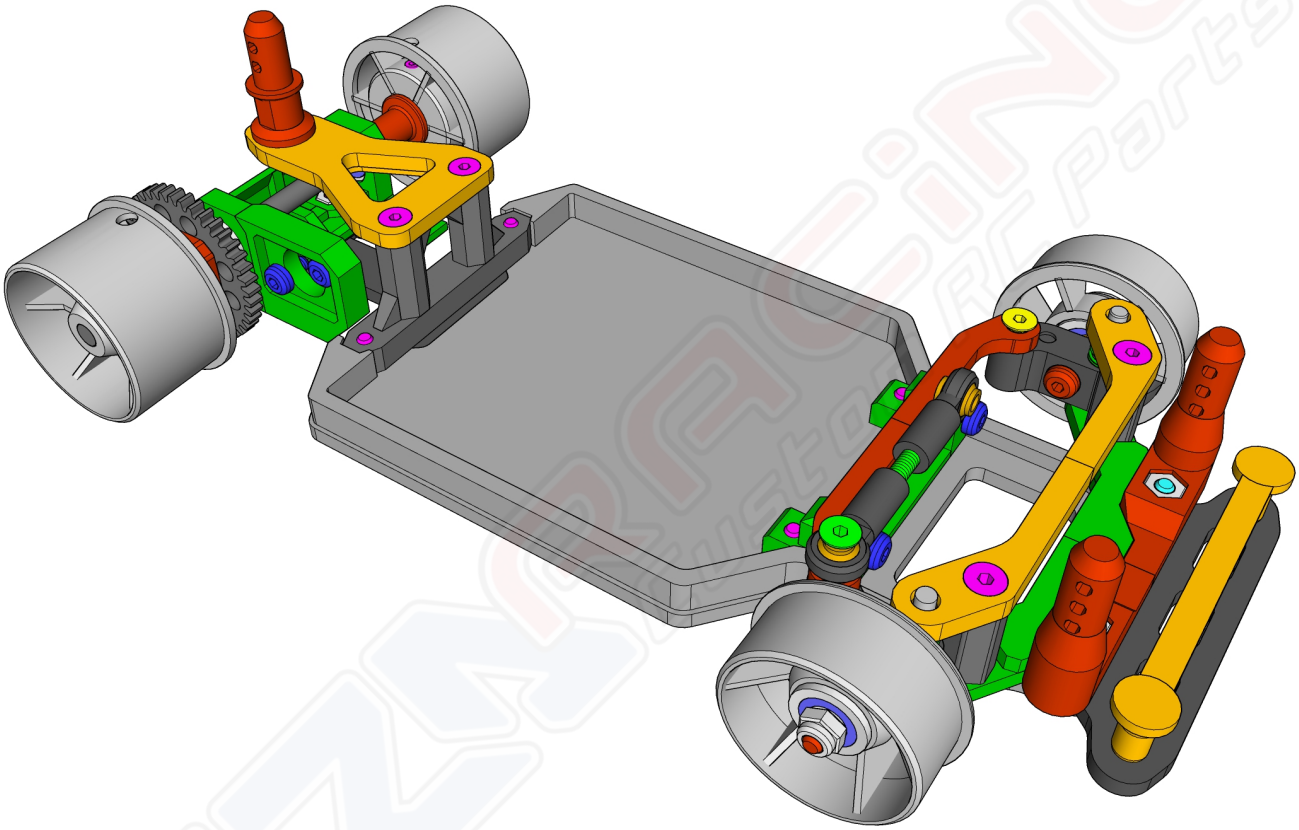
SIMPLE28
Budget Club Racer



Simple28 is a Free to 3D print low-cost model concept, where almost all components of the car can be 3D-printed by the user using PLA filament.

The car is designed around low speed 030 micro motor, which should not exceed 14,000 RPM at the rated 5V, or 20,000 RPM at 7.4V.

Its simple design and low weight allow for good agility of the model through corners and during acceleration.

The model is not intended for professional racing or aggressive driving, but for enjoying with friends and requiring minimal maintenance with little investment. "Smooth is Fast."

Simple28 - Budget Club Racer - 1/28 scale

3D printing settings:
Parts should be printed with 0.2mm layer height.
PLA is the material of choice, minimum 3 walls, chassis and flat parts with 100% infill.

