



## 30% Sukhoi 26M ARF Instruction Manual



Congratulations and thank you for purchasing the Performance Aircraft Unlimited 30% Sukhoi 26M. The Russian designed aerobatic Sukhoi has been around for decades. Designed to be a rugged aerobatic airframe with a powerful radial engine makes these aircraft all out performers with a unique sound that makes them unmistakable. Another feature unique for the Sukhoi is the pilot's seat. The pilot sits in a reclined position allowing their body to sustain high G-loads then normal upright seating.

The PAU is designed with 1490 sq inches of wing area for feather light performance. All wood construction and top quality hardware make it hard to beat. Many hours of testing and refinement has allowed us to produce a Sukhoi 26M that looks like a Sukhoi, but also delivers aerobatic agility and stability only found in the best RC aircraft. When you arrive at the field with the PAU Sukhoi 26M, no one will ask you "who makes that Yak?" only "Wow, nice Sukhoi!" From the side windows to the color scheme and this is a real Russian beauty.

We believe you will find this to be one of the finest flying scale Sukhoi's on the market. Most modelers will find assembly of this aircraft simple and straightforward. We recommend the builder follow the step-by-step instructions to achieve the best performance and to ensure nothing was over looked. This manual also includes tip sections throughout that may help you in key areas during assembly. Please familiarize yourself with this manual before assembly.

This aircraft is fairly large for a 50cc aircraft so users are cautioned of adding unnecessary accessories can add to the aircrafts total weight. A little here and a little there, it all adds up! Keep it simple, keep it light!

**This manual is broken down into ten chapters for simplicity:**

- Chapter 1** - Parts Inventory
- Chapter 2** - Preparation for Assembly
- Chapter 3** - Landing Gear and Tail Wheel Assemblies
- Chapter 4** - Canopy and Fuselage Hatch
- Chapter 5** - Engine Installation
- Chapter 6** - Cowling installation
- Chapter 7** - Rudder Installation
- Chapter 8** - Hardware Installation
- Chapter 9** - Radio and Control Surface Setup
- Chapter 10** - Final Inspection and Pre-Flight

**Additional items needed to complete this aircraft, which are not included:**

- An engine, within the recommend range, and propeller
- 8 channel computer radio and receiver recommended
- Batteries and switches
- Two aileron servos rated at least at 130oz of torque
- Two elevator servos rated at least at 130oz of torque each
- One rudder servo rated at least at 250oz of torque
- One throttle servo with push rod and links
- Optional choke servo with push rod and links
- One fueling dot or fueling device
- 3 to 4 feet of fuel tubing
- Foam rubber
- 4" or 3-1/2" spinner
- 30 to 45 minute epoxy
- A bottle of thin CA
- Covering iron
- Various modeling tools for assembly
- ½ inch low tack masking tape

## Chapter 1 Parts inventory

Place an “x” to ensure your kit is complete:

- 1 Fuselage
- 1 Fuselage access hatch
- 2 Wing panels (1 right and 1 left)
- 1 Set of Wings Bags
- 2 Horizontal stabilizers (1 right and 1 left)
- 1 Rudder
- 1 Fiberglass Cowl
- 1 set of CF landing gears
- 1 Pair of Light wheels
- 1 CF Tail wheel and tiller assembly
- 1 Carbon fiber wing tube
- 1 Carbon fiber stabilizer tube
- 2 Nylon wing retention bolts
- 4 titanium pushrods/turnbuckles
- 1 set of wheel collars
- 1 pair of wheel axels
- 1 HD pull-pull cable
- 1 Set of PAU aluminum control horn
- 1 fuel tank
- 6 HD 4/40 ball links
- 1 Set of additional various marked hardware
- 1 Vinyl graphics



**If any of these parts are missing immediately contact PAU.**

**If you need more information you can visit our support forum at: [flypau.com](http://flypau.com)**

**This manual is strict property of Performance Aircraft Unlimited.**

## Chapter 2

# Preparation for Assembly

Professionals utilizing premium Ultracote covering carefully covered your model. Due to climate changes during shipping, the models covering may have loosened and/or wrinkled. It's a good habit to go over your model with a covering iron to ensure all joints, seams, and edges are properly sealed.

