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Building Guide for Assembling Wood Model Kits

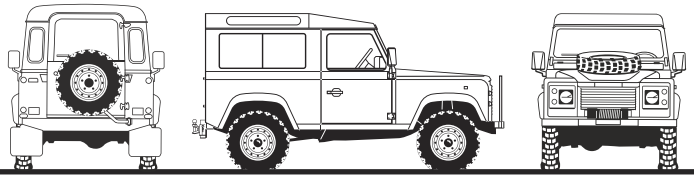
1/18th SEMI-SCALE REALISTIC DISPLAY

*Not suitable for children under 6 years of age; assembly with adult supervision recommended. *Models can be painted or kept in the original wood patina as shown.

While this building guide features the assembly of RNGWK90, steps, tips and notes are applicable to every wood model kit.

WOOD MODEL PARTS

DEFENDER

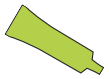


LAND ROVER DEFENDER 90 KIT

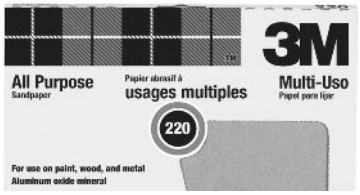
MADE IN THE UK

Recommended Tools

NOTE: A shoebox or container(s) with a top works great for holding all the small parts. This is helpful for not losing parts.



NOTE: Where indicated, apply CA Super Glue as shown with this icon.

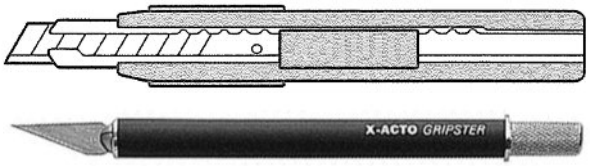


220–320 Grit Sandpaper
Used for sanding wood surfaces smooth.

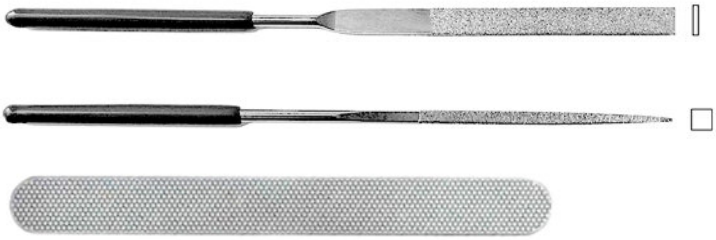
Medium CA Super Glue
(Cyanoacrylate) net weight, 20g. Available at most hardware stores nationwide.

Nail Polish Remover
(Acetone), use in well ventilated area - used to debond CA Super Glue. Available at most drug stores.

Modeling Knife
Typical modeling or hobby knife works, best is an X-Acto with #11 blade as shown.



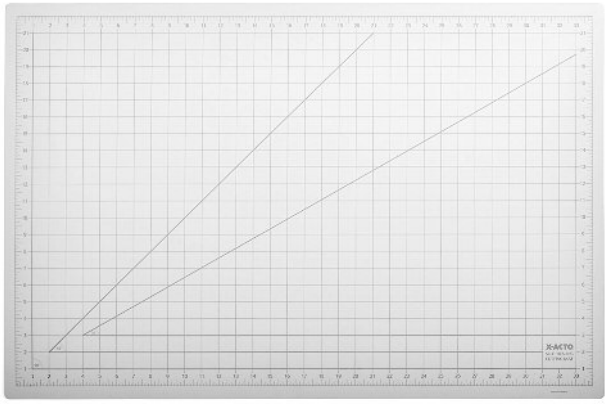
Modeling, Hobby Files
Square and or flat diamond type files work the best. An emory board, nail file or 220 sandpaper wrapped and glued around a small match stick will also work.



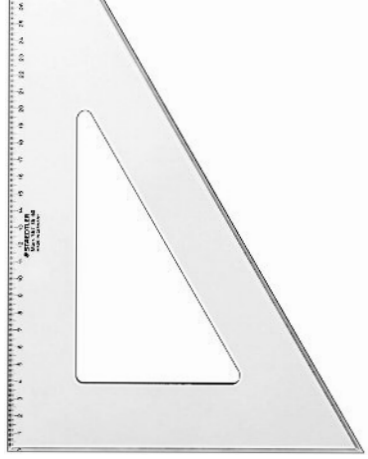
WARNING: I recommend using a Super Glue GEL formula – it stays put and doesn't wick as easily as regular super glue. Pay attention, you can glue your fingers together! Use in a well ventilated area. If the odor bothers you, a small fan blowing on your work area helps.

In steps 9B–9I building the wheels, you will need to glue parts that require using super glue in tight areas. Take your time, be patient and keep a disposable cloth or heavy duty shop towel available to wipe up any excess in a hurry. Keep alert of where you glue and what you handle that is still drying. **If you accidentally glue your fingers together – don't try to force them apart, it will break the skin before the bond – see unsticking remedy tip on page 10.**

Read before assembly
*Study the instructions thoroughly before assembly. *There are many small parts. * Assemble them carefully referring to the photos in this guide. *It is highly recommended to assemble each step in order exactly as shown.



Cutting mat or similar material to protect surface underneath working area
Self-healing cutting mat or suitable surface to protect work tables from knife, file and sanding marks.



90° Triangle
Small 30°, 60°, 90° triangle for checking surfaces

Introduction

Welcome to the build guide for our wood model kits.
This guide is to be used in conjunction with each wood model kit to help a first-time or seasoned model builder. Following these detailed notes and photos will give you the knowledge on how to work with a laser cut wood model assembly process and make building a fun experience.

This kit requires the use of sharp tools, sharp pointed instruments for filing and Super Glue that can stick your fingers together. Please read through the entire builde guide and familiarize yourself with what is involved before starting.

Whether you plan to make this a parent and child learning experience or want to build this yourself, I hope my decades of model building knowledge can help steer you along. Happy Land Rover Model Building!

Cheers,
Thompson Smith
Art/Creative Director, Rovers North

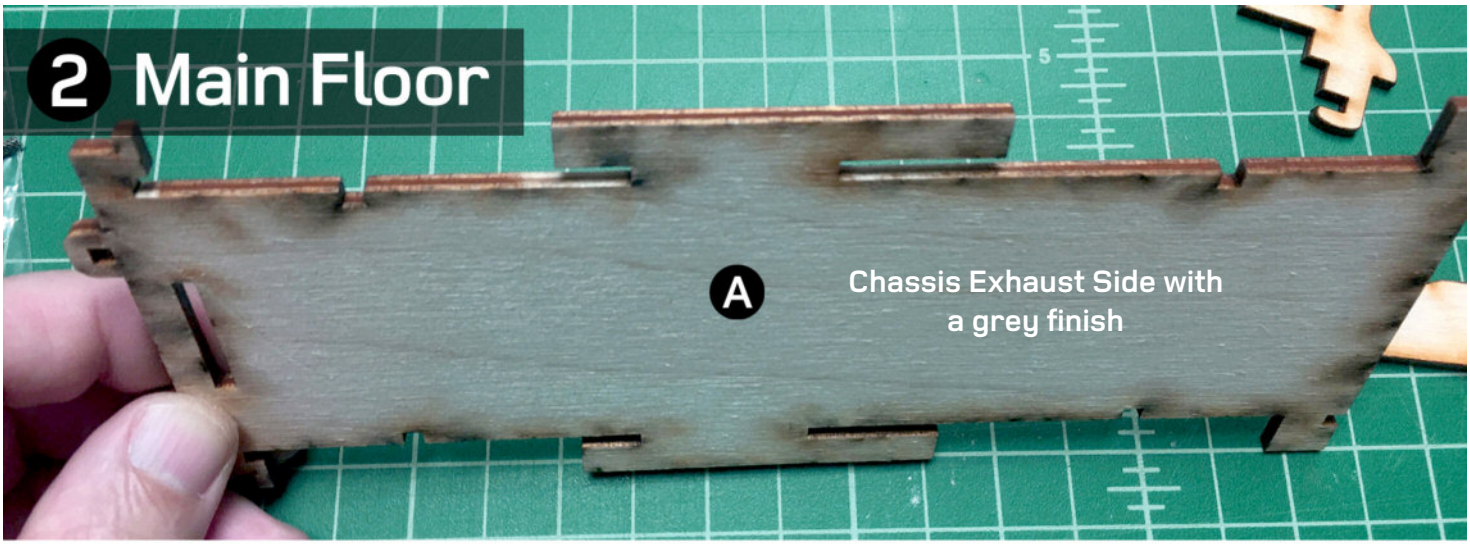
1 Locate Chassis Parts

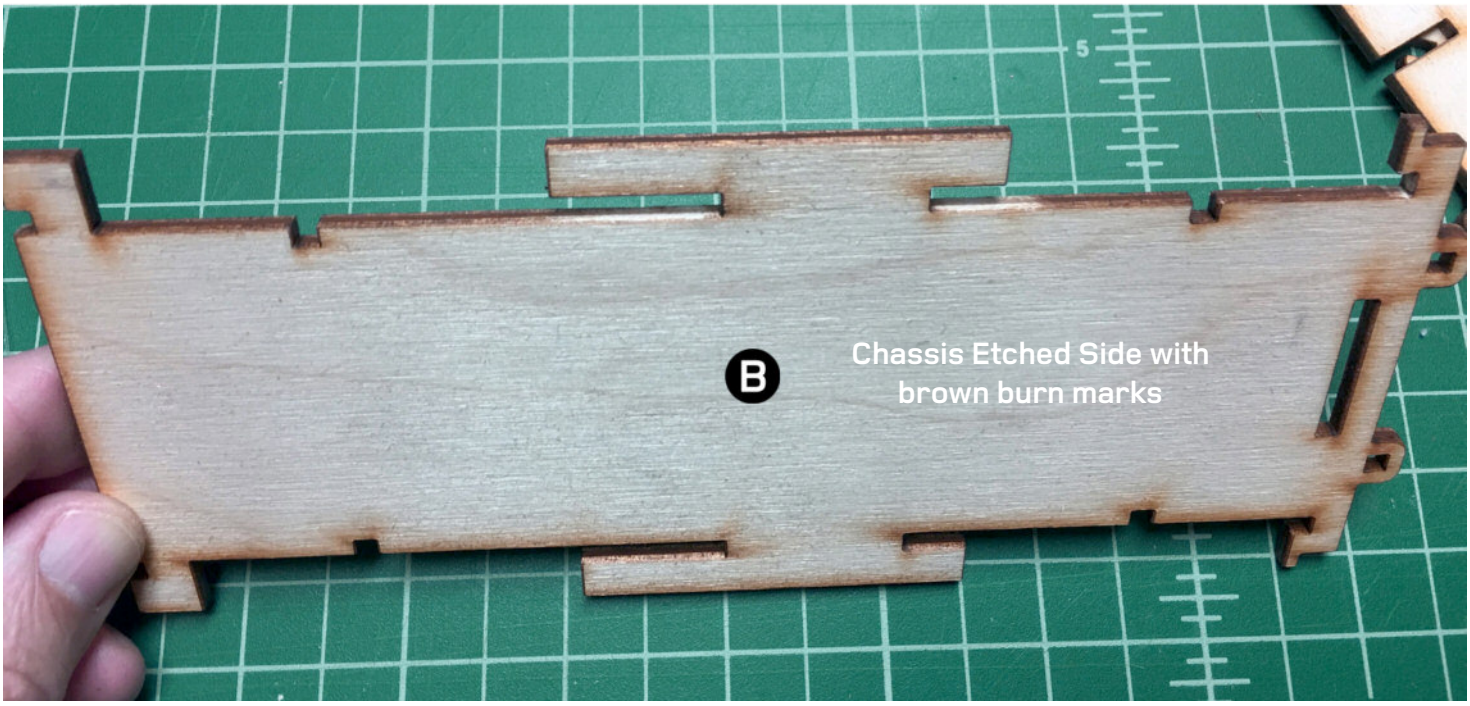
Start the Defender 90 wood model kit build by locating the chassis parts as shown above.

