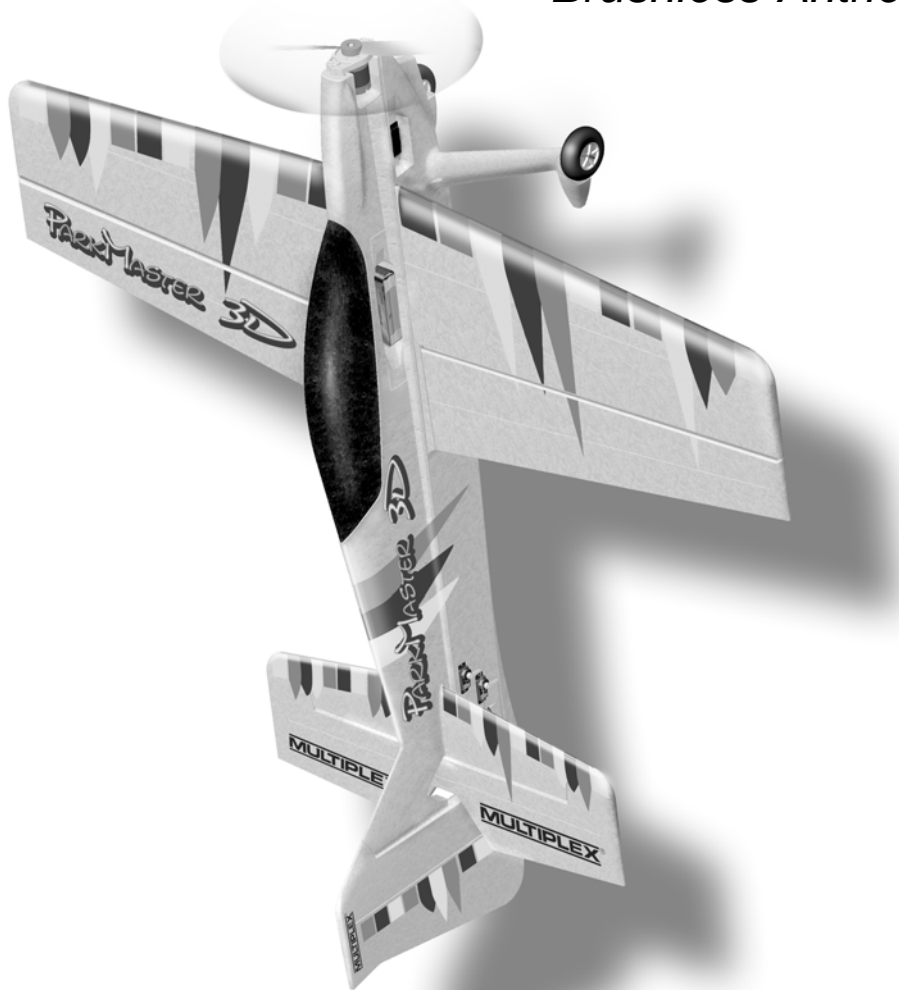


# ParkMaster 3D

vorgesehen für den MULTIPLEX  
Brushless-Antrieb # 33 2638



BK / KIT ParkMaster # 21 4231

**MULTIPLEX**<sup>®</sup>

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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 do 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 worked on**. If you find any part is not acceptable, we will readily correct or exchange it once we have examined it. Just send the component to our Model Department. Please be **sure** to include the purchase receipt and the **completed complaint form**, which is included in the kit.

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. Even though the model is called the "ParkMaster 3D", you can only fly in the park if model flying is expressly permitted there.**

**Additional items kit required for the "ParkMaster 3D":**
**MULTIPLEX radio control components for the ParkMaster 3D:**

MULTIPLEX RX-6-SYNTH light receiver	35 MHz A+B band	Order No. 5 5876
alternatively:	40 / 41 MHz band	Order No. 5 5877

Nano-Karbonite servo (four required)	2 x aileron, 1 x elevator, 1 x rudder	Order No. 6 5118
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Possibly 200 mm UNI suppressor filter lead (for speed controller)		Order No. 8 5035
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**Battery charger:**

<b>MULTIcharger LN-3008 EQU</b>		Order No. 9 2540
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For 2S and 3S LiPo, Lilo and LiFe batteries, and 4-cell to 8-cell NiMH and NiCd batteries

**ParkMaster 3D power set**

Contents:		Order No. 33 2638
Himax 2816-0890 motor, BL-17 II speed controller, APC 11 x 5.5" propeller, taper collet and propeller driver.		

<b>Flight battery</b>	Li-BATT BX-3/1 950	Order No. 15 7116
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**Tools:**

Scissors, balsa knife, combination pliers, side-cutters.

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

**Specification:**

Wingspan:	960 mm
Overall length:	1000 mm
All-up weight approx.:	525 g
Total surface area:	29 dm <sup>2</sup>
Wing loading min.:	18 g/dm <sup>2</sup>
RC functions:	Aileron, elevator, rudder, throttle

**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 simply 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.***

## 1. Before assembling the model

Check the contents of your kit before you start working on it. You will find **Figs. 1 + 2** and the Parts List helpful here.

**Note:** the GRP spars and longerons **40 - 43** are supplied in the kit as one full-length strip **14**, and have to be cut to the correct length. Please cut them as follows:

<b>40</b>	2 x L.H. and R.H. fuselage longerons	1.3 Ø x 745 mm
<b>41</b>	2 x L.H. and R.H. motor mount supports	1.3 Ø x 120 mm
<b>42</b>	2 x top and bottom wing spars	1.3 Ø x 855 mm
<b>43</b>	2 x top and bottom tailplane spars	1.3 Ø x 400 mm

Alternatively you can cut the strips to the length of the moulded foam components.

## 2. Preparing the elevator (9)

Lay the elevator **9** flat on the workbench and weight it down temporarily. Glue the spars **43** in place, wiping off excess glue immediately with a cloth. Use a balsa knife to cut slots at the marked points for the hinges **22**.

### Fig. 03

Prepare the elevator horn **23** as shown in **Fig. 04**, and glue it in the recess in the elevator **9**.

## 3. Preparing the rudder

Use a balsa knife to cut the slots for the rudder hinges **22**.

### Fig. 05

Prepare the rudder horn **23** as shown in **Fig. 06**, and glue it in the slot.

## 4. Preparing the ailerons (6 + 7)

Here again use a balsa knife to cut slots for the hinges **22** at the marked points. **Fig. 7**. Prepare the aileron horns **23** as shown in **Fig. 08**, and glue them in the slots; make sure the horns and swivel connectors are fitted the right way round.

## 5. Preparing the fuselage 3

To improve the visibility of the model in flight we advise you to pick out the canopy in a dark colour, and this is easiest to do at this stage. Mask out the canopy with adhesive tape before painting; we recommend the use of spray cans. Paint is heavy, so keep the application of colour as light as possible.

## 6. Installing the motor mount

Glue the plastic motor mount components **35 + 36** in place as shown in **Fig. 09**, followed by the motor mount supports **41** on both sides.

### Fig. 10

## 7. Installing the fuselage longerons

Lay the fuselage **3** down on a flat bench, with **one fuselage longeron channel facing down**, and fit one fuselage longeron in the longeron channel facing you; run cyano along the joint. Allow the glue to set hard, then repeat the procedure on the other side to form a mirror-image.

### Fig. 11

Trial-fit the elevator and rudder servos in their recesses in the fuselage, and secure each with a drop of cyano applied to the mounting lugs. Deploy the leads forward towards the receiver.

### Fig. 12

## 8. The main undercarriage 13

The first step is to remove any rough edges from the ends of the wire main undercarriage unit, and check that its shape is exactly as shown. Fit the first starlock washer **39** on one wheel axle by laying a pair of pliers on the bench with the jaws slightly open, as shown in **Fig. 13**, and pressing the wire unit **13** through the washer. Once the starlock washer is on the axle you will find that it can be pushed into final position; the free end of each wheel axle should be 24 mm long.

Place both undercarriage supports **37** over the wire unit **13** as shown, slip this assembly into the fuselage from the side, and glue it in place carefully.

### Fig. 14

The first starlock washer can now be fitted on the second wheel axle, using the pair of pliers again. Now fit the wheels and secure them with the second starlock washers. Allow the wheels just sufficient clearance for them to spin freely.

### Fig. 15

Now glue the undercarriage leg fairings **11 + 12** in place as shown, taking care to glue them to the wire legs only; do not glue them to the fuselage at the top, as this would restrict the springing effect of the steel.

### Figs. 16 + 17

## 9. Completing the wing

Glue the wing panels **4 + 5** together at the centre, taking particular care to ensure that they are not twisted relative to each other.

### Fig. 18

Invert the joined wing and lay it down on a flat surface. After the first third the whole surface of the wing panels should make contact with the bench surface. Glue the bottom wing spar **42** in the appropriate channel.

### Fig. 19

Turn the wing over, lay one half-span down flat and weight it down temporarily. Glue the top spar in the channel of the weighted wing panel only.

### Fig. 20

Allow the glue to harden, then pack up this side by 5 mm at the tip, and glue the spar to the second wing panel.

### Fig. 21

Use a balsa knife to cut the slots at the marked points in the wings and the ailerons for the aileron hinges **22**.

### Fig. 22

## 10. Joining the wing and fuselage

Attach the left-hand aileron **6** to the left-hand wing panel **4** using the hinges **22**. Secure each of the hinges **22** with a drop of cyano.

