

Instructions for making your own 2CV hood.

Written by Robin Maddern, March 2018. No copying or publication allowed without permission. Version 1.2

Making your own hood may seem daunting but in reality it's not beyond the scope of your average DIY'er. Precision and accuracy are required in marking out and cutting but there's nothing too technically challenging, if you have good manual skills and a methodical and patient approach then this whole process could be completed in a day, even if it's the first time you've done anything like this.

I spread my build out over a few days as there were no instructions and I was trying out things/making notes/taking pics for this guide as I went along.

You will need:

An old hood in reasonable condition to re-use it's metalwork / back window / end caps / window seal and bungees.

The new material.

Some basic tools: screwdrivers/hammer/grips/sharp scissors.

500ml of high-temp contact adhesive, I used Evo-stik.

Set square, long straight edge, measuring tape and white fabric marking pencil.

A set of M4 countersunk bolts, 15mm and 10mm long, 'penny' washers and dome head nuts, all in high quality stainless steel.

8mm bungee cord (if needed)

Classic Mini 'arrow head' profile 10 x 8mm chrome filler strip (£5). Or black if you prefer.

A 'Claytonrite' window rubber filler-strip tool (£10) from www.callistomarine.co.uk

Hood Material

The best material in my opinion is Sauleda Acrylic Canvas, PU coated. This is produced for the marine trade for use in boat canopies etc. It's very tough, fade resistant, breathable and waterproof, the outside looks like cotton canvas and it's available in a wide range of colours. Black or dark colours are the most practical long-term for 2CV hoods. Acrylic canvas has excellent dimensional stability, it's very resistant to stretching or shrinking even when it's very hot or cold, or when it's old.

I bought my material from here: www.profabrics.co.uk it was £15.66 a metre. As it's sold by the metre you'll have to buy 3 metres even though the hood is 2.11 metres long. The width I bought was 150cm, 120cm would also work and is slightly cheaper. You don't want the material to be too thick as it's harder to work with, especially when doing the front and rear corners which require some tight folds and the material being layered onto itself.

Cheaper materials (Cordura, nylon etc) are available at only £7 or £8 a metre, I received many samples and went with Sauleda as it looked the best visually and is a trusted 130-year-old brand known for it's quality and longevity.

You'll need a flat clean area to work, I used my lounge floor with decorating cloths down, a garage floor would work just as well. Some tasks are best left to dry overnight so this may be a consideration to take into account.

Method

Start by carefully dismantling your old hood, everything needs to come apart and many of those parts you'll be using again. A top tip is to take pictures on your phone as you do this, it'll help with your rebuilding later. Prise the 'filler strip' out from around the back window and using a blunt screwdriver work the rubber around the edges to carefully tease the glass out of it's seal. When the back window is out, pull the seal away from it's metal surround.

The back window surround is quite delicate and easily bent out of shape, tease it away from the old material. Drill out the rivets holding on the bottom bar and the cross bars further up the hood. Save the metal parts to one side.

The front top bar requires the locating 'pegs' to be unscrewed (most are 12mm), this then enables the front bar end caps to be teased out (blunt screwdriver and some gentle taps). Be careful not to damage these as they are nearly impossible to find, everything needs to be re-used.

You will see the hood material is neatly tucked into the ends of the 'D' shaped front bar, the bungees are also located in this way, save them if you can.

Once you have everything apart you can refurbish all the metalwork by rubbing it down and repainting it, with any luck it'll just have surface rust and nothing more serious. If you can keep your old material to use as a guide all the better, although most vinyl hoods will be useless as they'll probably be rock hard and shrunken.

Once you have the whole hood completely apart and the metalwork prepared for re-use you can start building your own hood.

Building

Some words of caution. Some of the processes you're about to undertake there is no coming back from, mistakes, glue spillages, creasing or ripping the material will all be seen in the finished job and could mean you have to start again. Measure twice, cut once.

