



SAFETY FIRST[®]

Shop and Pit Safety for *FIRST* Robotics

**Skunkworks
Team 1983**

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We Will Cover...

- The importance of protecting your eyes
- How to be safe around the robot
- And how to have a safe time in the shop

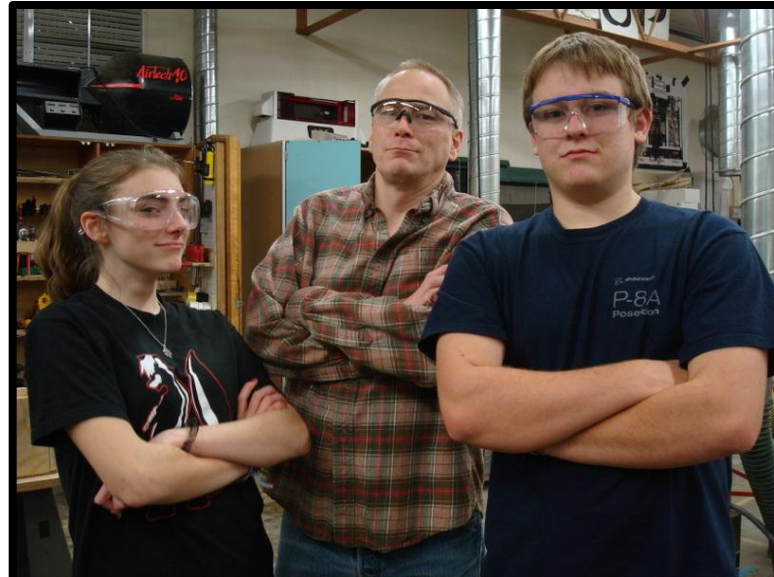
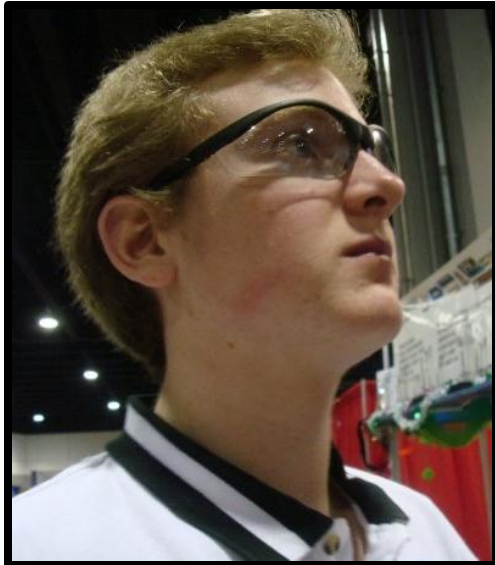


Protect Your Eyes

Everyone!

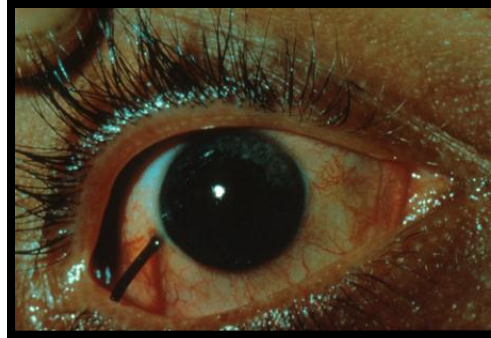


That includes mentors!



Types of Eye Hazards

Flying objects



Particles and dust



Harmful light radiation –
ultraviolet, lasers, infrared

Chemicals



ALWAYS WEAR SAFETY GLASSES IN THE SHOP AND IN THE PIT AREAS!!

- Everyone, all the time!!
- Especially when power tools, or machinery are in use, **but also when they're not!**



What About Prescription Glasses?

ONLY if you bring proof that they meet American National Standards Institute (ANSI) Z87.1 Standards for impact resistance **AND** if using side shields or wraparound safety glasses.



Face-Shields

- Mandatory when operating the grinder, or when a splash to the face might occur.
- Still must wear safety glasses underneath!!



