The Curtiss P-40N



Instruction Manual

DURAFLY

Please read this manual carefully before operating this plane.

⚠ WARNING:

Read this instruction manual fully so as to become completely familiar with the features of this product before operating. Failure to operate this product correctly could result in damage to the product, personal property and cause serious injury. This is a sophisticated hobby product and is NOT a toy. It must always be operated with caution, common sense and some basic mechanical ability. This manual provides instructions as the the assembly, safe operation and maintainence of this hobby product. It is highly reccommneded that you follow and read fully the instructions and warnings stated in this manual including safety, assembly, set-up and flying guidelines in order to operate this product correctly and avoid damage or serious injury.

SAFETY PRECAUTIONS:

As the user of this product you and you alone are responsible for operating it in a manner that does not endanger yourself and others around you or result in damage to the product orproperty of others. This product is operated via a radio controlled system that in some cases can be subject to interference from sources outside of your control. Interference may result in a momentary loss of control so it is always recommended that this product be used in a suitably open outdoors space.

- This is a radio controlled flying model and as such must always be flown with caution and care. This is not a toy.
- The P-40 is designed for intermediate to advanced pilots.
- Alway exercise great caution when using the recommended battery to power this product. For full safety notes and operating procedures, please see information provided by your battery supplier.
- Take great care when connecting/disconnecting the battery. See battery supplier for full safety procedures.
- Never power up the model in confined spaces and always keep the prop clear of obstructions.
- This product is not a toy. Children must be accompanied by an adult at all times if operating this product.
- Only fly this model in an open area away from crowds, people, buildings, tree's, power lines and obstructions.
- Always put safety first when operating this model and consider the warnings stated above.
- The supplier/manufacturer accepts no responsibility for damage or injury caused through the use of the product. Not suitable for children under the age of 14. THIS IS NOT A TOY.

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INTRODUCTION

The Curtiss P-40 was one of the most widely used fighters of WW2, seeing more combat in more theaters globally than any other fighter from either side of the conflict. The later 'N' model was considered by pilots to be the finest version of this versatile aircraft, and seeing as Durafly makes the best EPO warbirds out there, what could be better than a P-40N from Durafly.

The Durafly P-40N captures beautifully not only the classic lines of this much loved (though often over shadowed) fighter, but with the multiple national markings provided in the box, it pays homage to the many airman of the many nations under which it served valiantly in WW2. This P-40N sets a new standard for Durafly both in terms of finish close up on the ground and truly warbird like performance in the air. Boasting a whole host of unique features that include: 100 degree metal trunnion twist and turn retracts for rock solid ground handling, super smooth paint and surface finish with fine scale panel lines, and for the first time with a Durafly 1100mm warbird, a power train suitable for both 3 and 4S set-up's with no modifications required.

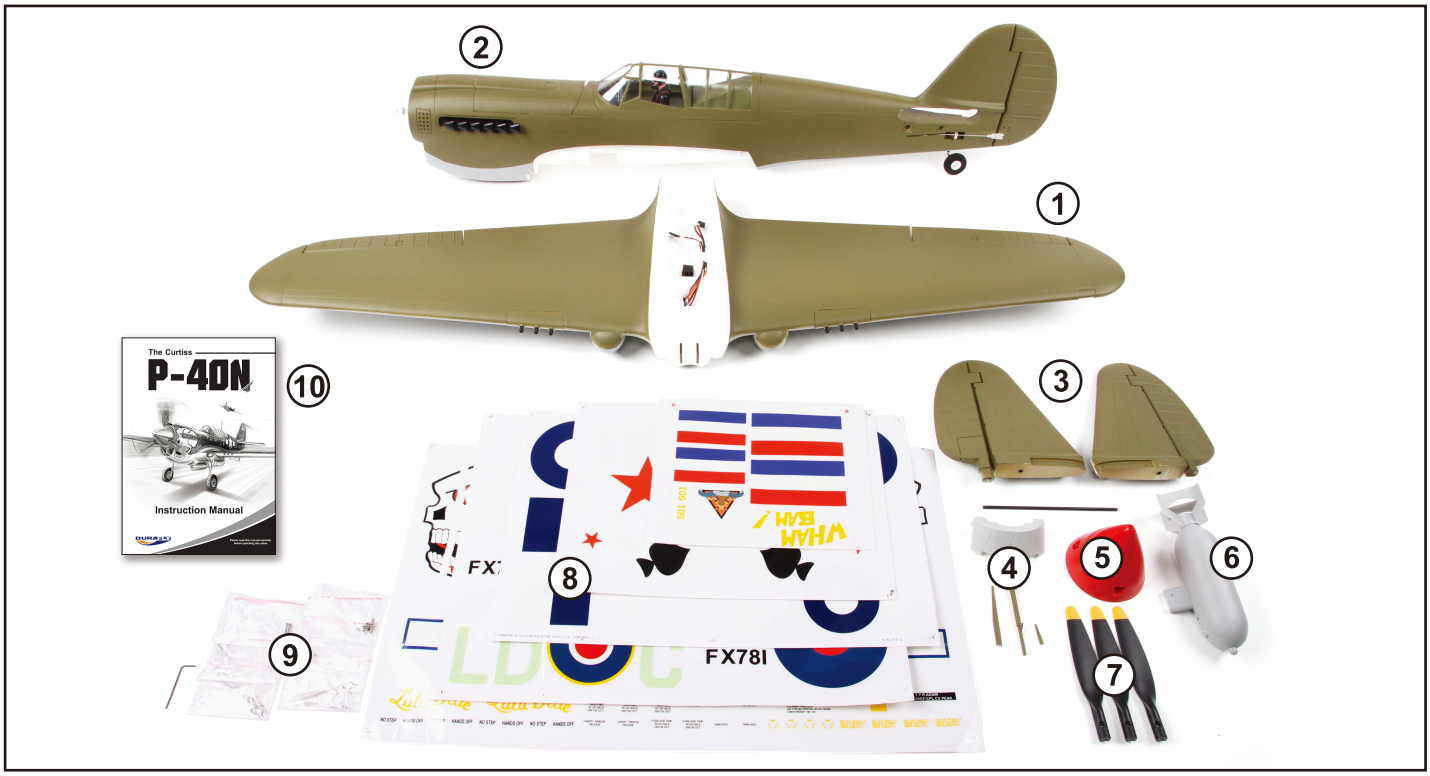
Durafly is proud to bring you this P-40N and we're confident you'll share that pride both when on the ground, and in the air.



SPECIFICATION

Wingspan:1100mm (43.3")
Flying weight:1300/1400g (45/49oz) 3/4 cell
Length:1000mm (39.3")
Servos:7 x 9g type (2 aileron, 2 flap, elevator, rudder, bomb system)
Motor: Durafly 3536 900Kv brushless outrunner
ESC: Durafly 45amp
Battery: 2200mah 3S 60-65C or 2200mah 4S 25-30C
Channels: 6-7 required (7 if using included bomb system)

CONTENTS OF BOX



1. Main Wing
2. Fuselage
3. Horizontal Tail Set
4. Plastic Scale Parts
5. Spinner
6. Bomb
7. Propeller Blades
8. Decal Sets
9. Accessories Set
10. Manual

REQUIRED TO COMPLETE MODEL

In its 'Plug n Fly' format the Durafly P-40N requires some additional electronic components to get it flight ready. Durafly recommends the products below for optimum performance and great value. Available at ***hobbyking.com***



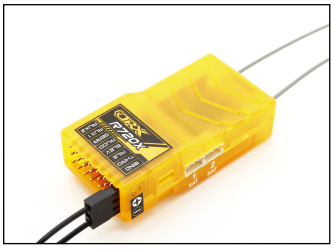
Zippy Compact 2200mAh
4S 25C Lipo:
Part No. ZC.2200.4S.25



Turnigy A-SPEC 2200mAh
3S 65C Lipo:
Part No. 9472000003-0



OrangeRx T-SIX 2.4GHz 6CH
Programmable Tx:
Part No. 9403000001 Mode 1
9403000001 Mode 2

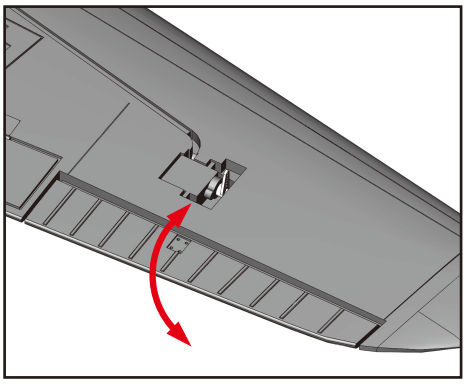


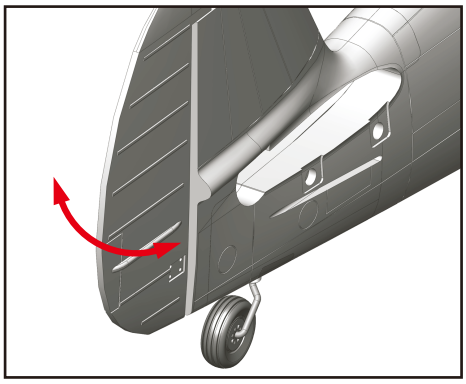
OrangeRx R720X 7ch 2.4Ghz
Receiver
Part No. R720X

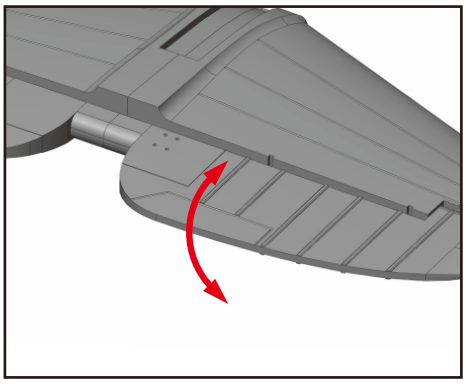
NOTE: Your P-40N comes with a selection of scale decals/markings to choose from. Application of these decals is highly recommended BEFORE you begin assembly of the model. Please refer to 'Decal application' on pages 17-18 of this manual for illustrated guides on how to apply each set.

ASSEMBLY

1. Out of the box your P-40N comes with reinforced foam hinges. However before assembly can begin, each hinge line must be flexed back and forth 5-6 times to reduce tension, and load on the servo. Do this for all control surfaces before continuing.