### Fig. 23

Slide the wing, with one aileron attached, through the fuselage as shown in **Fig. 24**. Set the wing central, then attach the second aileron as shown in **Fig. 25**. Now position the wing carefully (square and at right-angles to the fuselage) and run cyano along the joint between the fuselage and the wing; don't allow excess glue to run out of the joints. Check the alignment of the wing once again, as shown in **Figs. 26 and 27**.

## 11. Installing the servos, connecting the control surfaces

Place the aileron servos in their recesses, and secure each with a drop of glue applied to the mounting lugs. Connect the pre-formed end of the pushrods **29** to the servo output arms. Slip the pushrods through the swivel pushrod connectors on the aileron horns, set the servos and ailerons to centre, then tighten the clamping screws in the connectors.

### Fig. 28

## 12. Installing the tailplane and rudder

Trial-fit the tailplane **8** in its slot, and check that it is at right-angles to the fuselage. Carry out any trimming required, then glue it in place.

### Fig. 29

Attach the rudder **10** to the fin using the hinges **22**.

### Fig. 30

### 13. Connecting the servos to the elevator and rudder

If you are using servos other than those recommended, you may need to use different linkage holes - adjust as necessary.

Connect the pre-formed end of the rudder pushrod to the outermost hole in the servo output arm. The swivel connector should be mounted in the third hole from the outside of the horn in the rudder **10**. Tighten the nut of the pushrod connector just to the point where the barrel swivels smoothly, but without slop. Apply a tiny drop of thread-lock fluid or cyano to the outside of the nut to secure it.

Repeat the procedure with the elevator pushrod **30**.

### Fig. 31

### 14. Installing the motor

If you are using the dedicated power set # **33 2638** you will have no problems at this stage: everything fits, and the model is very adequately powered. The method of installing the motor mount **32** and the motor is shown in **Fig. 32**.

### 15. Centre of Gravity

The CG should be corrected as far as possible when you install the flight battery.

The model should balance at a point in the range **110 - 120 mm** aft of the wing root leading edge, measured on both sides of the fuselage. **Fig. 33**

### 16. Initial test-run

Install all the receiving system components as shown in **Fig. 34**, and connect them as described in the RC system instructions; use the Velcro tape **20 + 21** to secure the components. Check the neutral position and freedom of movement of the control surfaces, and the direction of rotation of the servos. Check the direction of motor rotation, and reverse it if necessary.

### 17. Settings (guide only!)

Centre of Gravity (CG): approx. 110 - 120 mm  
aft of the wing root leading edge  
Longitudinal dihedral: 0°  
Downthrust: 0 - 2° (motor shaft angled down)  
Sidethrust: 0 - 2° (motor shaft angled to the right)  
Adjustments are possible using the set-screws in the motor bulkhead.

Control surface travels:  
Measured at the widest point of the control surfaces

Ailerons:	65 mm
Elevator:	65 mm
Rudder:	90 mm

Dual Rates on elevator and ailerons: 30 - 50%  
Exponential: ailerons 30%, elevator 50%

### 18. Test-flying

**Wait for a day with flat-calm conditions or very little wind. Carry out all adjustments beforehand, in the calm of your workshop!**

Longitudinal dihedral = 0°. The design of the model automatically sets this correctly.

### Balancing:

Start by balancing the model within the stated range. Once you have completed the initial test-flights, you can fine-tune the setting as follows: fly straight and level at half-throttle, and roll the model

inverted. If you now have to apply a great deal of "down" to hold level flight, the model is nose-heavy; the CG must be shifted further aft. If the machine climbs whilst inverted, without requiring elevator correction, the CG is too far aft. When balanced correctly, the model will require slight down-elevator for level inverted flight.

### Correcting straight and level flight:

First the static balance: support the model by the spinner and the rudder: with the fuselage level, the wings should remain horizontal. If not, add ballast to the lighter wingtip.

On the next flight, fly the aeroplane at minimum throttle (just enough power to keep the model in the air), hold it straight and level, and adjust the trims for straight flight. Now switch to inverted and check the straight flying characteristics. If necessary, adjust the wingtip ballast after landing the model.

### Sidethrust:

Apply full throttle and fly the model straight and level past yourself before pulling up into a vertical climb. When ascending vertically the model should not exhibit any tendency to veer off to right or left. If this is not the case, adjust the sidethrust to correct the fault. Repeat the test several times, as any sidewind will tend to falsify the model's track.

### Downthrust:

Apply full throttle and fly the model straight and level until it arrives at your location, so that you have a clear view of the model from one side. Pull the aircraft up into a vertical climb: it should continue to climb vertically, and not fall away forward or back. If this is not the case, adjust the motor downthrust to correct the fault.

After these checks you may find it necessary to repeat the CG tests.

### Aileron differential:

Fly three or four rolls to the right at half-throttle; if the aircraft veers to the right during this manoeuvre, you need to increase the aileron differential. If it veers to the left, i.e. against the direction of rolling, you should reduce the aileron differential.

### 19. 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.

### 20. 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 (i.e. that its cover includes electric / glow powered model aircraft).

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

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### ParkMaster 3D

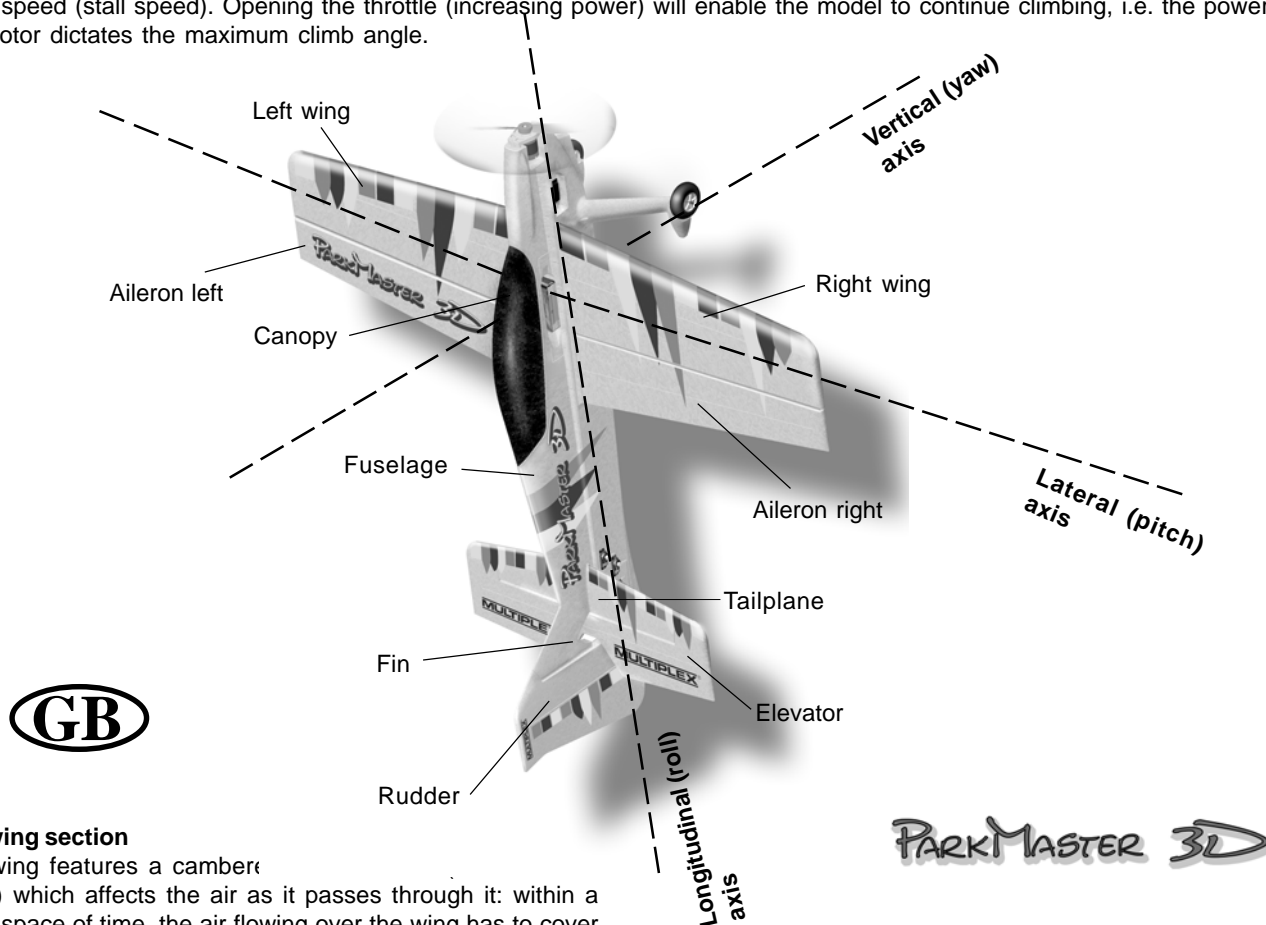
Part No.	No. off	Description	Material	Dimensions
1	1	Building instructions	Paper, 80 g/m <sup>2</sup>	A4
2	1	Decal set	Printed adhesive film	500 x 1000 mm
3	1	Fuselage	Moulded Elapor foam	Ready made
4	1	L.H. wing panel	Moulded Elapor foam	Ready made
5	1	R.H. wing panel	Moulded Elapor foam	Ready made
6	1	L.H. aileron	Moulded Elapor foam	Ready made
7	1	R.H. aileron	Moulded Elapor foam	Ready made
8	1	Tailplane	Moulded Elapor foam	Ready made
9	1	Elevator	Moulded Elapor foam	Ready made
10	1	Rudder	Moulded Elapor foam	Ready made
11	1	L.H. undercarriage fairing	Moulded Elapor foam	Ready made
12	1	R.H. undercarriage fairing	Moulded Elapor foam	Ready made
13	1	Main undercarriage unit	Spring steel wire	2 mm Ø, ready made
14	1	GRP spar / longeron material (roll)	GRP	1.3 Ø x 4500 mm