Although the material is very strong, it does have one drawback which you may come across when starting to cut. It's all to do with how small and tightly woven the Acrylic strands are in this material. When cut the material will easily rip along the cut just made, I liken it to crisp packet material where it's impossible to tear unless there's a slight cut in it and then it's very easy to tear along that cut, something to watch out for. Also be careful not to crease the material excessively, some creases can take a long time to come out.

OK let's start.

Roll out the material completely, straight and flat. Underside facing up. We start from the bottom of the hood.

Using your set square/straight edge mark a straight line across the bottom close to the end, it must be exactly square. Cut along it carefully so you have a perfectly square end.

Measure up 65mm from the end of the material and mark another line across, dead square. This will now be referred to as the **Base line**.

Measure the width of the material (mine was spot on 150cm) and halve this measurement to find the exact centre. Make a mark on the Base line. This is now referred to as the **Centre line**.

Measure 50cm either side of the Centre line and make small marks on the Base line, this 1 metre width marks the centres of the bungees as they go forwards up over the roof.

Make sure your material is completely rolled out and smoothed flat. Measure 1.89 metres up the material from the Base line and make a mark, do this for both sides so you know it's definitely 1.89 Metres, this measurement is critical as it's the length of the hood, which when the hood is finished cannot be altered. When you are sure you've accurately measured 1.89 metres from the Base line mark a perfectly square line across the material, this is now known as the **Top line**.

Measure 16cm further on from the Top line and mark across, this is where the hood ends, it's the part that's wrapped around the top bar the front, cut along this line and your hood material is now marked and cut to length.

Now we need to extend the Bungee marks to the Top line, these will be called the **Bungee lines**, these are already marked 50cm either side of the Centre line at the bottom. Do the same thing to the Top line, ie find the exact centre point, mark it and then mark 50cm either side. Now using a long straight edge mark the Bungee lines along the hood from bottom to top both sides. The markings should now look like a rectangle.

Measure up 40cm from the Base line and mark across, this is for reference really, it's the centre of the back bar on the body of the car, the rear window frame will have to meet with this part of the car accurately as it has a tab to locate there, the window frame needs to be centred and at just the right distance to do this.





Initial marking out is complete, now onto the metalwork..

Place the small bottom bar (which the bungees attach to) in place on the Base line. Note pictures for it's orientation (the thin part points towards the front), this bar is now going to be glued squarely onto the material with it's topmost edge right on the Baseline.

Bungees Attach the bungees to the small bottom bar and bend over the hooks so they are flush. Bungees can be a round section stretchy rubber or in this case 8mm Bungee cord. If you need to make one make sure it's the same length as the other. They don't need to be amazingly tight and when un-stretched they come more than $\frac{3}{4}$ of the way up the hood. The ends are crimped on, these can be re-used by prising them open (screwdriver / vice / needle-nose pliers) and re-crimping with big grips.

Mark the centre of the bar so you know it'll be correctly centred when finally in position. Mark around the bar once it's in place so you know where/where not to glue.

Notes on using contact adhesive. This is very smelly glue and you need to not breathe too much of it in. How it's used is you coat both surfaces to be glued, wait 5 mins and then press them firmly into position, you need just enough glue to coat liberally but not so much it goes everywhere or drips (it's stringy) or not so little it doesn't make a firm bond. Re-positioning is very tricky once stuck so accuracy and care is needed to stick things properly first time. Full strength is reached in 24 hours by which time it'll be very hard to prise the two surfaces apart. Getting glue where it shouldn't be will end in a messy job. Use disposable cheap brushes. I recommend having a practice with the glue on some scrap material first before you start on your hood.

Spread glue on the small bottom bar (with the bungees) and on the hood where it's going to go, make sure it's centred and press it firmly into position. The hood material at the sides now needs to be trimmed back so it can be folded up from the bottom over the bar and over at the sides to cover up the Bungee attachments. Trial fit the material over the bar (always up from the bottom and then over at the sides) both ends. When you're happy glue both surfaces and fold the material over the bar, pressing it hard into the shape of the bar.

