

Robot Inspector To Do List

Have fun inspecting robots. Your job is one of the most important at the event. It is your job to help teams compete; it is not to prevent them from competing. Students want to show off their work. Help them be proud of their work and pick out items that impress you. Inspection is an opportunity for you to show gracious professionalism by example.

If you experience issues from mentors or find something out of the ordinary on the robot, simply tell the team you are going to check with the Lead Robot Inspector when you are finished. If you see something on a robot that might compromise the operation (eg loose wiring, entanglement issues, need for electrical insulation, or exposed chain and sprocket), let the team know. You are helping them compete and you want them to have a great weekend.

1. Review robot rules, inspection sheet and other related documentation (eg power distribution diagram and data connectivity diagram) prior to event.
2. Arrive early (prior to pit opening) and check in at volunteer table. You will need to fill out paperwork, get credentials and crew shirt, etc. Check in with Lead Robot Inspector and have breakfast.
3. Walk through the pits after teams have uncrated their robots. Check over robots for glaring safety problems, sharp edges, lack of insulation and possible entanglement problems.
4. Meet team as they approach weight and size station for inspection. Make sure that the team has enough time before their next practice match to complete inspection. Begin paperwork by noting team name and number at top of inspection form.
5. Make sure bumpers and trailer hitch are present but removed from robot for sizing. Make sure that all attachments (including bumpers) are ready to be weighed.
6. Check that robot fits the sizing box and that all moving parts can stay inside the box unconstrained by the box sides, bottom or top. Note on the inspection form that robot has passed size.
7. Check robot weight with the main battery and bumpers removed while ensuring that all attachments are present on the robot.
8. Weigh the bumpers and attachment hardware and inspect for correct bumper construction and material.
9. Introduce yourself and inform the team if you are affiliated with another team. Instruct the team that they can ask for another inspector if they are uncomfortable with your team affiliation.
10. Walk with team back to their pit and continue inspection in the pit.
11. Ask for a Lead Mechanical Student and a Lead Electrical Student to answer inspection questions. Make sure that a mentor stays close to sign the inspection form when complete but ask that all but the two students step out of the pit. This insures a quick inspection with little interference from other team members.
12. Do a visual scan of the pit looking for anything unsafe including illegal batteries, compressors, or tools. Only kit compressors are allowed at events. No grinders,

- torches or open flames are allowed in the pit area. Make a mental note of questionable items, and inform Lead Robot Inspector after the inspection.
13. Proceed with inspection, checking off each line item when you are satisfied. Have some fun with the students to help put them at ease. For example, when asking about illegal items ask about heat seeking missiles, glow in the dark chemicals, green lasers, etc. This usually gets some interesting responses from the students.
 14. Check the robot for sharp edges and pointed objects. Inform team to correct anything that you find. You are looking for burrs and edges anywhere on the robot that can scratch or cut participants and volunteers.
 15. Work through each item on the inspection sheet. Check that there are the correct number and type of motors. Ask if there have been any modifications of the motors. Check for illegal mechanical items or disallowed materials. When in doubt ask the team for explanation.
 16. Check over the wiring and insure it is minimum size for the branch circuit in which it is used. Check for the correct size breakers and any electrical parts that are required (one MK ES17-12 battery, one Power Distribution Board, one 120A main breaker, Anderson battery cable connectors, etc.) Ask if the team has modified any electrical components.
 17. Check pneumatic system for correct size and type of pneumatic components. Insure that the relief valve, the high and low side gauges, pressure regulator and pressure switch is present. If team uses an off-robot compressor, it must be controlled by the cRIO and powered by the on-robot battery through a Spike relay and using the Nason pressure switch for sensing. Ask if any pneumatic components have been modified. If a team does not use pneumatics, cross through entire section.
 18. Make sure you and all others are clear of robot and robot wheels are not in contact with floor or robot cart when performing the 'power on' tests. Have the team tether the Driver Station to the robot and power the robot. Make sure that the Driver Station is showing the proper team number, battery voltage and software revision. Make sure the Robot Signal Light is functional and easily viewed. Check that the pneumatics system high side pressure does not exceed 125 PSI and the compressor shuts off under control of the cRIO. Check that the low side pressure is 60 PSI or less. Have the team shut power off and check that power is indeed removed when the main breaker red button is pushed. Have team release pressure on the pneumatic system using the pressure relief valve. Insure both gauges return to zero PSI.
 19. Check that the team built operator control panel does not exceed the maximum size.
 20. Have Team Captain and mentor read and sign inspection form.
 21. If robot passes inspection, apply the event inspection sticker and label to the robot in a conspicuous open area of the robot and add your initials on the colored sticker. This sticker is used by field personnel when queuing the robots and must be present for a team to compete.
 22. Ask if the team has any questions, and if none, wish the team good luck. Tell them that when they reach the finals, they will need to reweigh and resize. Have

