Cherokee

INSTRUCTION MANUAL

Wingspan: 60 in [1520mm]
Wing Area: 606 in^2 [39dm^2]
Weight: 6.75 – 7.25 lb [3060 – 3290g]
Wing Loading: 26 – 28 oz/ft^2 [79 – 85g/dm^2]
Length: 46 in [1170mm]
Radio: 4-channel minimum with four to seven standard servos and standard size receiver
Engine: .40 – .46 cu in [7 – 7.5cc] two-stroke,
.56 cu in [9.2cc] four-stroke,
42-50-800kV brushless out-runner motor

READ THROUGH THIS MANUAL BEFORE STARTING CONSTRUCTION. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.

GREAT PLANES®
MODEL MANUFACTURING COMPANY

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GPMZ1033 for GPMA1033 V1.0

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INTRODUCTION

Congratulations on your purchase of the Great Planes Cherokee .40 ARF! We have designed this plane to be a quick, fuss-free build by minimizing the amount of glue and measuring that needs to be done for a typical ARF. With a bolt-on, self-aligning tail section along with many other small time-consuming tasks already complete, you can have your Cherokee .40 ARF built in as little as 4 to 6 hours. Just like its full-scale counterpart, the Cherokee .40 ARF is extremely easy to fly and would be appropriate for beginners who have mastered a trainer or for the veteran pilot who just appreciates the rich history of the Cherokee.

For the latest technical updates or manual corrections to the Cherokee .40 ARF visit the Great Planes web site at **www.greatplanes.com**. Open the "Airplanes" link, then select the Cherokee .40 ARF. If there is new technical information or changes to this model, a "tech notice" box will appear in the upper left corner of the page.

AMA

We urge you to join the AMA (Academy of Model Aeronautics) and a local R/C club. The AMA is the governing body of model aviation and membership is required to fly at AMA clubs. Though joining the AMA provides many benefits, one of the primary reasons to join is liability protection. Coverage is not limited to flying at contests or on the club field. It even applies to flying at public demonstrations and air shows. Failure to comply with the Safety Code (excerpts printed in the back of the manual) may endanger insurance coverage. Additionally, training programs and instructors are available at AMA club sites to help you get started the right way. There are over 2,500 AMA chartered clubs across the country. Contact the AMA at the address or toll-free phone number below:

Academy of Model Aeronautics
5151 East Memorial Drive
Muncie, IN 47302-9252
Tele. (800) 435-9262
Fax (765) 741-0057
Or via the Internet at:
http://www.modelaircraft.org

IMPORTANT!!! Two of the most important things you can do to preserve the radio controlled aircraft hobby are to avoid flying near full-scale aircraft and avoid flying near or over groups of people.

PROTECT YOUR MODEL, YOURSELF & OTHERS....FOLLOW THESE IMPORTANT SAFETY PRECAUTIONS

1. Your Cherokee .40 ARF should not be considered a toy, but rather a sophisticated, working model that functions very much like a full-size airplane. Because of its performance capabilities, the Cherokee .40 ARF, if not assembled and operated correctly, could possibly cause injury to yourself or spectators and damage to property.

2. You must assemble the model **according to the instructions**. Do not alter or modify the model, as doing so may result in an unsafe or unflyable model. In a few cases the instructions may differ slightly from the photos. In those instances the written instructions should be considered as correct.

3. You must take time to **build straight, true** and **strong**.

4. You must use an R/C radio system that is in first-class condition, and a correctly sized engine and components throughout the building process.

5. You must correctly install all R/C and other components so that the model operates correctly on the ground and in the air.

6. You must check the operation of the model before **every** flight to insure that all equipment is operating and that the model has remained structurally sound. Be sure to check clevises or other connectors often and replace them if they show any signs of wear or fatigue.

7. If you are not an experienced pilot or have not flown this type of model before, we recommend that you get the assistance of an experienced pilot in your R/C club for your first flights. If you're not a member of a club, your local hobby shop has information about clubs in your area whose membership includes experienced pilots.

8. While this kit has been flight tested to exceed normal use, if the plane will be used for extremely high stress flying, such as racing, or if an engine larger than one in the recommended range is used, the modeler is responsible for taking steps to reinforce the high stress points and/or substituting hardware more suitable for the increased stress.

9. **WARNING:** The cowl and wheel pants included in this kit are made of fiberglass, the fibers of which may cause eye, skin and respiratory tract irritation. Never blow into a part to remove fiberglass dust, as the dust will blow back into your eyes. Always wear safety goggles, a particle mask and rubber gloves when grinding, drilling and sanding fiberglass parts. Vacuum the parts and the work area thoroughly after working with fiberglass parts.

We, as the kit manufacturer, provide you with a top quality, thoroughly tested kit and instructions, but ultimately the quality and flyability of your finished model depends on how you build it; therefore, we cannot in any way guarantee the performance of your completed model, and no representations are expressed or implied as to the performance or safety of your completed model.

Remember: Take your time and follow the instructions to end up with a well-built model that is straight and true.

DECISIONS YOU MUST MAKE

This is a partial list of items required to finish the Cherokee .40 ARF that may require planning or decision making before starting to build. Order numbers are provided in parentheses.

Radio Equipment

The Cherokee .40 ARF requires a minimum 4-channel radio system with four to seven 44 oz.-in. [3.2 kg-cm] minimum standard servos. Operational flaps will require six servos. If you are installing a glow engine, an additional standard servo is required for the throttle.

In addition, two 9" [229mm] servo extensions are required for the aileron servos. If you are using a radio system that does not support mixing functions, two Y-harnesses will also be required to connect the aileron servos and flap servos to the receiver.

A charge jack receptacle is optional, but is useful for recharging the receiver pack without removing the canopy hatch and is shown in the assembly of the plane. Recommended part numbers for the radio components are provided below:

❏ Futaba® S3003 Servo Standard (FUTM0031)
❏ Futaba S9001 Servo Aircraft Coreless BB
   (optional, FUTM0075)
❏ Futaba 9" Servo Extension J (FUTM3910)
❏ Futaba 6" Dual Servo Extension J (FUTM4130)
❏ Ernst Charge Receptacle Futaba J FM (ERNM3001)

Power System Recommendations

The recommended engine/motor size for the Cherokee .40 ARF is a .40 to .46 cu in [7 to 7.5cc] two-stroke engine, .56 cu in [9.2cc] four-stroke engine, or a RimFire™ 42-50-800kV brushless out-runner motor. If installing a two-stroke glow engine, a Pitts muffler is recommended. The stock muffler can also be used with a muffler extension but additional modification to the fuselage and cowl would be necessary. Engine and motor order numbers are provided below:

❏ O.S.® .46 AX ABL w/Muffler (OSMG0547)

❏ Bisson O.S. .46 SF/FX .50 SX Pitts Muffler (BISG4046)

❏ O.S. Muffler Extension #873 (OSMG2578) (Stock
   muffler only)

❏ Great Planes RimFire 42-50-800 out-runner
   brushless (GPMG4700)

❏ Great Planes Brushless Motor Mount Medium
   Motors (GPMG1255)

If using the recommended brushless motor, a 60A brushless ESC is required:

❏ Great Planes Silver Series 60A brushless ESC high volt (GPMM1850)

Propeller

If you are installing a glow engine, choose a prop based on the engine manufacturer's recommendation. If you are installing the recommended RimFire brushless motor, we suggest a 10" x 5 E or 11" x 5.5 E APC propeller. The 10" x 5 E prop provides adequate power with a longer flight time. The 11" x 5.5 E provides excellent power for the Cherokee .40 ARF at the cost of a shorter flight time.

❏ APC 10" x 5 electric propeller (APCQ4120)
❏ APC 11" x 5.5 electric propeller (APCQ1055)

Batteries & Charger

For a brushless motor installation, one 3200mAh 11.1V LiPo battery pack and one 3200mAh 7.4V LiPo battery pack connected in series are recommended. Order numbers for the battery packs and series connector are provided below:

❏ Great Planes LiPo 7.4V 3200mAh 20C discharge w/balance (GPMP0622)
❏ Great Planes LiPo 3200mAh 11.1V 20C discharge w/balance (GPMP0623)
❏ Great Planes Series Deans® U 2 to 1 adapter (GPMM3143)

A cell balancer is required for the LiPo battery packs listed above:

❏ Great Planes ElectriFly Equinox™ LiPo cell balancer 1to 5 (GPMM3160)

A suitable charger is also required. The Great Planes PolyCharge4™ is designed for LiPo packs only; however, it is able to charge four LiPo packs simultaneously. The Great Planes Triton2™ charger will only charge one pack at a time; however, it is capable of charging NiCd, NiMH, LiPo, and lead acid batteries. Order numbers for both are provided below:

❏ Great Planes PolyCharge4 DC only 4 output LiPo charger (GPMM3015)
-or-
❏ Great Planes ElectriFly Triton2 DC comp peak charger (GPMM3153)

ADDITIONAL ITEMS REQUIRED

Required Hardware & Accessories

This is the list of hardware and accessories required to finish the Cherokee .40 ARF. Order numbers are provided in parentheses:

❏ R/C foam rubber 1/4" [6mm] (HCAQ1000)
❏ 3' [900mm] standard silicone fuel tubing (GPMQ4131) (glow engine installation only)

Adhesives & Building Supplies

This is the list of Adhesives and Building Supplies that are required to finish the Cherokee .40 ARF:

❏ 1/2 oz. [15g] Thin Pro CA (GPMR6001)
❏ Pro™ 30-minute epoxy (GPMR6047)
❏ Masking tape (TOPR8018)
❏ Threadlocker threadlocking cement (GPMR6060)
❏ Denatured alcohol (for epoxy clean up)
❏ Drill bits: 1/16" [1.6mm], 5/64" [2mm], 3/32" [2.4mm], 3/16" [4.8mm]
❏ Dead Center™ engine mount hole locator (GPMR8130) (glow engine installation only)
❏ Great Planes tap & drill set 6-32 (GPMR8102) (glow engine installation only)
❏ Tap handle (GPMR8120) (glow engine installation only)
❏ Small metal file
❏ #1 Hobby knife (HCAR0105)
❏ #11 Blades (5-pack, HCAR0211)
❏ Medium T-pins (100, HCAR5150)
❏ Top Flite® MonoKote® sealing iron (TOPR2100)
❏ Top Flite Hot Sock™ iron cover (TOPR2175)
❏ 220-grit Sandpaper (glow engine installation only)
❏ Great Planes Velcro Hook & Loop 1" x 6" (2) (GPMQ4480) (brushless installation only)
❏ Panel line pen (TOPQ2510)

Optional Supplies & Tools

Here is a list of optional tools that will help you build the Cherokee .40 ARF:

❏ 1/2 oz. [15g] Thick Pro CA- (GPMR6013)
❏ 2 oz. [57g] Spray CA activator (GPMR6035)
❏ 4 oz. [113g] Aerosol CA activator (GPMR6034)
❏ CA applicator tips (HCAR3780)
❏ CA debonder (GPMR6039)
❏ Pro 6-minute epoxy (GPMR6045)
❏ Epoxy brushes 6, (GPMR8060)
❏ Mixing sticks (GPMR8055)
❏ Mixing cups (GPMR8056)

❏ Pliers with wire cutter (HCAR0630)
❏ Hobbico Duster™ can of compressed air (HCAR5500)
❏ Switch & Charge jack mounting set (GPMM1000)
❏ Rotary tool such as Dremel®
❏ Rotary tool reinforced cut-off wheel (GPMR8020)
❏ Servo horn drill (HCAR0698)
❏ Hobby Heat™ micro torch II (HCAR0755)
❏ Precision magnetic prop balancer (TOPQ5700)
❏ AccuThrow™ deflection gauge (GPMR2405)
❏ C.G. Machine™ (GPMR2400)
❏ Hobbico flexible 18" ruler stainless steel (HCAR0460)
❏ Top Flite MonoKote trim seal iron (TOPR2200)
❏ Top Flite MonoKote heat gun (TOPR2000)
❏ Hobbico pin vise 1/16" collet w/6 Bits (HCAR0696)
❏ Hobbico 8-piece ball tip hex L wrench SAE (HCAR0520)
❏ Hobbico 7-piece ball tip hex L wrench Metric (HCAR0521)
❏ Great Planes clevis installation tool (GPMR8030)

BUILDING STAND

A building stand or cradle comes in handy during the build. We use the Robart Super Stand II (ROBP1402) for all our projects in R&D, and it can be seen in pictures throughout this manual.

IMPORTANT BUILDING NOTES

•   When you see the term *test fit* in the instructions, it means that you should first position the part on the assembly **without using any glue**, then slightly modify or *custom fit* the part as necessary for the best fit.

•   Whenever the term *glue* is written you should rely upon your experience to decide what type of glue to use. When a specific type of adhesive works best for that step, the instructions will make a recommendation.

•   Whenever just *epoxy* is specified you may use **either** 30-minute (or 45-minute) epoxy **or** 6-minute epoxy. When 30-minute epoxy is specified it is **highly** recommended that you use only 30-minute (or 45-minute) epoxy, because you will need the working time and/or the additional strength.

•   *Photos* and *sketches* are placed **before** the step they refer to. Frequently you can study photos in following steps to get another view of the same parts.

•   The stabilizer and wing incidences and engine thrust angles have been factory-built into this model. However, some technically-minded modelers may wish to check these measurements anyway. To view this information visit the web site at **www.greatplanes.com** and click on "Technical Data." Due to manufacturing tolerances which will have little or no effect on the way your model will fly, please expect slight deviations between your model and the published values.

ORDERING REPLACEMENT PARTS

Replacement parts for the Great Planes Cherokee .40 ARF are available using the order numbers in the **Replacement Parts List** that follows. The fastest, most economical service can be provided by your hobby dealer or mail-order company.

To locate a hobby dealer, visit the Hobbico web site at **www.hobbico.com**. Choose "Where to Buy" at the bottom of the menu on the left side of the page. Follow the instructions provided on the page to locate a U.S., Canadian or International dealer.