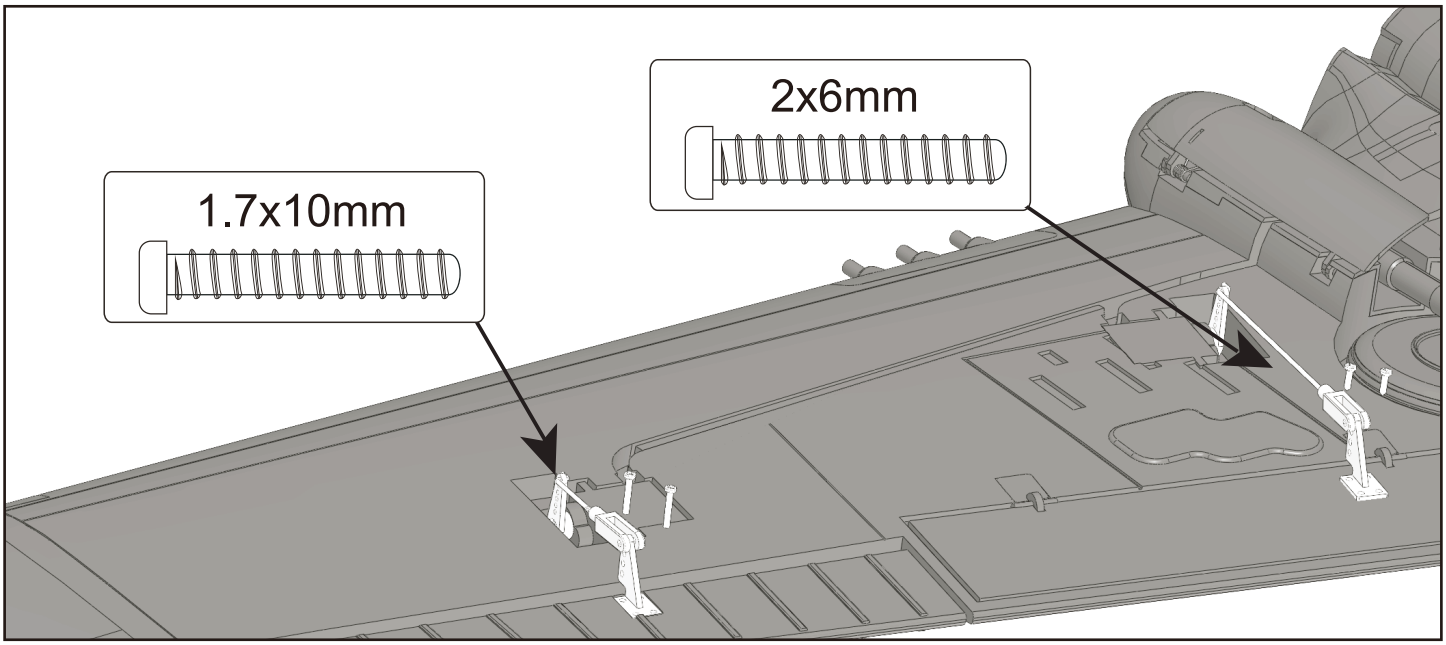




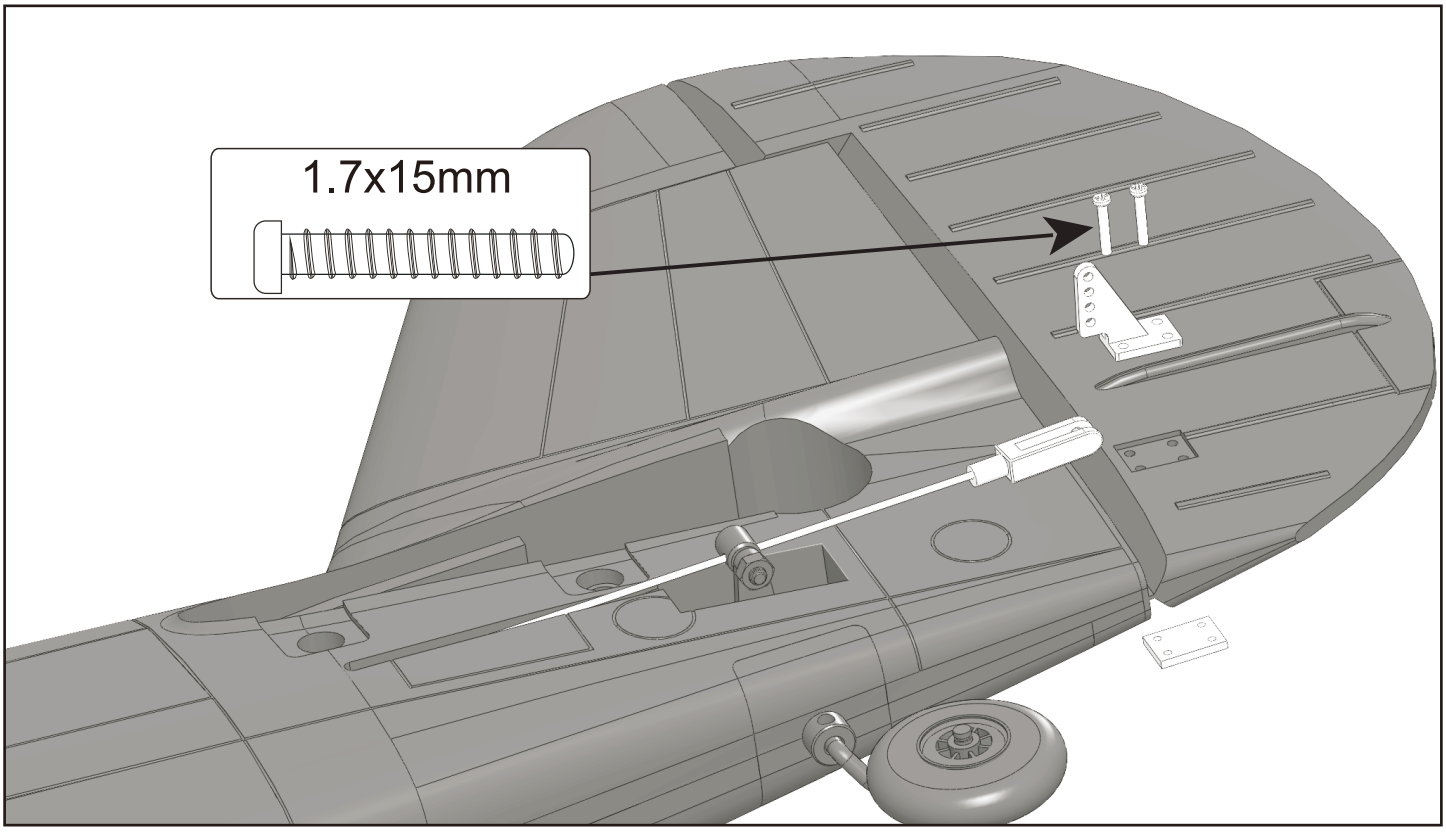


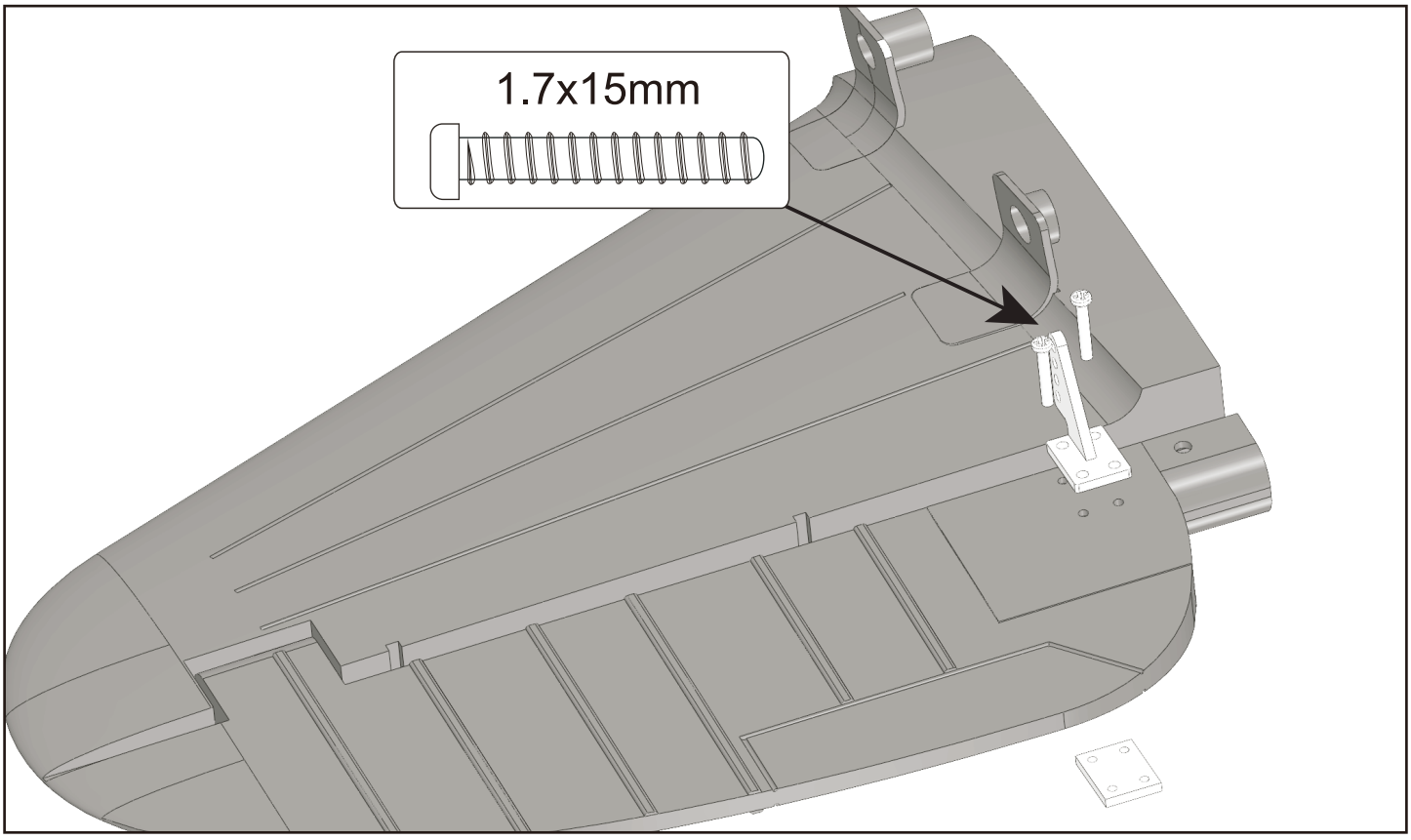
2A. Locate both aileron and flap control horns, plates and push rods. Screw each horn in place as shown below using the screws provided. Aileron horn screws pass through the aileron and screw into the receiving horn plate. The flaps screws screw directly into the plastic of the flap.

2B. Raise each servos horn until at 90 degree's to the wing and attach the push rods to the outer holes of both servo and control horn. Adjust the plastic clevis on the rods until the ailerons are neutral and the flaps are closed. Further adjustments can be made later during the 'set-up' stage of the manual.

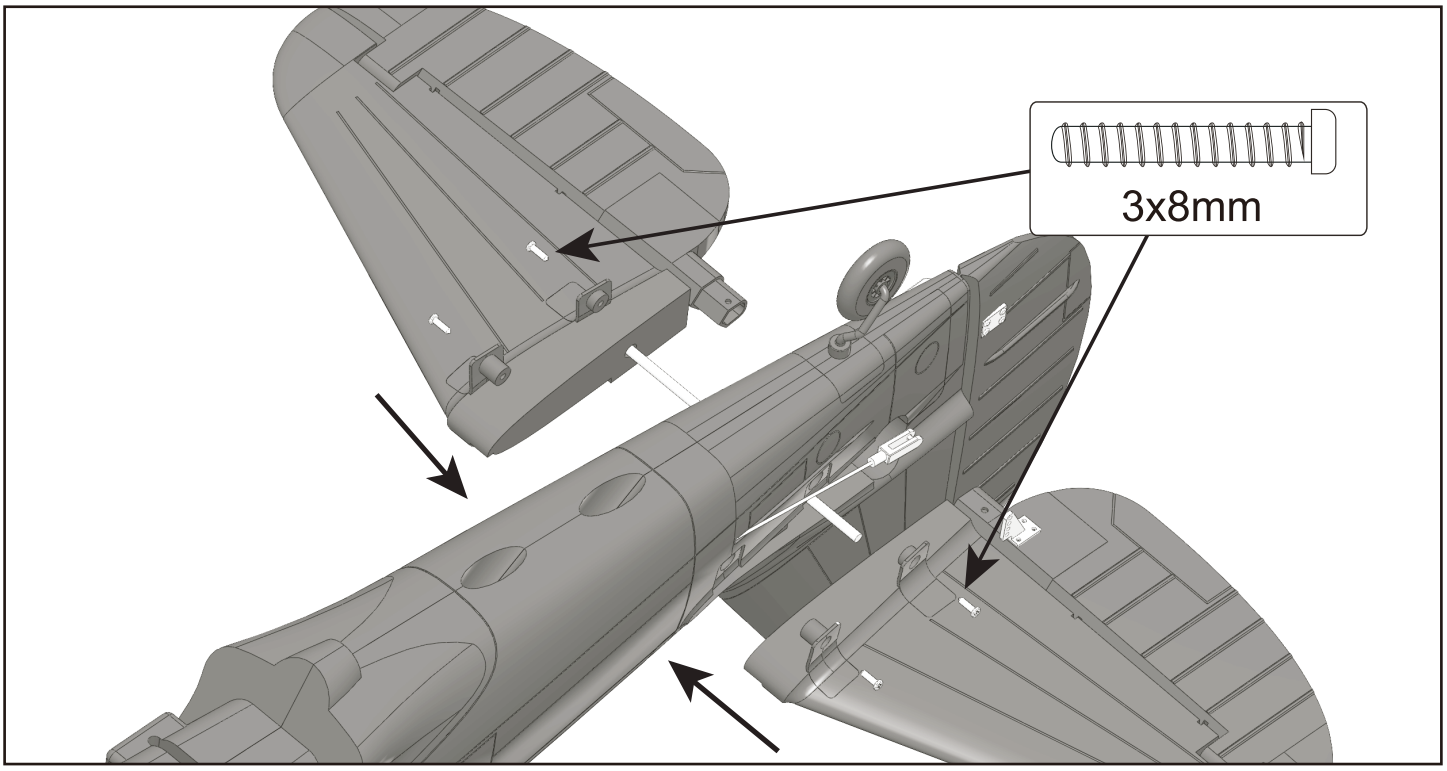


3. Repeat this process for the rudder and elevator control horns, ensuring the screws tighten firmly into the control horn plate on the opposite side of each control surface.

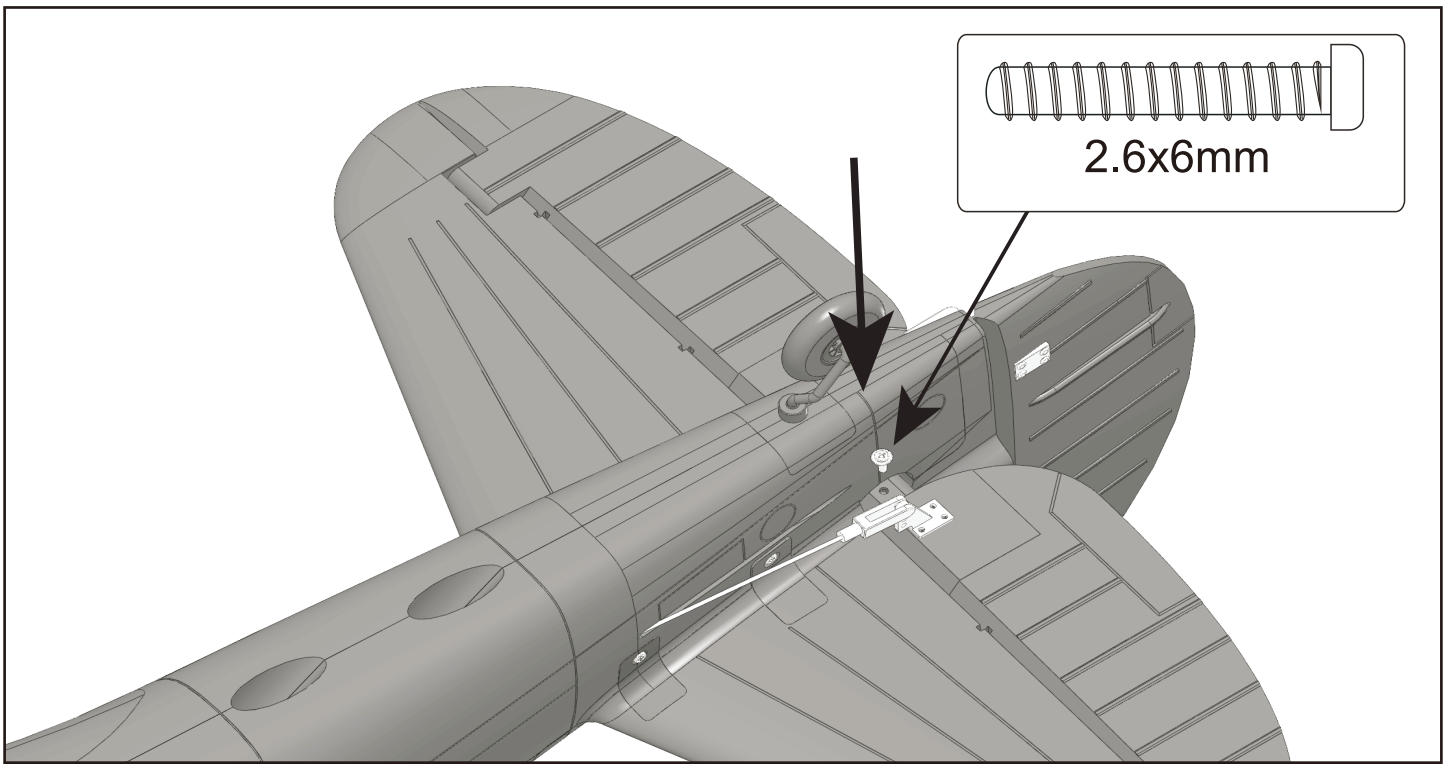




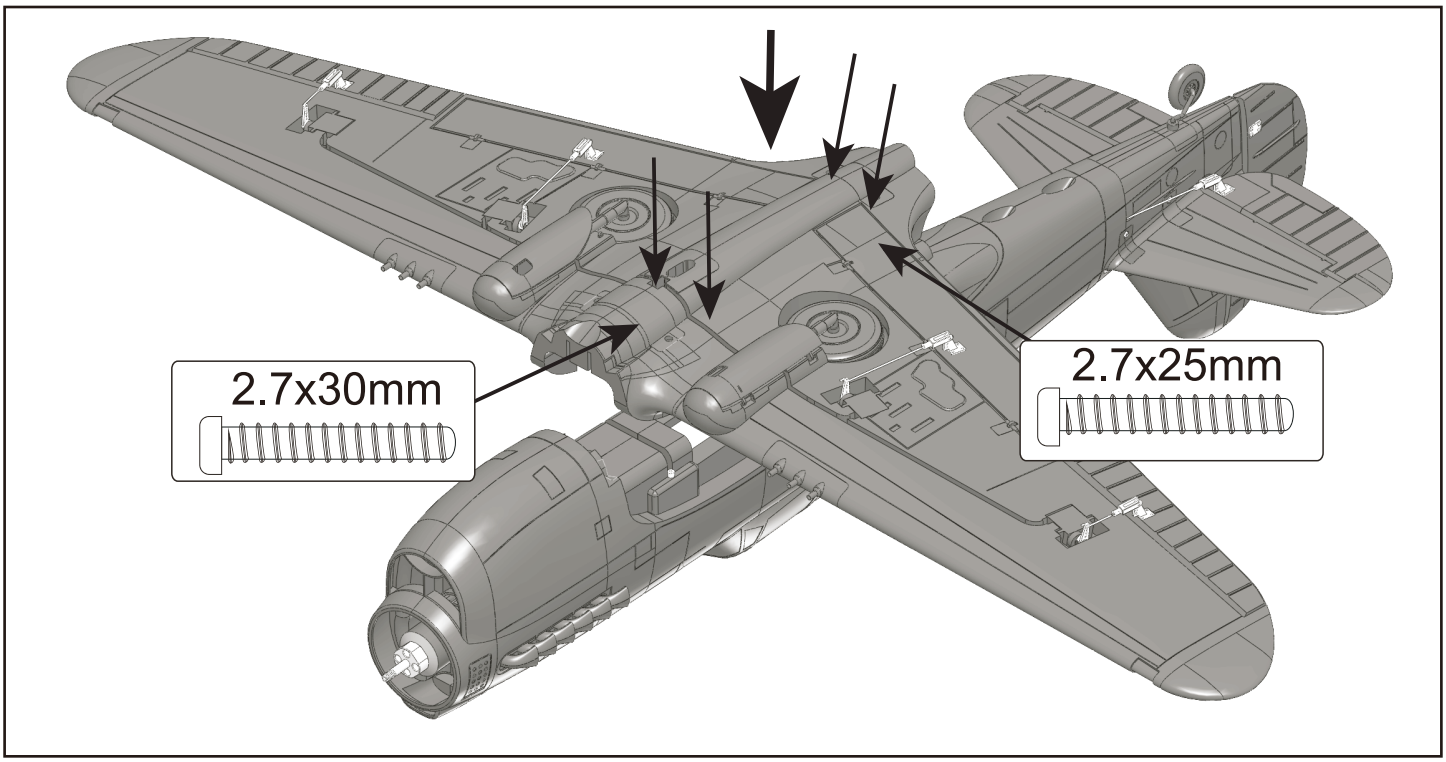
4. Insert that carbon tail spar into one half of the horizontal tail and slide into the opening at the rear of the fuselage ensuring the plastic screw tabs key fully into the fuselage sides. Repeat with the second half and once aligned, screw firmly in place with the 3x8mm screws as shown. A little glue may be applied at this stage for added security if desired.



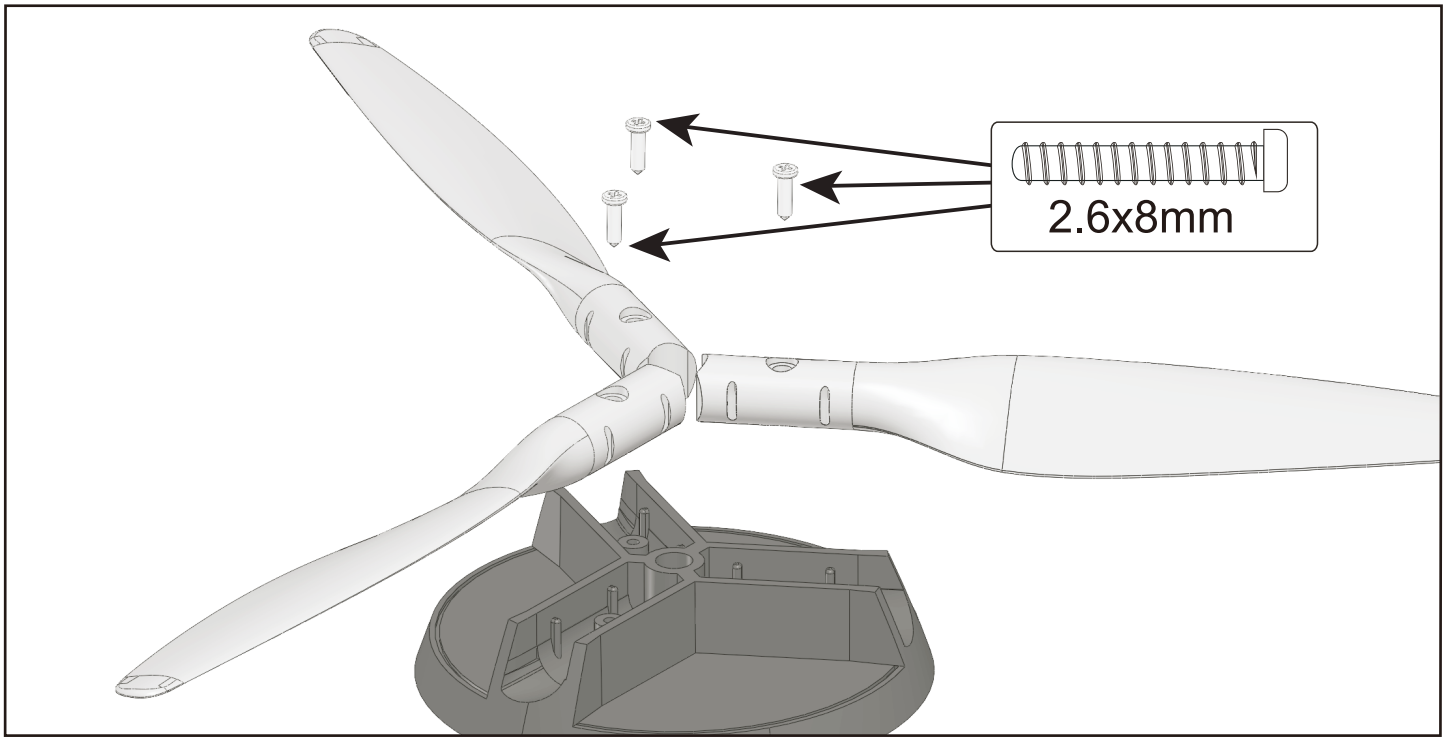
5. Into the hole of the elevator joint, screw the single 2.6x6mm screw as shown to ensure the elevator halves remain connected.