How to be Safe Around the Robot and in the Pits



- How to handle robot batteries...
- Correct ways to lift robots...
- Safety of working on the robots...
- How to be safe around the robots...



Handling the Batteries

- Be VERY cautious when working with the robot batteries
- There is the possibility of them:
 - Shorting out
 - Causing shock
 - Becoming hot and/or starting fires
 - Rupturing, and/or releasing battery acid
- Make sure to never cross polarity; to avoid damage. The polarity of the charger and battery should ALWAYS match
- ALWAYS wear goggles when working with batteries
- If chemicals come in contact with your eyes, wash them immediately



Lifting the Robot

- At least two people...they're heavy!
- Don't ever lift it when there are obstacles to walk over or around



- Always grasp the robot at the same level as the person helping
- Lift with your whole body, not just your arms!

Watch Your Hands!

- Only touch what you need to work on in the robot
- Do NOT be in contact with any of the systems on the robot if the power is on
- Always have someone else watching you when you're working on the robot
- Before turning on the robot, someone should always check that all hands are off the robot



Being Safe in the Shop

- **Dress Code:** (and more)
 - Hair **MUST** be pulled back, and long pony-tails should be tucked up in a way that keeps hair from hanging down.
 - NO loose/ baggy clothing
 - NO long sleeves
 - NO open toed shoes
 - NO ties, dangly jewelry, etc.
 - NO mp3 players of any kind
 - NO cell phones



- **Do wear:**
 - Safety glasses
 - Ear plugs; when operating loud machinery

It's Important to be able to Cooperate with each other in the shop and Pits

- Music level should be set so that all voices can be heard at all times
- Rough housing is dangerous and could create distractions or worse.
- Work areas should be kept clean
- Metal shavings should only be cleared with a vacuum or brush
- Students should always be able to consult to a mentor for help





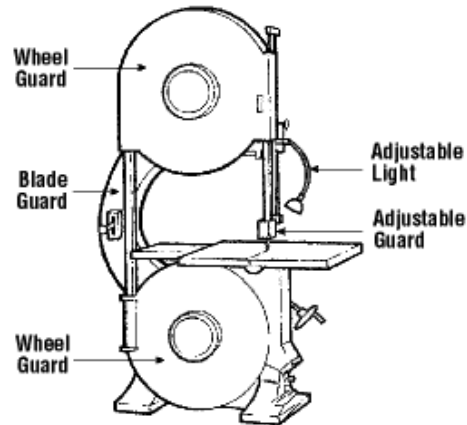
Using the Power tools



- **Never Operate Equipment in the shop unless supervised by a mentor.**
- Do not talk to someone while they are operating a machine.
- Do not allow others to distract you while operating a machine.
- Always keep hands out of the path of the cutting surface.
- Never attempt to measure adjust or change (set-up) while the machine is still running.
- Create a safety work zone associated with the machine you are operating. Advise others to stay outside of the safety zone.
- Warn others if you're about to operate a machine

Know the Tools and Their Rules

BANDSAW



DRILL PRESS



- Keep hands out of the path of the blade/ drill
- Secure materials
- Have the machine running at full speed before starting to cut or drill
- Have **someone else** turn on the machine for you, and keep their finger hovering over the off button