Parts may also be ordered directly from Hobby Services by calling (217) 398-0007, or via facsimile at (217) 398-7721, but full retail prices and shipping and handling charges will apply. Illinois and Nevada residents will also be charged sales tax. If ordering via fax, include a Visa® or MasterCard® number and expiration date for payment.

Mail parts orders and payments by personal check to:

Hobby Services
3002 N. Apollo Drive, Suite 1
Champaign, IL 61822

Be certain to specify the order number exactly as listed in the **Replacement Parts List**. Payment by credit card or personal check only; no C.O.D.

If additional assistance is required for any reason contact Product Support by e-mail at **productsupport@greatplanes.com**, or by telephone at (217) 398-8970.

Replacement Parts List

Description	How to Purchase
Missing pieces	Contact Product Support
Instruction manual	Contact Product Support
Full-size plans	Not available

Contact your hobby supplier for the following parts:

|	
GPMA3240	Wing
GPMA3241	Fuselage
GPMA3242	Vertical Stabilizer & Rudder
GPMA3243	Horizontal Stabilizer & Elevator
GPMA3244	Canopy/Hatch
GPMA3245	Wheel Pants
GPMA3246	Landing Gear
GPMA3247	Cowl
GPMA3248	Wing Tube
GPMA3249	Decal Sheet

COMMON ABBREVIATIONS

Stab = Horizontal Stabilizer
Fin = Vertical Fin
LE = Leading Edge
TE = Trailing Edge
LG = Landing Gear
Ply = Plywood
" = Inches
mm = Millimeters
SHCS = Socket Head Cap Screw
ESC = Electronic Speed Control

METRIC CONVERSIONS

1" = 25.4mm (conversion factor)

1/64" = .4mm	3/4" = 19.0mm
1/32" = .8mm	1" = 25.4mm
1/16" = 1.6mm	2" = 50.8mm
3/32" = 2.4mm	3" = 76.2mm
1/8" = 3.2mm	6" = 152.4mm
5/32" = 4.0mm	12" = 304.8mm
3/16" = 4.8mm	18" = 457.2mm
1/4" = 6.4mm	21" = 533.4mm
3/8" = 9.5mm	24" = 609.6mm
1/2" = 12.7mm	30" = 762.0mm
5/8" = 15.9mm	36" = 914.4mm

Inch Scale

0"   1"   2"   3"   4"   5"   6"   7"

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

Metric Scale
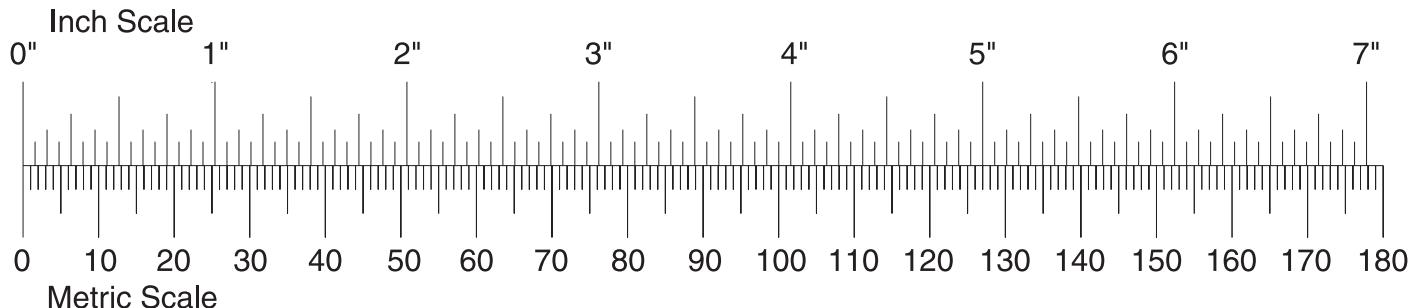
KIT INSPECTION

Before starting to build, take an inventory of this kit to make sure it is complete and inspect the parts to make sure they are of acceptable quality. If any parts are missing or are not of acceptable quality, or if you need assistance with assembly, contact **Product Support**. When reporting defective or missing parts, use the part names exactly as they are written in the Kit Contents list.

Great Planes Product Support:
3002 N. Apollo Drive, Suite 1
Champaign, IL 61822
Telephone: (217) 398-8970, ext. 5
Fax: (217) 398-7721
**E-mail: airsupport@greatplanes.com**

KIT CONTENTS
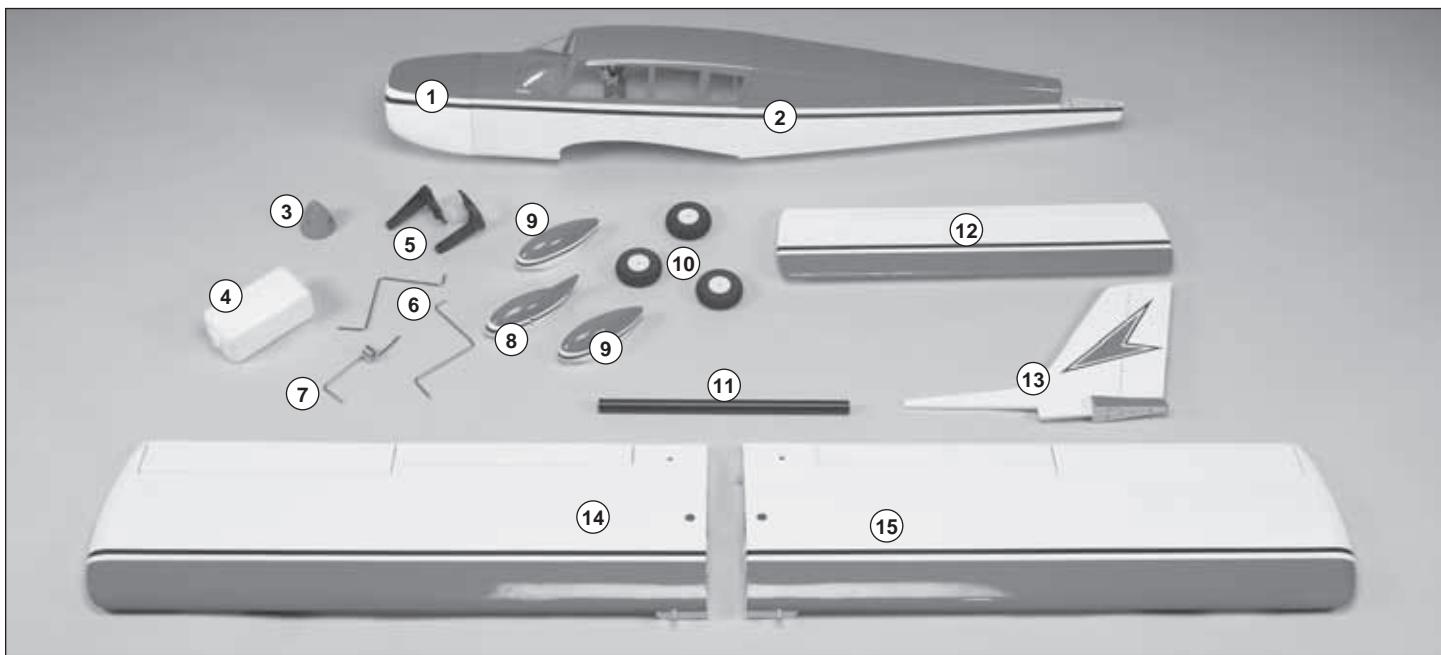
KIT CONTENTS

1	Cowl	10	2-1/2" [64mm] Wheels (3)
2	Fuselage	11	Aluminum Wing Joiner Tube
3	Spinner	12	Horizontal Stabilizer & Elevator
4	Fuel Tank	13	Vertical Fin & Rudder
5	Engine Mount	14	Right Wing Panel w/Flap & Aileron
6	Main Landing Gear (L&R)	15	Left Wing Panel w/Flap & Aileron
7	Nose Gear Wire		
8	Nose Wheel Pant		
9	Main Wheel Pants (L&R)		

❏ 1. If you have not done so already, remove the major parts of the kit from the box and inspect for damage. If any parts are damaged or missing, contact Product Support at the address or telephone number listed in the *"Kit Inspection"* section on page 7.
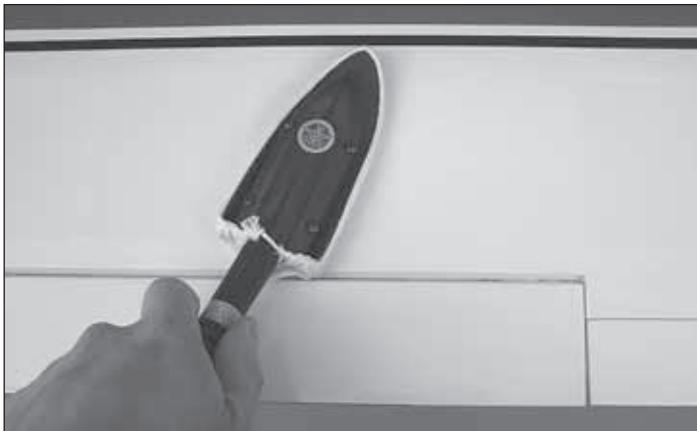
❏ 2. Carefully remove the tape and separate all the components. Use a covering iron with a covering sock on medium/high heat to tighten the covering if necessary. Apply pressure over sheeted areas to **thoroughly** bond the covering to the wood.

BUILD THE WING PANELS

Install the Aileron & Flap Servos & Pushrods

Before completing this section, confirm that the servos that you will be using will properly fit between the **servo mounting block** *locations on the* **aileron and flap servo hatch covers***. Make adjustments as necessary for your brand of servos. The block locations shown in this section will fit a standard size Futaba brand servo.*


❏ ❏ 1. Trim the covering from the servo arm cutouts in the aileron and flap (if you will have operational flaps) servo hatch covers. Use epoxy to glue the 3/4" x 3/4" x 5/16" [19 x 19 x 8mm] hardwood servo mounting blocks to the inside of the aileron and flap hatch covers. Be sure that the blocks are aligned over the rectangles with the grain direction perpendicular to the covers. Allow the epoxy to cure undisturbed.


ENLARGE TO 5/64"

CUT OFF UNUSED ARMS
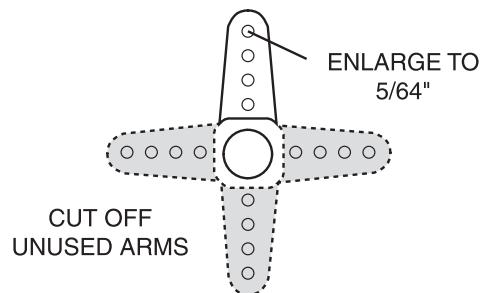
❏ ❏ 2. Cut three arms from a four-armed servo arm for the aileron servo. Enlarge the outer hole of the remaining arm with a 5/64" [2mm] drill bit.
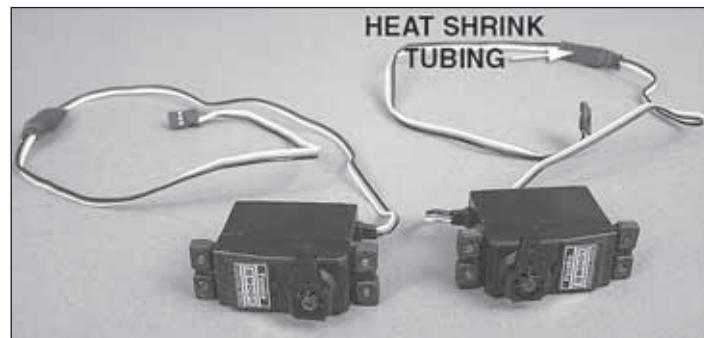

HEAT SHRINK TUBING

❏ ❏ 3. Attach a 9" [229mm] servo extension to the aileron servo and secure the connector using tape or heat shrink tubing (not included). Center the servo with your radio system and install the servo arm to the servo perpendicular to the servo case as shown. Be sure to reinstall the servo arm screw into the servo.


3/64" [1.2mm] GAP

SERVO ARM CENTERED IN OPENING
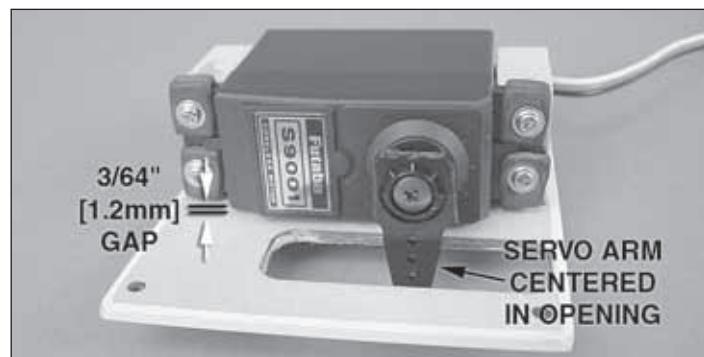
❏ ❏ 4. Position the servo against the underside of the aileron servo hatch cover between the mounting blocks. Shim the aileron servo away from the hatch cover approximately 3/64" [1.2mm] to isolate it from vibration (a business card folded in thirds works well for this). Drill 1/16" [1.6mm] holes through the mounting tabs on the servo case into the blocks. Thread a servo mounting screw (included with the servo) into each hole and back it out. Apply a drop of thin CA to each hole to harden the wood. When the CA has dried, install the servo onto the hatch cover using the hardware supplied with the servo.
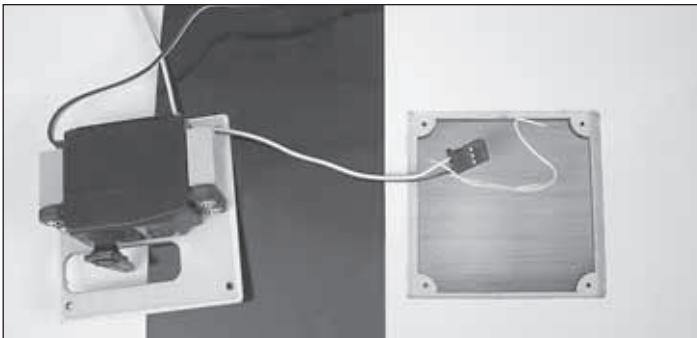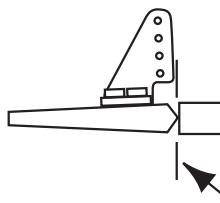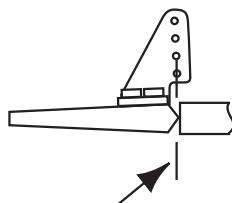
❏ ❏ 5. Use the string taped inside the **aileron servo bay** to pull the servo lead through the wing ribs.


