Drawing Iris, Eyelines and Eyebrow

I recommend that you draw the eyelines, iris, and eyebrow textures.
This will make existing characters more accurate and OCs more unique.
For the eyelines and eyebrow you can use material editor to replace the textures.
For the Iris you can set the iris type to “none” and then add your drawn texture as an overlay.
Gimp templates for eye, eyelines, and eyebrow is included in this guide.

Hair

I recommend you use accessory hair.
You can build up complex hairs using smaller pieces.
Building hair from smaller pieces is necessary to create accurate hairs for existing characters.
You can layer large hairs on top of each other to create unique looking combinations or to fill in gaps.

Sliders

As a general tip for sliders, I would recommend using the keyboard to input the value you want rather than move them around with the mouse.
Also would recommend using value that are multiples of 5 for the most part unless it’s a case where small values make a large difference.
The reason for this is that it will make it easier to remember what sliders give you what results for future characters.
For the majority of body sliders, I recommend keeping the X and Z (width and thickness) values around the same to keep the proportions natural looking unless the character has a unique body.
For arms, width and thickness are Y and Z.
Yellow sliders directly control the scale of an ABMX bone, they are the ones that start with **cf_s_**...
If the ABMX bone has a yellow slider, then you don’t need to touch the scale slider in ABMX for that bone, adjust the offset/tilt instead.

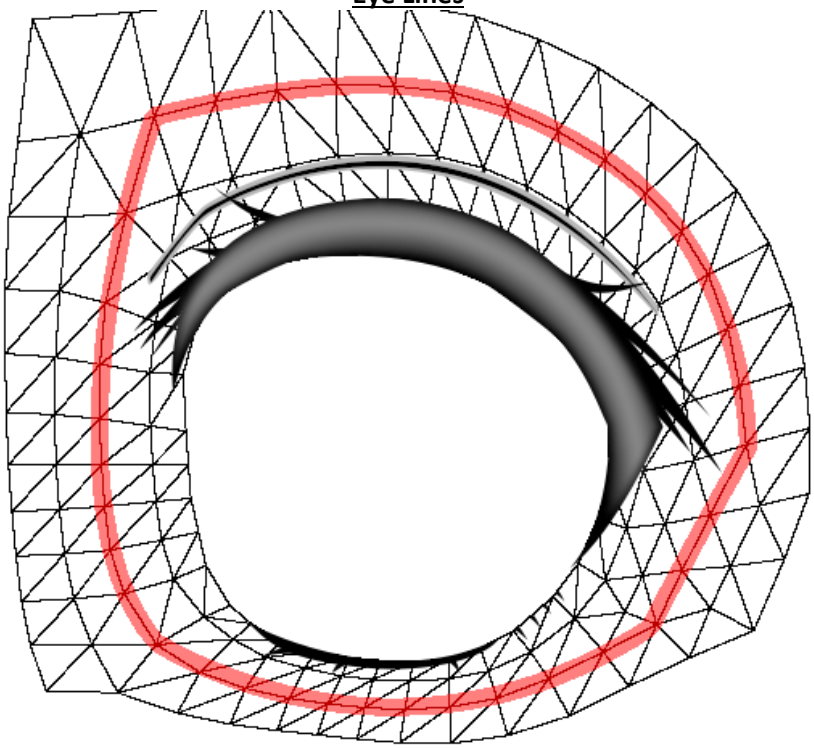
Default Character

A default Chika is included in this guide with most sliders set to 50.

Bones

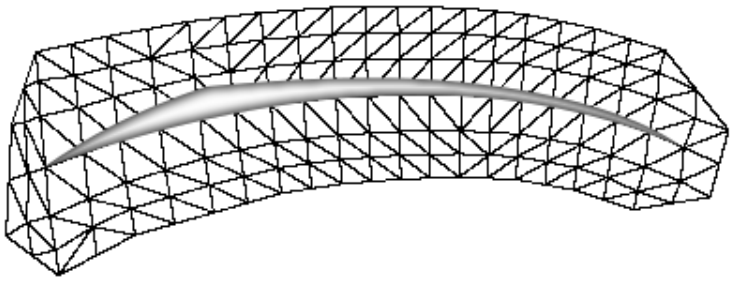
Changing the **cf_d**… bones in ABMX will also adjust the position of any child bones. Changing **cf_s**… bones will not and will only affect the shaping around that bone and not the children.

Eye Lines



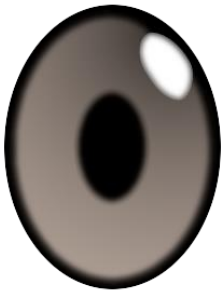
- When drawing the eye outlines, use the UV map as a guide.
- You can export the UV map using material editor.
- Use a path or vectoring tool to draw using curves.
- You can lighten areas to use the eyeline color, or make the entire eyeline white if you want it to be a solid color.
- To make things simpler, you can export the lower and upper eyeline as one texture and replace “eyeup” texture in ME.
- For the shadow, replace “kage” in ME.
- Recommend drawing within the red outline, anything outside the outline may get distorted.
- Gimp template included in guide.

Eyebrow



- You can lighten the inside and keep the edges dark to create an outline.
- By default eyebrows don’t have an outline.
- Gimp template included in guide

Eye



- Draw the iris by layers elipses over each other.
- Add transparent white highlight details.
- You can use gradients for the base coloring.
- Gimp template included in this guide.

Order/Checklist

You can use this list below as an exact order like a recipe or as a checklist.
I recommend using this order.
Try not to spend too much time on each section, and once you move on to the next, don't go back to adjust the previous section until all the sections have been worked on.
You can go over the individual sections once you've at least done majority work on all the sections.

Face

1. Draw iris, eyelines and eyebrow.
2. Pick head to use (head mod, etc)
3. Apply the drawn textures.
4. Shape the eyelines (use upper and lower eyelid sliders, and inner and outer corner height).
5. Pick eye type, skip if you are drawing the iris.
6. Pick and adjust highlights, skip if you are drawing.
7. Adjust iris spacing, vertical position, width and height.
8. Adjust eye spacing, height.
9. Pick a sclera type to use.
10. Adjust eyebrow spacing, height, and angles, you may need to use **cf_J_Mayu** in ABMX, also check that the eyebrows aren't too far away from the face.
    You can adjust that using Z offset.
11. Adjust cheek outlines, including the angle and sharpness
12. Adjust nose, mouth, and eyes vertical position
13. If the character has a long/tall head, adjust upper face height
14. If you are using head mod, adjust **cf_J_EarBase_ry** X offset

Hair

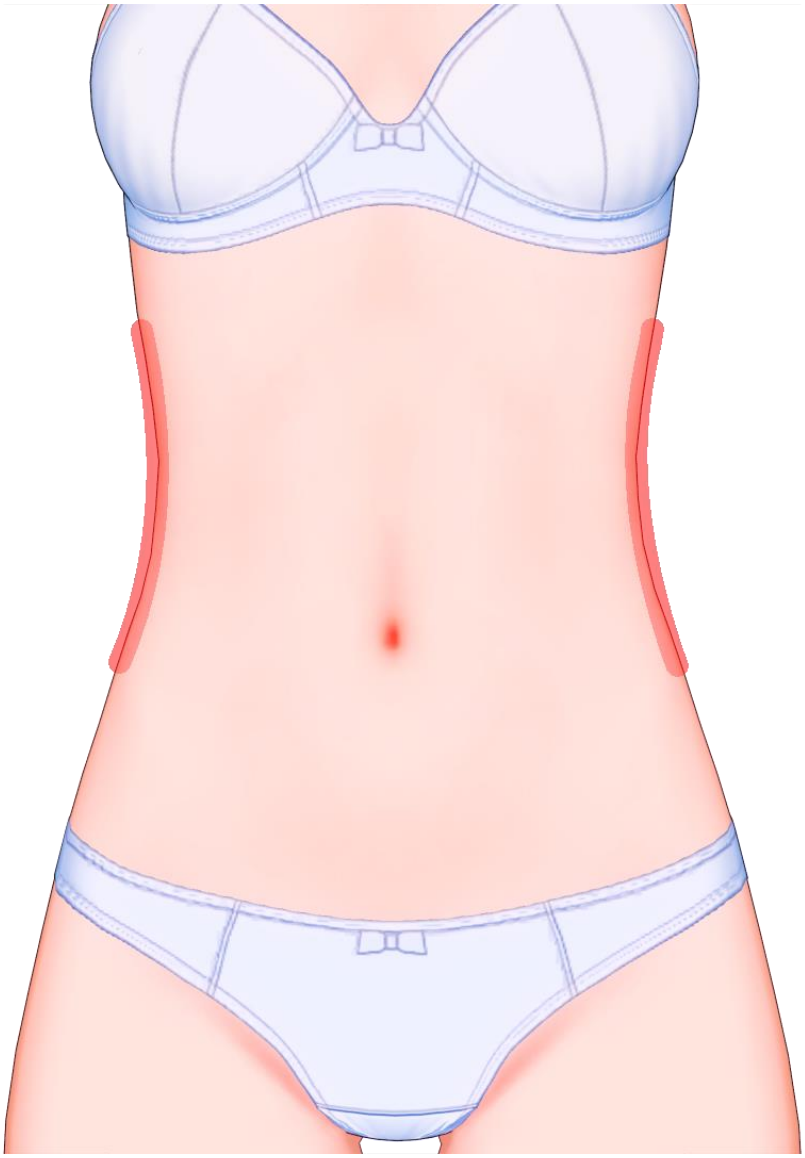
1. Rear hair.
2. Front hair.
3. Change shadow colors.
4. Duplicate front hair to make semi-transparent

Body

1. Adjust leg size if needed, arm size if needed.
2. Adjust hand and foot size.
3. Adjust toes/fingers if needed. Lengthen fingers, toes, or make them thicker.
4. Adjust thighs and leg sliders.
5. Adjust shoulder, hips and lower torso.
6. Adjust upper torso, and waist.
7. Adjust leg spacing.
8. Adjust arm spacing.
9. Adjust thigh shape.
10. Adjust ass shape.
11. Adjust waist shape.
12. Adjust breasts.

Waist Pinch

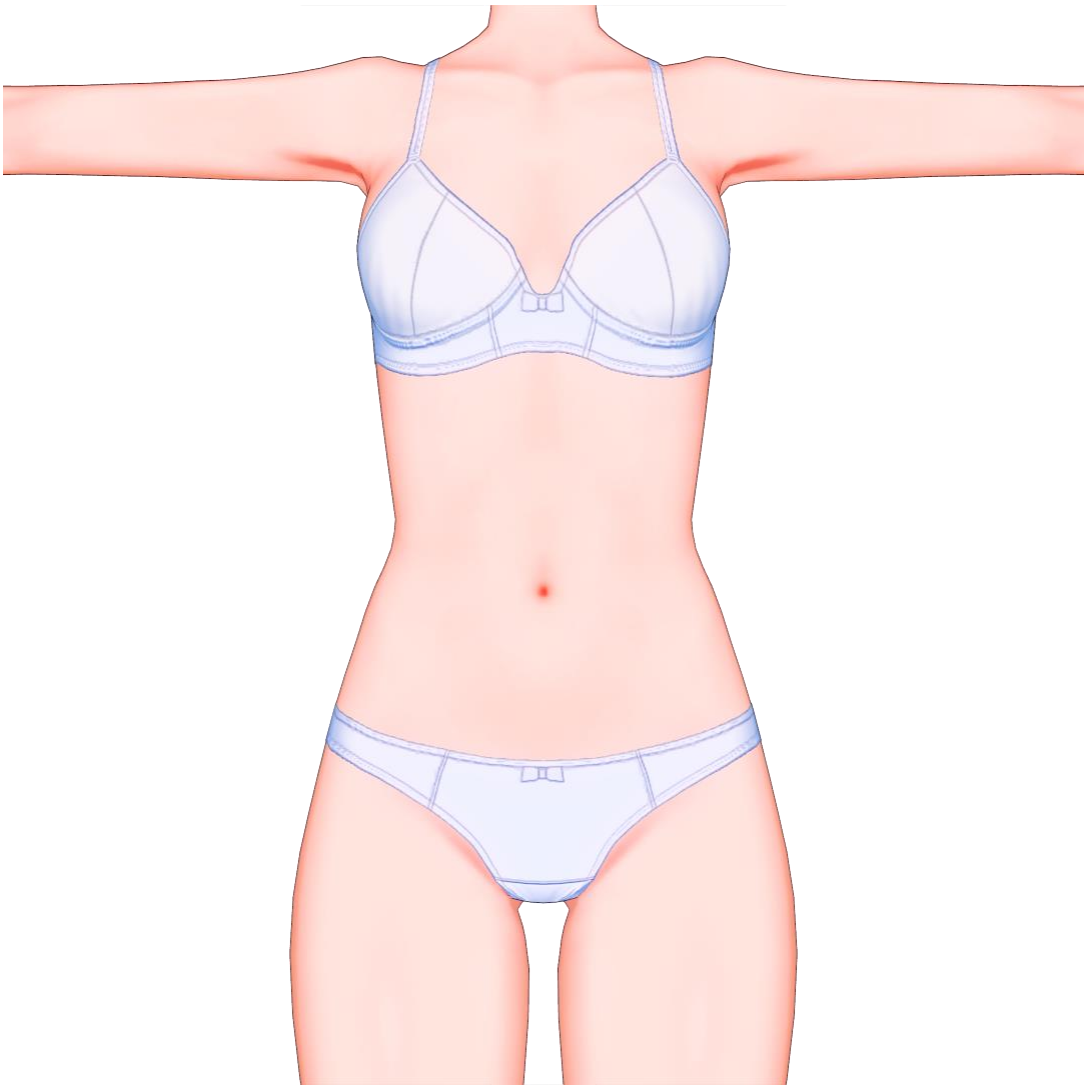
Typical anime characters have a pinched waist to some degree, some are sharp and some are rounder.



