Wonders of the humanoid frame

By Alex (FateHeart) and Ryan (graybandit2000)

Alex:

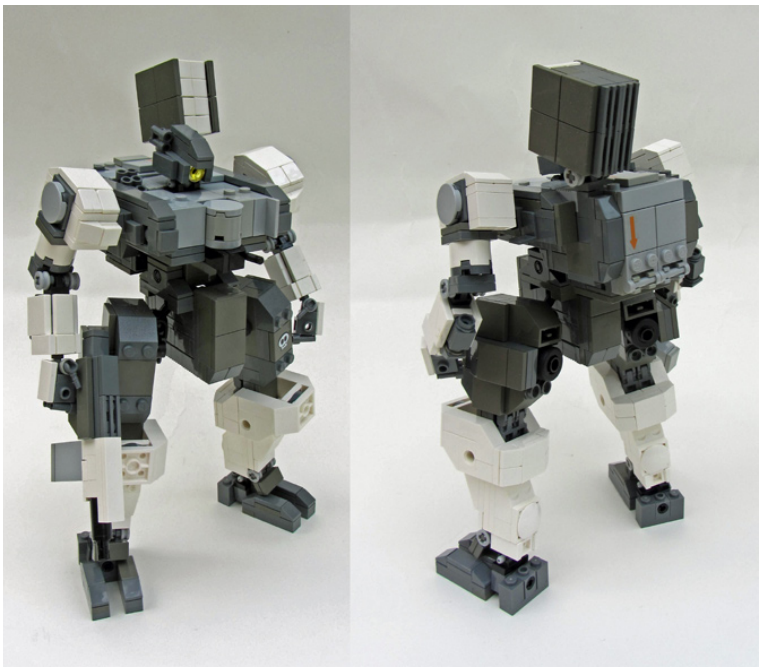
A long time ago (ten years can be viewed as a long time for some!) a young boy borrowed some VCR tapes from one of his friends. Within the tapes were episodes of the Japanese mecha anime TV series Mobile Suit Gundam Wing and After War Gundam X. The young boy was me and to say it didn't have an effect on my life would be an understatement. It instilled a love for humanoid mecha in me that I still have to this day. Naturally, when I started to build with LEGO as a hobby rather than just as a childhood play thing what I wanted to build the most were the humanoid mecha which amazed me when I was smaller. My initial attempts were crude to say the least as I had yet to fully understand the concept of SNOT building. Exposure to amazing builds on the LEGO® sharing website MOCpages helped my transition to SNOT building and not long afterwards I discovered the photo uploading site Flickr. After a year or so of lurking and much stealing of other respectable builders' techniques from the LEGO groups there I finally made an account on Flickr and began to upload MOCs for the world to see.

When I was approached by HispaBrick Magazine® to write an article for them about mecha I jumped at the chance reasoning that it was a good opportunity to show readers of the magazine just what made humanoid mecha so awesome for me. I've dragged Ryan on board with me to discuss our favourite mecha format. We'll be covering tips on how to build humanoid mecha and why we just keep on building them as well as why we love them so much!

Ryan:

I first got into building LEGO® mechs and mecha after playing the old PC game Mechwarrior 2 in 1998. The idea of battle machines with legs that had the punch of tanks was a revelation for me, and I immediately felt the need to reproduce it them in LEGO. After only a few of my own attempts, I found Ron Perovich and Primus' LEGO Battlemechs, and began to take some design cues and ideas from them, but still making my own models. While representative of the source, they were more statues than anything, with only cosmetic joints.

After a couple years of building large mech armies, I stumbled across Bryan Cooper's gigantic Gundam builds. His Teknomecha frame was amazingly large, but a bit beyond the scope of my collection. Determined to emulate his style, I began designing and building very rough Gundam models. While they were very basic aesthetically, they were my first big



models to try and include “human” joints, such as multi-axis hips and shoulders.

Eventually, I dropped out of building LEGO® entirely for a while, instead focusing on working towards college in 2004. However, my interest in the various Gundam anime continued to expand. I even found other Japanese mecha designs online, and looked up many different mecha builders. From 2004 to 2011, I had my LEGO in storage, with only a small amount of little sets that friends and family would give me as gifts.

In late 2011, I started to slowly get back into LEGO, and soon had a growing collection, including my old bricks out of storage. The Exo-Force click ball hinges and brick ball-and-socket joints that had been released in my absence from LEGO were a revelation for my building style.

