



PRESENTS

DREADnOUGHT

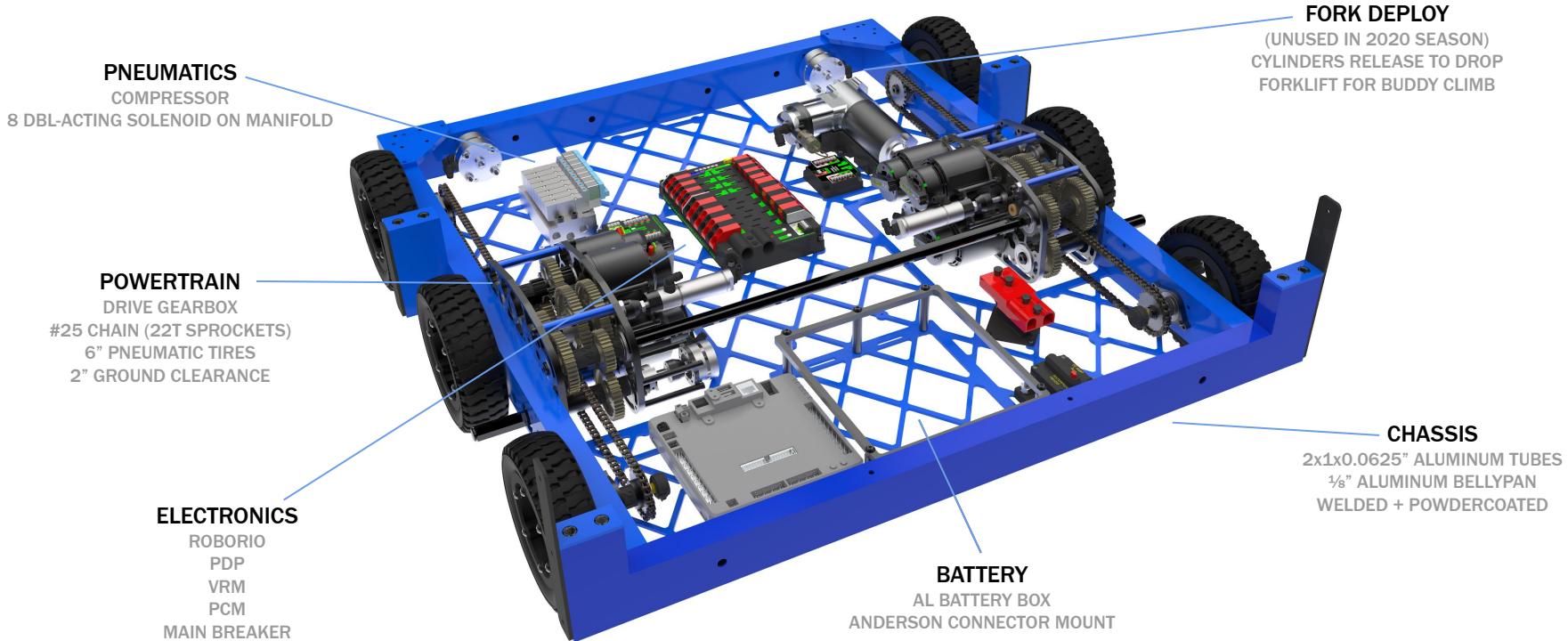
2021 INFINITE RECHARGE AT HOME PRESENTATION