This is the default waist, the waist outline is very rounded.

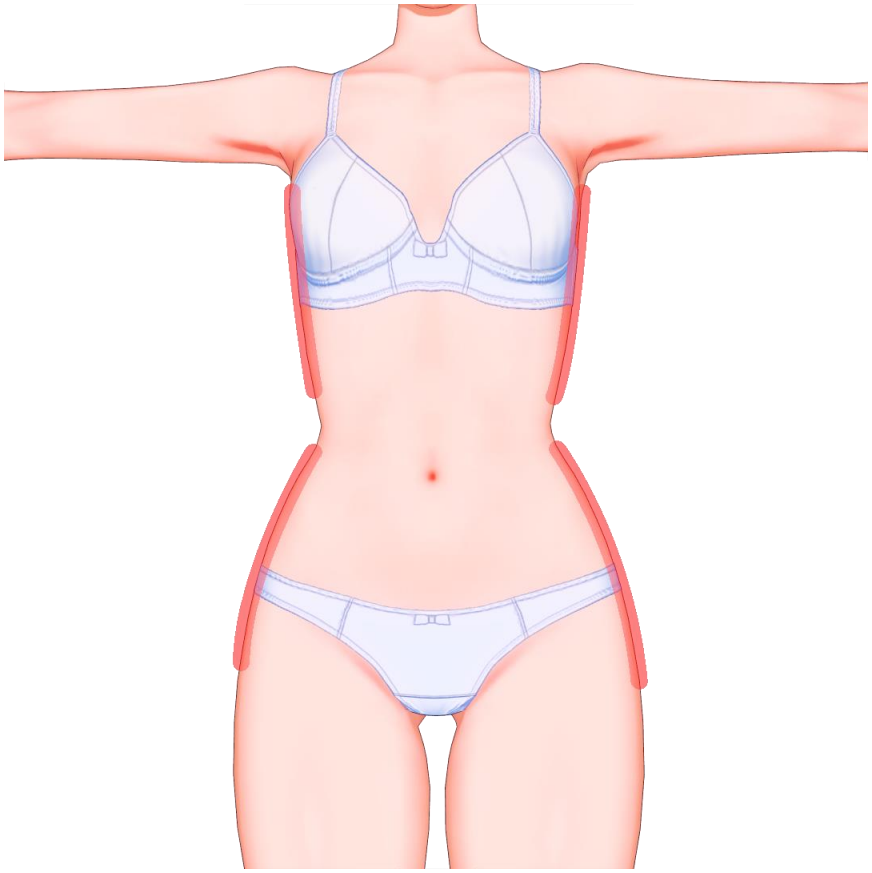
There are two methods to pinch the waist:

1. Decrease **lower torso scale y.**
2. Decrease **cf_j_spine01** and/or **cf_j_spine02** Y offset**.**
   You will need to increase **cf_j_spine03** Y offset if you want to keep the torso the same height.
   Note: increasing **cf_j_spine03** Y offset will increase the vertical size of the breast base.
   This is good for characters with large breasts, but will not look good for small breasts.
3. Using more **cf_j_spine01** adjustment will make the waist pinch sharper and move the pinch height down. Using more **cf_j_spine02** will make the pinch a bit rounder and move the pinch height up.
4. You can additionally use **Waist Position** slider to change the pinch height.

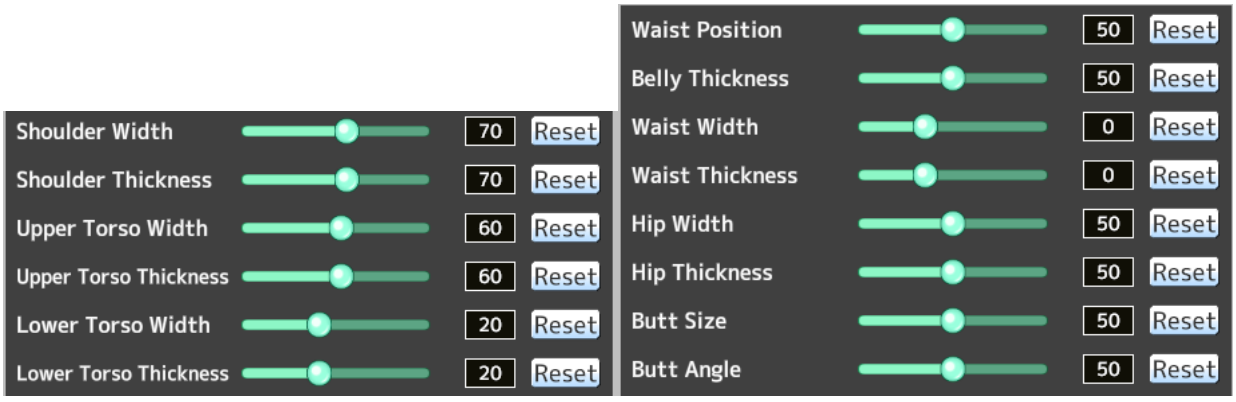


A combination of both were used for above.

Sliders for above example.

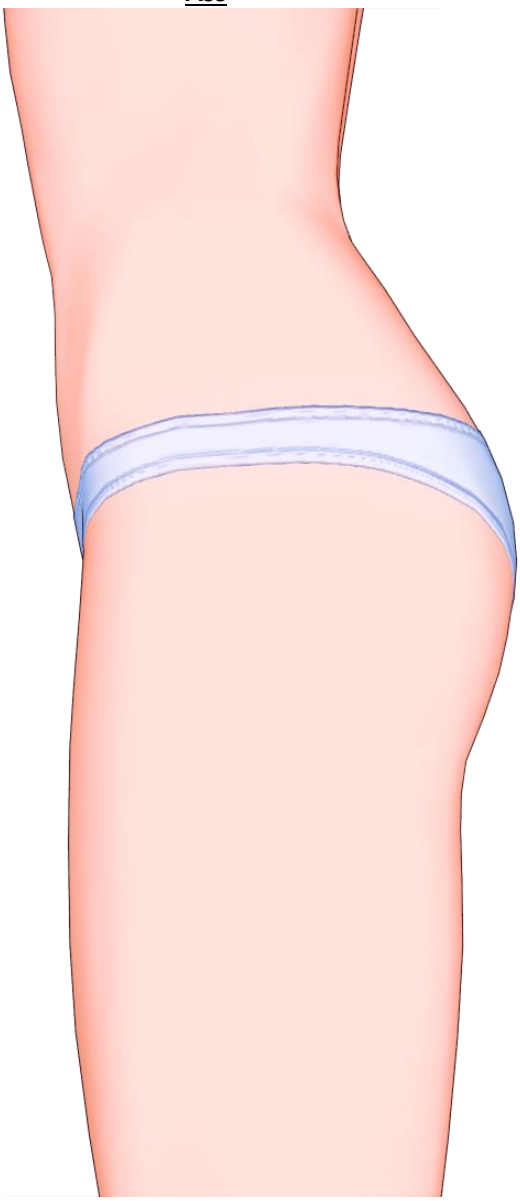


- Coupled with torso/waist/hip changes.
- Note to keep the highlighted areas smooth as a general rule unless going for something specific.
- If you are making an existing character, note whether the character has straight or curved outlines here and adjust accordingly.



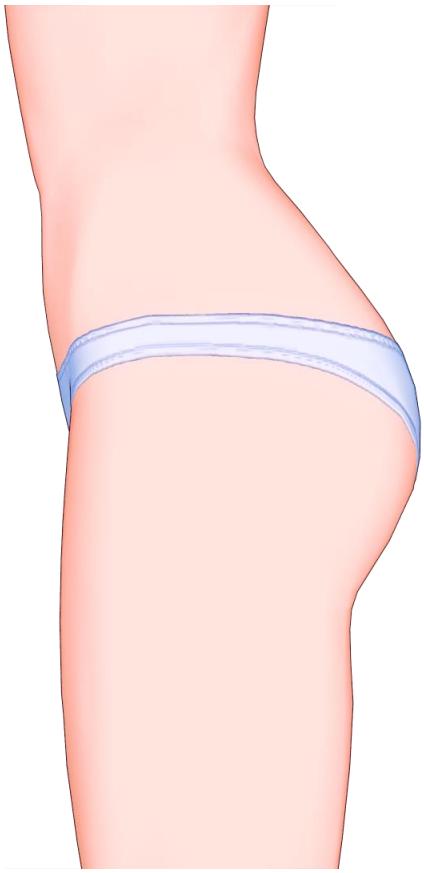
Torso & lower body changes for above example.

Ass

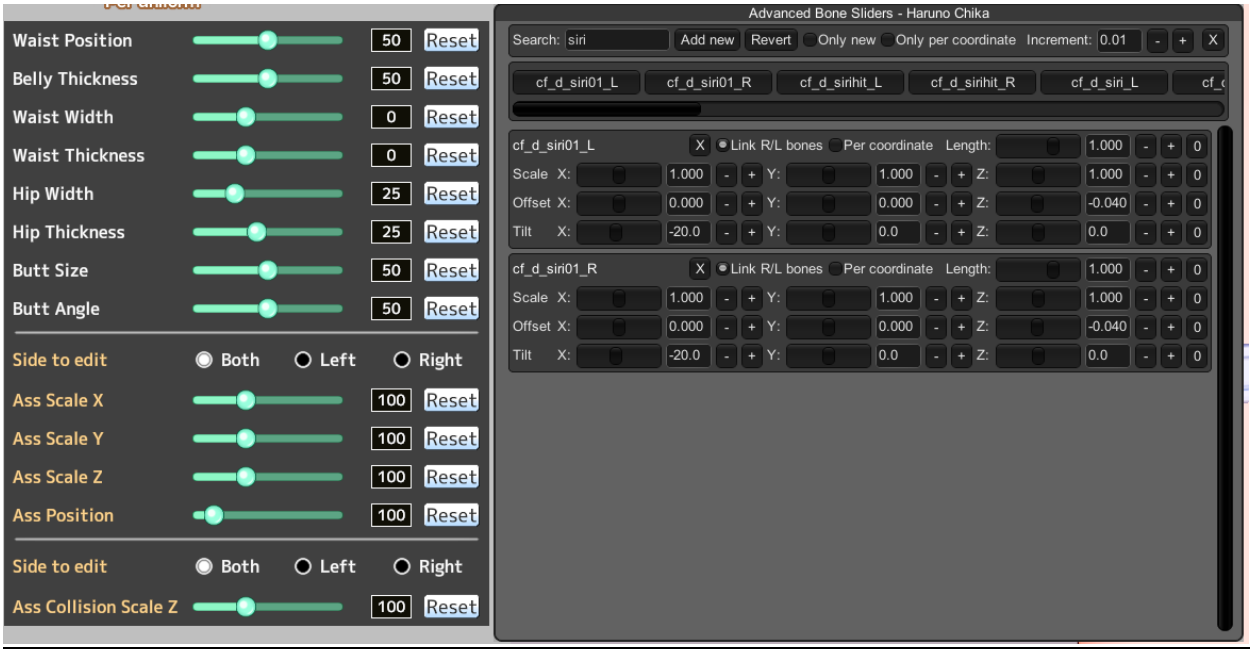


This is the default ass.

I recommend keeping the ass sliders close to default (50).
Increasing them will make the polygons more visible.
Instead you can use the abmx slider **cf_d_siri01** to make the ass better.
Decrease the x tilt and decrease the z offset.
This will also improve the physics in animations and give them more jiggle.
Use yellow ass sliders to adjust the size if you need to, but the polygon issue still exists.