Ultracote is a lower temperature film that seals and shrinks at lower temperatures. Make sure you set your iron on a low temperature initially to get a feel for the correct temperature setting and adjust accordingly. Higher temperatures will cause your covering to over shrink and distort. Also, use a sock over your iron to ensure a scratch free finish.

### Place an “x” to ensure task completion:

- Go over you model as necessary with a covering iron to insure all joints, seams, and corners are sealed properly.
- Use your iron to ensure the areas where cutouts are needed for your hardware are located and sealed down, such as servos; tubes, and control horn mounting locations.



Next, we'll need to cut out the covering at the locations for hardware and final assembly. Make sure you use a sharp hobby knife so your cuts will be clean and straight.

- Start with the fuselage, Locate and cut out the servo and stabilizer and wing tube locations.
- Locate and cut the location for the anti-rotation pins and mounting holes for the stabilizers and wings.
- Locate and cut the two mounting bolt locations for the canopy and the two pull-pull exits.
- Locate and cut the servo mounting locations for each wing half.





## Chapter 3

# Landing Gear and Tail Wheel Assemblies

Now that we're ready for assembly, we are going to start with the main landing gear first. You will need to locate the following parts to begin assembly. We tried to keep the landing gear in a scale location while providing a canister tunnel. **The landing gear is a little more difficult to install than a standard** setup but the results are worth the extra effort.

### Place an "x" to ensure task completion:

- ❑ What you will need in this chapter for the main gear:
  - ✓ Aluminum main gear
  - ✓ One pair of 3.5 inch wheels
  - ✓ One pair of axles
  - ✓ Four wheel collars
  - ✓ Hardware pack marked "main wheels"
  - ✓ Fuselage
  - ✓ Rudder
  - ✓ Tail wheel assembly

### Not Provided:

- ✓ 1/2" and a 9/16" inch wrench
  - ✓ Blue loc-tite
  - ✓ Allen wrench for wheel collars
- ❑ Use a small soldering iron and open the holes for the main gear bolts.
- ❑ Fasten the axles to the main landing gear with the lock nuts.
- ❑ Install the landing gear to the fuselage using the four 8/32 bolts, spring washers, and flat washers, and compression nuts. You may need to trim the gear opening a little to slide in the landing gear.
- ❑ Using your four wheel collars and wheels, center you wheels on the axles. Place the collars as close to the wheels as possible but ensure the wheels still rotate freely. Again, we don't want the wheel to move from side to side and contact the wheel pants. Also, we recommend the use of loc-tite on the setscrews of the wheel collars to prevent them from vibrating loose.



Now lets get the tail wheel assembly installed.

- ❑ Once the mains are on, slide on the rudder and place a piece of tape on the counter balance to keep rudder strait. Do not glue on rudder at this time.
- ❑ Next, find the indentations in the carbon fiber tail wheel bracket and drill two holes for the two wood screws provided. You only need to drill the two at each end of the bracket. Measure and center the bracket on the fuse and make sure it is center of the rudder. Mark and drill the two holes for your wood screws.
- ❑ Install the bracket and then remove the wood screws and coat the holes with thin CA, let dry, reinstall.
- ❑ Use loc-tite and place on all the setscrews of the collars securing the tail wheel and wheel assembly.



***Tip#2 Set aside your two tiller springs, we will install those later after the rudder is mounted.***

## Chapter 4

# Canopy and Fuselage Hatch

Not much to cover installing the canopy as it's pretty much done. Keep in mind if you are doing any repairs to the canopy to use epoxy, RC56, or odorless CA. Regular CA will fog the canopy.

### Place an "x" to ensure task completion:

- ❑ Gather the following for canopy and hatch installation:
  - ✓ Fuselage and Access Hatch
  - ✓ Two 6/32 bolts with two sealing washers



- ❑ Use your small soldering iron and open the two canopy hatch holes in the fuse.
- ❑ Install the hatch on the fuselage using two 6/32 bolts with the self-sealing washers.



## Chapter 5

# Engine Installation

Your firewall is pre-mounted but our customers can select from a wide variety of engine choices. It is nearly impossible to cover every engine installation choice in this manual but we'll cover the DA-50. Your aircraft was designed around the 50cc to 60cc gas motors. Also, we have provided a canister tunnel on your Sukhoi for those desire quieter operation. Please consult the manufacturer for the installation of optional canister.

