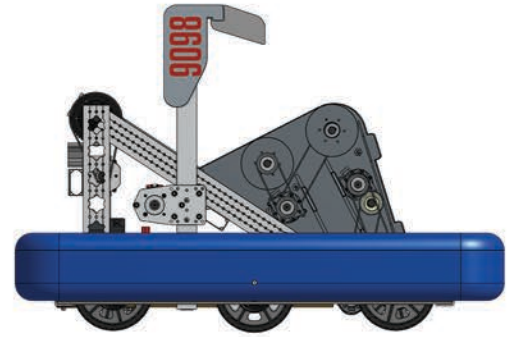# MOCKINGJAY

TEAM 9098 FIREHAWKS | ST. IGNATIUS OF LOYOLA C.S.S

The name "MockingJay" aligns with our team's identity and this year's game theme. The MockingJay is a fictional creature from the Hunger Games series. It is a songbird which ties into the musical theme of the game and its depiction as a firebird in the movie and book series.
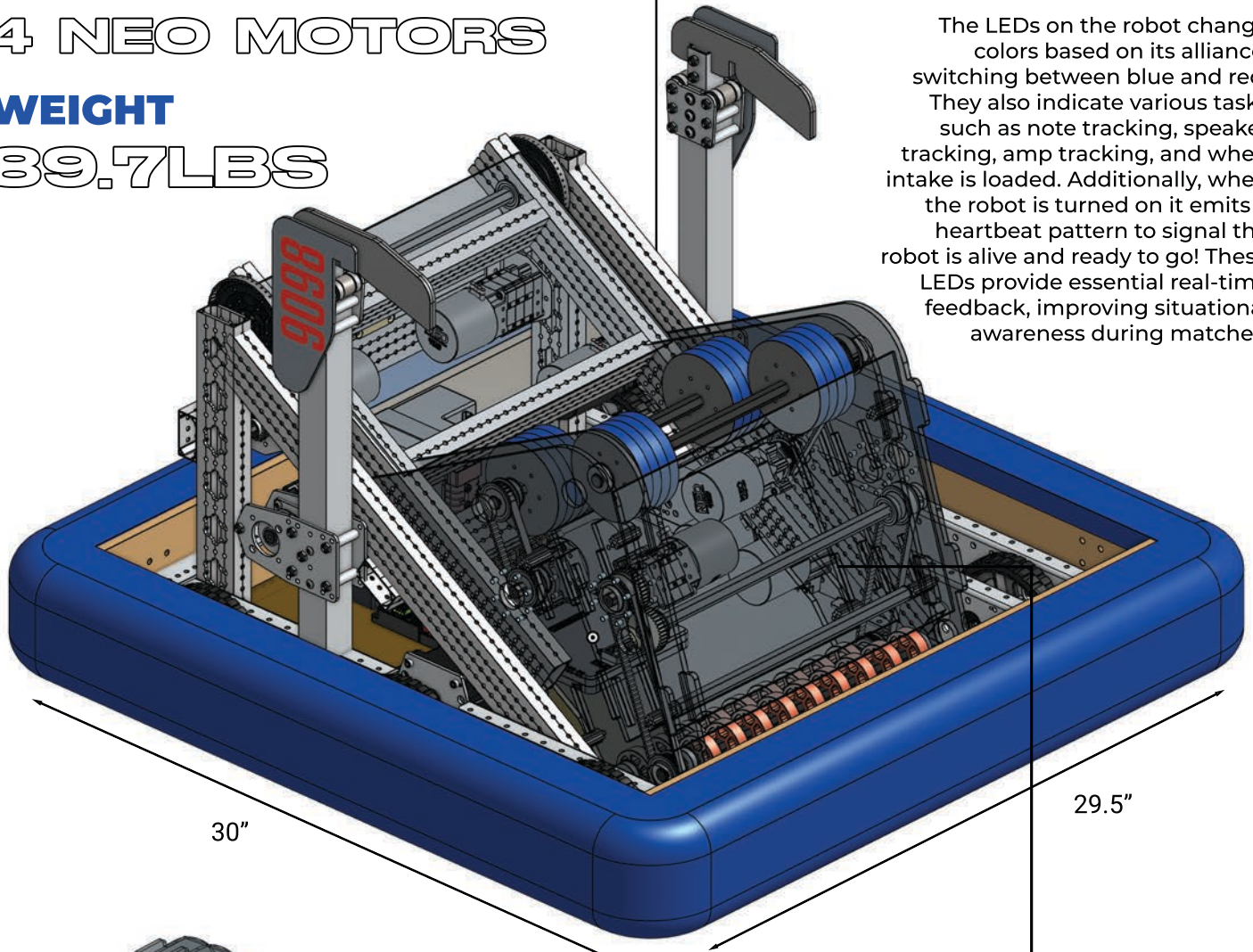

↑ 2'2"
Fits under the Stage!