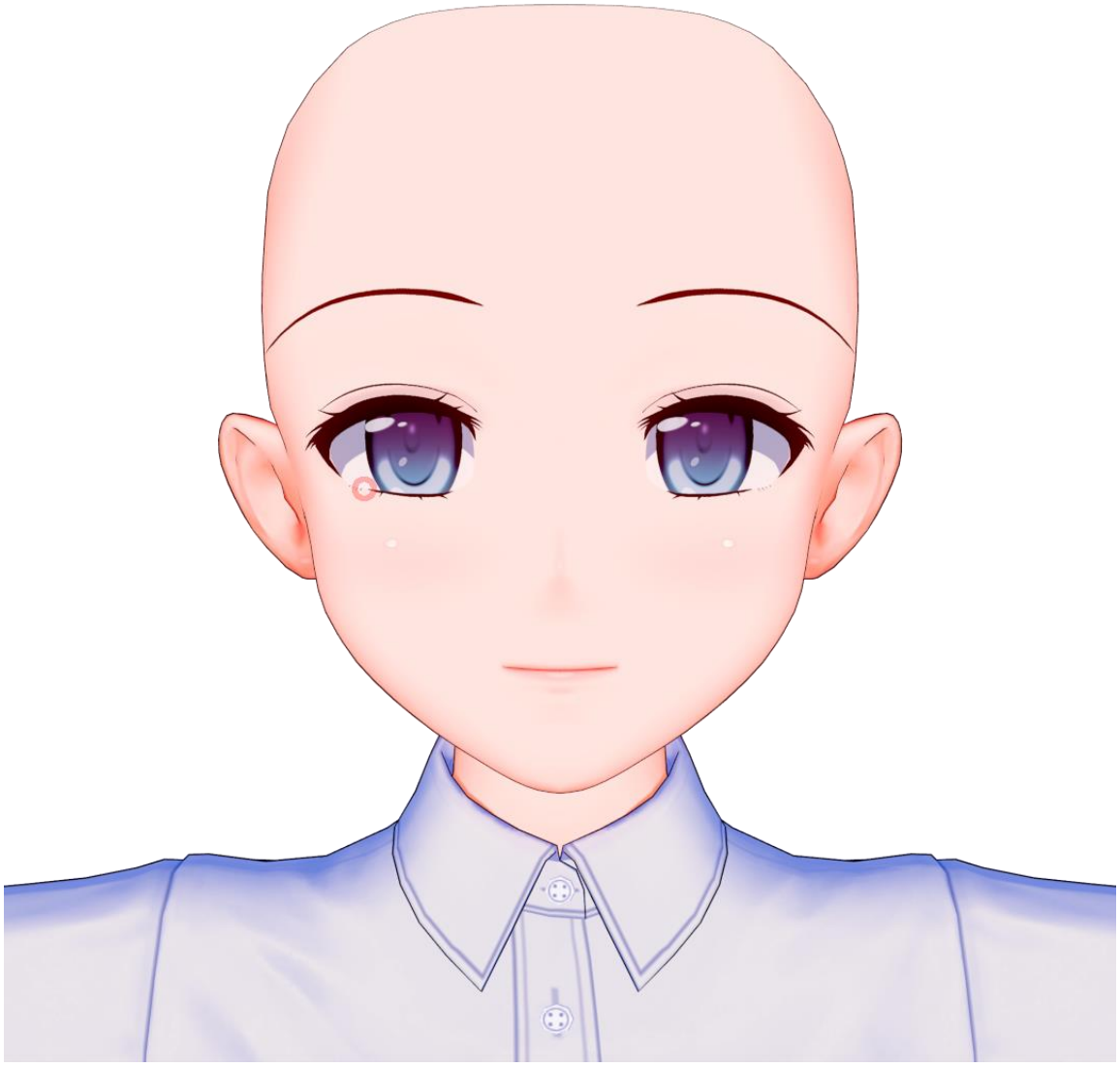
You should also adjust x offset to make the ass cheeks flush, as adjusting other sliders like hips can give them a gap or clip them together.



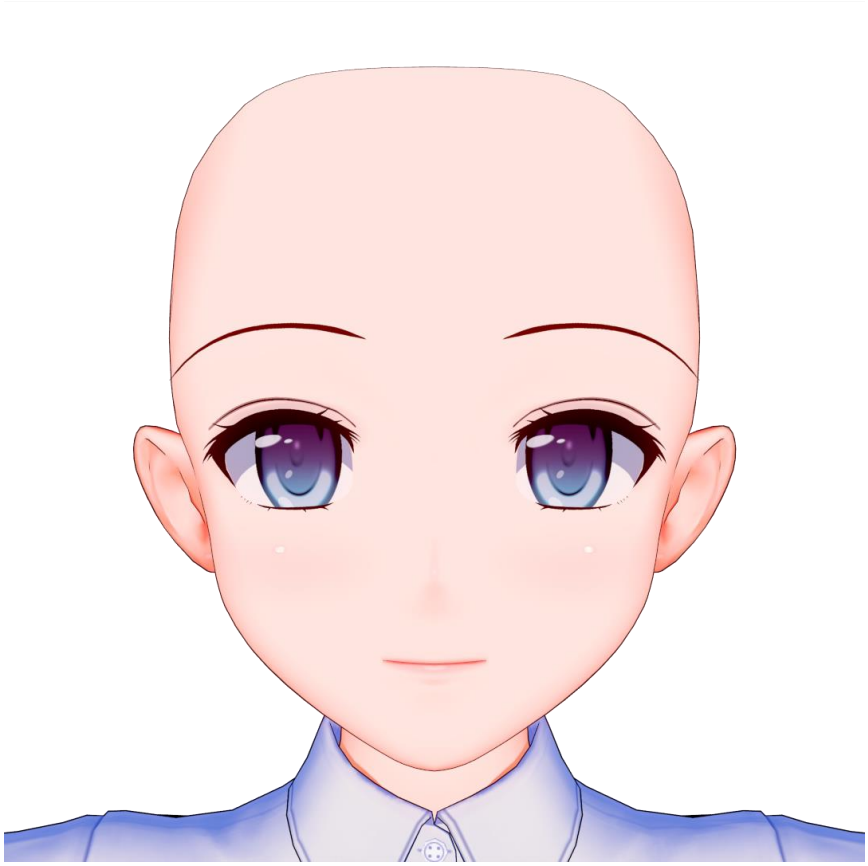
Slider settings for example above.

Lower eyelid shape

Often you will want the lower eyelid to be straighter. To do this you can set the **lower eyelid shape 2** slider to 0.



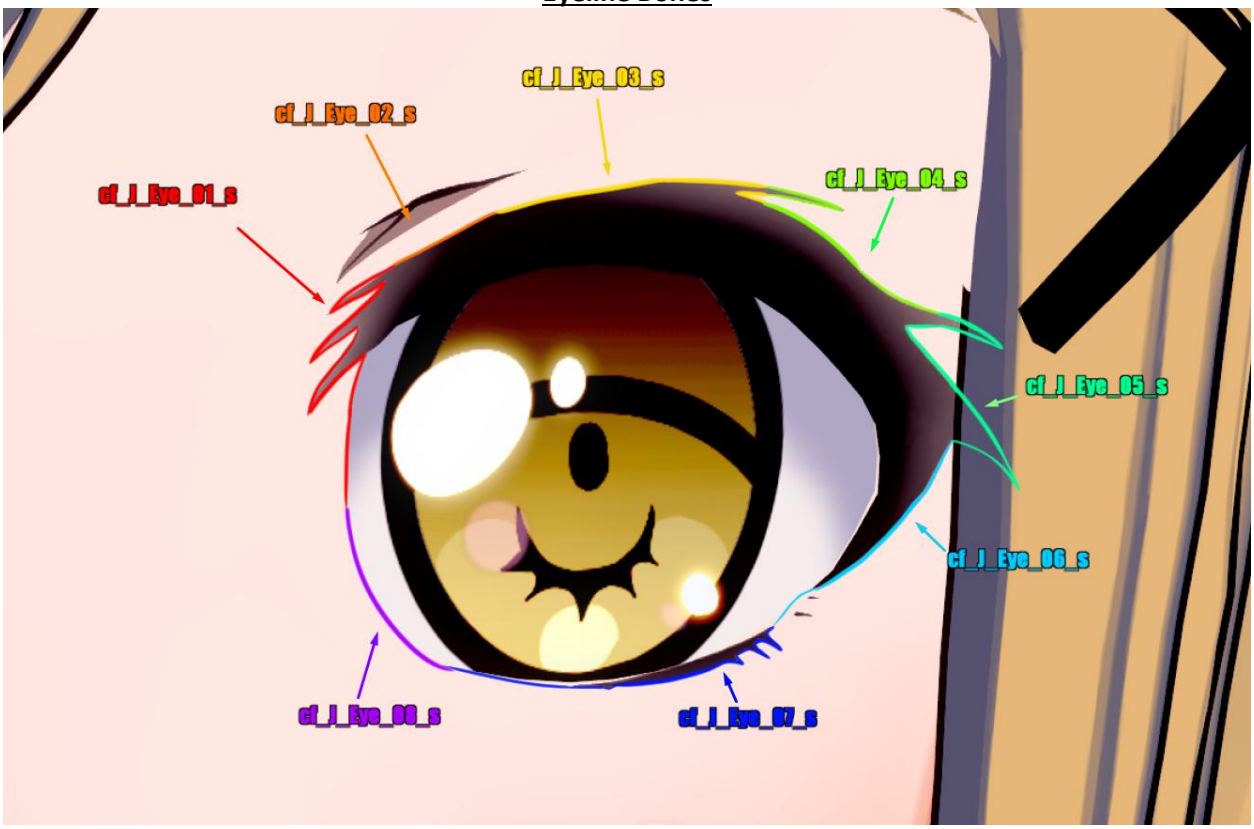
You may notice the tilt of the lower eyeline doesn't look right, as well as an odd angle forming at the circled location.



To fix this, adjust **cf_J_Eye07_s** z tilt. You can also adjust z tilt for **cf_J_Eye06_s** as well to further address the angle in the circled area.

Slider settings for the above pic.

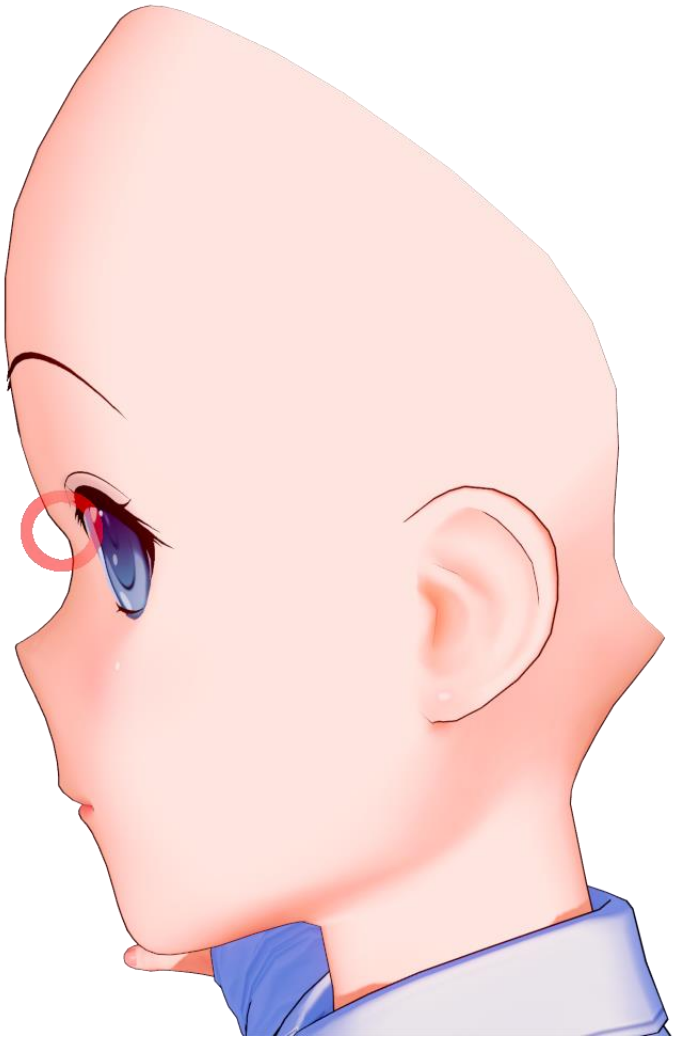
Eyeline Bones



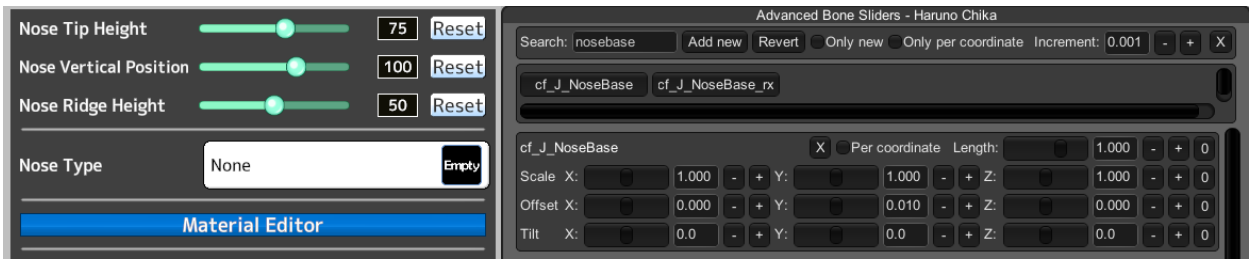
- These are all the bones that are in the eyelines.
- Usually you can get the right shape by using normal sliders. However, sometimes you may need to adjust some position/tilt sliders in ABMX to get the right shape, like for a lower eyeline.
- There is an extra underscore between eye and the number in the above image compared to the current bone names.

Raising the nose via abmx

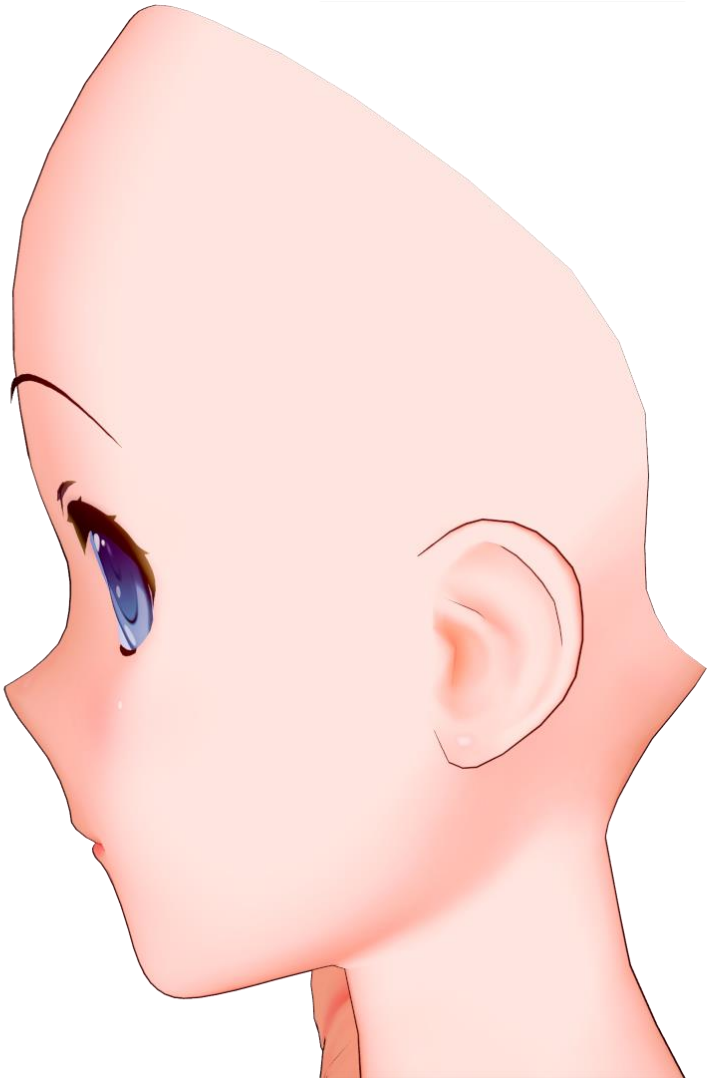
If you want to raise a character's nose in ABMX, use **cf_J_NoseBase** and adjust the y offset.