#2 x 3/8" [9.5mm] SCREWS

❏ ❏ 6. Thread a #2 x 3/8" [9.5mm] self-tapping screw into each servo hatch mounting hole in the wing panel and back it out. Apply a drop of thin CA to each hole to harden the wood. Install the aileron hatch cover to the wing panel using four #2 x 3/8" [9.5mm] self-tapping screws and four #2 flat washers.


4" [102mm] PUSHROD

SILICONE CLEVIS RETAINER

CLEVIS

CONTROL HORN

❏ ❏ 7. Thread a nylon clevis 20 complete turns onto a 4" [102mm] pushrod. Slide a silicone clevis retainer onto the clevis and connect the clevis to the outer hole of a control horn.


INCORRECT   CORRECT

HINGE LINE

❏ ❏ 8. Position the control horn over the plywood plate in the aileron (if you cannot see it, hold the aileron at a shallow angle in good lighting or use a small pin to puncture the covering), using the position of the servo arm as a guide. Align the holes in the control horns directly over the aileron hinge line and mark the location of the control horn mounting holes.

#2 x 1/2" [13mm] SCREWS

❏ ❏ 9. Drill 1/16" [1.6mm] holes at the marks you made through the plywood plate. Do not drill all the way through the aileron! Thread a #2 x 1/2" [13mm] self-tapping screw through each hole and back it out. Apply a couple drops of thin CA glue to each hole to harden the wood. When the glue has dried, install the control horn onto the aileron using two #2 x 1/2" [13mm] self-tapping screws.

Servo Horn

2-56 (.074")
Pushrod Wire   FasLink 1/16"

FASLINK

❑ ❑ 10. Use tape or a small clamp to hold the aileron in the neutral position. Make a mark on the pushrod where it crosses the outer hole in the servo arm. Make a 90° bend at the mark on the pushrod and cut off the excess pushrod 1/4" [6mm] beyond the bend. Attach the pushrod to the servo arm using a nylon FasLink. Thread the clevis up or down on the pushrod as necessary to center the aileron with the servo arm centered. When satisfied, slide the silicone clevis retainer to the end of the clevis to secure it.

Skip to step 13 if you are not installing operational flaps.

#2 x 3/8" [9.5mm]
SCREWS

❑ ❑ 11. Install the flap servo onto the flap servo hatch cover in the same manner (the flap servos do not require servo extensions). Install the hatch cover to the wing panel using four #2 x 3/8" [9.5mm] self-tapping screws and four #2 flat washers. Be sure to harden the screw holes with thin CA.

❑ ❑ 12. Install a control horn onto the flap using two #2 x 3/8" [9.5mm] screws. Make note that these screws are shorter than the ones used for the aileron control horns. As you did with the aileron, install a 4" [102mm] pushrod onto the flap. Before connecting the pushrod to the flap servo, use your radio system to operate the flap servo through the whole range of motion. In order to achieve the recommended flap deflection, use the end-point adjustment on your transmitter to reduce the servo travel to approximately 50% of total (30 degrees, if applicable).

❑ ❑ 13. Route the servo lead(s) through the hole in the top of the wing panel.

❑ 14. Repeat steps 1 to 13 for the other wing panel. When installing the flap servo in the other wing panel (if applicable), make note that both flap servos must be oriented in the same direction (one flap servo arm will be facing the root rib and the other flap servo arm will be facing the wing tip), in order for them both to rotate the same direction when joined with a Y-harness.

If you are not installing operational flaps, follow these steps to lock the flaps into the neutral position. If in the future you choose to add operational flaps, simply cut the ABS strips along the inside edge of each flap and install the flap servos and linkage as described in previous steps.

❑ 1. Locate the two 3/4" x 1-1/2" [19 x 38mm] ABS flap strips.

❑ 2. Center the strips over the inside edge of each flap just forward of the flap trailing edge. Use a felt-tip pen to trace around the shape of the ABS flap strips onto the flaps and wing panels.

❑ 3. Carefully remove the covering approximately 1/16" [1.6mm] inside the lines you drew using a sharp hobby knife. Take care not to cut into the wood when cutting the covering.

❑ 4. Wipe away the lines from the pen using a cloth dampened with alcohol and glue the strips into position.

Install the Tail Surfaces

6-32 x 1" [25mm] SHCS
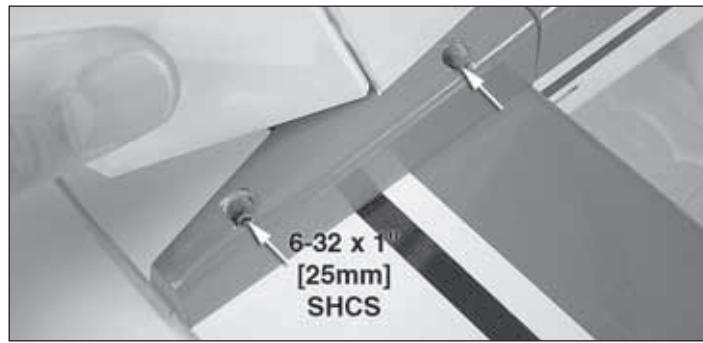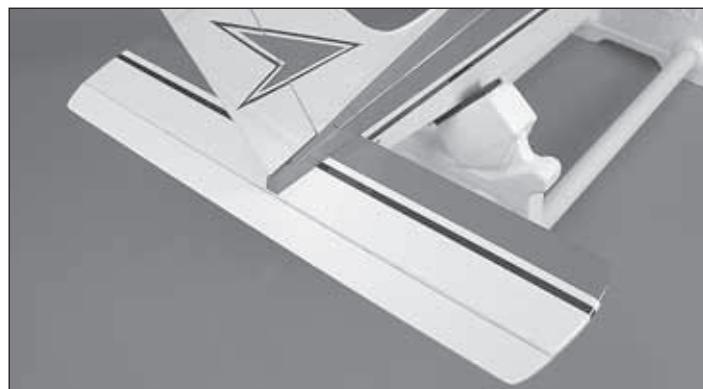
❑ 1. Place the horizontal stab onto the **stab saddle** in the **fuselage** and align the three holes in the stab with the three holes in the saddle. Align the holes in the **vertical fin base** with the holes in the stab. Press the forward end of the vertical fin into the slot in the fuselage. Use three 6-32 x 1" [25mm] SHCS and threadlocking compound to bolt the vertical fin and horizontal stab to the fuselage. A strip of red covering is provided to cover the screw holes if desired.

❑ 2. Temporarily insert a 36" [914mm] pushrod into the elevator outer pushrod tube that exits the right side of the fuselage. Use the position of the pushrod to mark the location for the elevator control horn onto the underside of the elevator.
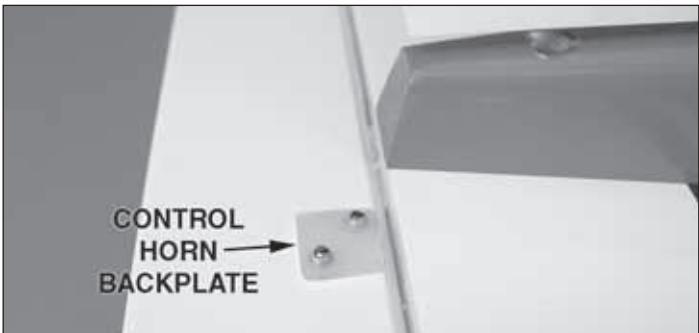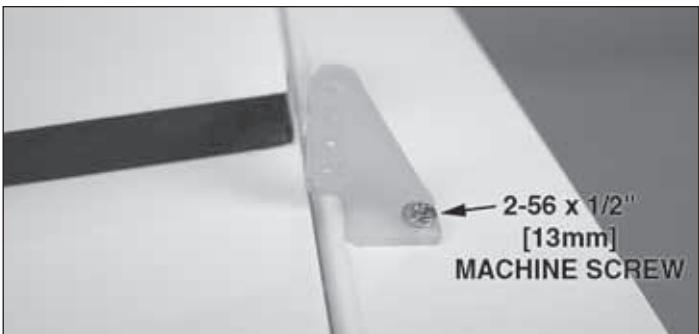
❏ 3. Drill 3/32" [2.4mm] holes at your marks completely through the elevator. Apply a couple drops of thin CA to each hole to harden the surrounding wood. Install a control horn and backplate onto the underside of the elevator using two 2-56 x 1/2" [13mm] machine screws.


❏ 4. Install a control horn onto the left side of the rudder in the same manner.

❏ 1. Cut two arms from a four-armed servo arm and enlarge the outer hole of one remaining arm with a 5/64" [2mm] drill bit and the second inner hole of the other remaining arm with the same bit. Center the rudder servo with your radio system and install the servo arm perpendicular to the servo case as shown, with the outer drilled hole toward the center of the fuselage.
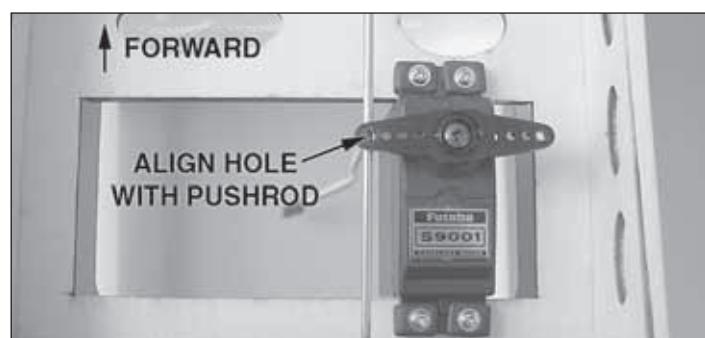
❏ 2. Temporarily insert a 36" [914mm] pushrod into the rudder outer pushrod tube. Use the pushrod to position the rudder servo onto the **servo tray** in the fuselage as shown. Align the outer hole of the inside servo arm with the pushrod. Thread a servo mounting screw (included with the servo) into each mounting hole in the servo and back it out. Apply a couple drops of thin CA to each hole in the servo tray to harden the surrounding wood. Mount the servo using the hardware included with the servo.
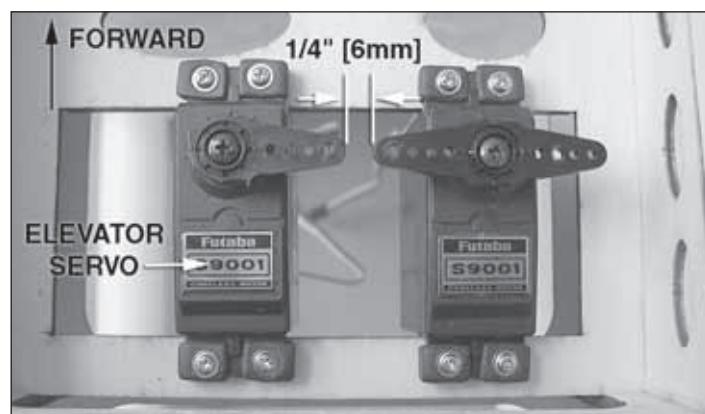

❏ 3. Cut three arms from a four-armed servo arm and enlarge the outer hole of the remaining arm with a 5/64"

[2mm] drill bit. Center the elevator servo with your radio system and install the servo arm onto the elevator servo as shown. Mount the elevator servo next to the rudder servo with a gap of approximately 1/4" [6mm] between the tips of the servo arms. Leave enough room for the throttle servo.
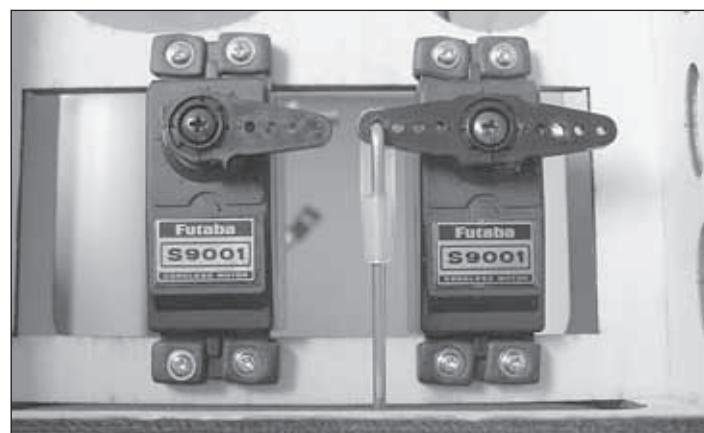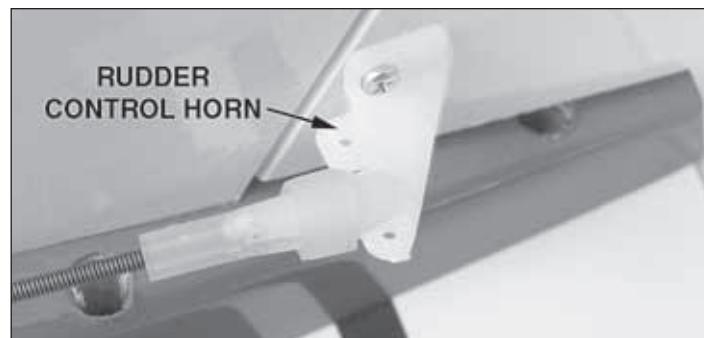
❏ 4. Thread a nylon clevis 20 complete turns onto a 36" [914mm] pushrod. Slide a silicone clevis retainer onto the clevis and connect the clevis to the third outer hole of the rudder control horn. As you did with the aileron and flap pushrods, use tape or a small clamp to hold the rudder in the neutral position. Make a mark on the pushrod where it crosses the outer hole in the servo arm. Make a 90° bend at the mark on the pushrod and cut off the excess pushrod 1/4" [6mm] beyond the bend. Attach the pushrod to the servo arm using a nylon FasLink. Thread the clevis up or down on the pushrod as necessary to center the rudder with the servo arm perpendicular to the servo case. When satisfied, slide the silicone clevis retainer to the end of the clevis to secure it.
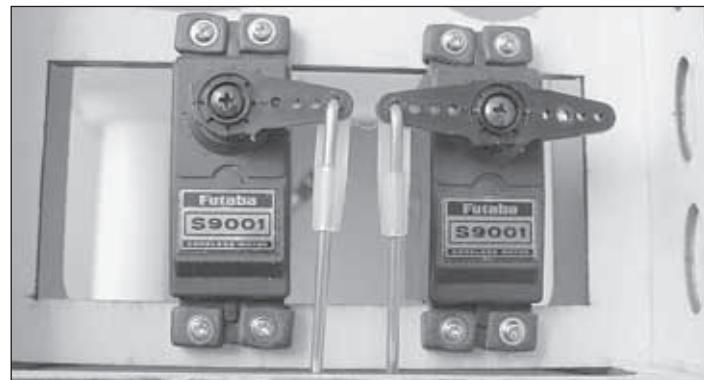

❏ 5. Install the elevator pushrod in the same manner. The clevis on the elevator pushrod should attach to the outer hole in the elevator control horn.