- Chassis flat base x1
- Chassis sides x2

TIP: In step 3 (see page 5), you will need the small square metal file (nail file, emory board or sandpaper) to remove the brown laser cutting glue residue and prepare each piece for ease of fitment.

2 Main Floor





NOTE: Laser cutting and etching plywood produces two sides, an "etched side" and an "exhaust side". As the laser cuts through the plywood, the glue used in assembling the plywood burns and leaves a slight sticky brown residue on the etched surface and sides as shown on (2B). The back exhaust side of the plywood shows grey marks shown on (2A). On the etched side, you will see burned-in details like door lines, and body lines.

NOTE: In these instructions you will be alerted to **etched side facing out** and have to make sure you are gluing with the correct side facing out.

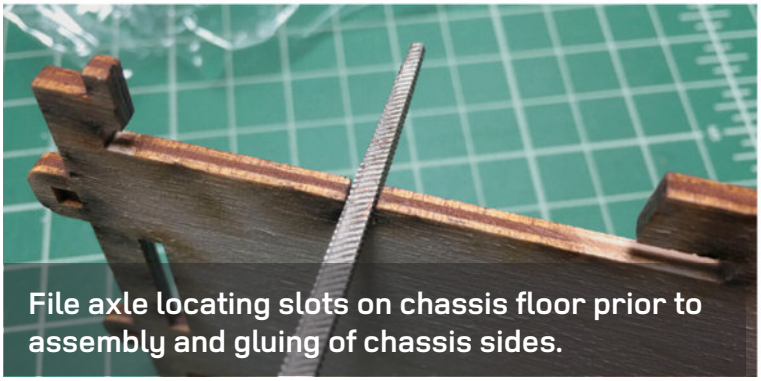
2 Main Floor Preparation

When assembling the chassis, I choose to have the exhaust side of the main chassis floor on the inside of the model, so the etched side (2B) was on display at the bottom. (My initial reason was so you wouldn't see the exhaust grey side when holding the finished product. In hindsight, I guess it doesn't matter, as a true past Land Rover Defender owner like myself knows, they are prone to leak a little bit of oil and grease - maybe showing the exhaust side underneath would be a positive display attribute, either way works). Keep each chassis side with exhaust side in.

You will notice that in some areas that the brown glue has been filed off in the above photos. This will help facilitate the assembly of the two chassis side pieces in steps 3, 4.

3 File Chassis

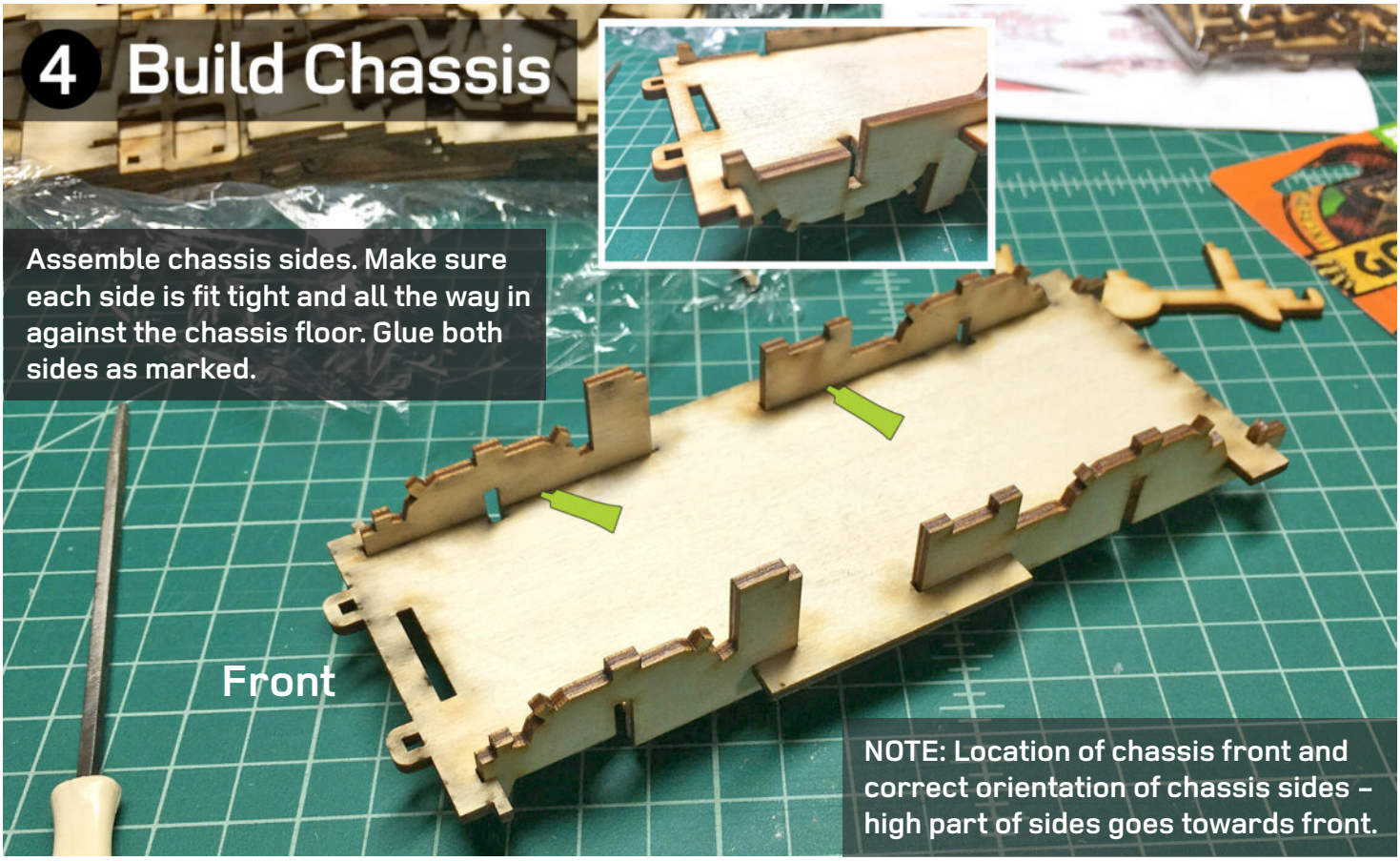
File axle locating slots on chassis sides prior to assembly and gluing to chassis floor.



File axle locating slots on chassis floor prior to assembly and gluing of chassis sides.

File chassis in areas as shown. Don't take too much off; you only remove the brown laser residue. Test fit a chassis side at a time before gluing.

4 Build Chassis



Assemble chassis sides. Make sure each side is fit tight and all the way in against the chassis floor. Glue both sides as marked.

Front

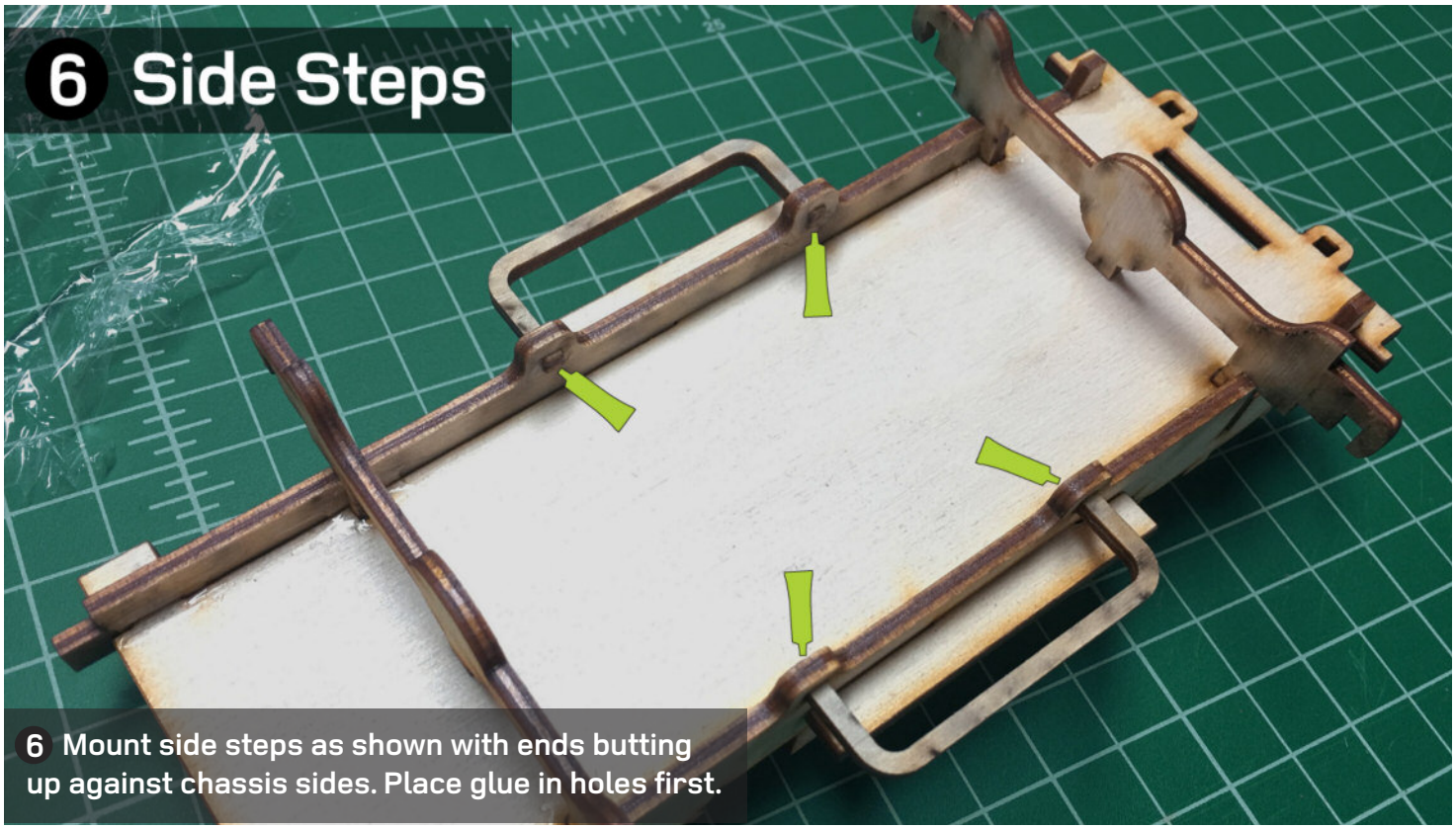
NOTE: Location of chassis front and correct orientation of chassis sides – high part of sides goes towards front.