We will cover the installation of the DA 50cc motor. Follow your engine manufactures instructions for any additional guidance. Lets get started!

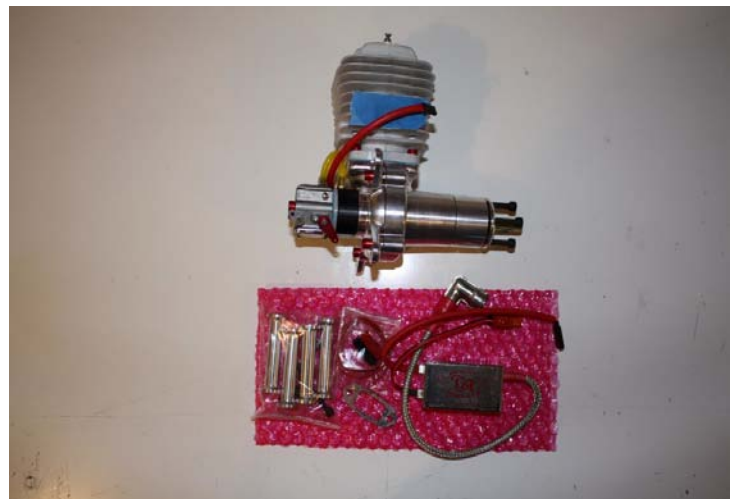
### Place an "x" to ensure task completion:

What you will need in this chapter:

A DA-50 mounting template found in the back of this manual.

#### Not Provided:

- ✓ **3" standoffs for the DA-50**
- ✓ **Four ¼-20 bolts for the DA-50**
- ✓ Four lock or compression nut with fender washers
- ✓ An engine in the recommend size range
- ✓ 4 inch spinner
- ✓ Propeller
- ✓ A drill and drill bits
- ✓ Center punch
- ✓ Scotch tape for template



*Also with the engine is installed, you will want 6 –13/16 inches from the firewall to the spinner back plate for proper cowl placement.*

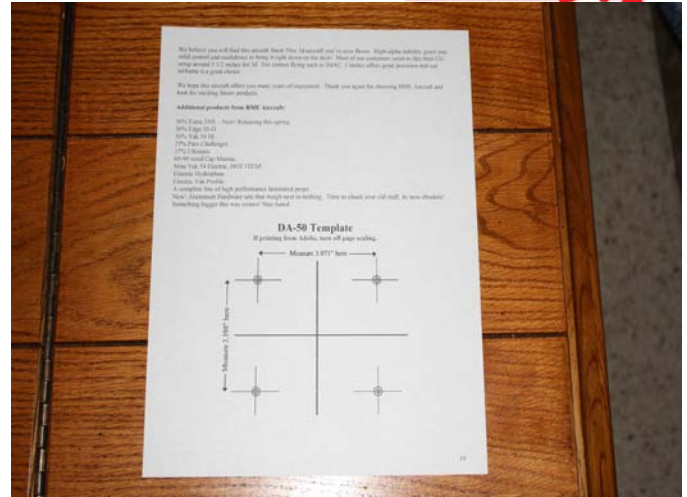
#### DA-50 installation

- ❑ The firewall is pre-marked so you'll just need to center your motor in the "+". Take a ruler and draw a line across the entire firewall for the thrust line and offset centerline.





- ❑ **DA-50 users only.** If using the DA template provided on the last page of this manual, check the measurements on the template and ensure the holes are correct. Cut the paper template to the size needed to tape it to the firewall using your thrust line and offset centerline as a guide. Mark the drilling locations and drill holes for 1/4-20 bolts.
- ❑ Mount the motor using 3" standoffs for the DA-50, and four 1/4-20 bolts.



- ❑ Now that you have the motor mounted, mark the locations for the fuel line and throttle push rod remove motor and drill those locations and reinstall motor.



