

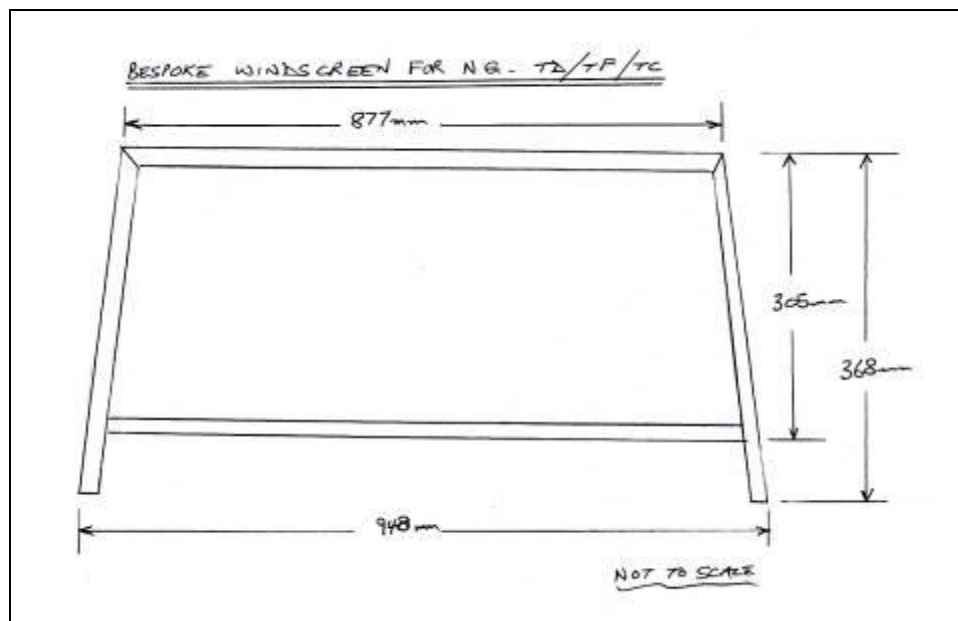
Making and Fitting a Windscreen:

If you are undertaking a new build and cannot source the correct windscreen then the only options are to get one made by a company such as Brasscraft, modify a similar windscreen from another car or make your own bespoke screen. Whilst not particularly difficult the latter option can be labour intensive. Having decided to replace Cracker's aero-screens with a full height windscreen I was lucky enough to obtain the top hoop (available on the pre IVA NG windscreens) plus a bottom rail and aluminium infill panel. This certainly allowed for a much quicker job than fabricating a four-piece screen from scratch.

When I decided to make my own windscreen I obtained some very good advice from Charlie Killick, who had previously heavily modified a pre IVA screen. Three key points are detailed below.

1. Make a new wider (longer) bottom channel and utilise a deeper windscreen glass: - This gives a better appearance.
2. Reshape the lower aluminium infill piece to suit.
3. Make taller windscreen feet: - This gives a more aesthetic and stronger mounting (but not strong enough to use the windscreen as a hand hold when getting in and out of the car).

As my original intention was to fit manual wiper blades in the lower aluminium infill piece I did not follow the first two pieces of advice, which I later regretted. The following describes how to make a suitable windscreen from scratch (although I had the advantage of having a hooped frame). By making a frame to the dimensions below you will be able to use standard MG Midget wiper arms and blades.



Sketch of the windscreen Frame.

