**393 Motor With Modified Casing**

The part which Team 4142 had decided on creating for the Make It Real CAD Engineering Challenge is a 393 Motor with 4 Screw Mounts. Through this design idea, the team hopes to improve the stability of 393 Motors and their axles when attached to robots. Ultimately, their primary goal is to reduce the likeliness of loose motors and axles, and thereby, prevent issues from arising and hindering the performance of the robot.

The 393 Motor with 4 Screw Mounts is intended to be used in place of the commonly used 393 Motor, and has been designed in such a way that would permit it to fit suitably into a normal VEX C-channel. This specially made motor can be used to power any VEX robot in substitution for a normal 393 Motor, thus, allowing for easy interchangeability for new users of the part.

To put together this innovated motor, our team has utilized the software known as Autodesk Inventor 2017. Through this software, the team used a 393 Motor Template to act as the basis of our design, and then proceeded to make modifications to the part. Simply put, the team created two additional motor mounts, while concurrently ensuring that the placement of the new inclusions would conform to the holes of a C-channel, onto the normal 393 Motor, and thus, produced a 393 Motor with 4 Screws.

From this project, our team has learned to maintain a curious eye and an open mind, as we have realized that there is always room for innovation and improvement in even the simplest of things. For example, our innovated motor can help to bring more stability to the motors and axles of robots, which could help to reduce the amount of problems one may encounter in regards to these segments of the robot.

Our team plans to continue on with the usage of the Autodesk Inventor 2017 software in the future to come. We plan to apply CAD to future robot developments in upcoming robotics competitions, such as First Robotics Competition and Vex Robotics Competition, as well as use the software to 3D Print, create detailed models, and for applications to the world of engineering in general.

Thanks to the availability and utilization of the Autodesk inventor 2017 software, our team is able to plan ahead, run tests and simulations on robotics which can range from dynamic testing all the way to stress analysis testing. Such capabilities permit the team to spend less time planning and more time working in an efficient manner.

Indeed, Team 4142 believes that the implementation of this software will be quite helpful in the path towards our careers, as it teaches us much skills. The execution of CAD has demonstrated to us how to be more patient, yet efficient with planning; how to create a visual representation of ideas to improve the management of time and materials; and how to effectively communicate with one another through the availability of visual drafting, by which others may see a clear, materialized idea.