*We recommend 4/40 push rods for throttle and/or optional choke servo. Also ensure there is no metal-to-metal contact from the throttle/choke to the servos. 2/56 Ball links for 4/40 rod (not included) will prevent the aforementioned metal-to-metal contact and will bolt to nicely to your motors carburetor.*

*Depending on your engine and prop selection you may want to add another .5 degrees of right thrust. We've found that a 23x8 propeller seems to give us the best performance.*

## Chapter 6

# Cowling installation

### Place an “x” to ensure task completion:

- ❑ What you will need in this chapter:
  - ✓ Fuselage and cowling
  - ✓ Six 4/40 bolts with spring and lock washers
  - ✓ Six bonded washers

#### Not Provided:

- ✓ A 4 inch spinner
- ✓ A Dremel tool
- ✓ A facemask and eye protection
- ✓ Pencil or dry erase marker



Always wear a mask and eye protection while cutting fiberglass. Take your time while installing the cowl. With care you will end up with a professional installation that will make an impression at the field.

Close the choke and place a piece of tape over the carburetor inlet and exhaust outlet to keep out any dust while setting up your cowl. Since the cowl is preset and uses a ring to mount, there will not be much to do here.

- ❑ First, measure and cut out the muffler area. Make sure that the back of your propeller is at least a ½ inch from the front of the cowl. Ensure that you leave at least 1 inch of the rear of the cowling intact for cowl integrity.
- ❑ Test fit the cowl to see where the cut is going to need to be made for the spark plug wire. Measure the distance and cut an opening just enough to get the cowl mounted. We will return to fine trim it later.

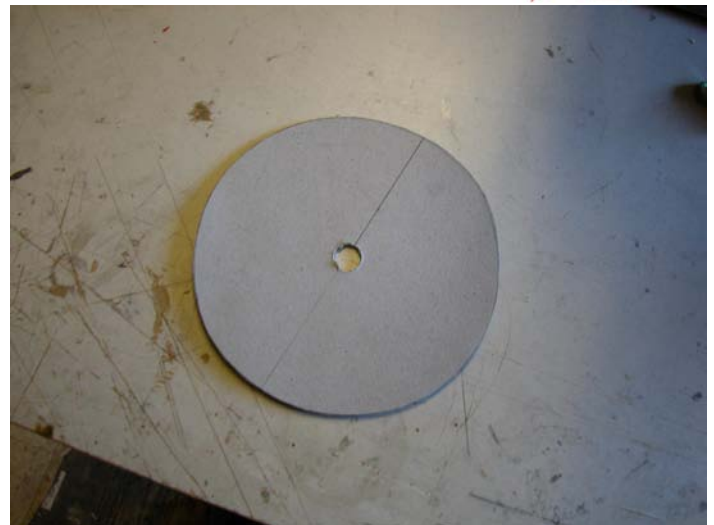


Since cylinder head opening does not need to be cut out, we can now mount the cowl to the fuse.

- ❑ Take your card stock and make six strips 6 inches long and 1 inch wide. Drill a 3/32 hole in one end of each strip.
- ❑ Using your 4/40 bolts, loosely bolt each strip of card stock into each cowl mounting hole and tape the other end to the sides of the fuselage.
- ❑ Remove the 4/40 bolts from the cowl mounting locations and position the cowl with the card stock paper overlapping the cowl.



- ❑ Make a circle on some remaining card stock the same dimension of the cowl opening. Drill a hole on the center for your propeller shaft. Place the circle on your prop shaft followed by your spinner back plate and propeller.
- ❑ Position the front of cowling at least a ½ inch behind the propeller and centered using the card stock as a guide. We prefer to have at least 1” for a scale appearance.
- ❑ Once satisfied with the fit and its lined up to match the covering, mark the cowl mount locations and drill out the holes for your 4/40 bolts.
- ❑ Remove the card stock strips from the fuselage and bolt the cowl in place.
- ❑ Now we are ready to do some fine trimming. We will want to cut at least an extra ½ inch cut around any of the engine components that protrude. Mark any additional areas that may require trimming to include if necessary, the spark plug. We also want to make sure we have at least twice the area of the cowl opening open on the bottom to allow for proper engine cooling as well.
- ❑ Remove the cowling and cut out the remaining areas to be trimmed. Re-install the spark plug and mount the cowl.





