Team Update 13

General

Week Zero Observations

As noted in this blog, teams should be careful to ensure that their ROBOT complies with G413 expansion limits and robot expansion rules even when filled with FUEL and should also be mindful to keep FUEL inside the FIELD.

Game Manual

7.3 In-MATCH

7.4.3 ROBOT

G413 **Expansion limits.** A ROBOT may not extend beyond any of the horizontal or vertical expansion limits described in R105, R106, and R107.

Exceptions to this rule:

A. If the over-expansion that violates R105 or R107 is due to visible damage and not used for strategic benefit, no penalty is imposed.
B. If an expansion that contributes to a violation of R106 is due to visible damage the team may extend a different component in a different direction, and no penalty is imposed.
C. If the over-expansion is MOMENTARY and is not used for strategic benefit, no penalty is imposed.

Violation: ~~MINOR FOUL, or~~ MAJOR FOUL ~~if the over-expansion is used for strategic benefit, including if it impedes or enables a scoring action~~. Corrective action (such as removing the offending MECHANISM, and/or re-inspection) may be required before the ROBOT will be allowed to compete in subsequent MATCHES.

> The intent of the G413-A and G413-B exceptions to this rule ~~is~~ are to prevent piling on a punitive response to a ROBOT that's already experienced hardship and not leveraging that hardship for gain.
>
> Exceptions are only given for visible damage, as perceived by a REFEREE. Teams should not assume that REFEREES will give an exception for unobservable damage even if ROBOT function is affected.
>
> Teams exploiting the exception to part B by designing in something to "break" will not be given an exception and will likely also be given a violation of G211.
>
> Examples ~~for this rule~~ related to exceptions A and B include the following:
> A. a physical device on a team's ROBOT, whose purpose is to restrain their TOWER mechanism from extending beyond the 30in (76.2cm) height limit imposed by R107, breaks after a collision with another ROBOT. Provided the

ROBOT does not use the now-too-long extension to climb the TOWER, no violation is assigned.

B. a vertical structural member of a ROBOT breaks at the bottom and rotates out such that it exceeds the 12in (30.48cm) limit imposed by R105. The ROBOT then parks such that its extension blocks opponent ROBOTS from reaching the OUTPOST. A MAJOR FOUL is issued.
C. a part of a ROBOT is damaged causing a panel to extend out less than 12in (30.48cm) on one side of the ROBOT. The ROBOT then extends out in another direction to intake FUEL. As visible damage has caused an expansion that contributes to the violation of R106, no penalty is imposed.
D. a mechanism that controls a ROBOT'S intake is damaged in a way that's not visible to a REFEREE and the team can no longer bring their intake back in. The team then extends out in another direction to climb the TOWER. The intake is not visibly damaged, so a violation of a MAJOR FOUL is issued.

The intent of the G413-C extension is to prevent violations for inadvertent mechanism flexing and movement for short periods of time during the MATCH not to provide a pathway to intentionally design less-than-MOMENTARY over-extensions.

Examples related to exception C include the following:

E. A ROBOT has a mechanism deployed out over one side of the ROBOT PERIMETER which, due to ROBOT movement or a collision, flexes MOMENTARILY beyond the projection of that side of the ROBOT PERIMETER. As the action is less than MOMENTARY and not used for strategic benefit, no penalty is imposed.
F. A ROBOT has a mechanism designed to rotate from side A to side B of their ROBOT and MOMENTARILY extends out both side A and B during rotation. This action is used for strategic benefit so a violation of a MAJOR FOUL is issued.
G. A ROBOT has a hopper that when filled with FUEL extends out multiple sides of the ROBOT. This action is used for strategic benefit so a violation of MAJOR FOUL is issued.

For both examples F and G, the ROBOT will likely need to take corrective action before being allowed to compete in subsequent MATCHES.
Note that G211 may apply if a team is intentionally exceeding the expansion limits for strategic benefit.

At the conclusion of the MATCH, the Head REFEREE may elect to visually inspect a ROBOT and remove the violation if the damage is verified.

7.4.5 Human

G425 ***SCORING ELEMENT delivery.** FUEL may only be introduced to the FIELD by a HUMAN PLAYER or DRIVER in the following ways:

A. through the CHUTE,
B. through the bottom opening in the OUTPOST, or
C. thrown over the ALLIANCE WALL from the OUTPOST AREA.

8.1 General ROBOT Design

R106 **Horizontal extension – one direction at a time.** ROBOTS may not extend beyond their ROBOT PERIMETER in more than one direction (i.e. over more than 1 side of the ROBOT) at a time. The extension may not reach outside the projection of that side of the ROBOT PERIMETER.
For the purposes of this rule, a round or circular section of ROBOT PERIMETER is considered to have an infinite number of sides. Exceptions include:

A. BUMPERS
B. Minor protrusions excluded from the ROBOT PERIMETER per R101
~~C. MOMENTARY and inconsequential extensions in multiple directions~~

Teams are responsible for maintaining compliance with expansion limits and subject to violations listed in G413 for any violations during the MATCH. ~~Examples of MOMENTARY and inconsequential~~ G413 includes an exception for MOMENTARY actions that are not used for strategic benefit such as ~~include~~ a wire or cable tie swinging out of the ROBOT PERIMETER, including while an extension is deployed out a different side.

Examples of compliance and non-compliance of this rule are shown in Figure 8 3.

Yellow bars represent the limits of the ROBOT PERIMETER and are drawn in the same orientation of the ROBOT'S PERIMETER.

Green bars represent a measured extension from the ROBOT PERIMETER that does not exceed the limit defined in R105.

- ROBOT A violates this rule for extending in more than one direction
- ROBOT B violates this rule for extending in more than one direction
- ROBOT C does not violate this rule
- ROBOT D does not violate this rule as the additional extension is ~~momentary and inconsequential~~ MOMENTARY and is not used for strategic benefit
- ROBOT E does not violate this rule
- ROBOT F violates this rule for extending in more than one direction by extending over a round segment of ROBOT PERIMETER.

Figure 8-3 has adjusted image for ROBOT D.