

Basic Supercar Designing

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Images by Paul 'Crowkillers' Boratko



When it comes to Technic models, mostly everyone loves the awesome vehicles known as Supercars, but what exactly is a 'supercar'? Well, by definition, a supercar is an ultra high performance vehicle with a sleek unique look that also comes with a hefty price tag.

In the LEGO® Technic world, a supercar is defined more so by what it has going on internally. The first Technic car from LEGO with supercar-like functions came out in 1988. This was the 8865 Test Car, which implemented many features that are now expected from a LEGO supercar. These functions consisted of a functional gearbox, front & rear suspension, and working steering. Then in 1994 we got the first true supercar. While it didn't have any type of head-turning body design, it had some very revolutionary features over the 1988 Test Car, like all wheel drive, 4-wheel steering, and a slick 4-speed gearbox.

So if you are up to the challenge and want to build your very own supercar, let's look at where to start.

1. The scale of your model

The wheels that you decide to use will determine the scale of your creation. If you are using the wheel and tire combo from the 42000 Grand Prix Racer or 42056 Porsche sets, you are looking at 1:8, while the wheels and tires from the 42039 24 Hour Race Car or 8070 Supercar are in the 1:10 range. Some builders have even squeezed multiple supercar functions into much smaller scale cars, so the scale choice is entirely up to you!

2. The aesthetics of your model

So what do you want your Supercar to look like? The internet is a great place for inspiration, so get out a pencil and a piece of paper and sketch out some designs. Maybe you like features from one certain car like the spoiler design, and the air intakes from another. Sometimes it is best to get your design figured out first so when you get into the chassis and drive-train, you don't end up having to rebuild them when you realize that you are now letting your bulky chassis determine how your body design is developing. Of course color is also something that you must consider when trying to come up with a design, because as we all know, we are limited with parts in certain colors.

3. Have a wide array of Technic elements

One thing that can throw a monkey wrench into your project is not having the right part for the job. You don't want to be forced to have to settle on using something that is less practical. So before you begin the actual building process, make sure that you have a nice range of elements on hand so that you are not waiting a week on a Bricklink order for parts that you probably should already have on hand.

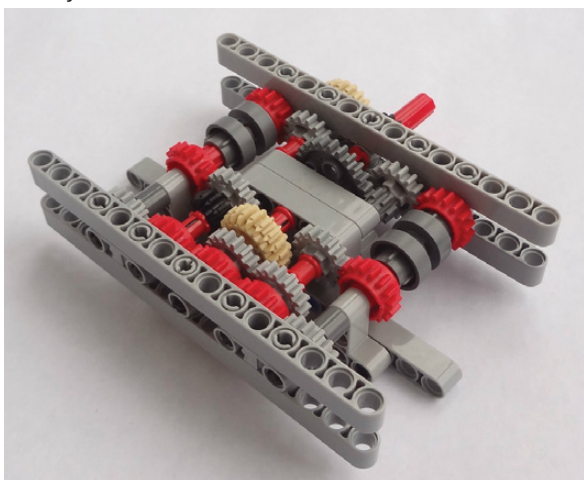
4. Try to start with a unique idea

Every time I start on a new car project, I like to start with either a new suspension idea or a new gearbox concept. This way you'll have a new goal and won't feel like you're rehashing the

same model. I sometimes browse MOCs that other builders have already done and try to come up with something new or maybe a unique variation of an existing idea. There is nothing wrong with 'borrowing' someone else's idea, but it is common courtesy to give credit to the source of your inspiration or idea.

5. The heart of your supercar

Of course we are talking about the gearbox. Many people give up here before they even start because they just don't quite have the understanding of what exactly is going on. This is where some online research can greatly help you out. There are a lot of guys out there that have videos and detailed pictures to help you understand how gearboxes work and how the ratios are determined. Gearboxes can be overwhelming depending on exactly how advanced you are trying to make them. Sometimes it's easier to get out a pencil and paper and sketch or write down exactly what you want to do, to help aid you while you build.



Gearbox

A new gearbox concept or idea is usually where I start during the process of designing a new car. Over the years I have tried to avoid using connectors on axles and instead only use liftarms to help everything turn more smoothly. Perpendicular connectors on an axle don't always line up perfectly with liftarms, so you can get axles and gears that are not sitting true and end up creating unwanted stress and friction which will drive you absolutely insane.

