

How to Add Hat Compatibility

Hi, I'm **rasp** and I will be walking through how I add hat compatibility to hair. This will include adding shape keys and editing in Blender, applying attributes in TexTools, and how to fix a couple of issues I've encountered with importing into TexTools.

This tutorial was overhauled on 2/23/24! As I've learned and grown in my own modding journey, I wanted to share my new knowledge with y'all. 😊

To follow along you will need:

- ❖ TexTools
- ❖ Blender (I am using version 3.5.1)

I won't be going over Blender or TexTools basics. If you need help with those, you can check out my [mash up walkthrough](#).

You can reach me on [twitter](#) or discord (rasplejax) if you need any help with troubleshooting, and you can find my mods on [ko-fi](#)! 💕

Step 1: Exporting Race/Gender Specific Hats

As part of adding hat compatibility, I import different hats into Blender to see where they sit and how the hair fits under them. I haven't found one single hat that's shaped in a way where I can see all the areas the hair might clip, but I have three hats I commonly use: **Spring Straw Hat** (close to the forehead and helpful with bangs), **Appointed Cap** (close to the top of the head), and **Shishu Bujin Eboshi** (close around the sides).

Depending on the race/gender for your mod, you may or may not see a hat specific to them. There are a couple of different ways I know of to export a race/gender specific hat. I'll share both. If you don't need help with this, you can skip to the [next step](#).

The first is editing the **metadata**. Just go to the **metadata tab**, click the box next to the race/gender you're using for your mod, and click **Save**.

Textures Models Variants Metadata

Set: e6141 ← Slot: Head(met) → 🔍 [2] Appointed Cap DISABLE **SAVE**

RACIAL MODELS

☒ Hyur Midlander Male	☒ Hyur Midlander Female
☐ Hyur Highlander Male	☐ Hyur Highlander Female
☐ Elezen Male	☐ Elezen Female
☐ Miqote Male	☐ Miqote Female
☒ Roegadyn Male	☐ Roegadyn Female
☒ Lalafell Male	☐ Lalafell Female
☒ AuRa Male	☐ AuRa Female
☐ Hrothgar Male	☐ Viera Female
☐ Viera Male	

Under the Models tab, I now have a male Au Ra hat to export.