Pranav, Diego, Abhinav, Krishna, Alex

DRIVEBASE

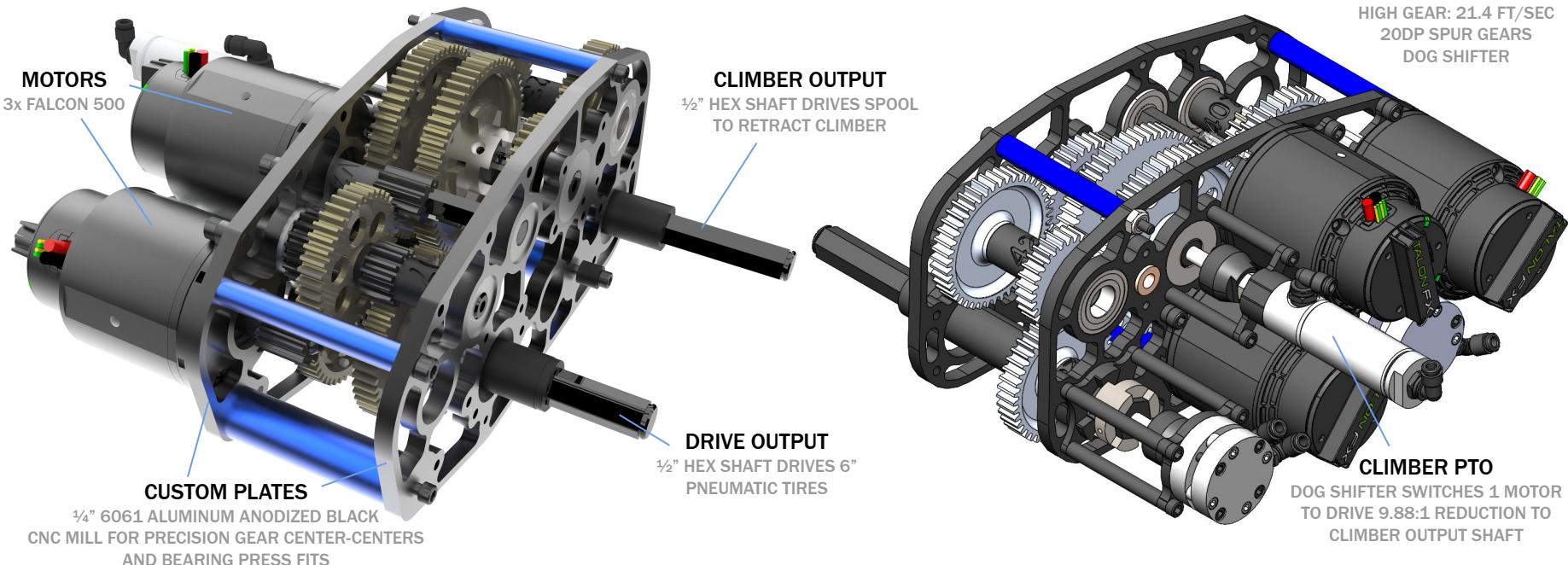
DRIVE OVER OBSTACLES AND QUICKLY CYCLE.
ROBUST AND LOW CG BASE

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DRIVE / CLIMBER GEARBOX

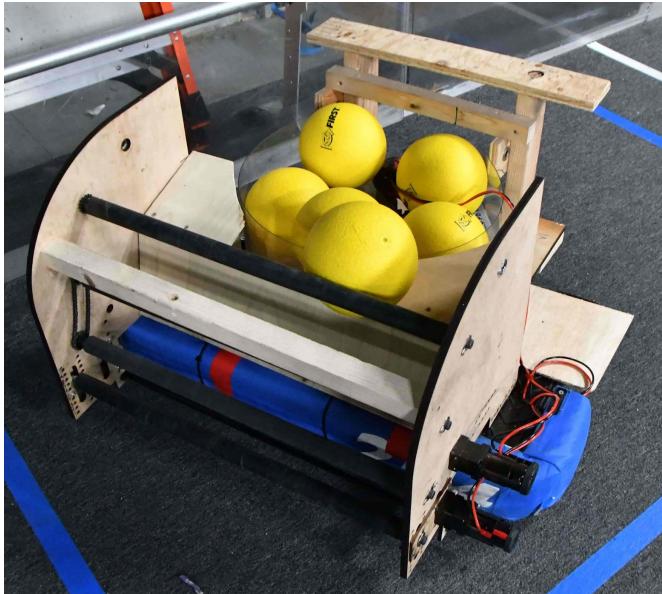
OUTPUT 2-SPEED DRIVE AND RETRACT CLIMBER



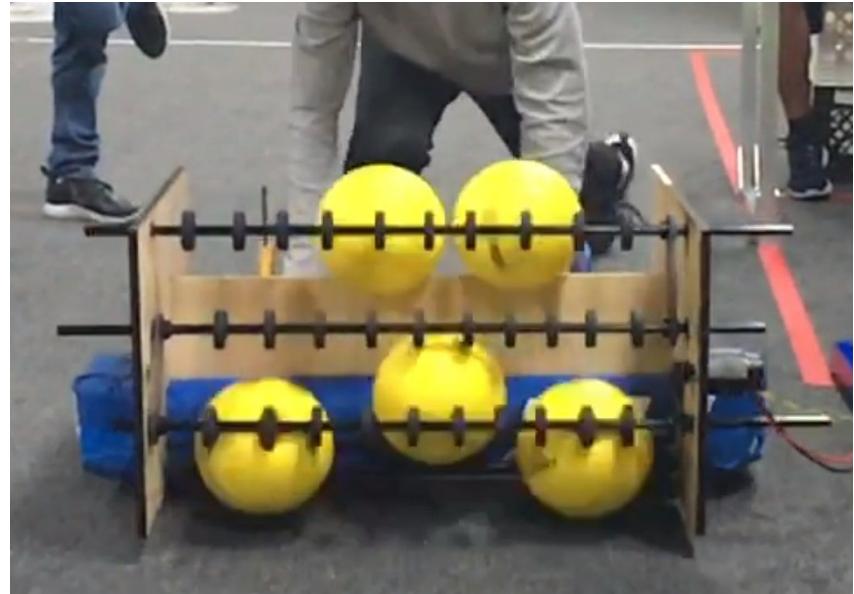
INTAKE

"TOUCH IT, OWN IT"

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VARIABLE COMPRESSION, ROLLER PROTOTYPE (V1)