6. The backbone

A nice strong chassis is very important. There are many technic elements like the 3 x 5 dogbone and 3 x 5 open frame liftarms that can help build a rigid chassis and also cut down on the stacking of liftarms to keep the part count down. You want to try and keep the chassis as strong as possible while keeping it light in weight because you have to remember that you still have many other components that will be attached to it, including the body. And you don't want to overload your shock absorbers and have to end up redesigning your suspension when you are nearing your model's completion.

7. Suspension

Designing the suspension is one of my favorite parts when I do a model. Based on your model's size, this is where you may need to get creative. If your model is large, you may need 2 shock absorbers per wheel, or maybe you can figure out a way to use a single shock in a unique way that offers more resistance when you compress it.



Suspensions

8. Steering

No functional car would be complete without a cool steering system. And to add to the playability, a HOG or 'Hand Of God' hidden steering knob or gear can make the model even more enjoyable by letting you operate the model without having to fiddle around with the steering wheel inside the cockpit. I almost always try to incorporate both into my models.

9. Interesting mechanically-controlled functions

If you want to up the 'coolness' factor of your Supercar, you could try adding functions like butterfly or gullwing doors that are remotely opened or closed by a hidden gear, a retractable spoiler, or even a convertible roof. These can greatly add to the 'wow' factor of your new ride.

10. Building a better body

I think for everyone, designing the body is the most challenging part. One of the most difficult things is trying not to rush through the body design just to get your model finished. A great-looking model is what is going to attract people to check out your model even further and see all of the cool stuff that you have packed into it. There are so many Technic panels and flex axles available that just about any type of car model can be replicated, but of course this will require you to get very creative.

