



NFPA
Education and
Technology
Foundation



Tips for Managing Machine Failure on Challenge Day

December 27, 2023

Situation:

Challenge Day represents the competition portion of the Fluid Power Action Challenge. The day is filled with anticipation, excitement, fun, and a little pressure for everyone involved, especially participating teams.

The excitement and pressure can be most prevalent on the competition board, especially for a competitive team. The feelings can be heightened if the team's machine performs well or fails.

Document Purpose:

This document shares tips designed to help manage or reduce the likelihood of machine failure on Challenge Day, especially during the board competition. NFPA's hope is that every team has a positive Fluid Power Action Challenge experience, even if machine failure occurs. The tips below were offered by organizers, hosts, volunteers, and Mechanical Kits, LTD.

Tips for Managing a Team's Machine Failure on Challenge Day:

- NFPA's Fluid Power Action Challenge materials and content serve as guidelines for the event. Organizers and hosts have the authority to make the event and schedule "their own." The point system can also be adjusted to fit your event. Organizers and hosts also control the number of competition board attempts offered on Challenge Day and can include practice opportunities.
- Hosts and organizers should consider meeting with participating educators during the Workshop Day to discuss the educators' role in the event. The following documents are available in the competition resources found on the NFPA's "[How It Works](#)" page and would supplement the conversation.
 - Tips for Teachers and Mentors
 - Notes for Teachers & Facilitators
 - Mid-Project Checklist
 - Attaching Piston Syringes



NFPA
Education and
Technology
Foundation



Tips for Managing Machine Failure on Challenge Day

December 27, 2023

- Remind teams they are NOT disqualified from the competition if their machines fail to perform on the timed competition board. The board is a small percentage of a team's overall score, and points can be earned in other categories throughout the day (e.g., safety, portfolio, interview questions).
- When machine failure occurs, offer empathy, but also help teams explore and discuss what they might do differently if faced with a comparable situation in the future. This approach maximizes a learning opportunity.
- Organizers and hosts, please share the full Workshop and Challenge Day agenda when marketing your event. It will allow educators to understand the program's timing and will help schools plan for transportation.
- You may be able to maximize each team's machine build / adjustment time on Challenge Day by scheduling the competition order based on each team's arrival time.
- Suggest that teams completely build and test Workshop Kits (prototypes) during the design and build phase between Workshop Day and Challenge Day. It is also important for teams to accurately document components, sizing, and construction steps. This will help them prepare for Challenge Day.
- Encourage teams to design and construct machines as efficiently as possible to reduce complexity and time needed to re-build or adjust machines on Challenge Day. Less time building may allow for more testing and practice opportunities.
- Inform teams that a full-scale paper layout of the competition board is included in each Workshop Kit. The layout is a resource that can help teams determine measurements and the position of components during the machine design and build process. It can also help teams "test" completed prototypes before Challenge Day.
- Consider setting up competition boards designated for practice and testing early in the day. Once the timed competition begins, you may consider keeping the "practice boards" open for teams to use when not competing.



NFPA
Education and
Technology
Foundation



Tips for Managing Machine Failure on Challenge Day

December 27, 2023

Feedback:

As you consider and implement these tips, please share your feedback and any additional tips with the NFPA. Our hope is that everyone has a positive experience, even if machine failure occurs. Please share your feedback, additions, or questions with the NFPA by emailing them to James Foster, Workforce Program Manager, at jfoster@nfpa.com

Thank you and good luck with your events!

James Foster
Workforce Program Manager
National Fluid Power Association
6737 W. Washington St., Suite 2350
Milwaukee, WI 53214