### Small items

20	2	Velcro tape, "mushroom"	Plastic	25 x 60 mm
21	2	Velcro tape, "felt"	Plastic	25 x 60 mm
22	3	Leaf hinge (sprue of six)	Inj. moulded plastic	Ready made
23	4	Glue-fitting control surface horn	Inj. moulded plastic	Ready made
24	4	Swivel pushrod connector	Metal	Ready made, 6 mm Ø
25	4	Washer	Metal	M2
26	4	Nut	Metal	M2
27	4	Socket-head grub screw	Metal	M3 x 3 mm
28	1	Allen key	Metal	1.5 mm A/F
29	2	Pre-formed aileron pushrod	Metal	1 Ø x 70 mm
30	1	Pre-formed elevator pushrod	Metal	1 Ø x 80 mm
31	1	Pre-formed rudder pushrod	Metal	1 Ø x 110 mm
32	1	Motor bulkhead	Inj. moulded plastic	Ready made
33	4	Socket-head grub screw		
		Motor bulkhead adjustment	Metal	M3 x 10 mm
34	2	Motor bulkhead retaining screw	Metal	M3 x 12 mm
35	1	Top motor mount	Inj. moulded plastic	Ready made
36	1	Bottom motor mount, with notch /Nut	Inj. moulded plastic	Ready made
37	2	Undercarriage support	Inj. moulded plastic	Ready made
38	2	Lightweight wheel	EPP plastic	53 Ø, hub bore 2.6 mm
39	9	Starlock washer	Metal	For 2 mm Ø
	1	GRP spar material (roll) To be cut to length as follows:	GRP rod	1.3 Ø x 4500 mm
40	2	L.H. and R.H. fuselage longeron	GRP rod	1.3 Ø x 745 mm
41	2	L.H. and R.H. motor mount support	GRP rod	1.3 Ø x 120 mm
42	2	Top and bottom wing spar	GRP rod	1.3 Ø x 855 mm
43	2	Top and bottom tailplane spar	GRP rod	1.3 Ø x 400 mm

## 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 section

The wing features a cambered 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)     | <b>Fig. D</b> |
| The elevator (up / down)      | <b>Fig. E</b> |
| The ailerons (left / right)   | <b>Fig. F</b> |
| The throttle (motor off / on) | <b>Fig. G</b> |

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.

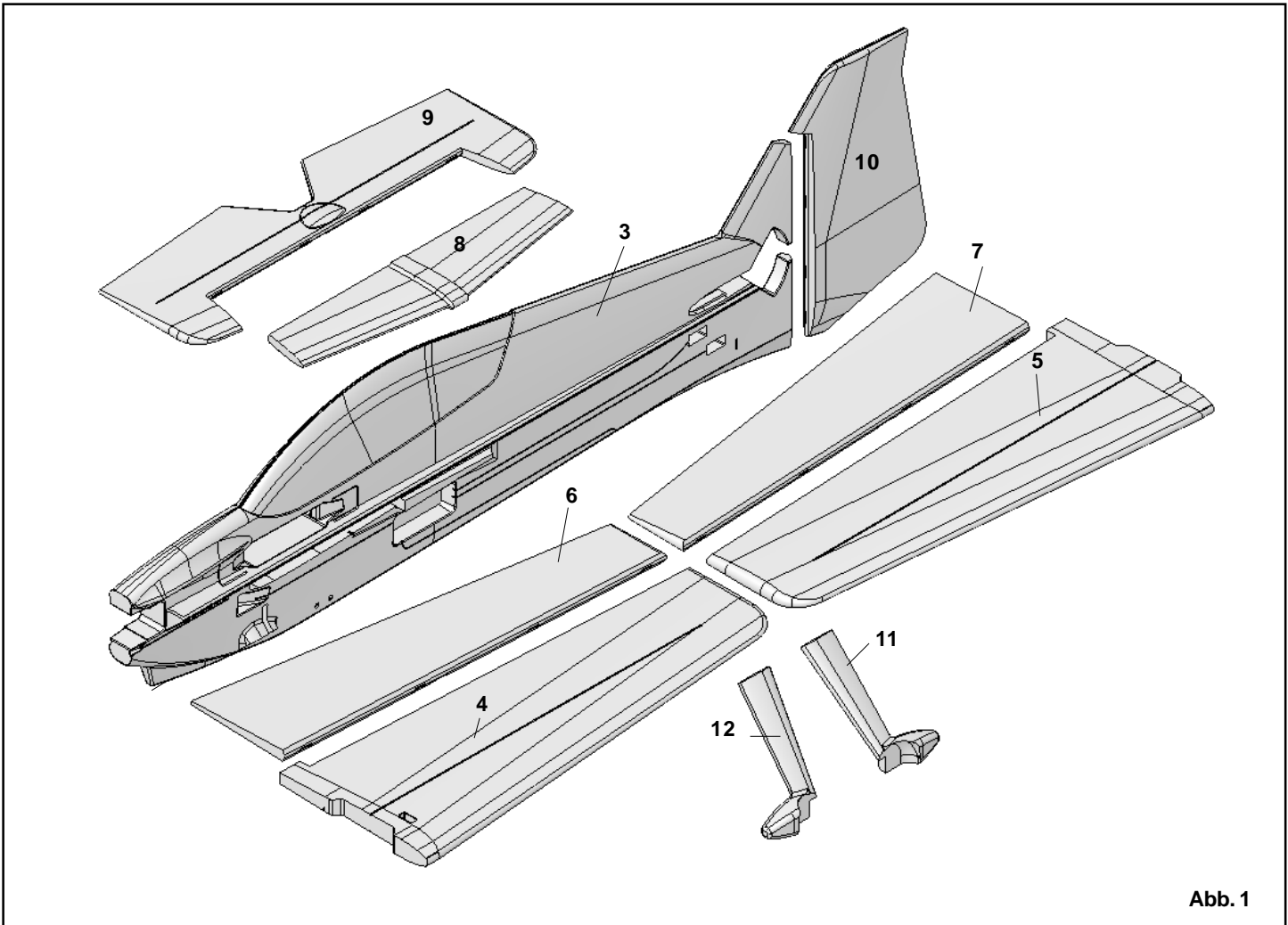


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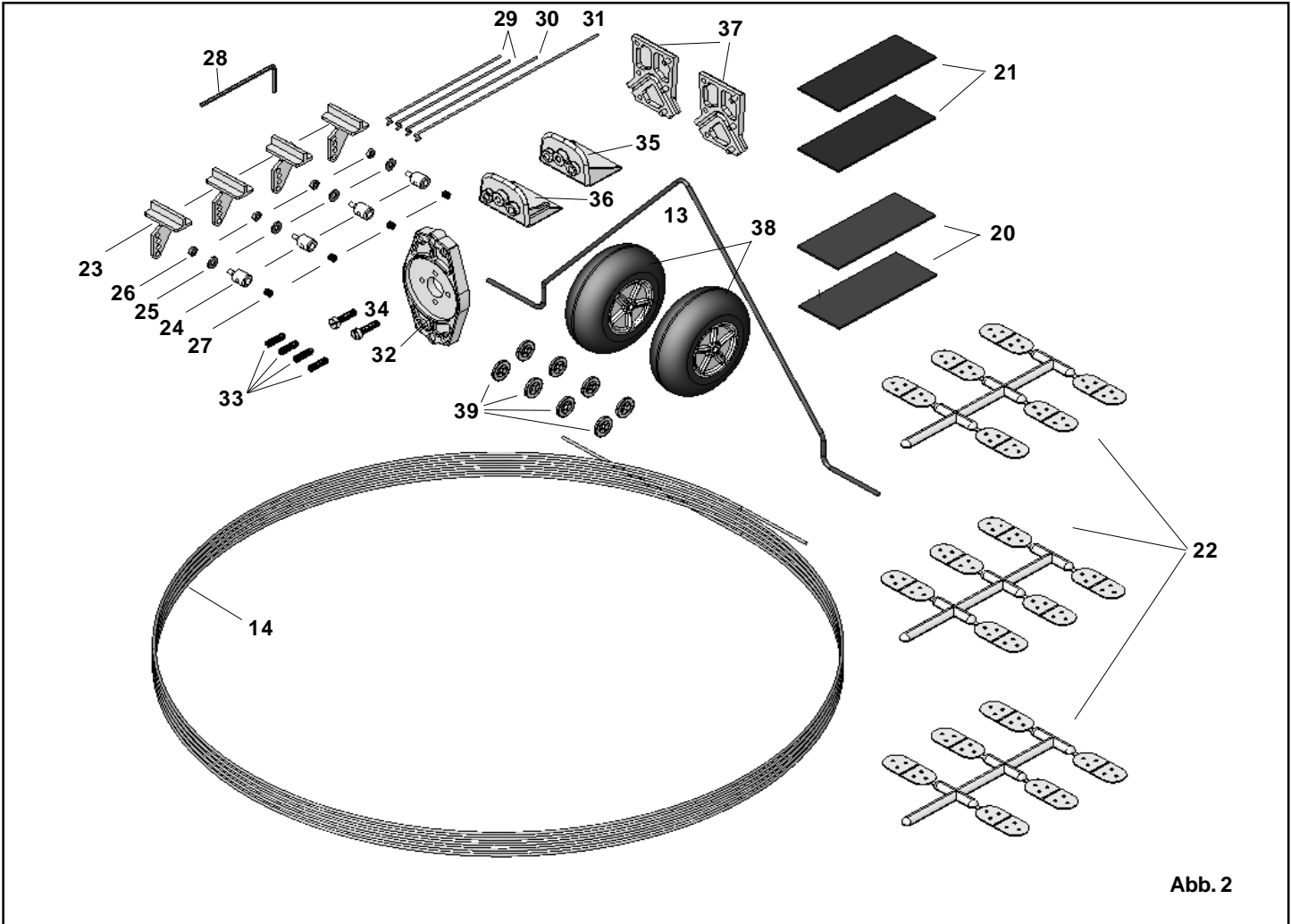