You may notice some distortions forming in the circled area if you raise its too high.



Sliders for above.

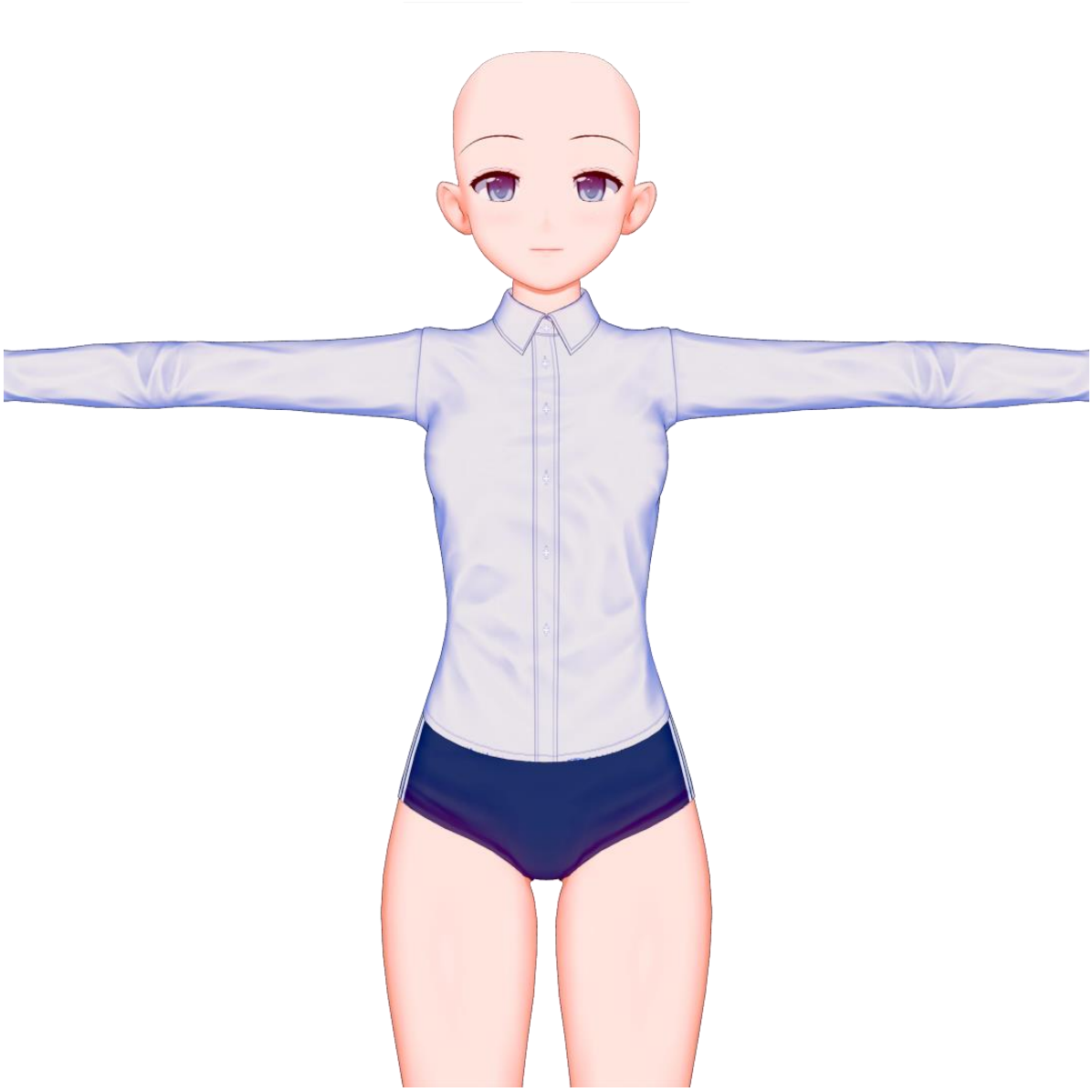


To fix it, you can adjust x tilt, z offset, and/or x scale.

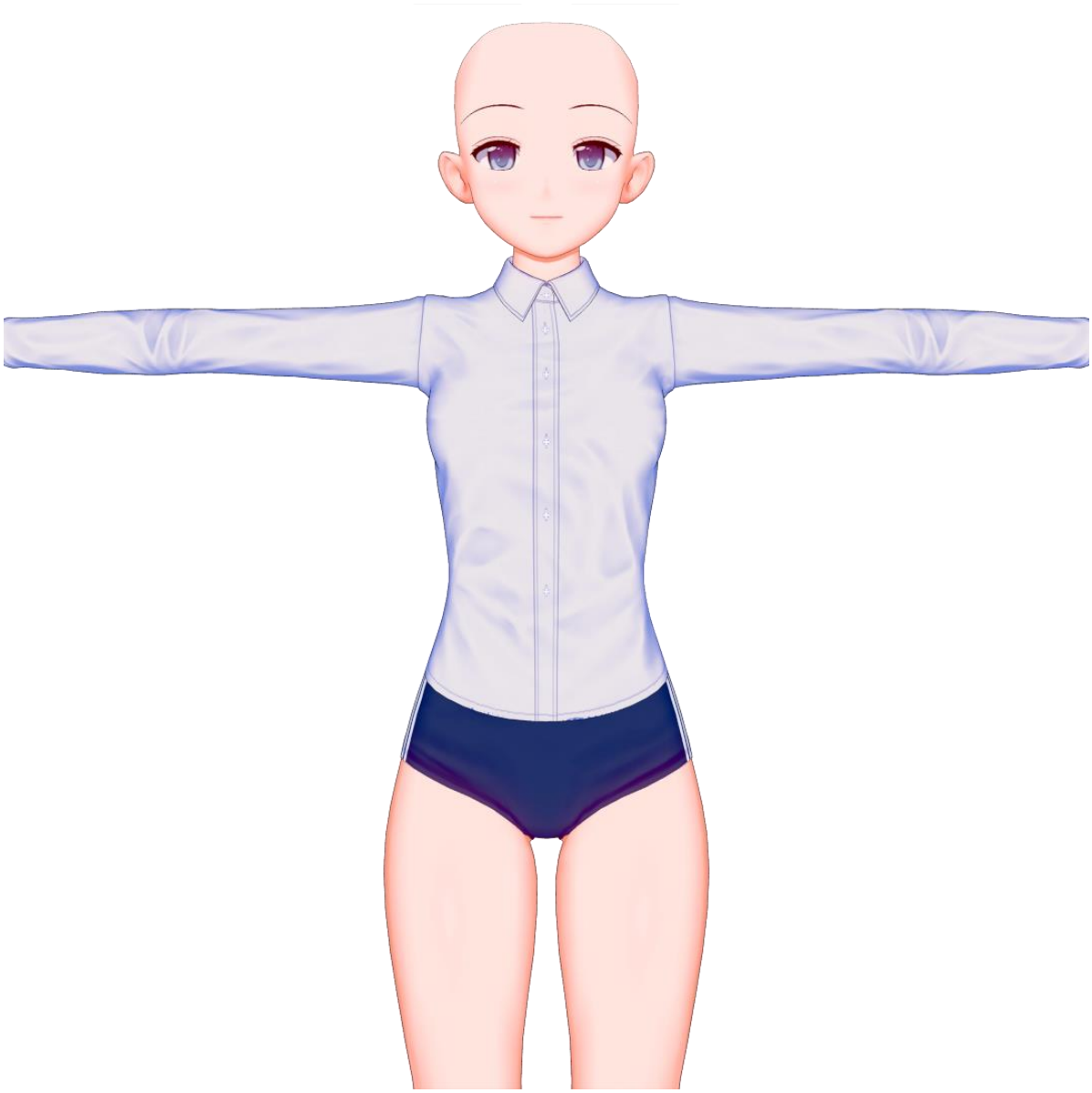
Sliders for above example. Length also increased.

Eyelid line/crease

You may notice that if you draw the eyelid line thin, it will seem to disappear at a distance.



To fix this, add a slight shadow around the line to make it more visible at a distance.

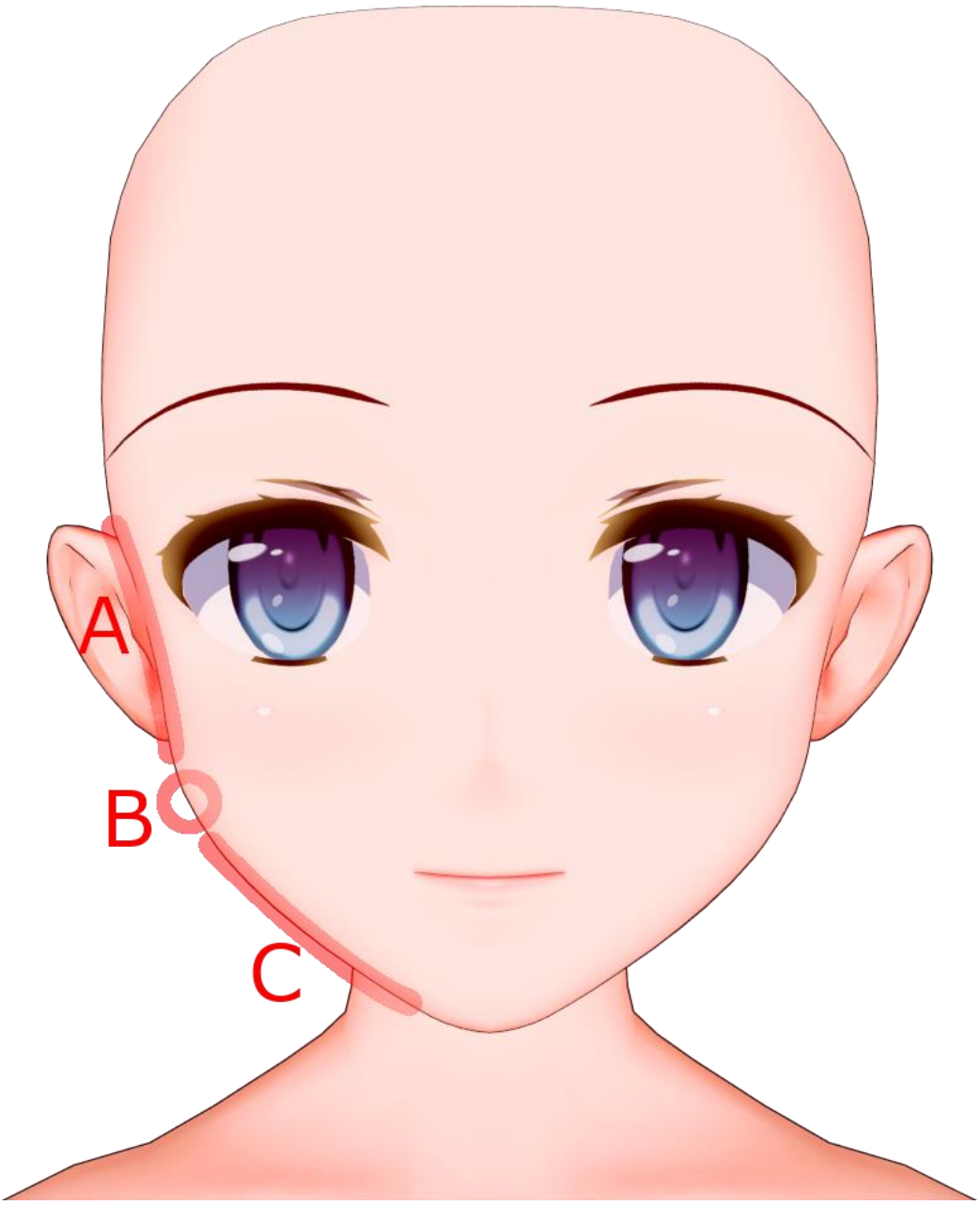


To fix this add a shadow around the line to make it more visible at a distance.