TANK DRIVE
4 NEO MOTORS

WEIGHT
89.7LBS

LED LIGHTS

The LEDs on the robot change colors based on its alliance, switching between blue and red. They also indicate various tasks such as note tracking, speaker tracking, amp tracking, and when intake is loaded. Additionally, when the robot is turned on it emits a heartbeat pattern to signal the robot is alive and ready to go! These LEDs provide essential real-time feedback, improving situational awareness during matches.
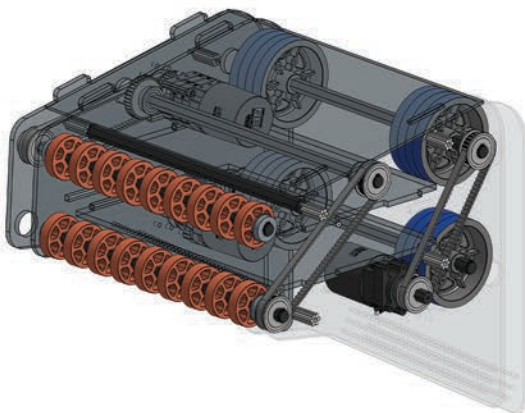

30"

29.5"

SHOOTER/INTAKE
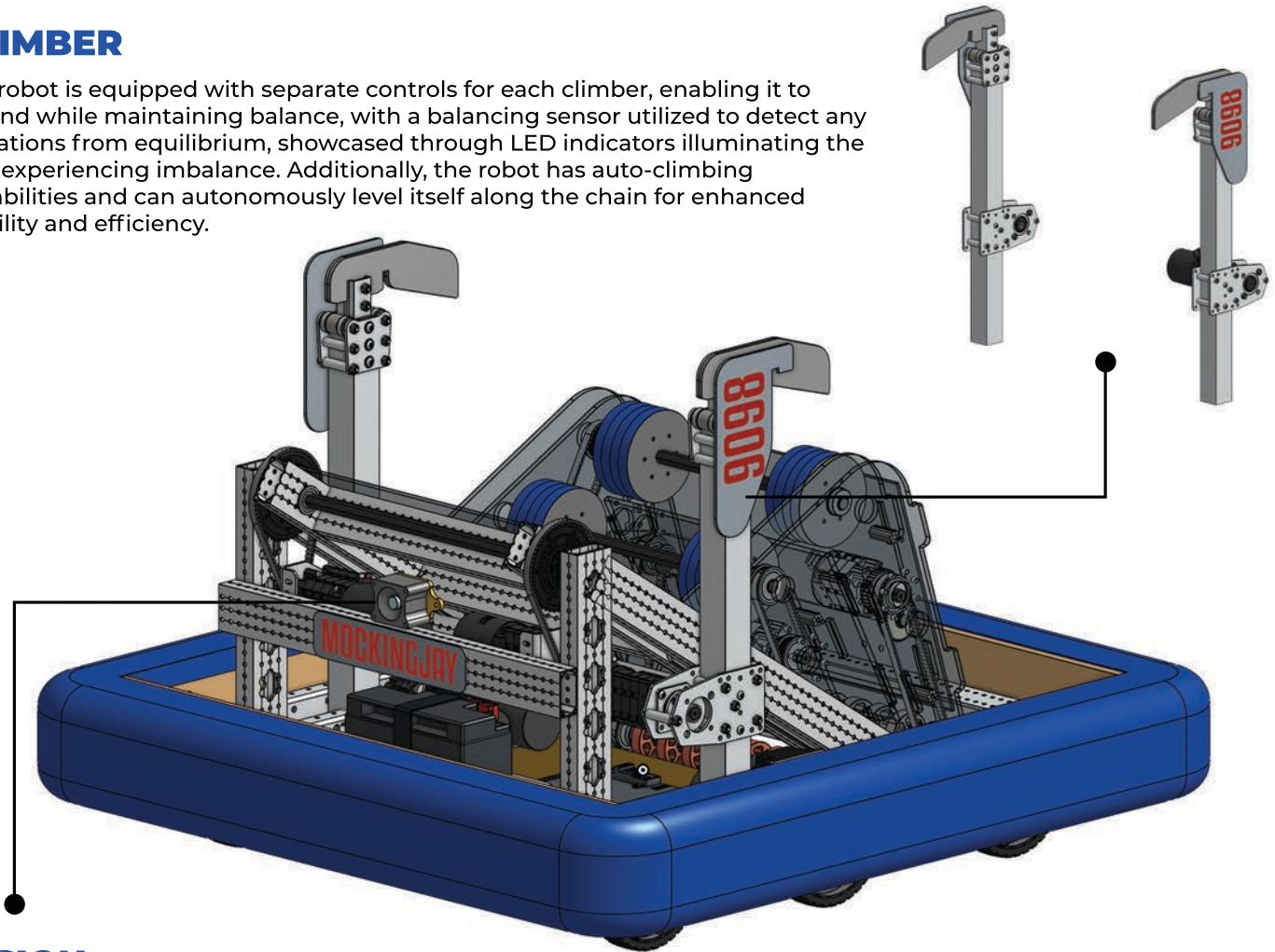
The robot's integrated shooter/intake design includes:
- A **beam break sensor** to detect when Notes have been successfully picked up,
- 8 flywheels (4 top, 4 bottom) for shooting at the speaker from various field positions, and
- 40 two-inch compliant wheels (20 top, 20 bottom) for the intake