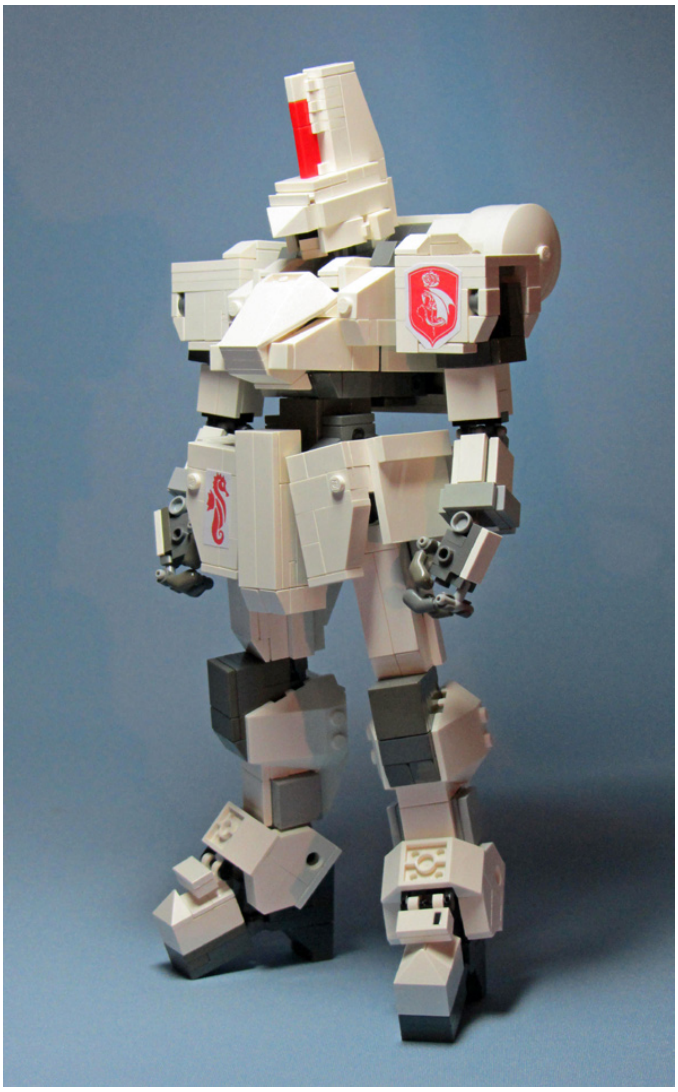
As I started to attempt new Gundam-style builds, I quickly realized that I would need to develop some goals, as I do not do well with free-building. I decided that the important aspects I wanted to incorporate were somewhat human-like pose-ability, a minifig pilot, and about an 11-12 inch size. With these goals in mind, I worked on several basic frames, eventually settling on one that compromised the least to achieve all my goals.

Tips and useful information for construction of humanoid mecha

Alex:

I generally start the build process by finding a reference which appeals to me. I will admit to the fact that the majority of my builds tend to be inspired by a pre-existing design from an anime or manga series, usually Gundam, or hobby plastic models such as the Frame Arms series. Not much starting from scratch on my part when it comes to building humanoid mecha. The reference is important when building as it helps to provide me with an idea as to proportions and detailing where appropriate as well as make it easier for me to imagine any details I wish to include into the design which are not in the reference. After running through ideas in my head I will start building usually starting with the mecha’s head. It’s a well known notion amongst mecha builders that mecha heads can be really hard to build in the brick due to size constraints, shaping and detail. However, once a decent head has been built it’s usually easier to continue construction. After the head I usually build the torso due to the fact that the majority of the joints come out of the torso which makes it an important section to get right. I make it a personal goal of mine to try and cram a minifig into the majority of builds so the torso is usually large enough to just cram in a pilot, cram being very literally in most cases.

In regards to joints I try to emulate or stick to the joint layout that the human body has, such as ball joints at the hips which ensure a similar range of movement to what our bodies have. However, in some cases it is not possible to entirely copy human joints due to problems with elasticity with examples being the elbows and the knees. As skin is stretchy our bodies are fine with only one joint however as LEGO bricks tend to not be stretchy in any sense of the word, the solution is to use 2 joints allowing for the same range of movement as the single joint employed by you and I. Admittedly, sometimes trying to fit a double joint whilst keeping a high level of detail and general appearance good-looking can be hard which can sometimes lead to the unfortunate choice of ‘good aesthetic appearance’ or ‘good range of movement’ but neither at the same time. The general guide to joints that I use but not necessarily stick to has joints with three axes of movement or similar (ball joints) at the neck, the waist, the hips, the shoulders, the wrists and the ankles. The elbows and the knees however only have one axis of movement so parts like click hinges are perfect there.



Proportions of a mecha play a large part in what style you are aiming for. Longer arms can lead to gorilla like proportions whilst longer legs can lead to almost supermodel like proportions. Due to the experiences I had as a child, the Gundam system of proportioning, namely the work of the mecha designer Hajime Katoki, is what I use when working out mecha proportions. A rough guide I use for a generic humanoid Gundam figures is to have the length of the leg, from the foot to the knee, as the same length of the main body, from the crotch to the top of the head. The arms, from the shoulder to the hand, should be the same length as the lower leg, from the knee to the foot. The head should be of similar size to the hands. Finally, the upper legs, from hip to knee, should be the same length as the lower arms, from elbow to hand. Once again, this is a very rough guide and probably isn't for everyone but it hasn't let me down quite yet!

Ryan:

My build process generally involves me building a frame roughly the size I want to reach, then figuring out a colour scheme. I then start fleshing out the model, generally building the feet first, then working my way up the frame, leaving the head for last. Heads are always tricky for me, so leaving them for last helps the rest of the build move along without me getting frustrated.

While I strive for my own form of accuracy to a source inspiration, be it Gundam or other mecha, I'm told my style is almost a 'caricature' of sorts. I make compromises based on what parts I have available, as I don't really BrickLink at all, so my models often take on their own look entirely, merely inspired by a source model.

The final words

Alex:

I guess the most important piece of advice for any aspiring mecha builders or even just LEGO® builders in general is to have fun and enjoy it! For me LEGO mecha builds come in two stages. The first stage is the building itself whilst the second stage is simply enjoying the build as it stands on my shelf. If I'm happy in both stages I know I've done something right.

Ryan:

The most important thing to achieve when building LEGO is satisfaction with your own model. I often revisit and rebuild parts of my models as I come up with different ways to do things. Build for yourself, not for your peers. Often this means I leave studs exposed, but it's a compromise I am happy with. That's not to say I don't accept critique from my peers and superiors in mecha building, but in the end, it's all about what I like in my model.
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