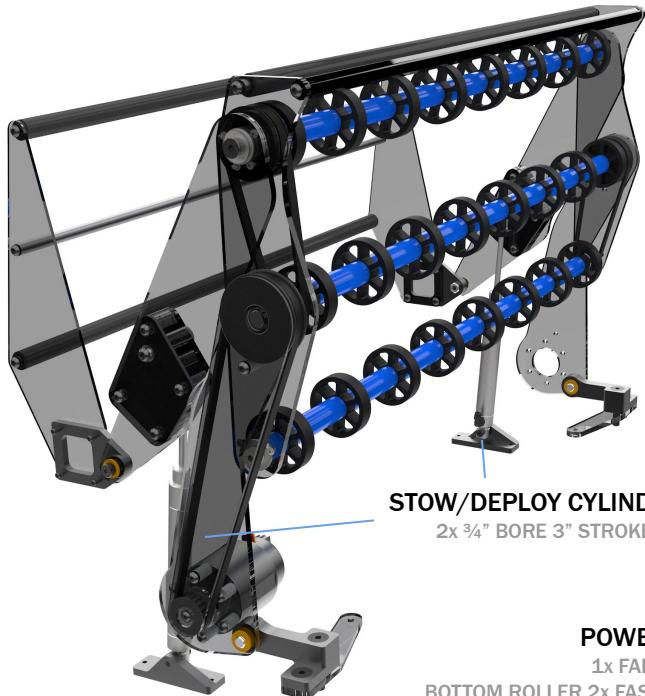


FLEX-WHEEL PROTOTYPE (FINAL)