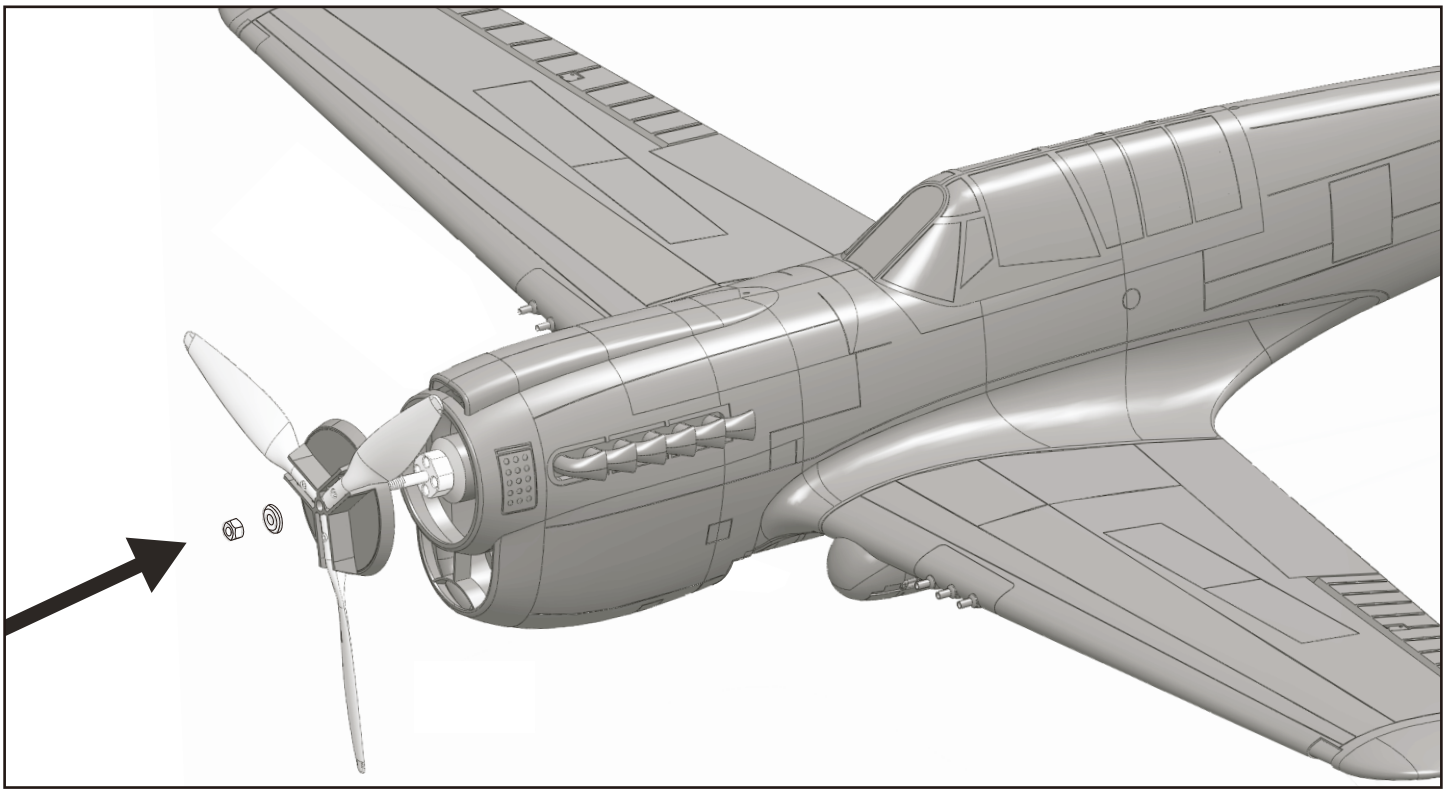
6. Attach the wing to the fuselage and ensure the servo wires from the wing pass through only the 3rd hole from the rear of the plywood tray into the fuselage. This will ensure the wing sits correctly on the fuselage. Once in place, screw the wing firmly down using the screws provided as shown below.



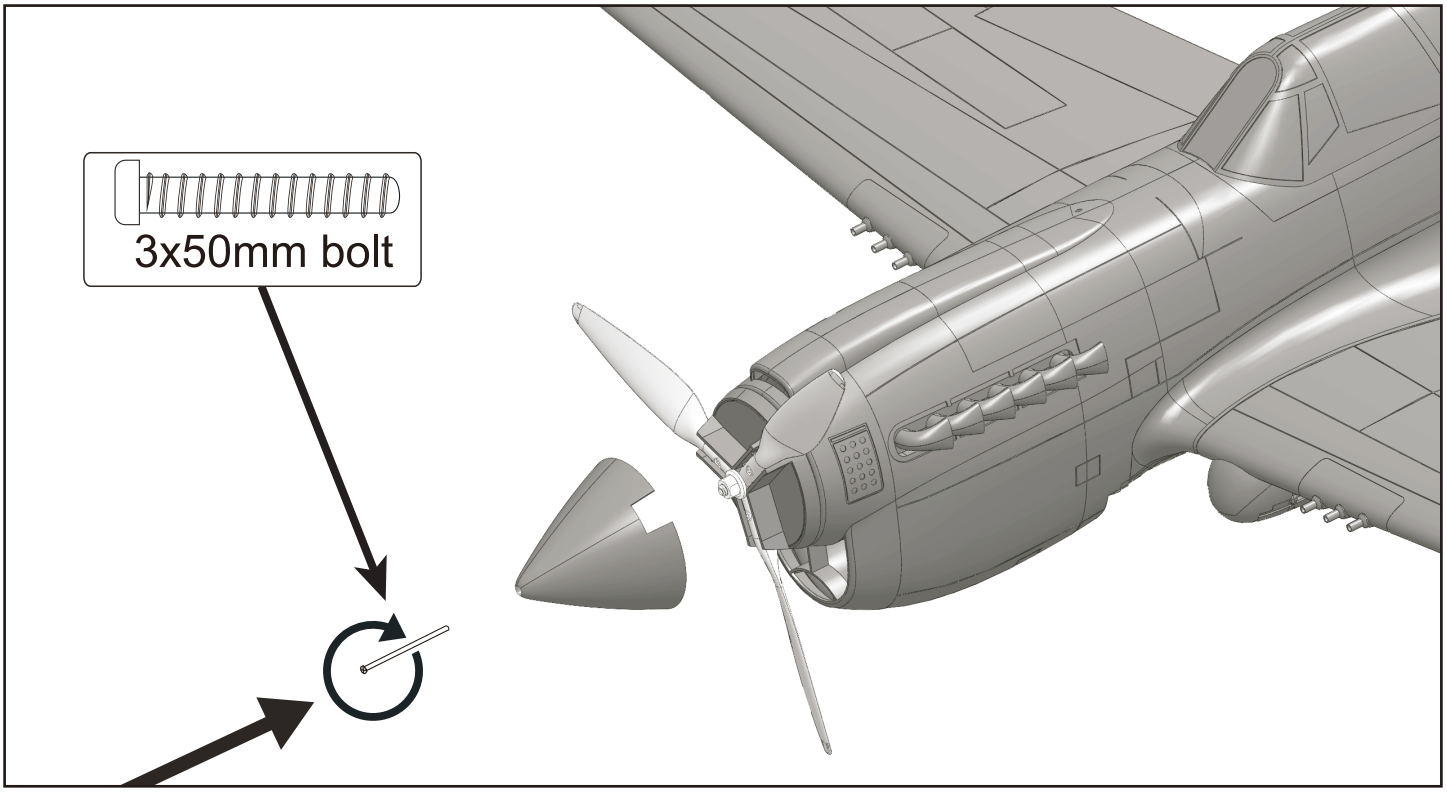
7. Push each of the propeller blades fully into the slots of the spinner back plate. Note that the numbered sides of the blade face outwards. Secure each blade to the back plate using the 2.6x8mm screws as shown. Check that the distance between each blade tip is equally. If not, loosen adjust and tighten again.



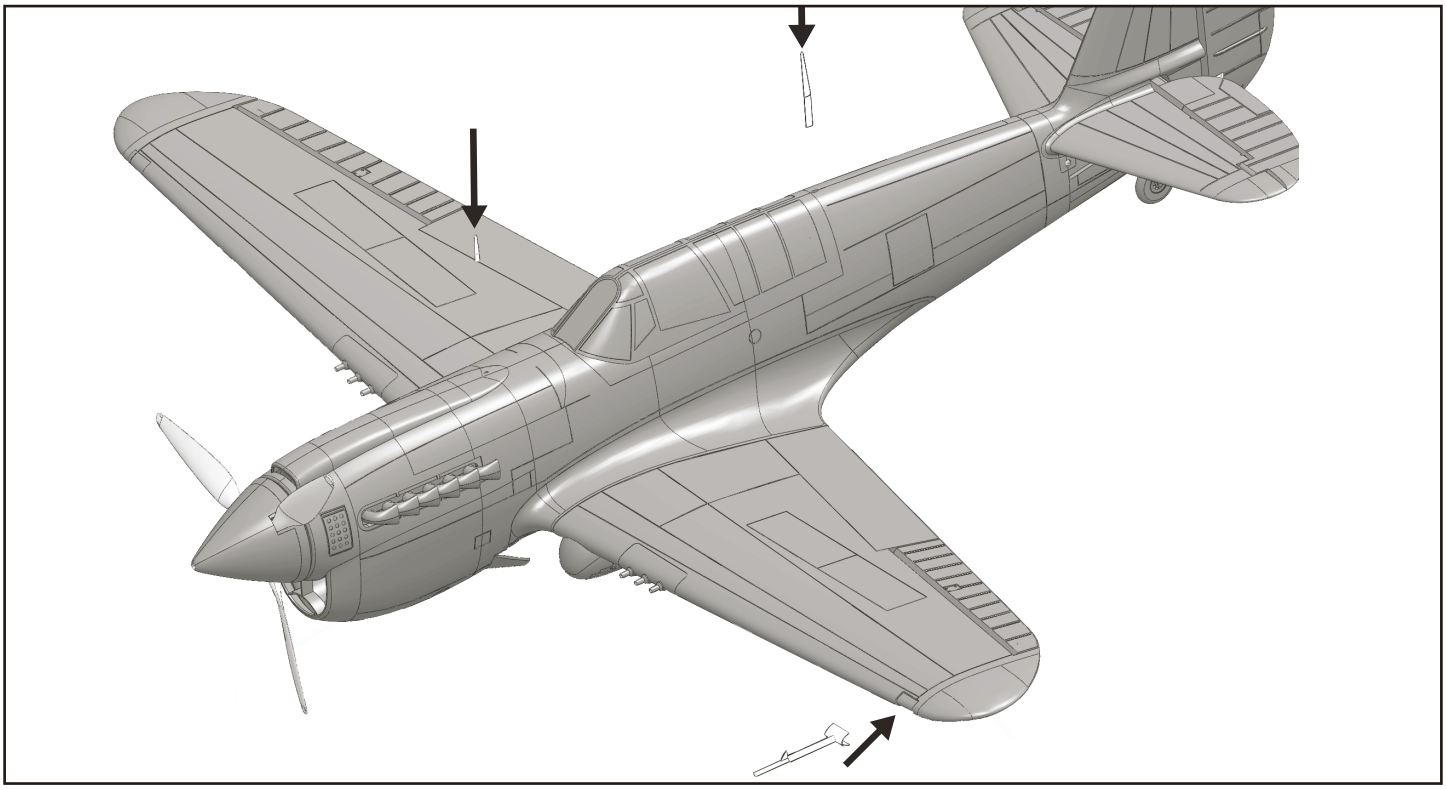
8. Slide the assembled back plate and blades onto the motor shaft ensuring the back plate keys properly onto the base of the shaft. Fit the supplied washer then nut onto the shaft and tighten the nut firmly to the shaft.



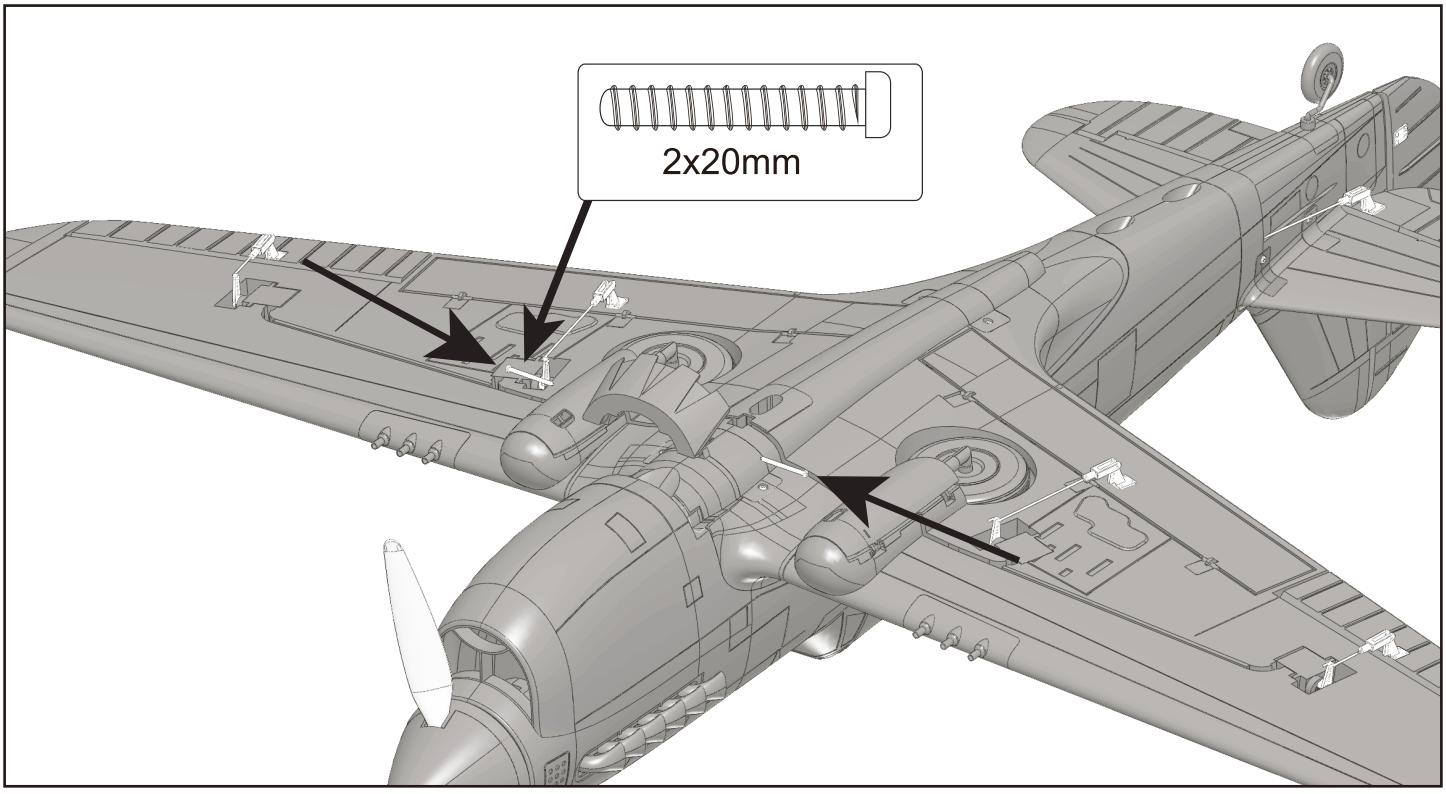
9. Position the spinner in place over the back plate and insert the 3x50mm bolt into the tip and tighten. A small amount of medium thread lock can be used if desired for extra security.