Textures Models Variants

Race | 5

Hyur Midlander Male

Hyur Midlander Male

Hyur Midlander Female

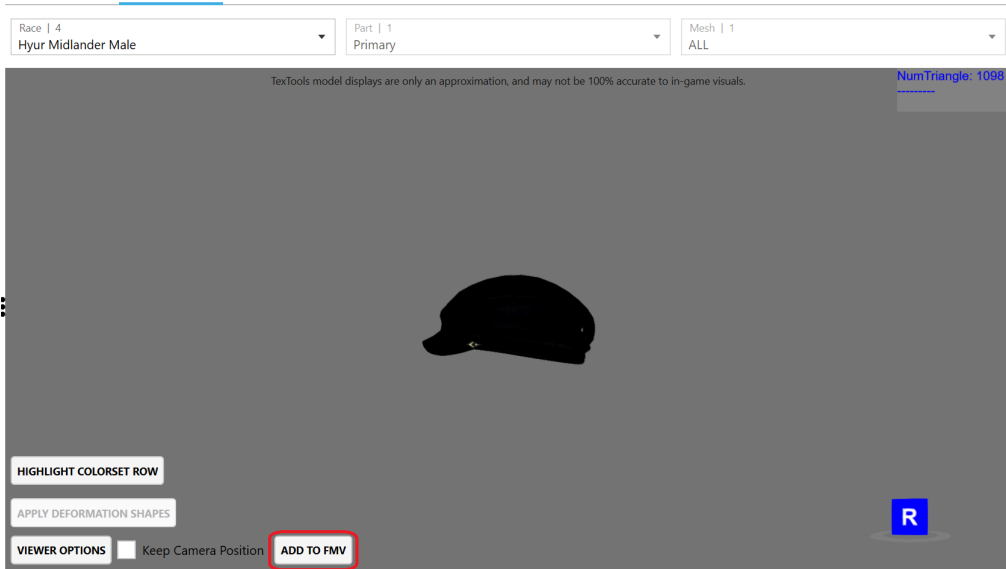
Roegadyn Male

Lalafell Male

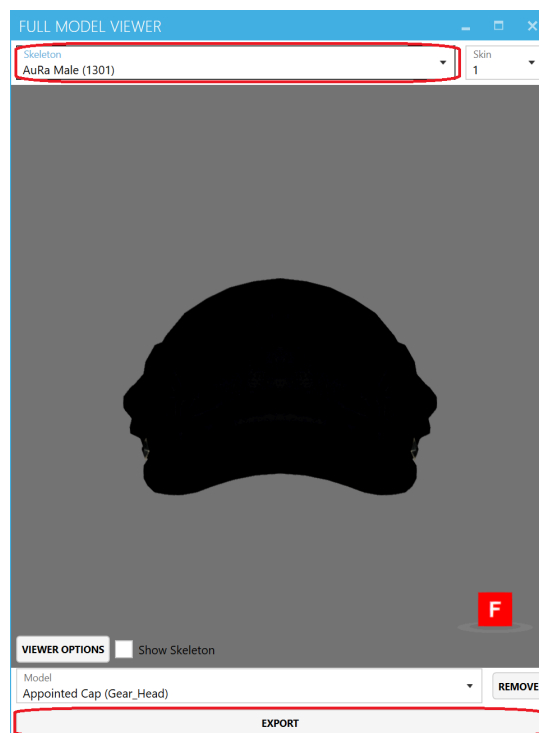
AuRa Male

The other option is using the **FMV viewer**. In your Models viewer, click the **Add to FMV** button towards the bottom left.

Textures Models Variants Metadata



A new window will open. At the top, select the race/gender you're using for your mod, and then click **Export** at the bottom. You'll need to type in a name for the export file, then just click the next **Export** button.



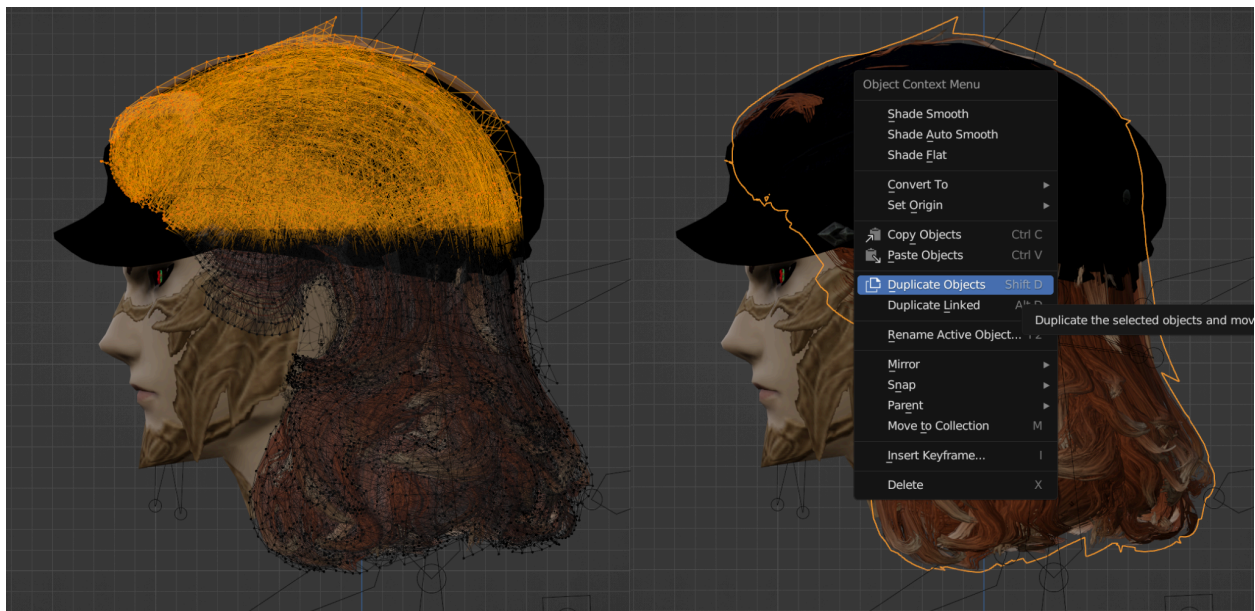
Step 2: Separating the Mesh

If you're working with vanilla hairstyles, you'll notice that they're usually broken up into multiple parts. One or more of the parts are usually sectioned to fit under a hat. If your hairstyle is already separated like that, you can skip to the [next step](#).