- them check back at the inspection station anytime they have a question and make sure they know that any modifications made during the weekend will require another inspection.
23. Sign, date and time stamp the inspection form at the top of the first page and file it in the “completed” folder at the inspection station.
 24. If the team failed the inspection, please note on the form the section(s) that failed and some indication as to why they failed. (A note on the front page will help another inspector follow up later.) If the team is partially complete then file the form in the “partial” folder.
 25. The inspection station should be manned throughout the weekend. The Lead Robot Inspector will coordinate with all inspectors for this task.
 26. Final weight and size re-inspections will begin on Saturday (late in the morning) as high ranked teams finish their last match. Check weight and size and record on the team’s inspection sheet. If the data varies from the initial inspection, question the team as to what changes have been made. Further inspection of the modifications may need to be made. Teams often remove assemblies that have failed or do not function as hoped.
 27. Assist with packing the inspection station after finals competition is complete but prior to awards.
 28. Have fun and thanks for volunteering!

Robot Inspector One Page To Do List

1. Review Robot Rules and inspection training documents prior to the event.
2. Arrive early on Thursday morning. Check in at volunteer table. Fill out paperwork and receive credentials and crew shirt.
3. Check in at inspection area and meet Lead Robot Inspector. Have breakfast and meet your Lead and fellow inspectors.
4. Your Lead Robot Inspector will have instructions for you and should assign you a buddy for at least the first few hours.
5. Walk through the pits and meet with teams after the pit opens and teams have unpacked their robots. Check for glaring safety problems with robots, inspect the pits and assist as needed. Get to know the teams and become acquainted with robot construction, equipment and material.
6. Begin inspections with weight and size; be sure to record these on the inspection sheet. Continue inspection in the team's pit area so you can check for disallowed chargers, tools, or safety issues. Ask to inspect all batteries and check for correct insulation on all battery terminals. When the team passes inspection, place inspection label and sticker on robot and initial same. Have mentor and team captain read and sign inspection sheet. Sign and time stamp inspection sheet. Place completed inspections in the "Completed" file.
7. If a team does not complete inspection please mark the inspection sheet for those areas that did not pass. Place partial inspection sheets in the "Partial" file.
8. Students want to show off their work so compliment them when you can. Pick out something interesting on the robot and comment on it.
9. Your Lead Robot Inspector should send you to lunch and/or dinner in small groups so that the inspection area can remain open throughout the day.
10. Pits will remain open until 8 PM and the inspection station needs to be manned until pit close.
11. If you volunteered for Friday and Saturday, be sure to arrive early, check in with the Lead, have breakfast and be ready to assist as needed.
12. All teams need to be fully inspected before they can compete on Friday. Some teams will need inspection on Friday morning.
13. You may be asked to assist with other volunteer positions if you have volunteered for the entire weekend. Starting late on Saturday morning, all teams competing in the finals and 5-10 alternate teams will need to be re-inspection for weight and size.
14. Make sure to record final weight and size on inspection form and ask for explanation if the weight and size differ from the initial inspection. A more detailed inspection may be needed.
15. Following the finals matches, the inspection station will need to be packed and ready for the truck.
16. Have fun.