

2025 *FIRST*[®] Robotics Competition Bumper Rule Changes

The Bumper Task Force looked at the existing bumper materials and rules to see how they could be improved. The group came up with three overall goals on which to focus:

- Make bumpers easier to build
- Make bumpers easier to inspect
- Improve options for teams to make more robust bumpers

The group was tasked to recommend improvements in all three areas while still allowing teams to use existing materials already acquired for the season. The 2025 *FIRST*[®] Robotics Competition game manual will have the complete final ruleset. Additional changes are being considered for the 2026 season and beyond.

Changes to make bumpers easier to build

One identified challenge is the specific dimensions that are frustrating to comply with when using the specified materials. Additionally, when using specified materials some teams had difficulty building bumpers that fit within the weight constraints. To address this concern, the following changes will be introduced for 2025:

- Gaps between segments increased from 0.5 in. → 1.5 in.
- Hard parts limit from 1 in. → 1.5in.
- Allow for heavier bumpers by only specifying a maximum overall robot weight
- More flexibility in backing materials and mounting solutions

Changes to make bumpers easier to inspect

Illegal bumpers are one of the largest non-compliance issues inspectors see at events. Many of these issues are bumpers that generally are robust and securely mounted but may be non-compliant with specific measurements specified in the manual documentation. To reduce the number of specific measurement requirements, the following change will be introduced for 2025:

- Remove specific measurement requirements on frame backing
- Reduce restrictions on backer thickness and holes

Robustness changes

Teams have been experiencing an increase in damage to their bumpers and robots throughout the season. The following solutions give teams the freedom to improve robustness while building to a more open specification. Additionally, it disallows construction techniques that that been shown through internal testing to be significantly

less effective in providing protection in robot to robot and robot to field interactions. The following changes to rules will be introduced in 2025:

- Allow thicker padding extending up to 4.25 in. from the frame perimeter
- Allow taller bumpers
- Allow additional padding materials including
 - Backer rod
 - Foam floor tiles
 - Solid Polyethylene (PE) closed cell foam with density between 1.5 and 3 lb/cu ft.
 - Solid Ethylene-Vinyl Acetate (EVA) closed cell foam with density between 2 and 6 lb/cu ft.
 - Pool Noodles
 - While hollow pool noodles will remain legal for 2025, testing suggests that these new materials likely provide better protection.
- Increase bumper to bumper overlap between robots by requiring the bumpers to fill the portion of the BUMPER ZONE between 2.5 in. and 5.5 in.
- Disallow weaker corner construction options including
 - Mitered corners
 - Wrap around corners