Where to download?
https://cults3d.com/en/3d-model/game/simple-28-budget-club-racer-1-28-rc-car

What licence applies to Free Simple28?
Model is released under CULTS - Private Use

You are authorized to:
Print and use the 3D prints of the 3D model for private use, in unlimited quantity.
Share the images of your 3D prints of the 3D model on communication media such as social networks or websites.

What is not allowed:
No commercial use or public sharing of the 3D model;
No modification or adaptation of the 3D model for public sharing or sale;
No distribution, sale, donation or exchange of the digital files of the 3D model.

For updates follow - Facebook Group:
https://www.facebook.com/groups/simple28rc

Optional parts available on Alza-Racing Website
https://shop.alza-racing.com/

Do I need to buy anything from mentioned website?
No, you don't. Car is available as free to print version, so you just download the files for personal use, source the hardware and you are ready to print, assemble and drive.

Other informations:
The model is not sold as an assembled kit, it is not a toy, and as such it is not intended for persons under 18 years of age.

To complete the assembly of the model, the structural parts must be 3D-printed.

Building the model requires good eyesight, patience and a steady hand.

If you've never managed to complete a puzzle of 100 or more pieces, then this model may not be suitable for you.

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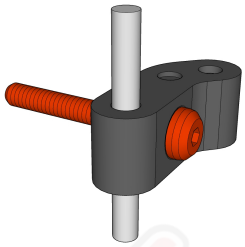
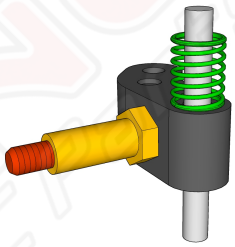
01 - Steering block assembly:

Screw M2x16 Button head screw into steering block as shown on picture.
Assemble left and right piece - mirrored.
Push the 2x18mm PIN into steering block (it should stick out 5mm on bottom side, 7mm on top side). At this time you can also pre-thread rear hole which will later be used for fastening steering connection.



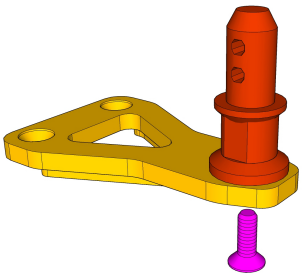
02- Steering block bearing holders:

Now it's also time to add bearing seat (front axle) onto M2 screw, so your bearings will sit propperly. You can use 3d printed part, source axles from other brands, or check ALZA optional parts.



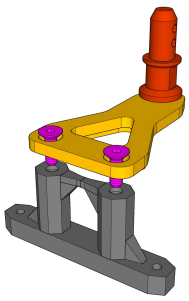
03 - Rear body post holder assembly:

You will need M2x6 Countersunk screw, 3d printed Rear body post and Rear body post holder. Assemble it like on picture.



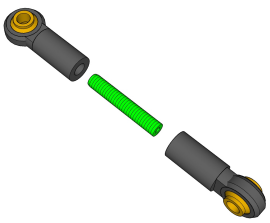
04- Rear H-Holder prepare and assembly:

Take your H-Holder and pre-thread all 6 screw holes. Once you succeded, than you can take rear body post holder plate and screw it onto H-Holder with 2pcs M2x6 countersunk screws.



05 - Servo steering link assemlby:

Take 2 14mm long ball joints and 1 m2 x 12 grub screw. Screw the grub into 1st ball joint about 3mm deep and take out the screw. Than screw same screw into 2nd ball joint also about 3mm deep. Now you can fasten both onto the screw, leaving about 6mm gap between ball joints. Half turn of one ball joint coresponds to 0.2mm change in length.



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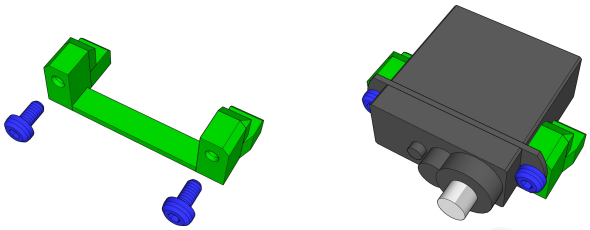
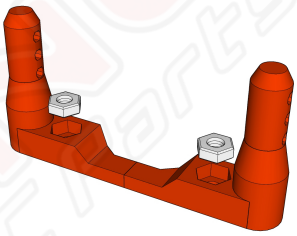
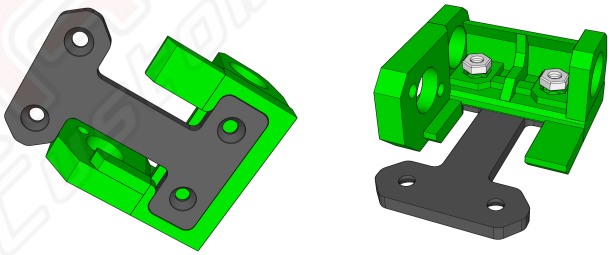
06 - Servo mount prepare:
Take your printed servo mount and pre-thread all four holes for at least 5-6 turns. For fastening the servo, you will need 2pcs M2x4 Buttonhead Screws. Than you can put in your servo and tighten it gently so that it sits in place. No brute force needed here.



