

HANGAR 9™

Piper J-3 Cub 40 *Plug-N-Play™*

ASSEMBLY MANUAL



Specifications

Wingspan: 80 in (2032mm)
Fuselage length: 49.9 in (1268mm)
Wing area: 919 sq in (59.3 sq dm)

Weight: 6.75–7.5 lb (3–3.4 kg)
Engine: Evolution™ .46 NT
Radio: 4-channel w/ 5 servos

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Additional Required Tools and Adhesives

Tools

- Adjustable wrench
- Hex wrench: 3/32"
- Hobby knife
- Phillips screwdriver (small)
- Phillips screwdriver (large)
- Ruler
- Threadlock

Other Required Items

- Measuring device (e.g. ruler, tape measure)
- Rubbing alcohol
- Covering Iron (HAN101)
- Covering Glove (HAN150)
- Sealing Iron Sock (HAN141)

Covering Colors

- Cub Yellow HANU884
- Black HANU874

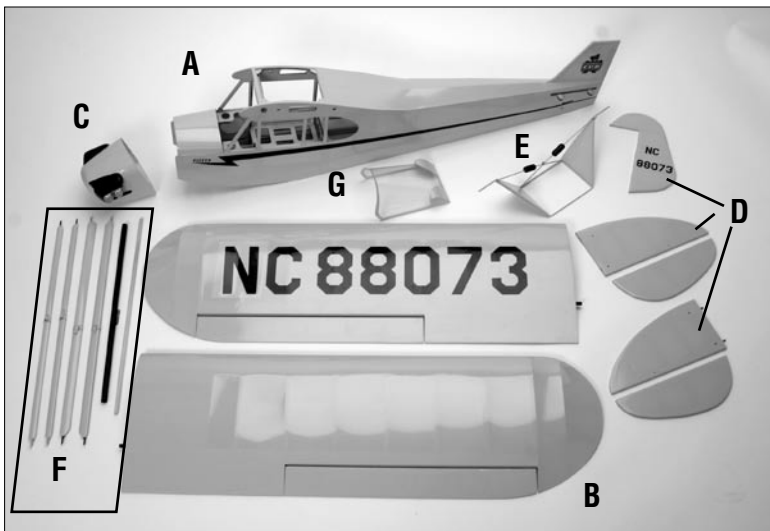
Warning

An RC aircraft is not a toy! If misused, it can cause serious bodily harm and damage to property. Fly only in open areas, preferably at AMA (Academy of Model Aeronautics) approved flying sites, following all instructions included with your radio and engine.

Field Equipment Required

- Propeller 10 x 6 (APC10060)
- Acorn-style nut (1/4-28)
- Fuel
- Glow Plug Wrench (HAN2510)
- Glow Plug Igniter with Charger (HAN7101)
- Glow Plug (HAN3001/3006)
- Manual Fuel Pump (HAN118)

Replacement Parts



Large Parts:

A. Fuselage	HAN4002
B. Wing	HAN4001
C. Cowling	HAN4004
D. Tail Set	HAN4003
E. Landing Gear	HAN4005
F. Wing Strut Set	HAN4010
G. Window Set	HAN4008

Items Not Shown:

Fuel Tank	
Tail Wheel Assembly	HAN4007
Decal Set	HAN4009
Pushrod Set	HAN4011
Wheels	HAN4006
Top Fuselage Hatch	HAN4012

Additional Items:

Evolution™ .46	EVOE0460
Servos	JRPS537
Receiver Battery (700 mAh)	JRPB3140
Receiver Battery (1100 mAh)	JRPB4240

Using the Manual

This manual is divided into sections to help make assembly easier to understand, and to provide breaks between each major section. Remember to take your time and follow the directions.

Before Starting Assembly

Before beginning the assembly of your J-3 Cub, remove each part from its bag for inspection. Closely inspect the fuselage, wing panels, rudder, and stabilizer for damage. If you find any damaged or missing parts, contact the place of purchase.

If you find any wrinkles in the covering, use a heat gun or covering iron to remove them. Use caution while working around areas where the colors overlap to prevent separating the colors.