Leave it a while to set.



As you can see in the above picture I have trimmed in the sides from the bottom up to the centre line of the back bar on the car. The correct width to cut is determined by placing the window frame centrally and folding over the sides so the material just comes up the the frame and not over it. You're aiming for a double thickness of material up either side of the window with the bungee line in the centre.

Once your bottom bungee bar has dried sufficiently, find your large bottom boot hinge metalwork, you'll see it has a channel which the bar you've just fitted fits into. Place it into position and fold up/tuck in the material in the corners, remember the back of this (which you can't see right now) is what will be on the outside and seen when finished. This is all held in place with a bolt through all of it either end, so using a small drill or a bradawl poke carefully through the bottom metalwork/material/bar/material to the outside.

Secure this using an M4 countersunk bolt (15mm), penny washers and dome head nuts. The bottom metal work is now complete.

All fixings through the material for metalwork are done using these M4 nuts and bolts. You don't need a washer on the inside as they're countersunk (need to be flush as all of these points touch the body), the penny washer goes on the outside of the material, secured by the dome nuts. They look a little 'Frankenstein' at first as they stick up but you do get used to the look.



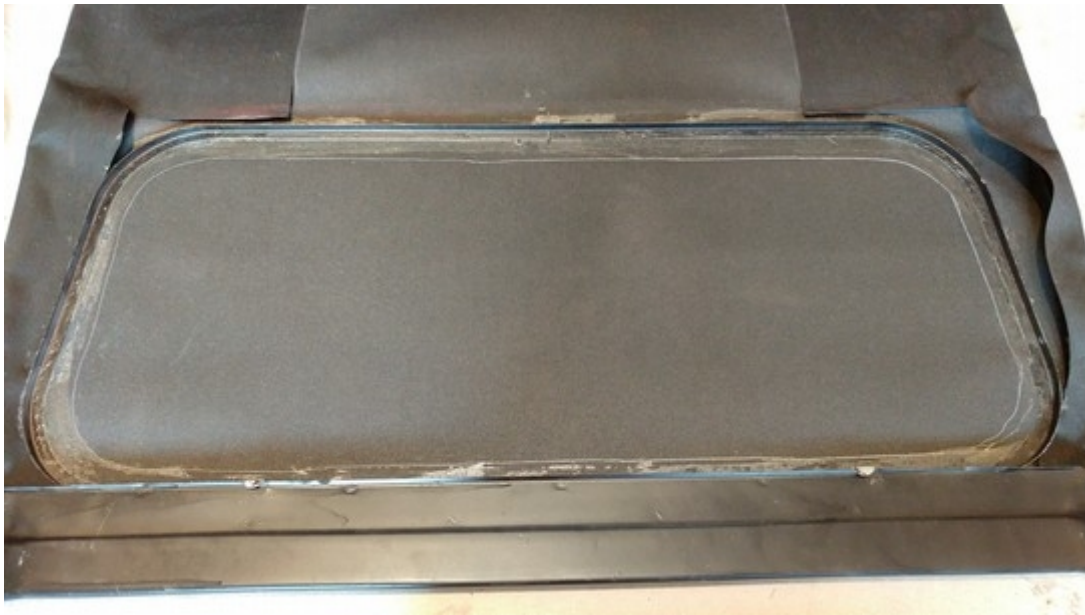
A small piece of thick tape over the bolt on the inside will further protect your paintwork and stop rust spots occurring from scratches.

Take the window frame and lay it into position on the material, you'll know the correct orientation as there's a single tab on the top and two bent over tabs on the bottom which sit over the top of the large bottom hinge metalwork. It's important the window frame is well centred as it's a tight fit either side to the body of the car.

Mark around the outside and inside of the window frame as well as you can, you can't reach the very bottom.