5 Assemble Axles

Looking from the front, right side up, mount differential on side as shown.

5 Locate front and rear axles as shown; fit down so tabs on top of differentials touch floor (this is a pre-production kit – differentials are offset in production kits; mount on side as indicated).

6 Side Steps



6 Mount side steps as shown with ends butting up against chassis sides. Place glue in holes first.

7 Locate Wheel Parts

Open the small brown paper bag and sort through all the small parts. Set aside the two mirrors, steering wheel, steering wheel column, raised air intake, two rear door hinges, two door handles and rear bumper hitch parts.

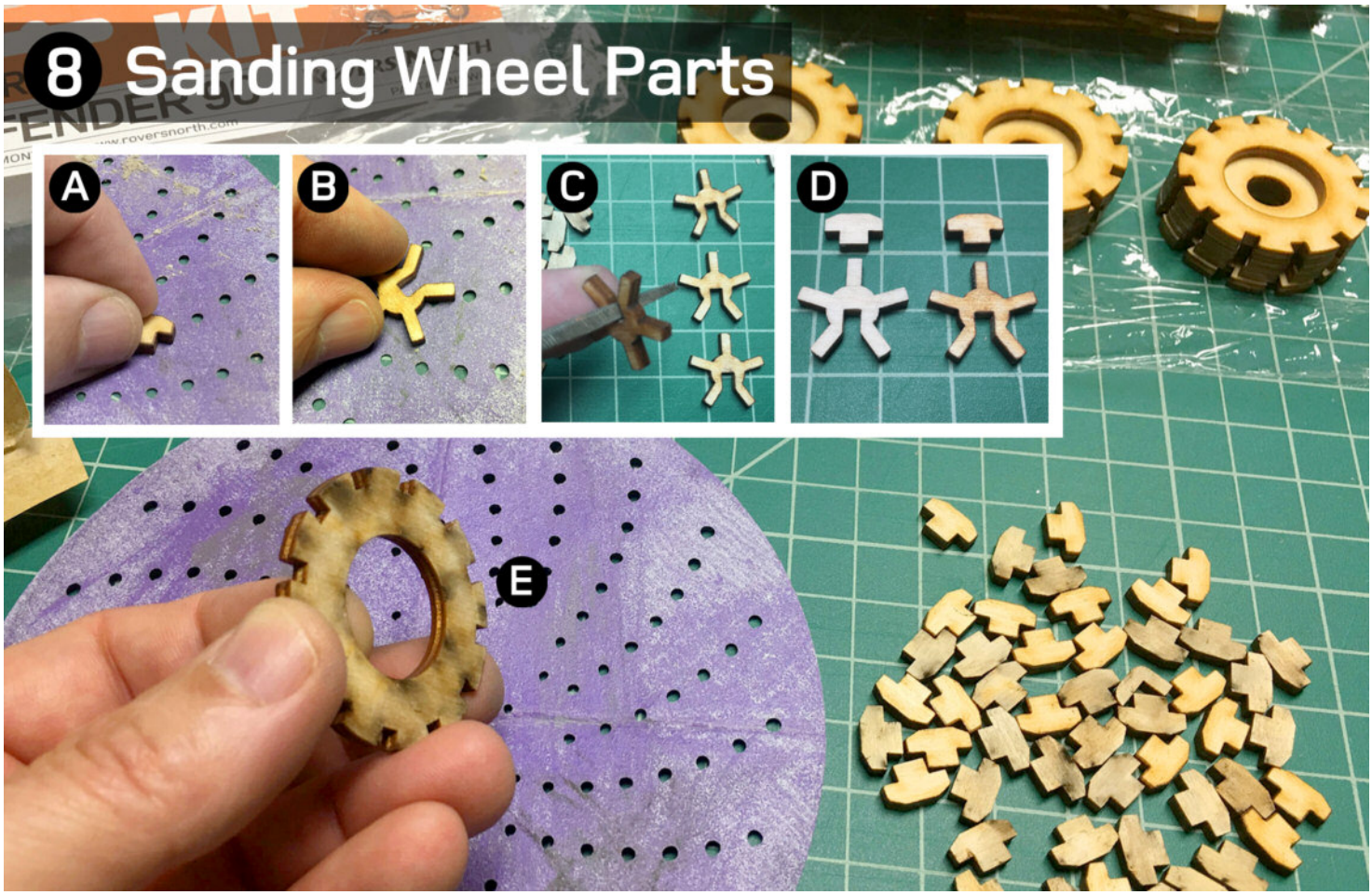
You should be left with 48 treads pieces - place these with the four locking wheel rims and four of each round wheel parts. See photo above.

Each single wheel assembly comprises of the following parts.

- Round outer discs with large center holes x2
- Round inner discs with smaller center holes x2
- Tread pieces x12
- Wheel Rim locking hub x1. This is the "wheel rim" and also the locking part that holds each wheel to the axle. This doesn't turn, but the wheel does.

For the next step 8, prepare a surface area to sand all the small parts. This is where the spare shoebox and or small parts box comes in handy, especially if you have a little helper with curious hands or are worried about losing some of them.

Sand all 48 tread pieces on both sides, removing the brown residue. This is super helpful when placing and gluing the wheels together. You will also have to sand the surface of the wheel locking rims and round wheels. This is covered in detail on step 8.



8 Sanding Wheel Parts

A TIP: Start with sanding both sides of all 48 wheel tread pieces so the brown residue has been removed (8A).

B Sand both sides of the wheel rim locking pieces (8B).

C File off the brown residue on the insides of each wheel locking piece, this will help with mounting each wheel to the axle later.

D This shows what sanded looks like next to unsanded.

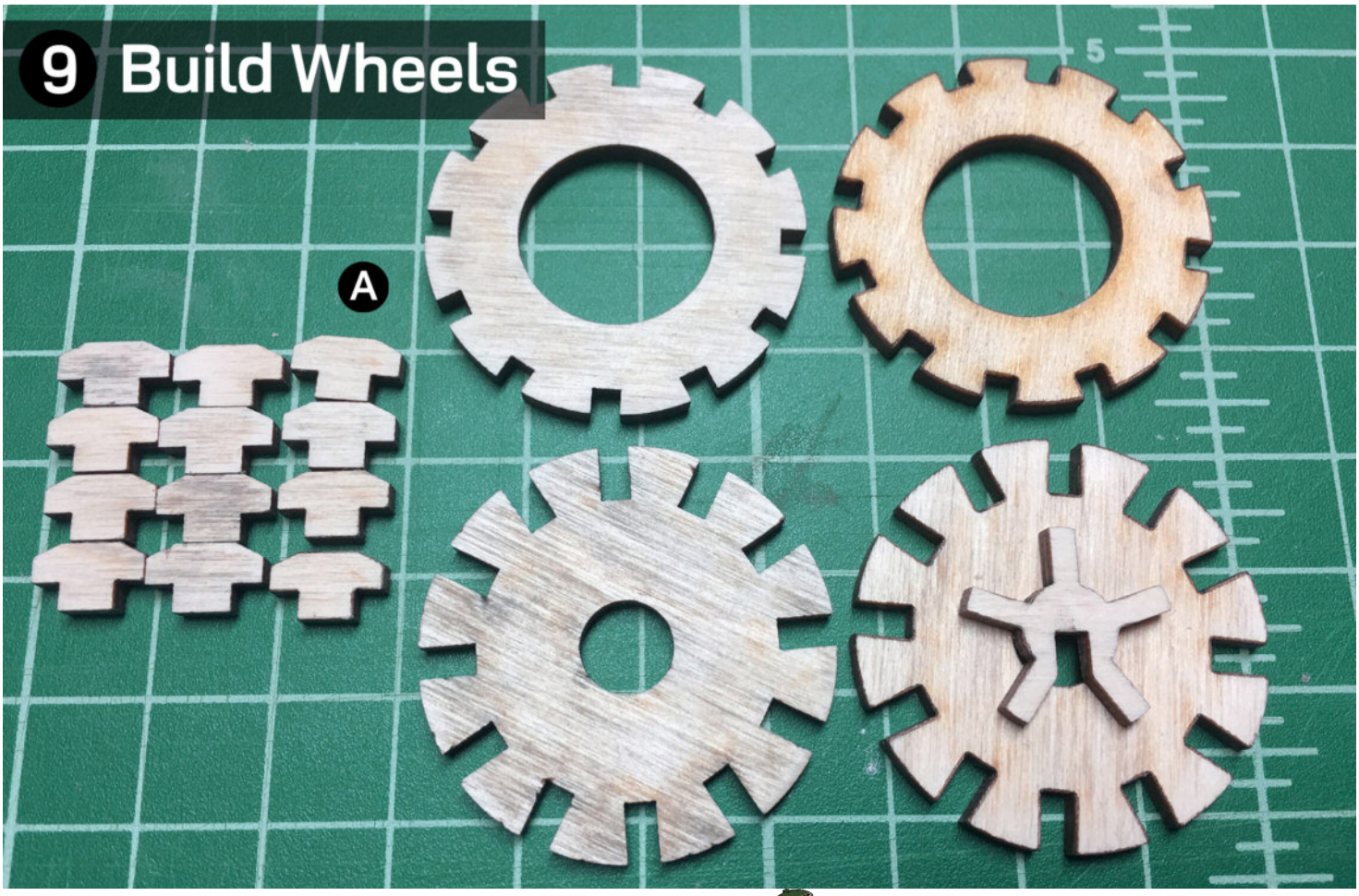
E **Sand the surface of round wheel pieces as shown above**

- Sand both surfaces of inside wheel pieces (small holes) x8
- Sand one surface of outside wheel pieces x8

See step 9A for final sanding photo condition.

Sand lightly, test fit individual tread pieces with four wheel parts sandwiched together. Sand as needed.

TIP: I found when mounting each wheel to the axle, I had to file a notch into the wheel rim locking piece as shown above. This helped tremendously with sliding on and making sure each wheel would spin freely. This is discussed in step 9F.



9 Building Wheels 9A

A As shown in the photo above, make sure to sand parts the same and prior to building wheels.

I wanted to retain the laser cut brown residue patina on the outside of each wheel to match the look of the rest of the Defender. These four outside round wheel pieces get sanded on **one side only**. The rest of the parts for each wheel gets sanded on both sides as shown.