## Chapter 7

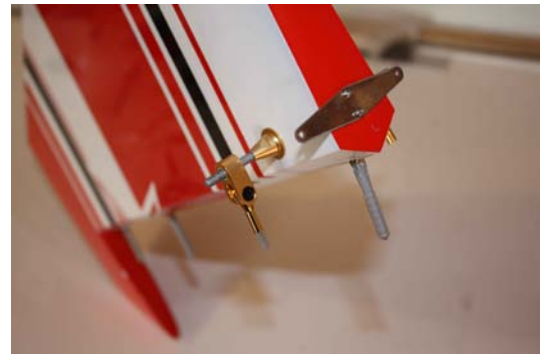
# Rudder Installation

Place an “x” to ensure task completion:

- ❑ What you will need in this chapter:
  - ✓ Rudder and fuse
  - ✓ Pull-pull hardware

Not Provided:

- ✓ 30 to 45 minute epoxy
  - ✓ Two cycle oil
- ❑ Next, we will install the hardware on the rudder before installing it. Find the pre-drilled hard point, remove the covering and insert the longer 4” aluminum rod in your hardware package.
  - ❑ There is an extra M4 bolt provided with your hardware set. This is used to tap the nylon insert in the center of the horns. Run this bolt several times in and out of the horn. Do not use a tap as this will cut away too much material leave slop in the horn. Failure to use this bolt prior to mounting your horns could cause the horn to seize and rendering it useless.
  - ❑ Install the cone shaped fasteners to the rod. **You must use loc-tite as shown.**
  - ❑ Now add the control horns placing them at 1.5” from the hinge line.
  - ❑ Now were going to prep the hinges for installation. Take a small drop of oil and place it in each of the pivot points of your hinges. The oil prevents excess epoxy from bonding the joint.
  - ❑ Apply epoxy into the trailing edge holes of the vertical stabilizer. Now apply epoxy to the hinges.
  - ❑ Carefully insert the control surface into the stabilizer and butt the two surfaces together. Move the surface back and forth a couple of times to make sure all the hinges are aligned correctly and the desired throw is attained. You will want at least 45 degrees.
  - ❑ Use some masking tape to hold the surfaces together and let cure for at least eight hours.





## Chapter 8

# Hardware Installation

We provide high quality aluminum control horn assemblies included with our latest generation of PAU aircraft kits. We believe these lightweight assemblies are the best available and can also be purchased separately from PAU.

### Place an “x” to ensure task completion:

- What you will need in this chapter:
  - ✓ The entire airframe
  - ✓ Four titanium push rods
  - ✓ Six sets of aluminum control horn assemblies
  - ✓ Four aluminum posts
  - ✓ Six HD ball links
  - ✓ One 20oz Du-bro fuel tank

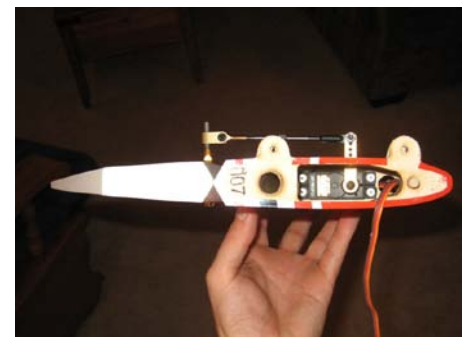
### Not Provided:

- ✓ Four 130oz or better servos for ailerons
- ✓ Two 130oz or better servos for elevators
- ✓ One servo for rudder at least 150oz (200oz or more preferred)
- ✓ One throttle servo 70oz or better
- ✓ Four 1.5” aluminum servo arms
- ✓ One 4” offset rudder servo arm
- ✓ One Fuel dot or other fueling device
- ✓ Some foam rubber for mounting receiver, ignition module, and fuel tank

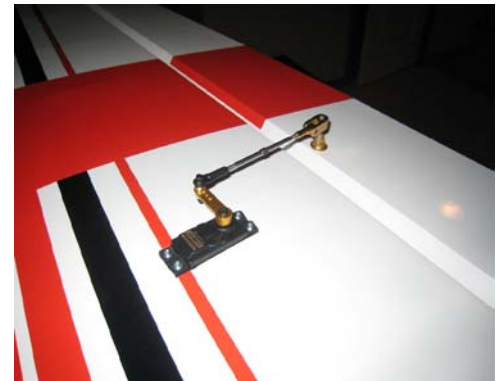


Install all your flight control servos with the output shaft closest to the control surface.

