

[Ri3D 2020] The Ohio State University

Control Panel Spinner Subsystem Memo

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Follow up:

What went well:

- It worked

What went wrong:

- Underengineered - didn't allow us to go under the game element

What needs improvement:

- Could've made the robot overall fit under the Control Panel element

Mechanism Specifics / Improvements

Mechanism Description: The control panel spinner uses readings from a color sensor to spin the control panel via wheels attached to the back of the robot.

- **Spinner**
 - The spinner consists of three green compliant wheels mounted on a vertical shaft at the back of the robot, centered at centered around the height of the control panel
 - Once the robot drives up to the control panel and the compliant wheels have contact with the panel, the wheels will then spin according to the stage of gameplay at a maximum speed of 55 RPM
 - Once stage 2 capacity has been reached: the wheels spin the control panel between 3 and 5 times
 - After stage 3 capacity has been reached: the wheels spin the control panel to the desired color, based on readings from the color sensor
- **Color Sensor**
 - The color sensor is inside a vacuum brush to provide a semi-isolated environment, mounted on an extendable shaft powered by pneumatics
 - The pneumatic shaft extends when the robot drives contacts the control panel, allowing the color sensor to read the currently selected color on the control panel and get the spinner to rotate the control panel accordingly

Technical Specifications:

- 5051 Aluminum Sheet Metal
- 1032 Screws/Nuts
- ¼ -20 Bolts/Nuts
- 1 x Vex 775pro
- 1 x 35:1 VersaPlanetary Gearbox Reduction
- 1 x TalonSRX Motor Controller
- 3 x 4" Green Compliant Wheels (25A durometer)

- 1 x ½" Hex x 0.201" ID ThunderHex (cut to length)
- 2 x Custom Dogbone Mounts (refer to CAD files)
- 1 x REV Robotics Color Sensor V1
- 1 x Circular Vacuum Brush
- 1 x Piston Plate Mount
- 1 x Piston (piston rod size may vary)
- 3 x Spacers
- 2 x Hex bearings

Suggested Improvements:

- More secure and planned mount for the piston.
- The piston placement in the photo was a little too high on our bot, we have to lower ours.

Gallery / CAD

Our CAD files are available at <https://github.com/firstroboticsosu/2020-CAD>.

