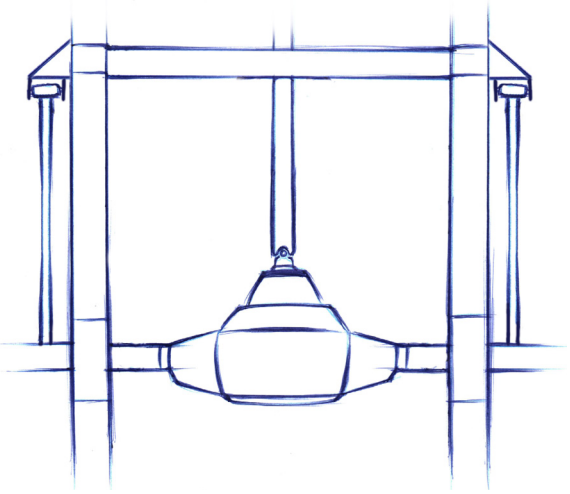
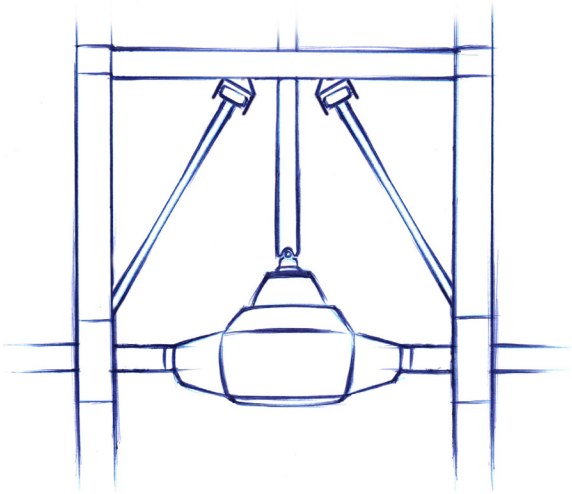
Why I Can't Tell You What Link Design To Run On Your Vehicle

The most common question I get asked has got to be "What type of suspension should I run on my vehicle?" And while that might seem like a straightforward question with an easy answer, I am going to take a moment to explain why it is far more complex than you would initially think.

But before we dive into this one, let me take a moment to show you a few of the most common link designs.

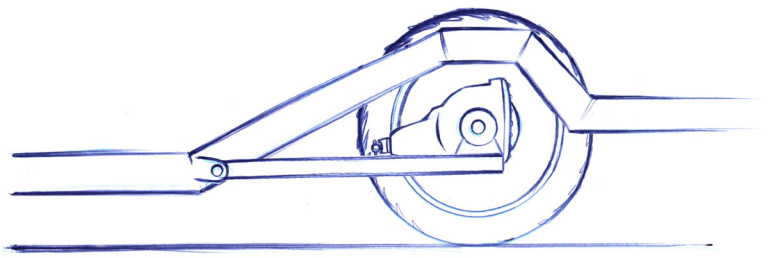
2-link – This is not an ideal design for a daily driver, but it is a very common design that is easy to install. The simplicity of the design leaves plenty of room for stock fuel tanks, exhaust, back seats and so on, but it's simplicity comes at a price. The standard 2-link that the custom aftermarket world runs cannot articulate (one wheel up and one wheel down). This causes binding, a lack of traction, and problems when going through driveways.

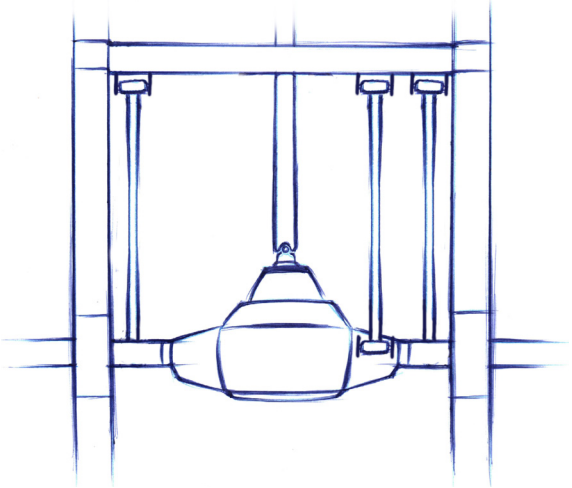




Truck Trailing Arm – While similar to the 2-link, the angled lower bars separates this design from the limited 2-link. This system is capable of articulation, which makes it much more viable for street use. It was used on the early GM pickups and is still used as the only rear suspension accepted in NASCAR. This design, like the 2-link, leaves lots of room for the fuel tank, exhaust, and even a back seat.

