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About the Bull Accessories

HornWeaponBladeAccessory

This is a mesh 'hat' for bulls. It is not a weapon. I wanted to make a weapon that could be attached to the head slot, but Kenshi does not allow weapons to be attached to head bone.

And if I made the HWBA to use the weapon slot, it would attach to the spine bone and not move with the horns.

So, the actual weapons for bulls do not have anything visible on the character. And this hat does not have any weapon properties.

The same mesh is used for the bladed and serrated versions and the horn rings.

Saddle

The saddle is made by copying the faces of the bull's mesh so it has exactly the same rigging as the bull's hull has. Has a back bag function.

Ox Cart

The cart is a back bag in FCS but it actually follows a separate new bone I made in the bull skeleton. This way I could give it a bit movement in the animation. I just wish I had added this before I remade all the animations bc I had to redo the animations again, to admit the cart bone.

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NPCs

The Cavalry

You have probably already realized the NPC cavalry are dummies. Guilty as charged!

This is because I could not figure out how to make the bull to pick up their squad mate. I can make a bull to pick up the leader, but the leader is needed to lead the squad to patrol. If he is 'incapacitated' (carried) the whole team just stays put.

Maybe I figure out how to do this at some point. In the meantime, dummies we got!

> You can use the heads and bodies to make your own. In fact, whatever is in this resource package, do whatever you want with them. No need to ask permission, you have it!

HINT: You can pose the armor/clothing to a riding pose by using the actual humanoid skeleton. When the pose satisfies you, just convert the armor objects to curves. Then parent them to the dummyrider skeleton and fix their rigging. (Rider's legs are following the spine1).

Then combine all the pieces that make the body. You need to adjust the UVs, if they overlap in the UV edit window. And make a new texture if you had to edit UVs or the pieces had originally two or more texture files.

The Bull Sellers

The talking to a separate seller and the chosen bull joins has been made with a clever dialogue trick.

It relies on the fact that the bull seller's faction will always stay neutral to the player faction. When the PC buys a bull, the seller dialogue marks +50 to the faction relations.

Then the PC goes to pick a bull by 'talking' to it. The bull checks against if the PC is an ally. If Ally, it makes the faction relations -50 and fast-joins the PC. Upon joining the bull gets a new player-bull dialogue pack.

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About Skeletons and Portraits

Rideable animals' core issue.

There are two character types in Kenshi, humanoids and animals. They are treated differently by the engine.

The biggest issue regarding riding, is the fact animals cannot pick up people.

So, I had to make a human, that looks like a bull.

Whatthebull? Why so many problems?

Using a non-humanoid skeleton where the game expects a humanoid skeleton, is the main cause for the following issues:

A) The sage steeds do not have a portrait.

B) The game crashes whenever the game tries to read the portrait file aka NPC talk to the bull.

C) The bull's hull can be seen over the automatically generated building menu icons.

D) The bull's hull can be seen over small character's portraits.

The issue A is because the game expects a head mesh to be where the bull's hump is, so the 'photobooth' just takes a picture of empty air when the bull is kneeling and if standing the bull's hull just covers everyone else.

The issue B is a direct result from A, this was originally 'fixed' by preventing all NPCs in a mod to NOT TALK to a dump personality.

This caused a lot of issues as a dumb player character could not speak to NPCs. And modded-in NPCs someone else made, still wanted to talk to the bulls, hence crashing the game. I reverted this when introducing the fix. The game crash was fixed in version 6 by adding head bones to the bull's neck where the game expects them.

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The issues C and D are the result of the game engine's problem to place the skeleton in its proper place in the game's inbuilt photobooth. Same reason as A, the game expects a humanoid skeleton and the bull's hull does not fit in the booth and spills over to the furniture section.