Glow Engine Installation

The Cherokee .40 ARF is designed to be flown with a .40 to .46 two-stroke glow engine, .56 four-stroke glow engine, or a brushless out-runner motor. If you plan to install a brushless motor, skip this section as it only contains information relevant to installing a glow engine.

Note: This section shows photos of a two-stroke engine being installed. The procedure for installing a four-stroke engine is the same. Be sure to maintain the correct drive washer distance as detailed in this section.
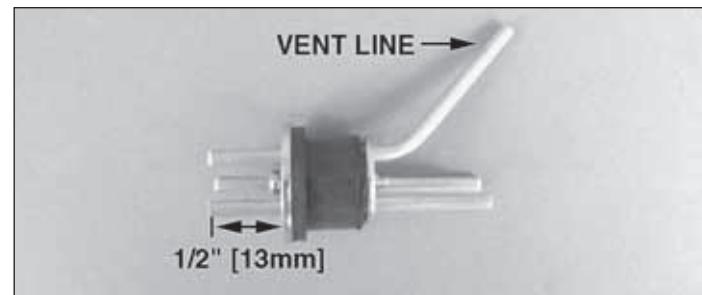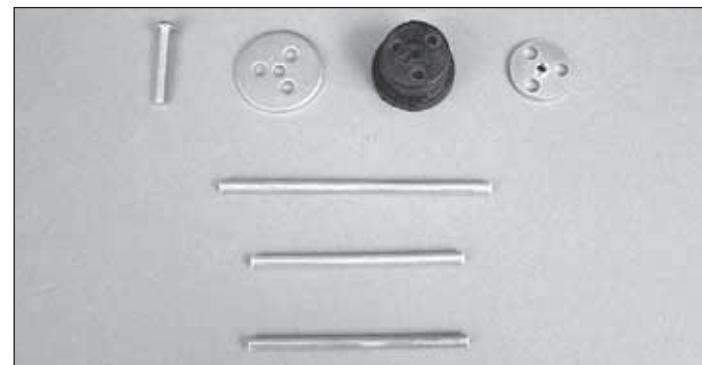
❏ 1. The fuel tank can be assembled as a two line system consisting of a vent (pressure) line to the muffler and a carb line. Filling and emptying of the tank would need to be done through the carb line, or an optional fuel fill valve (not included). The tank can also be assembled as a three line system having a vent line, carb line, and fill line. If installing a fill line, puncture the top of the stopper above the sealed off fuel tube hole. The fill and carb lines should extend out 1/2" [13mm] beyond the stopper and the vent line should be bent upwards and left uncut. With the tubes installed in the stopper, fit the stopper plates loosely in place with the 3 x 25mm Phillips screw to hold the assembly together.

Top of tank

Vent

Fill and carb lines
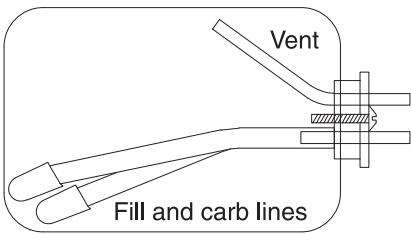
❏ 2. Fit the stopper assembly into the tank with the vent line pointing toward the top of the tank, but not touching. The fuel tubing and clunks (fuel pickup) on the carb and fill lines should almost reach the back of the tank but not touch. The clunks must be able to move freely inside the tank when assembled. Adjust the length of the fuel tubing accordingly. When satisfied, tighten the 3 x 25mm screw in the stopper to secure it in place (do not overtighten). Mark the side of the tank that must face up when installed in the plane, and we also suggest marking the tubes in the stopper.
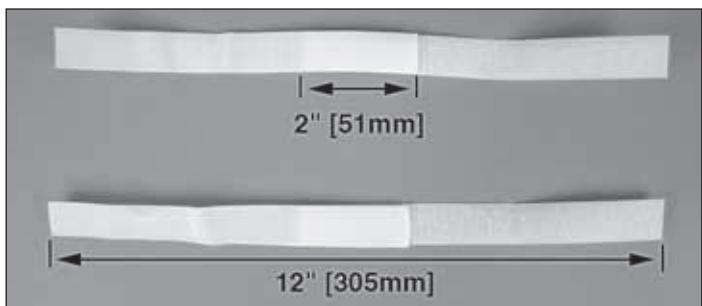
2" [51mm]

12" [305mm]

❏ 3. Make two 12" [305mm] long hook and loop straps from the included hook and loop material by overlapping the mating

ends of each side by approximately 2" [51mm]. Insert the straps into the slots in the plywood **fuel tank tray** as shown.

#2 x 1/2" [13mm] SCREWS

❏ 4. Fit the fuel tank tray into the fuselage by inserting the tab at the forward end of the tray into the slot in the firewall. Press the tray down onto the receiving tabs in the fuselage former and cross brace. Drill two 1/16" [1.6mm] holes through the tray and into the hardwood mounting blocks. Secure the tray in place using two #2 x 1/2" [13mm] screws and two #2 flat washers, being sure to harden the screw holes with thin CA.

❏ 5. Cut a piece of 1/4" [6mm] foam rubber (not included) to fit the fuel tank. Lay the foam rubber onto the fuel tank tray (it can be glued into place). Insert the neck of the tank through the hole in the firewall as far as it will go (being sure that the right side of the tank is facing up). Use the hook and loop straps to secure the tank in place.

❏ 6. Attach a 6" [152mm] piece of fuel tubing to each of the tubes in the fuel tank stopper.
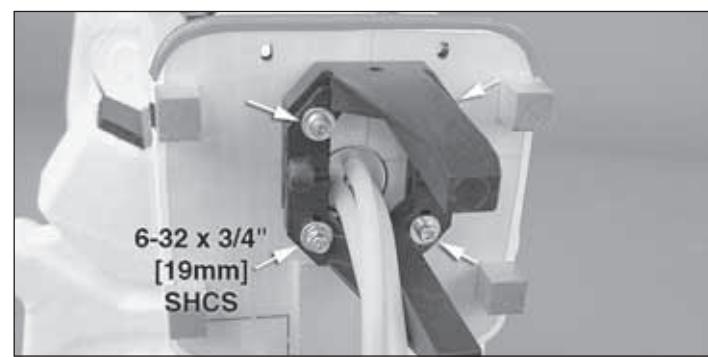
6-32 x 3/4" [19mm] SHCS

❏ 7. Using four 6-32 x 3/4" [19mm] SHCS, four #6 flat washers, four #6 lock washers, and threadlocking compound, attach the engine mount side-mounted to the firewall so that

the engine head will be on the right side. Leave the screws slightly loose. Test fit your engine between the mount halves. Slide the mount halves against the sides of the engine and finish tightening the mount screws.
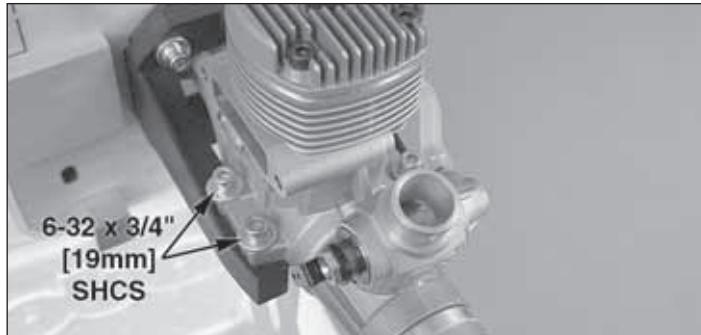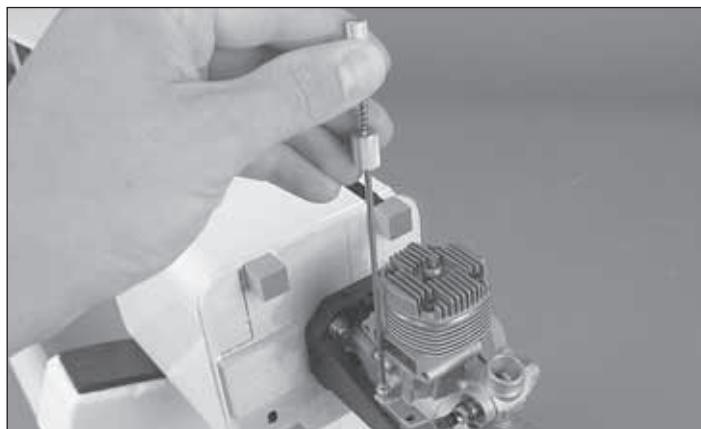
❏ 8. Position the front of the engine drive washer 4-15/16" [126mm] from the front of the engine mounting box. *(Note: The dimension is the same for both four-stroke or two-stroke engines.)* Mark the location of the engine mount holes onto the mount rails using a Dead Center Hole Locator. Remove the engine from the mount and use a 6-32 tap and drill set to create threads in the four mounting holes. Attach the engine to the mount using four 6-32 x 3/4" [19mm] SHCS, four #6 flat washers, and four #6 lock washers.
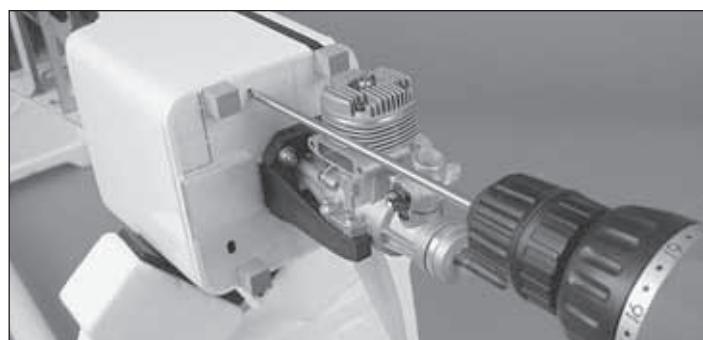
❏ 9. Drill a 3/16" [4.8mm] hole in the firewall inline with throttle arm in the carburetor using a long drill bit (if you do not have a long drill bit, you may need to temporarily remove the engine). **Be sure you do not drill through the fuel tank!** The hole in the firewall must clear the exhaust port on the engine. Also drill through the second former in the fuselage.
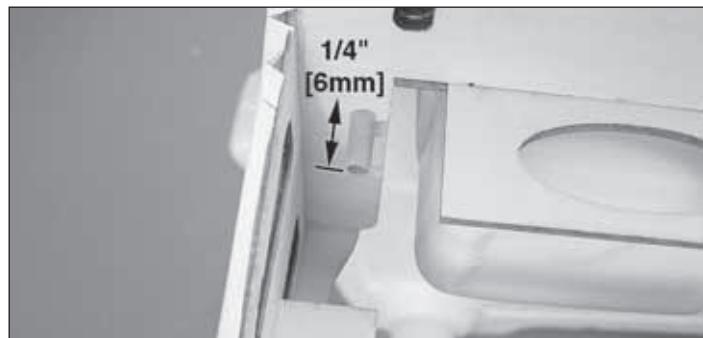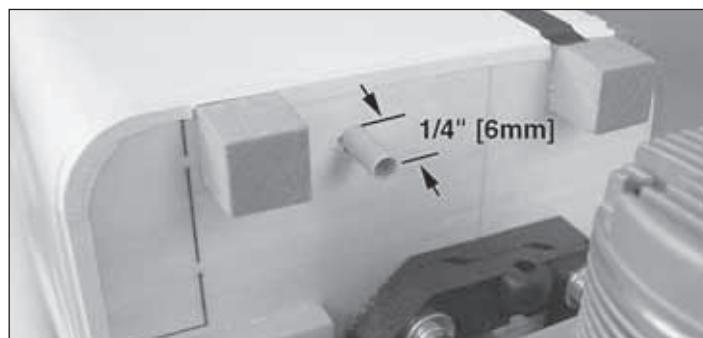
❏ 10. Cut a piece from the included outer pushrod tube long enough to extend beyond the firewall and second former approximately 1/4" [6mm]. Roughen the portion of the tube that contacts the formers using 220-grit sandpaper. Glue the tube into the holes with CA.
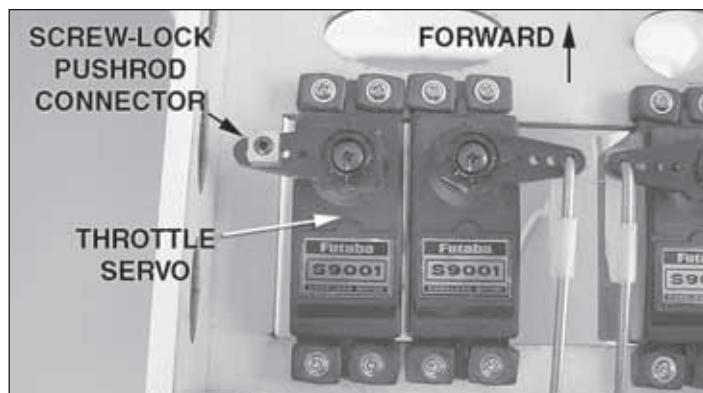
❏ 11. Cut three arms from a four-armed servo arm. Install a brass screw-lock pushrod connector using a nylon retainer