- Install 130oz or better servos for the ailerons in the servo trays located in the bottom of the wings.
- Install 130oz or better servos for the elevators in the servo trays located in the bottom of the horizontal stabilizers.
- Install one or two equaling 150oz or better servos for the rudder in the servo tray inside the fuselage.
- Install your throttle and or choke servos in the forward bays provided.
- First you need to find the pre-drilled holes for the steel posts. Install the aluminum control horn assemblies to each surface with the M4 bolt in the down position. You must blue loc-tite on the aluminum cone shaped base to ensure the bolt does not try to back out under vibration. Screw on the horns on to the posts. **Do not use loc-tite installing the horn.**



- ❑ Make sure your elevator servos are centered and mount your servo arms at 90 degrees to the hinge line.
- ❑ Take some masking tape and tape the elevator counter balances to the stabilizers so that they are in a center position.
- ❑ Screw in your two HD ball links onto the counterclockwise ends of the 2.5" H9 push rods and screw the other end into the control horn. Ensure everything is still centered. Don't forget to add locknuts to the 4/40 bolts attaching the ball link to the arm.
- ❑ Ensure aileron servos are centered and mount your arms parallel to the hinge line.
- ❑ Screw in four HD ball links onto the counterclockwise ends of the 3" push rods and screw the other end into the control horn. Ensure everything is still centered. Don't forget to add locknuts to the 4/40 bolts attaching the ball links to the arms.

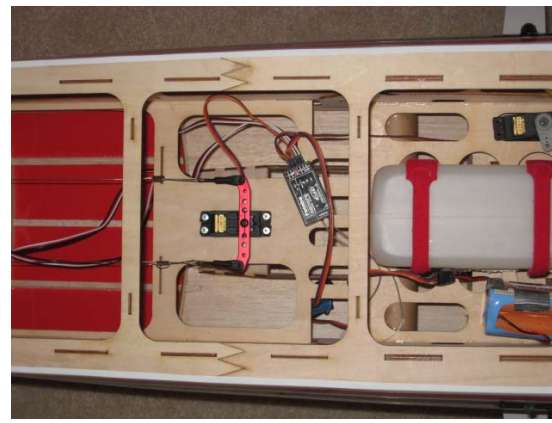


- ❑ Ensure your rudder servo is centered and mount your rudder servo arm.
- ❑ Install your pull-pull cable your remaining pull-pull hardware. Cables should be not crossed to avoid any rubbing on the exits. It is normal for the non-pulling side of the cable to slacken a little when the rudder is deflected.
- ❑ Install your tiller springs you set aside earlier.



- ❑ Assemble the fuel tank according to the directions provided on the package. You will need to decide whether you want a two or three-line setup. With a two-line setup you will need an additional "T" fitting in the carburetor line that connects to your fuel dot or fueling device. Make sure you use Tygon fuel tubing inside the tank for the clunk as well.

- ❑ Install the fuel tank just in front of the wing tube using zip-ties or hook and latch (Velcro) straps. Place a loop in the vent line over the top of the tank to prevent fuel loss during flight and improve flight times. Take small zip-ties or fuel line clamps and fasten to all the points where the fuels lines connect.



- ❑ Mount your battery switches in the side of the fuse. We mounted our switches on the black strip of the fuse thus hiding them from view.

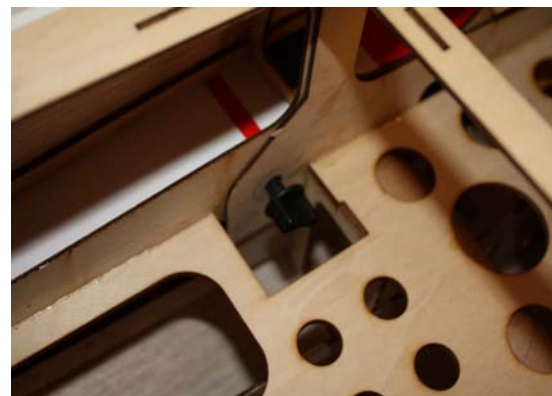
- ❑ Install the fuel-filling device in a location of your choice. In this case, we installed it just behind the ignition switch.

- ❑ Install your throttle push rod. Again as mentioned earlier, we do not want metal-to-metal contact at the attachment point on the engine. Use a 4/40-rod with a 2/56 ball link for 4/40 rod to attach the push rod to the motor.



- ❑ Once satisfied with your throttle setup, mount the cowl using the five 4/40 bolts provided and attach the prop and spinner.