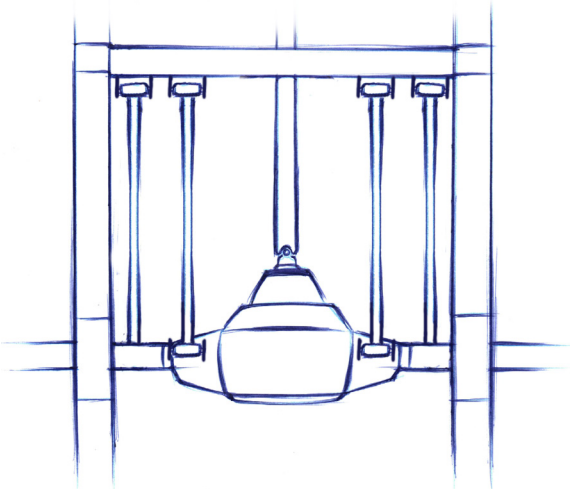
From a side view, both of these designs will look almost identical.



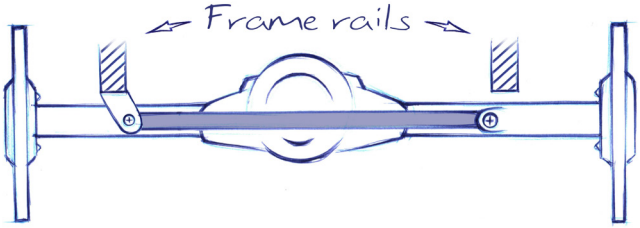


Parallel 3-link – Commonly used on 60's GM cars, this design can help in situations where space is tight. The single upper bar can be installed on either side of the axle to make room for the fuel tank or whatever else might be in the way. The downfall of the design is that it is not ideal for high horsepower installations.

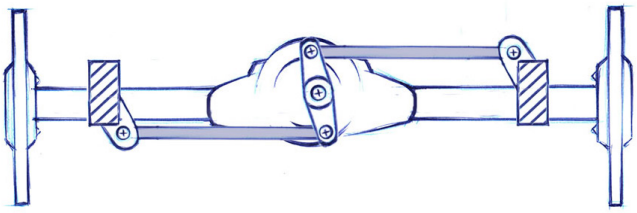
Parallel 4-link – The addition of the second upper bar will take up more space than the previous designs, but it also adds more axle support. The orientation of the bars can be inside or outside of the frame. Most commonly, the upper bars will be above the axle tube and the lower bars will be below the axle tube, but it's not uncommon to see the upper bars mounted to the front of the axle tube or even under it.



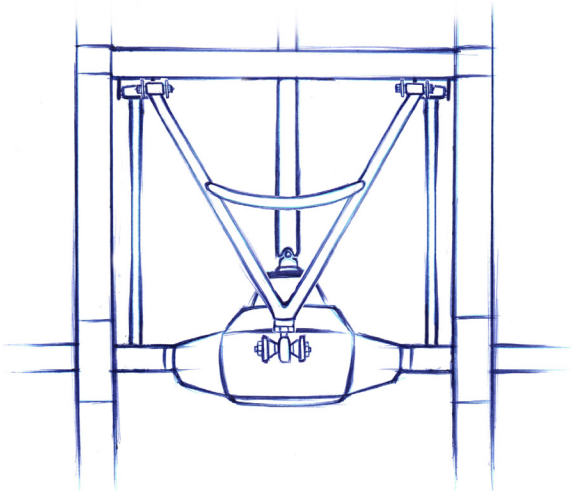
All of the designs we just covered will require some sort of lateral limiting device, like a panhard bar, watts-link, track locator, or any number of the more exotic systems.



A panhard bar is a simple device that mounts to the frame on one side and the axle on the opposite side.