into the third outer hole in the remaining servo arm, with a 4-40 set screw loosely threaded into the connector. Center the throttle servo with your radio system and install the servo arm onto the servo as shown. Use the hardware included with the servo and install it next to the elevator servo.
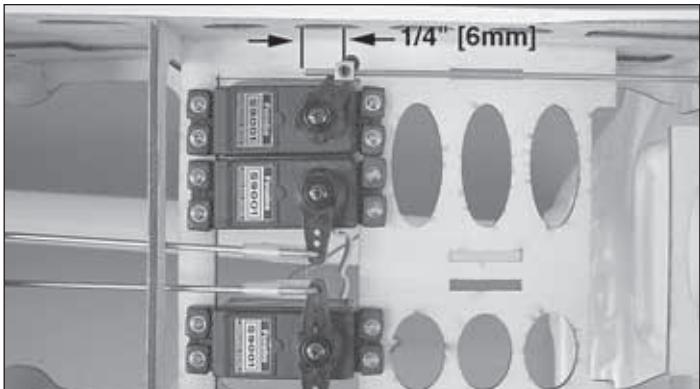
❏ 12. Install a nylon clevis and clevis retainer 20 complete turns onto a 17-1/2" [445mm] pushrod. Insert the pushrod through the forward end of the outer pushrod tube and through the screw-lock pushrod connector on the throttle servo. Connect the clevis to the throttle arm on the carburetor. If necessary, bend the pushrod in order to clear the exhaust port. Make the necessary adjustments so that the throttle servo properly opens and closes the carburetor. Tighten the 4-40 set screw against the pushrod. Cut off the excess pushrod 1/4" [6mm] behind the screw-lock pushrod connector.

Brushless Motor Installation

If you have installed a glow engine, skip this section as it only contains information relevant to installing a brushless motor.

Be sure to read and understand the instructions that come with the ESC and motor before attempting to operate the system.
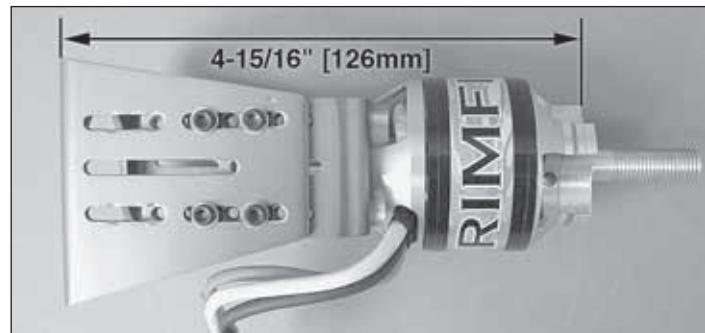
❏ 1. Attach the out-runner motor to the brushless motor mount using the included 3 x 8mm machine screws and threadlocking compound. If you haven't done so yet, install the prop adapter to the motor case with the hardware included with the motor and threadlocking compound. Loosen the screws that hold the two motor mount halves together and set the distance from the back side of the mount to the front of the prop adapter to be 4-15/16" [126mm]. Retighten the screws using threadlocking compound.
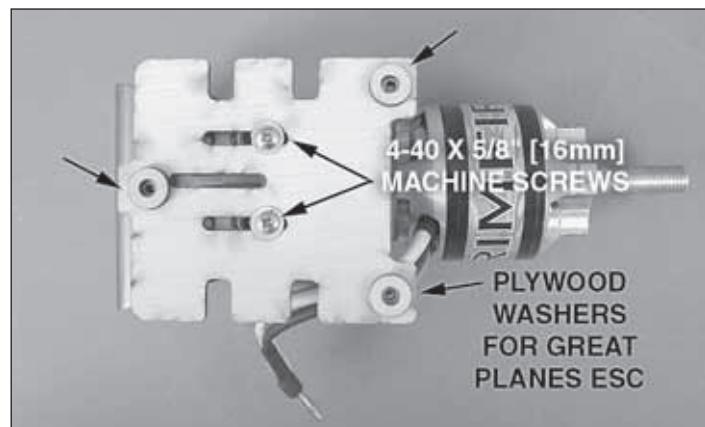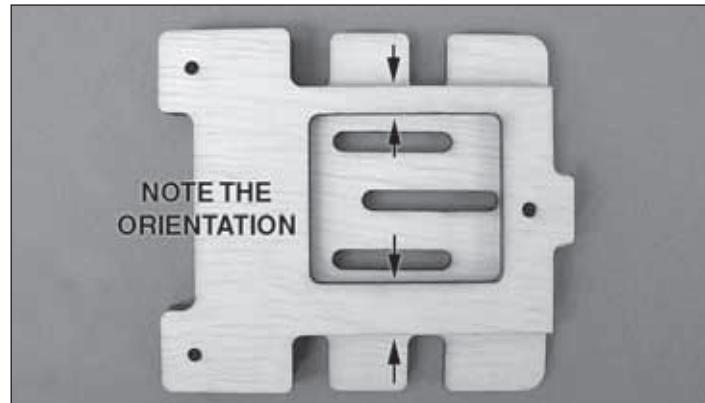
❏ 2. Glue the two **ESC mounting tray** pieces together in the orientation shown. Note that the mounting slots are slightly offset toward the top side of the mount. Be sure that the

mounting halves are glued together in the direction shown. Attach the mounting tray to the right side of the aluminum motor mount using two 4-40 x 5/8" [16mm] machine screws, two #4 flat washers and threadlocking compound (thread the screws into unused holes in the aluminum mount). If you are installing the recommended Great Planes ESC, glue the three plywood washers onto the face of the mount. Rubber band tabs are provided for other model ESCs.
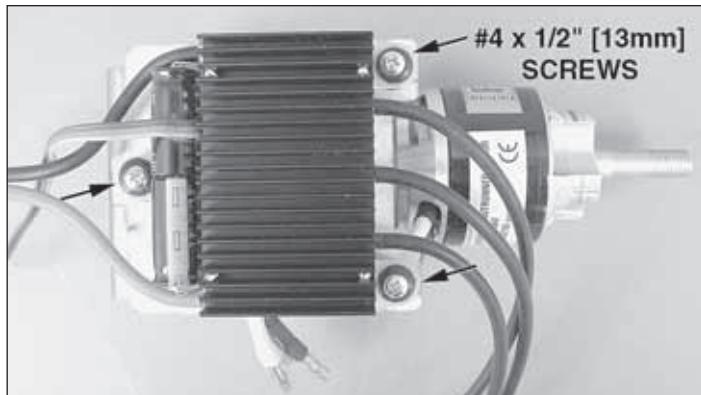
❏ 3. If using the Great Planes ESC, install it to the mounting tray using three #4 x 1/2" [13mm] self-tapping screws. Be sure to harden the holes with thin CA. If installing another model ESC, use rubber bands (not included) and self-adhesive hook and loop material (not included) to secure the ESC to the mounting tray.
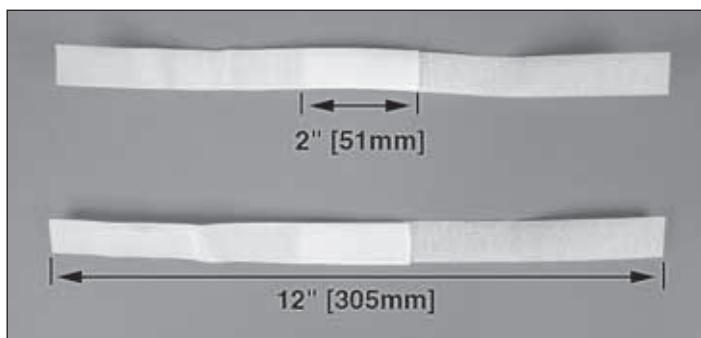
❏ 4. Make two 12" [305mm] long hook and loop straps from the included hook and loop material by overlapping the mating ends of each side by approximately 2" [51mm]. Insert the straps into the slots in the plywood **fuel tank tray** as

shown. The fuel tank tray is also used as the **battery tray** for a brushless installation.
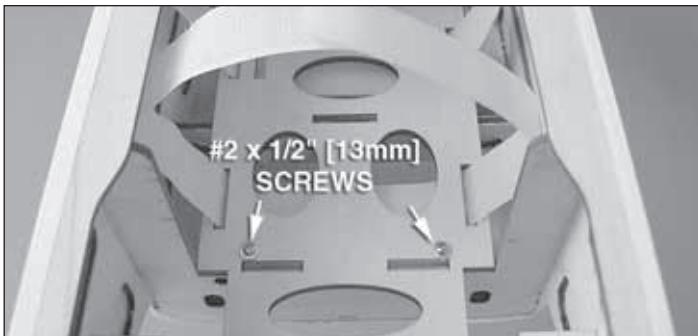
❏ 5. Fit the fuel tank tray into the fuselage by inserting the tab at the forward end of the tray into the slot in the firewall. Press the tray down onto the receiving tabs in the fuselage former and cross brace. Drill two 1/16" [1.6mm] holes through the tray and into the hardwood mounting blocks. Secure the tray in place using two #2 x 1/2" [13mm] screws and two #2 flat washers, being sure to harden the screw holes with thin CA.
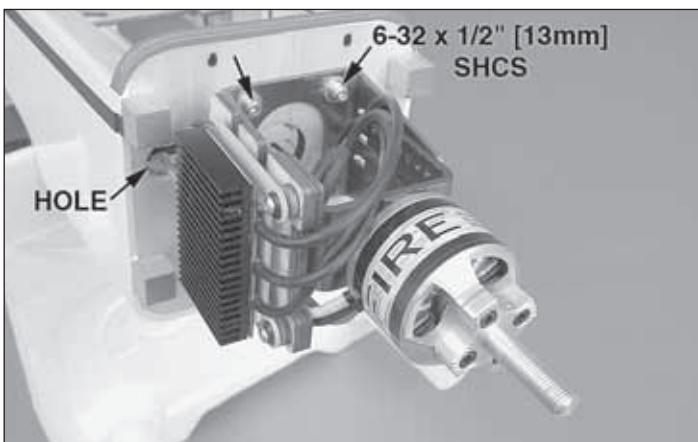
❏ 6. Drill a hole in the firewall for the battery lead from the ESC and the receiver lead. Attach the motor mount to the firewall using four 6-32 x 1/2" [13mm] SHCS, four #6 flat washers, four #6 lock washers, and threadlocking compound. Connect the motor leads on the ESC to the motor. Be sure that the leads will not interfere with the rotation of the motor.
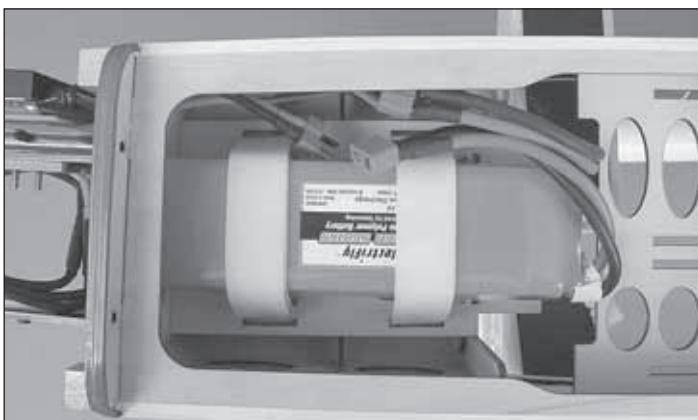
❏ 7. Apply the hook side from self-adhesive hook and loop material (not included) to the top of the fuel tank tray. A thin coat of epoxy on the tray will improve the adhesion of the hook material. Apply the mating loop material to the bottom of your

battery pack. Also use some self-adhesive hook and loop material to join the 11.1V and 7.4V packs together. The straps you made in step 4 are used to securely hold the battery packs onto the tray. Test fit your packs onto the tray and cut the straps to the desired length. Now would also be a good time to confirm the correct rotation of the motor using the ESC and radio system. If the motor rotates in the wrong direction, unhook any two motor leads and swap their positions.

Assemble & Install the Landing Gear
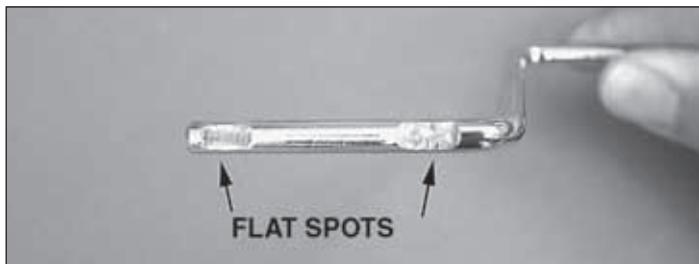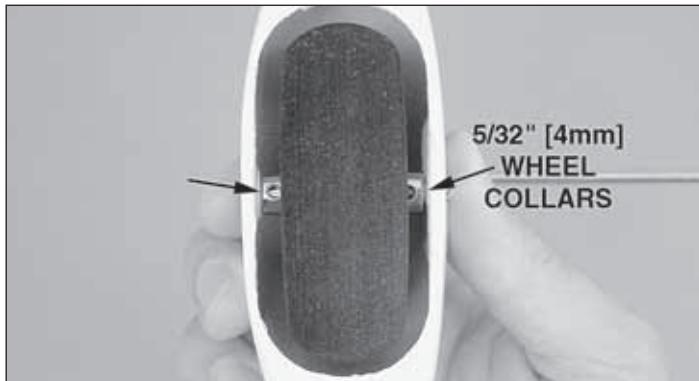
❏ 1. While fitting the axle end of the main landing gear legs into the main **wheel pants**, slide a 5/32" [4mm] wheel collar onto each axle followed by a 2-1/2" [64mm] wheel and then another 5/32" [4mm] wheel collar. Mark the location of the threaded holes in the wheel collars onto the axles. Use a file or rotary tool such as a Dremel to grind flat spots at the marks on the axles.