- ❑ Install the horizontal stabilizers at this time. Install the carbon fiber stabilizer tube. Slide in each half and secure them with the four 4/40 retention bolts and bonded washers.



- ❑ Lets install the wings at this time and check our center of gravity (CG). Install the carbon fiber wing tube. Slide in each wing panel and secure them with the four nylon wing retention bolts.

**Tip#8** *If the wing is tight you can coat the tube with a little baby powder to aid the insertion of the wing panels.*

**Tip#9** *For added protection in case the wing retention bolts back out during flight; you can add hitch pins to the anti-rotation pins of the wing. With the wings installed, mark the anti-rotation pins 1/4 inch from the fuselage side. Remove the wings and drill a small hole in the anti-rotation pins. You can find appropriate sized hitch pins at most local hardware stores. Re-install wings and insert the hitch pins for added protection.*



Now we're ready to check the CG and install your remaining hardware. The CG range is 6 to 7 inches back as measured where the wing meets the fuselage. We recommend 6" inches for initial flights.

- ❑ Check CG at this time and place your batteries and remaining hardware in locations to attain the desired CG. If satisfied mount your remaining hardware.

Congratulations! You have just completed assembly of your Sukhoi 26M. Now would be a good time to install the optional vinyl graphics included with your kit.

***Tip# Recommended step. Now would be a good time to seal all of your hinge gaps prior to installing your hardware. This can provide you with a better flying aircraft by increasing control surface performance and preventing possible flutter. Many use a strip of white covering for this purpose; many also use Blendederm or other types of hinging tape.***

***Take approximately a one-inch strip of covering the length of your surface. Fold it in half while placing into the gap with the control surface fully deflected up and iron it in place. Check to make sure you still have full surface travel once you have completed (figure 78,79, and 80).***





## Chapter 9

# Radio and Control Surface Setup

Now we are ready to setup your aircraft for flying. Included in this manual are templates for measuring surface throw you may use if desired. We recommend that you setup your aircraft on low rates for initial flights until you become familiar with the aircraft and its capabilities.

### The recommended low rates for this aircraft are:

25 degrees for ailerons with 0 to 20% expo  
 15 degrees for elevators with 0 to 20% expo  
 30 degrees for rudder with 0 to 20% expo

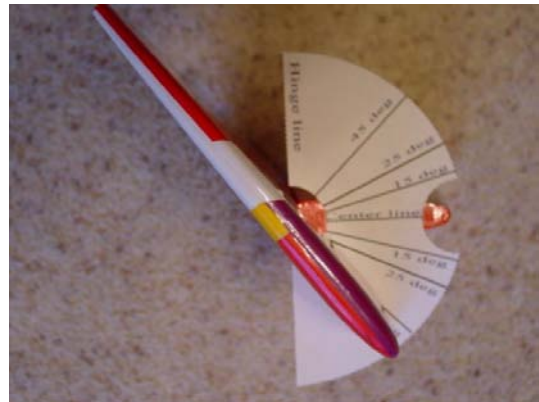
### The recommended high rates for this aircraft are:

35 degrees for ailerons with 40 to 70% expo  
 45 degrees for elevators with 40 to 70% expo  
 45 degrees for rudder with 30 to 70% expo  
**or as much as you can stand for hardcore flyers.**

CG Range is 6 to 7 inches.

### Place an “x” to ensure task completion:

- What you will need in this chapter:
  - ✓ Completed airframe
  - ✓ Radio
  - ✓ Throw templates or meter
- Cut out the templates for surface throw. These should be located on the last page of this manual.
- Tape each one in place using the horizontal line as a reference point to each stabilizer at the counter balance and at the inside of the wings where the ailerons meet.
- Set your throws accordingly. Double check to make sure nothing is binding to include the throttle and or choke servos and their linkages. Also, ensure all surfaces and controls are moving in the proper directions.



## Chapter 10

# Final Inspection and Pre-Flight

Welcome to the final chapter prior to your maiden flight. We hope you have enjoyed building your Sukhoi 26M.