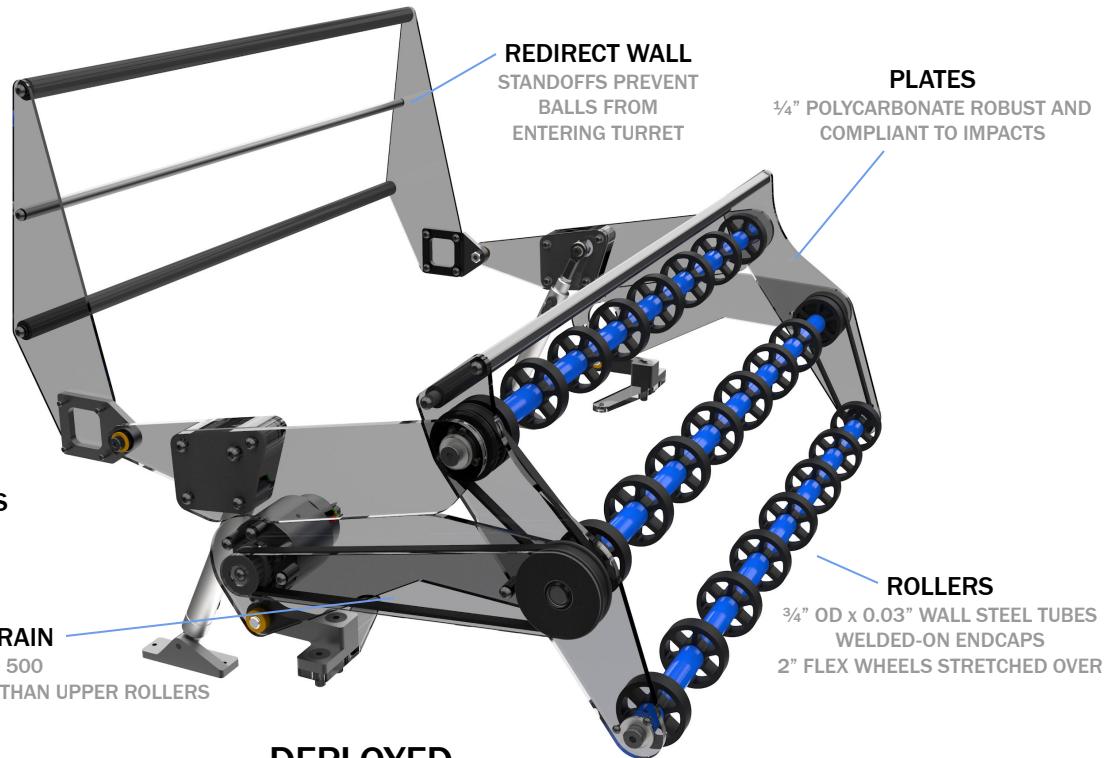
INTAKE

PULL BALLS UP FROM GROUND AND ACCEPT FROM FEEDER STATION

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STOWED



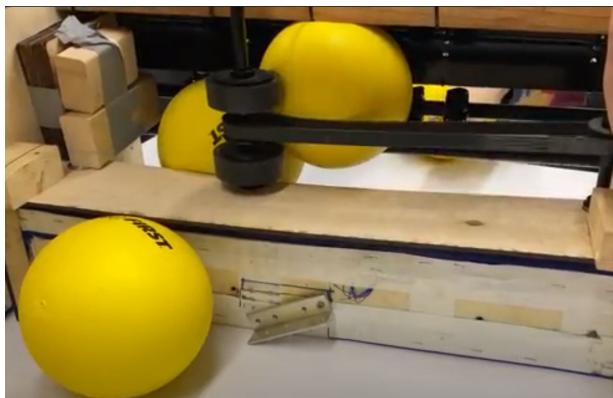
DEPLOYED

SERIALIZER

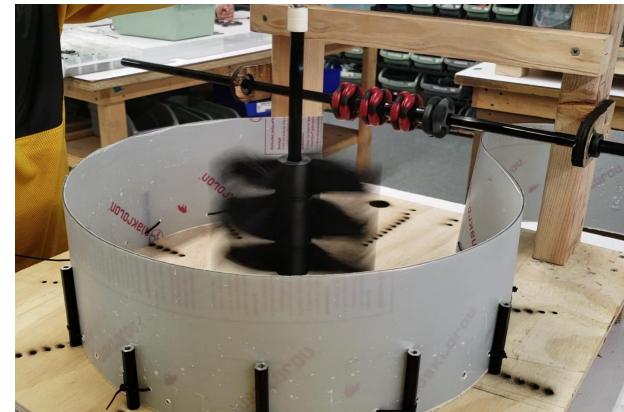
STORE 5 BALLS WITHOUT JAMMING, FEED QUICKLY AND CONSISTENTLY INTO SHOOTER



PINBALL
COUNTER-ROTATING BELTS



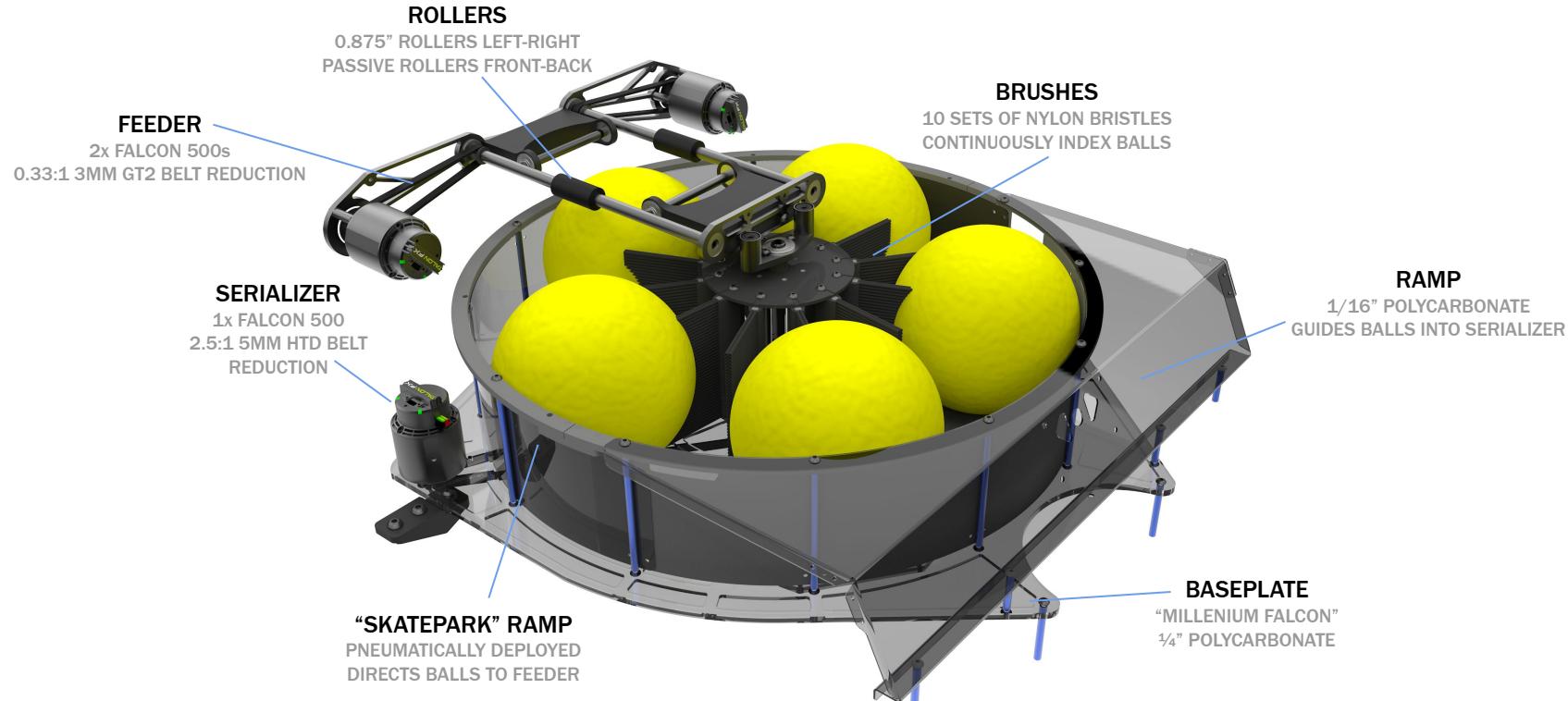
SNAKE
LINEAR BELT RUNS



WASHING MACHINE
ROTATING BRUSHES

SERIALIZER/FEEDER

