

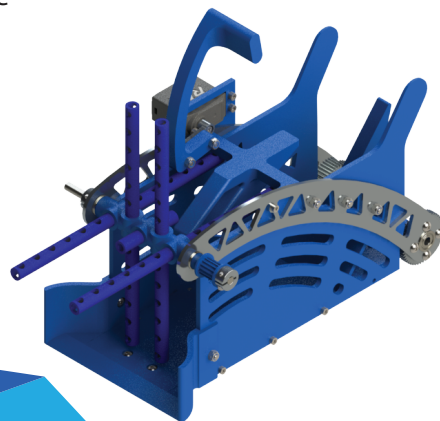
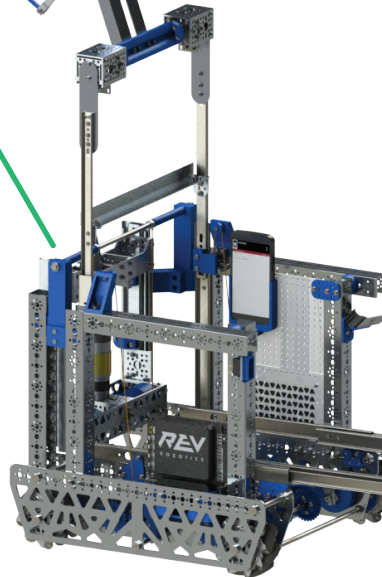
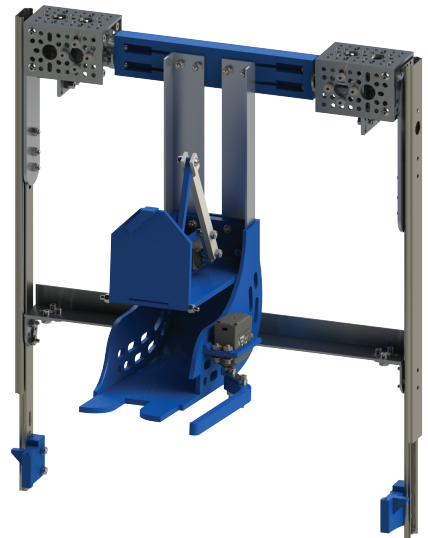
Climb

- System designed to be able to lift twice the weight of the robot
- CNC machined hook
- Worm gear set with a speed reduction of 24 to 1
- 3.7:1 Yellow Jacket Planetary Gear Motor drives a 24:1 worm gear
- Twin 35mm double spools; two UHMWPE cords hold the robot
- Handle to manually adjust the height of the climb & thrust bearing to relieve the stress from the motor
- Four sliding wheels, used to maintain parallelism with the lander



Outtake

- System achieves desired height through extending sliders and pivoting arm
- Double ServoBlock™ pivoting axle
- Detachable passive cube sorter for depot matches
- Double linkage controlled door
- Sorting arm with variable angle, engaged by servo



Intake

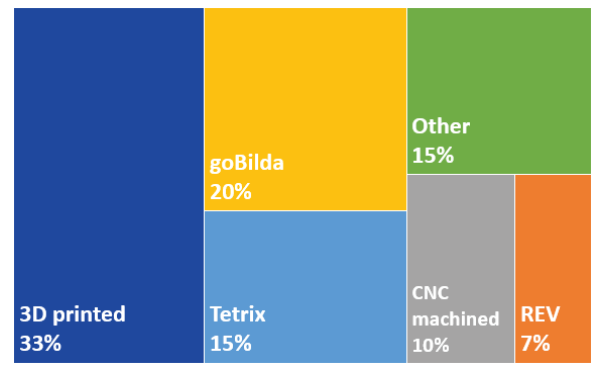
- "Slapper" comprised out of 5 perforated silicone tubes driven by a 20:1 Gear Motor through a 24:15 double belt drive
- Intake rides on a polished 3D printed "Dock"er"
- Intake extends on a three stage slider assembly, strung in a cascading manner and driven through a bevel gear transmission by a 20:1 NeveRest Motor
- Two independent coaxial rotational movements, one for rising the box and one for the belt transmission
- Servo controlled stopper arm ensures that only two minerals can enter the intake

#14270

WINNING IS TEMPORARY, LEARNING IS FOREVER

- KEITH A. COLEMAN

Part sources



Sprint 1

- 26:1 Mecanum Drivetrain
- Wooden prototype intake
- 160 RPM Silicone slapper
- Extremely basic outtake system
- No climb
- Time-based autonomy

Sprint 3

- New triple bearing roller for intake
- Back to silicone tubes for intake; 320 RPM motor
- Better mounting for electronics
- Encoder based autonomy
- Further driver automation

Sprint 5

- Perforated tubes on intake for more flexibility
- Added stopper to intake to limit the number of minerals
- Lightweighting on many 3D printed parts
- Improved UVC webcam mount



Sprint 2

- Face mounted 20:1 drive-train
- First 3D printed intake, with 100mm omni wheels
- Rubber band intake
- Added sorter and door to outtake
- One way latch climb
- TeleOp enhancements

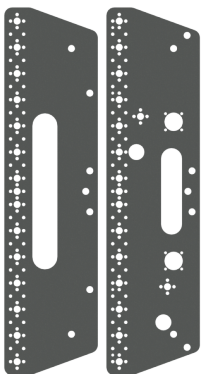
Sprint 4

- Added funnels to intake
- Switched to polished 3D printed part as roller for intake
- Aggressive lightweighting on all CNC machined parts
- Motion profiling
- Added limit switches to outtake

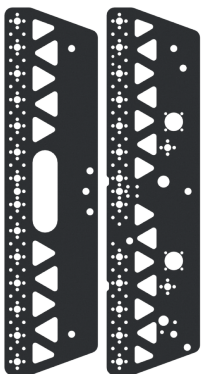
Sprint 6

- Added cube sorter for depot-side matches
- Changed latching system to a simple hook design
- Faster 520 RPM intake
- Improved autonomy paths
- Additional antistatic measures

Sprint 1



Sprint 2



Sprint 4