HAN100 – Heat Gun

HAN150 – Covering Glove



HAN101 – Covering Iron

**HAN141 – Sealing Iron
Sock**

Warranty Information

Horizon Hobby, Inc. guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any parts damaged by use or modification. In no case shall Horizon Hobby's liability exceed the original cost of the purchased kit. Further, Horizon Hobby reserves the right to change or modify this warranty without notice.

In that Horizon Hobby has no control over the final assembly or material used for the final assembly, no liability shall be assumed nor accepted for any damage of or caused by the final user-assembled product. By the act of using the product, the user accepts all resulting liability.

Once assembly of the model has been started, you must contact Horizon Hobby, Inc. directly regarding any warranty question that you have. Please do not contact your local hobby store regarding warranty issues, even if that is where you purchased it. This will enable Horizon to better answer your questions and provide service in the event that you may need any assistance.

If the buyer or user is not prepared to accept the liability associated with the use of this product, they are advised to return this kit immediately in new and unused condition to the place of purchase.

For any additional questions please contact:

Horizon Hobby Product Support
4105 Fieldstone Road
Champaign, Illinois 61822
(877) 504-0233
www.horizonhobby.com

Section 1: Receiver Installation

Required Parts

- Fuselage
- Receiver

Required Tools and Adhesives

- Phillips screwdriver
- Hobby knife

Step 1

Plug the elevator, rudder and throttle servo leads into your receiver. Plug the "Y" harness into the aileron channel of the receiver. Plug the switch harness and battery leads into the receiver as well. Install the flat radio foam into the fuselage, followed by the die-cut foam.



Note: There is a tube located under the elevator servo for the antenna wire. Route the wire through this tube to the tail of the aircraft.

Step 2

Place the remaining flat radio foam over the receiver and battery. Secure the foam to prevent the receiver and battery from moving from their location.



Note: The windows are not shown for clarity.

Section 2: Landing Gear Installation

Required Parts

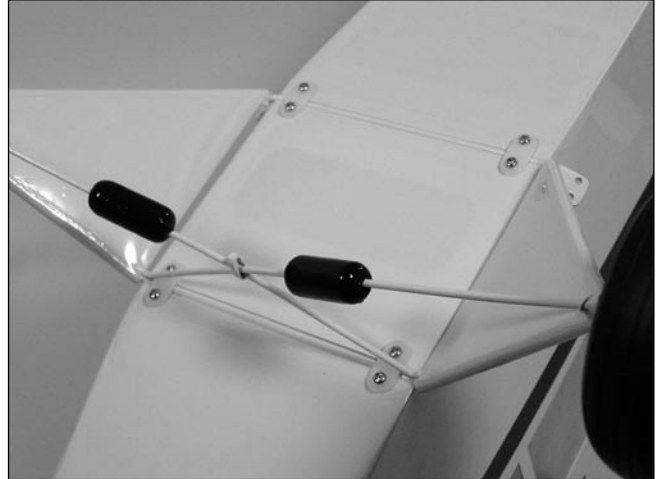
- Landing gear w/wheels
- Landing gear strap (4)
- 2mm x 14mm screw (8)

Required Tools and Adhesives

- Phillips screwdriver (small)

Step 1

Position the landing gear to the bottom of the fuselage. Secure the position of the gear using four landing gear straps and eight 3mm x 10mm screws.



Section 3: Propeller Installation

Required Parts

- Fuselage
- Propeller

Required Tools and Adhesives

- Phillips screwdriver (small)

Step 1

Attach the propeller following the instructions provided with your engine.



Note: Photo is shown using an acorn nut installed instead of the standard propeller nut and washer.