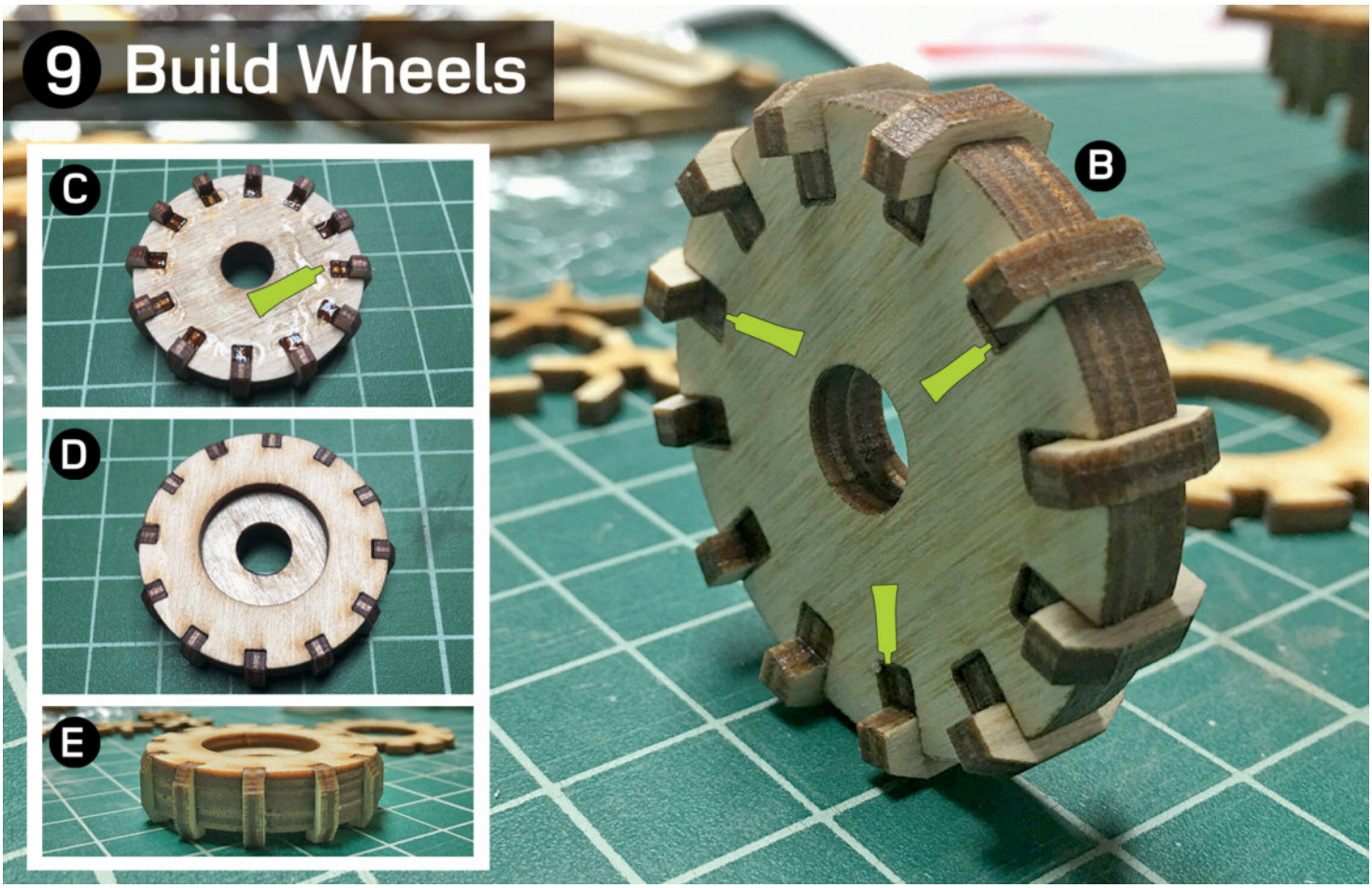
Gather together the sanded parts to build each wheel.
- Wheel treads x12
- Round wheel outer discs x2 (sanded on one side only)
- Round wheel inner discs x2 (sanded on both sides)

Using the 3D assembly line drawing instructions as a guide, you will see how each wheel is built. See 9B-9E for more details on how these are built and assembled together.

WARNING: Gluing with CA Super Glue can make your fingers stick together! Using regular thin super glue, the viscous properties makes it wick, creep and seep into all areas it comes in contact with - and is really hard to see.

For this reason, I choose to use a Super Glue GEL formula - it stays put and doesn't wick as much - be careful though, you can still get your fingers stuck together!

In steps 9B-9I building the wheels, you will need to glue parts that require using super glue in tight areas. **Take your time, be patient and keep a cloth or heavy duty shop towel available to wipe up any excess in a hurry.** Be aware of where you glue and what you handle. If you accidentally glue your fingers together, see remedy tip on page 10.



8 Build Wheels steps 9B–9E

B Start with placing two wheel inner pieces together (9B) and gluing in each tread piece until all 12 treads are fit as shown. Make sure the tread pieces are centered, straight, perpendicular to the wheel and in as far as they can go - all the way down. Let dry.

C Place glue around the edges of one side and offer a wheel outer piece (sanded side down - unsanded side out) to the wheel (9C). This will be the inside of every wheel that gets mounted to the axle.

D This shows how the inside of each wheel will look - this is the side that mounts to the axle.

E This shows the same as above (9D), but turned on the side. You will mount the wheel to the axle, then add the wheel rim locking star on the axle hub and glue down the second wheel outer piece. See steps 9F-9I for final mounting and assembly.

Oops! Glued your fingers together?

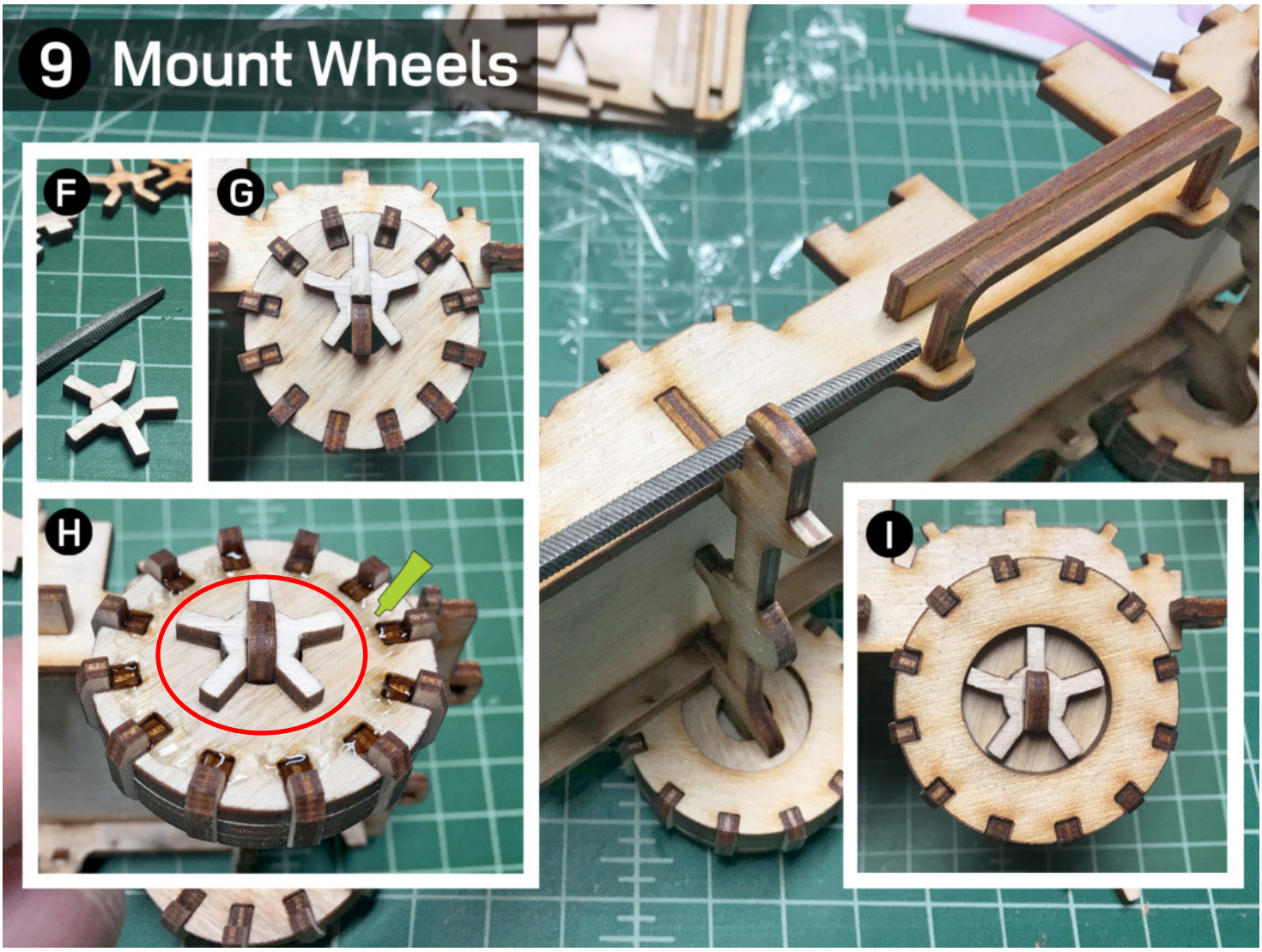
Not to worry – don't try to separate – the glued bond will always win!

You can use nail polish remover (acetone) to debond your glued together fingers. Use the nail polish remover in a well ventilated area, add a little bit at a time until the bonded area starts to soften up. Keep adding the remover until you can free up your fingers. This might take several applications and attempts, but the remover will succeed in the end.

TIP: While it's a great experiment to see how humans rely on our opposable thumbs, I don't recommend getting your fingers stuck together with super glue!

I've done it many times (by accident of course) and when this happens, it puts you into a massive panic! You can definately feel that if you tried to pull your fingers apart, your skin will be the first to go. Not a good feeling at all.

Keep a bottle of nail polish remover close by.



9 Mount Wheels steps 9F–9I

F As mentioned in steps 8A-8E, each wheel rim locking hub might need to be filed in the center slot to fit and slip onto the axles easier. File this and or file the axle slot.