SERIALIZE AND STORE BALLS BEFORE FEEDING TO SHOOTER

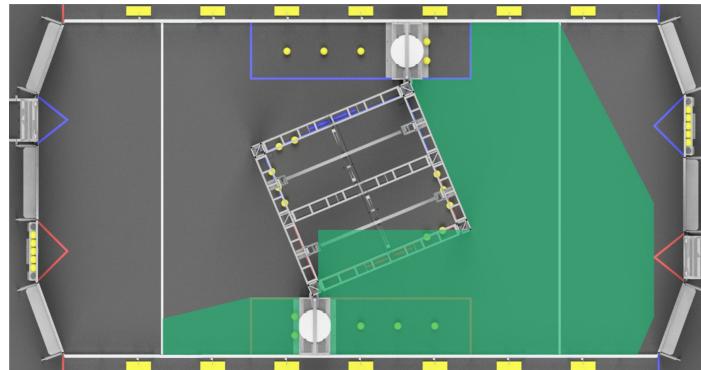


SHOOTER/TURRET

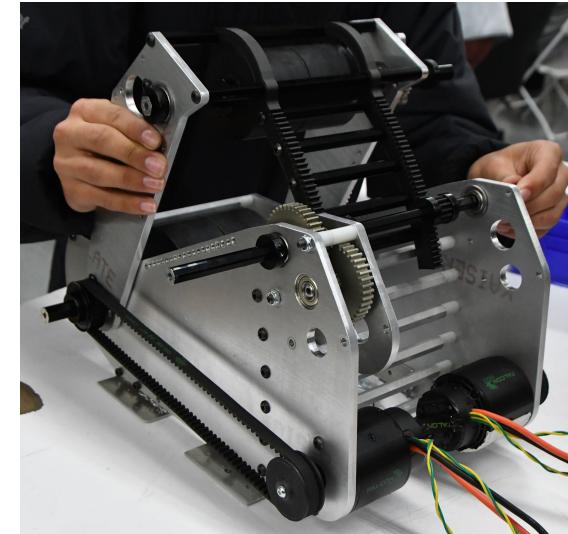
ACCURATELY AND QUICKLY SCORE BALLS FROM MAXIMUM LOCATIONS



SKYSTALKER
SHOOTER/TURRET
PROTOTYPE



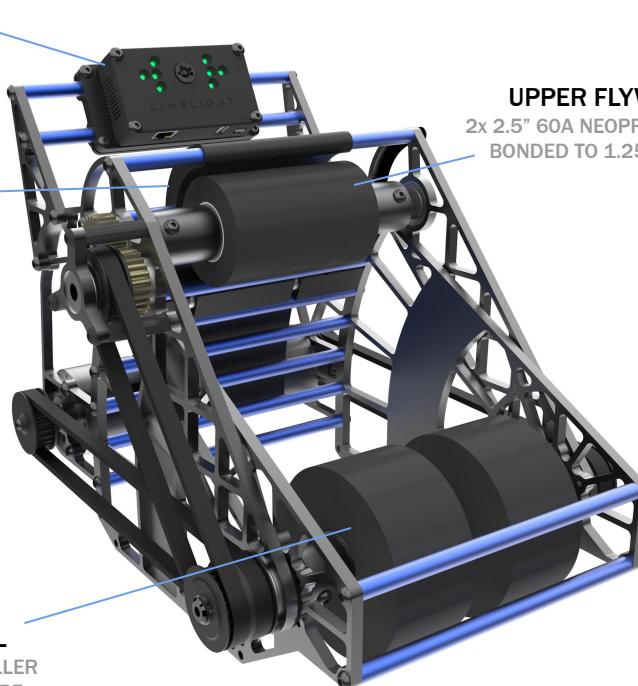
SHOOTING LOCATIONS
~45% OF FIELD



SHOOTER PROTOTYPE
DOUBLE FLYWHEEL METAL
PROTOTYPE

SHOOTER/TURRET

ACCURATELY AND QUICKLY SCORE BALLS FROM MAXIMUM LOCATIONS

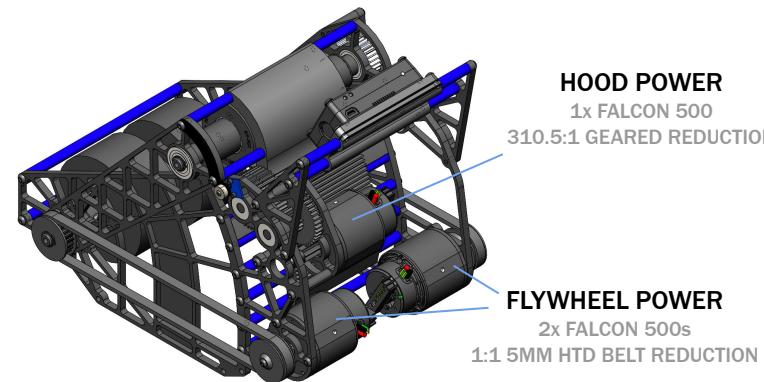


LIMELIGHT
VISION ASSISTANCE