Section 4: Installing the Stabilizer

Required Parts

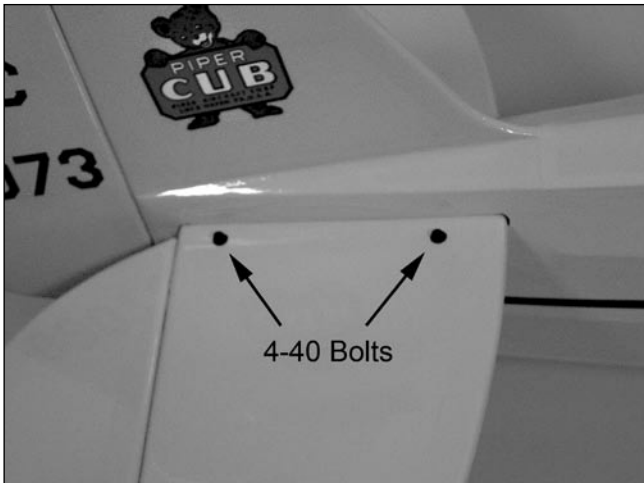
- Stabilizer assembly
- Fuselage
- #4 washer (4)
- 4-40 x 1/2" socket head screw (4)

Required Tools and Adhesives

- Hex wrench: 3/32"
- Threadlock

Step 1

Slide the stabilizer halves into the slot in the fuselage. Use four 4-40 x 1/2" screws and four #4 washers to secure the stabilizer. Use threadlock to prevent the screws from vibrating loose during flight.



Step 2

Attach the elevator clevises to the elevator control horns.



Step 8

Attach the four connectors to the brass fittings of the stabilizer. The cables should have very light tension.



Section 5: Wing Installation

Required Parts

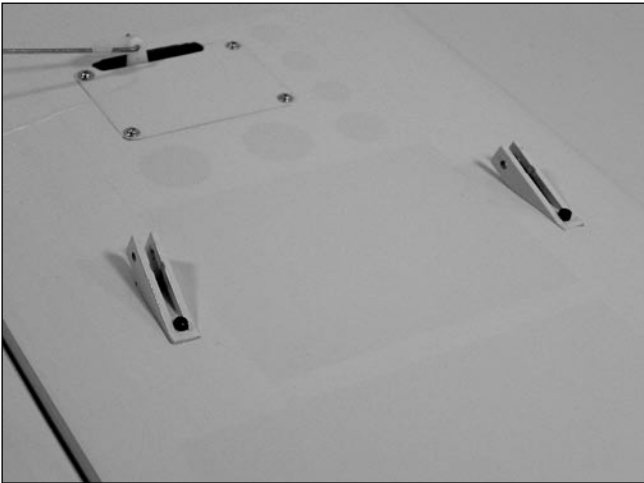
- Wing
- 4-40 lock nut (16)
- Strut support anchor (4)
- Strut end (4)
- Strut (wide) (L&R)
- Strut brace (short) (2)
- #2 x 3/8" screw (4)
- 1/4-20 x 2" nylon bolt (2)
- 4-40 x 1/2" socket head screw (24)
- Fuselage
- 4-40 nut (4)
- Strut bracket (4)
- Strut (narrow) (L&R)
- Strut brace (long) 2
- Strut cross brace (2)
- Fuselage hatch

Required Tools and Adhesives

- Hex wrench: 3/32"
- Threadlock
- Phillips screwdriver (small)
- Adjustable wrench

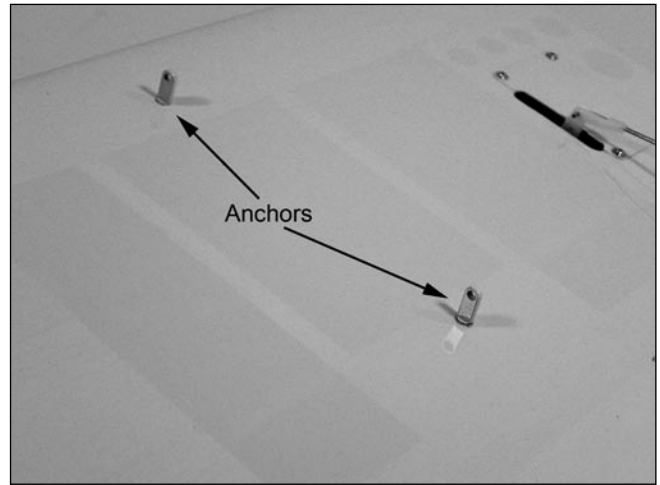
□ □ Step 1

Attach two strut brackets to the bottom of the wing using four 4-40 x 1/2" socket head screws. Use threadlock to prevent the screws from loosening during flight.