❏ 2. Reinstall the wheel pants, wheel collars and wheels onto the axles. Thread a 6-32 x 1/4" [6mm] SHCS into each wheel collar with threadlocking compound and tighten the screws against the flat spots on the axles. Be sure that the wheels rotate freely on the axles. Oil the axles if necessary.
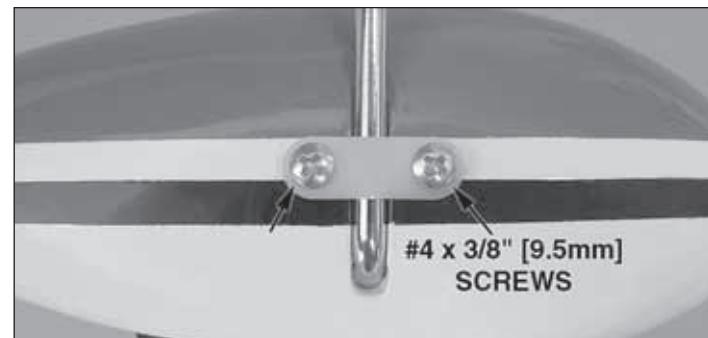
❏ 3. Place a landing gear strap over each gear leg and mark the locations for the screw holes. Drill 3/32" [2.4mm] holes at your marks, being sure not to drill into the wheels. Install a strap onto each pant using two #4 x 3/8" [9.5mm] self-tapping screws. Reinforce the holes with thin CA.

❏ 4. Fit the main landing gear legs into the slots in the underside of the wing panels. Position two nylon landing gear straps over each landing gear leg at a 45° angle as shown. Mark the locations of the screw holes onto the wing and drill holes at your marks using a 3/32" [2.4mm] drill bit. Secure the landing gear legs to the wing panels using the nylon landing gear straps and #4 x 1/2" [13mm] self-tapping screws.

❏ 5. Install the nose wheel pant and wheel onto the nose gear wire in the same manner as you did the main landing gear.

6-32" x 1/4" [6mm] SHCS — SCREW-LOCK PUSHROD CONNECTOR — 4-40 x 1/8" [3mm] SHCS — 5/32" [4mm] WHEEL COLLAR
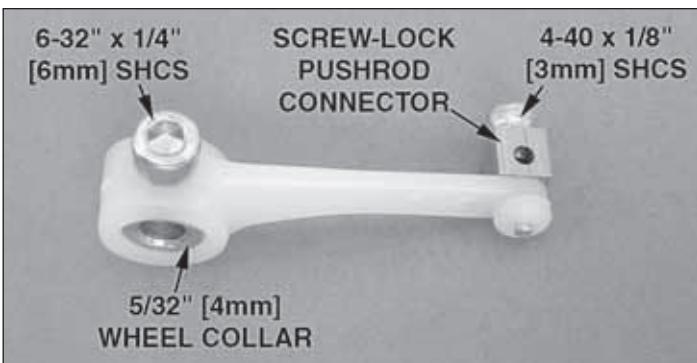
❏ 6. Fit a 5/32" [4mm] wheel collar into the nylon steering arm, aligning the threaded hole in the collar with the hole in the arm. Loosely thread a 6-32 x 1/4" [6mm] SHCS (with threadlocking compound) through the hole in the arm and into the collar. Install a brass screw-lock pushrod connector using a nylon retainer into the outer hole on the steering arm. Loosely thread a 4-40 x 1/8" [3mm] SHCS into the screw-lock pushrod connector.
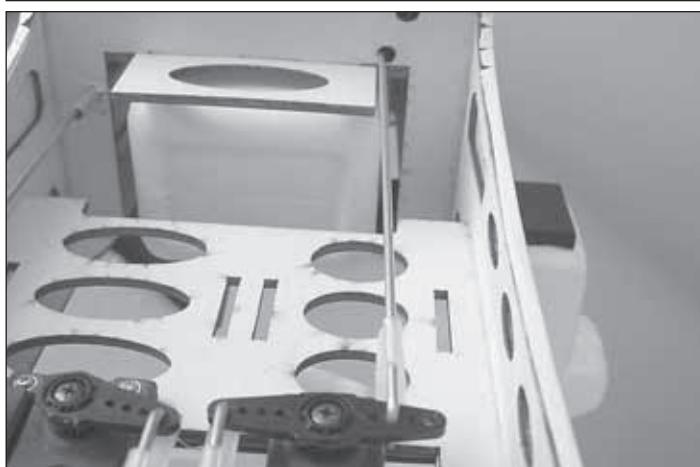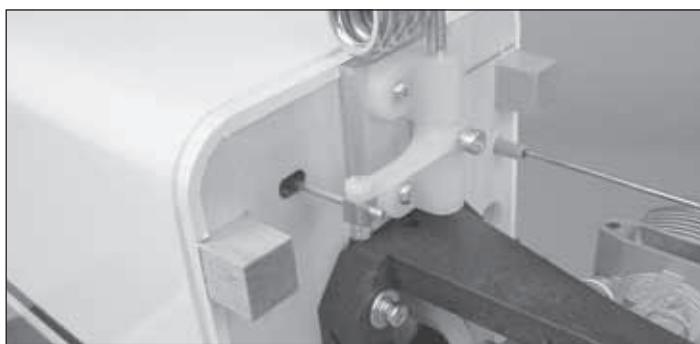
❏ 7. Fit the steering arm between the nylon steering block halves. Insert the nose gear wire up through the steering block and through the steering arm as shown. Tighten the SHCS against the flat spot in the nose gear wire.

❏ 8. Align the bottom edge of the steering block with the bottom edge of the hardwood mounting plate on the firewall. Mark the locations of the four steering block mounting holes onto the hardwood plate. Drill 3/32" [2.4mm] holes at the marks you made. Mount the steering block onto the hardwood plate using four #4 x 5/8" [16mm] self-tapping screws, being sure to harden the holes with thin CA.

FASLINK→

❏ 9. Cut off the threads from the remaining 12" [305mm] pushrod, leaving all of the unthreaded portion of the pushrod intact. Make a mark 3/16" [4.8mm] from one end of the pushrod and make a 90° bend at the mark. Fit the unbent end through the steering pushrod hole in the second fuselage former and out the hole in the firewall. Fit the forward pushrod end into the brass screw-lock pushrod connector on the nylon steering arm. Insert the bent end of the pushrod into the second inner hole in the unused side of the rudder servo arm. Secure the pushrod onto the servo arm using a nylon FasLink. With the rudder servo arm perpendicular to the servo case, rotate the nose gear wire so that the nose wheel is pointing straight. Tighten the SHCS in the brass screw-lock pushrod connector against the pushrod.

CARVE AWAY THIS AREA AS NECESSARY

MUFFLER EXTENSION

❏ 10. With the nose gear in place, the muffler can now be installed onto the engine (if applicable). Either the stock muffler can be used or a Pitts style muffler. If using the stock muffler included with the engine, a muffler extension will be required. If installing the O.S. Max #873 muffler extension (OSMG2578), the bottom right corner of the fuselage will need to be carved away in order to accommodate the muffler body. The firewall has dashed markings in this area indicating the location of the pre-installed balsa block behind the firewall. A piece of white MonoKote is included with the Cherokee .40 ARF for covering up the area that was carved away. No modification needs to be done to the fuselage when using a Pitts style muffler. However, we did cut the exhaust outlets slightly shorter for this installation.

❏ 11. If you haven't done so already, cut the fuel line and vent line (to muffler) to the correct length and connect them to the engine. The fill line should be left uncut and it can hang free from the bottom of the plane. A fuel line plug is provided for the fill line.

Install the Receiver
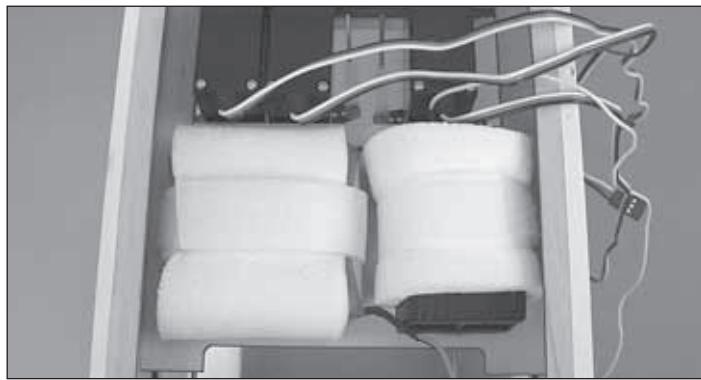
❏ 1. Make straps from the included hook and loop material to fit your receiver and receiver pack. Cut pieces of foam rubber (not included) to fit your receiver and receiver pack and strap them to the radio tray as shown.

❏ 2. Connect the servos to the receiver, being sure that the leads will not interfere with the tail pushrods. Depending on the ESC being used (if applicable), you may need a servo extension to reach the receiver. If you plan to connect the flap and aileron servos to the receiver using Y-harnesses, connect the harnesses to the receiver at this time.
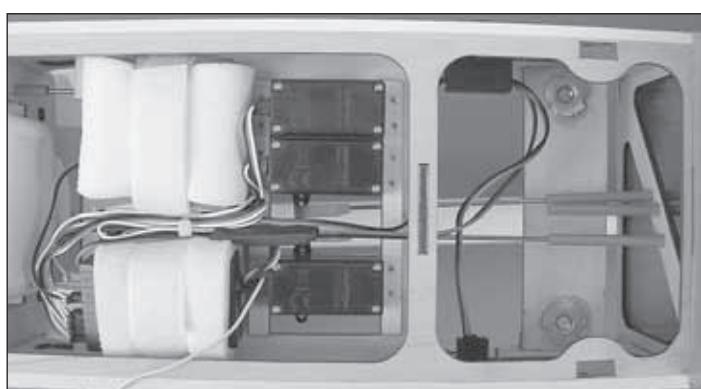
❏ 3. Install your receiver switch and charge jack onto the sides of the fuselage. Confirm that the location of your switch and charge jack will not interfere with the wing bolts when installed.

CUT

SERVO ARM

STRAIN RELIEF
INSIDE FUSELAGE
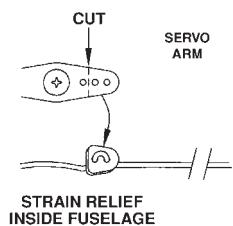
❏ 4. Install a strain relief onto the receiver antenna to protect the solder joint that secures it inside the receiver. A strain relief can be made by cutting off the end of an unused servo arm and stitching the antenna through two holes in the arm as shown. Route the antenna through the antenna tube and out the aft end of the fuselage.

Install the Cowl, Spinner & Propeller
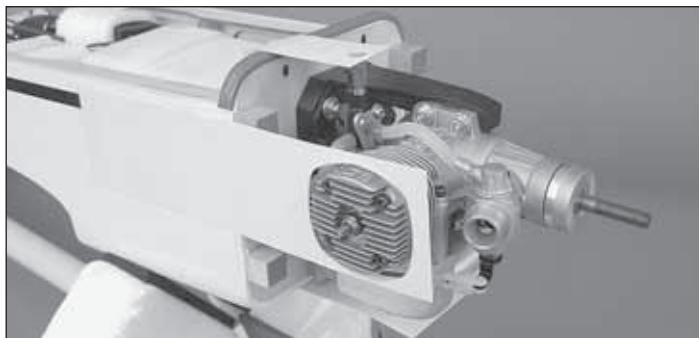
❏ 1. Before fitting the **cowl**, make any cutouts necessary for your power system. If you are installing a glow engine, a cutout must be made for the engine head, exhaust outlets, and needle valve access. Templates should be made and taped to the fuselage to accurately create the necessary cutouts in the cowl. A rotary tool such as a Dremel works very well for cutting holes in fiberglass.

MASKING TAPE

MARKS
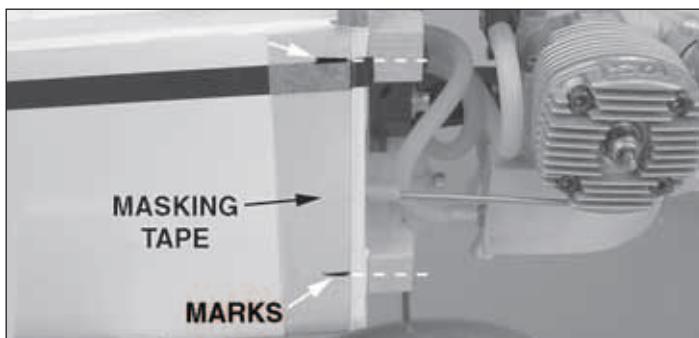
❏ 2. Apply some strips of masking tape onto both sides of the fuselage just behind the firewall. Mark onto the tape the location of the center of the **cowl mounting blocks**.
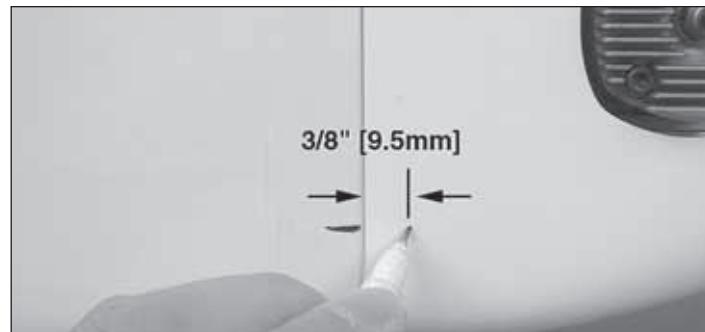
3/8" [9.5mm]

❏ 3. Fit the cowl to the fuselage and align it with the colors on the fuselage. When satisfied with the fit, tape the cowl into position. Measure 3/8" [9.5mm] forward from the aft end of the cowl at each mark you made on the masking tape. Mark the cowl for each of the four cowl mounting screws.