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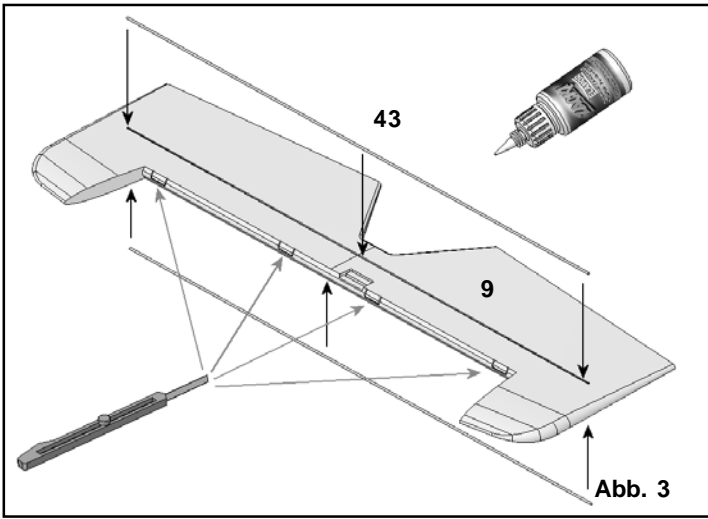


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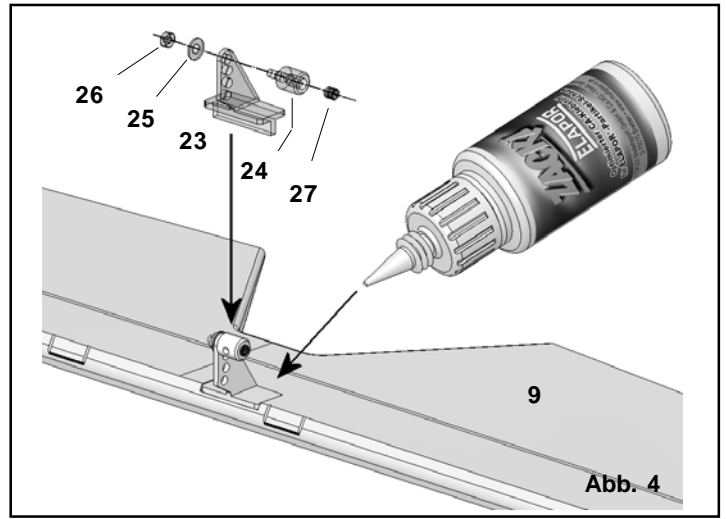


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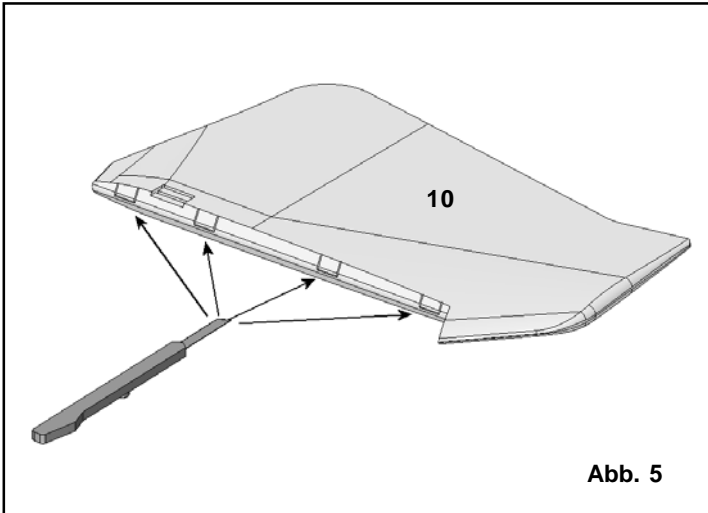


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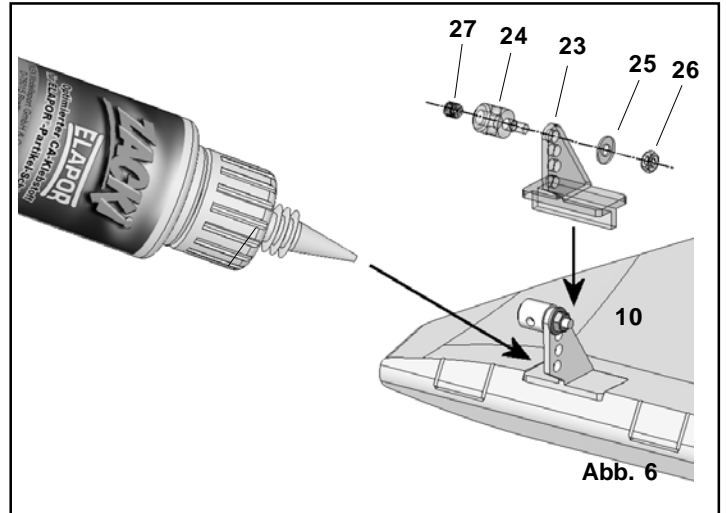


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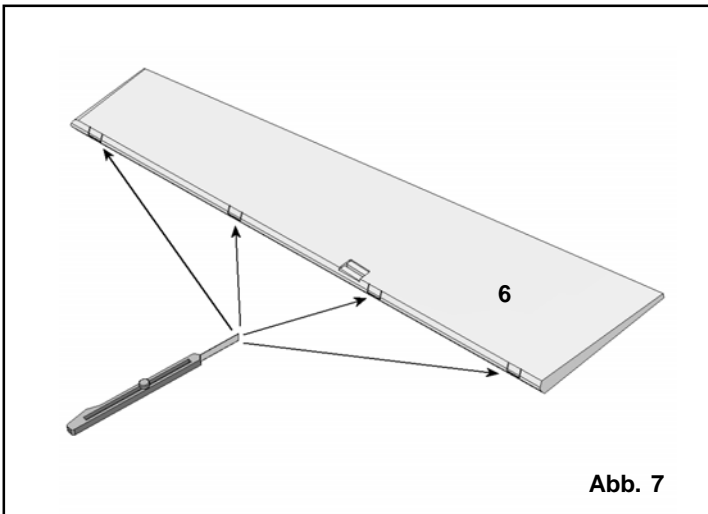


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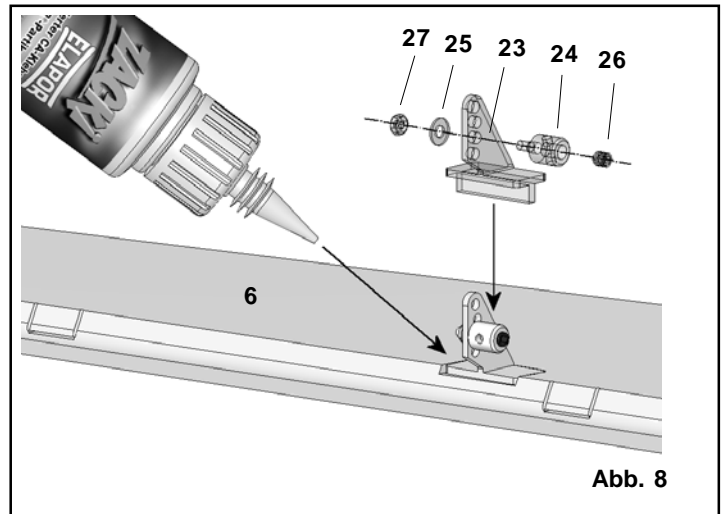


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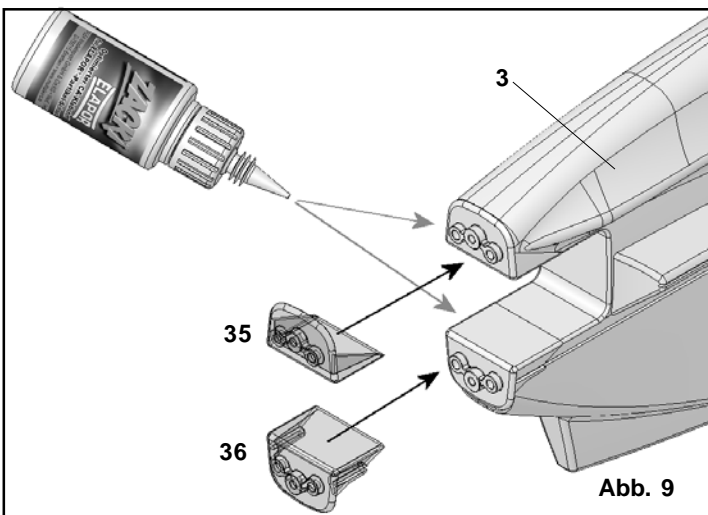