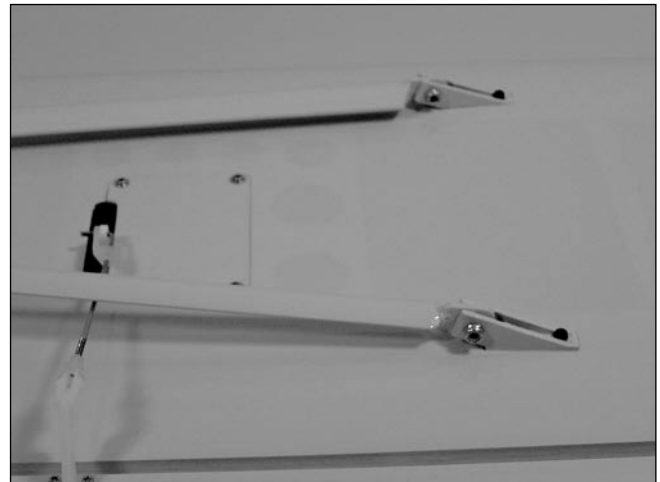
□ □ Step 2

Thread the strut support anchors into the holes in the wing. The anchors have external threads.



□ □ Step 3

Attach the strut to the strut brackets using two 4-40 x 1/2" socket head screws and two 4-40 lock nuts. The wide strut goes towards the leading edge, the narrow strut towards the trailing edge.



Note: The airfoil of the struts matches the direction of the wing. The struts also have fittings in the center, which will face towards the wing when installed.

Section 5: Wing Installation

□ □ Step 4

Thread a 4-40 nut onto the threaded end of the strut. Thread a strut end onto the strut. The nut will be used once the strut has been adjusted.



□ □ Step 5

Install the short strut brace to the rear strut support anchor and the long strut brace to the front strut support anchor using 4-40 x 1/2" socket head screws and 4-40 nuts. Attach the strut supports and the strut cross brace using two 4-40 x 1/2" socket head screws and two 4-40 lock nuts.



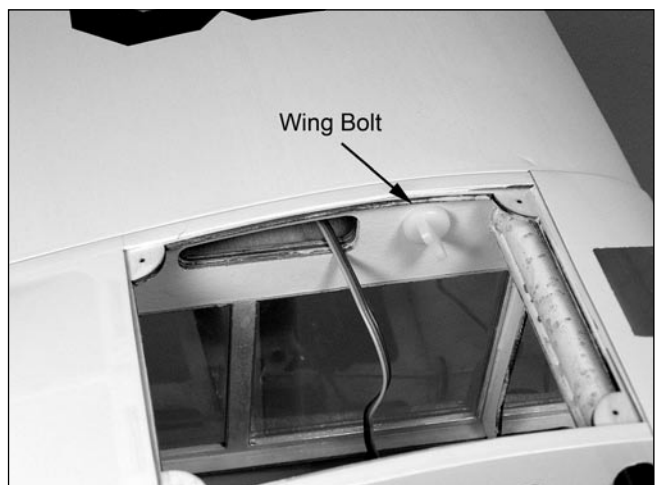
□ □ Step 6

Slide the wing tube into the wing panel. Slide the tube and panel into position on the fuselage.



□ □ Step 7

Secure the wing panel using a 1/4-20 x 2" nylon bolt.



Section 5: Wing Installation

Step 8

Support the fuselage so the wing is not resting on the work surface. Adjust the strut end so it aligns with the wing strut mount. Attach the wing struts using two 4-40 x 1/2" socket head bolts and two 4-40 locking nuts. Once attached, tighten the 4-40 nuts on the strut to prevent the end from rotating when the wing is removed for storage.



Step 9

Repeat Steps 1 through 8 to install the remaining wing panel and strut.