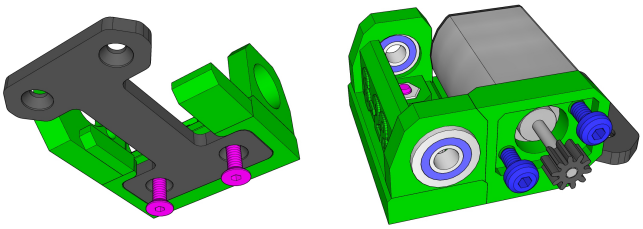
07 - Front body post holder assembly:
Take 2 regular M2 Nuts and press them into front body post.
It's not that hard that it would need it's place in the manual. But some will appreciate having most steps of assembly covered.



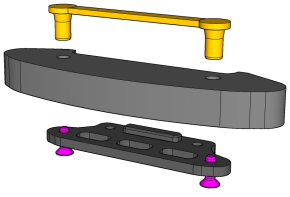
08 - Motormount and preparation:
Put H-Plate into motormount and puncture those two holes at the bottom of motormount. Turn it arround and press in 2pcs M2x6 regular nuts.



09 - Finalizing Motormount assembly:
Take 2x M2x6 Countersunk screws and screw H-Plate onto motormount. Press in the bearings, add 030 motor and fasten the motor with use of 2x M2x4 Buttonhead Screws.



10 - Front Bumper assembly:
Put 2x M2x6 screws into the Bumper holder, place the bumper (bought or DIY) onto those 2 screws. Than add Bumper Top holder part (either single or One-piece like on picture) into the Foam Bumper. Gently screw the screws until you can not move the top part which is holding the foam bumper. Foam bumper is not needed, but its helpful when crashing. You can either made it DIY or get one on ALZA webpage.



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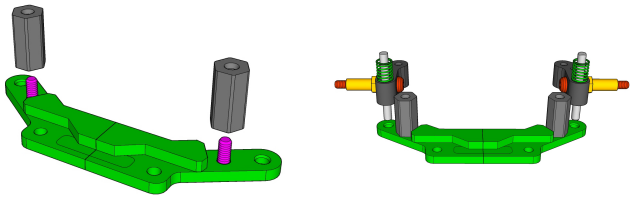
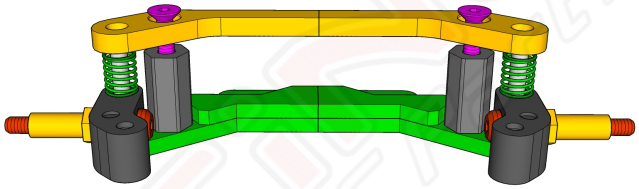
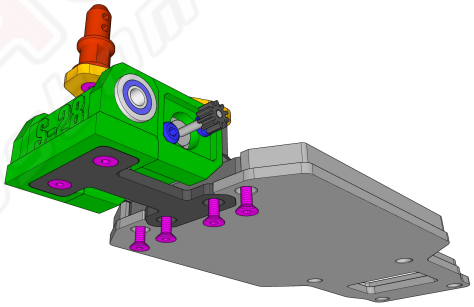
11 - Front lower arm preparation:
Firtst take 2 M2x6 screws and 10mm distance spacers and fasten them onto lower arm. Once you have succeded, you can put assembled steering blocks onto the lower arm. The Holes for pins will need some preparation, as Pin should slide freely through the hole.



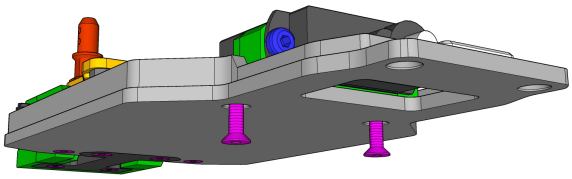
12 - Front final assembly:
Remove springs, put your upper arm in place and fasten it with 2x M2x6 CountersUnk screws. Check if motion of steering block is free, if not - adjust the holes on arms. Once you get smooth motion, take down the upper arm, install pins, and put upper arm back.