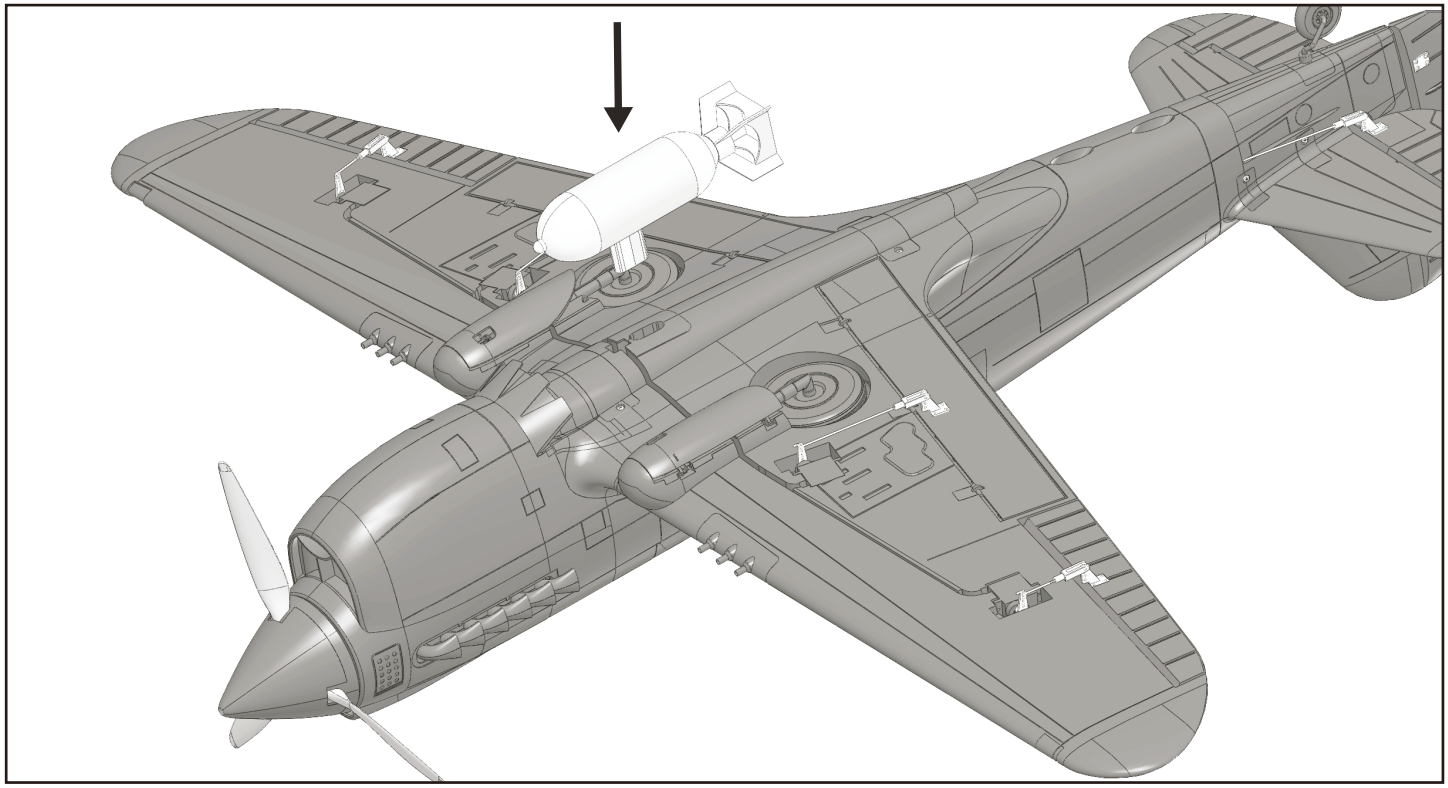
10. Using a small amount of the glue supplied, glue the longer aerial into the slot behind the canopy, the short aerial into the slot of the battery hatch and the pitot tube onto the leading edge of the left wing panel as illustrated below.



11. Position the radiator cowl into place on the bottom leading edge of the wing. Using the 2x20mm screws supplied screw directly into the foam under the screw holes and into the internal plywood inserts. It is recommended not to over tighten these screws so as to make wing removal easier when required.



12. The final stage of assembly is to test fit droppable bomb. Simply drop the bomb into the slot on the underside of the wing center and you are done, the magnets will take care of the rest! The bomb release system is covered on page 12 of this manual.



Assembly of your Durafly P-40N is now complete.
Before you move onto the final set-up of the model, check all screws, bolts and components ensuring all are secure and firmly in place.



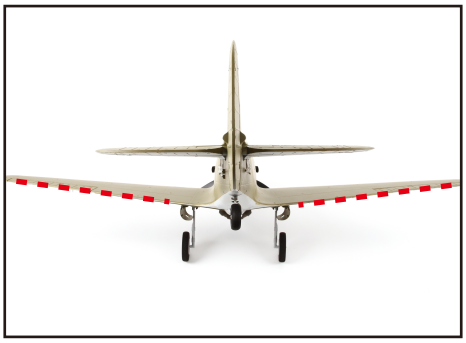
SETTING UP YOUR MODEL

1. With your receiver installed and all servos plugged into their corresponding channels, connect the flight battery to the ESC to power up the electronics. With the model now armed, ensure all servos are centered and all control surfaces are level. If not, adjust by turning the control clevis's by hand accordingly until the control surfaces are level as shown.

Note: For safety reasons, it is advised that this is done with the prop removed from the model.



Elevator

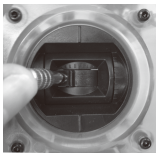


Ailerons



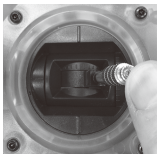
Rudder

2. Check all control surfaces are moving in the correct direction with the applicable stick input (see below)



Roll left

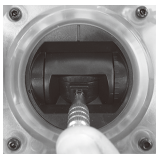




Roll right

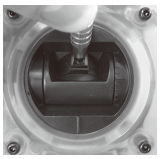


Aileron (Roll)

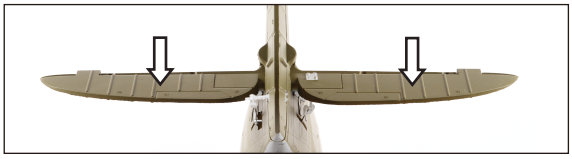


Pitch up

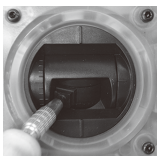




Pitch down

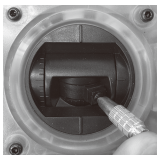


Elevator (Pitch)

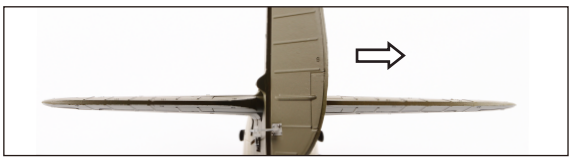


Yaw left





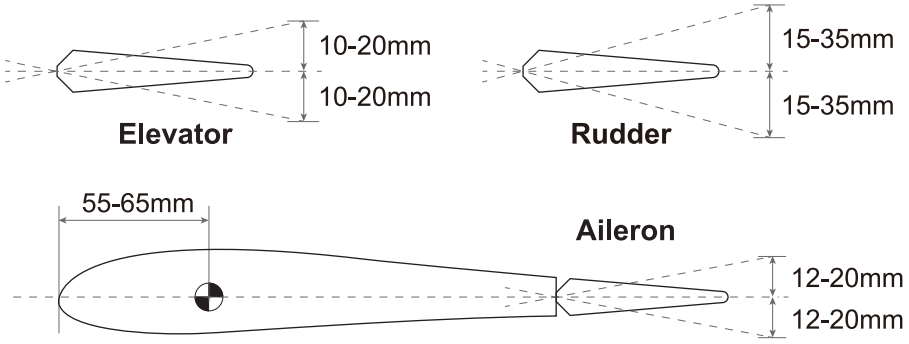
Yaw right



Rudder (Yaw)

3. The P-40N handles very well in flight but requires setting up beforehand. Please follow the recommended settings below for good all round flight performance.

Control throws:



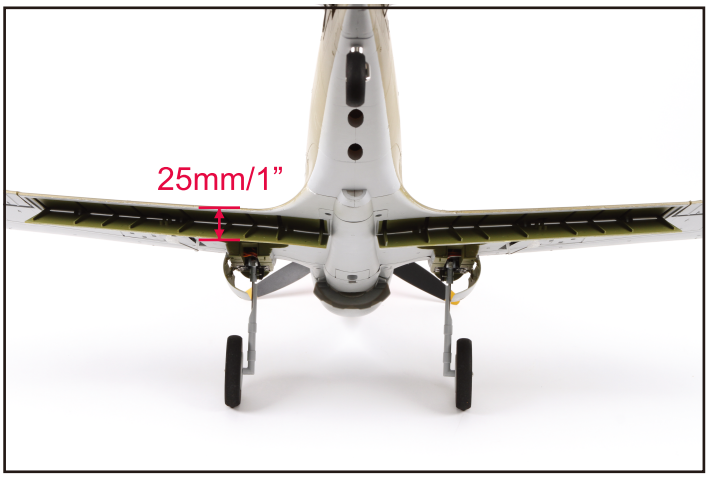
* Elevator ‘low rates’ 10mm ‘high rates’ 20mm in either direction from neutral.

* Aileron ‘low rates’ 12mm ‘high rates’ 20mm in either direction from neutral.

* Rudder ‘low rates’ 15mm ‘high rates’ 35mm in either direction from neutral

* Bomb/AUX switch 100% up -100% down. If you can hear bomb servo straining, adjust this percentage.

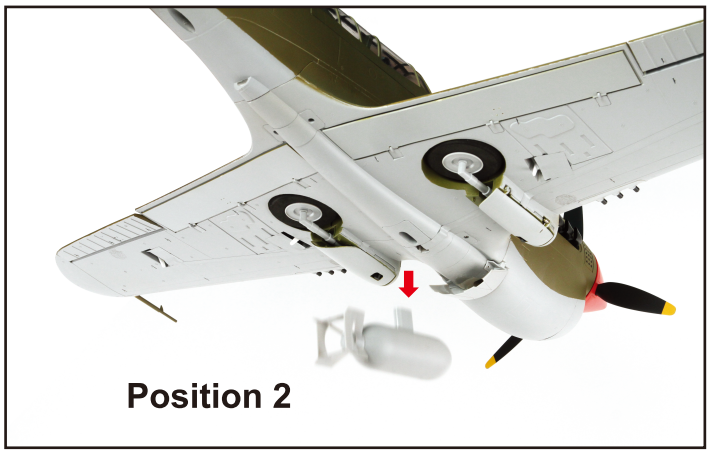
4. Flaps on the P-40N will need to be set for 3 stages (up flap, mid flap and full flap). Either via your radio or mechanically by turning the clevis’s on the flap control rod (or via both in most cases), set mid flap with a distance of 25mm(1”) between the trailing edge of the wing and the flap (see below). For full flaps a distance of 60mm(2.3”) is recommended. In the ‘up flap’ position ensure the flaps close fully without straining the servos. Also check that both flap deploy equally.





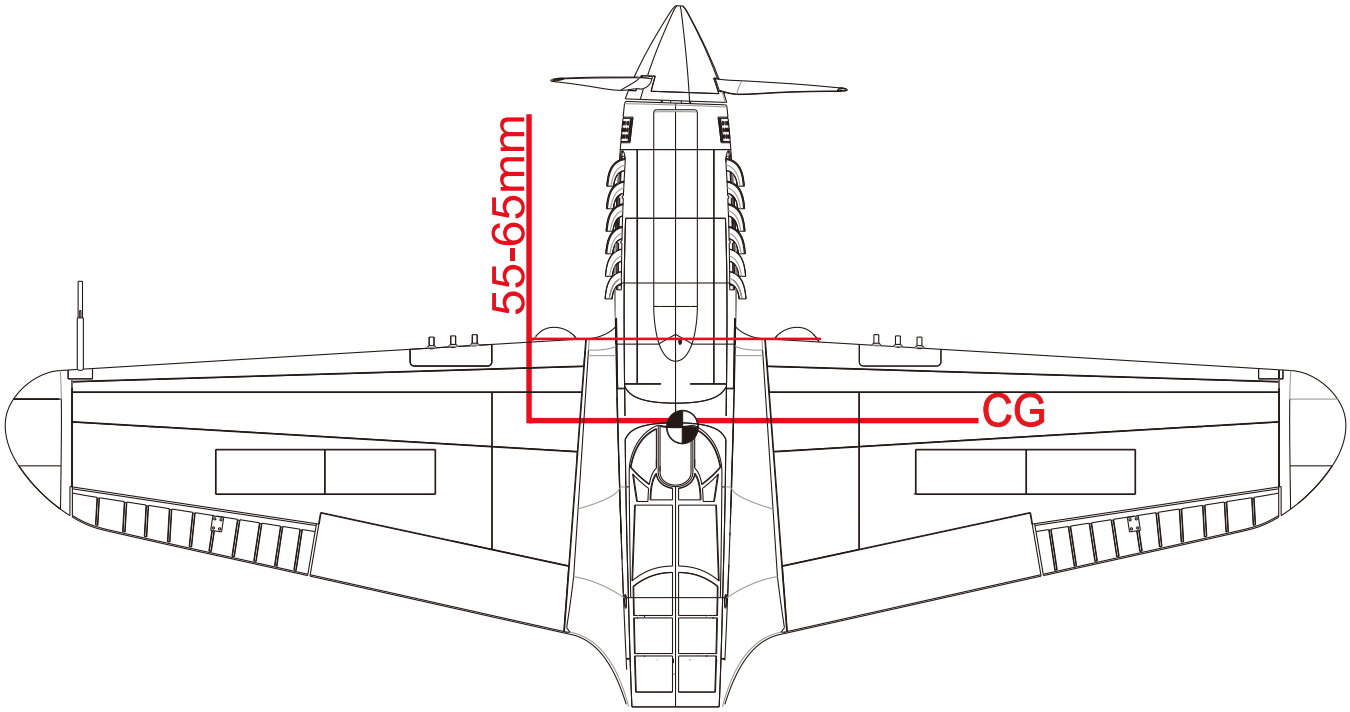
5. Your P-40's scale bomb drop system operates via a 2 position aux switch on your radio. With the bomb drop servo connected to the corresponding channel on your receiver, ensure that the bomb holds firmly (but without any servo strain) in position 1 of the switch and drops freely in position 2. If not, adjust the travel/end points on this aux channel until satisfied.





CG AND BATTERY PLACEMENT

Make sure the center gravity (CG) is as indicated in the following diagram. From the leading edge of the wing CG is approximately 55-65mm.

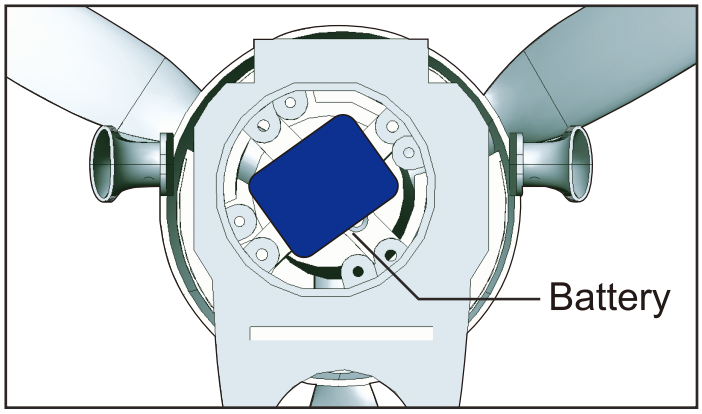


NOTE:

Your P-40N has two lipo options, either a **60-65C 2200mah 3S**, or **25-30C 2200mah 4S**, both options weigh approximately the same. Your lipo's position to achieve the correct CG is the same for both, as far forward as possible directly behind the motor mount. To get the lipo this far forward you will have to install the lipo on its edge as shown in the following images. Its an unorthodox approach but its better than adding dead weight to achieve the correct CG and the velcro strap ensures the lipo is held firm and unable to move. See images on the next page for details.



Battery and receiver location



Battery angle required
for correct CG positioning

With assembly and set-up now complete, your Durafly P-40N should now be ready for flight. However we recommend you read and follow the advice given in the following pages of this manual before flying your model.



MODEL FLYING PRECAUTIONS

- Select your flight area carefully. Always choose an open space that is unobstructed from trees and buildings and away from crowed areas. Avoid flying in area's with roads, electric/telephone poles/wires and water near by or within close proximity to full size air traffic.
- Do not fly this model in poor weather. High winds, low visibility, inclement temperatures, rain and storms are to be avoided.
- Never attempt to catch this model whilst in flight. Even a slow moving model can cause harm to yourself and/other and risks damage to the model.
- This model is recommended for children no younger than 14 year old. All children, no matter what age, should always be supervised by a capable and responsible adult when operating this model.
- Always unplug your model battery when not in use. Never leave the battery installed in the model.
- Remember to keep clear of the propeller at all times when your flight battery is connected.
- Before flying, always turn on your transmitter first then plug your flight battery into the model.
- After flying, always unplug your flight battery first then turn off your radio transmitter.
- Exercise caution when charging your batteries and follow in full your battery manufactures safety guideline when doing so.

PRE-FLIGHT CHECKS

1. Always range check your model before any flight (especially when flying a new model for the first time). Follow your radio manufacturers guidelines for performing this check.
2. Check all screw/bolts and mounting points are firmly secured, including control horns and clevises.
3. Only fly with fully charged batteries (both in your radio and model). Failure to do so could result in loss of control, damage to the model and/or persons/property around you. Check your batteries are fully charged.
4. With the model powered up (Transmitter on first, then receiver/model) check that all surface are free from damage/obstructions, moving in the correct directions and freely with stick input.
5. Inspect the model and prop for any damage that may have occurred during transit and listen for any unusual sounds from the electronics when powered up. If in doubt, do not fly.
6. With the model held securely and the prop free of obstructions, increase the throttle just slightly to confirm the rotations of the prop is correct. The model should want to pull straight forward with throttle.
7. If this is your first flight with the model double check the C/G is at the correct position. If not adjust battery position inside model accordingly.
8. If you are an inexperienced model pilot seek the help and assistance of an experienced pilot to perform these final checks and to test fly the model for you.

FLYING YOUR P-40N

Before flying make sure you have followed closely the set-up guidelines on pages 10 through 13. Start by taxying on the ground a little to get use to the handling. Be sure to always taxi with full up elevator held in, flaps retracted and gentle use of throttle. This will keep the model tracking steady and true plus has the added bonus of looking far more scale. For take off you'll want to hold in some right rudder to counter the rotational torque on the initial roll out. Slowly advance the throttle whilst holding in just a little up to keep the tail down as you begin to build up speed, correcting direction with rudder as needed. As speed builds, ease off the amount of up elevator you have held in, then as soon as you reach 3/4 throttle you'll start to see the P-40N lift of the ground.

Once in the air retract to the landing gear as soon as you are comfortable and start exploring. If on 3S you will find you can cruise around happily on 75-85% throttle. On 4S however 50-60% is sufficient for scale paced flying. Of course opening up to full throttle is very exciting, but generally only need as desired. A full 'airshow' routine can be performed on either the 3 or 4S set-up including loops, rolls, low banked passes, Slipt-S's etc, all vertical maneuvers being as large as you wish with the 4S set-up. Flight times vary according to set-up and throttle use. An average flight of mixed throttle flying will give you approximately 5-6 minutes on the 3S set-up. However flight times upwards of 7 minutes can be achieved on 4S (as less throttle is needed). The P-40N will drop a wing when it stalls, that said it is quite benign and easily recovered from at height by centering all sticks and application of power thereafter.