The intake, located just inside the front bumper, can rapidly pick up ground Notes. The arm's resting 60 degree angle position allows for effectively scoring in the speaker from the subwoofer without having to raise the arm (raising the arm is used for longer range shots).

CLIMBER

The robot is equipped with separate controls for each climber, enabling it to ascend while maintaining balance, with a balancing sensor utilized to detect any deviations from equilibrium, showcased through LED indicators illuminating the side experiencing imbalance. Additionally, the robot has auto-climbing capabilities and can autonomously level itself along the chain for enhanced stability and efficiency.

VISION

The robot features **two cameras**: The front camera detects Notes and is used to automate Note tracking and pickup. The back camera detects April Tags and is used to calculate distance and direction to Speaker, and also to help squarely align to the Amp.

ACCURATE
AMP SCORING & SPEAKER SCORING

AUTONOMOUS

Our sophisticated autonomous routines utilize a specialized combination of driving trajectories, Note detection, and April Tag detection. This combination results in accurate, high scoring autos that can be run from a variety of starting positions.

Source-Side Subwoofer

3-Piece Auto:
Pre-loaded note (#1)
First source-side centre-line note (#2)
Second source-side centre-line note (#3)

2-Piece Auto:
Pre-loaded note (#1)
Source-side note (#2)

1-Piece Auto:
Pre-loaded note (#1)
Leave the zone thereafter.

Center Subwoofer

4-Piece Auto:
Pre-loaded note (#1)
Middle note (#2)
Amp-side note (#3)
Source-side note (#4)

4-Piece Auto:
Pre-loaded note (#1)
Amp-side note (#2)
Middle note (#3)
Source-side note (#4)

3-Piece Auto:
Pre-loaded note (#1)
Middle note (#2)
Source-side note (#3)

Amp-Side Subwoofer:

4-Piece Auto:
Pre-loaded note (#1)
Amp-side note (#2)
First amp-side centre-line note (#3)
Second amp-side centre-line note (#4)

3-Piece Auto:
Pre-loaded note (#1)
First amp-side centre-line note (#2)
Second amp-side centre-line note (#3)

3-Piece Auto:
Pre-loaded note (#1)
Amp-side note (#2)
First amp-side centre-line note (#3)

3-Piece Auto:
Pre-loaded note (#1)
Amp-side note (#2)
Second amp-side centre-line note (#3)

1-Piece Auto:
Pre-loaded note (#1)
Leave the zone after a 12-second delay.

MOCKINGJAY AUTONOMOUS

Our sophisticated autonomous routines utilize a specialized combination of driving trajectories, Note detection, and April Tag detection. This combination results in accurate, high scoring autos that can be run from a variety of starting positions.

Source-Side Subwoofer

3-Piece Auto:
Pre-loaded note (#1)
First source-side centre-line note (#2)
Second source-side centre-line note (#3)

2-Piece Auto:
Pre-loaded note (#1)
Source-side note (#2)

1-Piece Auto:
Pre-loaded note (#1)
Leave the zone thereafter.

Center Subwoofer

4-Piece Auto:
Pre-loaded note (#1)
Middle note (#2)
Amp-side note (#3)
Source-side note (#4)

4-Piece Auto:
Pre-loaded note (#1)
Amp-side note (#2)
Middle note (#3)
Source-side note (#4)

3-Piece Auto:
Pre-loaded note (#1)
Middle note (#2)
Source-side note (#3)

Amp-Side Subwoofer:

4-Piece Auto:
Pre-loaded note (#1)
Amp-side note (#2)
First amp-side centre-line note (#3)
Second amp-side centre-line note (#4)

3-Piece Auto:
Pre-loaded note (#1)
First amp-side centre-line note (#2)
Second amp-side centre-line note (#3)

3-Piece Auto:
Pre-loaded note (#1)
Amp-side note (#2)
First amp-side centre-line note (#3)

3-Piece Auto:
Pre-loaded note (#1)
Amp-side note (#2)
Second amp-side centre-line note (#3)

1-Piece Auto:
Pre-loaded note (#1)
Leave the zone after a 12-second delay.