For some reason all the virtual photobooths are set in a checkboard like grid, right next to each other. So if I have a human on square 2-4 the chair on square 2-5 is fine. But the bull kneeling on 2-4 spills on square 2-5 and because the front is on an earlier square; the front covers the entire chair. Now, I do not claim to know this is exactly it. But makes it easier to understand what it is about (see image).
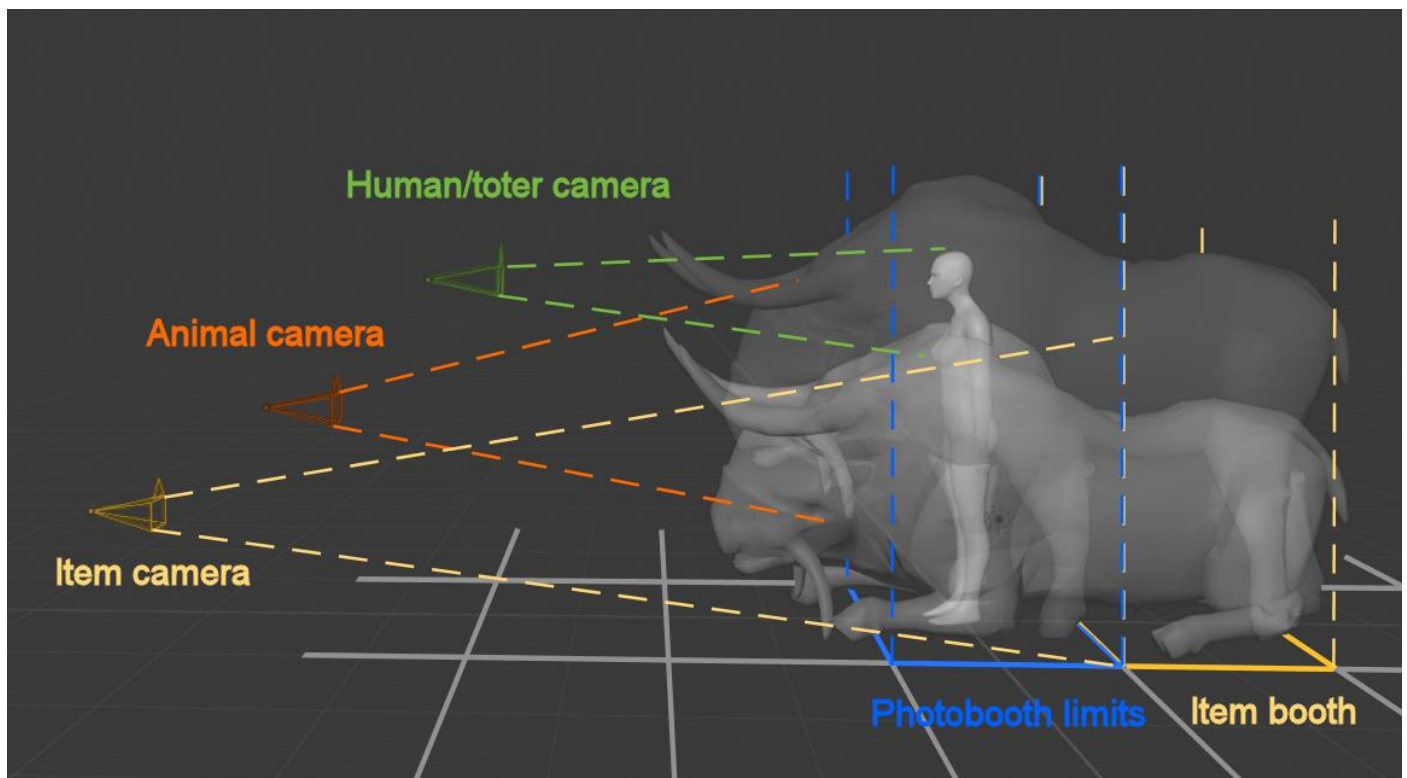
I really could not prevent the bull's hull from overlapping the furniture, but making the idle animations kneeling, and all poses pulled back, I managed to barely avoid the human camera limits. The issue being all that mesh head and hump blocking the team mates' portraits. I do not have a clue how this setup manages to not print all team mates' images on top of each other always. I think the game might turn the skeletons in the exact same spot invisible, or something.

But knowing what I know, I truly recommend making a small vehicle, below chest level.

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How to make your very own rideable skeleton

You will need:

1) Blender with Kenshi import/export plugin

2) Enormous amounts of time, patience and snacks… no double it!

For the purposes of this guide, I am referring to the animal or vehicle you are about to make as a 'toter'.