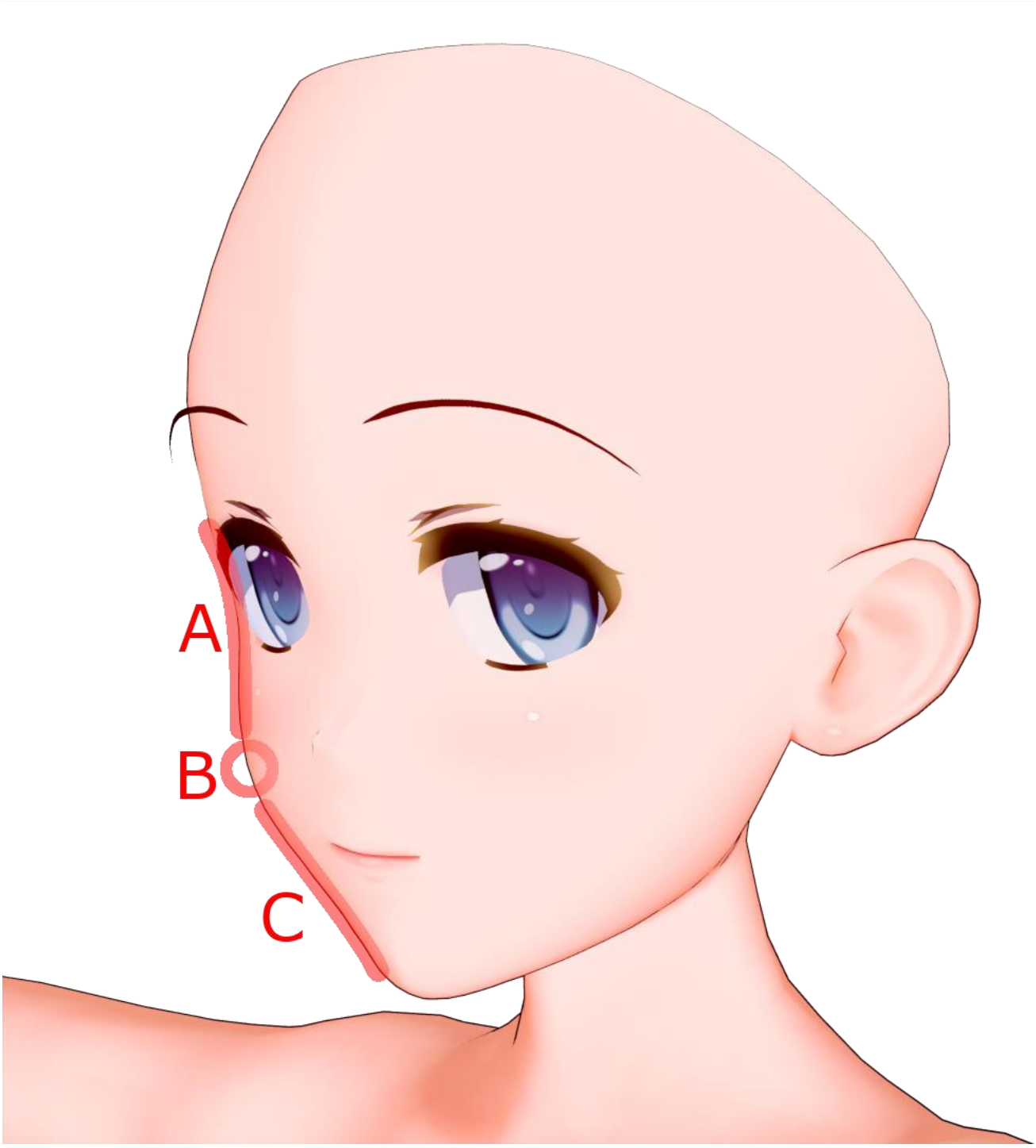
No shadow.

With shadow.

Face Outline



Default face front view.

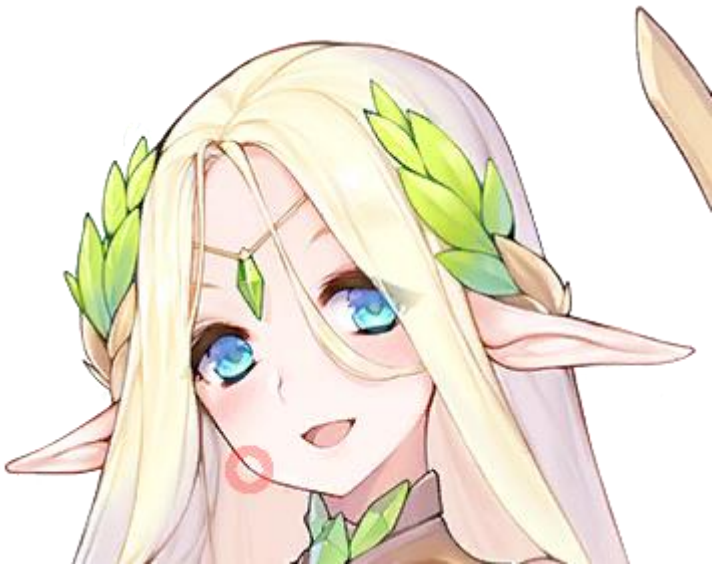


Oblique view.
Note: C looks concave from the side view.

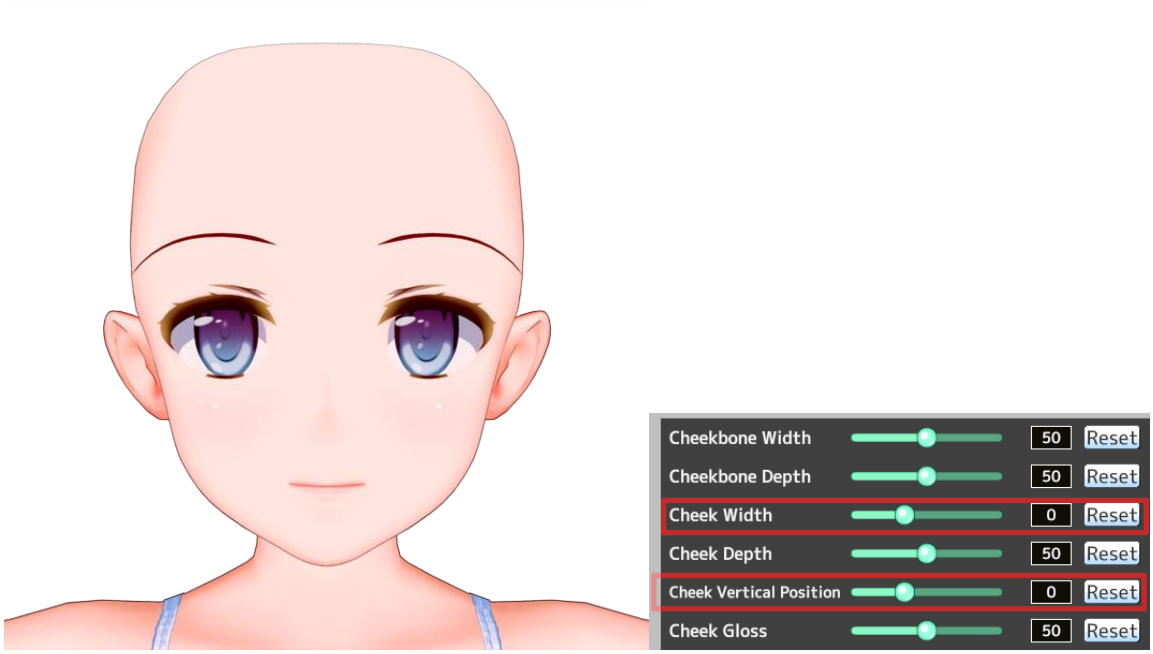
Some typical changes you may want to achieve anime style face:

- Sharper B.
- Smaller angle for B between A and C.
- Lower B.
- Concave C from the front.
- Shorter vertical span for C.

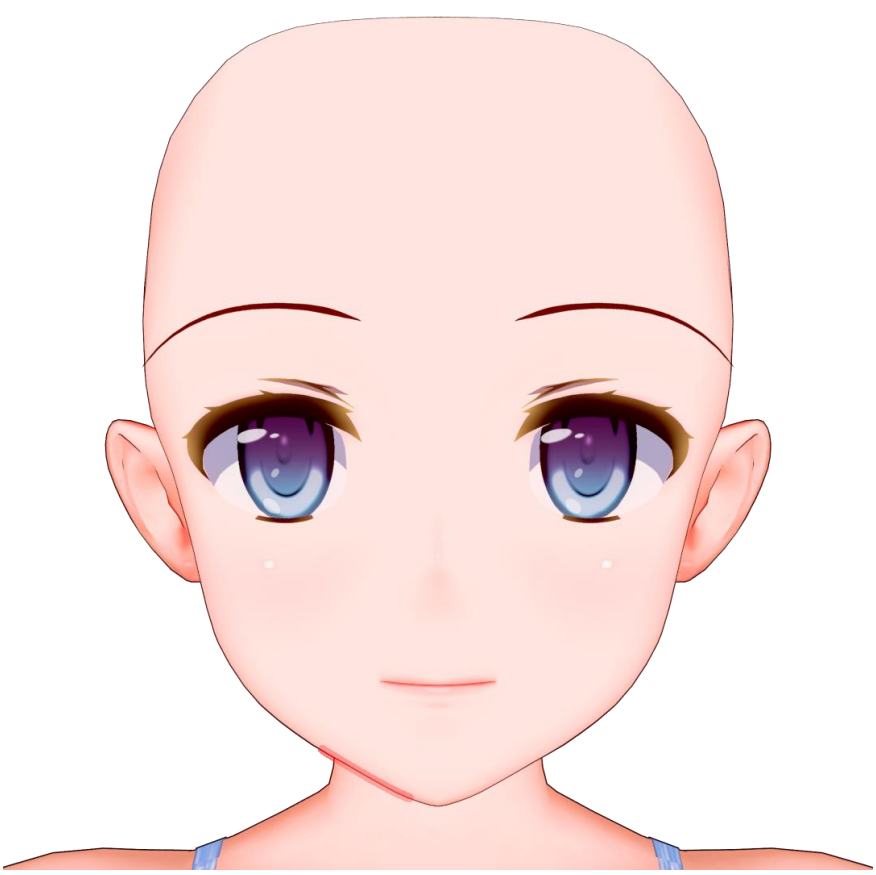
As an example I will use Celestia's lower face outline.



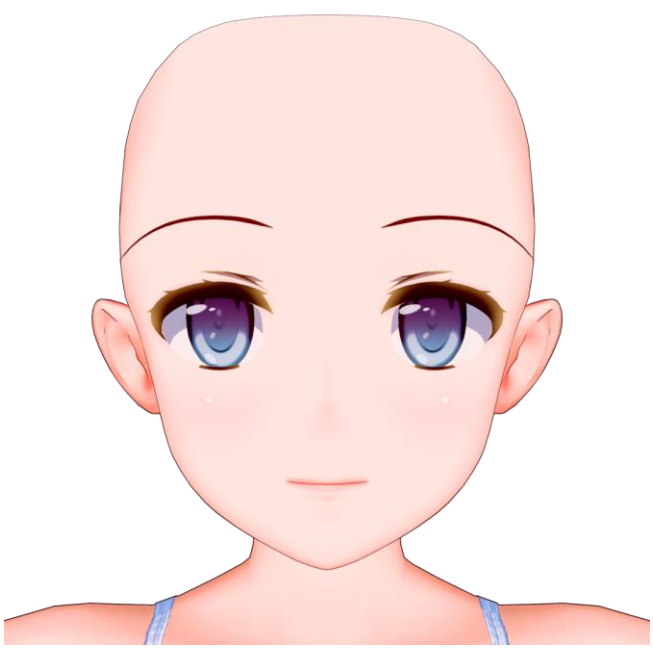
First thing to note is that B is quite low, it's actually below her mouth as well.



Start by lowering Cheek Vertical Position and decreasing Cheek Width.

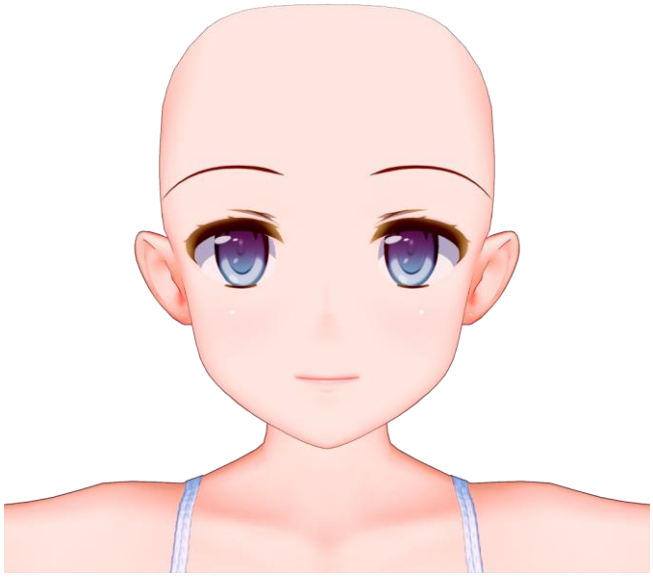


To adjust the chin tip sharpness. You can use **Chin Vertical Position** and **Chin Width**.
You can also smooth out the highlighted area by increasing **Chin Scale X**.