#2 x 1/2" [13mm] SCREWS

❏ 4. Drill 1/16" [1.6mm] holes at the marks you made on the cowl through the cowl mounting blocks. Remove the cowl and thread a #2 x 1/2" [13mm] self-tapping screw into each hole in the cowl mounting blocks and back it out. Apply a couple drops of thin CA to each hole in the blocks. Enlarge the four holes in the cowl with a 3/32" [2.4mm] bit. Install the cowl onto the fuselage using four #2 x 1/2" [13mm] self-tapping screws and four #2 flat washers.

❏ 5. If necessary, ream or drill the spinner backplate to fit the crankshaft of your engine (or brushless motor prop adapter). Install the backplate onto the crankshaft followed by the propeller. Install the prop washer and prop nut. Depending on the size propeller you are using, you may need to enlarge the propeller blade cutouts in the spinner cone. When a good fit is achieved, use the screws included with the spinner to install the spinner cone onto the backplate.

Install the Wing & Canopy Hatch

❏ 1. Fit the two wing panels onto the aluminum **wing joiner tube**. Slide the root ribs of the panels together so that the **anti-rotation pin** preinstalled in one panel fits into the mating hole of the other panel. Slide the wing dowels that are preinstalled in the LE of the wing panels into the receiving holes in the fuselage at the front of the **wing saddle**. Use two 1/4-20 nylon wing bolts to secure the wing in place.
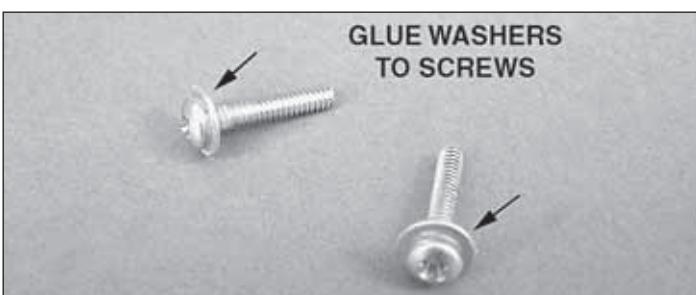
❏ 2. We suggest gluing a #4 washer to each of the two 4-40 x 5/8" [16mm] canopy hatch screws. Take care not to get glue onto the threads of the screws. This will make the screws easier to work with at the flying field.

❏ 3. Fit the **canopy hatch** in place by inserting the two dowel pins into the receiving holes at the front of the hatch opening. Use the two 4-40 x 5/8" [16mm] machine screws to secure the hatch in place.
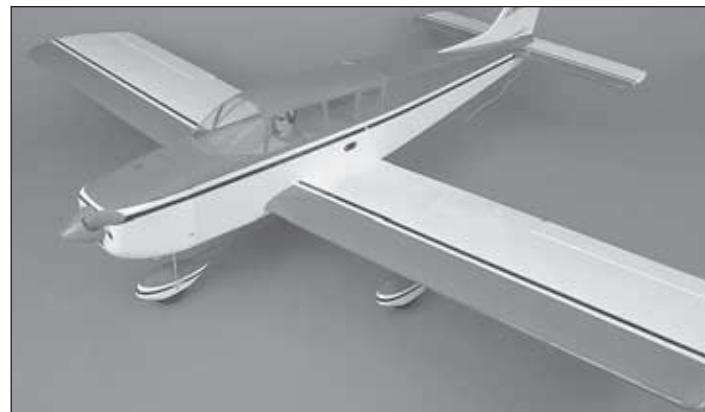
❏ 4. This completes the assembly of the Cherokee .40 ARF!

Apply the Decals

1. Use scissors or a sharp hobby knife to cut the decals from the sheet.

2. Be certain the model is clean and free from oily fingerprints and dust. Prepare a dishpan or small bucket with a mixture of liquid dish soap and warm water–about one teaspoon of soap per gallon of water. Submerse the decal in the soap and water and peel off the paper backing. **Note:** Even though the decals have a "sticky-back" and are not the water transfer type, submersing them in soap & water allows accurate positioning and reduces air bubbles underneath.

3. Position the decal on the model where desired. Holding the decal down, use a paper towel to wipe most of the water away.

4. Use a piece of soft balsa or something similar to squeegee remaining water from under the decal. Apply the rest of the decals the same way.

GET THE MODEL READY TO FLY

Install & Operate the Motor Battery (Brushless Only)

IMPORTANT: If using multiple battery packs that are connected with an adapter, never charge the batteries together through the adapter. Always charge each battery pack separately. Charge the batteries, then read the following precautions on how to connect multiple packs for flying the model.

This is how to connect four batteries in Series:

These are four 11.1V, 3200mAh batteries. When joined in Series, the result will be a 44.4V, 3200mAh battery.

OKAY

These are SERIES adapters that connect two batteries in Series.

11.1V (3-cell) 3200mAh

11.1V (3-cell) 3200mAh

22.2V 3200mAh

44.4V 3200mAh

11.1V (3-cell) 3200mAh

11.1V (3-cell) 3200mAh
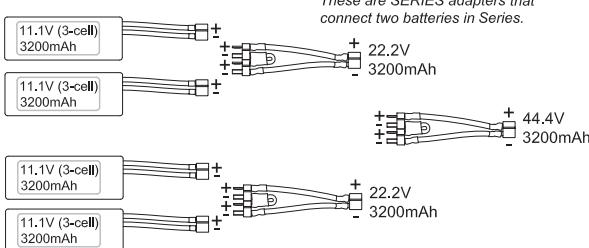
22.2V 3200mAh

Connecting batteries in **"Series"** means to connect the +'s to the –'s and the –'s to the +'s. This combines the batteries' voltages, but the capacity remains the same.

This is how to connect three batteries in Series:

These are three 11.1V, 3200mAh batteries. When joined in Series, the result will be a 33.3V, 3200mAh battery.

OKAY

11.1V (3-cell) 3200mAh

33.3V 3200mAh

11.1V (3-cell) 3200mAh

22.2V 3200mAh

11.1V (3-cell) 3200mAh
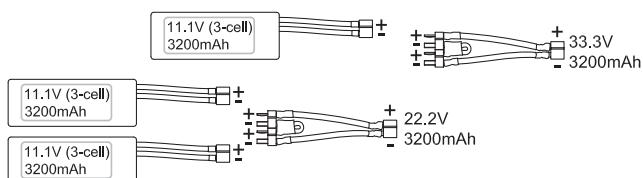
Batteries of different voltages, but not different capacities may also be connected in Series:

These are three 11.1V, 3200mAh batteries and one 7.4V, 3 200mAh battery. When joined in Series, the result will be a 40.7V, 3200mAh battery.

OKAY

Different Voltage

7.4V (3-cell) 3200mAh

11.1V (3-cell) 3200mAh

18.5V 3200mAh

40.7V 3200mAh

11.1V (3-cell) 3200mAh

11.1V (3-cell) 3200mAh

22.2V 3200mAh
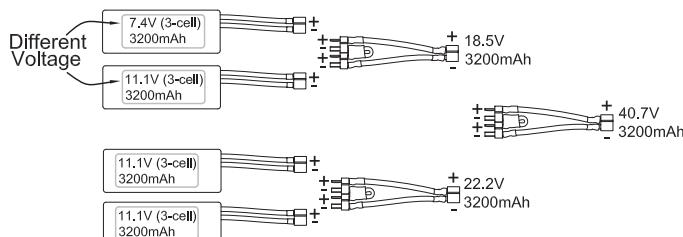
It's okay to connect batteries with different Voltages in Series to achieve the new, desired Voltage.

NO!

NEVER connect batteries that have different capacities!

11.1V (3-cell) 3200mAh

Different Capacities

11.1V (3-cell) 2500mAh

11.1V (3-cell) 3200mAh
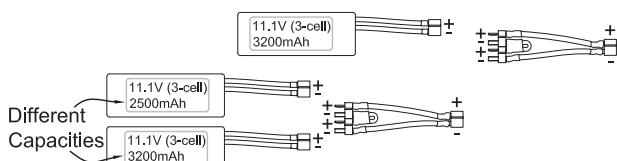
❑ 1. Turn on the transmitter and receiver and center the trims. If necessary, remove the servo arms from the servos and reposition them so they are centered. Reinstall the screws that hold on the servo arms.

❑ 2. With the transmitter and receiver still on, check all the control surfaces to see if they are centered. If necessary, adjust the clevises on the pushrods to center the control surfaces.

4-CHANNEL RADIO SETUP (STANDARD MODE 2)

ELEVATOR MOVES UP

RIGHT AILERON MOVES UP
LEFT AILERON MOVES DOWN

RUDDER MOVES RIGHT

FULL THROTTLE
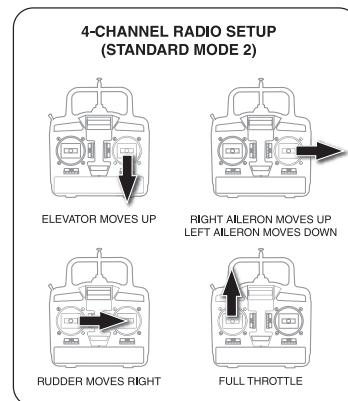
❑ 3. Make certain that the control surfaces and the carburetor respond in the correct direction as shown in the diagram. If any of the controls respond in the wrong direction, use the servo reversing in the transmitter to reverse the servos connected to those controls. Be certain the control surfaces have remained centered. Adjust if necessary.
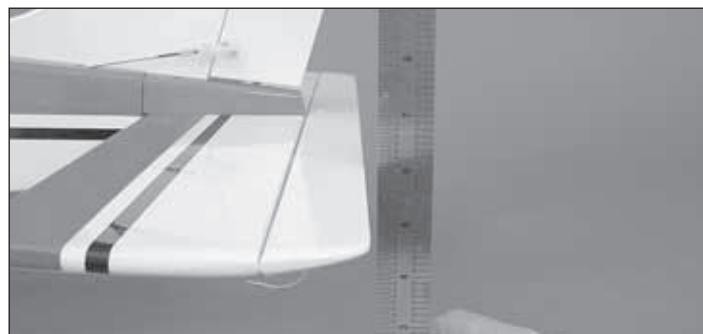
Use a Great Planes AccuThrow™ (or a ruler) to accurately measure and set the control throw of each control surface as indicated in the chart that follows. If your radio does not have dual rates, we recommend setting the throws at the low rate setting.
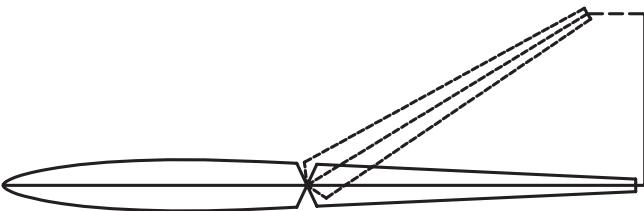
Note: The throws are measured at the **widest part** of the elevators, rudder and ailerons. If you are using a ruler to set your control surface throws, the deflection distance is measured as the height from the center TE of the control surface when moved from the neutral position as shown in the sketch. Deflection in degrees is also provided for an alternative measuring method.

These are the recommended control surface throws:

	High Rate	Low Rate
ELEVATOR:	1/2" [13mm] 21 deg up	3/8" [9.5mm] 16 deg up
	1/2" [13mm] 21 deg down	3/8" [9.5mm] 16 deg down
RUDDER:	1-1/4" [32mm] 34 deg right	5/8" [16mm] 17 deg right
	1-1/4" [32mm] 34 deg left	5/8" [16mm] 17 deg left
AILERONS:	1" [25mm] 24 deg up	7/16" [11mm] 10 deg up
	1" [25mm] 24 deg down	7/16" [11mm] 10 deg down
FLAPS:	(Full) 9/16" [14mm] 24 deg	
	(1/2) 5/16" [8mm] 13 deg	

IMPORTANT: The Cherokee .40 ARF has been **extensively** flown and tested to arrive at the throws at which it flies best. Flying your model at these throws will provide you with the greatest chance for successful first flights. If, after you have become accustomed to the way the Cherokee .40 ARF flies, you would like to change the throws to suit your taste, that is fine. However, too much control throw could make the model difficult to control, so remember, "more is not always better."

Balance the Model (C.G.)

More than any other factor, the **C.G.** (balance point) can have the **greatest** effect on how a model flies, and may determine whether or not your first flight will be successful. If you value this model and wish to enjoy it for many flights, **DO NOT OVERLOOK THIS IMPORTANT PROCEDURE.** A model that is not properly balanced will be unstable and possibly unflyable.

At this stage the model should be in ready-to-fly condition with all of the systems in place including the engine or brushless motor, landing gear, and the radio system (and battery pack if applicable).

❏ 1. Use a felt-tip pen or 1/8" [3mm]-wide tape to accurately mark the C.G. on the top of the wing on both sides of the fuselage. The C.G. is located 3-1/16" [78mm] back from the LE of the wing.

This is where your model should balance for the first flights. Later, you may wish to experiment by shifting the C.G. up to 7/16" [11mm] forward or 7/16" [11mm] back to change the flying characteristics. Moving the C.G. forward may improve the smoothness and stability, but the model may then require more speed for takeoff and make it more difficult to slow for landing. Moving the C.G. aft makes the model more maneuverable, but could also cause it to become too difficult to control. In any case, **start at the recommended balance point** and do not at any time balance the model outside the specified range.