TIPS & FACTS

- Do all bone additions and renames to the skeleton BEFORE recreating the animations, as you will need to redo them every time you add or rename a bone. **Think ahead**. Is your toter needed to pull a cart? Add a bone for the cart from the beginning.

- If you are using a non-humanoid skeleton as a base, you need to grow **identical bones for neck**, **head** and **headnub** in the exact same position the humanoid skeleton has, to prevent the game crashing when a NPC tries to talk to the toter. Use a humanoid skeleton as a reference but DO NOT COPY the bones, you need to GROW identical bones and rename them to fit. This also means the actual head neck and headnub bones the skeleton has, you need to rename something else.

- If the skeleton is larger than the humanoid skeleton, the hull will most likely overlap the toter's teammate portrait pics. To compensate this, I made the bull to stay low when idle. The game keeps taking portraits so often, even a short time standing the bull's hull would appear over every portrait. **Consider making your toter stand lower than chest height.**

- **Do not mess with the bone link chain.** Do not remove bones or cut the parenting link chain any way. This will result a non-exportable skeleton and you need to start all over. No, you cannot redo the chain. You would need to know the exact order the devs added the bones in the first place. Luckily you can ADD bones anywhere, if they do not need to be in the middle of two existing bones in sync. If they do, you will have to adjust the bone manually for every key frame in the animation. And I cannot guarantee the automated weights will work.

- Because the riding pose is the same pose as carrying, you will have to make a compromise on both. Also, your mod will overwrite all the above mods' riding poses, so a subber can only effectively use one toter mod. Unless a community standard for a riding/carrying pose is used.

- Until someone figures out how to make the Scythe (or other program) to actually save an usable custom ragdoll, the hands of the rider will flap. The game nicely prevents other body parts from flapping, but the hands were designed to sway while carried. The gravity physics of the hands is down (from head towards hands) and when the character is posed upwards on a toter, the 'wind' created by going forward plays against the 'gravity' and this is why the hands flail. Removing the ragdoll completely fixes this, but then the character stays up standing when KOed.

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How to add bones

1) Import the skeleton you want to add a carry bone to

2) Click on the skeleton and go to edit mode

3) Select Add – Single Bone
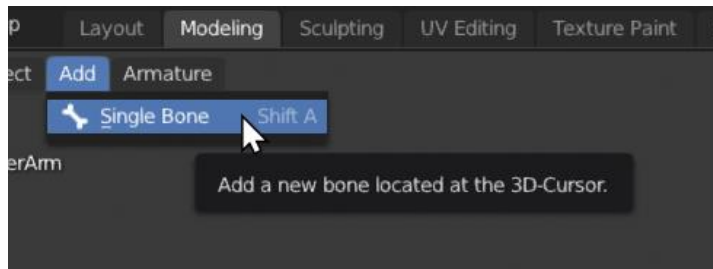
4) Move the bone where you want to place it. Do not rotate as it makes it more difficult for you to set the character pose. If you are using my pose, the riding bone rotations are:
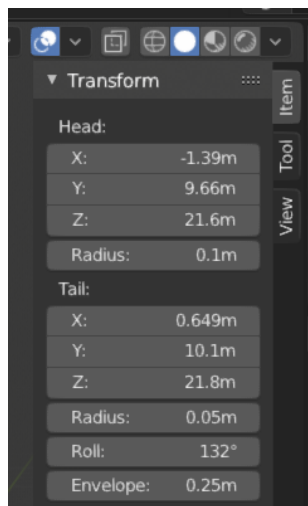
5) Navigate to the Bip01 L UpperArm and rename it fe. Bip01 L UpperArm 001 etc. Do notice the odd Bip01 BullNeck and BullHead bones. These were renamed after adding the 'photobooth bones' aka new set on human like neck, head and headnub bones.

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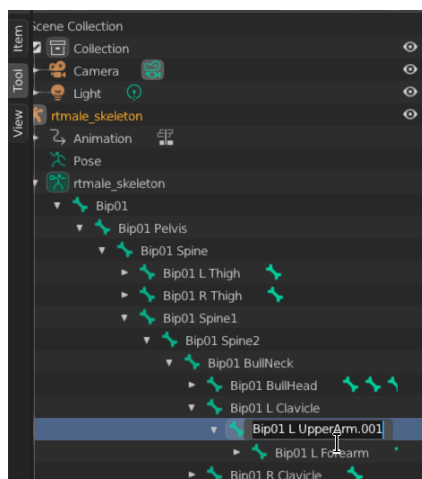
6) Make sure you have the 'photobooth bones' added and renamed.