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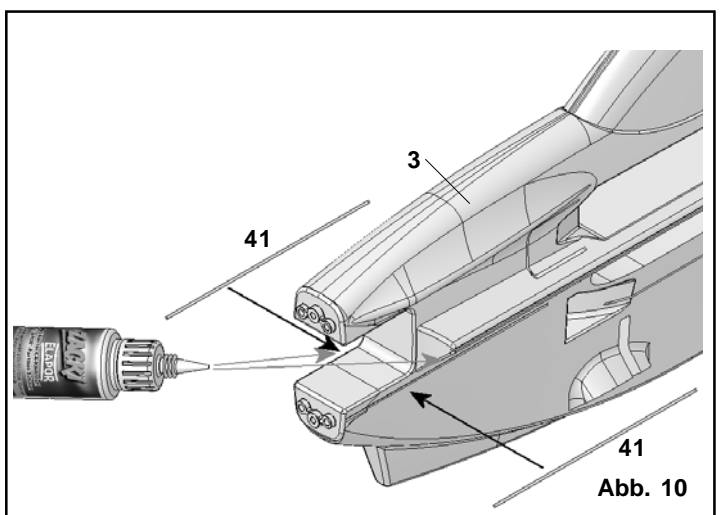


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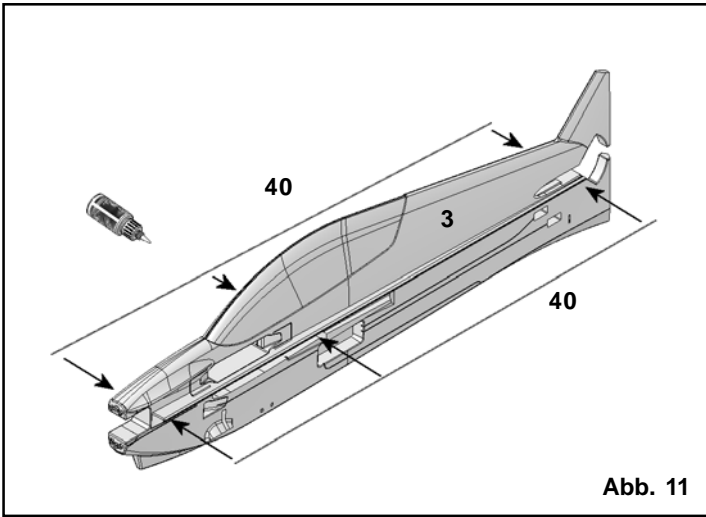


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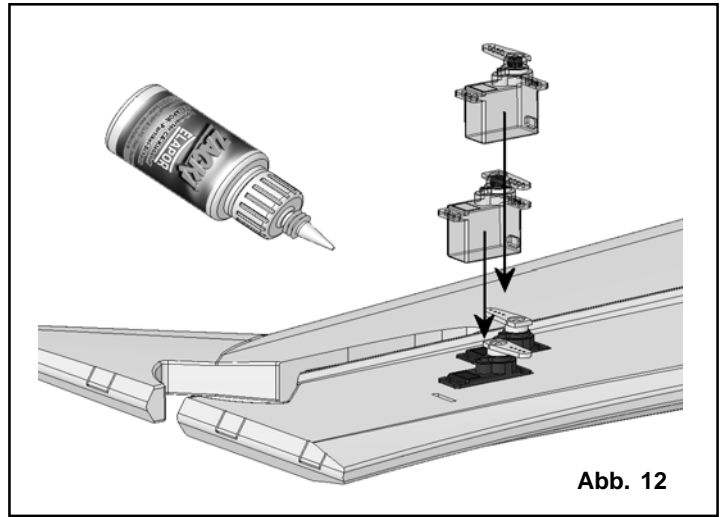


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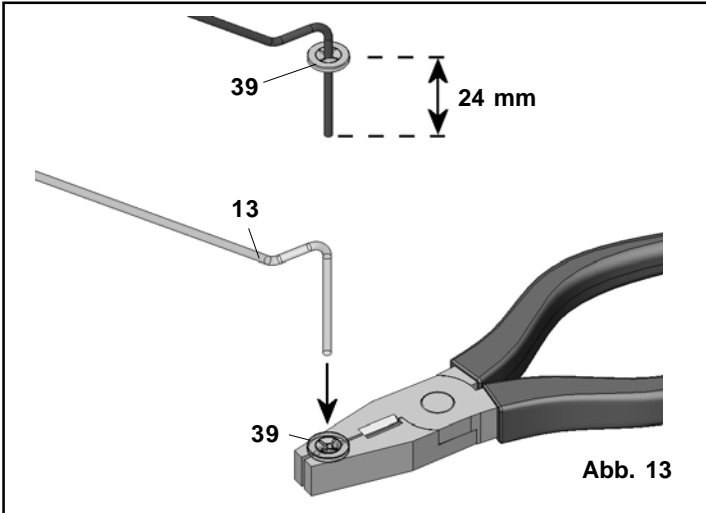


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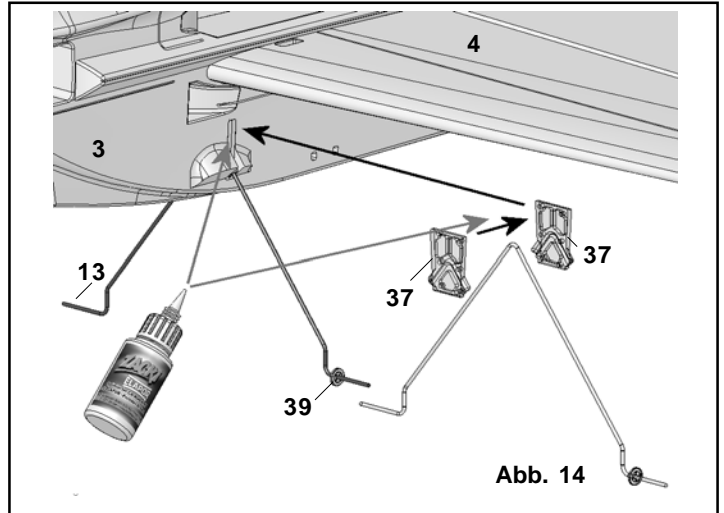


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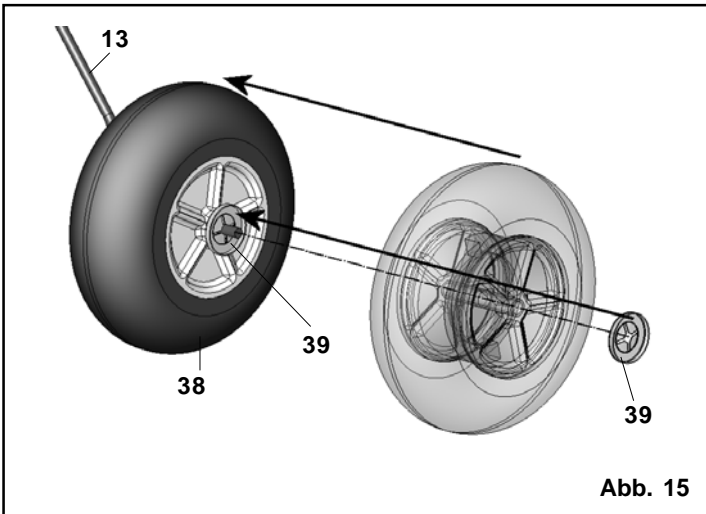


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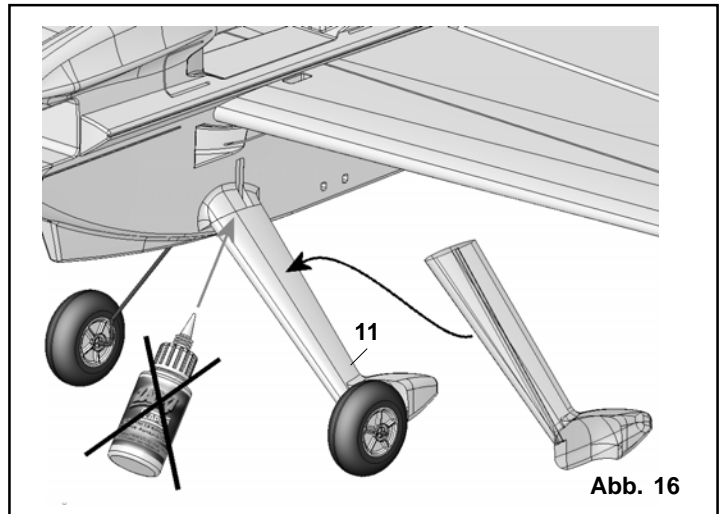


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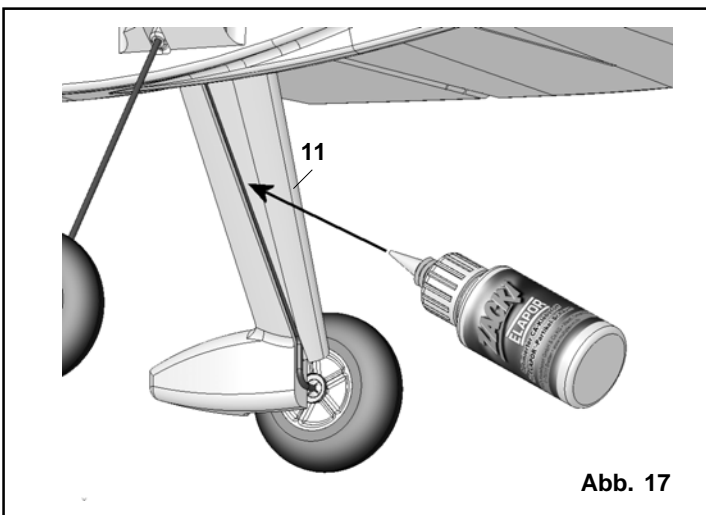


