

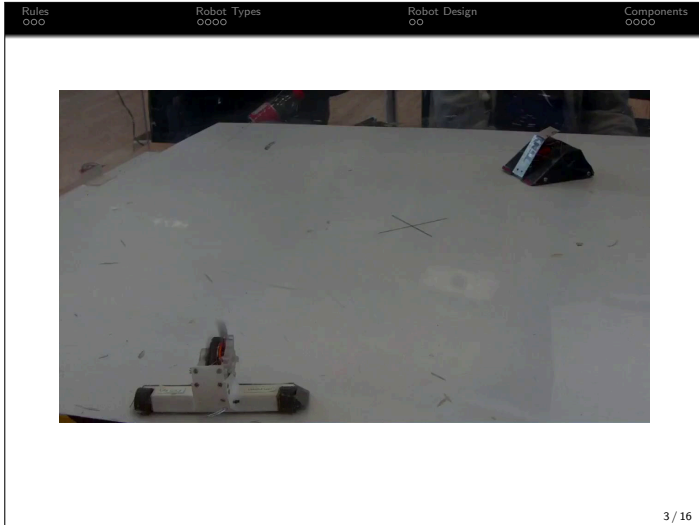
Combat Robots: Design, Construction, and Components

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- Rules
- Robot Types
- Robot Design
- Standard Components
- Additional Components



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SPARC Weight Classes

Weight	Name
0.33 lb / 150 g	Fairyweight
1 lb / 454 g	Antweight
2.2 lb / 1 kg	
3 lb / 1.36 kg	Beetleweight
6 lb / 2.7 kg	Mantisweight
12 lb / 5.4 kg	Hobbyweight
15 lb / 6.8 kg	Dogweight
30 lb / 14 kg	Featherweight
60 lb / 27 kg	Lightweight
120 lb / 54 kg	Middleweight
220 lb / 100 kg	Heavyweight
250 lb / 110 kg	Alternative Heavyweight

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SPARC Rules

- Alternative locomotion weight limits
- Voltage limits
- Pressure limits
- Other stored energy limits
- Weapon type limitations

Safety
We may further limit weapons due to safety concerns

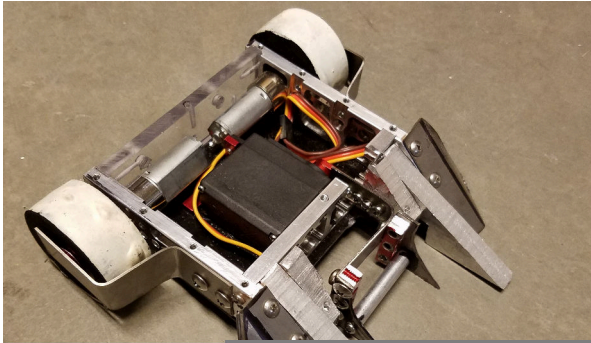
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SPARC Match Rules

- Round robin tournament
- 3 minutes matches
- First robot unable to move loses
- Operators can "tap out" at any time

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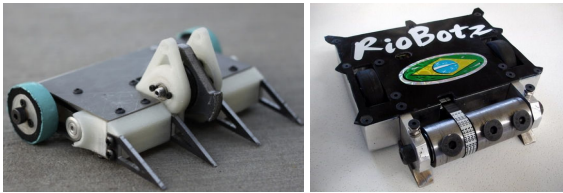
Flippers and Lifters



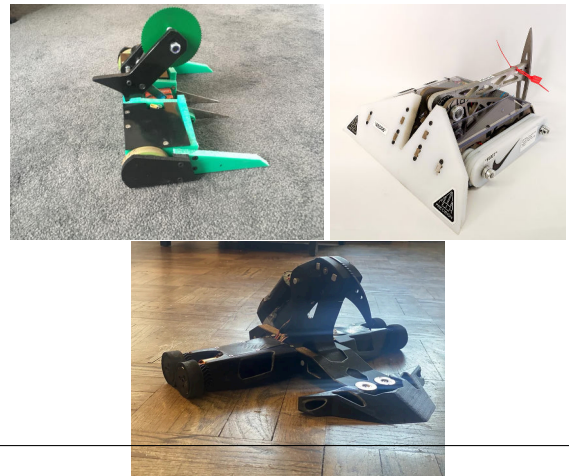
Horizontal Spinners



Vertical Spinners



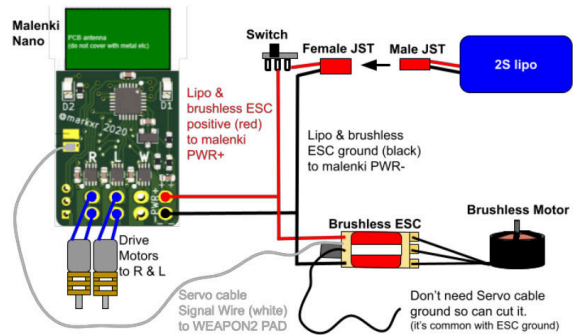
Other Weapons



Robot Design

- 3D printed frame
- Brushed DC drive motors
- Foam or rubber (o-ring) wheels
- Metal (steel or aluminum) weapon
- Metal armor (optional)


Electronics



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Drive Motors

- FingerTech "Gold Spark" 16mm Gearmotor
- Extra-long 3 mm shaft
- 8 gear ratios
 - 20:1
 - 35:1
 - 50:1
 - 86:1
 - 115:1
 - 150:1
 - 250:1
 - 360:1
- 28 grams
- 1.3 A stall current




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Receiver/ESC

- Malenki Nano
- Receiver and triple ESC
- 1.8 A maximum current
- 6 V max



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RC Servos

- Position controlled actuator
- Multiple sizes available



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Brushless Weapon Motor

- Higher speed and efficiency than brushed motors
- Additional ESC required



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Resources: camerondevine.me/battlebots