3d Printed Hardtop by FezCreations
Instructions for Assembly

Please read the entire document before assembly.

Thank you for purchasing the 3d printed hardtop Assembly! Thanks to you all, I can continue to make great products for the community. This is a work in progress, so please let me know if you think of anything that can improve this document. This is one of many ways to construct this top, you may find other methods suit you better.

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Materials & Preparation

From FezCreations:

- Complete ASA panels
- Mounting Blocks w/ m6x1.0 threaded insert holes.
- Instructions

You should have:

- Zipties. Size & amount varies. (Typically a 50ct. Of 4” ties will work)
- Sandpaper, coarse grit
- Plastic Welding Kit (can be found for ~$20 via amazon) with wave hot staples and spatula tool
- Super Glue/Epoxy for plastics
- razor/box cutter
- (not provided Miatacage.com. Hard Top Mounts - Complete Set are a good option)
- Painters tape
- Optional: foam weather stripping/seal/gasket various sizes will work. 1/16” thick x ½” wide, ½” x ¾”, ¼” x ¾”, etc.
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Assembly:

First Steps/Preparation:

Organize all panels and make sure they are laid out properly. Using painters tape & a marker, label the panels in a way you can remember which order they get put together. (if not already labeled)

Using a sharp tool, remove any excess plastic or overhang from panels to ensure smooth connections.

Using sandpaper, lightly sand any edges that will come in contact with a bonding agent. This will ensure that the adhesive has a strong grip to the panel edges.

Install the hardtop brackets to the car.

For Panels with ZIP TIES

Joining Panels - I would suggest doing the following, but you can figure this out however you like:

Join the A row panels together with zip ties and place the flat edge connecting to the B panels on a flat surface. Once the panels are joined, and you have it upright with the underside of the panels facing you, melt a few staples into seams. (this will allow the panels to stay tightly connected, but still have the flexibility to align the towards the end).
Repeat this process for the B, C, & D sections, making sure that the edges of the sections are joined on a flat surface and can mate up smoothly with the other panels.

Once all 4 sections have been initially set, you can join them all and have the entire top as one. Place the top on the car and tape down or fasten the front panels that connect to the windshield. Using tape, string, ties, or wire, line up the C-Pillar panels to the surround of the package tray.

Once you feel comfortable with the alignment of the top, you can start to bond/weld the panels more securely. I would recommend staples every 4” O.C. and at the panel intersections,and epoxy or glue the seams from the underside. (you may want to put painters tape on the top side of the seams in case you have glue penetrating the seams)

Mounting Blocks:

When all the panels have been completely joined, you can add the mounting blocks. The mounting block holes should line up with the mounting holes for all aftermarket hardtop brackets. ***THERE WILL BE SPACE BETWEEN THE BLOCKS AND BRACKETS (this is to ensure you have to top set where you like and use spacers/hardware to fine tune the alignment)*** The rear blocks should have a contour on the back to match up with the contour of the interior side of the hardtop panels.

Once the blocks have been aligned, you should be able to bond/weld them in place.

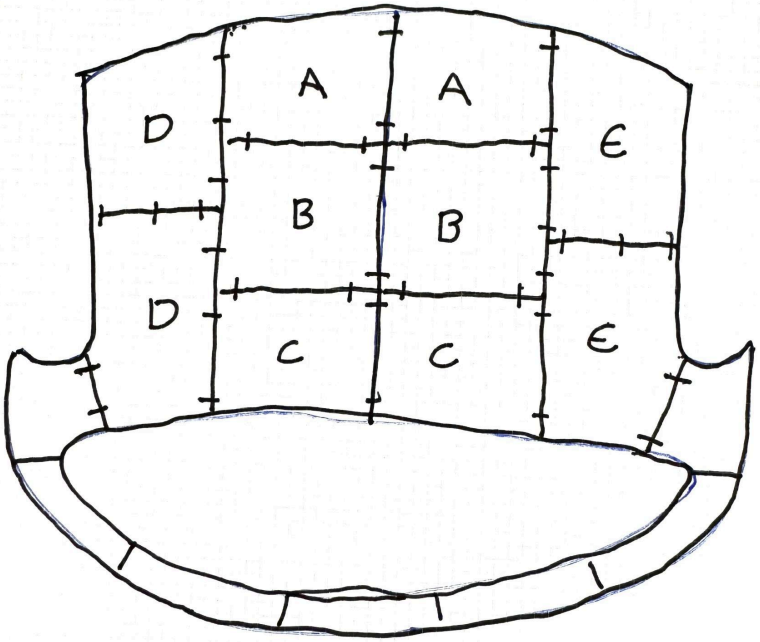
The mounting blocks have M6x1.0x12.7mm threaded inserts. These are more for alignment purposes. I would recommend reinforcing these sections or passing a bolt through the entire assembly.