If you're working with a solid mesh, you will need to separate it into different parts.

I'm going to start by importing a hat and a head into Blender with my hairstyle. I imported a head so I can check and make sure that when I edit the hair, I don't accidentally clip it through the head in areas that are visible below the hat.

Now, with my hair selected, I'm going to enter **Edit Mode**. With **X-Ray Mode (Alt + Z)** on, I selected a portion of the hair that will be hidden by the hat. I then exited edit mode, right clicked with the hair still selected, and clicked **Duplicate Objects**.

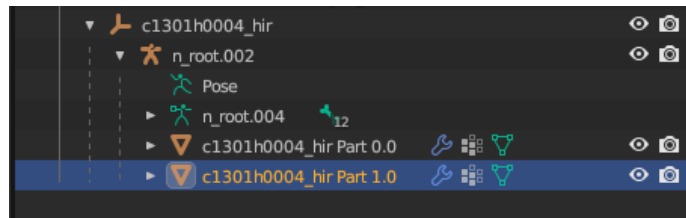


The duplicated hair will be grabbed and moving around with your cursor. Just press **Esc** to cancel the grab.

Now I'm going to re-enter **Edit Mode**. My selection is still there. I'm going to press **Delete** then **F** to delete faces. Then, I'm going to exit Edit Mode, select my other hair mesh, and enter Edit Mode again. My same selection is there, so I'm going to press **Ctrl + I** to invert the selection. Then I'll press **Delete**, and this time I'll press **V** to delete vertices.

Note: It is quicker to Separate By Selection, but in my experience this can cause seams in the Normals. I've not encountered the same seams with this method.

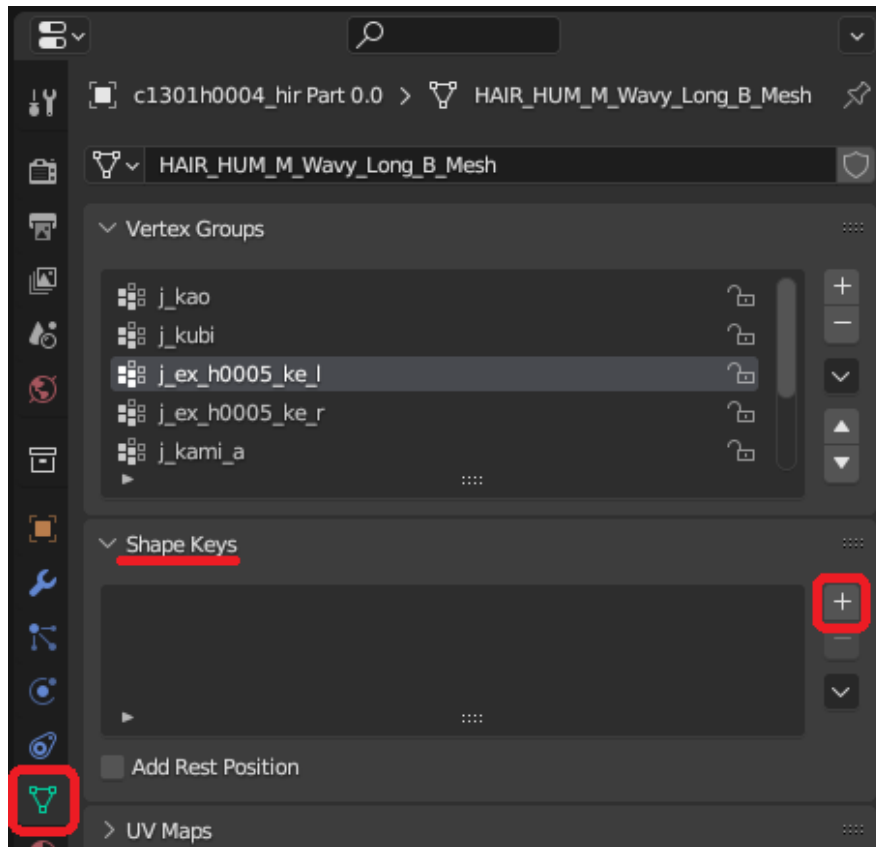
Next, I'm going to rename my duplicated mesh. If you're using a vanilla or low poly mesh, you can rename the second number of the part (ex: original mesh was 0.0, duplicated mesh is 0.1). If you're using a high poly mesh, you'll need to rename the first number of the part (ex: original mesh was 0.0, duplicated mesh is 1.0). Always be sure that your numbers are consecutive or else it can cause issues in TexTools.