FOR AIMING SHOTS

HOOD
3D PRINTED GEARS
45° TO 70° RELEASE ANGLE
HALL EFFECT SENSOR TO ZERO

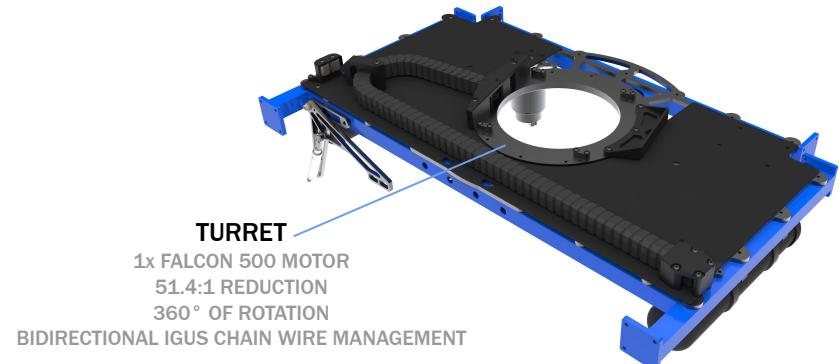
UPPER FLYWHEEL
2x 2.5" 60A NEOPRENE ROLLER
BONDED TO 1.25" AL TUBE

LOWER FLYWHEEL
2x 4" 60A NEOPRENE ROLLER
BONDED TO 1.25" AL TUBE



HOOD POWER
1x FALCON 500
310.5:1 GEARED REDUCTION

FLYWHEEL POWER
2x FALCON 500s
1:1 5MM HTD BELT REDUCTION

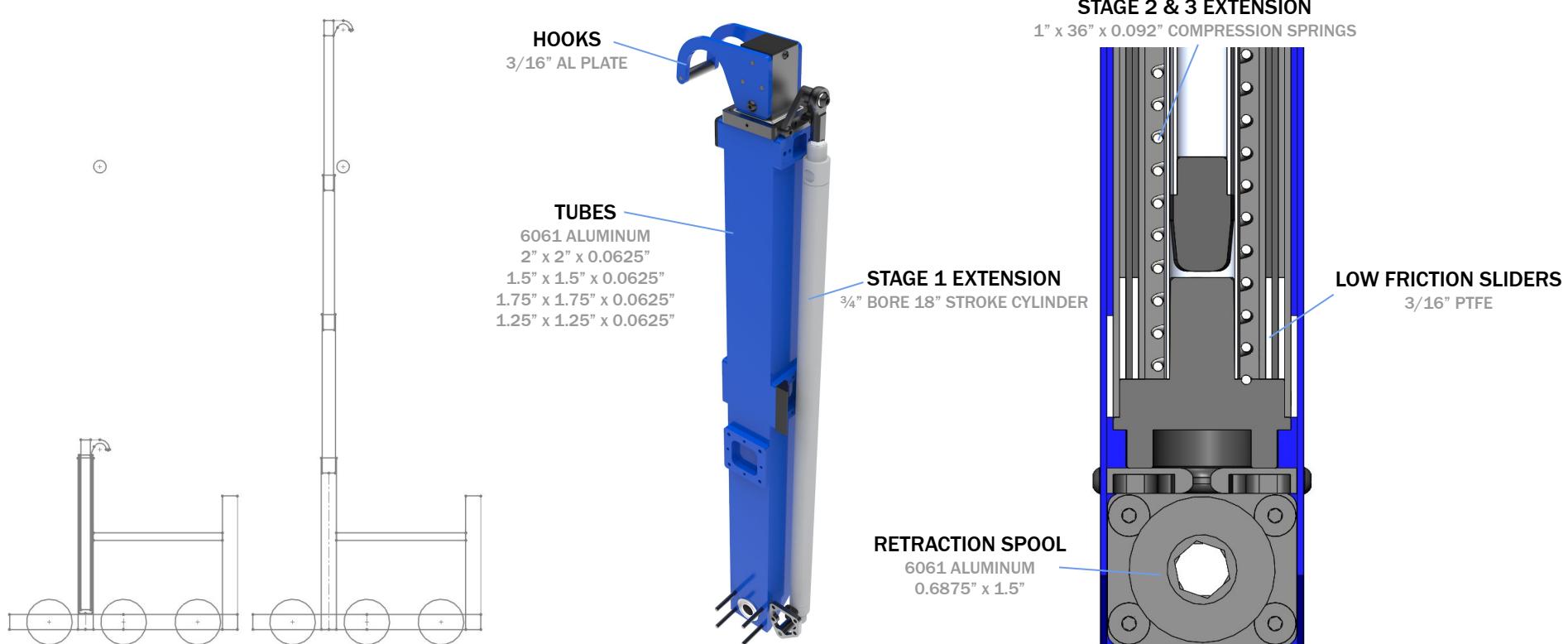


TURRET
1x FALCON 500 MOTOR
51.4:1 REDUCTION
360° OF ROTATION
BIDIRECTIONAL IGUS CHAIN WIRE MANAGEMENT