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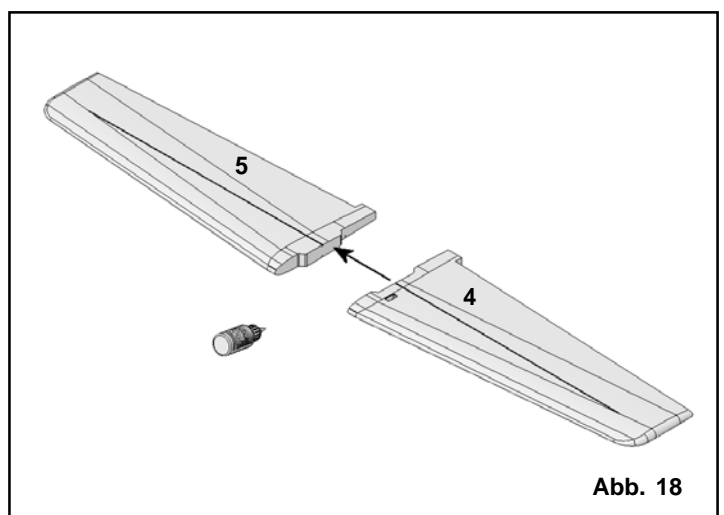


Abb. 18

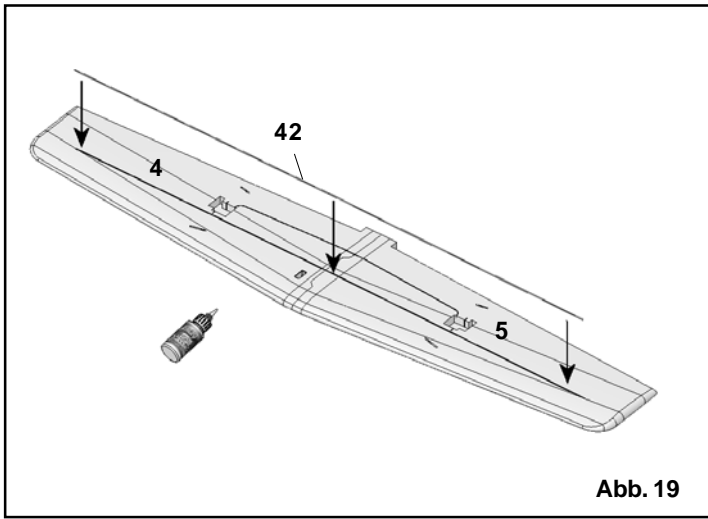


Abb. 19

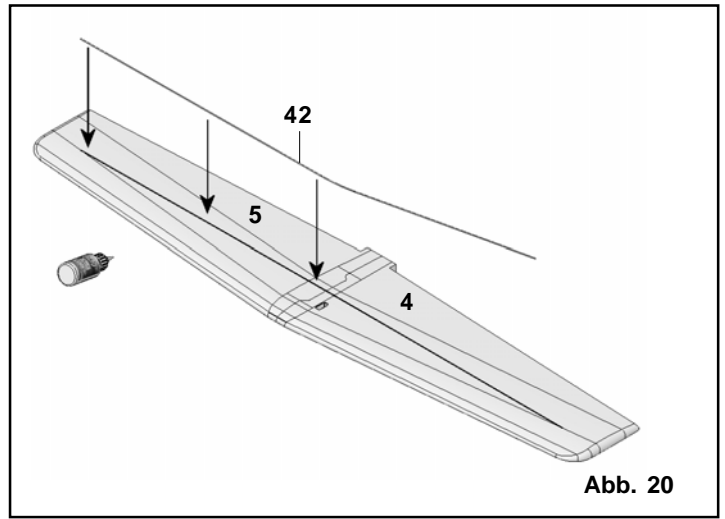


Abb. 20

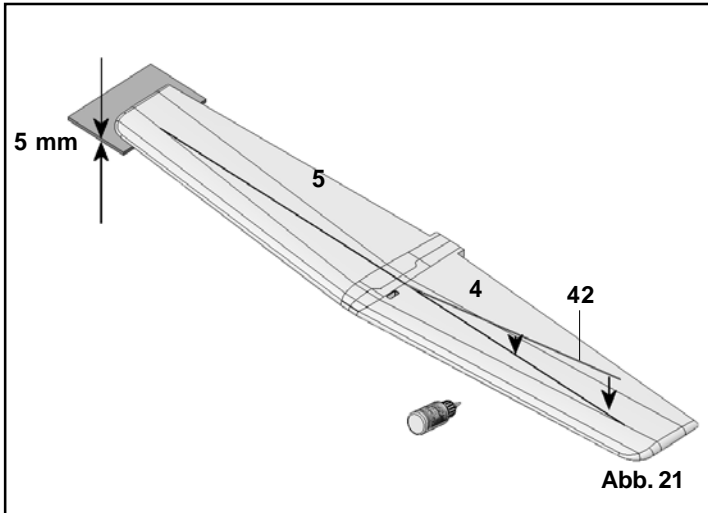


Abb. 21

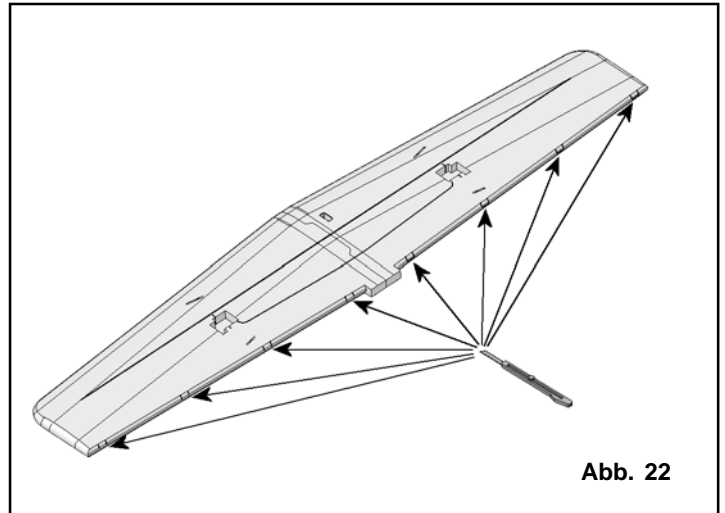


Abb. 22

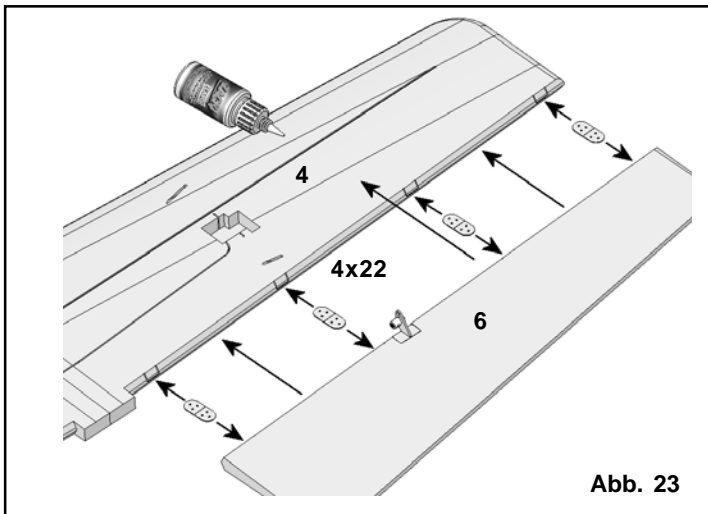


Abb. 23

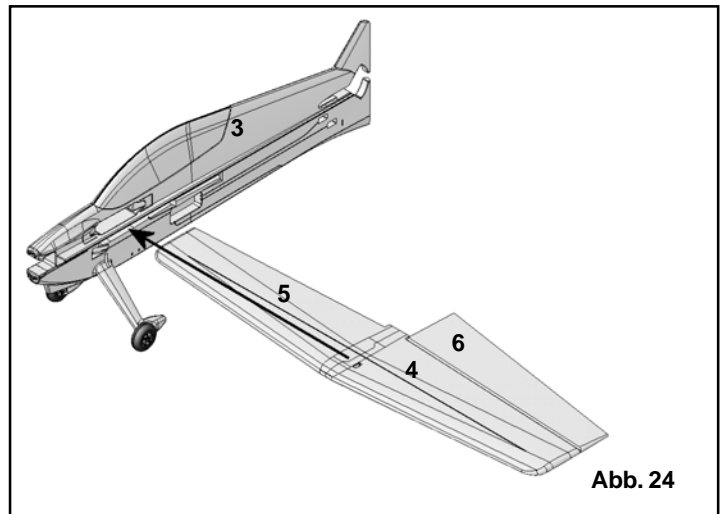


Abb. 24

