

## 2021-2022 Publicity Robot

### SCUBA Shops

Eco Dive Center - (310) 398-5759

Beach Cities Scuba - (714) 527-1500

Scuba.com - (949) 221-9300

Scuba World - (714) 998-6382

Openwater Habitat Dive Shop - (714) 558-1055

### Resources

[https://www.reddit.com/r/FRC/comments/l0yfas/help\\_with\\_a\\_tshirt\\_cannon/](https://www.reddit.com/r/FRC/comments/l0yfas/help_with_a_tshirt_cannon/)

<https://www.chiefdelphi.com/t/t-shirt-cannon/146218>

<https://grabcad.com/library/robocubs-2019-t-shirt-cannon-1>

<http://robocubs.com/robots/tshirt-cannon/>

[https://youtu.be/Yn\\_wtP6Gjho](https://youtu.be/Yn_wtP6Gjho)

<https://grabcad.com/library/frc-team-4761-t-shirt-cannon-robot-1>

<https://www.chiefdelphi.com/search?q=t%20shirt%20cannon>

<https://www.team254.com/shockwave/>

<https://youtu.be/xGLdusrCFYc>

<https://www.chiefdelphi.com/t/team-4717-t-shirt-cannon-alpha-cad-design/357391>

[https://drive.google.com/file/d/1l9-vbWbbpMOPnTTm4\\_lvSZNVDTtHbtNMN/view](https://drive.google.com/file/d/1l9-vbWbbpMOPnTTm4_lvSZNVDTtHbtNMN/view)

### Tips

- NEVER USE PVC, ABS, or aluminum tubing is fine
- Put your solenoid valves as close as possible to the rear of the barrel. This “wastes” less of your air capacity with expansion through the volume of all of your hoses/plumbing.

### Ideas

- Black, Orange, hints of Gray
- [KOP Chassis](#) (Config is whatever we have available)
  - 4 [CIMs](#)
  - 4 Wheels
  - 4 [Tough Box Micros 7.31:1 Ratio](#)

- 8" [Pneumatic Wheels](#)
- T-Shirt Cannon
  - Rotates with the robot
  - Only independent pitch control (up-down)
  - Faces front of the robot
  - 10 Barrel Revolver (3")
- Airhorn (must get approval from Admin)
- Speaker
  - [Anker Soundcore 2](#) - \$39.99 ([Case](#))
  - [Tribit XSound Go](#) - \$29.59
  - [Cambridge SoundWorks Oontz Angle 3](#) - \$25.99

^^ order is from best to not-so-great :DD
- RGB Lights
  - Addressable or non-addressable
- Large acrylic/Plexi board with vinyl logo + social media (maybe on the back) (also to cover up mistakes and wires)
- FRC team flag holder (1 large one or 2 smaller ones like college flags?)
- Scrolling LED banner/sign
- Maybe use old Logitech joysticks for better control + make a controller board holder w/ strap for support
- Sound reactive lights (hype o meter type thing with addressable lights, and whichever class goes the highest is good or smth)

## Design Elements

The barrel should be 2.5" ID and 24" long

50 ms airburst for launching

[solenoid](#)

## Electronics

- RoboRIO
- PDP
- VRM
- PCM
- Victor SPXs (Drive Train)

## Pneumatics

- Big boi scuba tank (2000-3000 PSI)
- Shut off valve
- Solenoid for Big boi scuba tank
- Regulator for big boi scuba tank to Accumulator tank (tons of PSI to 120 PSI)
- Accumulator Tank (120 PSI)
- Regulator for Accumulator Tank to Outlet (120 PSI to 60 PSI)
- Solenoid for Accumulator Tank
- Drain valve for the Accumulator Tank
- Airway from Accumulator Tank to Barrel should be at least  $\frac{3}{4}$ ", but preferably 1"
- Need a fast solenoid between Accumulator and Barrel
- [Ranger Roll](#) (but  $\frac{1}{2}$  instead of  $\frac{1}{3}$  fold) for rolling shirts

## Mechanical

- 8" Pneumatic Wheels
- KOP Drive
- 7.31:1 Toughbox Micros
- Independent pitch control for revolver
- Revolver Indexer (switching between revolver shots, think of a .357 magnum)
  - Motor based, for mechanical simplicity
    - An auto case that would fire a shot, wait a second for the shot to leave, then turn the motor by a certain number of revs
  - Mini CIM
- Revolver Lock (ensures the barrel is aligned with the outlet)
  - [Geneva drive](#) mechanism ([more link](#))