CLIMBER

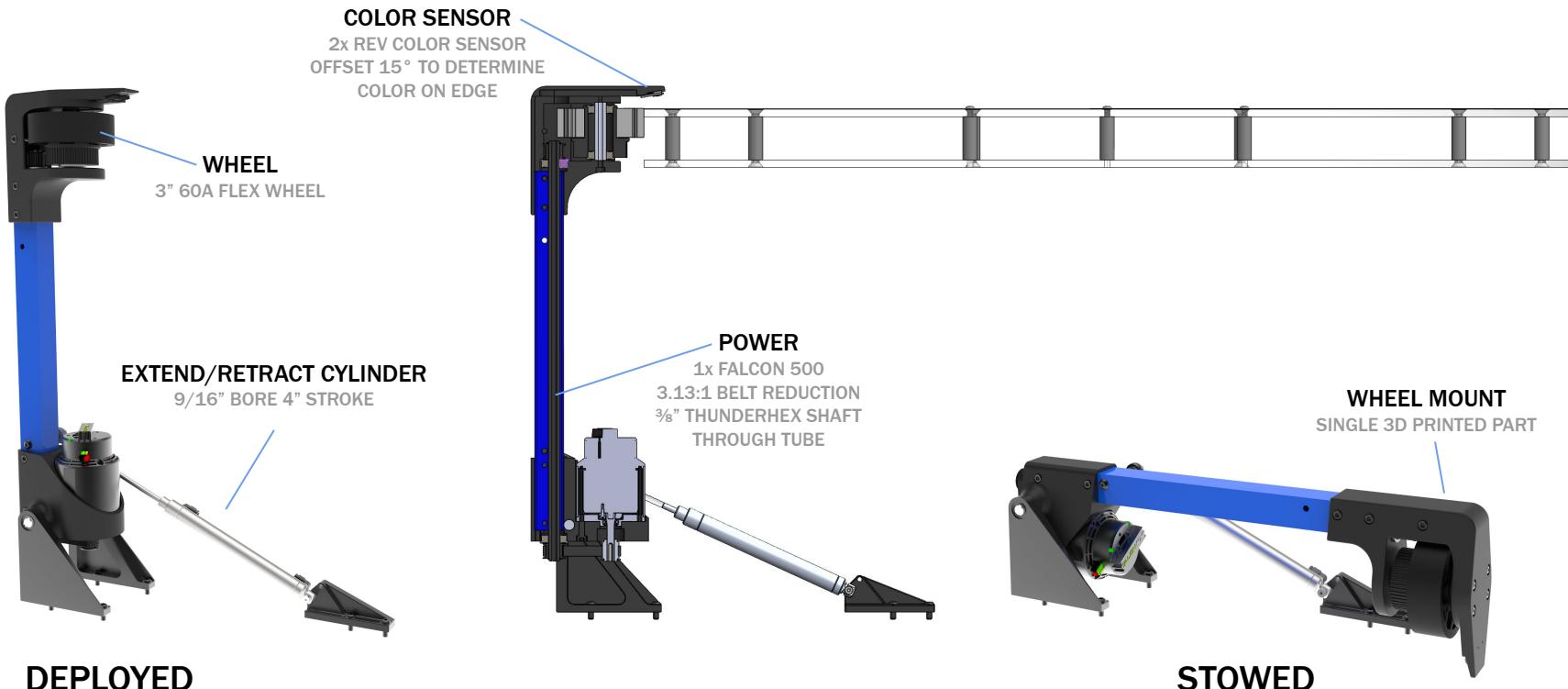
RAISES ROBOT 40" AT END OF MATCH

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WOF MECHANISM

AUTOMATICALLY SPINS CONTROL PANEL WITH COLOR SENSORS



AUTONOMOUS MODES



10 BALL AUTO

TRAJECTORY GENERATION WITH QUINTIC HERMITE SPLINES
RAMSETE NONLINEAR AUTONOMOUS FEEDBACK CONTROLLER

QUESTIONS?

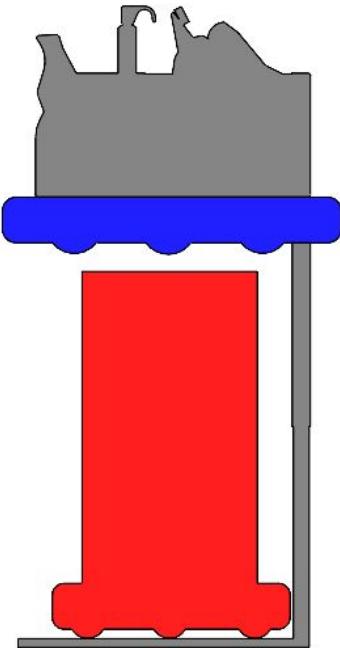
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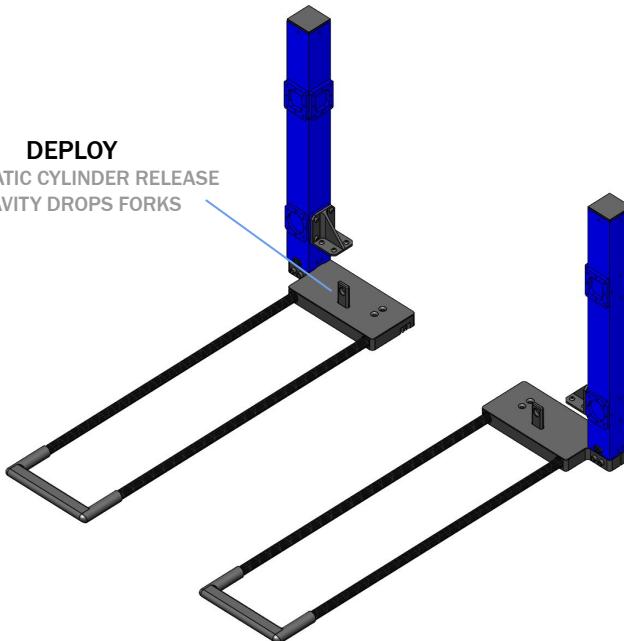
FORKS