Glue this marked area ready for the window frame to be fitted, glue the window frame itself, wait 5 minutes, and press it firmly into position, make sure the material is completely flat. If you have glue squidding out the sides, you're using too much.

The window frame is now fitted.

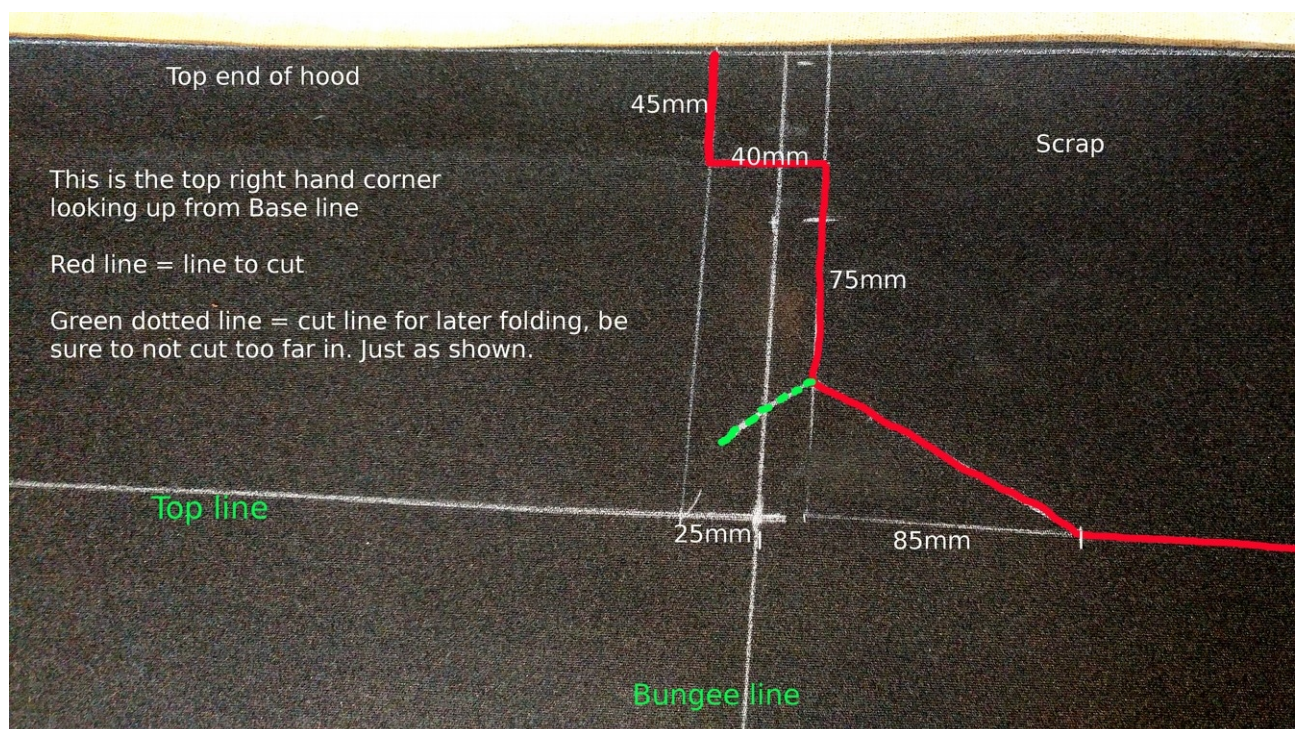


Leave everything overnight to dry ideally, or at least some time before continuing, you don't want anything to dry out of position. Tea break.

Now we move up to the Top line.

This is one of the most complicated parts of the build, the front corners, they're very visible in the finished job. With care these instructions and dimensions will work out well, accuracy and double checking before cutting is recommended.

Look carefully at this top markings pic and make a note of all measurements. Replicate these accurately onto your material using a set square.



How to mark out and cut this top corner shape:

Where the Bungee line and Top line meet, measure 25mm to the left and using the set square mark a line to the end of the hood.