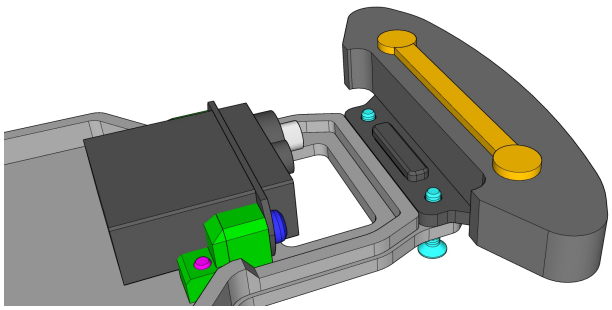
13 - Assemble Back and chassis:
Take 4x M2x6 screws, put chassis and rear together and fasten the screws. Simple.



14 - Adding servo to chassis:
Take 2x M2x6 Countersunk screws and screw completed servo assembly onto chassis plate.



15 - Adding Bumper to chassis:
Take 2x M2x10 Countersunk screws and put them through chassis and bumper holder.



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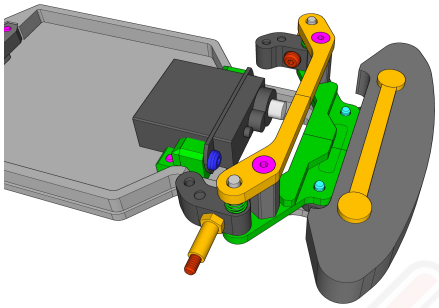
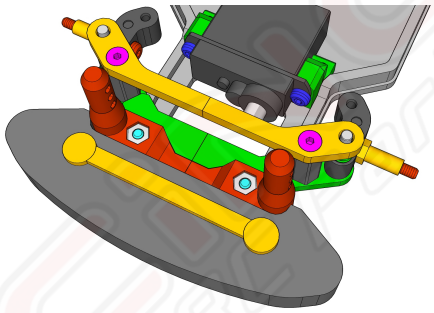
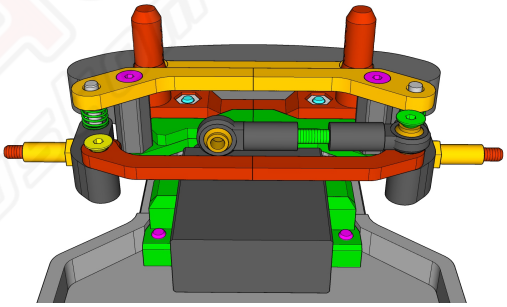
16 - Adding complete Front end to chassis:
Take completed front end and put it over bumper which you installed earlier. Check if the tabs on bumper and lower arms are clean and they sit well together without angle to any side.



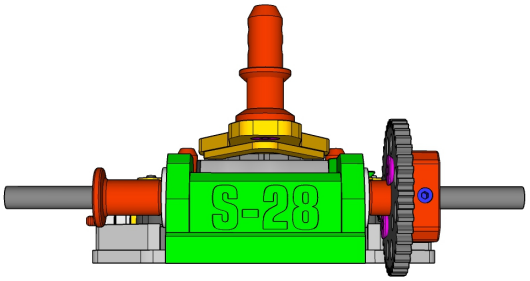
17 - Adding Front Body post to assembly:
Add Body posto over the lower arm and fasten those two screws which are holding together whole frontend.



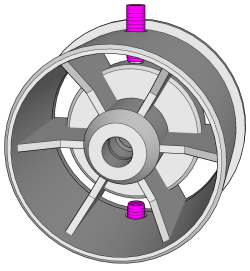
18 - Connect Steering blocks together:
Put steering connection onto steering blocks. Fasten left side with M2x8mm Countersunk and right side with M2x12mm countersunk screw. Allow little play on steering connection, adjust the hole if needed. Check steering blocks movement in all directions.



19 - Insert rear axle:
Install 70mm long axle into motormount. Add 40t spur gear (you can use Module 0.5 Slot car spur). Ajust spur gear position so the axle distance is same on both sides. Add some spacers left and right and you are ready to attach rear rims.