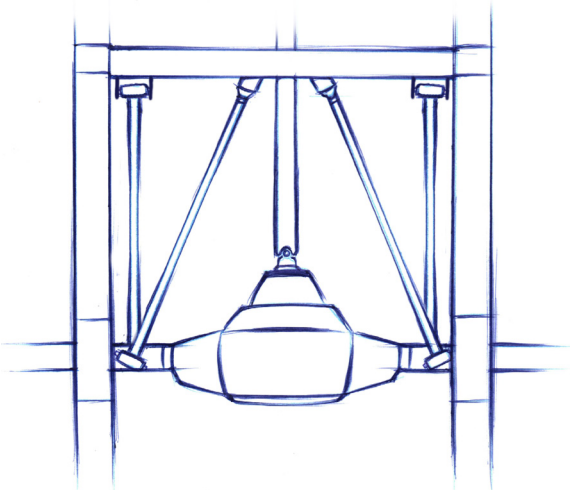


A watts-link is a more complex system that has two separate bars and a center bell-crank to keep the axle center.

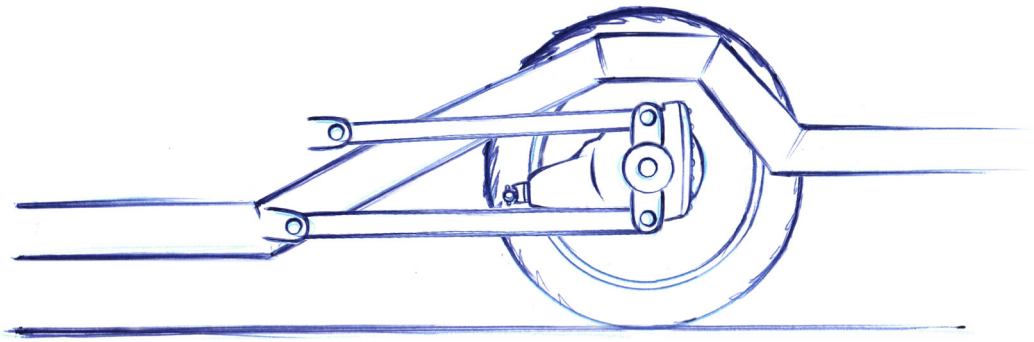


Wishbone 3-link – The orientation of the wishbone can be either to the front or the rear and the shape of the wishbone itself can be varied, depending on the space limitations. The only thing to keep in mind is that the single point of the wishbone will assume all lateral loads, so the joint/bushing will need to be tough enough to do that. Also, the single point needs to be capable of 100% of the articulation angle. Depending on the vehicle's layout, the wishbone can be used to work around a fuel tank without the need for an external lateral limiting device.

Triangulated 4-link – One of the more universal designs out there, the triangulated bars can be oriented forward or backwards with no issue. Set up properly, this design can handle complete axle location chores, assuming the amount of angle that the triangulated bars have is enough (this is another question with no definitive answer – there are too many variables to the question). The downfall of this design is that the triangulated bars take up a lot space, so it's not often used on vehicles where the stock fuel tank is in the way.



The Parallel 3-link, Parallel 4-link, Wishbone 3-link, and the triangulated 4-link can all potentially look the same from a side view.



So back to the original question: why can't anyone answer your questions about what design is best for you?

To be fair, the questions go more like this:

What is the best design for towing?
What will fit best in my *insert vehicle here*?
What is the best design for a good ride?
What setup is the most reliable?
What design is the best handling?
What design can handle 500hp?

These might seem like a easier questions to answer, but they are still too vague. To shed some light on what I mean by that, here are some quick answers to those questions.

What is the best design for towing?
Technically speaking, designed and built properly, any one of the suspension designs I showed have the ability to tow.

*What will fit best in my *insert vehicle here*?*
Your vehicle, most likely, has a number of limitations. It is up to you to define those limitations and find a suspension design that will fit within those limitations.

What is the best design for a good ride?
The type of link design you run plays a very small role in the ride quality of your vehicle. The major parts to that equation are bag choice/placement, and shock choice/placement.

What setup is the most reliable?
In most cases, reliability is determined by proper engineering and installation, not by the particular design.

What design is the best handing?
Aside from the 2-link, any of the other designs are capable of handling quite well. The real question is, do you know how to tune a suspension to handle well?

What design can handle 500hp?
Handling lots of horsepower is easy. The trick is getting that horsepower to the ground. Again, can you tune a system to plant the tires?

There are plenty of people who have a preferred suspension design and are happy to tell you to do that suspension on whatever it is that you're building, but the reality is that whoever is building the suspension is ultimately responsible for the design and how it fits within the vehicle's confines.