From where the Top line and Bungee line meet mark a point 85mm out to the right.

Draw thick lines (or use a different colour) to help show you where to cut. Measure 45mm down from the top end, 40mm across, make a straight line and mark 75mm down. From this end point mark a diagonal across to the 85mm point. This is the shape that needs to be cut out.

The final task is a very careful cut as the green dotted line shows, in at 45 degrees, it must not reach too close to the 25mm line, as you will see the cut in the finished hood.

The left hand side is identical except mirrored, so if you touched the sides of the hood together in the centre they would be identical.

Once both sides have been marked and cut the hood should look like this, looking from the top end.



Just as with the first bottom bar we fitted, the top bar has to be orientated as shown, thin edge right on the Top line, holes pointing towards the back of the hood, it must be square and centred. You can see some creasing in the pic as I've trial fitted and creased the material into where it needs to be when it gets wrapped over.

When you're happy glue the top bar into position. You don't have to glue it all the way around just the part that touches the material in this pic.

Now onto the top corners (the fun bit).

Best explained in pictures as well as text.

The material needs to be wrapped back over the bar and the end material pushed into the holes at the ends of the top bar. As with the bottom of the hood it's ends over first, sides over afterwards.



When the end material is wrapped around the front bar, poke the ends in neatly as shown, so you have a crisp edge and no wrinkles.



This is where the diagonal cut line we made earlier comes into play, it'll enable the material to fold over itself neatly inside the D shaped end bar.

Now we need to offer up the end of the bungee ready for attachment. I made a small cut for the hook of the bungee to go through the material and touch the metal of the end bar inside, this gives it more grip and stops it moving. Note the front bar has a small slot to locate the bungee end hook, it's at the top of the hole as we are working upside-down.



Now the ends are wrapped over and the as bungee is in place we can finish the front corners by wrapping over the sides. The final Bungee hook position is important to get a good result, it wants to be as far to top of this hole as possible. Then the side flap material is tucked in the hole without creases and it's all held in place by the ends caps.



How the finished ends should look, luckily as there's no glue involved you can take your time re-positioning until the finished ends look like this. You will probably have to tap the end caps in gently with a hammer.



Once you're happy with the fit and how it's looking, feel through the material for where the holes are for the locating front pegs. I used a blade to make a small cross-cut, you don't need a huge hole. Screw in the locating pegs, they're threaded directly into the plastic of the end caps so don't need a huge amount of tightening.

We're now ready for a trial fit on the car, this is to get the side width exactly right.

Trial fit on the car.

Carefully fit the back part of the hood to the car, it's important to locate the top tab of the window frame in it's slot on the rear bar of the body first, then loosely tighten the two 8mm bolts holding on the back bar.

Move to the front of the car and put the locating pegs into the front 'hold-down' bar. Carefully position the material as the hood closes so the bungees run down the body sides and excess material is inside.

IT FITS :-)

Get hold of your last pieces of metalwork, the two supporting cross bars, tape the ends well with insulating tape and push them roughly into position, the front one is quite near the front and the back one quite near the back, this tensions the hood further, it should tap like a drum and not have too many wrinkles. The eccentricity in the roof bars points downwards.

Now take your time tugging the hood into shape, you might want to adjust the rear 8mm headed bolts either side at the back, or the 'hold-down' bar adjustments either side at the front, all are slotted and 8mm.

When you're happy with how wide to set it you can mark it inside, this will then be it's final glued position. For me this material wants to be well onto the body all along the sides with no hollow parts showing underneath where it's lifting up, it never shrinks so that width will be how it will always fit.



Picture shows supporting bars roughly in place, sides sat how they should be, well onto the body with no lifting.



Material tugged into position ready for internal marking.



Mark along the lines as shown, when glued the width will then be fixed.

The centre fasteners.

Lift up the sides of the hood where the central locating slot pieces go, take your side locator bracket and push it into position ready for marking.