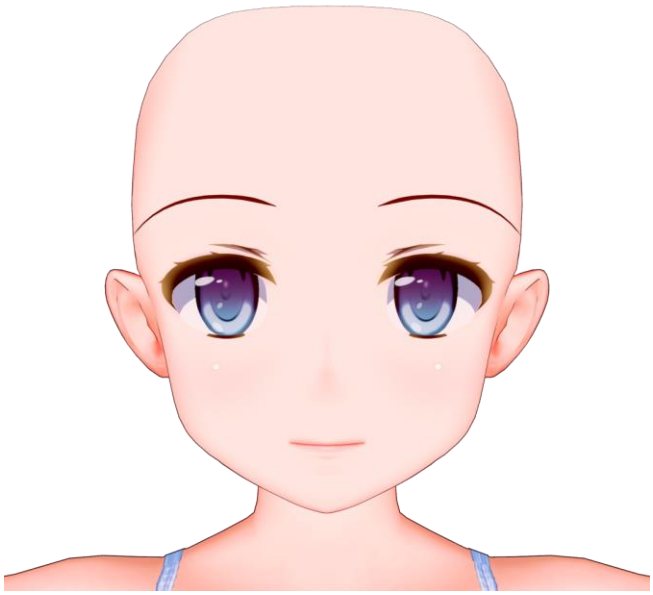


Chin Scale X = 130

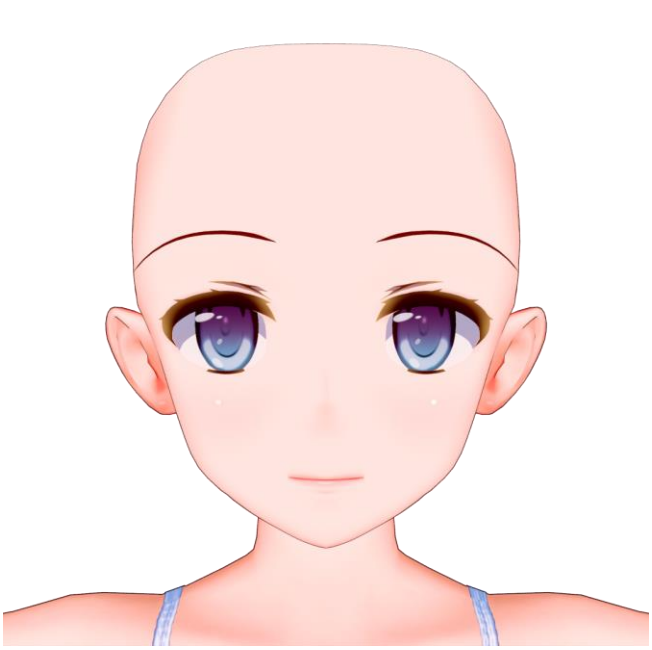
Since there is no bone for B, you have to increase the sharpness by changing A and C.



Start by increasing **Cheekbone Scale Y**. This lengthens A, and squeezes B to make it look sharper.
Cheekbone Scale Y = 190



Next, adjust the vertical span of C using **Lower Head Scale 1 Y**.
Lower Head Scale 2 Y also does this scale, but it will also scale the mouth.
Lower Head Scale 1 X = 95



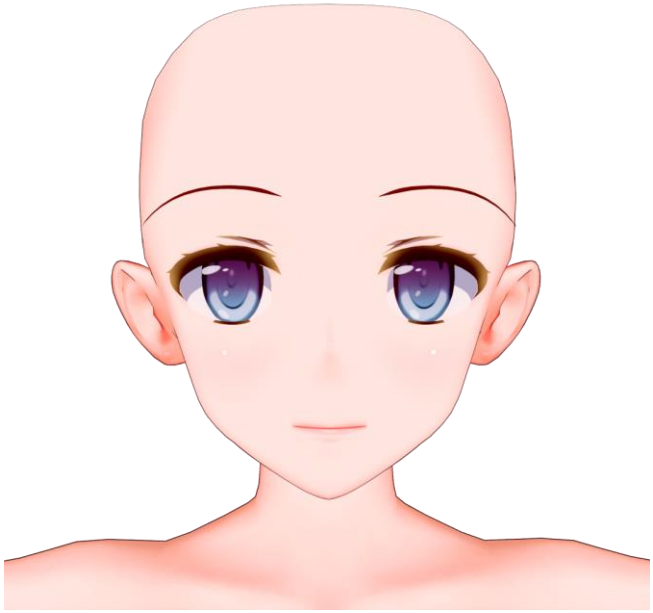
Next adjust **Lower Head Scale 1 X**.
Lower Head Scale 1 X = 90

You may notice the lower face outline looks a bit flat from the side.

You can increase **Upper Cheek Scale Z** to give the cheek a bit more angle from the side.
Upper Cheek Scale Z = 130

Check the side profile. Here you can see the cheek depth is ahead of the mouth.

Either use Mouth Depth or ABMX position to correct.
Mouth Depth = 140



If you want the face outline to look straighter, you can also adjust some additional sliders.
Chin Scale X = 90
Cheekbone Scale X = 80
Upper Cheek Scale Y = 90
Adjusting them in the opposite direction will make the face rounder.

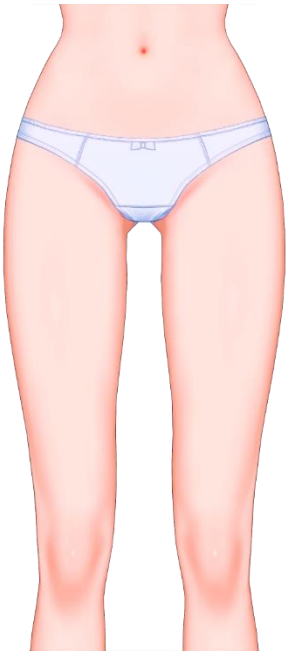
Thighs

By default Koi's thighs have this odd bulge inwards at the top of the thighs.

To fix it, increase the Leg Spacing. How much you increase the slider by depends on thigh thickness.
Leg Spacing = 110

You can also smooth out the outline of the thigh by increasing some sliders:
Upper Thigh Scale Y = 120
Center Thigh Scale Y = 120
This spreads the bulge around more along the length of the leg instead of looking bulgy at the top.

Decreasing **Upper Thigh Width** will bow the upper thigh inwards.



If you don’t want the bowing effect use these sliders instead:
Upper Thigh Scale X = 90
Center Thigh Scale X = 90
And keep **Upper Thigh Width** at the default value (50).

Breasts

References

Reference art breasts are often affected by gravity. If a character is leaning back or lying down, gravity will pull the breasts apart and form a gap in between. However if the character is standing they would otherwise bump up against each other and form a tight cleavage line, so don't be deceived by reference art of a leaning character with a gap between their breasts. The same effect can also actually been seen in Koi itself. If you lay a character down or lean them back, you will also see a gap form.

Cleavage

Often large breasts in Koi are clipped together to give the illusion of cleavage. However it's possible to create perfect cleavage without clipping.

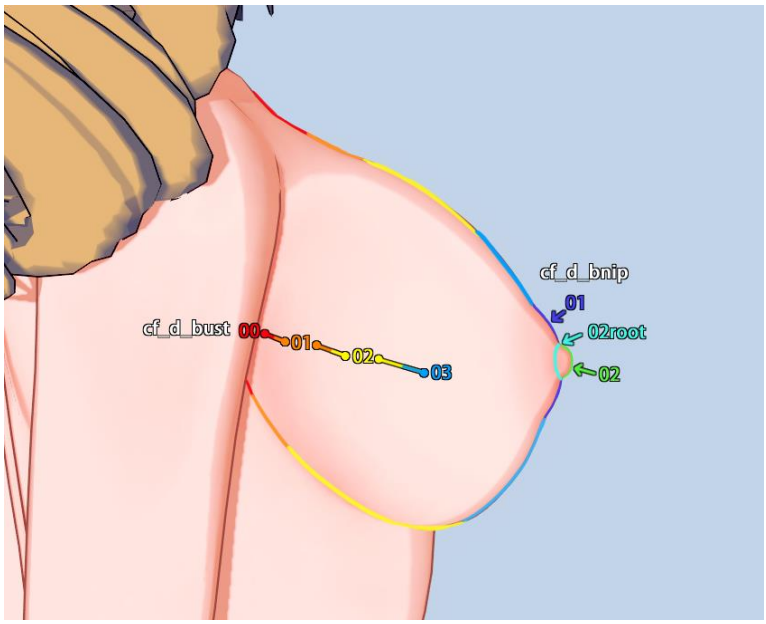
Breast Size

Increasing the **Breast Size** slider from 0 to 70 will gradually increase the size of the nipples. Once you reach around 70, increasing the breasts further will actually decrease the size of the nipples. Also note that if you start with a smaller slider value for **Breast Size** and increase the breasts further using yellow sliders or ABMX, you can get larger nipples.

Areola Size

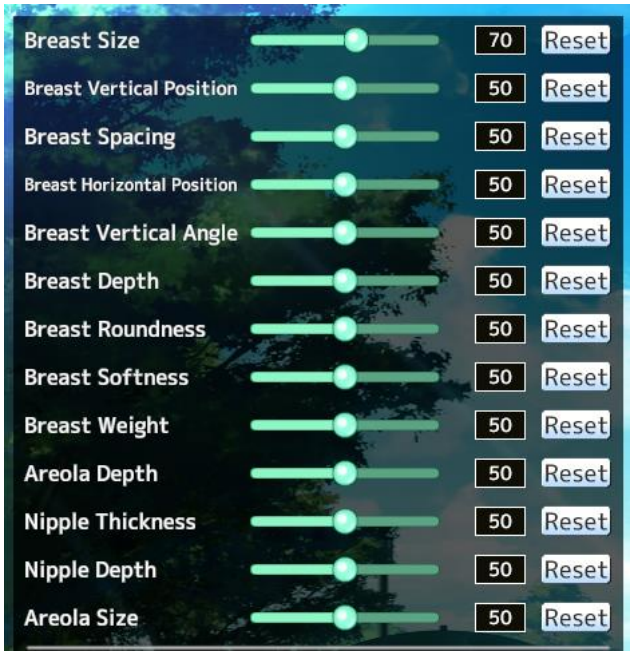
The slider Areola Size does not actually increase the geometry of the areola shape, it only increases the texture of the areola. If you use this to increase the areola, you will get a mismatch between the geometry and the texture. The better way is to increase the breast tip using **Breast Scale 3** sliders and then adjust the **Areola Size** slider to match the texture with the actual geometry. However to do this properly you will need to plan from the start so that the sliders values work well to create a desirable shape by choosing a base **Breast Size** value to use.

Breast Bones



Note for each **cf_d**… bone for the breasts, there is also a **cf_s**… bone, which is more useful for controlling the shape without affecting the child bones (exception is **cf_s_bust00**).

Sliders



I do not recommend using the default sliders to shape breasts and instead keep them at default values of 50. The reasoning for this is that the default sliders for the most part change multiple bone values at once per slider and you may end up having to work against it in ABMX later. My experience is that you end up having to do less work and save more time if you modify bones individually rather than use the default sliders, and then working against those values in ABMX later. The majority of breast shaping can be done in **Chest 2** slider section which directly map to individual ABMX bones. Then ABMX can be used to modify tilt and position bone values.

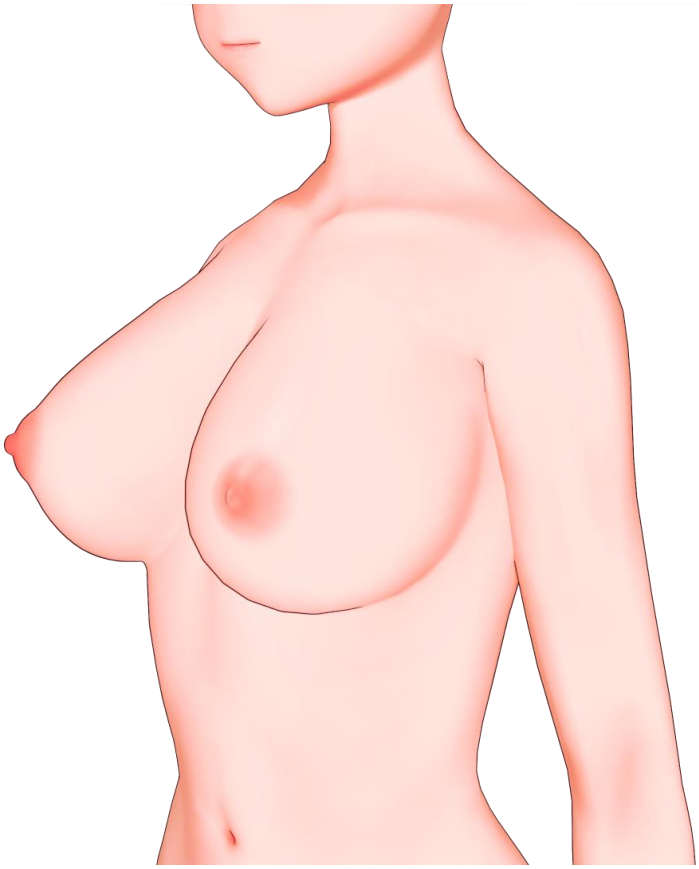
Workflow

This will be the workflow I recommend when creating breasts. I recommend starting with the breast settings provided with the default character (all sliders set to 50). This workflow is only a guide that outlines what I've found to be an efficient way to be able to create a variety of breast shapes using the least amount of slider edits. Don't feel limited to these instructions and feel free to use any slider. However understand that editing too many sliders may end you up with redundant slider values (sliders whose values cancel each other out and do not do any meaningful work).

