FRC SAFETY MANUAL

FENERBAHÇE DOĞUŞ SPARC 5665

~2025~

“Accidents hurt. Safety does not”

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1. Introduction to Safety

- The workshop contains many potential hazards to your safety. However, with proper control and concentration these hazards can be completely eliminated.
- This manual is designed to outline the basic workshop safety requirements and how you should be using them to keep yourself safe.

Mission statement:
To provide the tools,training,and oversight for FIRST team 5665 to operate in a safe manner in all aspects of their work whether it be in their workshop or whether it be while in the competition.

2. Responsibilities

- Safety Captain: Provides briefings, makes sure personal protective equipment (PPE) is used and manages emergency procedures

- Team Members: Follow all safety rules, use appropriate PPE, report hazards immediately, and keep a clean work area.

- Mentors : Controls activities, provides guidance on safe practices, and makes sure all team members understand safety protocols.

3. Safe Conducts

The following recommendations are to detail the expected standard behaviour for all of our team members working within the pit area:

- **Never** adopt a casual and relaxed attitude in the workshop and always be conscious of the potential hazards to your safety.
- Ensure that personal clothing is suitable to the workshop conditions.
  - Singlets,tank tops or similar clothing are also not suitable for wearing in the pit area.
- Use protective clothing and devices apporiate to the type of operation being carried out,giving due consideration to the work being carried out in the vicinity.
- **Never** run in the pit area.
- **Do not** carry out any work in isolation in the pit area, ensure that at least one other person is in the victinity.
- **Do not** handle, store or costume food or beverages in the pit area.
- Before any work is carried out in the pit area, permission must be obtained from the Pit Area Supervisor.
- **Never** undertake any work unless the potential hazards of the operation are known as presely as possible, and the appropriate safety precautions are adopted. Take additional care when carrying or moving any potentially hazardous material or substances.

- Label all safety equipment and maintain it in good operating condition.
- Team members never work alone in the pit area. There should always be at least two team members present.
- Keep safety information and emergency procedures prominently displayed at all times in the pit area.

Included in the safety information,the telephone numbres of emergency sevices: in Tukey = 112 / in USA = 911

First Aider, Abidin Zenginer : abidin.zenginler@gmail.com

Safety Captain, Berra Karateke: h.berrakarateke@gmail.com

FIRST AID BOX LOCATIONS : Pit Area - On the shelves

4. Electrical Safety

Any and all of our members must do these before working on our robot:

- Turn it off by opening the main circuit breaker, and unplugging the batteries before working on it.
- Vent any compressed air and open the main vent valve.
- Relived any compressed or stretched springs.
- Lower the robot’s arms or devices that could fall before starting on your work.
- Respect electricity!!!
- Inspect AC electrical cords routinely to make sure that in good condition.
- Do not overload electrical fixtures.

To avoid overloading, avoid the electrical power source installations :

- Extension cord connected to another cord/to a power ship.
- Do not daisy chain outlet strips.

5.Batteries safety

- Use only certified batteries from reliable sources.
- Protect batteries from physical damage, bending, and high temperatures.
- Always use a compatible charger and avoid overcharging.
- Keep the charging area clean and organized; avoid blocking air circulation.
- Prevent metal contact when carrying spare batteries.
- Regularly inspect the battery for cracks, leaks, or any signs of damage.
- Bent terminals can lead to leaks—check them regularly.
- Examine the battery carefully before and after each competition round.
- Never disassemble, puncture, or handle batteries improperly.
- Store batteries out of reach of small children—button cells pose serious risks if swallowed.
- Prevent excessive vibrations on lithium-ion batteries.

- In case of an acid leak:

- Neutralize affected surfaces with sodium bicarbonate.
- Do not handle the battery without wearing gloves.
- Place the battery in a sealed container; if skin contact occurs, rinse immediately and seek medical attention.
- Keep a Class C fire extinguisher on hand for lithium-ion fires.
- Prevent short circuits by covering battery terminals with insulating material.
- In case of an incident during a competition, notify the first aid team immediately and complete the required forms.