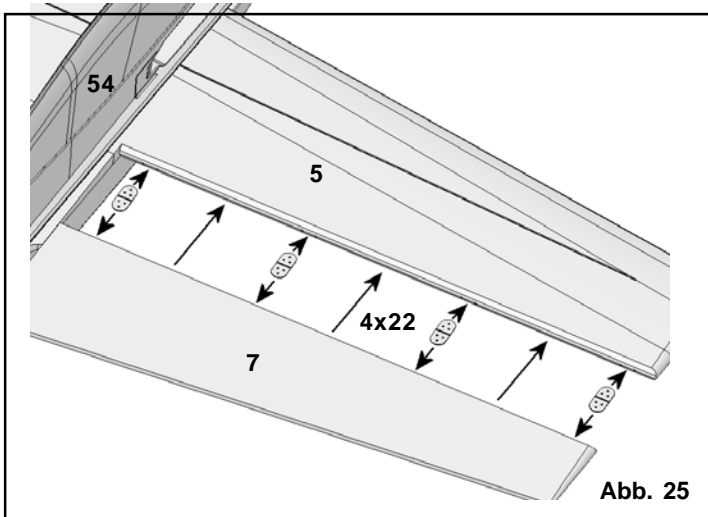


Abb. 25

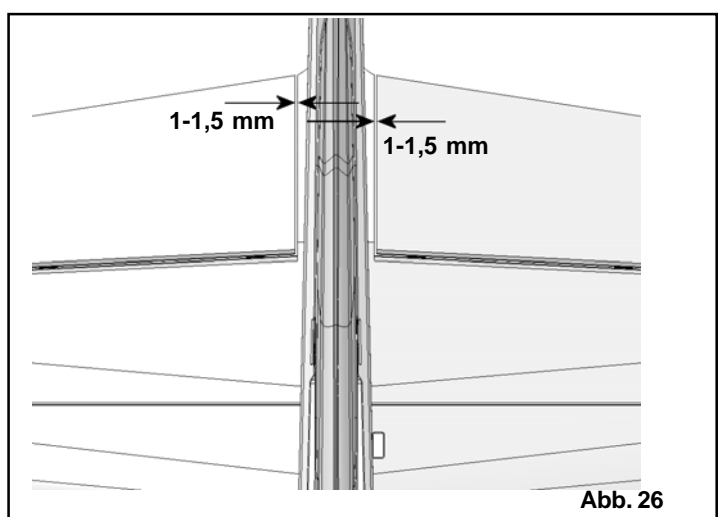
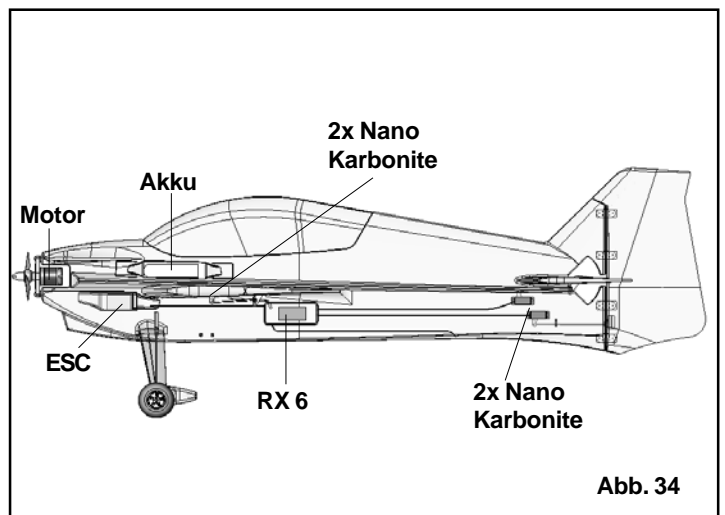
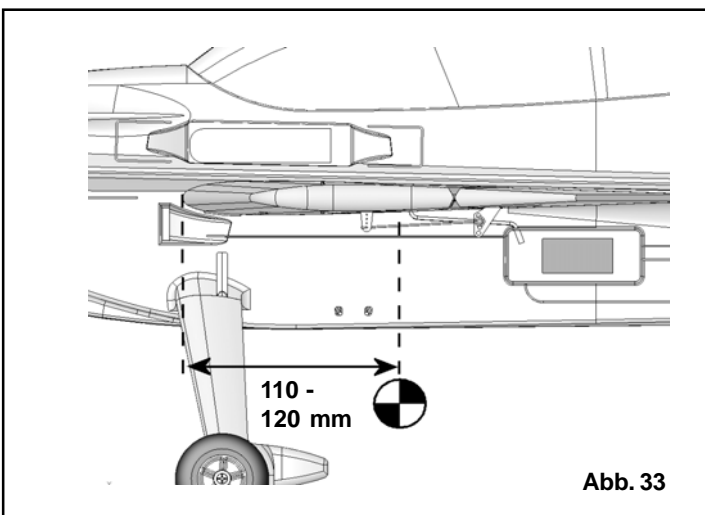
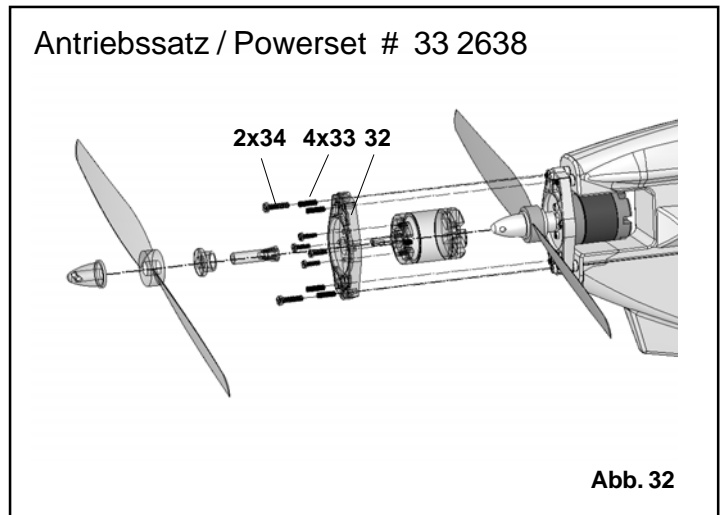
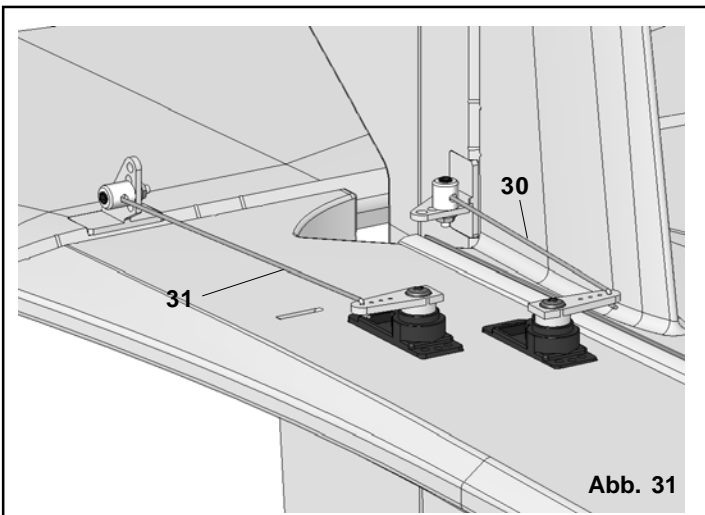
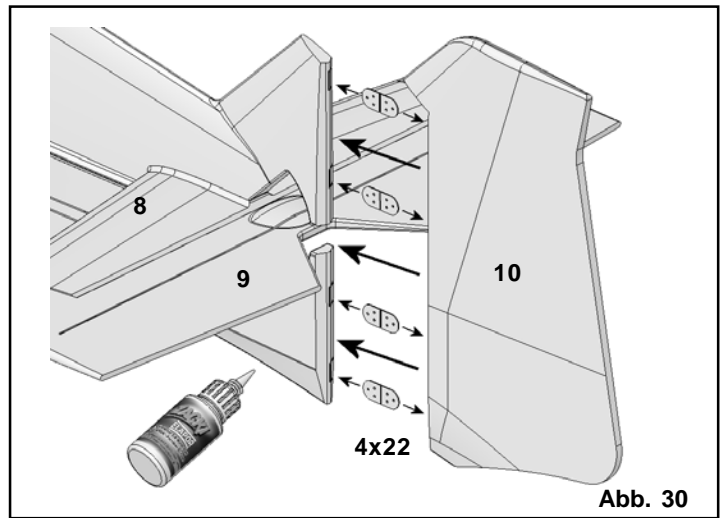
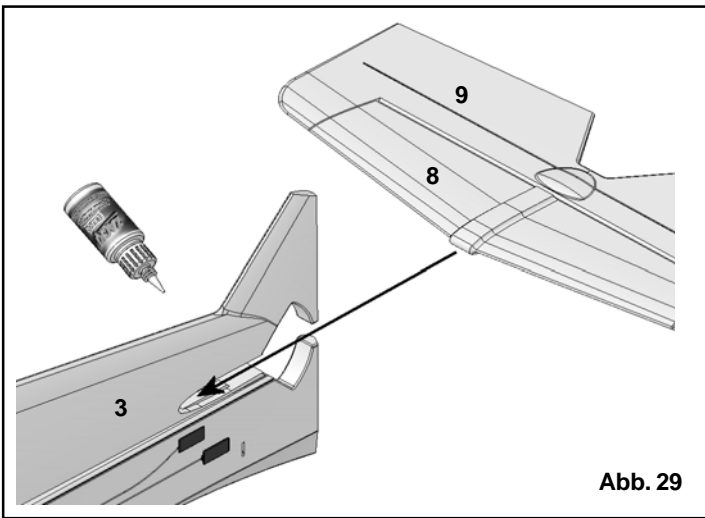
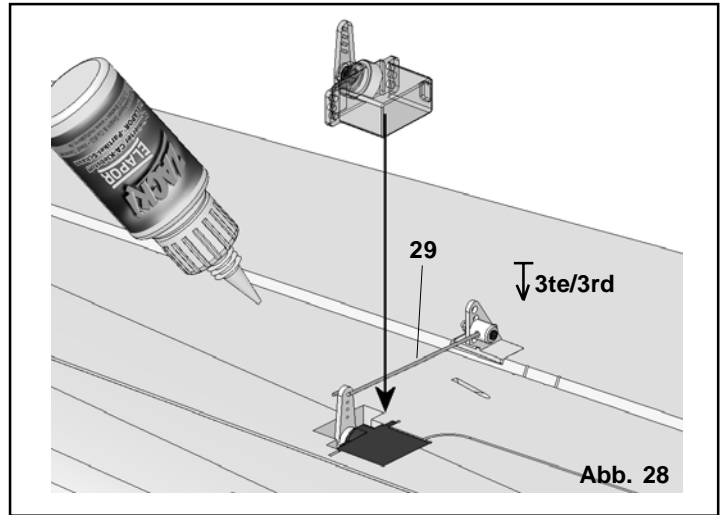
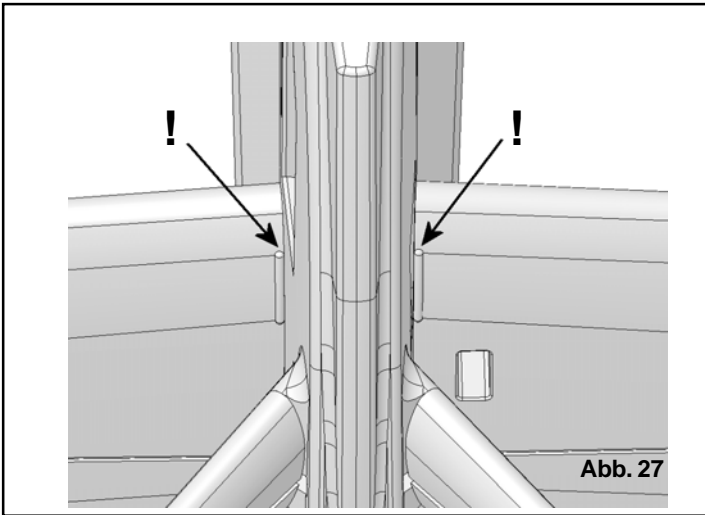