1. Decide on the size, choose a Breast Size, this will affect how well you can make large areola/nipple geometry.
2. Choose softness/weight settings. Recommend high values for large breasts. For head sized or larger, recommend 100 for both slider values.
3. Create the general shape and balance using **Breast Scale 2 and Breast Scale 3** sliders.
4. Size the breasts using **Breast Scale 1** and/or **Extra Breast Scale 1**. **Using Breast Scale 1** will affect the shape and gap between the breasts. Using **Extra Breast Scale 1** will not affect the shape or gap.
5. Adjust the base of the breasts using **Extra Breast Scale 2** X and Y scale. Typically the default size of the breast base for the Koi model is a bit large so consider shrinking this a bit.
6. Adjust the X tilt using **cf_s_bust00** X tilt or **cf_d_bust00** X tilt. This is to remove any gap between the body and breasts. Breasts that rest flush against the body look the most natural. Note however that this will change the nipple angle and angle the nipples downwards.
7. Adjust the vertical angle of the nipples. The best way to do this without changing the shape is using **cf_d_bust_03** X tilt. You may notice that the nipples will rest too low after the tilt change. Adjust the height of **cf_d_bust_03** Y position to compensate. You can also use **cf_d_bust_02** tilt, however this will also change the shape and create banana style breasts. If you want upwards pointing breasts, but not banana tits, use **cf_d_bust03** instead.
8. If they are large breasts, adjust the base of the breasts further using **cf_s_bust00** X and Z tilt. This will make sure the breasts are not awkwardly floating above the body.

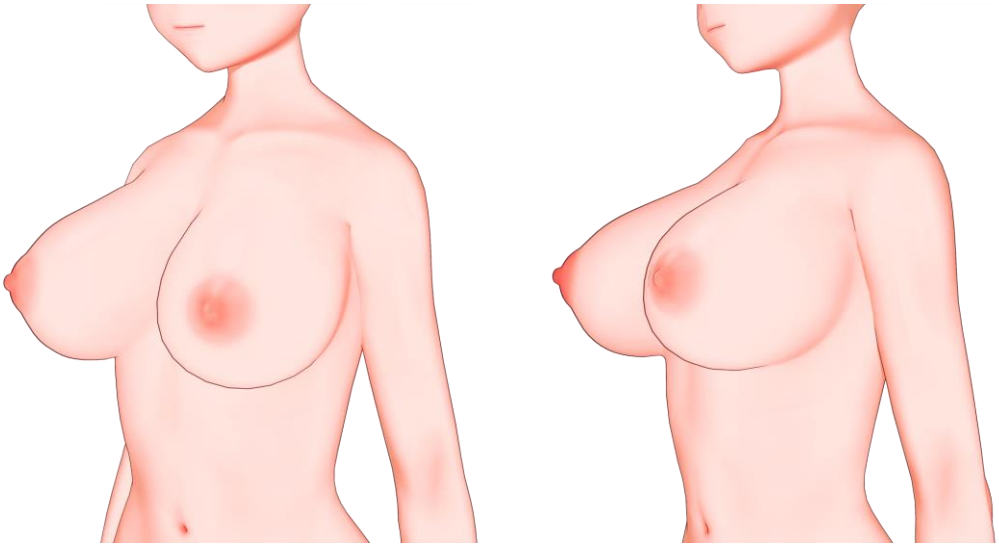
Example 1: Creating Cleavage

This example will aim to create large breasts with non-clipping cleavage. First step is to pick a base **Breast Size** slider value.

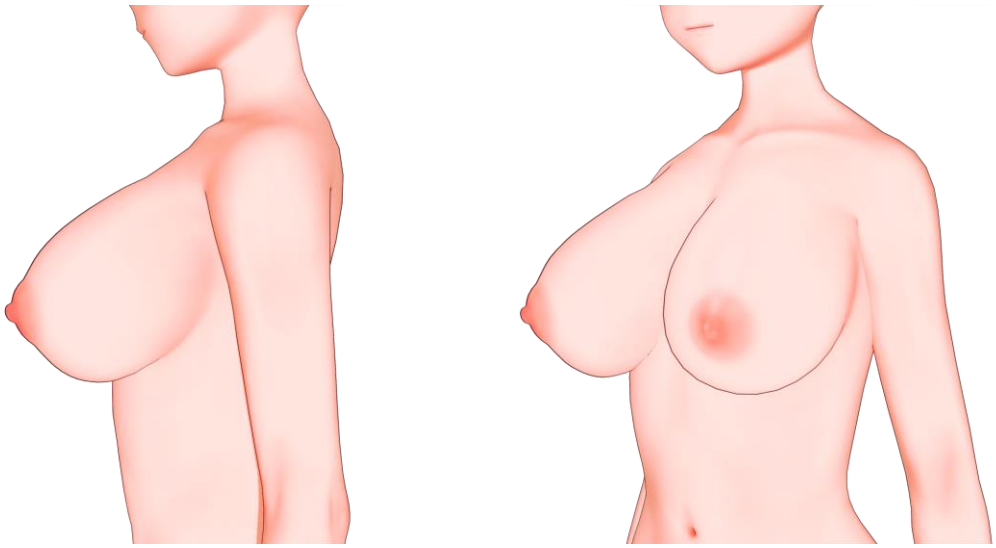


Breast Size = 70
Breast Softness = 100
Breast Weight = 70

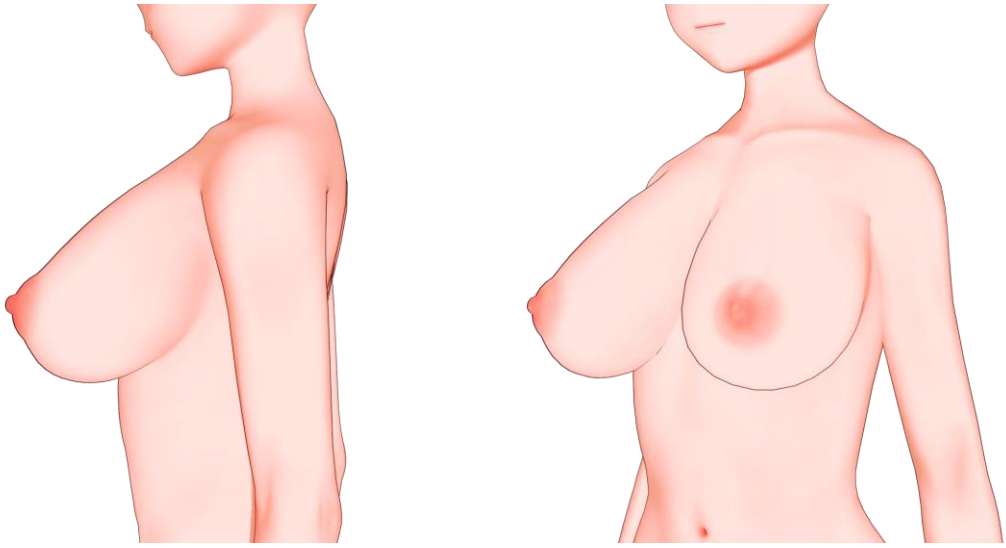
- Softness and weight not only change the shape but also control the physics of animations.
- Focus on shape first and then you can change the size later.
- Remember that a base size value that's lower will result in larger nipples, and a large base size value will result in smaller nipples. 70 is a good base value for moderately sized breasts.



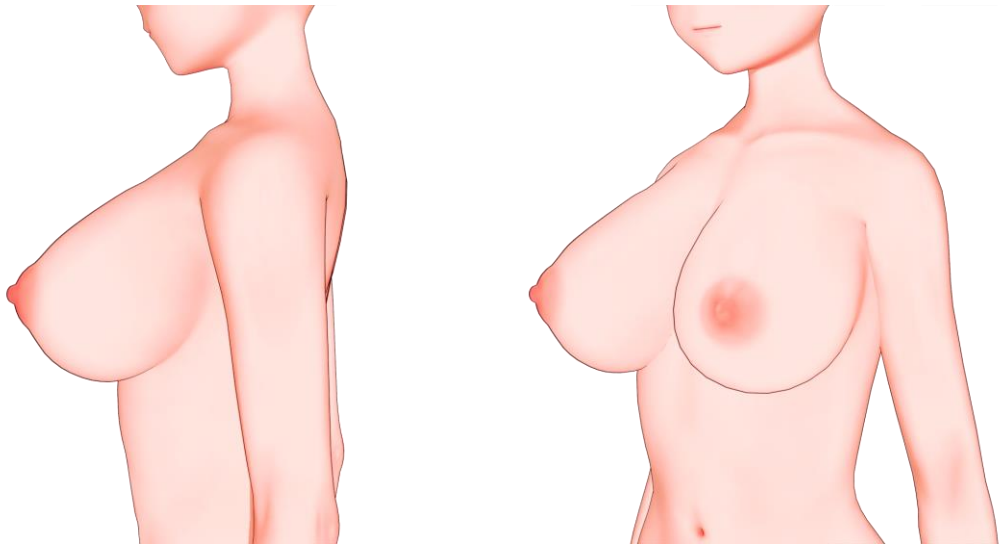
You can make breasts fuller and more anime-like by increasing the lower bones.
Breast Scale 2 Z = 130
Breast Scale 3 X = 130
Breast Scale 3 Y = 130
As you increase these bone/slider values the nipples/areola get larger.



Next set softness/weight, this will reduce the appearance of breasts floating in front as well as increase the effects if physics in animations.
Breast Softness = 100
Breast Weight = 70

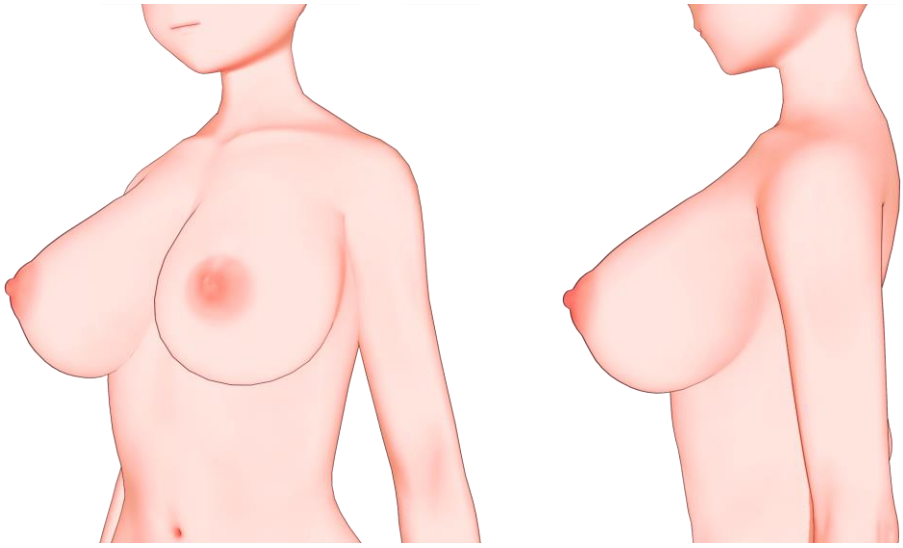


If you want to raise the angle of the nipples so they are point more upwards using ABMX
cf_d_bust03 Tilt X = -15
Tilt X sliders in ABMX will also affect the angle of the nipple, but they also change the shape.
cf_d_bust03 can change the angle of the nipples with minimal changes to shape.

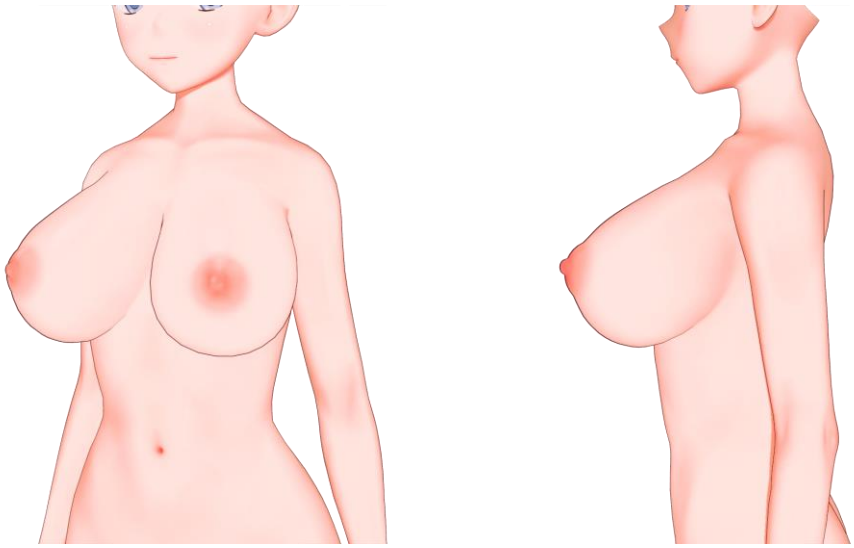


Correct the nipple vertical position.
cf_d_bust03 Offset Y = 0.01

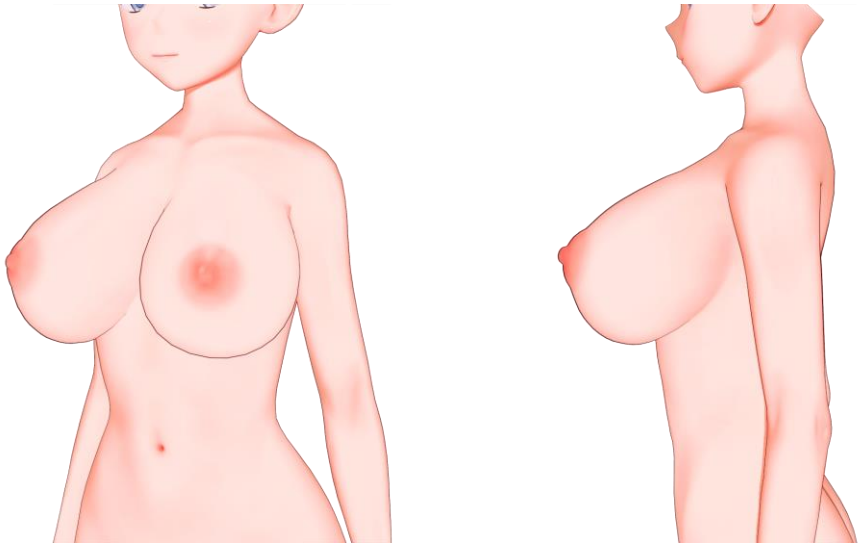
You can further adjust shape using **cf_d_bust01** and **cf_d_bust02**.