❏ 2. With the wing attached to the fuselage, all parts of the model installed (ready to fly) and an empty fuel tank, place the model upside-down on a Great Planes C.G. Machine, or lift it upside-down at the balance point you marked.

❏ 3. If the tail drops, the model is "tail heavy" and the battery pack and/or receiver must be shifted forward or weight must be added to the nose to balance. If the nose drops, the model is "nose heavy" and the battery pack and/or receiver must be shifted aft or weight must be added to the tail to balance. If possible, relocate the battery pack and receiver to minimize or eliminate any additional ballast required. If additional weight is required, nose weight may be easily added by using a "spinner weight" (GPMQ4645 for the 1 oz. [28g] weight, or GPMQ4646 for the 2 oz. [57g] weight). If spinner weight is not practical or is not enough, use Great Planes (GPMQ4485) "stick-on" lead. A good place to add stick-on nose weight is to the firewall (don't attach weight to the cowl–it is not intended to support weight). Begin by placing incrementally increasing amounts of weight on the bottom of the fuselage over the firewall until the model balances. Once you have determined the amount of weight required, it can be permanently attached. If required, tail weight may be added by cutting open the bottom of the fuselage and gluing it permanently inside.

Note: Do not rely upon the adhesive on the back of the lead weight to permanently hold it in place. Over time, fuel and exhaust residue may soften the adhesive and cause the weight to fall off. Use #2 sheet metal screws, RTV silicone or epoxy to permanently hold the weight in place.

❏ 4. **IMPORTANT:** If you found it necessary to add any weight, recheck the C.G. after the weight has been installed.

Balance the Model Laterally

❏ 1. With the wing level, have an assistant help you lift the model by the engine propeller shaft and the bottom of the fuselage under the TE of the fin. Do this several times.

❏ 2. If one wing always drops when you lift the model, it means that side is heavy. Balance the airplane by adding weight to the other wing tip. **An airplane that has been laterally balanced will track better in loops and other maneuvers.**

PREFLIGHT

Indentify Your Model

No matter if you fly at an AMA sanctioned R/C club site or if you fly somewhere on your own, you should always have your name, address, telephone number and AMA number on or inside your model. It is **required** at all AMA R/C club flying sites and AMA sanctioned flying events. Fill out the identification tag on page 28 (or on the decal sheet) and place it on or inside your model.

Charge the Batteries

Follow the battery charging instructions that came with your radio control system to charge the batteries. You should always charge your transmitter and receiver batteries the night before you go flying, and at other times as recommended by the radio manufacturer.

CAUTION: Unless the instructions that came with your radio system state differently, the **initial** charge on **new** transmitter and receiver batteries should be done for 15 hours **using the slow-charger that came with the radio system**. This will "condition" the batteries so that the next charge may be done using the fast-charger of your choice. If the initial charge is done with a fast-charger the batteries may not reach their full capacity and you may be flying with batteries that are only partially charged.

Balance Propellers

Carefully balance your propeller and spare propellers before you fly. An unbalanced prop can be the single most significant cause of vibration that can damage your model. Not only will engine mounting screws and bolts loosen, possibly with disastrous effect, but vibration may also damage your radio receiver and battery. Vibration can also cause your fuel to foam, which will, in turn, cause your engine to run hot or quit.

We use a Top Flite Precision Magnetic Prop Balancer (TOPQ5700) in the workshop and keep a Great Planes Fingertip Prop Balancer (GPMQ5000) in our flight box.

Ground Check

If the engine is new, follow the engine manufacturer's instructions to break-in the engine. After break-in, confirm that the engine idles reliably, transitions smoothly and rapidly to full power and maintains full power–indefinitely. After you run the engine on the model, inspect the model closely to make sure all screws remained tight, the hinges are secure, the prop is secure and all pushrods and connectors are secure.

Range Check

Ground check the operational range of your radio before the first flight of the day. With the transmitter antenna collapsed and the receiver and transmitter on, you should be able to walk at least 100 feet away from the model and still have control. Have an assistant stand by your model and, while you work the controls, tell you what the control surfaces are doing. Repeat this test with the engine running at various speeds with an assistant holding the model, using hand signals to show you what is happening. If the control surfaces do not respond correctly, **do not fly!** Find and correct the problem first. Look for loose servo connections or broken wires, corroded wires on old servo connectors, poor solder joints in your battery pack or a defective cell, or a damaged receiver crystal from a previous crash.

ENGINE SAFETY PRECAUTIONS

Failure to follow these safety precautions may result in severe injury to yourself and others.

Keep all engine fuel in a safe place, away from high heat, sparks or flames, as fuel is very flammable. Do not smoke near the engine or fuel; and remember that engine exhaust gives off a great deal of deadly carbon monoxide. Therefore, do not run the engine in a closed room or garage.

Get help from an experienced pilot when learning to operate engines.

Use safety glasses when starting or running engines.

Do not run the engine in an area of loose gravel or sand; the propeller may throw such material in your face or eyes.

Keep your face and body as well as all spectators away from the plane of rotation of the propeller as you start and run the engine.

Keep these items away from the prop: loose clothing, shirt sleeves, ties, scarves, long hair or loose objects such as pencils or screwdrivers that may fall out of shirt or jacket pockets into the prop.

Use a "chicken stick" or electric starter to start the engine. Do not use your fingers to flip the propeller. Make certain the glow plug clip or connector is secure so that it will not pop off or otherwise get into the running propeller.

Make all engine adjustments from behind the rotating propeller.

The engine gets hot! Do not touch it during or right after operation. Make sure fuel lines are in good condition so fuel will not leak onto a hot engine, causing a fire.

To stop a glow engine, cut off the fuel supply by closing off the fuel line or following the engine manufacturer's recommendations. Do not use hands, fingers or any other body part to try to stop the engine. Do not throw anything into the propeller of a running engine.

LITHIUM BATTERY HANDLING & USAGE

WARNING!! Read the entire instruction sheet included with your battery. Failure to follow all instructions could cause permanent damage to the battery and its surroundings, and cause bodily harm!

- ONLY use a LiPo approved charger. NEVER use a NiCd/NiMH peak charger!
- NEVER charge in excess of 4.20V per cell.
- ONLY charge through the "charge" lead. NEVER charge through the "discharge" lead.
- NEVER charge at currents greater than 1C.
- ALWAYS set charger's output volts to match battery volts.
- ALWAYS charge in a fireproof location.
- NEVER trickle charge.
- NEVER allow the battery temperature to exceed 150° F [65° C].
- NEVER disassemble or modify pack wiring in any way or puncture cells.
- NEVER discharge below 2.5V per cell.
- NEVER place on combustible materials or leave unattended during charge or discharge.
- ALWAYS KEEP OUT OF REACH OF CHILDREN.

AMA SAFETY CODE (excerpts)

Read and abide by the following excerpts from the Academy of Model Aeronautics Safety Code. For the complete Safety Code refer to *Model Aviation* magazine, the AMA web site or the Code that came with your AMA license.

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 aircraft 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.

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

7) I will not operate models with pyrotechnics (any device that explodes, burns, or propels a projectile of any kind).

Radio Control

1) I will have completed a successful radio equipment ground 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.

5) **I will not knowingly operate my model within three miles of any pre-existing flying site except in accordance with the frequency sharing agreement listed** (in the complete AMA Safety Code).

9) Under no circumstances may a pilot or other person touch a powered model in flight; **nor should any part of the model other than the landing gear, intentionally touch the ground, except while landing.**

CHECK LIST

During the last few moments of preparation your mind may be elsewhere anticipating the excitement of the first flight. Because of this, you may be more likely to overlook certain checks and procedures that should be performed before the model is flown. To help avoid this, a check list is provided to make sure these important areas are not overlooked. Many are covered in the instruction manual, so where appropriate, refer to the manual for complete instructions. Be sure to check the items off as they are completed.

❏ 1. Check the C.G. according to the measurements provided in the manual.
❏ 2. Be certain the battery and receiver are securely mounted in the fuselage. Simply stuffing them into place with foam rubber is not sufficient.
❏ 3. Extend your receiver antenna.
❏ 4. Balance your model *laterally* as explained in the instructions.
❏ 5. Use threadlocking compound to secure critical fasteners such as the set screws that hold the wheel axles to the struts, screws that hold the carburetor arm (if applicable), screw-lock pushrod connectors, etc.
❏ 6. Add a drop of oil to the axles so the wheels will turn freely.
❏ 7. Make sure all hinges are **securely** glued in place.

❏ 8. Reinforce holes for wood screws with thin CA where appropriate (servo mounting screws, cowl mounting screws, etc.).
❏ 9. Confirm that all controls operate in the correct direction and the throws are set up according to the manual.
❏ 10. Make sure there are silicone retainers on all the clevises and that all servo arms are secured to the servos with the screws included with your radio.
❏ 11. Secure connections between servo wires and Y-connectors or servo extensions, and the connection between your battery pack and the on/off switch with vinyl tape, heat shrink tubing or special clips suitable for that purpose.
❏ 12. Make sure any servo extension cords you may have used do not interfere with other systems (servo arms, pushrods, etc.).
❏ 13. Secure the pressure tap (if used) to the muffler with high temp RTV silicone, threadlocking compound or J.B. Weld.
❏ 14. Make sure the fuel lines are connected and are not kinked.
❏ 15. Balance your propeller (and spare propellers).
❏ 16. Tighten the propeller nut and spinner.
❏ 17. Place your name, address, AMA number and telephone number on or inside your model.
❏ 18. Cycle your receiver battery pack (if necessary) and make sure it is fully charged.
❏ 19. If you wish to photograph your model, do so before your first flight.
❏ 20. Range check your radio when you get to the flying field.

FLYING

The Cherokee .40 ARF is a great-flying model that flies smoothly and predictably. The Cherokee .40 ARF does not, however, possess the self-recovery characteristics of a primary R/C trainer and should be flown only by experienced R/C pilots.

Fuel Mixture Adjustments

A fully cowled engine may run at a higher temperature than an un-cowled engine. For this reason, the fuel mixture should be richened so the engine runs at about 200 rpm below peak speed. By running the engine slightly rich, you will help prevent dead-stick landings caused by overheating.

Takeoff

If you have dual rates on your transmitter, set the switches to "high rate" for takeoff, especially when taking off in a crosswind. Although this model has good low-speed characteristics, you should always build up as much speed as your runway will permit before lifting off, as this will give you a safety margin in case of a "flame-out." When you first

advance the throttle the plane will usually turn left slightly. Correct by applying sufficient right rudder to hold it straight down the runway. When the plane has sufficient flying speed, lift off by smoothly applying up elevator (don't "jerk" it off into a steep climb!), and climb out gradually. Do not use flaps for your initial takeoff. After you have the feel of the Cherokee .40 ARF, takeoffs may be made with the flaps set at 50%.

Flight

We recommend that you take it easy with your Cherokee .40 ARF for the first several flights, gradually "getting acquainted" with this realistic model as your engine gets fully broken-in. Add and practice one maneuver at a time, learning how she behaves in each. For ultra-smooth flying and normal maneuvers, we recommend using the "low rate" settings as listed on page 24. Though the full-scale Cherokee is not rated for aerobatics, the Cherokee .40 ARF is capable of some graceful aerobatic maneuvers. Well before it's time to land, fly your Cherokee .40 ARF to a safe altitude. Cut the throttle to an idle, lower the flaps completely and check out the model's low-speed characteristics. Do this several times to become familiar with how the Cherokee .40 ARF handles stalls. This also helps you learn what to expect when landing.

CAUTION (THIS APPLIES TO ALL R/C AIRPLANES): If, while flying, you notice an alarming or unusual sound such as a low-pitched "buzz," this may indicate control surface *flutter*. Flutter occurs when a control surface (such as an aileron or elevator) or a flying surface (such as a wing or stab) rapidly vibrates up and down (thus causing the noise). In extreme cases, if not detected immediately, flutter can actually cause the control surface to detach or the flying surface to fail, thus causing loss of control followed by an impending crash. The best thing to do when flutter is detected is to slow the model immediately by reducing power, then land as soon as safely possible. Identify which surface fluttered (so the problem may be resolved) by checking all the servo grommets for deterioration or signs of vibration. Make certain all pushrod linkages are secure and free of play. If it fluttered once, under similar circumstances it will probably flutter again unless the problem is fixed. Some things which can cause flutter are; Excessive hinge gap; Not mounting control horns solidly; Poor fit of clevis pin in horn; Side-play of wire pushrods caused by large bends; Excessive free play in servo gears; Insecure servo mounting; and one of the most prevalent causes of flutter; Flying an over-powered model at excessive speeds.

Landing

When it's time to land, fly a normal landing pattern and approach. The Cherokee .40 ARF may bleed off airspeed more rapidly than the sport planes you are used to. For this reason, be prepared to carry a little power during approach. For your first landings, plan to approach slightly faster than stall speed and flare a few inches off the runway onto the main wheels.

Flaps

Full flaps make the Cherokee .40 ARF very steady in the landing pattern, but just carry a little extra power to make up for the extra drag. The extra drag of the flaps also allows you to make shorter, steeper approaches. The Cherokee .40 ARF needs to touch down with a nose high attitude to avoid whacking the nose gear and skipping back into the air. For this reason, landings with flaps require a deliberate flare with high rate elevator to raise the nose. Touch and go's and go-arounds can be accomplished with full flaps. Just use the elevator to establish a shallow climb. It is preferred to have the flaps up or at "half" setting for takeoffs and climb-outs because the plane will accelerate and climb much better.

Have a ball! But always stay in control and fly in a safe manner.

GOOD LUCK AND GREAT FLYING!

This model belongs to:	Name	Address	City, State Zip	Phone number	AMA number

Make a copy of this identification tag and put it on or inside your model.