Power Racing Series

Getting Started Guide

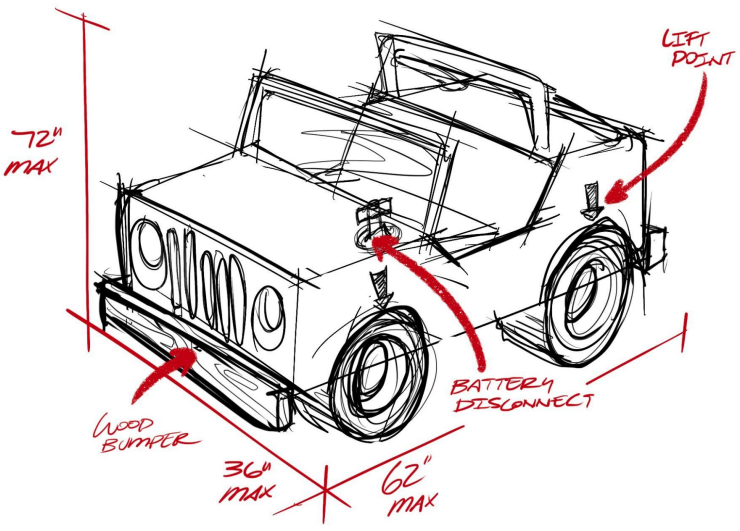
Table of Contents

Power Racing Series History and Basics:

Power Racing Series started in 2009 in a parking lot in Chicago with a handful of racers and some overvolted stock Power Wheels toys. Today, it has grown to an multi-part cross-country series that brings together people of all skill levels and walks of life. We have built a community that encourages risk-taking and learning all while having an absolute blast. If this is your first time building a kart, welcome! We are so happy to have you. In this guide you will find the basics of a kart build, including some sage advice from seasoned racers and a platform from which you can launch your vehicle. You'll want to start by giving yourself a deadline - go to our website and pick at least 2 race events to attend this season to be considered for the championship title, register for those races, and then get started with your design. If registration or traveling costs are a major financial factor in racing, we have funding opportunities! For your first race, the goal should be to have a kart that goes and stops. The rest will be learned on the track! We also have extra points for having a kart that looks cool! Most teams pick a theme for their kart and decorate it with as much effort as they put into the drive train, and sometimes they dress the part, too. Keep in mind that you can start earning points by posting onto Instagram and TikTok while you build - see the Social Media Moxie Points page for more details on that. Ultimately we hope that you have fun designing your kart, make some new friends, and learn a whole lot from failing spectacularly. Everyone loves a good kart wreck, right?

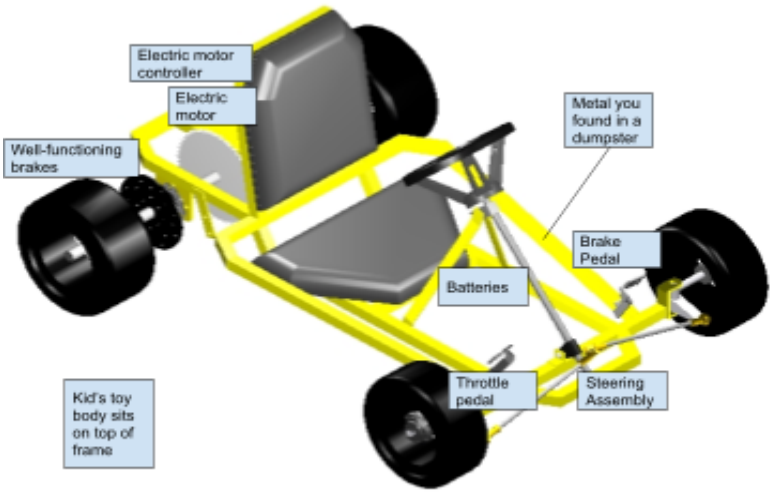
Visual Kart Specs:

Take a look at the sketch below - all of these parameters can be found in the Official Rules doc, but we thought this might be a handy visualization. Direct any rules interpretation questions to info@powerracingseries.org.