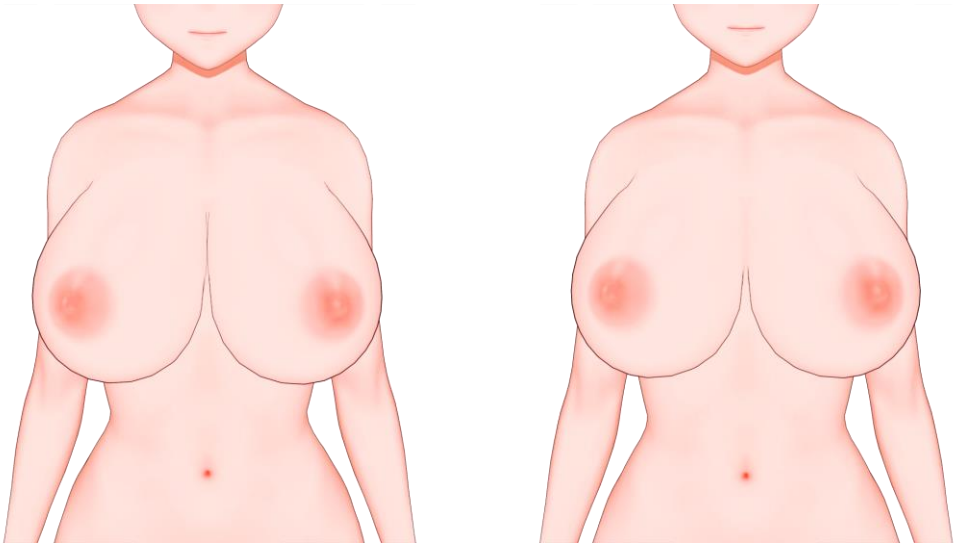
cf_d_bust01 Tilt X = -5
cf_d_bust01 Offset X = -0.01



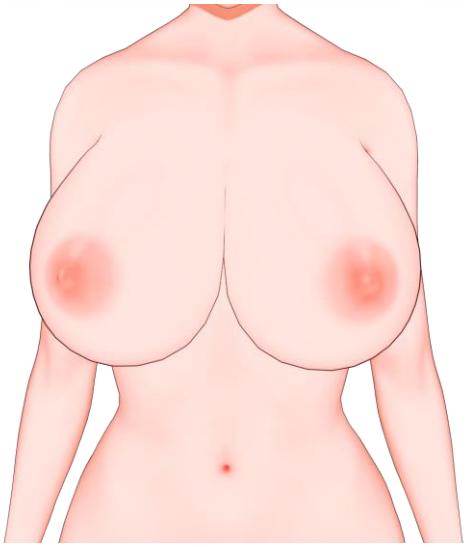
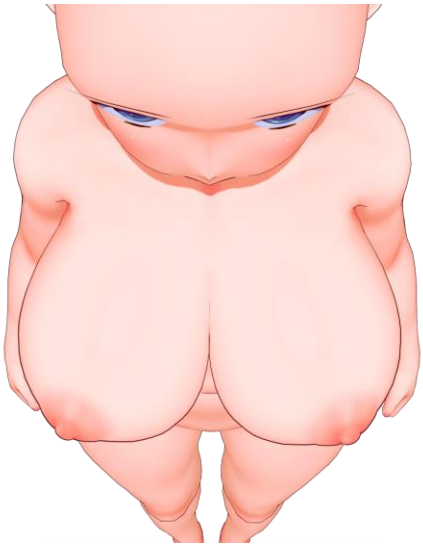
Once you have the shape you want you can change the size without affecting the shape using:
Extra Breast Scale 1 XYZ = 110



You can make them rounder near the base by increasing:
Breast Scale 2 X = 110
Breast Scale 2 Y = 110



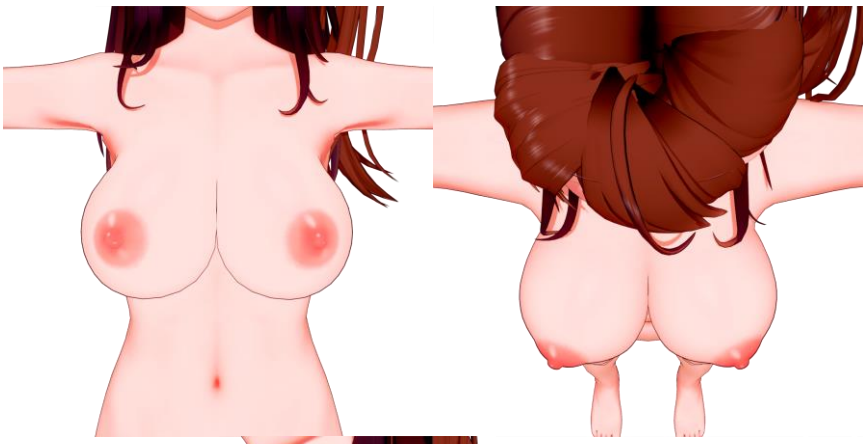
To create cleavage start by moving the breasts closer by using:
cf_d_bust01_L = 0.005
cf_d_bust01_R = -0.005
You can remove unwanted lines by using a detail mask.

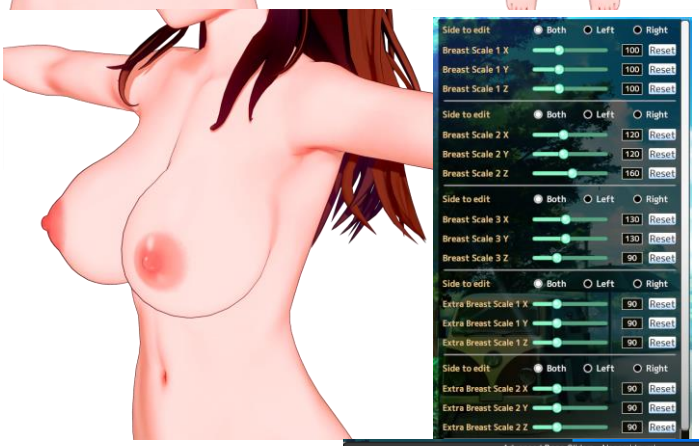



cf_d_bust01_L Offset X = 0.008
cf_d_bust01_R Offset X = -0.008
This is used to make the breast geometry of each side flat against each other, it helps to press the breasts against each other as close as possible without clipping:
cf_s_bust01 Tilt Z = -9

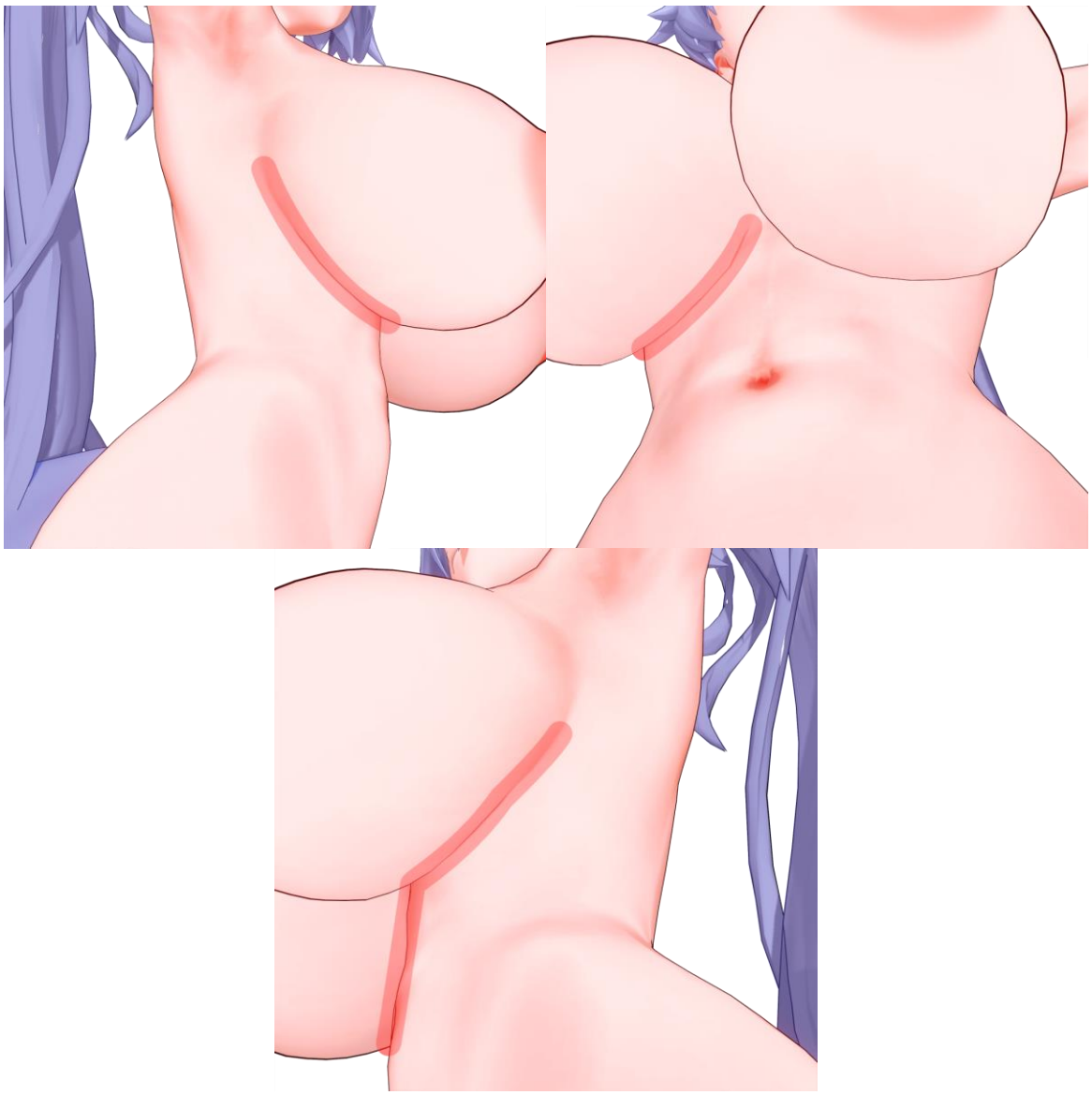
This is a simple example, but in a more complex example, the shape would need to be adjusted using:
cf_s_bust_01
cf_s_bust_02
cf_s_bust_03
cf_d_bust_01
cf_d_bust_02
cf_d_bust_03
Tilt Z and **Offset X** sliders to flatten the inner outline so that they can be pressed against each other without clipping.

Some examples:





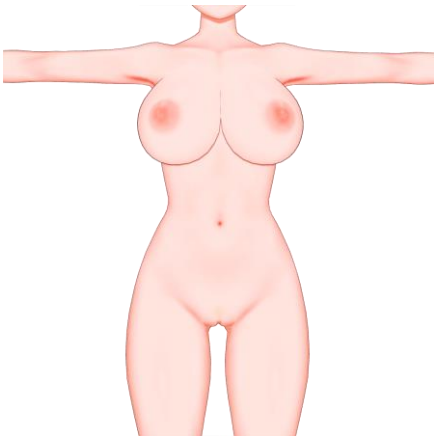
Note in the last example you can use cf_s_bust_01 Tilt X, Y and Z, to make breasts rest more snug against the body, this is useful for extremely large breasts.



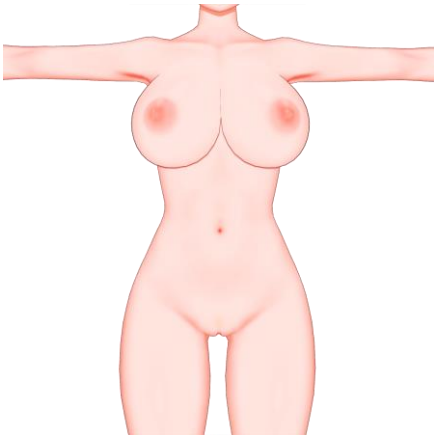
Changing **cf_s_bust_01** Tilt X, Y and Z can make these outlines snug against the body. If you see too much of a space in these areas between the breast and the body, it can usually be fixed with **cf_s_bust_01** tilt adjustment.

Hips

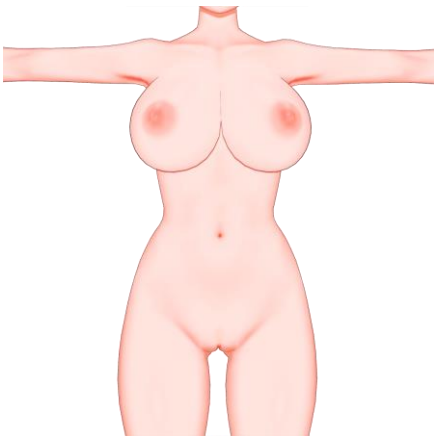
For hips, consider adjusting the vertical length of the pelvis using **Lower Waist Scale Y**. Many existing characters have either shorter or longer pelvis than the default Chika. You can also use this to shape the waist/hip outline. Make sure to adjust **cf_j_ana** as it can stick out if you shorten the pelvis.



Lower Waist Scale = 100



Lower Waist Scale = 80



Lower Waist Scale = 120