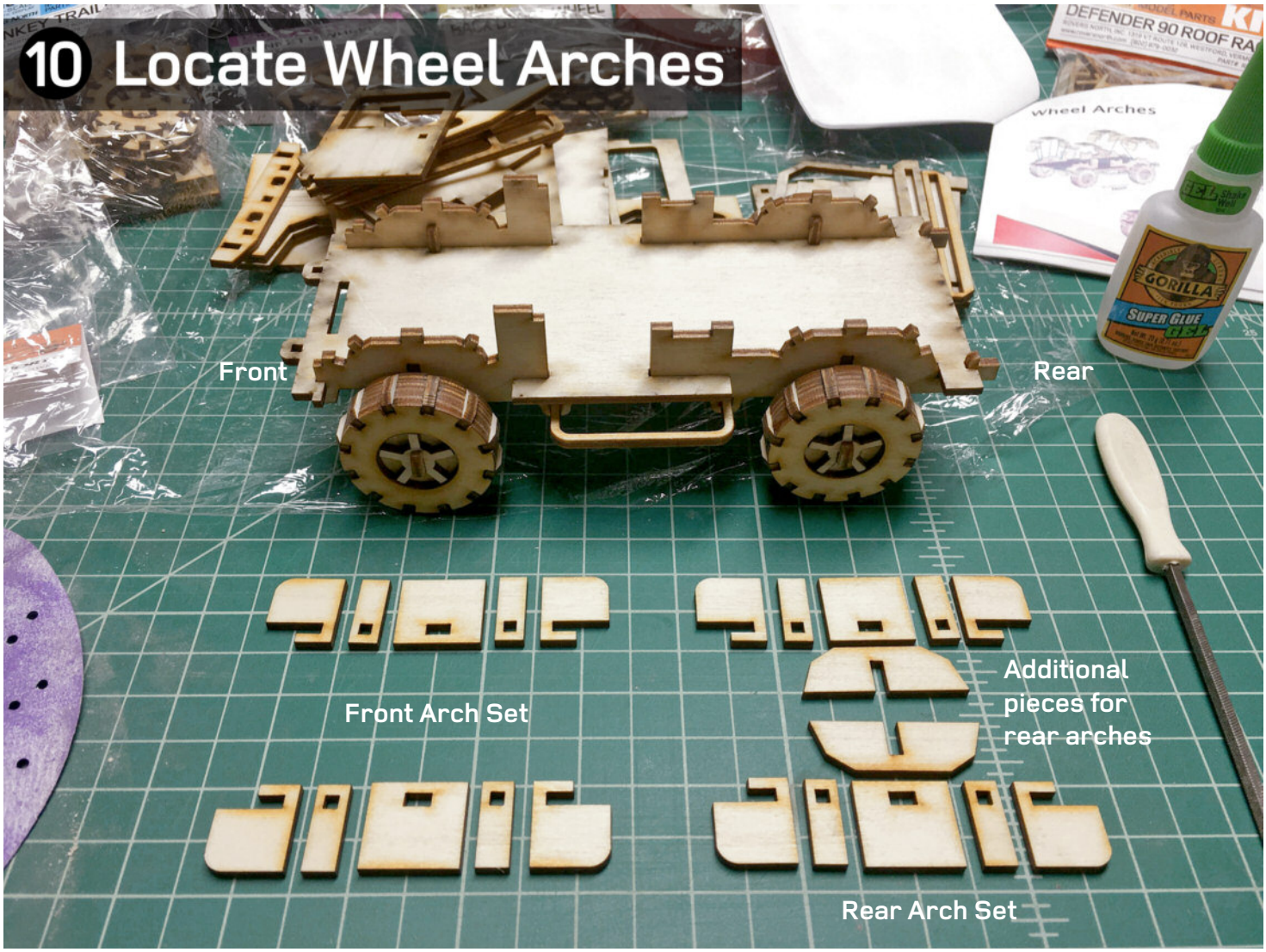
G Test fit each wheel on an axle. Make sure to either file the wheel rim locking piece (9F) and / or combine with additional filing of the axle as shown in background photo.

H Once you are satisfied with how each wheel sits and spins on the axle, place each wheel on and lock in with a wheel rim locking hub. Then, add glue to the outside edge (9H) and mount the final wheel outside piece with the sanded side down, unsanded side out as shown in (9I).

TIP: Keep glue away from wheel rim locking hub and out of the center red area section shown above.

I This shows how each wheel will look after gluing down the final wheel outside piece.

TIP: Test fit the wheels to make sure they spin and make them on the loose side. Test fit and spin before final outside gluing and / or more sanding or file work.

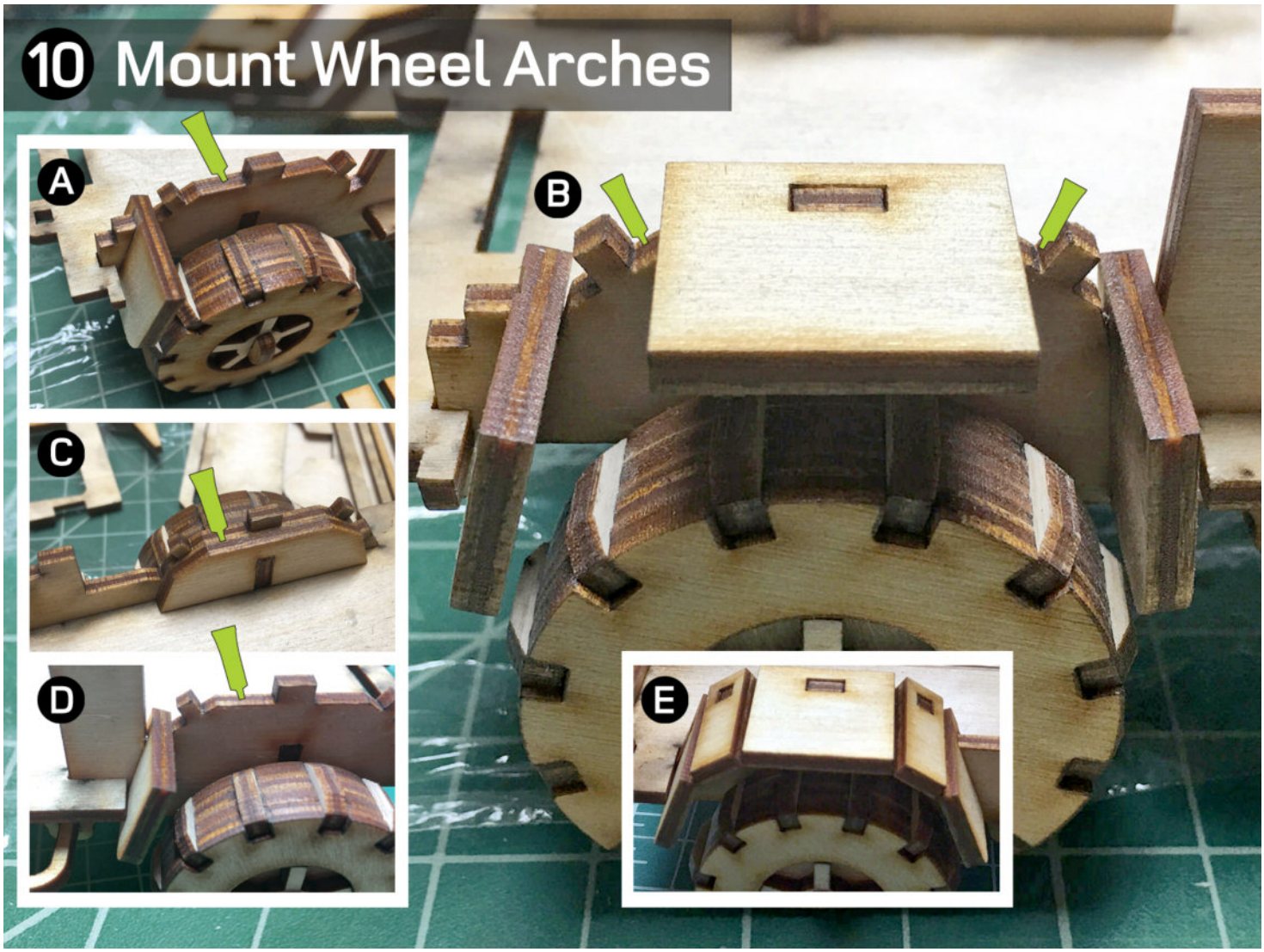


10 Locate Wheel Arch Parts

Wheel arch parts are shown as above. Separate these out from the kit contents and orientate as shown. The parts are all identical for front and rear. The rear arches have an additional piece that gets glued onto the inside of each chassis side, see step 10C.

Prepare parts as before with filing slots and holes as needed so they fit tight, but you are still able to test fit and remove.

NOTE: You will want to install these so the etched side is facing up as shown in photo above (exhaust side down).



10 Mount Wheel Arches 10A–10E

A Test fit each wheel arch piece prior to gluing. Adjust fit with file as needed. Apply glue to the flat chassis side surface as indicated. Start with the front lower arch section, then add the rear section, see (10B). Make sure to keep each piece aligned so the arch surface, front and rear comes in contact against the chassis, see step (14) for alignment.

B Mount the top center arch section, then apply glue to the flat chassis side surface as indicated for the thinner fill in arch pieces as shown. Complete both front arches.

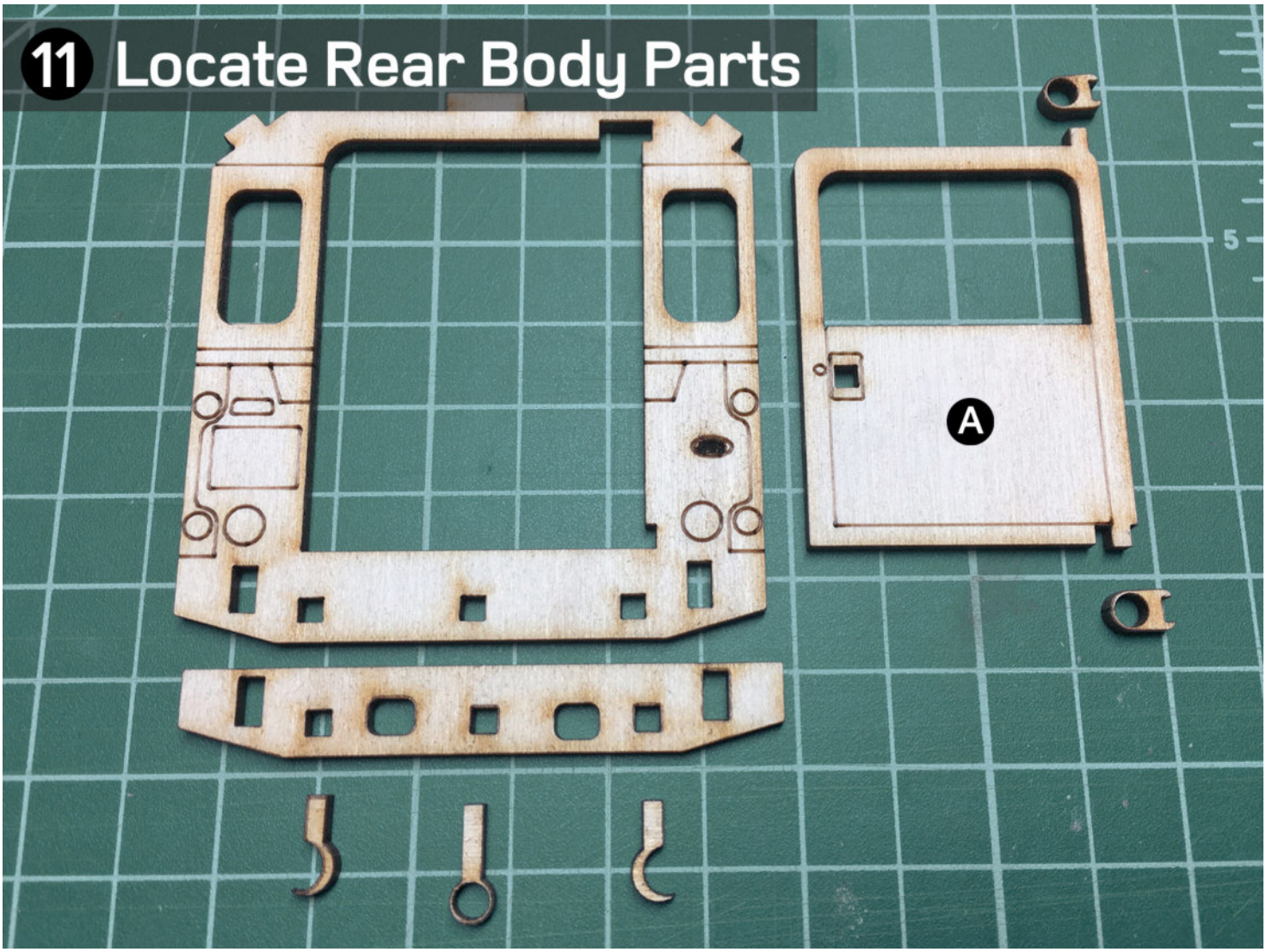
C Move to the rear and test fit each piece first, file and sand as needed before gluing. Apply glue to the inside of the chassis side and small axle slot. Mount each rear internal arch support as shown for both sides.