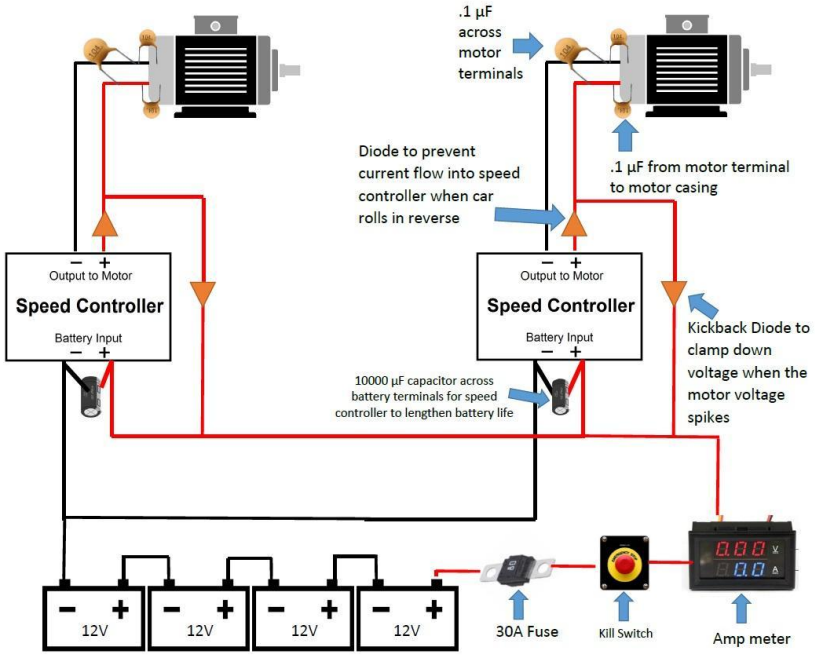


The major takeaways here are to include safe, sturdy bumpers of a softer material than metal, well marked lift points that can easily support the weight of your cart when lifted off the track, and an easily accessible large E-stop button or switch that cuts ALL power to the kart.

This diagram shows an example frame and drivetrain orientation. Your frame should hold the driver's weight close to the ground to prevent roll-overs and it should be relatively lightweight. Make use of triangles in rigidifying your frame design, and don't forget that the brakes are critical for race qualification. Different teams use different throttle types, steering setups, body and frame designs, and seat sources, so build what makes sense to you based on parts availability and silliness factor.



Electrical Build Block Diagram



This is a great way to start with your electrical design. Consider what your motor type will be and what kind of batteries you will use, and then sketch out something simple to be your base. Don't forget your fuse and battery cutoff in your design! Translating this to a physical kart will mean finding protected paths for your wiring and building space into your frame to hold the larger components.

Example BOM

Keep track of everything you use in your bill of materials (BOM) as you go, and remember that many components count half or not at all towards your total BOM budget limit. You will be asked to show your BOM to the technical inspector at your first race to ensure that your kart is within the allowed budget. See the full rules document for details on what information to include. It is MUCH easier to put this document together during the design process rather than waiting until the night before the race to slap it all together - trust us, we know!

"The Stingray" Bill Of Materials				
Item	**Link**	**Price**	**Quantity**	**Total**
Razor Dunebuggy go kart frame	Facebook Marketplace	$50	1	$50
1800W 48V DC Brushless Electric Motor Max 5200rpm 4500RPM E-Bike scooter	LINK	$85	1	$85
Kelly Motor Controller KBS48101X	LINK	$89	1	$89
Greenway 48v 748.8wh battery X 0.06$	LINK	$44.93	2	$89.86
VEVOR Front mounted go kart tires + hubs	LINK	$98.99	1	$98.99
#35 Chain Sprocket and chain	LINK	$35.99	1	$35.99
Azusa 2512,2513 Go Kart Spindle & Bracket Set, 5/8" Dia x 6" Long	LINK	$48.87	1	$48.87
Kid's car seat	Found on side of the road	$0	1	$0
Steel for frame modifications, bumper mounts	Metal Recycling Dumpster @ RIT	$0	1	$0
			Total:	**$497.71**

Links to resources

If you've read through this whole document and the entire ruleset for this coming race season and still have questions, don't hesitate to reach out to Power Racing Series via any of the modes listed below. We also have grants available to support your team that can be found on our website, and scholarships available if you're still facing financial hurdles to join up. Our mission is to provide a fun, interesting engineering and arts project for enthusiasts and students of all skill levels and backgrounds. We can't wait to see you on the track!

Power Racing Series Forum: forum.powerracingseries.org
Power Racing Series Facebook Page: Power Racing Series
Unofficial Racers' Facebook Group: Powerwheels Racers for Adults
Power Racing Series Instagram: @powerracingseries
Power Racing Series TikTok: @powerracingseries
Power Racing Series Email: info@powerracingseries.org