Step 3: Shape Keys

If you skipped the previous step, start by importing a hat and a head in addition to your hairstyle. This is so you can reference where the hat sits and make sure that shape edits don't accidentally clip through the head in areas that are visible below the hat.

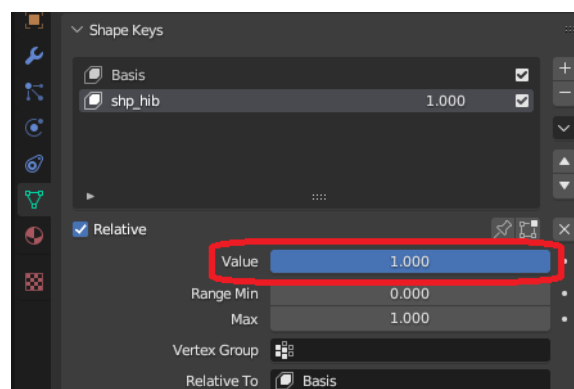
Now, I'm going to select the mesh that will be visible when hats are worn. Navigate to the **Object Data Properties**, which is a **green triangle icon**. There is a **Shape Key** section. Expand it if it's not already open.



Click the plus sign on the right hand side **twice**. Two shape keys will generate. One named **Basis** and the other defaults to Key 1. Double click on Key 1 to change the name, and rename it to **shp_hib**.

Basis is the regular mesh shape and shp_hib is the shape the mesh will take when a hat is worn.

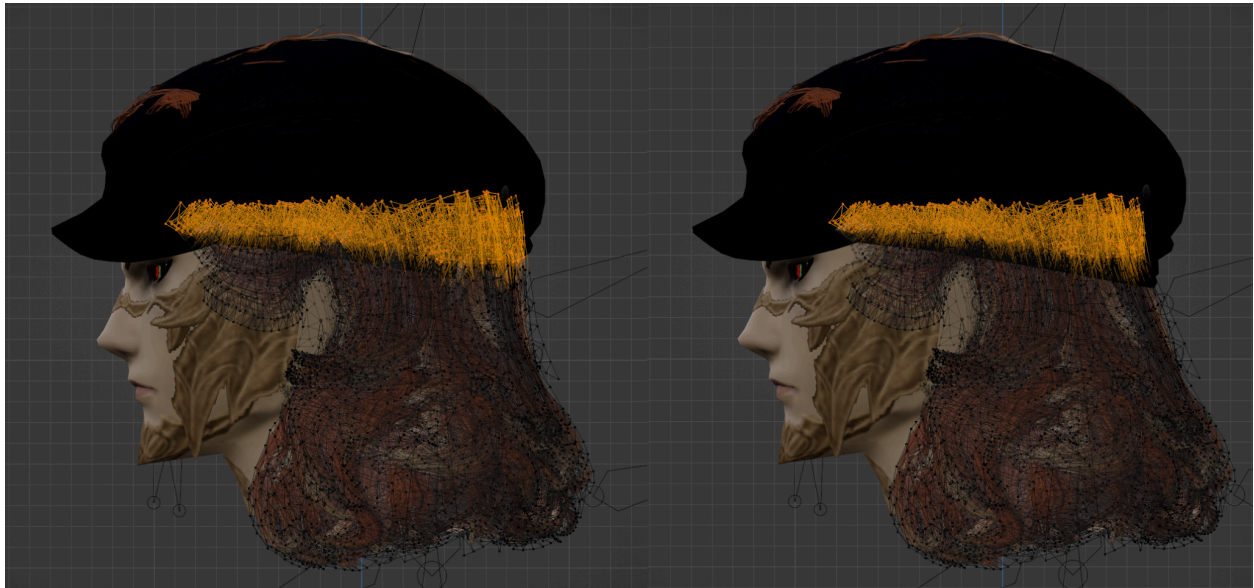
With **shp_hib** selected, set the **value** to 1.



If you're editing vanilla hairstyle(s) with multiple parts that will be visible when hats are worn, be sure to repeat this process for each applicable part. The next step will be editing the shape. You can select all of your applicable parts to edit at the same time.