Landing the P-40 is a pleasure and a real treat for those who like to practice 'scale' type approaches as the P-40 will need to be 'flown' onto the deck through a powered decent. Bringing the retracts down shows no noticeable effect on the model nor do mid flaps. Once you have the P-40 fully lined up to the runway and no more than 8ft from the runway full flaps can be deploy if desired (be sure to maintain good throttle management). As soon as the P-40 settles onto the ground hold in full up elevator to prevent the P-40 from nosing over. Flaps should be retracted before taxying back to the pits.





P-40N GENERAL TIPS

- For optimum flight performance and model longevity, it is highly recommend that you always fly with a balanced prop. The supplied prop should be balanced, but it is always good to check first.

- Keep all leads within the fuselage area as tidy as possible. Tidy wires look better, allow for easier access to all internal components, better battery installation, increased airflow around electronics and a reduction in potential electronic signal interference (noise).

- Inspect the propeller frequently, especially if you have suffered a hard landing or the prop has been knocked. If the prop is in any way damaged it must be replaced and any loose fixings must be tightened.

- It is very important that your flight battery be as far forward as possible to prevent the P-40 from flying tail heavy. Ensure you follow exactly the guidelines for CG set-up on page 12/13 before flying your P-40N.

- It it recommended NOT to maiden the P-40N with the bomb attached. Test fly and trim the model first, then have fun with the bomb drop after a successful test flight.

- A 4S 2200mah 25-30C is the preferred pack to use on the P-40N. If running a 3S 2200mah set-up it is recommended that a pack with a discharge rating of 60C or higher be used. For this reason a 4S 2200mah 25-30C pack would be ideal as it will have the same approximate weight of the 60-65C 3S pack, but give you much more power to play with and generally longer flight times (as you'll not need to fly at full throttle as much).

- Do not use full flaps on a windy day. Full flaps should generally only be used on calmer days and only then with considered use of throttle to prevent the model from stalling.

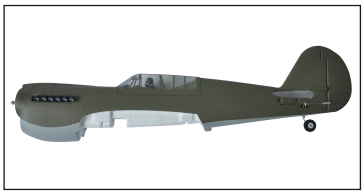
- To further avoid any change of your P-40N tipping over onto its nose on landing, switch to 'high' rates on the elevator as soon as the model settles onto the ground after landing and hold full up elevator.

- Do not leave your model in direct sunlight for prolonged periods of time. This will have an adverse effect on the foam surface of the model.

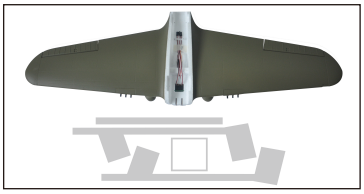
Thank you again for purchasing the Durafly P-40N. We hope you'll have many happy days of flying and look forward to bringing you more Durafly models in the future.

Don't forget, spare parts are available for this model, please see the next page for details.

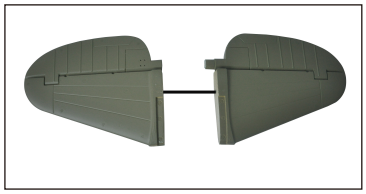
SPARE PARTS LISTING



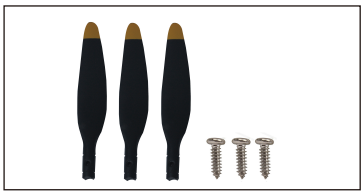
Fuselage
Part No.: 9306000190-0



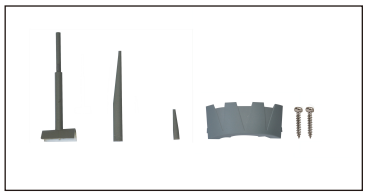
Main wing inc bomb servo
Part No.: 9306000191-0



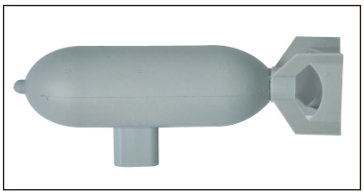
Horizontal tail
Part No.: 9306000192-0



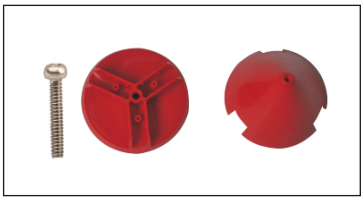
Propeller set
Part No.: 9306000193-0



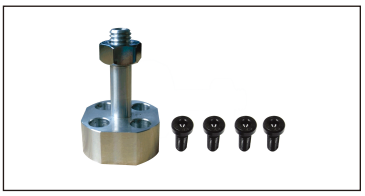
Scale plastic parts
Part No.: 9306000194-0



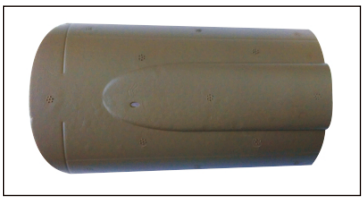
Bomb
Part No.: 9306000195-0



Spinner set
Part No.: 9306000196-0



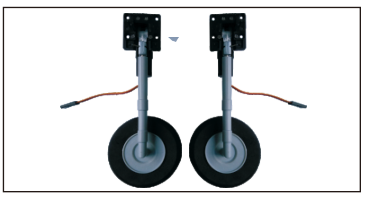
Prop shaft
Part No.: 9306000203-0



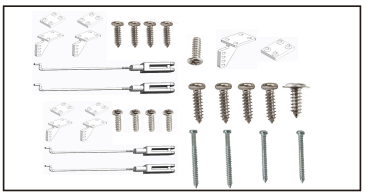
Battery hatch
Part No.: 9306000197-0



Tail wheel assembly
Part No.: 9306000198-0



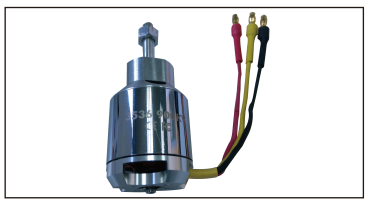
Retracts/main gear
Part No.: 9306000199-0



Control/mounting
accessories
Part No.: 9306000200-0



Decal sets
Part No.: 9306000201-0



Motor inc shaft & X mount
Part No.: 9306000202-0

DECAL APPLICATION GUIDELINES

Applying the supplied decals will take you longer than assembling the model. This is because great care must be taken when doing so. The decals are vinyl type and so need to be applied in a certain way. Please follow carefully the guidelines below to achieve the best possible finish on your P-40N.

1. Study the scheme reference sheet carefully and understand fully where each decal should be applied.

2. DO NOT cut to the edge of each decal. Instead leave a 10mm edge around it. These decal use a clear front cover/film that is used to remove the decal from the paper backing.

3. Once you have cut out your decal rub the surface of the clear protective film to ensure the decal sticks it. This will ensure all of the decal is lifted off the backing paper

4. Position the decals carefully on the model according to the decal reference sheet then gently rub (using a dry cloth) the decal in place rubbing from the center of the decal out to avoid wrinkles and air bubbles.

5. If you do have some air bubbles under the decal, use the tip of a sharp blade to make a small hole in the bubble then rub over it again to push the air out.

6. Once the decal is firmly rubbed down and any air bubbles removed, you can slowly remove the front clear protective film. DO NOT pull this clear film upwards to remove it, instead pull the film slowly off to the side. This will ensure the decal doesn't lift up from the surface of the model when you remove the clear film.

7. Very gently rub the decal again with a cloth now that the clear film is removed to ensure all edges are firmly stuck down.

8. Finally the use of a covering iron is STRONGLY recommended to seal the decals to the painted foam surface and prevent them from lift at the edges over time. Set the iron to a low temperature and gently run the iron lightly over the surface of the decal as illustrated below. Use of a cloth to cover the head of the iron is recommended to help prevent damage to the foam and the decal. A house hold iron can be used if no covering iron is available.

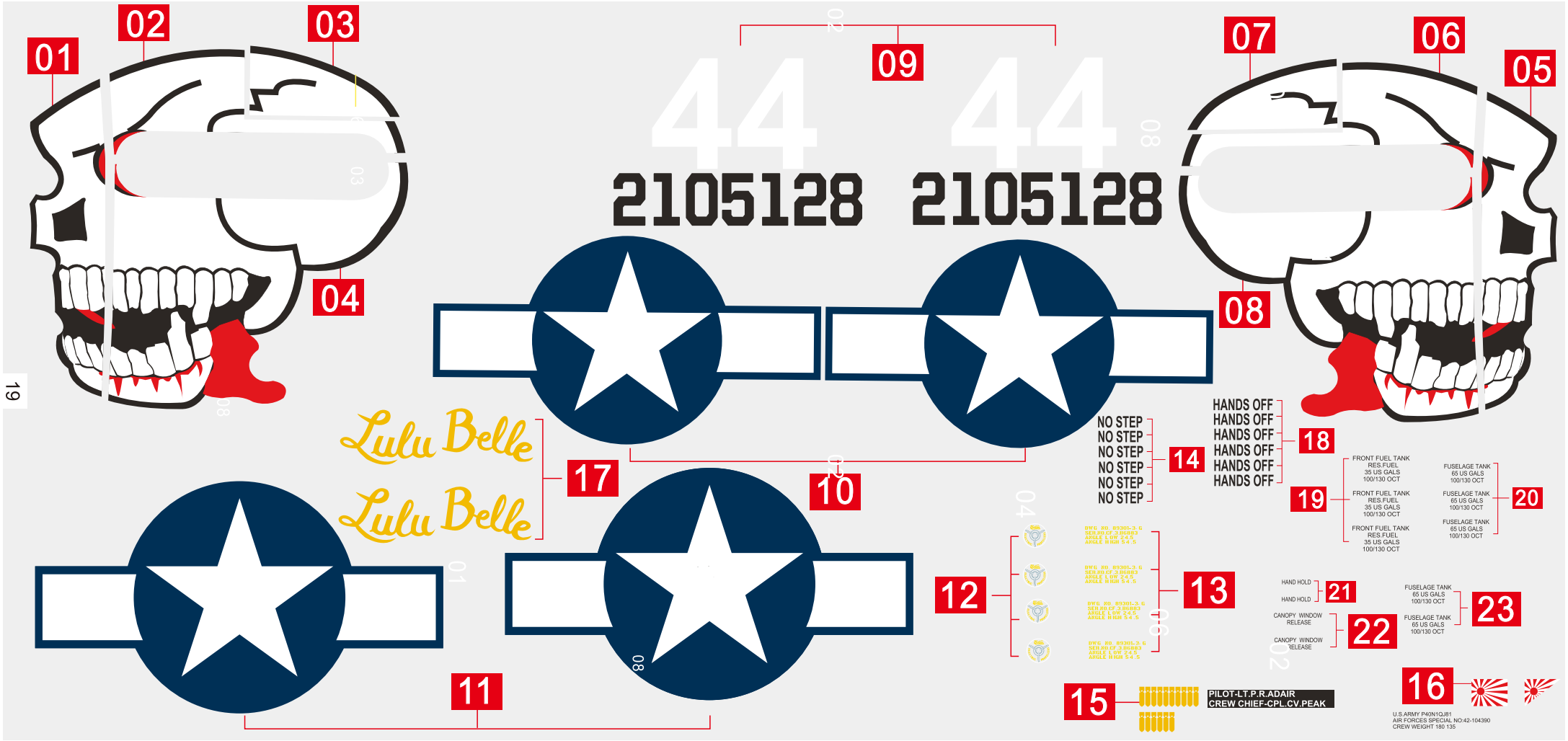




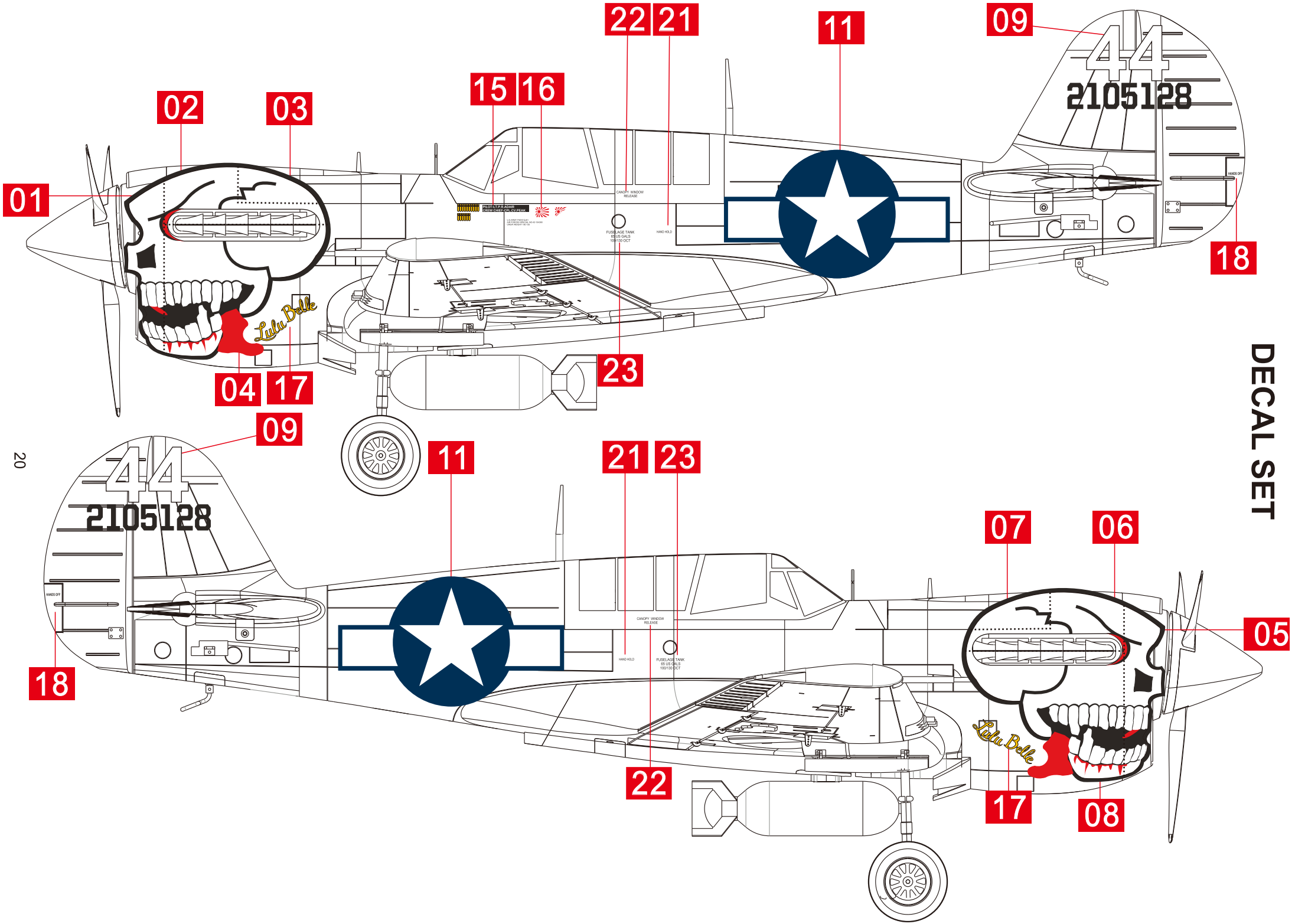
DECAL TIPS

- Rub the clear front film before you remove the decal from the paper back to ensure it lifts fully from the backing.
- Pull the clear front film off to the sides when after the decal is rubbed into position, DO NOT pull this film directly up, it could cause the decal to rip.
- Although the most striking, the USAAF 'Lulu Belle' scheme is the most difficult to apply. It will take at least 1 hour to apply fully, but the results are worth it. Pay particular attention to the skull head as this is separated into 4 parts and needs to be applied with great care to ensure a wrinkle free finish.
- Scale 'NO WALK', 'HANDS OFF' and many other decals can be found on the Lulu Belle decal sheet but can be used on any scheme selected.
- Position your decals carefully. Once the decal grips to the surface of the model, it can not be removed without lift the paint.
- Be patient and take your time applying decals and you will be left with a perfect finish.
- It is strongly recommended that a covering iron be used to seal the edge of the decals to the surface of the model. If not, changes in temperature can result in the edges of the decals lifting.