Important point: Don't push them all the way back, this is critical as the material doesn't stretch at all, if you push both of these side locators all the way in to the centre of the car you'll not be able to latch them. Leave them in a mid position and just over the tab on the car and mark them as shown.

Mark the position (sides) and where the locating slot needs to end up.



Once you're all marked up you can take the hood back off the car and do the final side gluing, bar fitting and centre locator tabs fitting.

On to the final jobs now.

Glue down the sides, you only need a wide strip of glue both sides, don't go too far in so you can see the glue inside or so far out that the bungee is effected.

For correct tensioning I put my tool box on the big metal bottom end part and pulled the bungees straight, I then placed a large brick in a towel behind the top bar to tension the whole hood on the floor. It stayed like that for a couple of hours whilst the side glue dried.

Fit the central locators according to your markings. I've used M4 stainless countersunk 10mm bolts, penny washers and dome headed nuts for all metalwork to material fastenings, there is a reason for this. I figured it's all very changeable if required and making flat, secure pop rivets isn't that easy, things have to be bought. I'm a 2CV man, I prefer nuts and bolts .

The supporting bar locations are as follows:

Front bar = 20cm back from Top line

Rear bar = 30cm up from the top of the back window frame, I have a feeling about this, I have lots of water collecting in the back part of my hood with my other car, it's just an experiment but maybe this is a little low?

Once this is all complete we're on to the final challenge, the back window.

Start by marking out a line 20mm in from the frame all the way around, this is to enable the material to be well stuck on the horizontal and vertical edges of the window frame. Cut the window hole out carefully.

I had still yet to finally glue down the pieces at the sides of the rear window in this pic.



Carefully cut segments into the corners to allow the material to keep to the frame shape as it's flapped over.



Glue the material around the back window frame well, even with professionally made hoods they have been known to come apart.

When the material is well stuck down it will look like this, straight edges with no cuts and cuts in the corners.



Now we can fit the rear window's rubber seal. Ideally it needs to be quite warm and pliable to be easy to work with, in the winter leave it on a radiator or in the summer leave it in the sun for 20 mins.

I've flipped the hood over so you can see how it's located, note the back window is a very slight trapezoidal shape and isn't rectangular, it's wider at the bottom than the top.



Now you'll need some 'adult lubricant'..

I've fitted a few windows in seals in 2CV's with the rope etc, this stuff just works so well every time, it's water based so doesn't harm the rubber and when it dries (eventually) it's just a sticky harmless seal, easily washed off with water if needed.

Give the inside of the glass channel a good lube.



Now working from the inside again feed the bottom edge and a part of one corner into the rubber seal, I had a couple attempts at the back window but got there in the end, the first time the rubber moved away from the metal frame, it'll take a bit of patience but you can see what needs to be done. Tease the rubber carefully over the glass all the way around, keeping the rubber in place on the frame.



Once the back window is in, you have reached the final, and I think the most satisfying job of all, fitting the chrome filler strip.

This is sold as being for a classic Mini, front or rear. It just so happens 2CV's and classic Mini's use exactly the same filler strip to hold the windows in.

This is done 'dry', don't use any lubrication for this part. Start in the centre and work your way around, I'd not done this before but you soon get the correct 'wiggle and push' action going. Very satisfying.



The corners take slightly more effort and it's important to keep the strip nice and flat and not curve it inwards around the corners as it wants to do. When you come to the end, using some sharp scissors cut the strip off, cut it very slightly too long (by 3 or 4mm) then with a screwdriver coax this end carefully into place. This will ensure there's no gap.

It's finished.



I hope you've enjoyed this guide, I enjoyed writing it and the challenge of making my own hood for the first time.

Please let me know how you get on and include some pics, I'd like to see how all of the colours look on the car. As you can see as of March 2018 my car is still being recommissioned so no final outdoor pics yet. It'll be finished and enjoyed this summer and I think with her new hood she's going to look great.

Thank you,

Robin Maddern.