Note – be mindful of whether you have Basis or shp_hib selected. If you want to make edits to your regular mesh after the hat compatibility is added, you will need to click on Basis. If shp_hib remains selected, any edits to the mesh will apply to it, even if you set the value to 0.

With shp_hib selected and set to 1, I'm going to enter **Edit Mode**. With **X-Ray Mode** on, I selected the section of hair under the band of the hat. Then with **Proportional Editing** on, I pressed **S** to scale and reduced the size until I was happy with it.

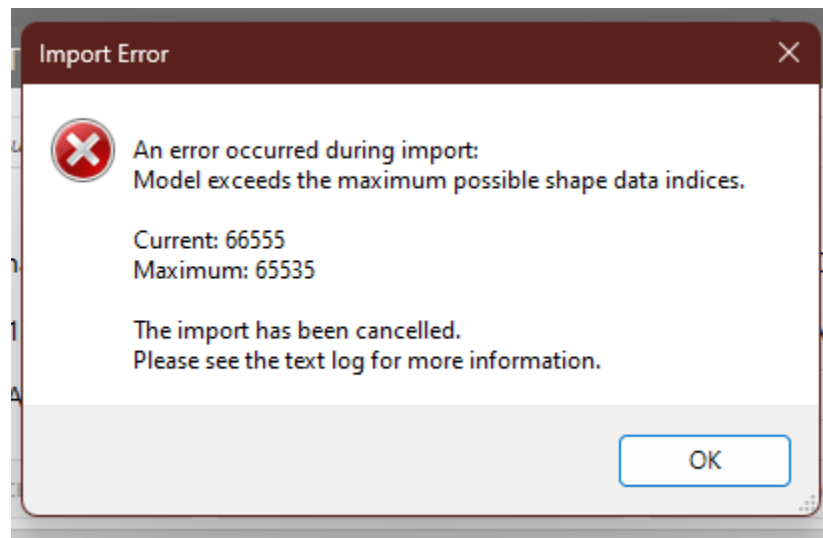


You may need to clean up how certain sections are scaled, especially with bangs. I had to go in and fix the side burns because they clipped into the face.

I always double check my hair under other hats and make edits as needed. Once you're happy with how your hair looks, you can delete the head and hat and export the FBX. Be sure that when you export that **Apply Modifiers** and **Add Leaf Bones** are unchecked.

Step 4: Extra Step for High Poly Meshes

In working with high poly meshes like Baldur's Gate 3 hairstyles, I've come across two issues with hat compatibility: 1) TexTools deleted the shape keys despite giving no warnings or errors, and 2) TexTools gave the below error which canceled the import.