American USAAF Markings

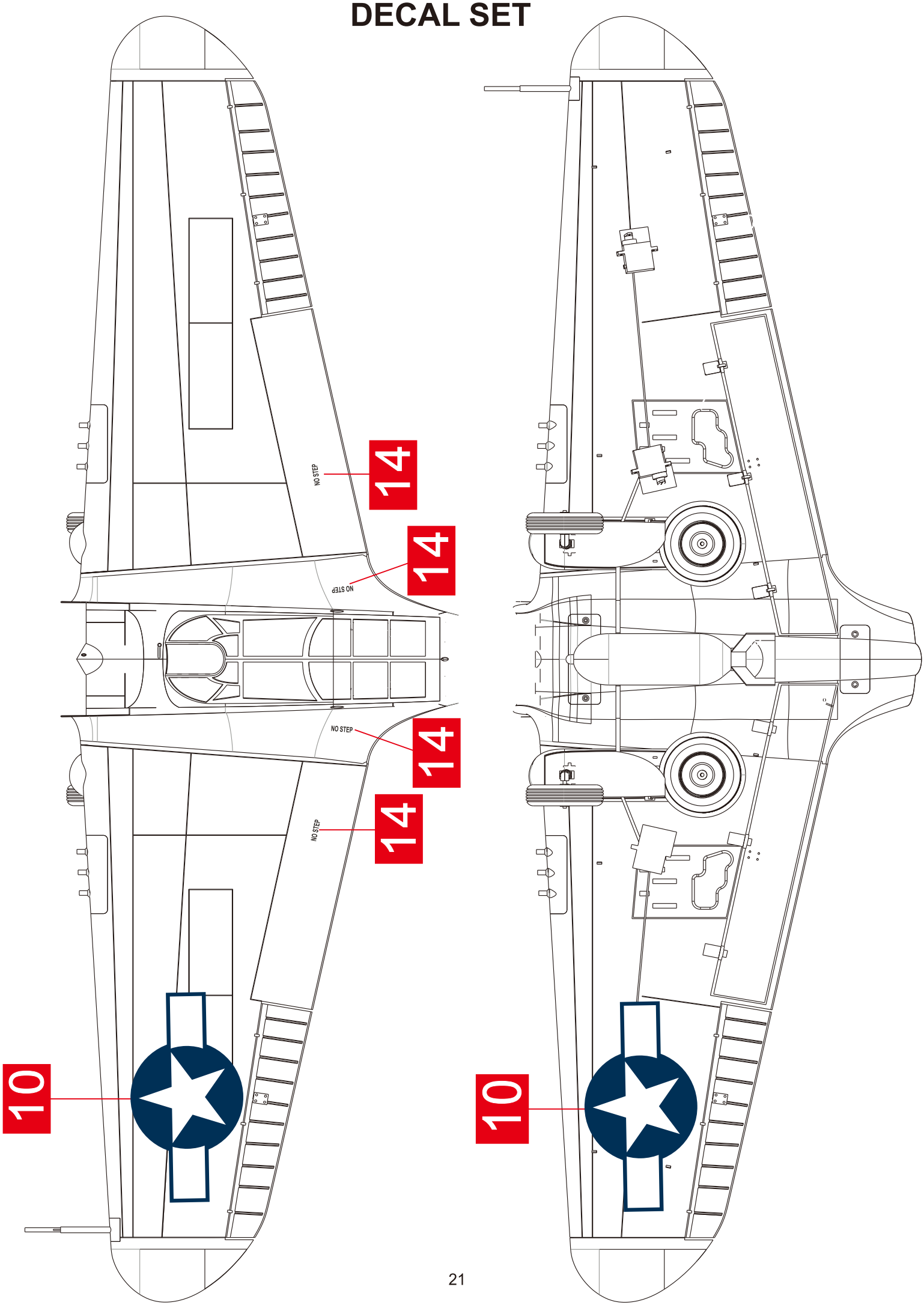


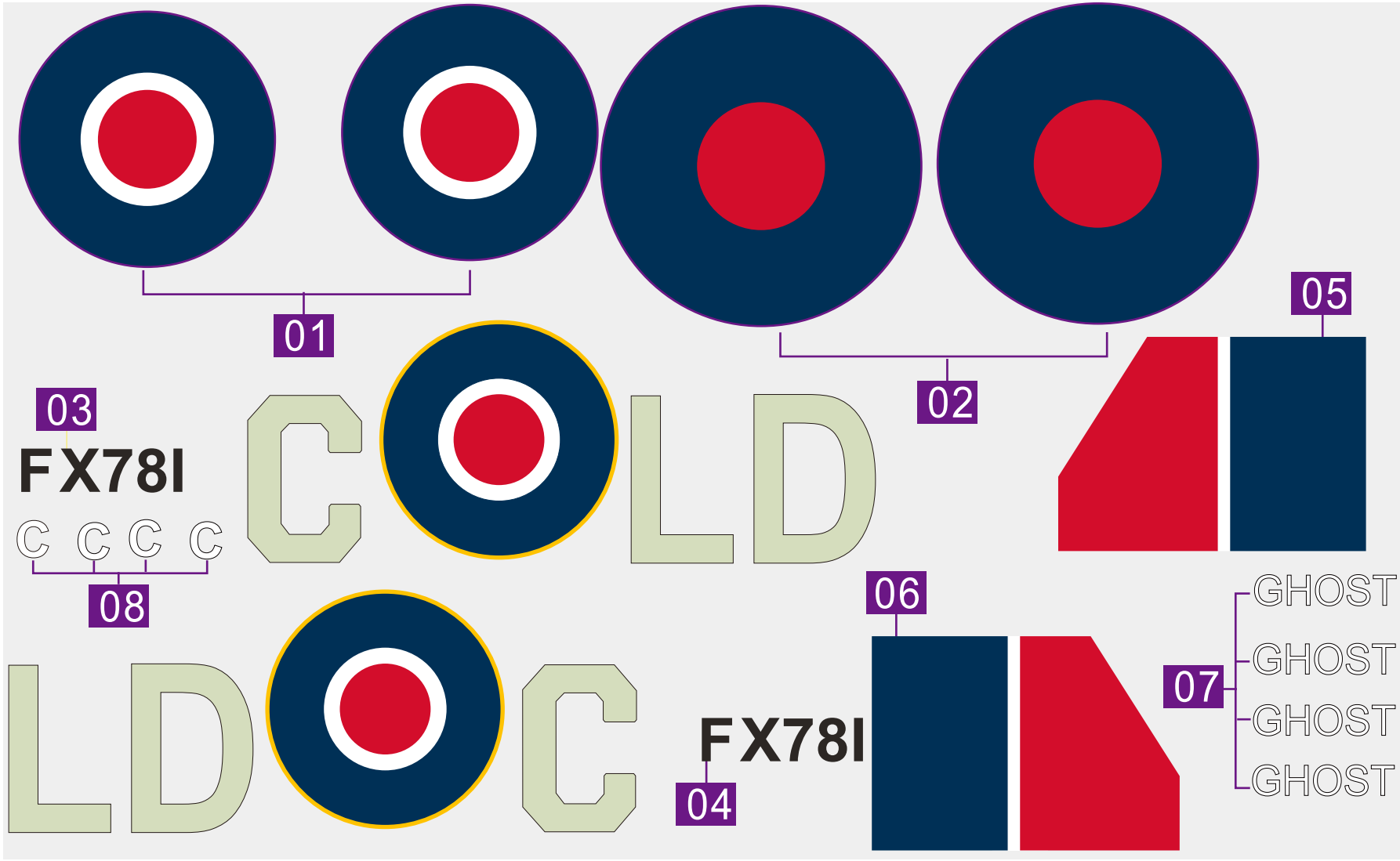
USAAF P-40N ‘Lulu Belle’Flown by 2nd Lt. Philip Adair
89th Fighter Squadron, 80th Fighter Group
Nagahuli, India, early 1944


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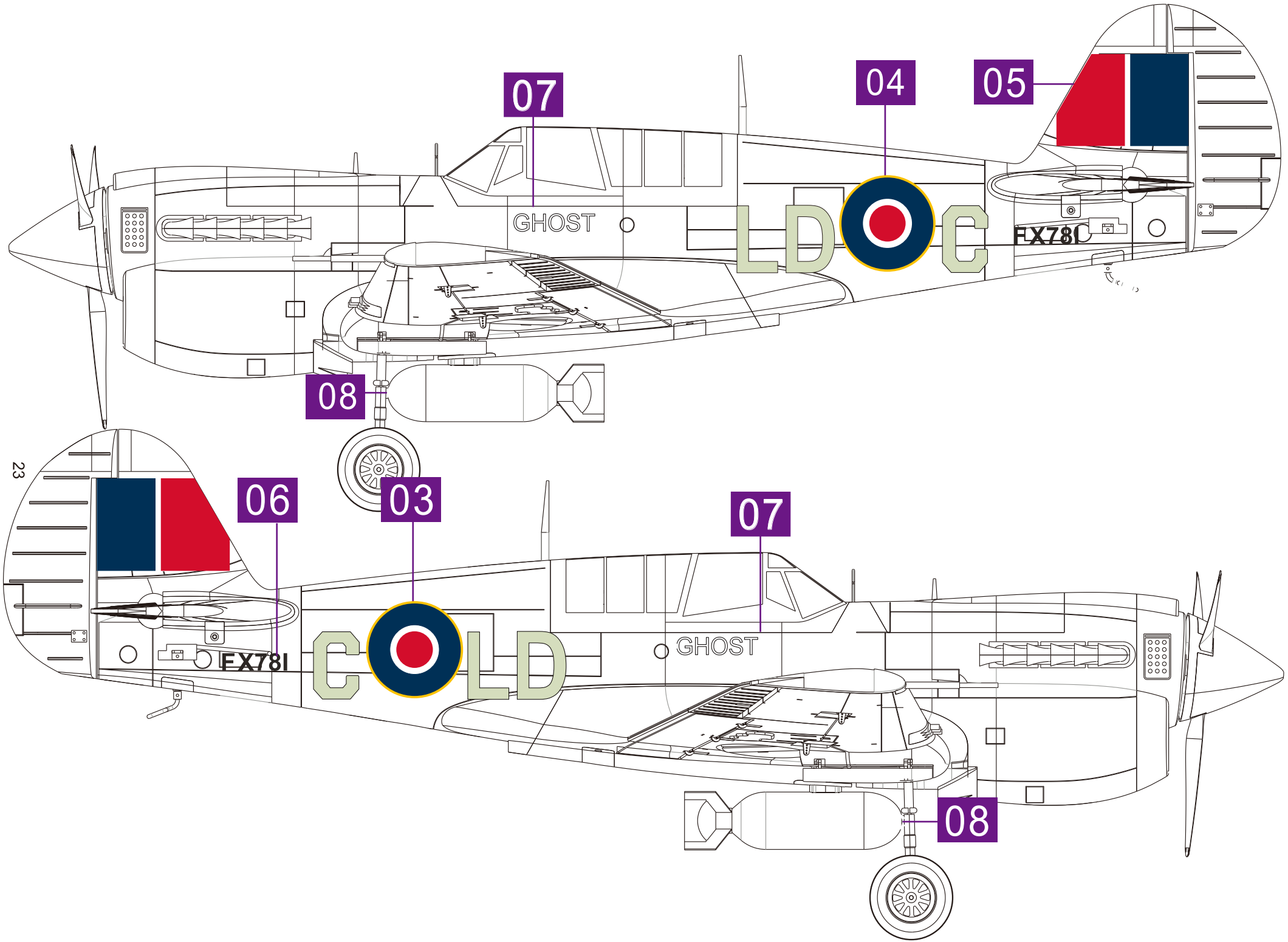
DECAL SET

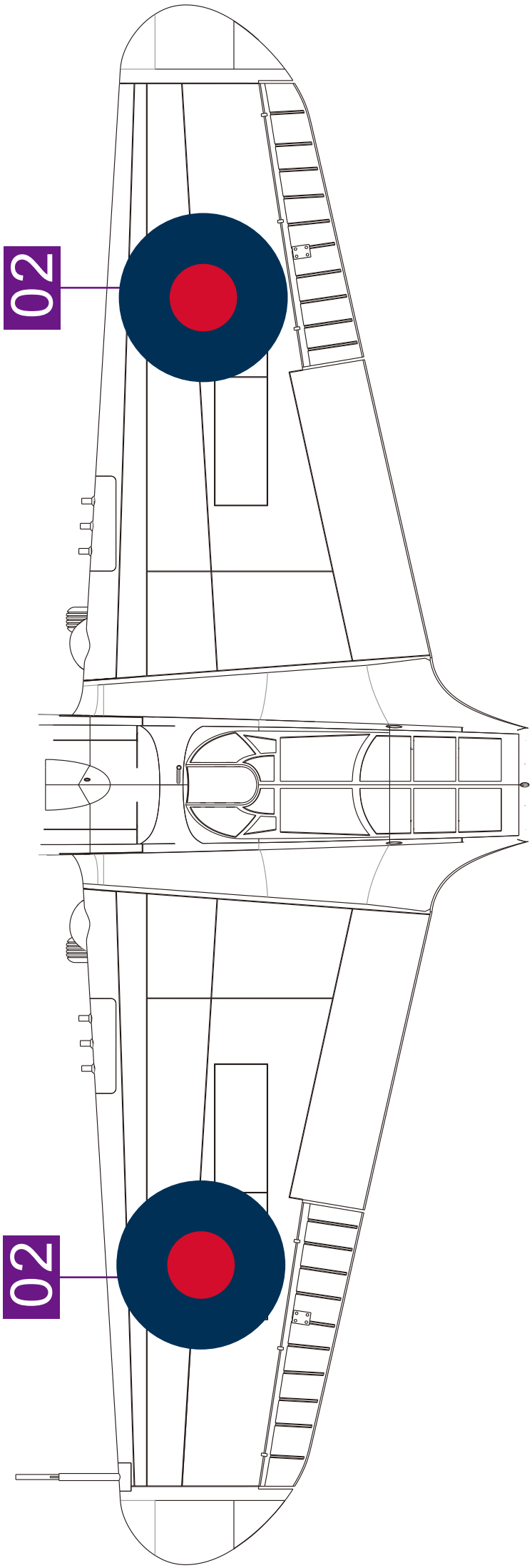
DECAL SET

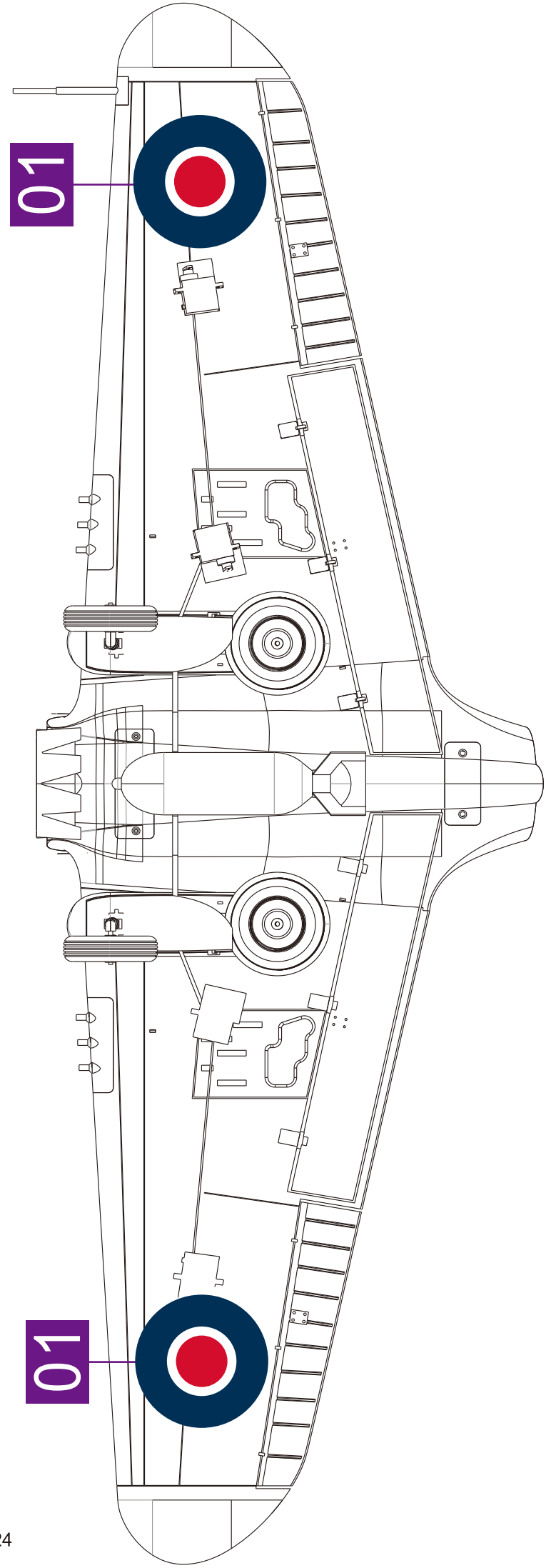


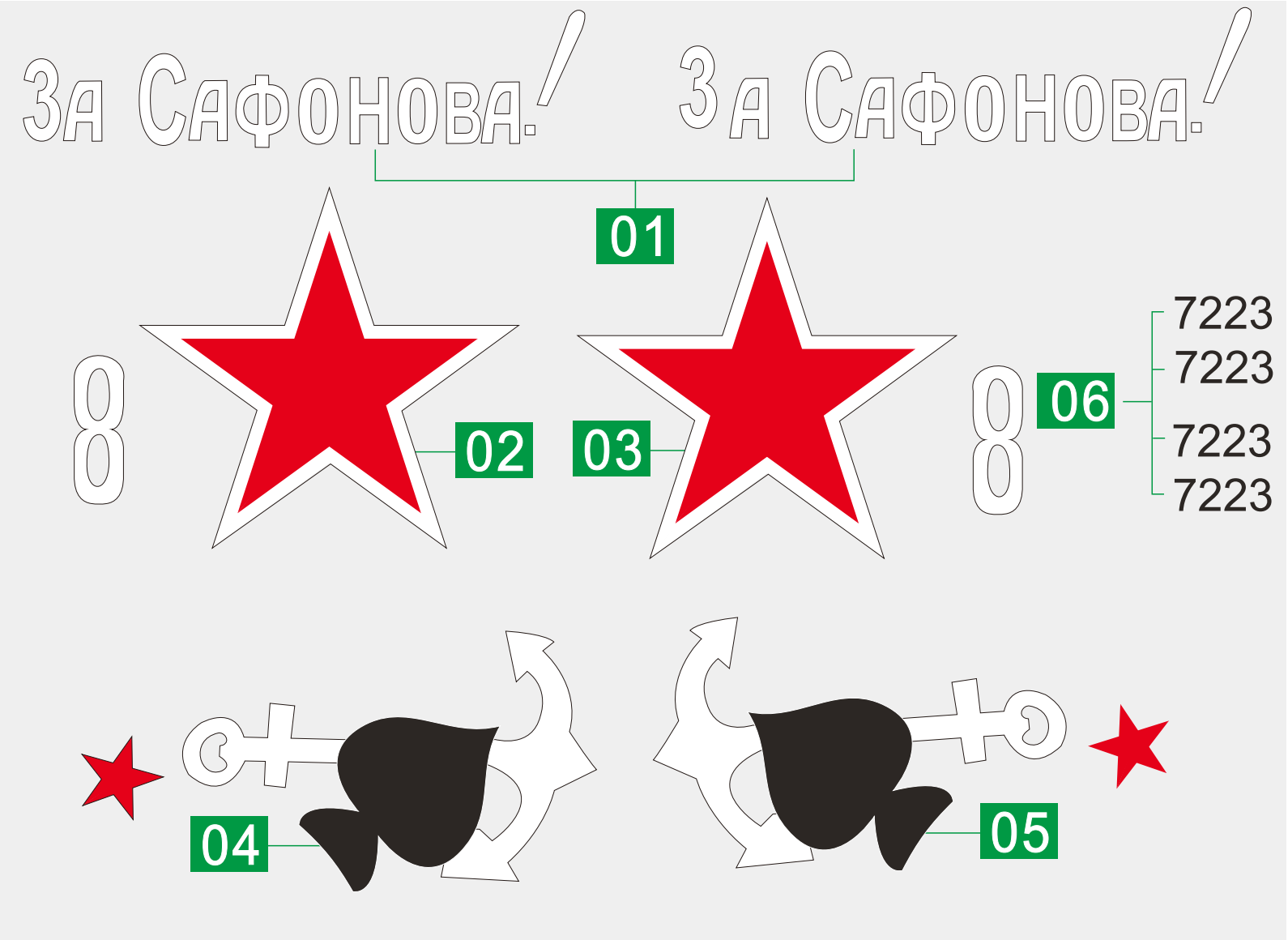


Curtiss P-40N/Kittyhawk FB.IV, FX781, LD-C,
RAF No. 250 Sq, Italy 1944.

