Name	FIRST Robotics Team 4153
Name	TINST NODULICS TEATH 4133

SAFETY RULES & BASICS FOR MILLING MACHINES

Milling machines are used to cut metal to drill, slot, and removal metal in the horizontal plane. The rotating bit is extremely sharp and requires special safety precautions while being used. Be sure to always follow good safety practices in the shop as described in General Robotics Safety Rules. Specific safety requirements for milling machines are:

- Do not make contact with the revolving cutter. Keep fingers at least 6" away.
- Even a non-revolving cutter is dangerously sharp- watch where you place your hands
- Place a wooden pad or suitable cover over the table surface to protect it from possible damage...or just NEVER place wrenches, hammers or other metal tools on the mill table.
- Use the buddy system when moving heavy attachments.
- Do not attempt to tighten arbor nuts using machine power.
- When installing or removing milling cutters, always hold them with a rag to prevent cutting your hands.
- While setting up work, install the cutter last to avoid being cut.
- Remove spindle wrench immediately after securing bit in collet.
- Shut the machine off before making any adjustments or measurements. Never adjust the workpiece or work mounting devices when the machine is operating.
- Use parallels to position work in the vise, and be careful that the cutter doesn't make contact with the vise or table.
- Check and set the proper speed, feed, and depth of cut before cutting into the metal
- Chips should be removed from the workpiece with an appropriate brush or vacuum
- When using cutting oil, prevent splashing by using appropriate splash guards. Cutting oil on the floor can cause a slippery condition that could result in operator injury
- Some form of cutting fluid should be used when cutting metal
- Keep vise jaws clean so that parts and jaws do not become "dented."
- When finished with the mill, ensure that the tool has stopped rotating, remove your cutter, and place back in the proper container, and clean the machine before leaving.

I have read and understand these rules. I realize I must be tested and checked-out on the milling machine operation and safety by a mentor before I am allowed to use it.

Signature	Date		
Mentor Test & Check-out Signature		Date	

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FIRST Robotics Team 4153 Milling Machine Qualification Test

- 1. The first item of procedure to operate the milling machine is
 - A. secure work piece.
 - B. set cutting speed.
 - C. turn on power.
 - D. obtain teacher permission.
- 3. Make measurements or set-ups only when
 - A. you have permission.
 - B. you have read and understand safety rules.
 - C. the machine is at a dead stop.
 - D. All of the above.
- 4. Remove spindle wrench immediately after securing bit in collet.
 - A. True
 - B. False
- 5. Which of the items below could be used to securely fasten your work piece?
 - A. a vice.
 - B. Indexing head.
 - C. Step blocks and clamps
 - D. Any of the above.
- 6. Milling machine cutters are sharp and must be handled carefully.
 - A. True
 - B. False
- 7. When machine is at a dead stop, chips should be removed with
 - A. hand.
 - B. cloth
 - C. brush
 - D. None of the above.
- 8. After you are finished using the milling machine, you should
 - A. turn off the power.
 - B. brake the machine to a dead stop.
 - C. remove cutter.
 - D. All of the above.
- 9. Never clean chips away from cutter while machine is running.
 - A. True
 - B. False
- 10. Keep fingers at least 6" away from the cutter.
 - A. True
 - B. False
- 11. Check and set the proper speed, feed, and depth of cut before cutting into the metal.
 - A. True
 - B. False
- 12. The floor around the milling machine should be kept clean.
 - A. True

- B. False13. The best way to clean up the milling machine is using an air hose.A. TrueB. False
- 14. If you are uncertain about the set-up or any aspect of the operation, you should
 - A. go ahead and try the operation.
 - B. check with your teacher before proceeding.
 - C. call the machine manufacturer.
 - D. None of the above.
- 15. Besides improper placement of your hands, which of the following is a possible cause of accidents around the milling machine?
 - A. unsecured long hair.
 - B. loose clothing.
 - C. jewelry.
 - D. All of the above are correct.
- 16. It's OK to use an iPod and earbuds when running the milling machine.
 - A. True
 - B. False
- 17. Only a spinning cutter is dangerous
 - A. True
 - B. False
- 18. When engaging power table feed, make sure no one is standing by the table handles
 - A. True
 - B. False
- 19. Just bolting the vise to the mill table is usually sufficiently "square" to the table
 - A. True
 - B. False
- 20. Coolant or cutting fluid is usually needed when cutting metal
 - A. True
 - B. False
- 21. When loosening a collet, tap the top of the draw bar with a common steel hammer
 - A. True
 - B. False
- 22. Care should always be taken to make sure the cutter does not contact the vise or table
 - A. True
 - B. False
- 23. Parallels can position the workpiece in the vise so that the cutter doesn't hit the vise.
 - A. True
 - B. False