Abb. 26



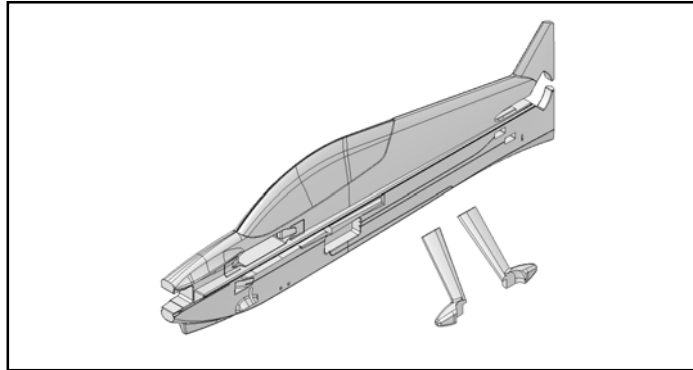
Ersatzteile  
Replacement parts  
Pièces de rechanges  
Parti di ricambio  
Repuestos

PARKMASTER 3D

(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)

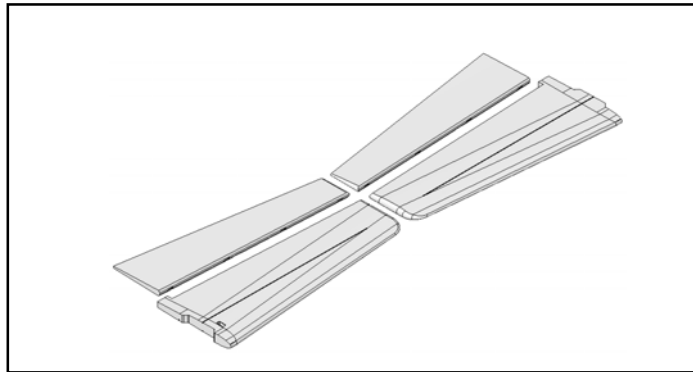
**# 22 4132**

Rumpf mit Fahrwerksverkleidungen  
Fuselage and undercarriage fairings  
Fuselage avec habillage de roue  
Fusoliera con carenatura carrello  
Fuselaje con revestimientos del tren de aterrizaje



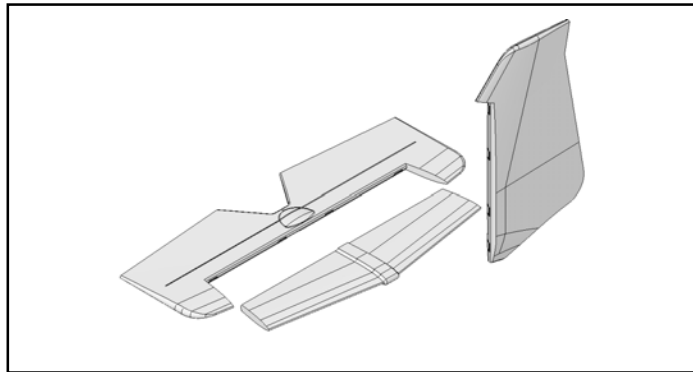
**# 22 4133**

Tragflächen  
Wing panels  
Aile principale  
Semiali  
Alas



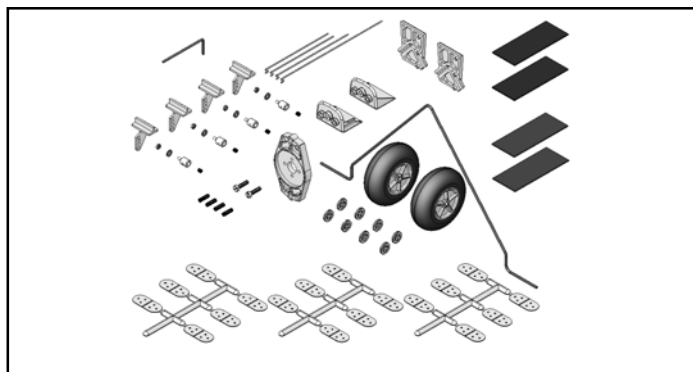
**# 22 4134**

Leitwerkssatz  
Tail set  
Kit de stabilisateurs  
Piani di coda  
Kit de empenajes



**# 22 4135**

Kleinteile  
Tail set  
Petites pièces  
Minuteria  
Piezas pequeñas

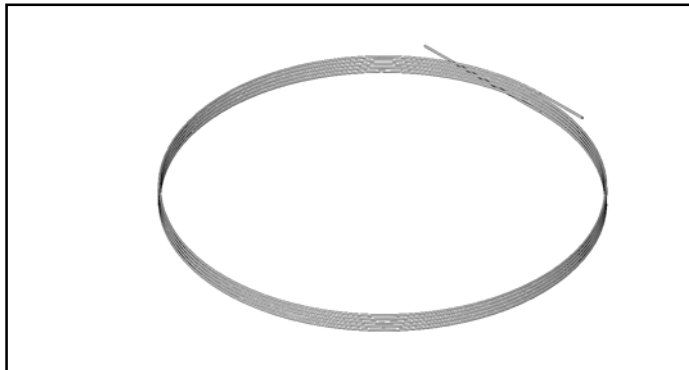


Ersatzteile  
Replacement parts  
Pièces de rechanges  
Parti di ricambio  
Repuestos

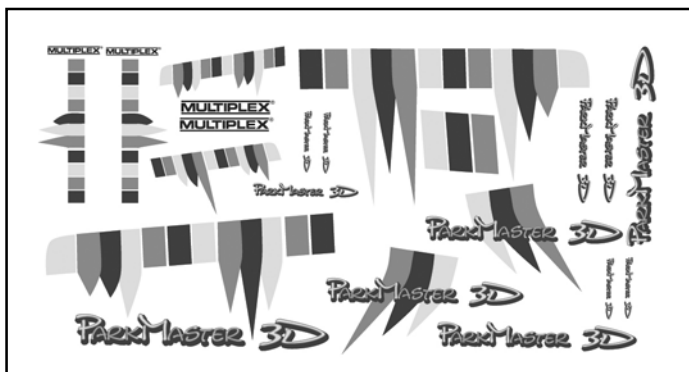
# ParkMaster 3D

(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, diríjase a su distribuidor)

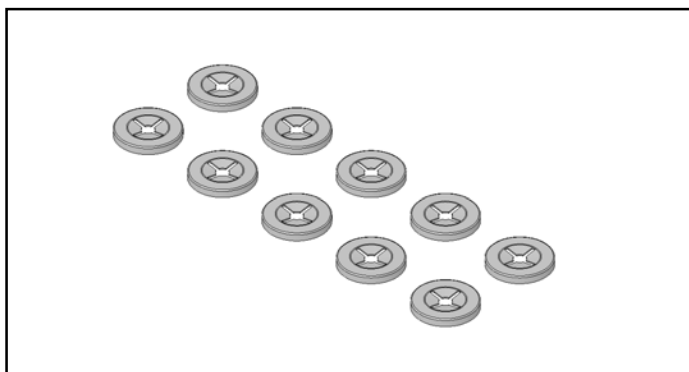
**# 22 4136**  
Draht- und Holmsatz  
Wire and spar set  
Kit de clé d'aile et de renfort  
Rinforzil  
Juego de alambres y largueros



**# 72 4501**  
Dekorbogen  
Decal sheet  
Planche de décoration  
Decals  
Pliego de adhesivos



**# 72 3310**  
Wellensicherung (10St.)  
Starlock washer (pack of 10)  
Rondelle de fixation de roue  
Rondelle dentate (10 pz.)  
Muelles de retención (10 unid.)



**Kleber Empfehlung!**  
**Recommended adhesive!**  
**Colle conseillée!**  
**Colla consigliata!**  
**cola recomendada !**

**# 59 2727**  
Zacki ELAPOR