6. Power and Hand Tools

- Have a mentor present.
- Use the right tool
- Don’t distract anyone using a power tool.
- Concentrate on your work.
- Never leave the tool running and unattended.
- Work on a stable surface.
- Watch out for sharp edges.

7. Soldring

- Use only lead-free solder and solder only with an electrically heated soldering iron/gun.
- Be careful
- Wear eye and face protection.
- Solder in well ventilated areas.
- Never touch the iron/gun.
- Avoid burns by wearing cotton clothing covering arms and legs.
- To avoid cross-contamination, there should be no food or drink in the dedicated soldering area.
- Always wash your hands after handling solder.
- Work on a fireproof surface.
- Keep your soldering iron in its protective holder when not in use.
- Do not leave any hot tool where someone could accidentally touch the hot element.
- Dispose of solder waste properly.

8. Chemical Safety

- Keep chemical containers in good condition.
- Make sure all chemical containers have labels placed by the manufacturer.
- Ensure that all labels are legible.
- Store all chemicals in an orderly way and store incompatible chemicals separately from each other.
- Store any flammable chemicals when not in use in non-flammable storage locations and away from flammable materials.
- If you are exposed to a chemical, notify your student lead and mentor immediately and consult the SDS if necessary.

9.Personal protective equipment(PPE)

- Near or on moving or rotating machinery do not wear ties, loose clothing, jewellery, hanging key rings or similar items while working
- People with long hair should tie their hair back when using these machines.

9.1 Eyes and Face Protection

- Always wear eye protection when using power operated hanf or machine tools, or while performing physical tests that could lead to the damaging of your eyes.

9.2 Hand and Hearing Protection

- Use proper gloves and mechanical tool guards for the application.
- Make hearing protection devices available, such as earplugs, where there are objectionable/questionable sound levels.

9.3 Foot Protection

- Open footwears should not be worn in the workshop area;

like flip-flops, sandals, mules, crocs, lightweight slippers, etc.

10. Fires Extinguishers

This equipments is provided in our workshop and pit area to extinguish minor fires only if there is any major risk from the fire, the building **must** be evacuated. Before using a fire extinguisher read the instructions ensuring that it is appropriate to the type of fire.

- Water Type Extinguisher - Colour coded red.For use on solid fires only.Not to be used on electrical or chemical fires.

- Carbone Dioxyde Extinguisher (CO2) - Colour coded red with a black band.For use on electircal and flammable liquid fires

It should be noted that this extinguisher can be safely used on all types of fires, however when the gas dissipates, re-ignition can take place.

11. Safety in the Pit

- Floors are to be kept tidy and dry
- Work areas and equipments are to be thoroughly cleaned after use.
- You must keep the corridor outside your pit station open for pedestrians and robot passage.
- Participants and spectators must wear personal protective equipment (PPE) in the pit area all the time.
- Team structures, signs, banners or displays can not be higher than 10 feet above the ground.
- Do not try to add to your space by setting up in another area
- Benches are to be kept clean and free from chemicals and any equipment that are currently not in use.
- Bottles and glassware are to be kept off the floor.
- Access to all emergency equipment (fire extinguishers, first aid kits) must be kept free from obstruction
- If a team member is the last person to leave the pit area, they will be sure that all equipment is turned off and put away in an orderly manner.

12. Safety Documentation and Records

These are the primary safety documents and records that the team maintains:

- 5665 SAFETY Manuel
- MSDD:Material Safety Data Sheet (for chemical - Battery)
- Safety Training Records
- Safety Checklist (Inspect tools and equipments before using, identify any hazards in the work area)
- Incident reporting

13. Incident Reporting

- When an accident, whether minor or major, occurs immediately tell your team Captain or Safety Captain
- Document the incident and cause of the incident in your team safety notebook.
- Make sure that the situation that caused said incident is corrected and be sure that does not happen again.
- Replace damaged or worn equipment.

14. Workshop (5'S’ principle)

- **S**ort: Sort through items and set them in groups, needed or not needed.
- **S**traighten: Organise the work area
- **S**hine: Do regular inspection, maintenance and cleaning within your work area.
- **S**tandardise :Use an inspection list before starting your work.
- **S**ustain: Make **5S** your way life

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