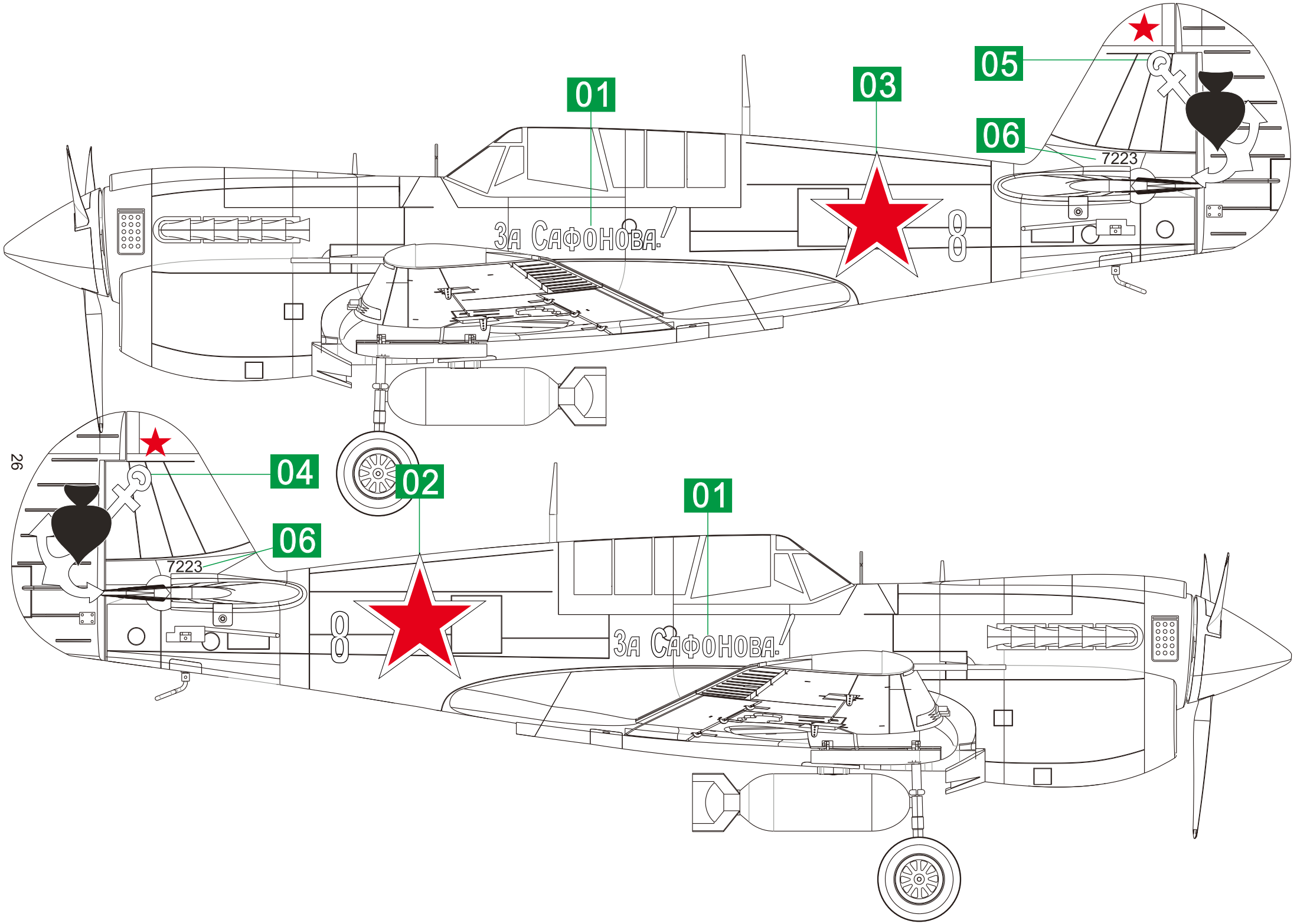

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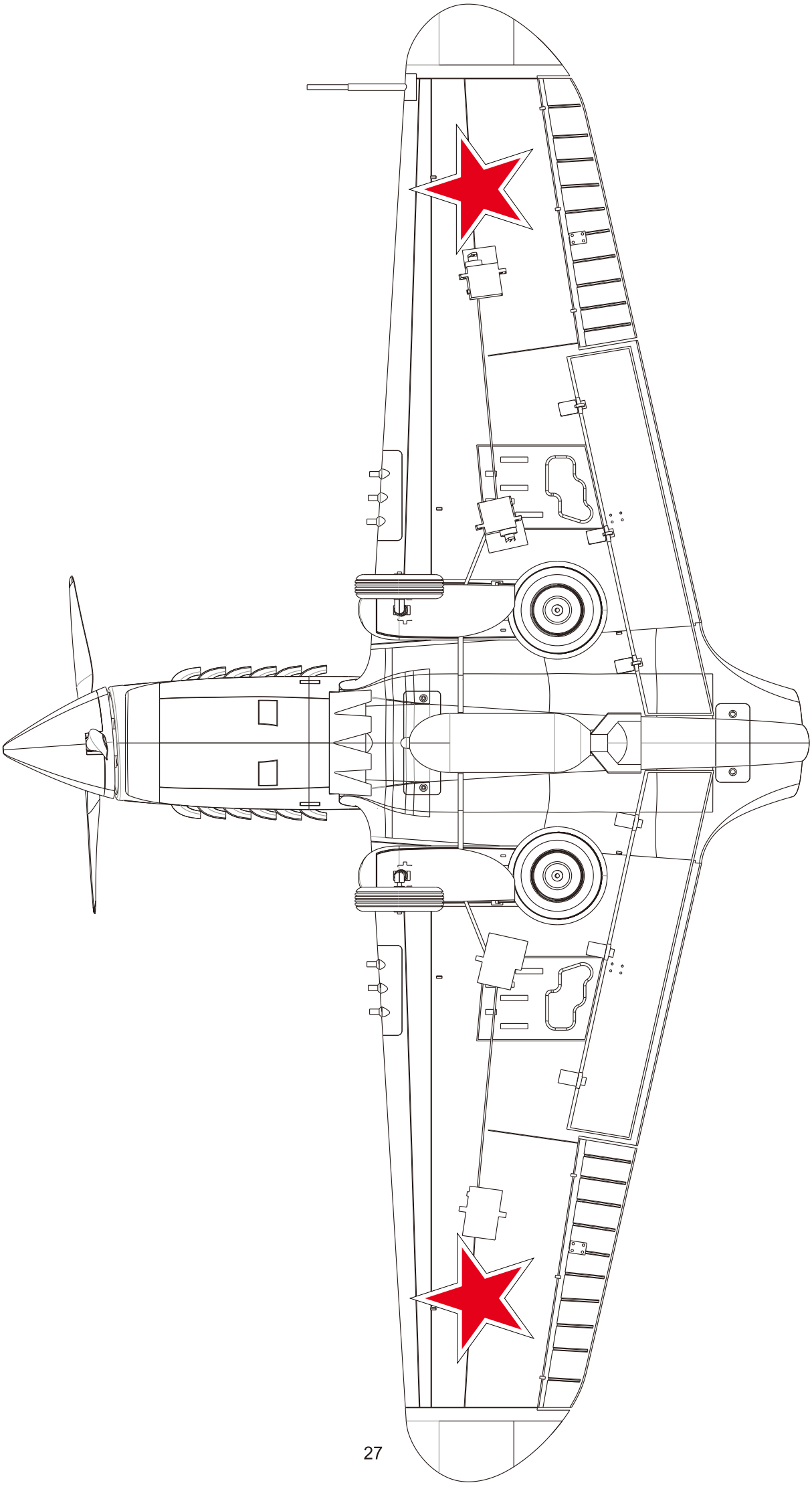

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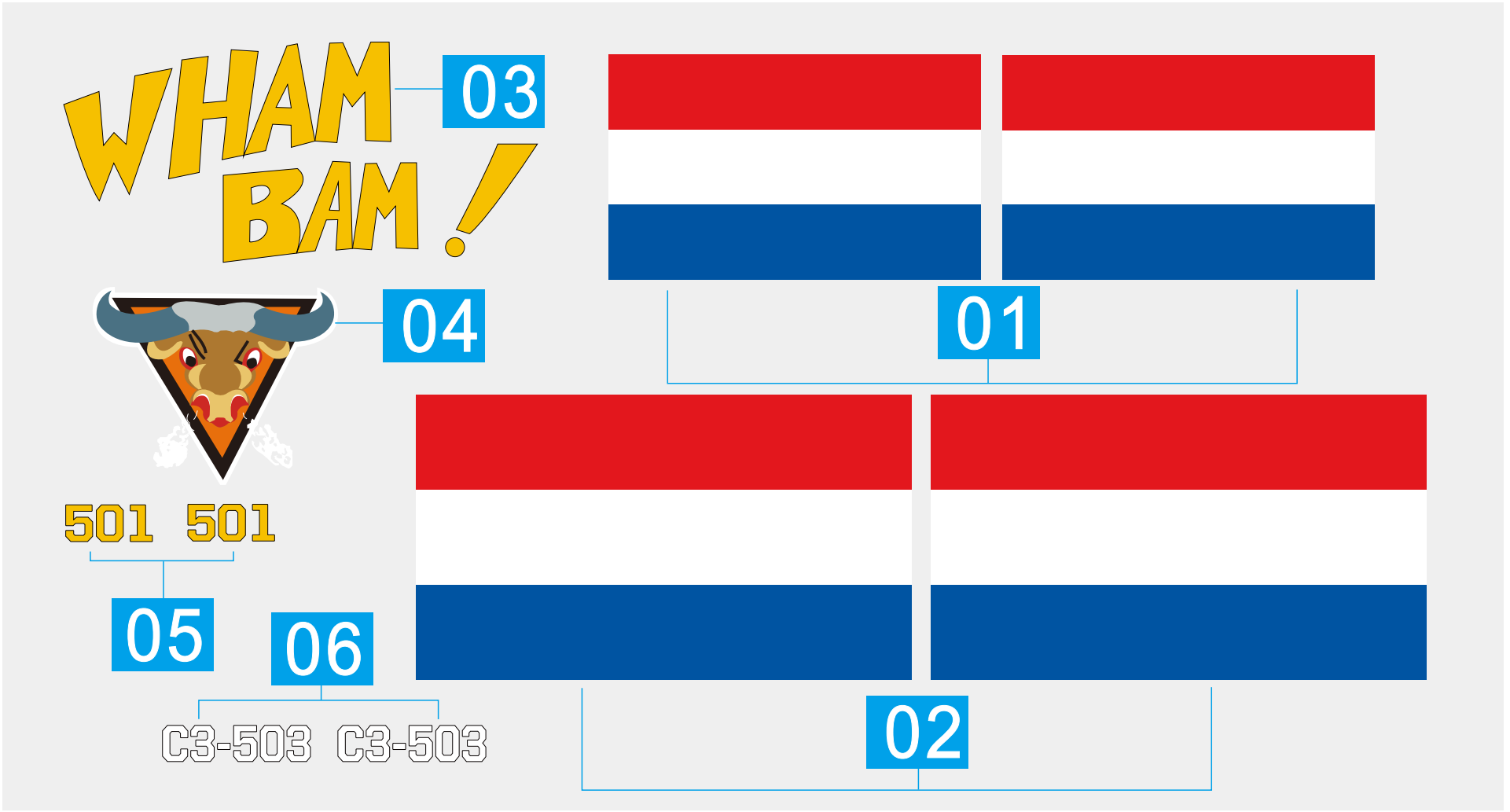


Soviet Air Force P-40N, 2nd GvIAP,
Northern Fleet,
Late 1943.