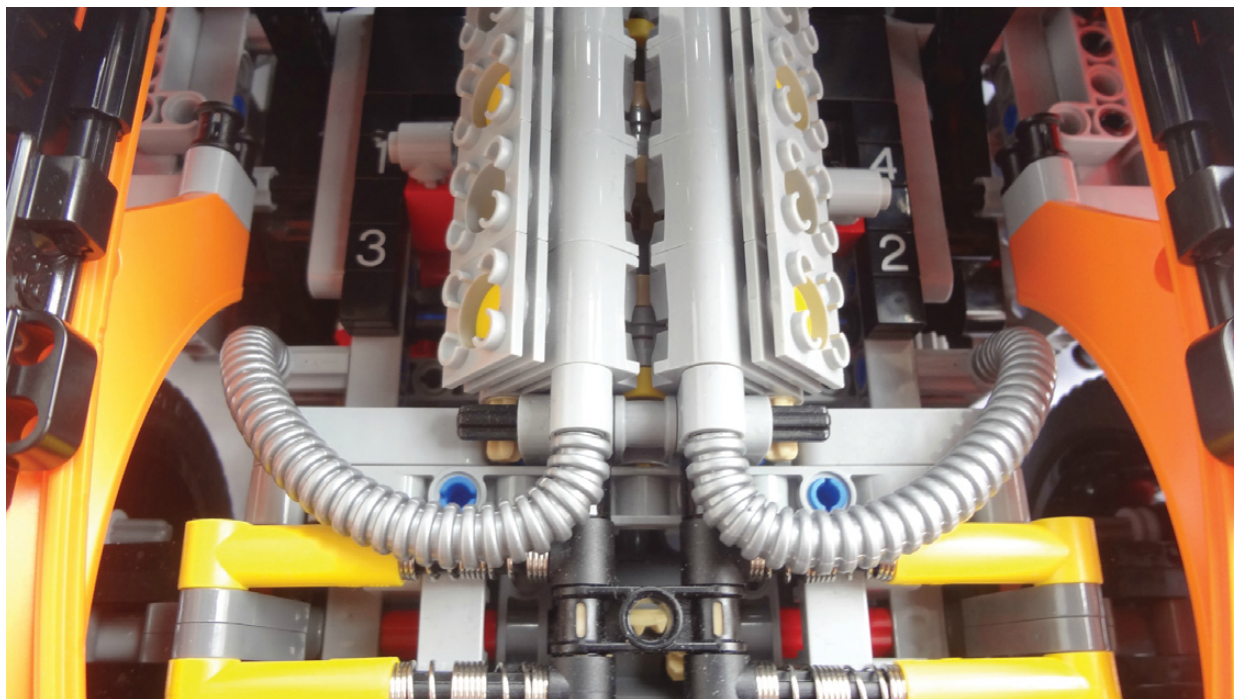
11. Frustration

When things start getting to the point where you are pulling out your hair and grinding your teeth trying to get something to work, sometimes you need to step away from your model. I cannot tell you how many times I would sit and stare at a failing mechanism in anger. I realized that if I spent too much time on one area that it helped to just move on to something else or maybe pop in a movie and take a break from building for a short time. When I would come back to my original set-back, I almost always found a solution. Everyone gets burned out building at some point.

12. Inspiration

When I started getting into building again back in the early 2000s, there were not many people building cars. Some of the main inspirational car builders from back then were Nathanaël Kuipers, Misha Van Beek, and Aleš Zorko. Fast forward ten

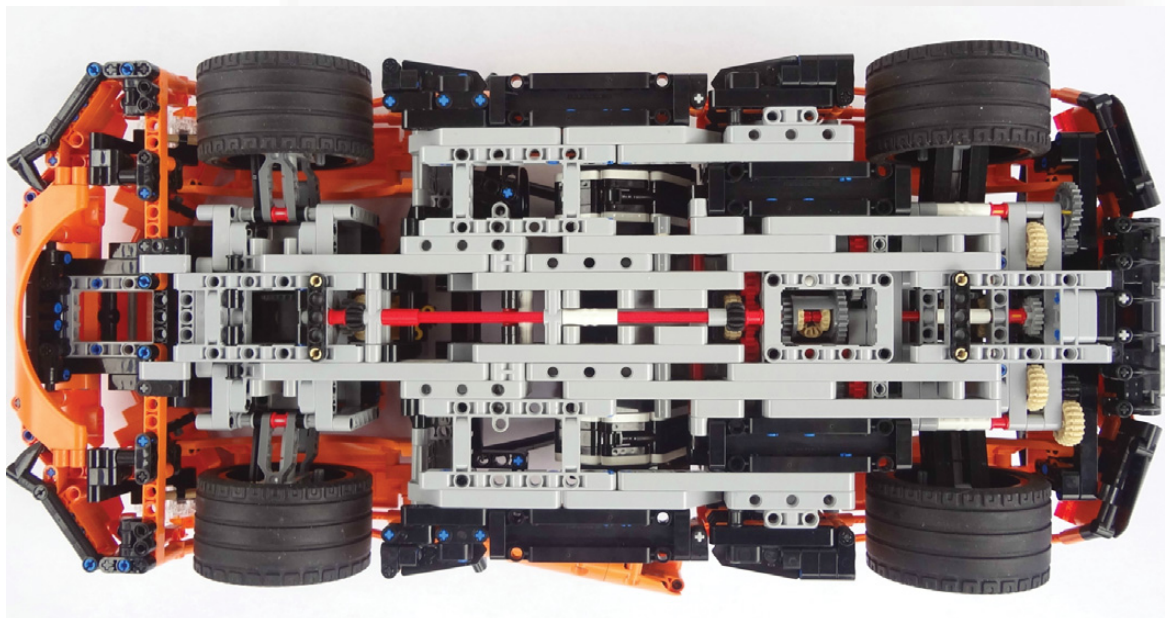
years and there are a ton of great builders from all over the world that are building awesome supercars and pushing Technic to the limit. Some of these builders include Máté Lipkovichs, Paweł Kmieć, Jeroen Ottens, Fernando Benavides de Carlos, Francisco Hartley, and many others. I highly recommend checking out their work. I have links to their work as well as many other great builders on my friends wall at my website. These guys have enough material to keep you lost in supercar goodness for days. I also recommend joining up on a Technic forum like Eurobricks. If something confuses you, then you can ask questions and get answers.



Engine and Gearbox

13. Speed is not a factor

As I stated earlier, there is no need to rush through your model. Chances are that whatever you build can be done in a much better and more practical way. Look at your parts and think of new ways to use them and try to get as many uses out of one piece as you can.



Inferior view with mechanisms belonging to all functions

Remember, the more cleverly your model is designed, the more admiration you'll gain with your fellow Technic AFOLs!
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