D Complete each rear arch with the same process as indicated in steps 10A-10C.

E Each finished wheel arch should look like the photo as shown above in (10E).

TIP: Take note of how each arch piece is mounted. Make sure they are level and square. Keep the bottom surfaces (with rounded corners) close to and touching the chassis base - otherwise this will leave a gap when you mount each body side.

TIP: You can use a level, the 90° triangle or your eye to adjust before the super glue sets.



11 Locate Rear Body Parts

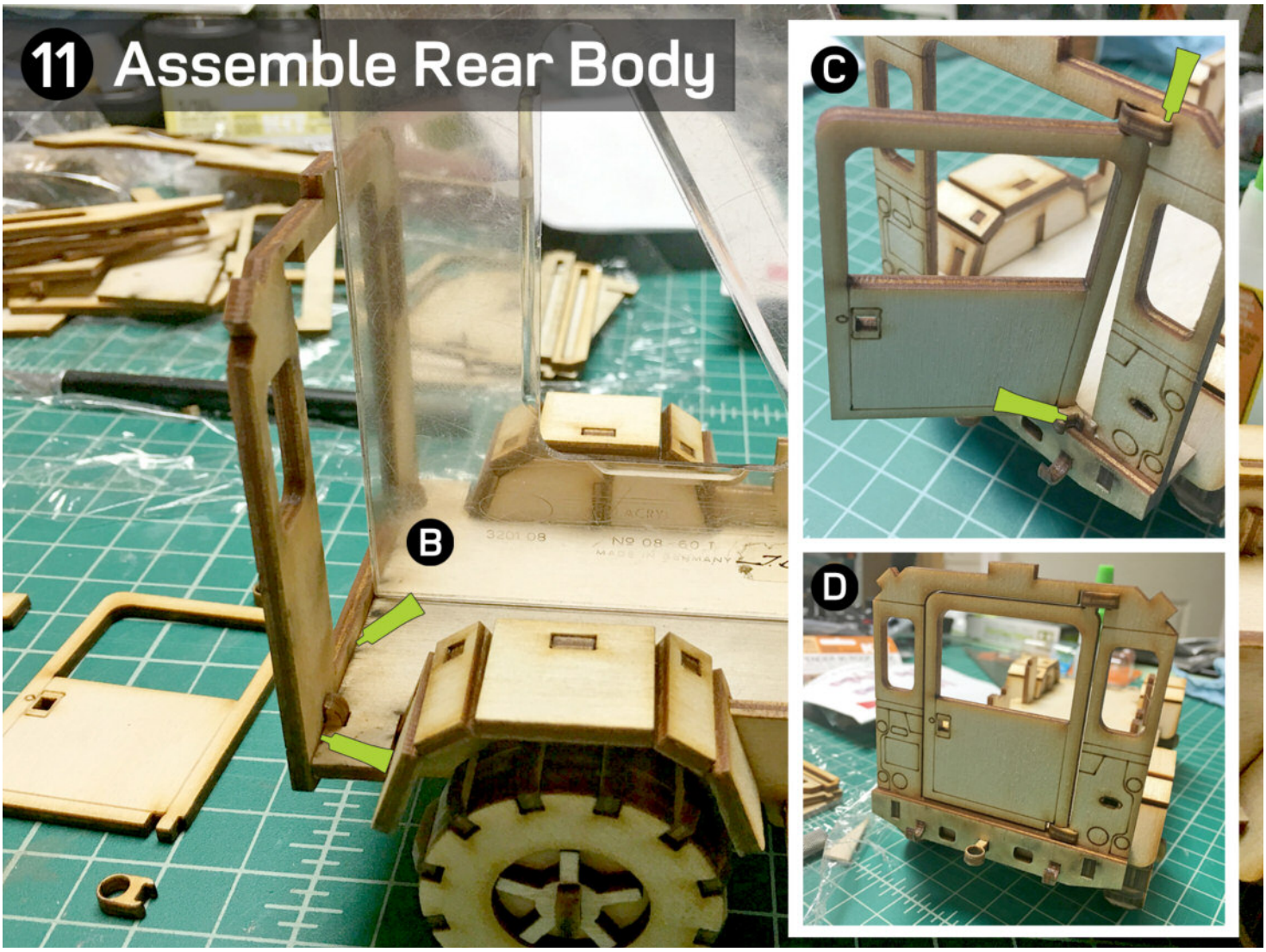
The rear body parts are shown as above. Separate these out from the kit contents and orientate with **etched side facing out** as shown.

- Rear body facing x1
- Rear door (only used if NOT mounting rear spare wheel kit) x1 (See (11A) below to mount Rear Spare Wheel Kit)
- Rear door hinges x2
- Rear bumper x1
- Rear hitches x3

A **ATTENTION! :** **If you purchased a Rear Spare Wheel kit (RNGWKDRS) NOW is the time to locate and install these parts on step 11C.** You will replace the Defender 90 (or 110) base kit rear door (11A) with the new rear door (with slot for rear tire mount) from the rear spare wheel kit package.

RNGWKDRS

If you would like to add a rear spare wheel kit, order one before continuing the build process. Please visit roversnorth.com and or give us a call to order RNGWKDRS.



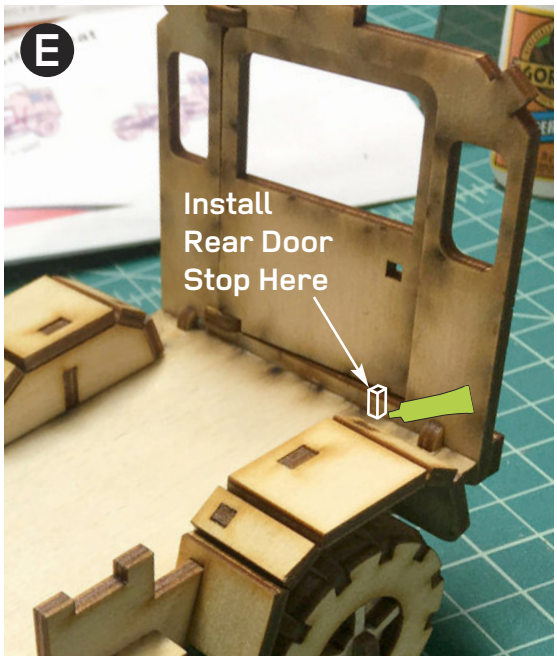
11 Assemble Rear Body and Door

B Offer the rear body part to the chassis, test fitment first before gluing. Use the 90° triangle to make sure it is perpendicular to the chassis. Glue as indicated, keep against 90° triangle while the glue is drying.

C **D** Install rear bumper and then rear hitches as shown. Apply a drop of glue to inside of slots first before adding each part.

Install rear door as shown. Glue top rear door hinge in first, then pivot and install lower door hinge in as shown. Apply only a drop or so of glue - make sure that glue doesn't get into door pivot area.

E Install a small piece of wood to make a door stop - mount against rear door and chassis as shown. This keeps the rear door from closing into the back compartment area. This part should be included in the kit, if you loose it, a wooden match stick piece will work also.



⑫ Mount Bulkhead, Seatbase Parts

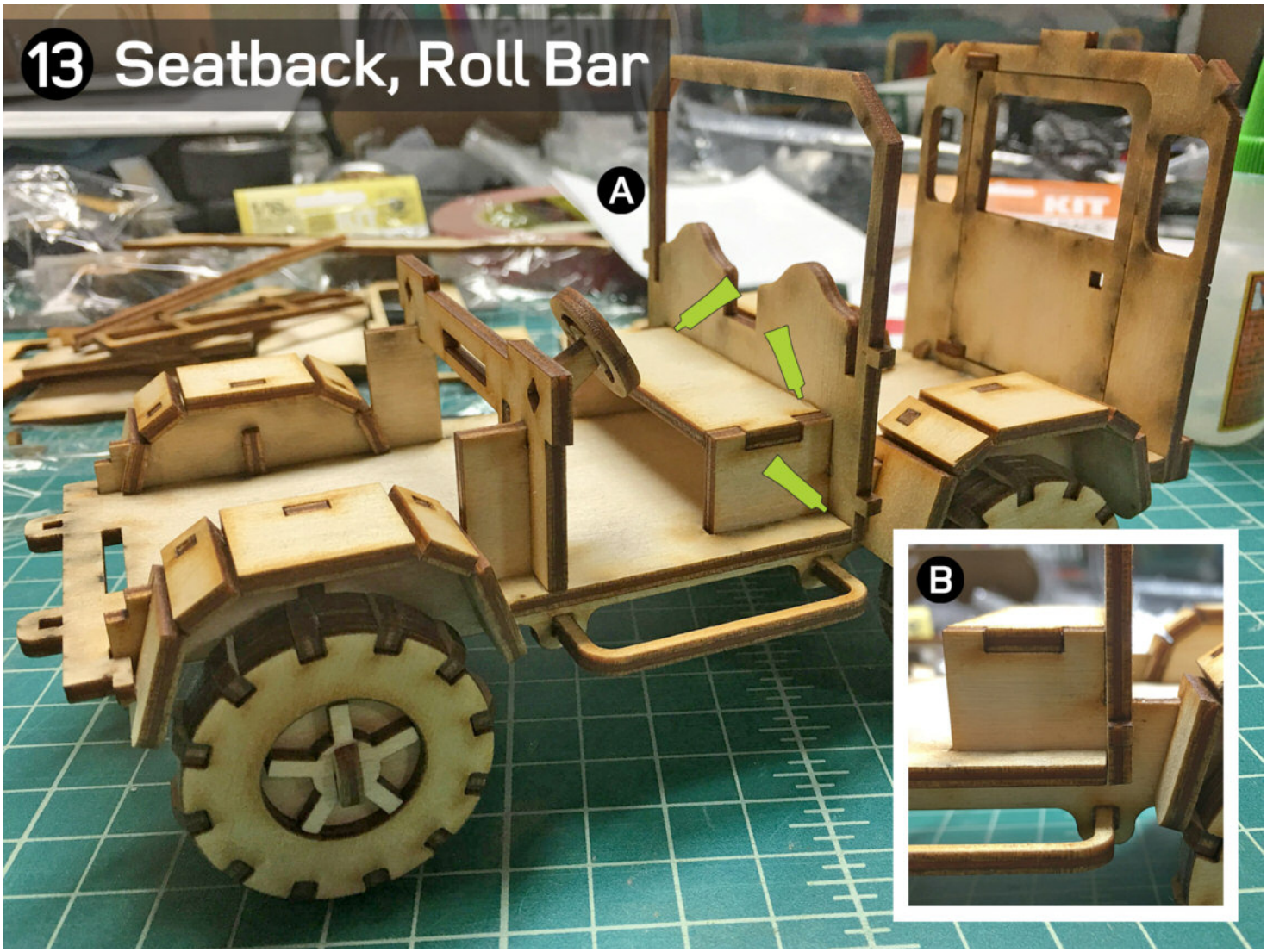
Ⓐ Mount the bulkhead as shown, use a few drops of glue to fix. At this time you can choose to make your Defender RHD or LHD, I made this Defender 90 build LHD as shown.