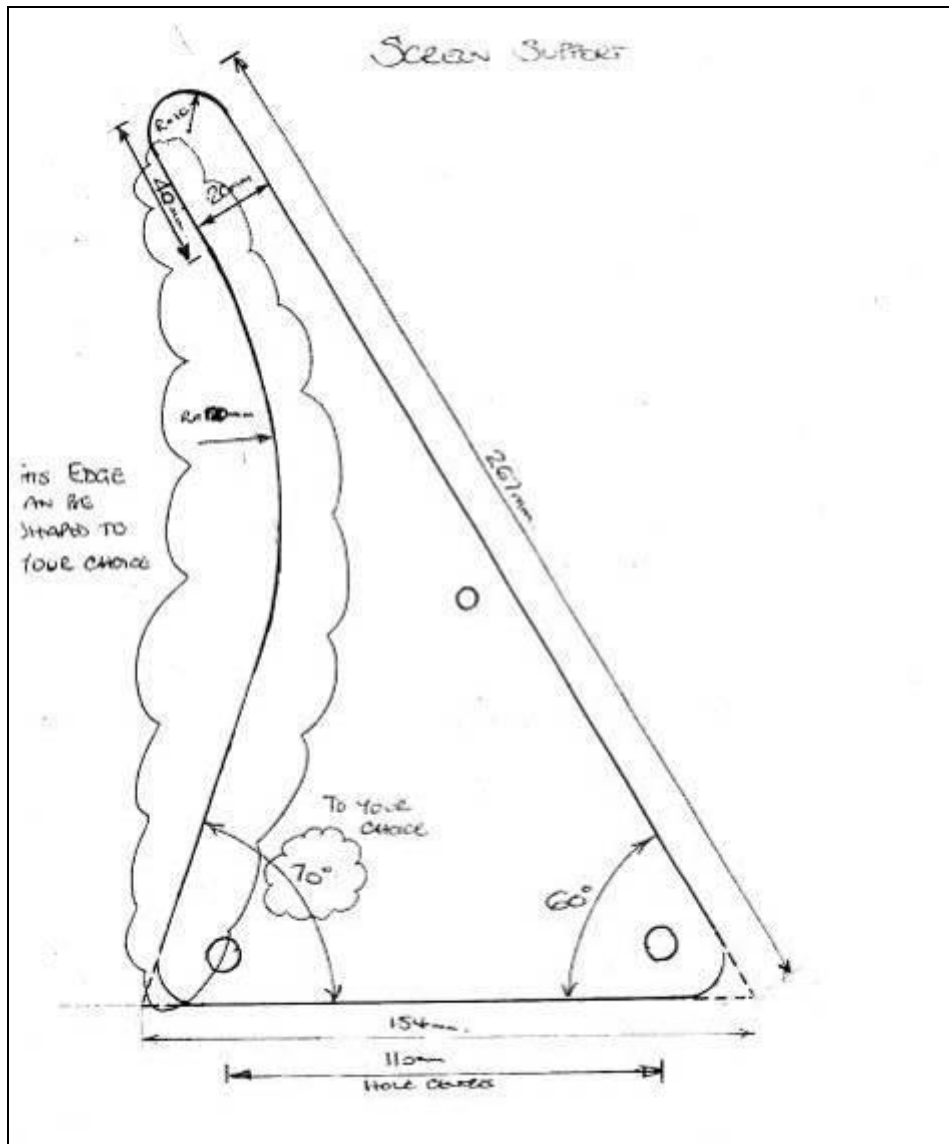
Materials required:

1. Aluminium flat plate for the feet: - A piece of aluminium plate 400mm x 300mm x 6 mm thick cost £25 including postage. This is enough material to make four feet but I couldn't find smaller.
2. Aluminium channel for the frame: - A length of aluminium channel 3/4" x 1/8" x 5m (a mix of imperial and metric measurements were on the invoice) cost £54 from a local metal supplier (I purchased this before obtaining an original top hoop frame).
3. Mild steel flat bar: - 300mm x 13mm x 3mm thick cost £4.75 off eBay (this is enough for two corner fastening brackets so you will need two lengths).
4. Aluminium plate 100mm x 150mm x 1mm thick with a 20mm wide 90 degree turn up on one long side (this is to make the infill panel).
5. Glass cut to your template. Mine was laminated and cost £52.12.
6. Assorted stainless steel fixings.
7. Rubber Channel to surround glass.

8. Rubber strip to go between aluminium infill piece and car body.

Making the windscreen feet:

Using hand tools (plus a belt sander and polisher) I re-created the shape in the sketch below. I drilled M8 holes where the feet are secured to the body (the other holes are M6) and used stainless steel fasteners. According to the 'Original Build Instructions' secure the feet to the body so that the centreline of the mounting holes is 500mm above the bottom of the body and the rear lower edge of the feet is 55mm forward of the dashboard fascia measured horizontally through the bottom holes.



Windscreen feet (sketch courtesy of Charlie Killick).



The finished feet.

Making the screen:

Whilst appreciating that many original owners built their own screens from the parts supplied in the kit I am also aware that the vast majority of current NG owners, including myself, purchased ready built cars, often with aero-screens instead of windscreens. Although my own windscreen construction utilised an NG curved top frame you can use four lengths of aluminium channel to make a frame from scratch to the dimensions shown (this is how the early NG windscreens were made). The aluminium frame is secured in the corners with metal brackets. The easiest method to make/finish accurate mitres is with a mitre saw fitted with a metal cutting blade, otherwise cut by hand and finish accurately with a faceplate sander.

Drilling the frame for the feet:

1. Lay the frame parts on a flat surface.
2. From the bottom of each side section measure up 10mm, 60mm and 155mm and drill M3 pilot holes at these positions centrally in the channel (these are the holes for securing the frame to the feet).
3. Drill clearance holes for M6 fastenings through the lower two holes.
4. Drill and tap the third hole for M6 fastenings.

Making the internal brackets:

Hidden internal brackets are positioned in the four corners of the windscreen and hold the frame together. The internal width of the channel is 12mm so the 13mm wide metal strip needs to be reduced in width by 1mm. The strip comes with rolled edges so put it in the vice and file off approximately 0.5mm from each side, keep checking and filing until the metal strip slides smoothly in the channel. (I cheated and used an abrasive belt).

Cut off two 135mm lengths. Bend the brackets to give leg lengths of 60mm and 75mm. It is very important that the legs are bent square and the exact angle is formed, keep offering them up and checking against the frame. It doesn't matter if the corners of the brackets are slightly rounded and not a sharp 90 degrees..



A simple and cheap bending device.

The brackets are fitted so that the long legs are fitted in the longer channel sections. The hole positions are to suit the leg length and frame. Offer up the brackets to the frame and mark the frame for drilling four holes at each corner (two on the horizontal and two on the vertical channels). Drill each hole M3. Now offer up the corner brackets and mark through the holes made in the channel and drill the brackets M3.