More Tools and Rules

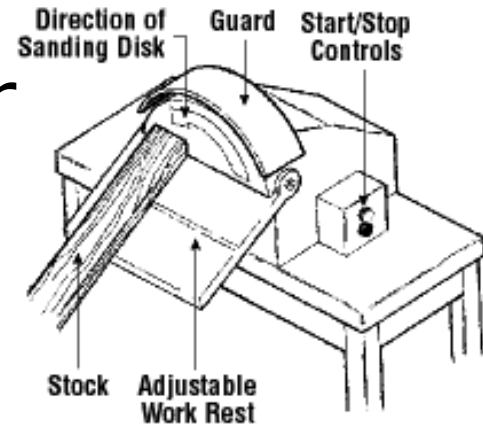
Chop Saw



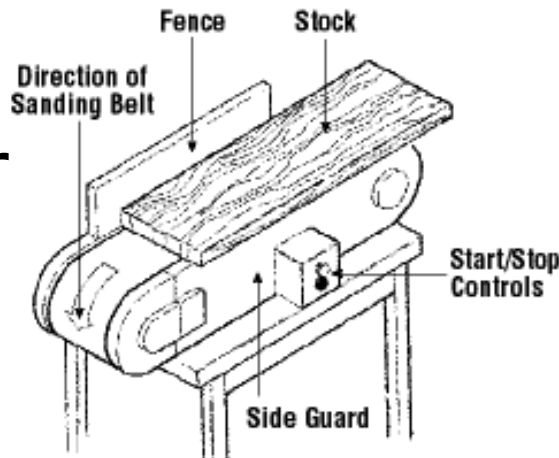
Remember to wait until the blade comes to a COMPLETE stop before extracting the blade from the material.



Disc Sander

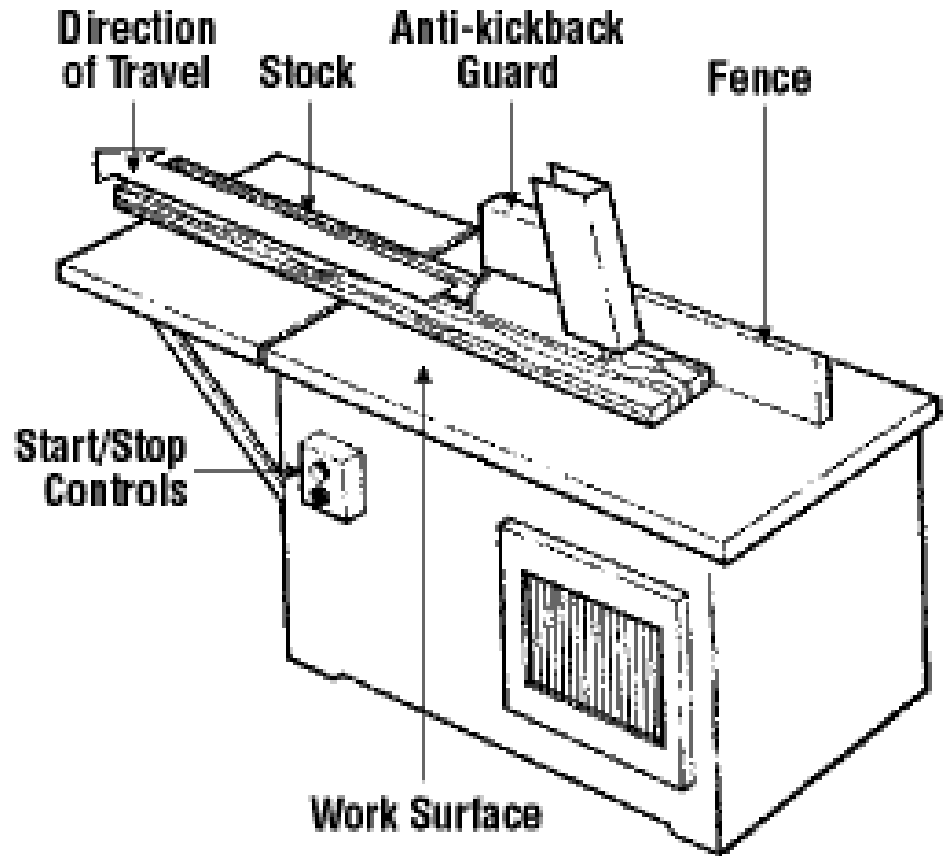


Horizontal Belt Sander



STUDENTS DO NOT USE THE TABLE SAW...**EVER**

ONLY Mentors!



BE SAFE!

And then at the end of the season we may let you hug the robot...(If it's off of course)! 😊