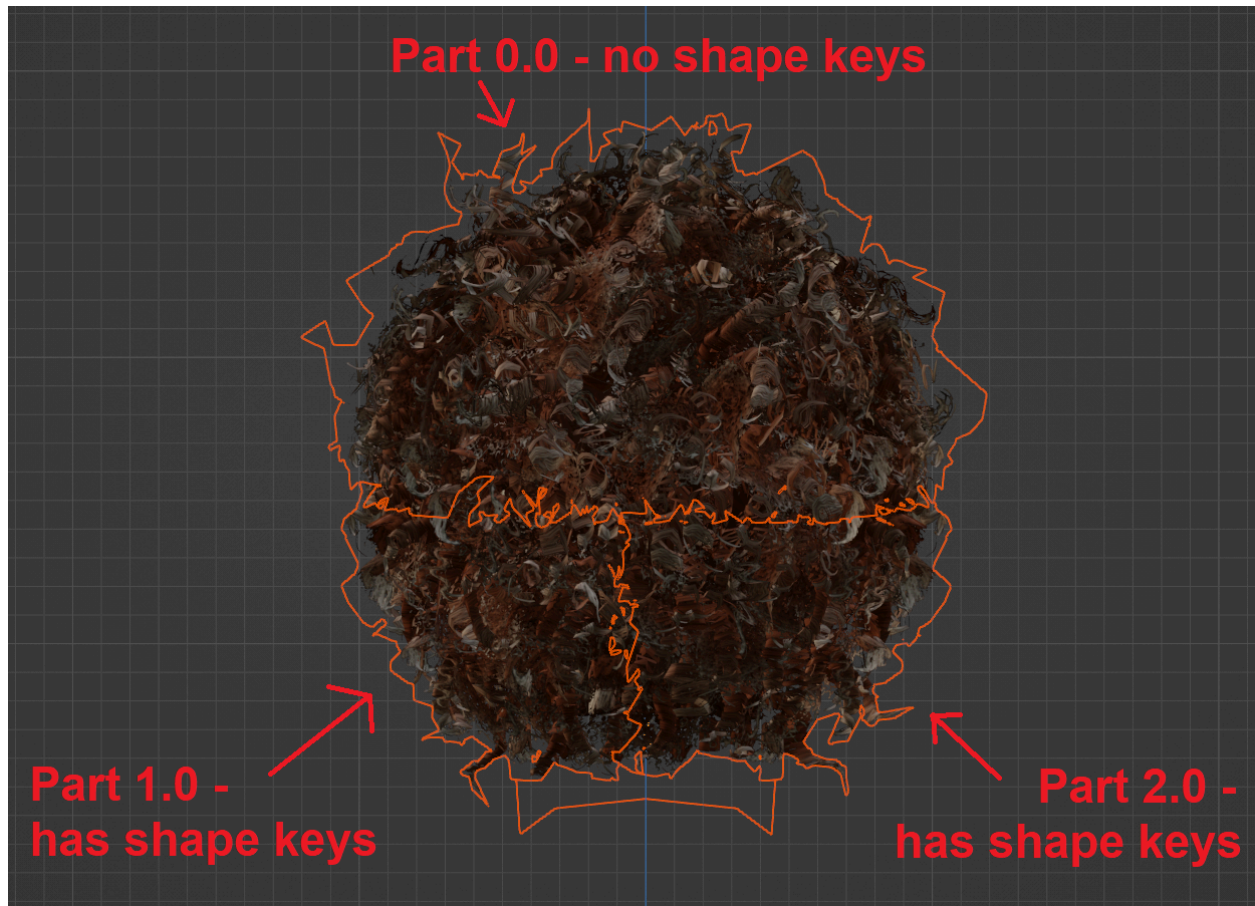
If you don't run into either of these issues, you can skip to the [next step](#).

As always, I have to give credit to [Kay](#) for their help troubleshooting. I wouldn't have figured this out without them, and some of the steps I shared in this tutorial are ones they taught me!

We'll start with **issue 1**, which is if you import your hair into TexTools and the shape keys are deleted without any warnings or errors.

The first thing I would check is your mesh names. I mentioned this in Step 2, but to review, you want your parts to have different first numbers (ex: original mesh was 0.0, duplicated mesh is 1.0).

If your naming is correct, you may need to separate the hair into additional parts. I had to do this with my Dandelion port, as illustrated below. Just refer to Step 1 on separating the mesh, it's the same process.

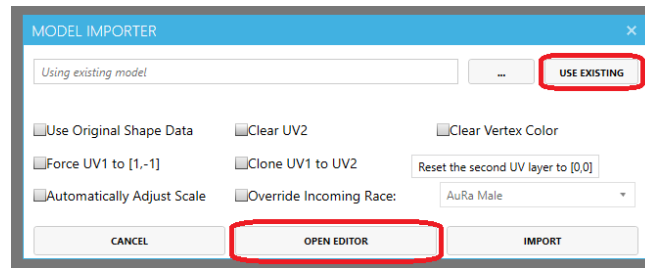


Onto **issue 2**. I ran into this issue before I learned to separate the scalp section. Separating that section and not applying any shape keys to it should prevent this error. However, if you're editing a high poly mesh and your proportional editing area is too large, it may also result in this error.

If you get this error, I would recommend deleting your shape keys and starting over. You want to be sure that when you're editing the shape, that you're editing the smallest number of vertices possible.