**Lets go over the airframe and perform a pre-flight to make sure everything is in order.**

- Inspect the airframe for any visible damage and loose covering that may have occurred during the build.
- Inspect the main landing gear and tail wheel assembly. Ensure all mounting hardware and collars are fastened properly.
- Inspect your motor installation and cowl to ensure all bolts are tight and the muffler is firmly mounted in place. Check the motor and muffler for possible contact with the cowl. Inspect ignition module and spark plug wire for proper mounting. Check propeller and spinner to ensure they are both secure.
- Inspect the inside of the fuselage to ensure your batteries, switches, regulators (if equipped), fuel tank and lines are securely fastened. Check nylon wing bolts to ensure they are in place and secured.
- Inspect all control surfaces and control surface hardware. Gently tug on each surface to make sure the hinges are properly bonded. Check the four 4/40 horizontal stabilizer fasteners and ensure they're in place and secured.
- Check all servos for mounting screws. Check servo arm mounting screws and inspect that the 4/40 links have been secured with lock nuts.
- Fill fuel tank and inspect for any leaks.
- Check your batteries in both your aircraft and radio to ensure they are fully charged
- Turn on radio to inspect all controls for binding, proper direction and throw while on high rates.
- Re-check CG. It should be anywhere from 6 to 7 inches depending on your flying style.
- Secure aircraft using a buddy or hold down and start motor according to manufacturers guidelines. Don't forget to lower your throttle prior to ignition.
- Perform a proper range check with the motor running using your radio manufacturers instructions.
- Make sure you go back to low rates for your maiden takeoff and enjoy!

This concludes your pre-flight checks. After your maiden flight, repeat these steps to perform a post flight to ensure nothing has loosened. It's always a good habit to use a checklist like this one to go over your aircraft prior to the first flight of the day.

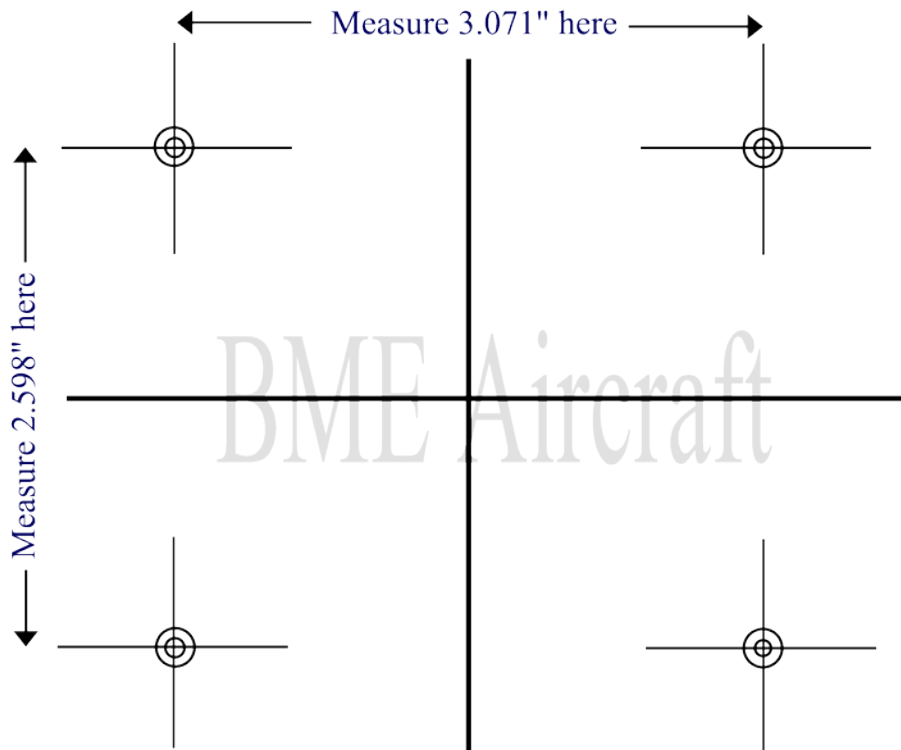
We believe you will find this aircraft finest Sukhoi's you've ever flown. Many hours went into developing a Sukhoi with a scale appearance while having outstanding flight performance. For contest flying such as IMAC, the CG at 6-1/2" or the center of the wing tube offers great precision and our airframe is a great choice.



We hope this aircraft offers you many years of enjoyment. Thank you again for choosing PAU and look for exciting future products.

# DA-50 Template

If printing from Adobe, turn off page scaling.





# Throw Template

If printing from Adobe, turn off page scaling.  
Cut out around all the dotted lines.

