

FIRST Robotics Safety Manual 2018

FRC Team # 203 **SOUP**erbots



SOUPERBOTS

Camden County Technical Schools

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IMPORTANCE OF SAFETY

In your pit, you have to make sure that it's clean, organized, and safe. Safety is very important and it is everyone's responsibility- not just the safety captain's. To make sure everyone is safe we follow a set of safety procedures, as mentioned later, and this is what has kept our team without serious injury.

SCOPE

This safety manual was written to show the importance of safety while working with all components of the robot, and practicing safe procedures in the pit during competition.

RESPONSIBILITIES

STUDENT

As students we practice all proper safety procedures while working on all technical and mechanical components of the robot.

SAFETY CAPTAIN

At competitions, a safety captain's first job is to maintain their pit. Our job is to appease the safety judges. While in the pit it is important for the safety captain to make sure everyone is safe and that all questions judges have about our team or robot is answered correctly. It is important to know the function of all components of the robot and be able to answer any questions asked accurately.

MENTOR

Mentors ensure that all students are accurately solving problems with the robot in a harmless manner that will help the robot. In order to ensure everyone is safe the mentors may teach members of the team what each component is and how it works. This helps in the process of keeping everyone safe.

SAFETY RULES OF POWER UP

FRC and all FIRST competitions care vastly for the safety of its participants, and require the following in the safety manual:

- Safety goggles and close-toed shoes are needed while working on any technical component of the robot while at competitions, but should be practiced while working throughout the season.
- Robots that are categorized as dangerous will not be allowed to participate in competition if deemed this during inspection.
 - If a robot is categorized as dangerous before a match they will not be allowed to participate.
 - If a robot is categorized as dangerous during a match they will be disabled.
- Drive teams aren't allowed to enter the field unless lights are green, and are not able to jump over the guardrail before and after a match and can only enter through the appropriate gates.
 - Will be given a violation if rule is not followed, and applies to the whole team.
- During the match no person(s) from the DRIVE TEAM may enter the field, and robots must stay on the field and can't contact anything from off the field.
 - Any violation of this will result in a RED CARD violation, and only referees and field staff apart of the ARCADE are able to do this action.
- DRIVE TEAM must stay out of the power cube return, portal, and exchange chute unless for a moment.
 - Violation results in a foul against team which deducts points at the end of final score during a match.

DESCRIPTION OF TOOLS USED AND HOW WE USE THEM

MILLING MACHINE

These machines are used to cut tools, and typically perform milling operations or other operations using different parts. They remove material by their movement within the machine or directly from the cutter's shape.

VERTICAL/ HORIZONTAL BAND SAW

A band saw is a saw with a continuous band of toothed metal that is stretched between two or more wheels and is used to cut metal with a long sharp blade.

LATHE

A lathe is used to remove metals in a work piece to give the piece a certain shape, form, and size depending on how it is used by the worker. It also is used to hold the work piece to perform various metal removing operations such as turning, grooving, chamfering, knurling, facing, and forming.

DRILL AND DRILL BITS

Drills and their drill bits are typically used by the worker to bore holes in various metals or to fasten objects together depending on how it is used.

VICE GRIPS

Vice grips fasten objects together or hold them in place while another tool is being used on the parts in order to ensure no movement of the part which may mess up the action a worker is trying to perform.

DIAL CALIPERS

Dial Calipers are important for measuring objects, the thickness of a material, the depth of a hole, and the diameter of a hole.

FILE

A file takes away any excess material left on an object that has been cut or changed in any form.

HAMMER

Hammers are used to put two objects together by fastening a screw into both of the parts

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment (PPE) is equipment used to protect the user from any dangers of any component of the robot. These include:

- Safety glasses
- No loose clothes
- Long hair must be held back with hair tie
- Sleeves are rolled up or short sleeves are worn
- Hearing Devices (earplugs, earbuds, muffs, etc.)
- Steel toed boots (Foot protection)
- Gloves
- Hard Hats
- Full Body Coverage
- Respirators

Though all may not be needed while working in a shop on components of the robot

Always Have:

- An injury log which keeps track of all past and current injuries
- First Aid Kit
- Emergency contact information

SAFETY PROCEDURES

The following are safety procedures made by the team everyday while working on parts of the robot:

- Proper use of hand- held tools
- Proper use of electrical devices
- Techniques for lifting and raising the robot
- Always walk and work in a controlled manner.
 - Any horseplay may result in injury.
- Make sure to be aware of the robot and any high-speed rotating components on the robot
- Always fully open a ladder and never stand on a non-approved step.

The Safety Captains Must...

- Develop specific safety procedures
- Maintain an up to date list of Material Safety Data Sheets (MSDS)
- Make sure that all materials are returned to its proper place during matches
- Performing and tracking safety training of all participants



WHAT TO DO IN THE EVENT OF AN EMERGENCY

In the event of an emergency there are a set of steps taken by the team members, mentors, and the safety captains. These steps are:

- 1.

AT THE COMPETITION

Our team takes the safety of our students seriously to ensure that no injuries occur and everyone is able to partake in the experience of building a robot. This mentality is also true for our safety while at competitions.

PIT SAFETY

The pit can become dangerous to work in due to the chaos of preparing your robot for each competition though there are steps taken by our team to make sure no one is injured during the process. These steps include:

- Making sure everyone has Proper Protective Equipment (PPE) while working on the robot in the Pit
- Any hazardous materials are dealt with properly
- Robot is properly inspected before each match so that it is safe to go out on the field
 - Also done to ensure no violations will be given for a dangerous robot which can cause the robot to be disqualified from a match or taken out of a competition depending on when the hazardous part is found on the robot as stated in the Safety Rules.
- All who are working in the pit are properly trained to work on components of the robot so no one is hurt



SAFETY AWARDS

Source

http://first.wpi.edu/Images/CMS/First/2008VOL_Safety_Advisor_Manual.pdf