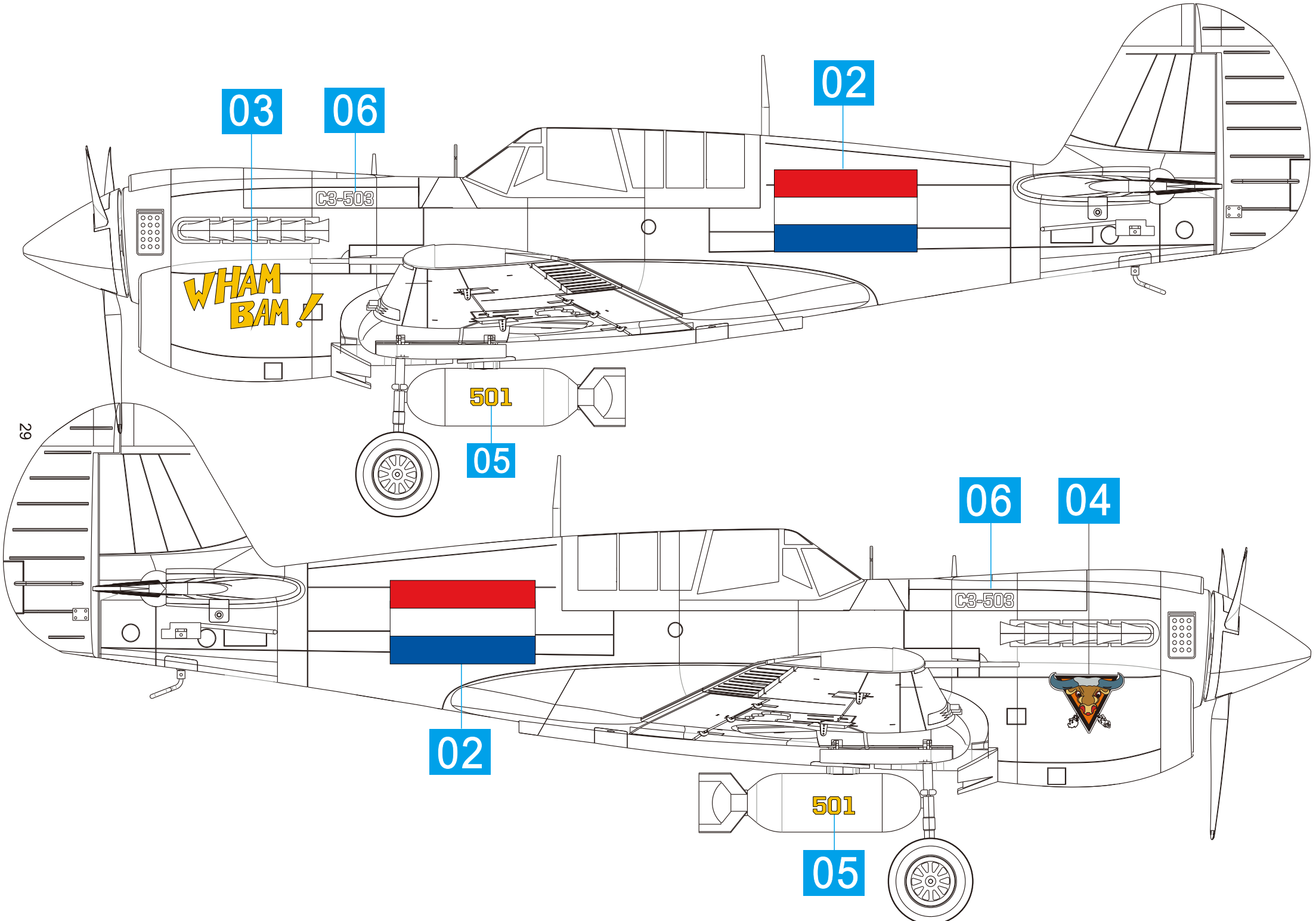

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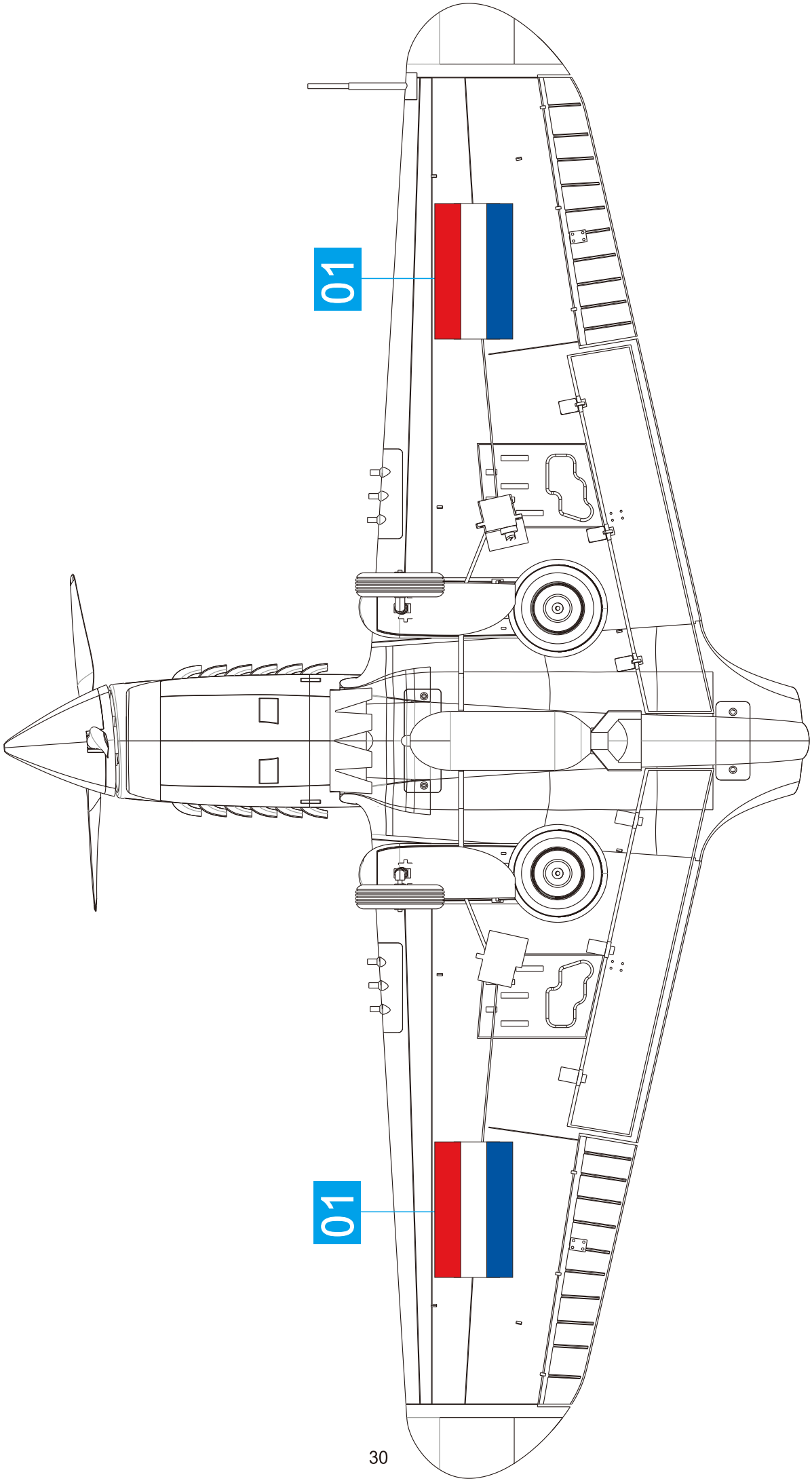


Dutch NEIAF Markings



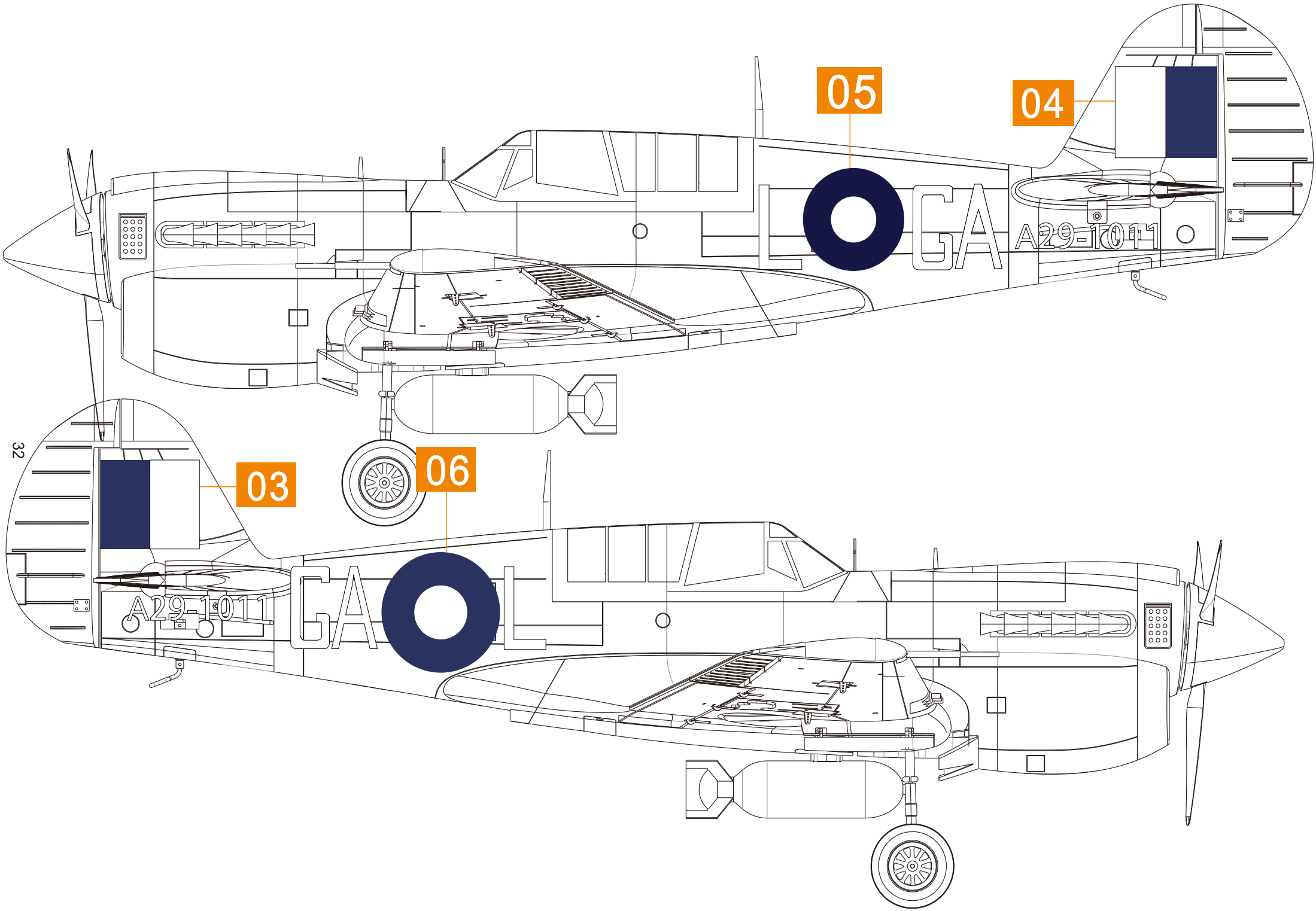
NEIAF P-40N ‘Wham Bam’, ML-KNIL
No. 120 Sqdn, New Guinea, 1944.

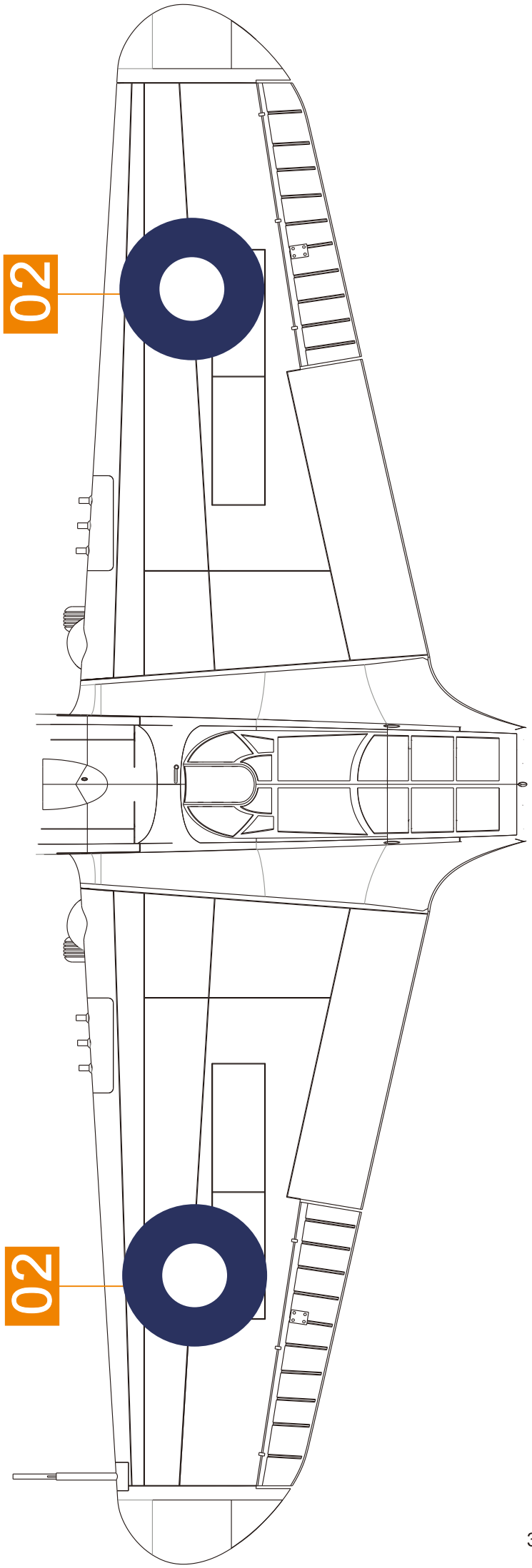

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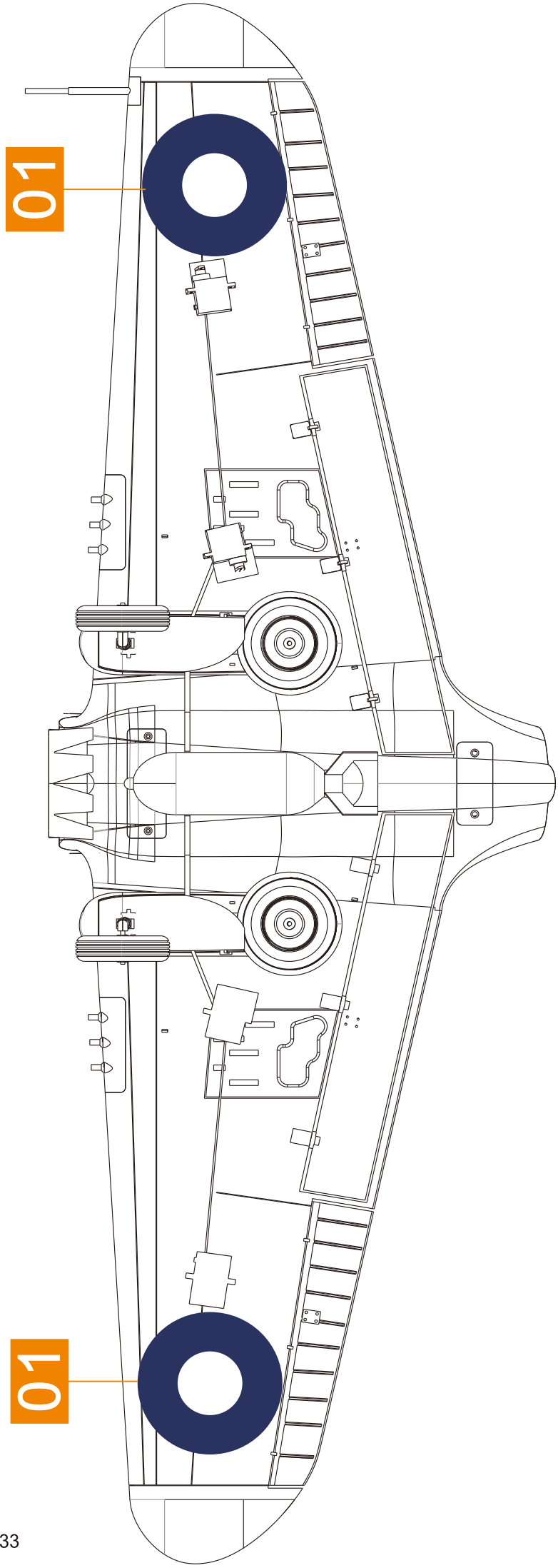

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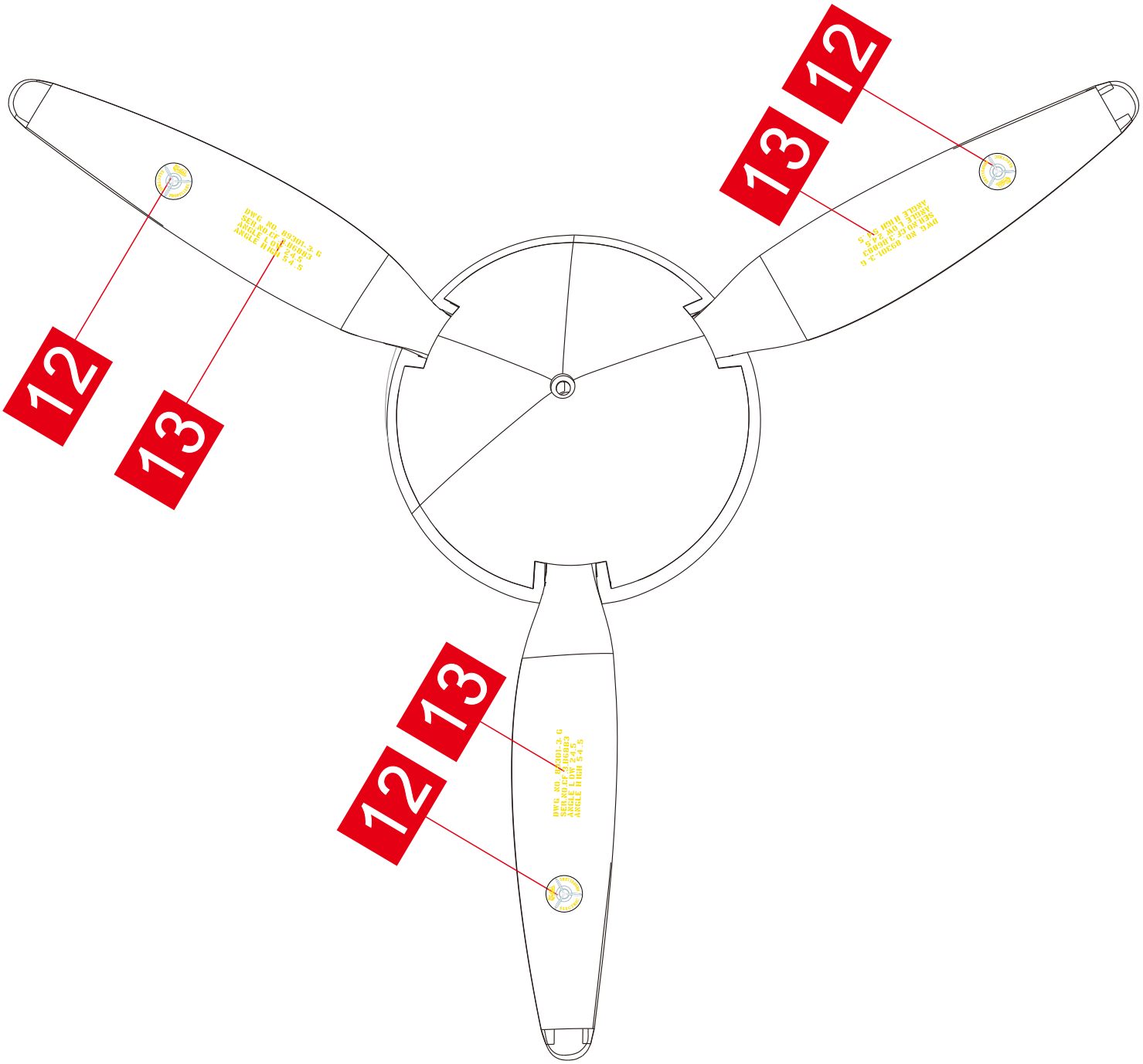
RAAF Curtiss P-40N/Kittyhawk FB.IV
LG-A, A29-1011 ,
No. 75 Sqdn, New Guinea, early 1945.


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Propeller decals



TROUBLE SHOOTING:

Problem	Cause	Solution
Motor does not turn	1. Battery is not fully charged. 2. Transmitter battery low. 3. Motors not connected. 4. The motor is damaged. 5. Receiver is not bound to Tx. 6. ESC in set-up mode.	1. Charge the batteries. 2. Install a full charged battery. 3. Check for connection between the ESC and motor. 4. Replace motor. 5. Consult Radio manual and go through bind procedure again. 6. Hold model and move throttle to full position then back down to idle.
Model moves backwards	1. Prop installed backwards	1. Turn the props around.
Control surfaces not moving with stick input	1. The servo lead is connected to Rx incorrectly. 2. The servo is damaged.	1. Make sure the servo leads are connect properly. 2. Replace servo.
Model does not fly straight	1. Control surfaces not centered. 2. CoG is not in the correct position.	1. Adjust the trims on the transmitter. 2. Re-position lipo as suggested.
Model does not climb well	1. The battery is not fully charged. 2. Elevator servo is reversed. 3. CG too far backwards.	1. Charge the battery. 2. Change servo direction via Tx. 3. Move battery forwards.
Limited Radio Range	1. Transmitter/Receiver batteries are flat.	1. charge/replace batteries.

NOTES:



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