7) Add any additional bones you need.

8) Create 166 animations for the skeleton. The animations need to be named exactly same as the vanilla human skeleton has. Case and space sensitive.

Shopping list for bones to add

- head, neck and headnub exactly where the game expects them. You do not need to rig any vertices to them.

- The riding bone mid-back. This is renamed 'Bip01 L UpperArm' and the original L upperarm needs to be renamed something else, fe. Bip01 L UpperArm 001

- a cart bone.

- Any other extra bone you think you need. Please note, that every extra bone is a burden to the game engine and should only exist if you really need one. Fe. rhino horns on the snout do not need bones, as they move with the head. A tail would need 1-3 bones to move smoothly (most animal skeletons already include these).

Animation

Vanilla Animation Names List

Mandatory animations are **bolded** (game breaks or crashes without). You can of course just have a 1 frame pose for each, as long the file have something to play when the game calls.

aimshoot	combat stance ref	guard5
arrow dodge spin 2	combatstance	guard6
back blow	combatwalk	hand2chest
back blow light	coolstance	hand2chest-R
back blow low	crawl idle down	hand2head
badpunch	crawl idle up	hand2head-R
bigchopv2	crawl loop	hand2leftshoulder
blk front hi	crawl use	hand2ribs
blk rear hi	crouch idle	hand2ribs-R
blk rear left	crouch walk	hand2shoulder
blk right	desperate attack	hand2stomach
blk thrust	dodgeback	hand2stomach-R
block left upper	dodgefall	handtowounds
block up upper	dodgefly	handtowoundsR
bowing	downward combo	head turning
breathing	drunken walk	headbutt
breathing noarms	flying big chop 3	heavy downcut
cannibaleating	flykick	heavy swing
carry me	flyknee	**idle_stand_confident**
carrying left arm only	foetal	**idle_stand_guard**
carrying right arm only	gotobed	**idle_stand_normal**
chop down	guard 1h	**idle_stand_relax**
chop down static	guard pole	**idle_stand_stiff**
chop left	guard4	**idle_stand_timid**

idle_turnhead	mid blow drop	stance3
idle_weapon_confident	mid blow light	stances
idle_weapon_guard	**neck set**	stances 01
idle_weapon_normal	newstrafe	**stand 1**
idle_weapon_relax	ninjarun	**stand 1 sword**
idle_weapon_stiff	**none**	**stand 1 sword noarms**
idle_weapon_timid	**pickup**	**stand carrying left**
jog carrying left	postures	**stand carrying right**
jog carrying right	ref08	**stand pole**
jog lower	reload 1	standing up 3
jog upper	reload 2	stealthKO
jog upper sword	reload 3	stepback
kicklow	**run lower**	stepback short
kneeling hostage idle	**run upper**	**stonemine**
kneeling hostage kneel	**run upper sword**	strafe 2
kneeling hostage stand	shoteiL	strafe lower
limp 1 full	shoulder lift B	strafe upper
limp L lower	shoulder lift left	**swim**
limp L upper	shoulder lift right	**swim carry**
limp R lower	shoulder lift upper walk	**swim carry left**
limp R upper	shoulder set	**swim idle**
limprunL	sidestep 2	**swim2**
limprunR	**sitting chair**	**swimbash**
ma 2punchie	sitting dazed	**swimidle2**
ma 2strike	**sitting idle**	sword ready
ma chudan	**sleepinbed**	**use**
ma idle1	**sleeponfloor**	**walk carrying left**
ma idle2	squat	**walk carrying right**
medic	squat T	**walk lower**
megakick	stance1	**walk upper**
mid blow	stance2	**walk upper sword**

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windface

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Glossary

Photobooth bones   My petname for the three bones, that prevent the game crashing when a NPC is talking to the toter. The bones are Bip01 Neck, Bip01 Head and Bip01 HeadNub, set in a humanoid figuration in correct height.

Toter   A combination word for a rideable animal or vehicle, much less cumbersome to write.