Use the 90° triangle to check bulkhead for proper alignment and accuracy.

Ⓑ Mount the seatbase as shown above. Place a few drops of glue onto the slots shown in (12A) before securing part.

Ⓒ Mount the steering column and steering wheel as shown above. Place a drop or so of glue into the slots or holes before fixing each part.

- Bulkhead x1
- Seatbase x1
- Steering column x1
- Steering wheel x1

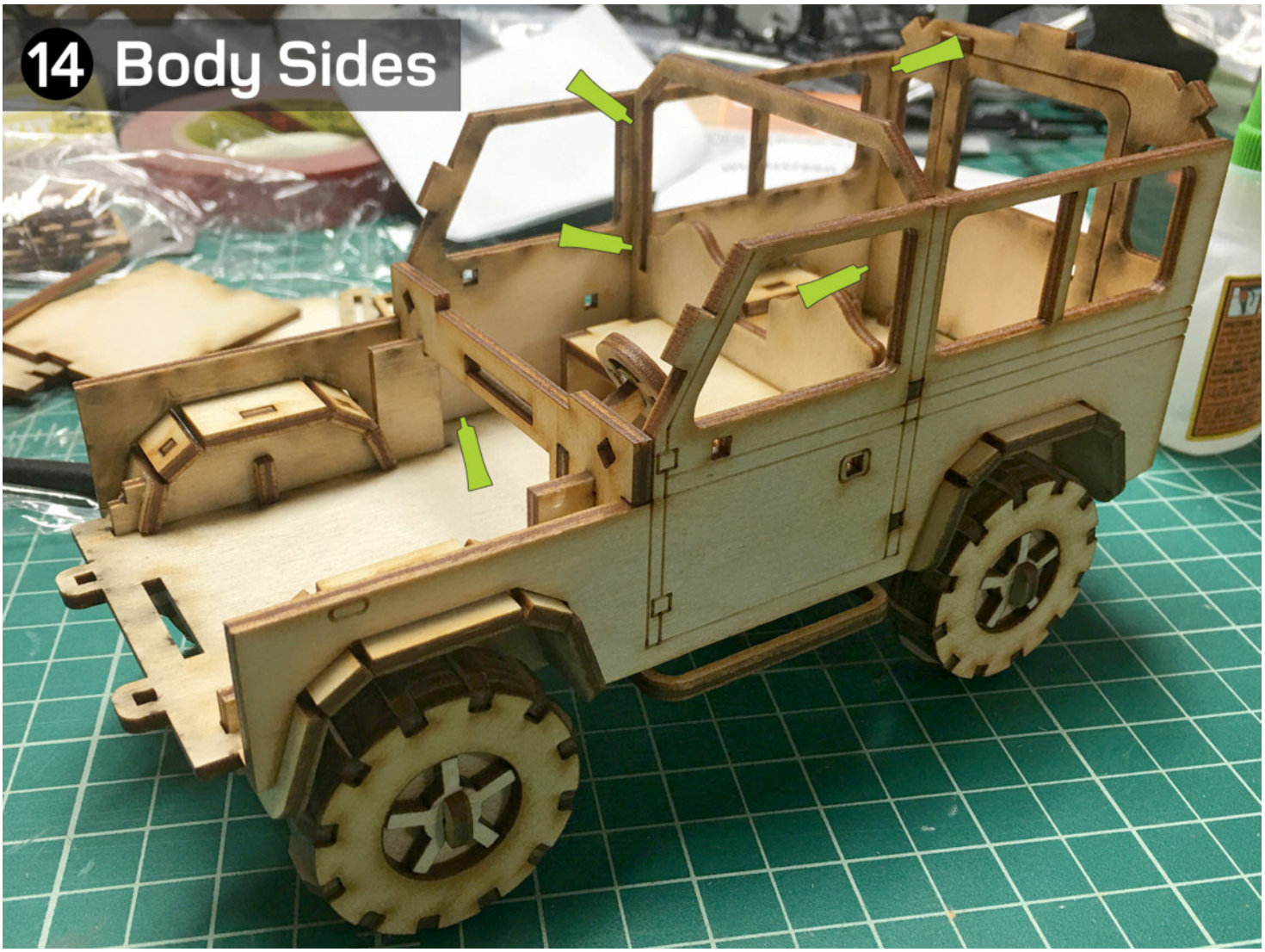


⓭ Mount Seatback, Roll Bar Parts

Ⓐ Mount the seatback as shown, use a few drops of glue to fix. Use the 90° triangle to check bulkhead for proper alignment and accuracy, hold in place while glue dries. This step is important, because the body sides need to fit onto the small side posts on the roll bar. Lined up straight, they should fit well.

Ⓑ Double check and make sure the seatback and roll bar are all the way down and bottom is flush with the chassis, see (13B) before the glue dries.

- Seatback, Roll Bar x1



14 Mount Body Side Parts

Test fit each body side piece for fitment before gluing, make adjustments as needed with the file. Make sure that you have the **etched side facing out** on each body side before gluing.

Mount the each body side as shown above, use a few drops of glue to fix as indicated. If you add the glue after fitment, this can be applied on the inside as shown. Also apply near and around bulkhead.

Align rear body upright section to be flush against each body side. Align roll bar to fit within etched lines on the outside.

- Body Side Left x1
- Body Side Right x1

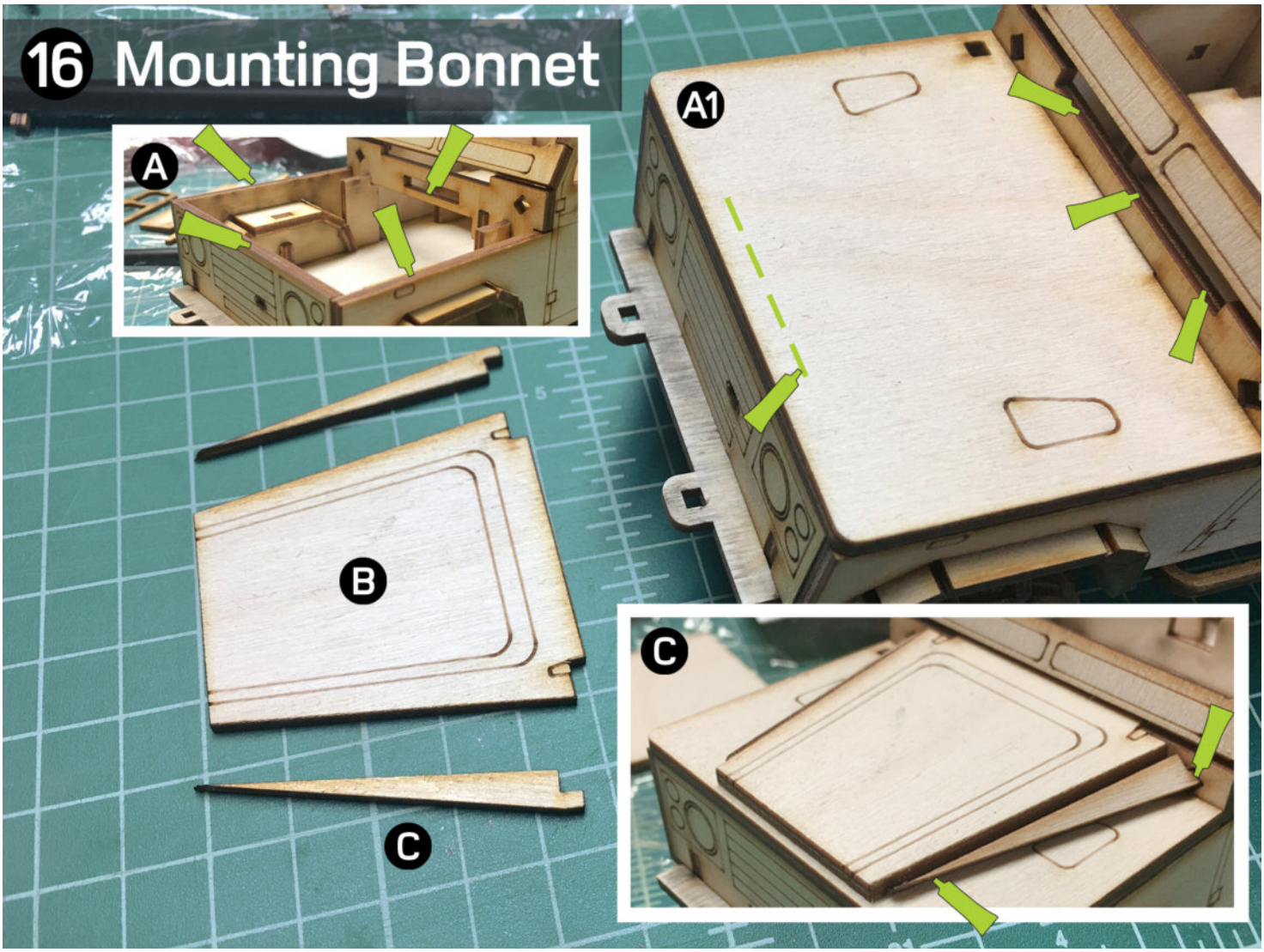
⑮ Mount Seatback, Roll Bar Parts

Ⓐ Test fit the windscreen before mounting and adjust slots with file if necessary. Mount the windscreen as shown above; place a few drops of glue onto door frame before mounting windscreen. Secure with glue on the base of windscreen to bulkhead.

Ⓑ Test fit front grille part before gluing; adjust slots with file as needed. Place glue to sides of grille and lower chassis and mount to vehicle. Keep alignment straight, making sure grille is flush with ends of each body side.

Add additional glue to inside of lower grille area prior to mounting bonnet in step (16).

- Windscreen x1
- Front Grille x1



16 Mounting Bonnet Parts

A1 Test fit the bonnet base piece for fitment before gluing, make adjustments as needed with the file. Make sure that you have the **etched side facing out** with side wing top vents showing.