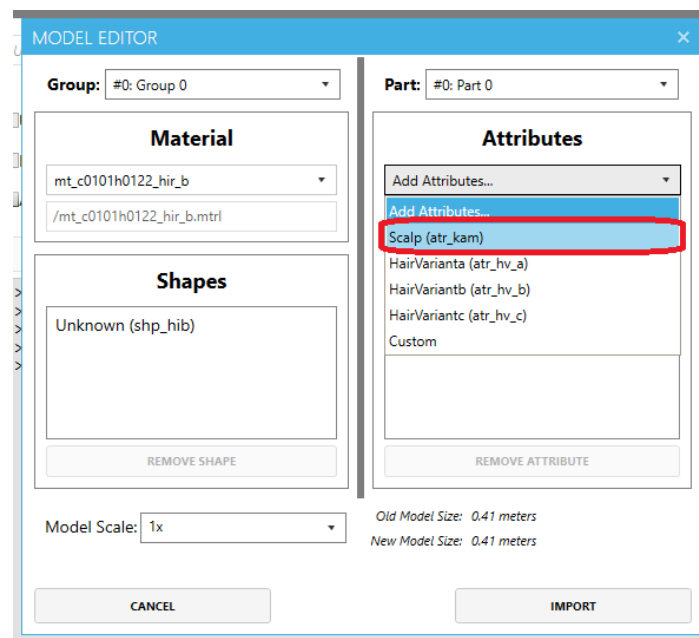
Step 5: Attributes

The **Scalp** attribute makes the part it's applied to disappear when hats are worn. To assign the attribute, you'll need to open the editor. In TexTools under your Models tab, click **Import**. A new window will open. Select your FBX or click **Use Existing** if it's already been imported, then click **Open Editor**.



Another window will open. Select the **Group** and the **Part** for the section you want hidden when hats are worn. Example: if you named a mesh Part 1.2 in Blender, it would be Group 1, Part 2 in TexTools.

Next, in the **Attributes** section, click the drop down menu and add the **Scalp** attribute.



If you make a mistake, you can click the **Remove Attributes** button at the bottom of the box. If your modded hair and the vanilla hair you're applying it to both have a lot of parts, you may find that the Scalp attribute is applied where you don't want it to be. So I

recommend checking every Part under every Group to remove any Scalp or other attributes you don't want.

Step 6: Extra Step for Miqo'te

Miqo'te have two unique attributes that are also used for adding hat compatibility: **Miqo'te Ears** and **Miqo'te Long Hair Unique**.

Miqo'te Ears is used to make the ears disappear when certain hats are worn. You don't want to use the **Scalp** attribute for ears, because the **Miqo'te Ears** attribute is special in that it allows the ears to still show when hats with ear holes are worn.



For example, the Salon Server's hat doesn't have ear holes, so the ears should disappear when hats are worn. The Weathered Beret does have ear holes, so the ears should show.

Miqo'te Long Hair Unique is used for sections of the hair that should be hidden when certain hats are worn, but not when all hats are worn.



As a general rule of thumb, any hair below your scalp mesh should get the **Miqo'te Long Hair Unique** attribute. If you're unsure if a part needs the attribute, you can always test with the Weathered Coif (shown above) to see which parts show and need the attribute.

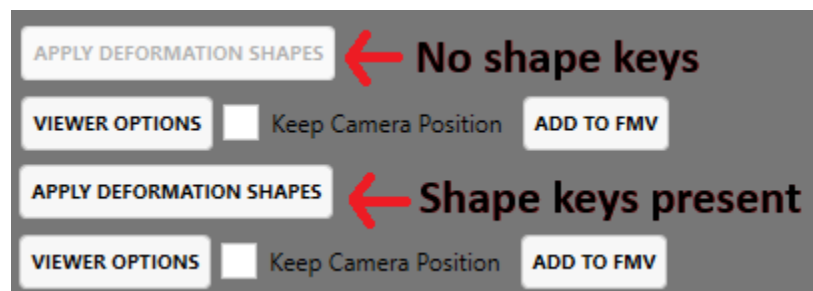


Step 7: Troubleshooting

Pack up your mod and load it in game. Try on different hats and see what happens!

If you find that random parts of your hair are disappearing, go back to TexTools and make sure that the Scalp attribute isn't applied to any parts you don't want it to be.

If it looks like the shape key isn't applying, first double check that the shape key names are spelled correctly. If that isn't the cause, TexTools may have deleted your shape keys without telling you. An easy way to tell if they were deleted is to look at the **Apply Deformation Shapes** button in the lower left corner of the TexTools viewer. If the text is gray, your shape keys were deleted. If they were deleted, refer to [Step 4](#).



And always remember to check your Penumbra priorities and if you're in the right collection. I can't count how many times I've stressed out over an issue only to discover that was the problem!

And that's it! We're done! Congrats on adding your hat compatibility! 🥳