Step 10

Install the fuselage hatch using four #2 x 3/8" screws.



Note: When removing the wing, simply disconnect the bolts holding the strut to the fuselage. This will make things much easier when installing the wing at the field.

Note: The struts on the J-3 Cub are functional, so be sure all bolts and nuts are tight before flying. Failure to do so could result in wing failure.

Adjusting the Engine

Step 1

Completely read the instructions included with your engine and follow the recommended break-in procedure.

Step 2

At the field, adjust the engine to a slightly rich setting at full throttle and adjust the idle and low-speed needle so that a consistent idle is achieved.

Step 3

Before you fly, be sure that your engine idles reliably, transitions and runs at all throttle settings. Only when this is achieved should any plane be considered ready for flight.

Control Throws

The amount of control throw should be adjusted as closely as possible using mechanical means, rather than making large changes electronically at the radio. By moving the position of the clevis at the control horn toward the outermost hole, you will decrease the amount of control throw of the control surface. Moving it toward the control surface will increase the amount of throw. Moving the pushrod wire at the servo arm will have the opposite effect: Moving it closer to center will decrease throw, and away from center will increase throw. Work with a combination of the two to achieve the closest or exact control throws listed.

Elevator

Low Rate

11/16" (11.5°) Up 9/16" (10°) Down

High Rate

1¹/₄" (19.5°) Up 1" (18°) Down

Linear measurement (Inches) measured at widest part of elevator (roughly in the center).

Note: Use the Low Rate for most flying. The High Rate is used specifically for performing spin maneuvers.

Aileron

Low Rate

3/8" (8°) Up 1/2" (9°) Down

High Rate

7/8" (21°) Up 1¹/₁₆" (22°) Down

Linear measurement (inches) measured at root.

Rudder

1¹/₂" (28°) Left 1¹/₂" (28°) Right

Linear measurement (inches) measured at front of counterbalance.

Recommended CG

An important part of preparing the aircraft for flight is properly balancing the model. This is especially important when various engines are mounted.

Caution: Do not inadvertently skip this step!

The recommended Center of Gravity (CG) range for the Piper J-3 Cub is 3¹/₄" (82.5mm) behind the leading edge of the wing against the fuselage. It is suggested to start at the forward end of the range until comfortable with the flight characteristics of your aircraft. If necessary, move the battery pack or add weight to either the nose or the tail until the correct balance is achieved. Stick-on weights are available at your local hobby shop and work well for this purpose.

Preflight

Range Test Your Radio

Step 1

Before going to the field, be sure that your batteries are fully charged, per the instructions included with your radio. Charge both the transmitter and receiver pack for your airplane. Use the recommended charger supplied with your particular radio system, following the instructions provided with the radio. In most cases the radio should be charged the night before going out flying.

Step 2

Before each flying session, be sure to range check your radio. See your radio manual for the recommended range and instructions for your radio system. Each radio manufacturer specifies different procedures for their radio systems. Next, start the engine. With the model securely anchored, check the range again. The range test should not be significantly affected. If it is, don't attempt to fly! Have your radio equipment checked out by the manufacturer.

Note: Keep loose items that can get entangled in the propeller away from the prop. These included loose clothing, or other objects such as pencils and screwdrivers. Especially keep your hands away from the propeller.

Step 3

Double-check that all controls (aileron, elevator, rudder and throttle) move in the correct direction.

Step 4

Check the radio installation and make sure all the control surfaces are moving correctly (i.e. the correct direction and with the recommended throws). Test run the engine and make sure it transitions smoothly from idle to full throttle and back. Also ensure the engine is tuned according to the manufacturer's instructions, and it will run consistently and constantly at full throttle when adjusted.

Check all the control horns, servo horns, and clevises to make sure they are secure and in good condition. Replace any items that would be considered questionable. Failure of any of these components in flight would mean the loss of your aircraft.