For Panels with DOWELS

Joining Panels:

I recommend assembling the to pon the floor or table, and then setting it to the car once all panels are connected with the dowels. DO NOT FUSE PANELS YET

You will need the 48 metal dowels that are provided (4mm x 30mm). In order from A - E, join the pairs of panels together that match the letters below:



Once all panels are joined in pairs, attach A, B,& C. When the 6 middle panels are connected you will be able to mount the D & E panels to the ABC panels.

NOTE: If this order is not followed, you may not be able to connect the panels correctly. Some dowel holes may not line up exactly due to printing tolerances. To fix this use a #21 drill bit or similar to correct the hole opening.

When ABCDE completes the roof assembly, you can connect the remaining pillar & window panels to the main assembly.

The hardtop should now be rigid enough to bring to your car and start aligning the mounting blocks and fusing the panels.

Methods of Construction:

Using Hot Staples to fuse the panels:
Set a staple at each joined corner and along the seam at 4” from each other. The more you use, the better the connections will be. Once you've set all the staples in place, you can remove the break-off tabs that protrude from the plastic. Once all the tabs have been removed, you can use the hot spatula tool to smooth over any sections where you set the staples. I recommend watching some youtube videos that go over how these work.

Using Glue after the panels have been stapled:
Tape over the top of the seams using painters tape. Using an adhesive/bonding agent, carefully apply it to the underside of the seams and let it set. Be careful to make sure it is not getting past the seams on the underside. Once the panels are glued at all seams, you can set in hot staples as the step above states.

You can choose to apply weatherstripping at the underside of the top where it touches down on the package tray surround. Using hardtop brackets (not provided Miatacage.com. Hard Top Mounts - Complete Set are a good option) line up the blocking and bracket locations so that the holes line up. Set the mounting blocks using glue and fuse along the edges of the blocks using staples in a similar way to the panels.

The blocks should accept M6 heat-set hardware. Be sure to not overtighten them. You can also drill through the entire assembly at the mounting hole locations and connect using a more compressive setup. Ask me for more information if interested in this route.

OPTIONAL

OPTIONAL - added strength along seams:
Apply fiber tape along the underside of the seams & epoxy the underside of the hardtop.

OPTIONAL - rear window:
Rear Lexan Window Instal:
Purchase or cut out a sheet of lexan matching the shape of the OEM window. This info can be found online to purchase the window.
Mark a spot 1” down and every 6” along the window edge (or as the window comes pre drilled). Drill at these locations through the window and panels. You can use any size hardware you like and also apply sealant or a seal to make the window more watertight. Be careful to not overtighten.

OPTIONAL - Fiberglass/CF Top
The shells printed for fiberglassing are made from PETG. This material is suitable for easier fiberglass use. These panels are not as robust as the functional panels and should not be used without fiberglass. User may need to further prep the panels before overlaying materials.

-Use standard methods to encase the top in a fiber shell
-Use aluminum framing to increase strength across sections: Think of an L-Channel or C-Channel going front to back over the center of the car or both seats. This will allow you to tie the channels into the roll bar>windshield surround and tie the panels to the metal frame. A channel running from the drivers>passengers front mount and tying the front panels down to reduce uplift if experiencing.

OPTIONAL - Customer Feedback Instructions
The easiest method I found was using my ratcheted hand clamps and clamping the two pieces I was working on, stapling the corners first, then a few in the middle. After carefully lining all the edges up and stapling them together one by one everything all came together. I was then able to set it on the car. After setting it on the car I went around and added more staples for more reinforcement. I used an angle grinder to nip all the metal fingers off the staples. I was afraid that it wouldn't line up but after installing the mounting blocks it lined up perfect. I tested the doors and everything was good. Patience is key, it is a tedious job. Next part is filling in the gaps with body filler and sanding everything smooth.
Then some primer filler to fill in the tiny crevices. Then, and this is just my preference, I plan on coating the whole top with bed liner spray to give it a soft texture and to keep out the rain. I will take pictures of the final product. The only place I would recommend the zip ties is binding multiples pieces that might sag in the middle. I used a 4x8 make shift ply wood table to assemble on. That's all of my advice.

IF ANY PANELS GET DAMAGED DURING INSTALL:

Please reach out to me via email: fezcreations@outlook.com
I can print and send you replacement panels as needed for the cost of materials & shipping.

Customer Is responsible for constructing and using the top in a legal and safe way for their own intended purposes. This top may not be legal on all public roads and will have to advise local laws regarding aftermarket exterior car parts for public roadways. Mounting hardware is not included, though can be purchased separately. I will provide instruction upon delivery & will be available for any questions you may need during your building process.

NOTE: If this order is not followed, you may not be able to connect the panels correctly. Some dowel holes may not line up exactly due to printing tolerances. To fix this use a #21 drill bit or similar to correct the hole opening.