LIFT PARTNER ROBOT AT END OF MATCH

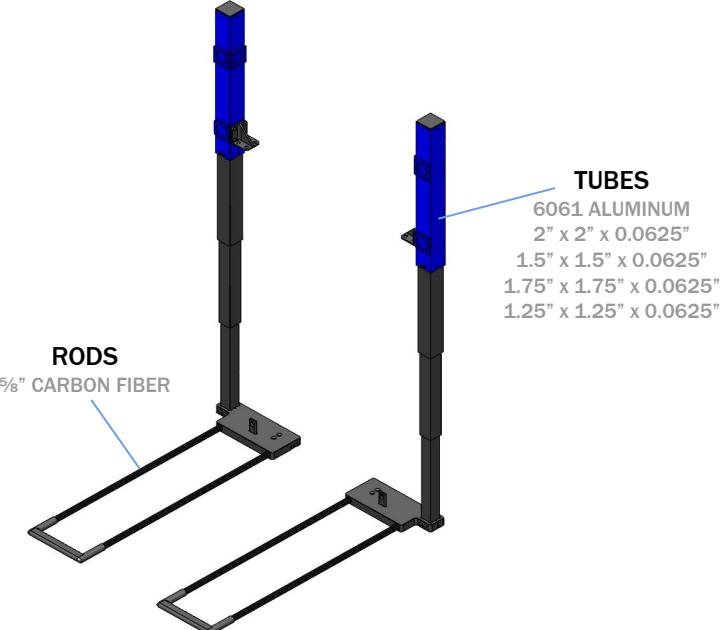
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DEPLOY
PNEUMATIC CYLINDER RELEASE
GRAVITY DROPS FORKS



RETRACTED

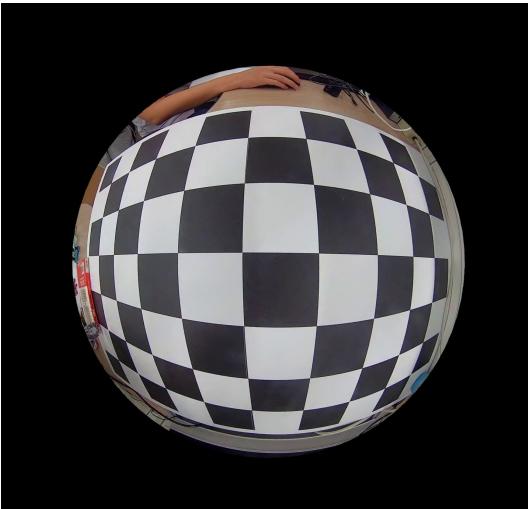


EXTENDED

TUBES
6061 ALUMINUM
2" x 2" x 0.0625"
1.5" x 1.5" x 0.0625"
1.75" x 1.75" x 0.0625"
1.25" x 1.25" x 0.0625"

RODS
5/8" CARBON FIBER

COORDINATE UNDISTORTION



FISHEYE LENS
SEVERE DISTORTION



LIMELIGHT
STILL SOME DISTORTION

```
public double[][] loadCol000() { return new double[][]{{0.012,0.012},{0.012,0.016},{0.012,0.016}}; }
public double[][] loadCol001() { return new double[][]{{0.015,0.012},{0.015,0.016},{0.015,0.016}}; }
public double[][] loadCol002() { return new double[][]{{0.018,0.012},{0.018,0.016},{0.018,0.016}}; }
public double[][] loadCol003() { return new double[][]{{0.021,0.012},{0.021,0.016},{0.021,0.016}}; }
public double[][] loadCol004() { return new double[][]{{0.024,0.012},{0.024,0.016},{0.024,0.016}}; }
public double[][] loadCol005() { return new double[][]{{0.027,0.012},{0.027,0.016},{0.027,0.016}}; }
public double[][] loadCol006() { return new double[][]{{0.030,0.012},{0.030,0.016},{0.030,0.016}}; }
public double[][] loadCol007() { return new double[][]{{0.033,0.012},{0.033,0.016},{0.033,0.016}}; }
public double[][] loadCol008() { return new double[][]{{0.036,0.012},{0.036,0.016},{0.036,0.016}}; }
public double[][] loadCol009() { return new double[][]{{0.039,0.012},{0.039,0.016},{0.039,0.016}}; }
public double[][] loadCol010() { return new double[][]{{0.042,0.012},{0.042,0.016},{0.042,0.016}}; }
public double[][] loadCol011() { return new double[][]{{0.045,0.012},{0.045,0.016},{0.045,0.016}}; }
public double[][] loadCol012() { return new double[][]{{0.048,0.012},{0.048,0.016},{0.048,0.016}}; }
public double[][] loadCol013() { return new double[][]{{0.051,0.012},{0.051,0.016},{0.051,0.016}}; }
public double[][] loadCol014() { return new double[][]{{0.054,0.012},{0.054,0.016},{0.054,0.016}}; }
public double[][] loadCol015() { return new double[][]{{0.057,0.012},{0.057,0.016},{0.057,0.016}}; }
public double[][] loadCol016() { return new double[][]{{0.060,0.012},{0.060,0.016},{0.060,0.016}}; }
```

PRECOMPUTED COORDINATE
UNDISTORTION MAPS



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