Range Testing the Radio

Before each flying session, range-check your radio. This is accomplished by turning on your transmitter with the antenna collapsed. Turn on the radio in your airplane. With your airplane on the ground, you should be able to walk 30 paces away from your airplane and still have complete control of all functions. If not, don't attempt to fly! Have your radio equipment checked out by the manufacturer.

2005 Official AMA National Model Aircraft Safety Code

GENERAL

1) I will not fly my model aircraft in sanctioned events, air shows or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.

2) I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.

3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.

4) The maximum takeoff weight of a model is 55 pounds, except models flown under Experimental Aircraft rules.

5) I will not fly my model unless it is identified with my name and address or AMA number, on or in the model. (This does not apply to models while being flown indoors.)

6) I will not operate models with metal-bladed propellers or with gaseous boosts, in which gases other than air enter their internal combustion engine(s); nor will I operate models with extremely hazardous fuels such as those containing tetranitromethane or hydrazine.

7) I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind) including, but not limited to, rockets, explosive bombs dropped from models, smoke bombs, all explosive gases (such as hydrogen-filled balloons), or ground mounted devices launching a projectile. The only exceptions permitted are rockets flown in accordance with the National Model Rocketry Safety Code or those permanently attached (as per JATO use); also those items authorized for Air Show Team use as defined by AST Advisory Committee (document available from AMA HQ). In any case, models using rocket motors as a primary means of propulsion are limited to a maximum weight of 3.3 pounds and a G series motor. (A model aircraft is defined as an aircraft with or without engine, not able to carry a human being.)

8) I will not consume alcoholic beverages prior to, nor during, participation in any model operations.

9) Children under 6 years old are only allowed on the flight line as a pilot or while receiving flight instruction.

RADIO CONTROL

1) I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.

2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.

3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in the front of the flight line. Intentional flying behind the flight line is prohibited.

4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission. (Only properly licensed Amateurs are authorized to operate equipment on Amateur Band frequencies.)

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- 5) Flying sites separated by three miles or more are considered safe from site-to site interference, even when both sites use the same frequencies. Any circumstances under three miles separation require a frequency management arrangement, which may be either an allocation of specific frequencies for each site or testing to determine that freedom from interference exists. Allocation plans or interference test reports shall be signed by the parties involved and provided to AMA Headquarters. Documents of agreement and reports may exist between (1) two or more AMA Chartered Clubs, (2) AMA clubs and individual AMA members not associated with AMA Clubs, or (3) two or more individual AMA members.
- 6) For Combat, distance between combat engagement line and spectator line will be 500 feet per cubic inch of engine displacement. (Example: .40 engine = 200 feet.); electric motors will be based on equivalent combustion engine size. Additional safety requirements will be per the RC Combat section of the current Competition Regulations.
- 7) At air shows or model flying demonstrations, a single straight line must be established, one side of which is for flying, with the other side for spectators.
- 8) With the exception of events flown under AMA Competition rules, after launch, except for pilots or helpers being used, no powered model may be flown closer than 25 feet to any person.
- 9) Under no circumstances may a pilot or other person touch a powered model in flight.

Organized RC Racing Event

- 10) An RC racing event, whether or not an AMA Rule Book event, is one in which model aircraft compete in flight over a prescribed course with the objective of finishing the course faster to determine the winner.
 - A. In every organized racing event in which contestants, callers and officials are on the course:
 1. All officials, callers and contestants must properly wear helmets, which are OSHA, DOT, ANSI, SNELL or NOCSAE approved or comparable standard while on the racecourse.
 2. All officials will be off the course except for the starter and their assistant.
 3. "On the course" is defined to mean any area beyond the pilot/staging area where actual flying takes place.
 - B. I will not fly my model aircraft in any organized racing event which does not comply with paragraph A above or which allows models over 20 pounds unless that competition event is AMA sanctioned.
 - C. Distance from the pylon to the nearest spectator (line) will be in accordance with the current Competition Regulations under the RC Pylon Racing section for the specific event pending two or three pylon course layout.
- 11) RC night flying is limited to low-performance models (less than 100 mph). The models must be equipped with a lighting system that clearly defines the aircraft's attitude at all times.

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HORIZON
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