Confidential Instructions Kicker Mechanical Subteam Student

Robot Design

You are a student on the kicker mechanical robot subteam. You have recently been tasked with creating a kicker system with the ability to kick a 24 inch ball into high goals on the field. It is really important that you are able to produce your robot design. The team is counting on the ability to kick the balls into the high goals and shoot the ball over the truss consistently. In order to get the points needed, the kicker must be able to kick the ball in autonomous and teleoperated mode.

The kicker design that has been developed needs to utilize 2 CIM motors and 4 mini-CIM motors in order to have enough power to kick the ball. Any less than this and the kicker will not be able to shoot into the high goal. The maximum number of CIM motors allowed for the robot this year is six, and the number of mini-CIM motors four.

You have done all the math and CAD drawings to prove that your design will be successful as long as you have the 2 CIM and 4 mini-CIM motors needed for the articulation of the kicker. Any less than these motors will compromise the design and make your kicker ineffective. When properly built, your kicker design will guarantee that balls will be scored during autonomous mode, as well as the ability to truss the ball, putting the team in a good position to win the match as well as improve our ranking during the competition.

You were recently informed that the drivetrain mechanical group is planning to use CIM motors in their design. You need to work with them to make sure you have enough CIM motors for your kicker design.

You are now sitting with a student from the drivetrain mechanical subteam to discuss your CIM motor needs for your designs. Discuss a solution for both of your designs.

Confidential Instructions Drivetrain Mechanical Subteam Student

Robot Design

You are a student on the drivetrain mechanical subteam. Your subteam has been tasked with coming up with a robot drivetrain design capable of having enough torque to provide adequate acceleration and pushing power if needed. It is critical that the robot is able to have enough acceleration and pushing power to get around defending robots in order to shoot the ball in the high goal or over the truss. Without the ability to get around other robots, the shooter will be useless because we will not be able to get close enough to shoot or truss the ball. The amount of truss points our robot receives is an important factor to determine our ranking, as well as enables us to get valuable assist, truss, and catch points. The team also needs the assist points to be ranked in the top 8 teams.

Your team has developed a drivetrain design capable of achieving these goals. The drivetrain design necessitates the usage of 6 CIM motors in order to provide enough torque and acceleration for the robot. The maximum number of CIM motors allowed for the robot this year is six, and the number of mini-CIM motors four.

You have done all the math and CAD drawings to prove that your design will be successful as long as you have the six CIM motors needed. Any less than six CIM motors will compromise the design and make your drivetrain ineffective. When properly built, your drivebase design will guarantee that the robot can out-maneuver other robots, putting the team in a good position to win the match as well as improve our ranking during the competition.

You were recently informed that the kicker mechanical group is planning to use CIM motors in their design to articulate the kicker. If you could convince them to use another method to actuate their design, then you could use the CIM motors available to make your design work.

You are now sitting with a student from the kicker mechanical subteam to discuss your CIM motor needs for your designs. Discuss a solution for both of your designs.