Drill and tap the holes in the brackets for M4 or M5 fixings and enlarge the holes in the corners of the windscreen frame to take your choice of fixings. I used stainless steel M5 countersunk but if I was making a four part frame I would use M4 or a BA etc. equivalent.

Trial fitting of the windscreen frame:

Fasten a 2mm thick x 30mm wide self adhesive rubber strip on the bottom inside edge of the feet where they make contact with the car (a different rubber thickness may be required when the assembly is finally finished and fitted to the car). With the frame assembled and the feet fitted the assembly is offered up. At this time you will notice that the body scuttle is tapered and the feet are parallel, loosen the fastenings that secure the feet to the frame enough to allow the legs to be securely fastened to the bodywork. If you now look where the legs fit to the frame you will notice a gap of approximately 3mm at the rear. Original windscreen kits were supplied with tapered aluminium washers to allow the frame and feet to be securely bolted together without distorting the frame. I was lucky enough to obtain a set of tapered washers from John Hoyle, the alternative is to make a long tapered wedge from a piece of 3mm thick aluminium (a future winter job for me is to replace the washers with a wedge). Make and trial fit these wedges while the frame is fitted to the car. Once the assembly (including wedge's) is a perfect fit you can measure up and make the aluminium infill piece that goes below the screen.

Fitting the aluminium infill below the screen:

The infill fills the gap between the bottom of the windscreen and the body scuttle. It can be made from a piece of aluminium with a 3/4" fold along one long edge. You will need to remove a small section from the corners of the fold to allow it to fit. Allow an appropriate gap between the bottom of the infill section and the body to take a rubber draft excluder of your choice. Once the infill panel is correctly shaped you can remove the windscreen assembly and make a template for the glass.

Note.

In my ignorance I inadvertently cut out my infill panel to sit inside the aluminium channel, seeing other cars at the National Rally I realised that it should have been fixed on the outside.

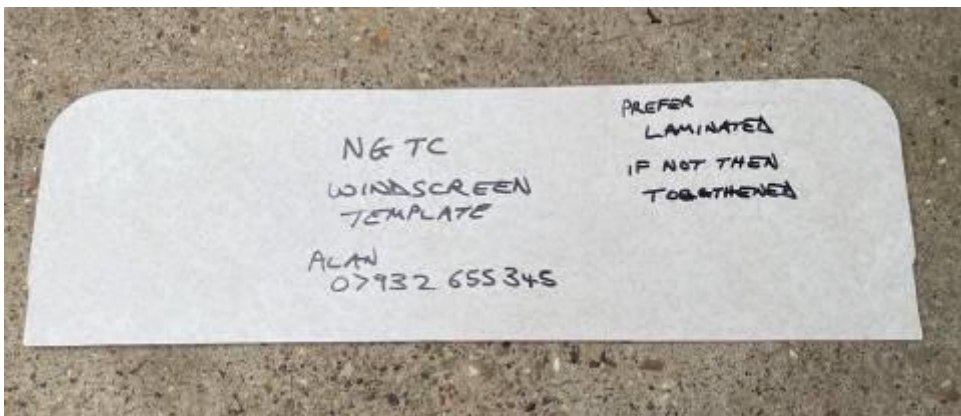


My infill panel shown inserted.

With the infill in place I marked out for securing at two positions on each side and five positions where the folded flange contacts the lower windscreen channel. The holes were drilled 3mm for securing with pop rivets (later changed to stainless self tapping screws as there was no access for pop rivet pliers). The edges (sides) were secured to the frame with stainless M4 Button Heads.

Making the glass template:

With the feet removed I laid the frame on a piece of plywood and drew round the inside of the frame the template was then made 10mm bigger all round (this allowed for a 7mm(ish) gap all round between the glass and frame). The template was then reduced by a further 4mm in the area occupied by the angle brackets and the corners were slightly rounded. At this stage drill (and if necessary thread) any additional holes in the frame that will take wind deflector fittings and lift-the-dot pins etc. The template can now be taken to your local glass merchant who will be able to offer a toughened or laminated finish, I chose laminated.



The template as taken to the glass supplier who recommended 6mm laminated.
(This template is now hanging on my workshop wall just in case it's needed again).

Fixing the glass in the frame:

Assemble the top and sides of the frame and secure the lower two brackets to the channel that goes below the windscreen. I obtained some rubber channel (from Woolies Trim Supplies) that fitted neatly round the glass and was a firm fit in the aluminium channel, I cut it away in the areas occupied by the corner brackets.



Rubber fitted to glass and ready for assembly, note cut-outs in the rubber for corner brackets.

This reduced the gap between the edge of the rubber channel and frame down to around 4mm. Eight small pads were made by laminating two 2mm thick strips of self adhesive rubber, these pads were fitted in the aluminium channels to correctly locate and centralise the glass. With the glass positioned within the top and sides of the frame the bottom channel was offered up and secured. The final task at this stage was to seal the edges of the glass to channel joints with black windscreen sealant. The windscreen can now be fixed to the car with stainless fastenings.



Alan Myland