20 - Rear rims preparation:
Take M2x6 grub screw. Screw it from the side into the rim, only 5-6 turns and take it out. Repeat same step on opposite side of the rim. Than take longer screw and thread the complete hole to the middle of the rim. If you will try threading with grub, there is a high chance that you will ruin it's head. Once threaded, clean the middle hole and screw both grub screws into place.



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What hardware is needed to complete the build?

Below is the complete list of hardware that is needed to complete one Simple 28.
Some parts are optional in the list but can also be printed. (Standoff and Front Axle).

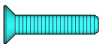
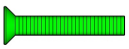
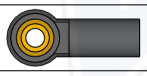
Where can I buy needed hardware?

Screws and nuts and pins can be bought in local hardware stores or online.
Axles can be used from 1/24 Slot cars, ball joints are available at local hobby shops, same with bearings. Springs you can salvage from your used ballpoint pen :)

What type of spur and pinion gear is needed?

Current motormount alows total of 48t. So 40t Spur gear + 8t Pinion.
Spur gear with 3mm bore and Piniont with 1,5mm bore. Both are available in Slotcar shops worldwide.

Motormount which allows 49 and 50t total gearing will be available soon.

		M2 x 6	17 x Countersunk
		M2 x 8	1 x Countersunk
		M2 x 10	2 x Countersunk
		M2 x 12	1 x Countersunk
		M2 x 12	2 x Buttonhead
		M2 x 4	4 x Buttonhead
	Optional for DIY spur gear	M2 x 4	2 x Grub Screw
		M2 x 6	4 x Grub Screw
		M2 x 12	1 x Grub Screw
		M2 nut	4 x Regular Nut
		M2 nut	2 x Locking Nut
		2x18 pin	2 x Dovel Pin
	Optional, can be 3D printed	M2 x 10	2 x Standoff
		M2 x 14	2 x Ball joint
	Optional, can be 3D printed	M2 x 8	2 x Front Axle
		5mm	2 x Spring
		70mm	1 x Solid Axle
		3x7x3	6 x FL Bearings

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030 Brushed motor:

Since this is low budget low weight car, it does not need or like powerfull motor.
The car is designed around low speed 030 micro motor, which should not exceed 14,000 RPM at the rated 5V, or 20,000 RPM at 7.4V.

PPN7PA12C1 Motor from Minebea / NMB Technologies is suggested, or something with similar RPM at rated voltages. Search online for Datasheet of the motor.

Also search for PPN7PA11C on bigger online marketplaces :)

Motors from currently available 1/24 buggies are not suggested, as power and RPM are too high for this low weight car.

If you go with high rpm motors, you should consider using 1s ESC and different gear ratio.

Servo motor:

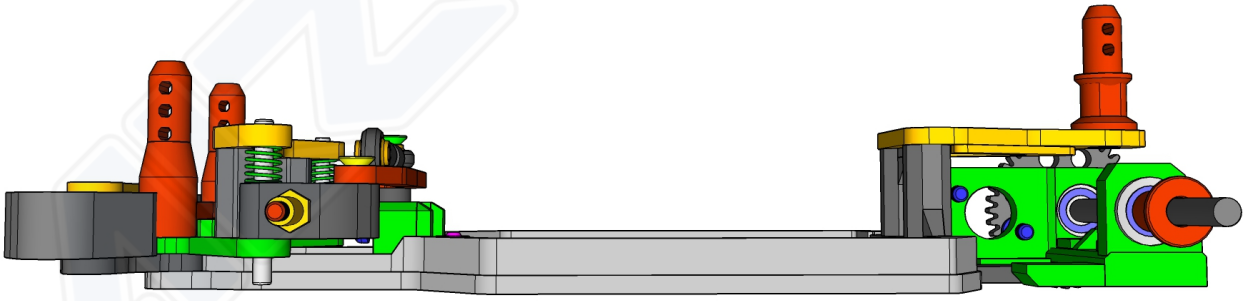
Car is designed arround regular 4.3g servos which are widely available.
Any that fit's your budget will do.

Suggested ESC:

Any 2s ESC with reverse and brake function that fits your budget. On bigger online marketplaces you can get them from 5 € / $ to very high priced options. Low budget options are always recommended and most of them work very well for the price.

Lipo Battery:

Use 2s Lipo with 200+ mAh. Car consumes about 100mAh if driven on carpet track for 10 minutes.



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Optional parts available on Alza-Racing Website

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