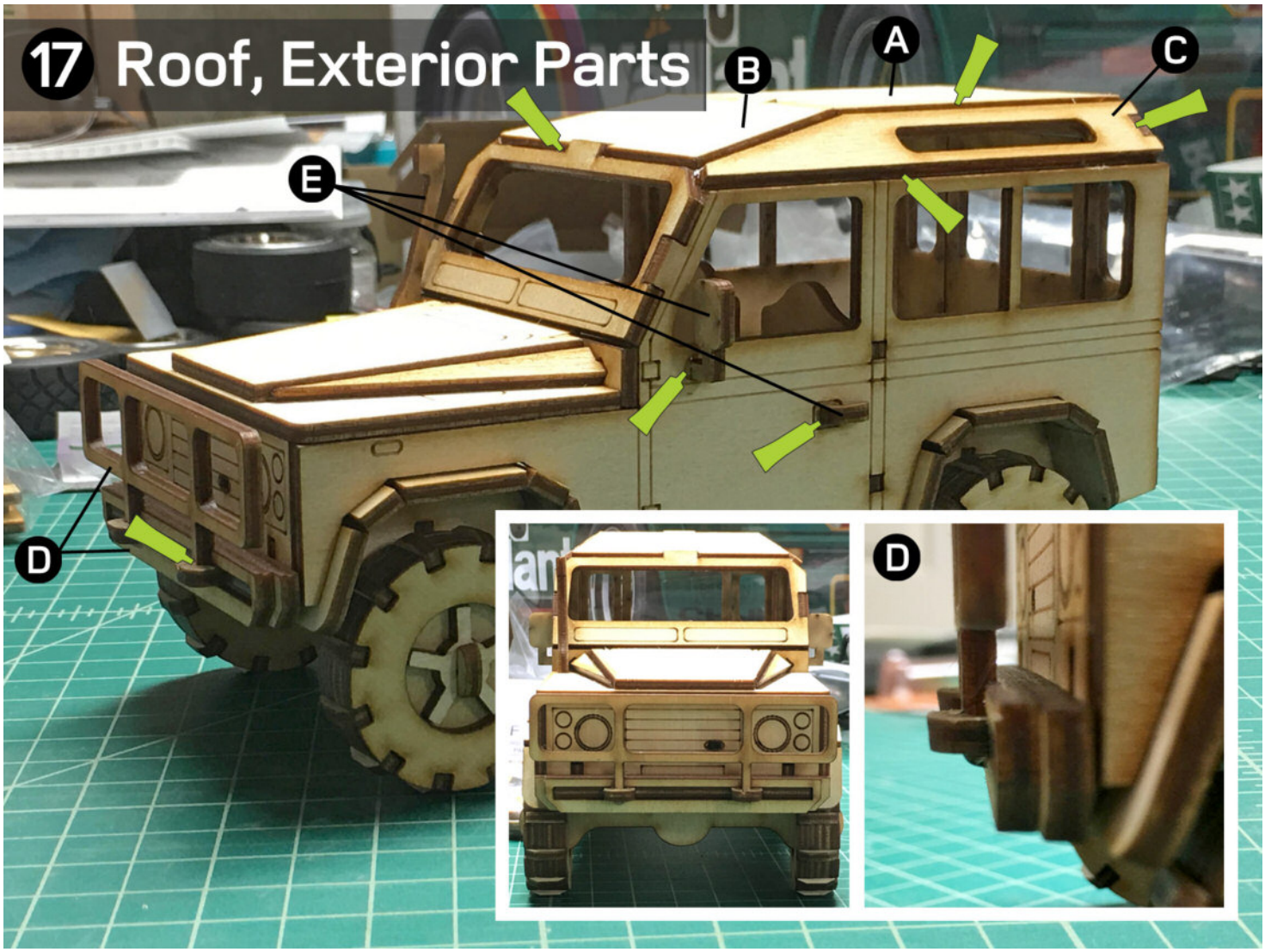
Mount the bonnet base as shown above, use a few drops of glue to fix on top of entire rim top of grille and wings, let dry before proceeding to next step.

B Test fit bonnet top into slot on bulkhead. A few millimeters back from the front edge (3-4mm) is the location of where you will apply a few drops of glue to fix the front of the bonnet down; see glue locations on (16A1).

TIP: I prefer to place a few drops of glue directly on the underside of the bonnet front edge so it will be hidden when mounted.

C Test fit each bonnet side as shown above. Place a few drops of glue into the slots as indicated. Use a small drop of glue towards the front where the part is very narrow (locate the glue in the small valley and where it has some contact area).

- Bonnet Base (16A1) x1
- Bonnet Top x1
- Bonnet Sides x2



⑰ Install Roof, Exterior Parts

Ⓐ Test fit the roof center part to the roll bar and top of rear door body. Make sure that all roof panels are **etched side facing out**. Add glue to center of roll bar slot and top of rear door body.

TIP: I noticed that there is some air space between the roof parts. No problem, this is where the GEL super glue excels and fills extra voids.

Ⓑ Test fit the front roof panel, glue down as indicated to top of windscreen and front of center roof panel.

Ⓒ Test fit each side roof prior to gluing. Fill air gap voids with GEL Super Glue as needed. Don't use too much, but use enough to bond the parts well.

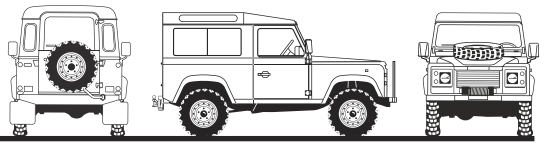
Ⓓ Locate the front bumper parts. The large piece fits on first, a smaller bumper piece, then the brush guard fits into the chassis slots. Test fit all of these first before gluing, adjust as needed and slide over chassis tabs as shown above.

TIP: If you purchased the D90 Roof Rack kit, this includes a brush guard with rallye lights, use this instead. The front brush guard didn't fit into the chassis hole slots all that well and I chose to notch with the file to fit. Sand the large bumper and small bumper piece surfaces as this will provide more clearance to mount the brush guard into the slots. I recommend both modifications to help mount the brush guard into the slots, see (17D). Align the top of the brush guard a tick lower than the top of the bonnet base as shown.

Ⓔ Test fit all remaining door handles, rear door handle and raised air intake before gluing, adjust slots and holes as needed with file. Mount as shown in photo, glue where indicated.

- Roof Top Center x1
- Roof Top Front x1
- Roof Top Sides x2
- Exterior Bits (mirrors x2, handles x3, raised air intake x1)

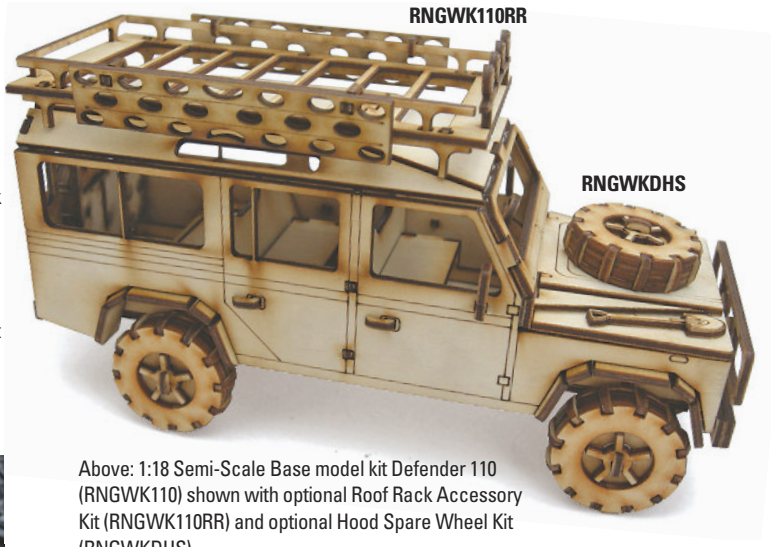
ADDITONAL KITS & OPTIONAL PARTS



Wooden Land Rover Model Kits

These wooden model kits will amaze you! Available in 1:18 semi-scale or miniature scale, made from laser cut 3mm Baltic Birch plywood, they are unpainted kits ready to assemble. The 1:18 semi-scale kits measure (Defender 90 7.67" L, Defender 110 9.85" L). Miniature kits measure (Defender 90 4.25" L, Defender 110 5" L, Series IIA, III 3.75" L). Miniature Defender 90,110 kits include all accessories, Series IIA kit does not.

The base model 1:18 semi-scale kits are ready for accessorizing. Add a roof rack kit, front hood spare wheel kit, or a rear door wheel kit. Defender 90 Roof Rack kit includes: roof rack, roof rack lights, front bull bar w/lights, two surfboards, sump guard and pick and shovel. Defender 110 Roof Rack kit includes: the same except, 2 sand mats instead of surfboards. Hood Spare Wheel and Rear Spare Wheel Kits includes specific hood (or door) and wheel. Don't forget a Sankey Trailer, supplied with High-Lift Jack and 2 Jerry Cans, for the full effect! **Note: If adding the Hood Spare Wheel and or Rear Spare Wheel accessory kits, these are required while building base kits, and can't be added later.**



Above: 1:18 Semi-Scale Base model kit Defender 110 (RNGWK110) shown with optional Roof Rack Accessory Kit (RNGWK110RR) and optional Hood Spare Wheel Kit (RNGWKDHS).

Optional 1:18 Semi-Scale Kit Accessories

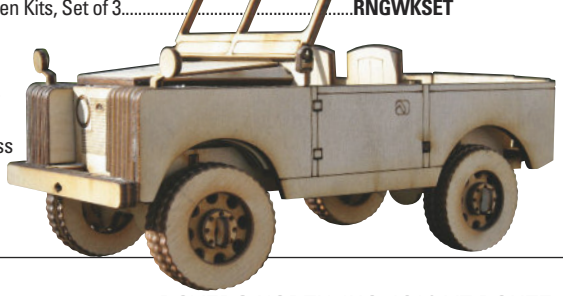
Wooden Accessory Roof Rack Kit, Defender 90 ..... **RNGWK90RR**
Wooden Accessory Roof Rack Kit, Defender 110 ..... **RNGWK110RR**
Wooden Accessory Hood Spare Wheel Kit, Defender 90, 110 .. **RNGWKDHS**
Wooden Accessory Rear Spare Wheel Kit, Defender 90, 110 ... **RNGWKDRS**
Wooden Accessory Hood Spare Wheel Kit, Series ..... **RNGWKSHS**
Wooden Accessory Rear Spare Wheel Kit, Series ..... **RNGWKSRS**
Wooden Accessory Sankey Trailer Kit ..... **RNGWKSAN**

1:18 Semi-Scale Base Wooden Model Kits

Wooden Model Kit, Defender 90 ..... **RNGWK90**
Wooden Model Kit, Defender 110 ..... **RNGWK110**
Wooden Model Kit, Series IIA Topless ..... **RNGWKIIA**
Wooden Model Kit, Series IIA Hard Top ..... **RNGWKIIAHT**
Wooden Model Kit, Series III Hard Top ..... **RNGWKIII**

Miniature Wooden Model Kits

Miniature Wooden Kit, Defender 110 (incl. accessories) **RNGWK110M**
Miniature Wooden Kit, Defender 90 (incl. accessories) **RNGWK90M**
Miniature Wooden Kit, Series IIA ..... **RNGWKIIAM**
Miniature Wooden Kits, Set of 3 ..... **RNGWKSET**



Base model 1:18 Semi-Scale Series IIA Topless Kit (RNGWKIIA) shown.

*Not suitable for children under 6 years of age; assembly with adult supervision recommended. *Models can be painted or kept in the original wood patina as shown.