



## General

- 34" long, 25" wide, 45" tall
- 120.5 lbs
- 2020 Utah Regional Winners
- 78 point median score contribution

## Autonomous

- 47 point, 7 power cell max scoring configuration
- Custom waypoint following for smooth and accurate routines
- Tracks field position using encoders & gyro
- Modular building block code structure
- Extensive use of parallel & sequential scheduling

## Vision

- Reliable distance calculation using height of retro-reflective target
- Automatic tracking to within  $\pm 1^\circ$
- Automatically drives to optimal distance from goal
- Different Shooter RPMs for different locations

## Software

- C++
- Modular command-based framework
- Custom Driver Station dashboard using Network Tables API  
Programmed in Javascript

## Drivetrain

- 6 wheel West Coast Drive  
6" wheels  
4x Colsons, 2x omnis
- 4x Falcon 500s
- Custom 2-stage flipped gearboxes  
14.3 ft/s free speed

## Intake

- Mixture of compliant wheels
- 1x 775pro
- 1x NEO rotator  
Automated 3-position control using PID

## Storage

- Polyurethane belt system with 3D printed crowned pulleys
- 5 Power Cell capacity
- 4x BAG
- Semi-automatic indexing using photoelectric sensors
- LEDs indicate number of held Power Cells

## Shooter

- Single flywheel  
6" Colsons
- Fixed hood
- Rigid 1/4" aluminum plate construction
- Shoots anywhere between Initiation Line and Control Panel
- 43% Inner Port accuracy from Initiation Line
- 1x Falcon 500  
Variable RPM control using PID adjustable RPM mid-match to compensate for degrading power cell quality

## The Skywalker

- Translates along Generator Switch to reliably balance
- 1x 775pro at 252:1 reduction
- Singular 2" Stealth Wheel surrounded by pair of 3" Colsons  
Securely centers hook onto rung

## Climber

- Single-stage elevator
- 1x NEO  
~1.5s extension & retraction
- Pancake piston locks elevator after match ends

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