SAE INTERNATIONAL

BAJA SAE 2023

Technical Inspection Bulletin

Introduction

- **It is your responsibility to read the rules and prepare your car accordingly. This document provides supplemental information.**
- **Be sure to read all the technical bulletins.**
- This bulleting will cover some of the rule's changes for 2023.
- This bulletin will also offer guidance on how certain rules will be enforced.
- If you are unsure about a rule, you can make use of the Rules Question feature on BajaSAE.net.
- Many rule changes were implemented to simplify the technical inspection process and reduce time spent in technical inspection while maintaining a sharp focus on competitor safety.

Outline

- Rules Changes
- Roll Cage
- Kohler Engine
- Vehicle Controls
- Driver Restraint
- Fuel System
- Cockpit
- Guards
- Vehicle Identification
- Technical Inspection Data

2023 Rule Changes

New Engine Supplier

- Teams are now required to run the Kohler CH440 engine. Please be sure to read the rules and understand the requirements around the new engine. **Submit a rules inquiry if you are unclear on something in the rule book.**

4-Wheel Drive/All-Wheel Drive

- 4WD/AWD is required for the 2023 season. Teams unable to demonstrate a working 4WD/AWD system will be assessed a penalty.
- Be sure to review section B9 of the rule book for guarding requirements.

The changes listed above are notable significant rule changes from prior years and are not an exhaustive list. You are responsible for reviewing the rule book in its entirety and complying with all rules.

Roll Cage

The most common items with frame inspection include:

- Unsupported bends in the RRH
  - >33 inches between Point B and Point S
- FBM_up
  - Extending longer than 40 inches between named points Point C and Point D
- Members holding seat belts
  - Mitered/Bent tubes cantilevered off of other tubes are not acceptable
  - Members hold seat belts should be lateral members between the RRH and LDB
- Driver clearance to the outside of the roll cage
  - Drivers must be able to steer lock to lock and maintain the minimum 3” clearance to their hands

Kohler Engines

- High speed screw adjustment
  - Please make sure that you are complying with the requirements for high-speed screw adjustment laid out in B.2.7.12

- Good news in the throttle setting department
  - There will be no hard stops on the engine to be checked during technical inspection
  - Throttle setup with be completed by Kohler during engine check

- A Kohler in line fuel filter will be required
  - Filter must be located above the splash shield

Vehicle Controls

- Proper brake line routing continues to be an issue for many teams.
  - Brake lines must not be stretched in tension, even at the extremes of suspension and steering motion.
  - Brake lines must be routed with large bend radii, and away from pinch points.
  - Brake lines and other brake system components must not hang below the car or be exposed to damage from the track.
  - Brake hoes must not be kinked or pinched as to damage the hose.

You can refer to the document “A Guide to Successful Baja SAE Technical Inspection available on BajaSAE.net under Series Resources for more information.

Drive Restraint

- Driver restraint problems were observed in three ways:
  - **Mounting:** Frame tabs mismatched to fastener size, mounting tubes cantilevered or not meeting secondary member requirements, and tabs with weight reduction cutouts.
  - **Redirection / Abrasion:** Redirections around seat, abrasion from firewall, redirections over seat bolsters.
  - **Geometry:** Shoulder belts mounted too high or too low, lap belt angles too high, anti submarine belts mounts forward of the chest plane, insufficient adjustment capacity, adjuster/buckle with insufficient slack. Note an update to later spacing for shoulder belts in B4.2.4.2 for 2023.

Fuel System

- Fuel System problems centered around three items:
  - **Tank Mounting**
    - Over torquing of the tank mounting hardware leads to excessive deformation of the rubber washers
    - With the above mentioned over torquing there were many teams that didn't fully tighten the tank bolts and there were able to be rotated by hand.
    - Note a new requirement around metallic washer diameter in B.6.5.1
  - Please make sure that you are complying with the requirements for high-speed screw adjustment laid out in B.2.7.12
  - **Splash Shields**
    - The splash shield must protect from fuel being poured on the engine, and the shield must divert fuel away from the engine and away from hot exhaust components.
    - Splash shields must be mounted with sufficient clearance to the muffler.
    - *Teams are encouraged to construct broad, full width splash shields*

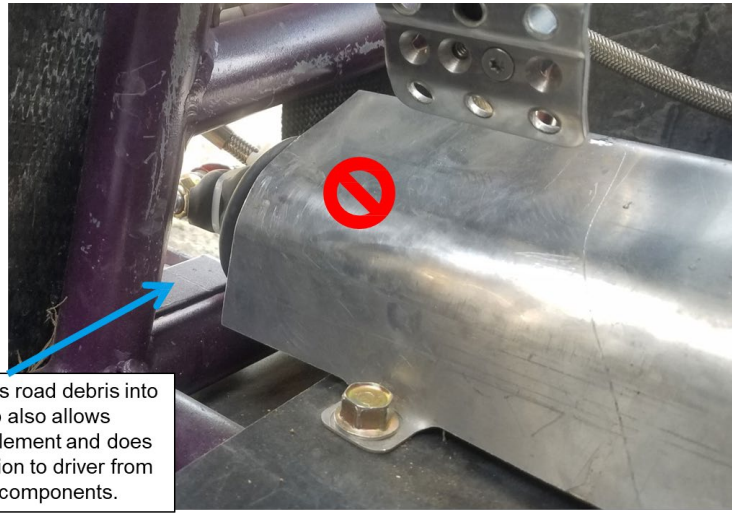
      Metallic splash shields are required. Connections below the splash shield other than to the carburetor are **prohibited**. Bulkhead fittings through the splash shield are **prohibited**.

Cockpit

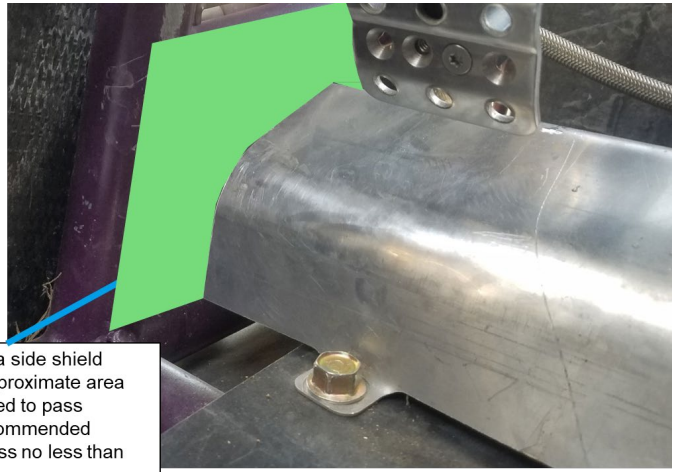
- **Fire Extinguisher**
  - Due to durability concerns, we recommend using no lightening holes or cutouts in the tabs mounting fire extinguishers.
  - The use of the fuel tank “C” brackets will be acceptable for mounting the fire extinguisher (Refer to B.6.5.1 for tab requirements)
  - Hose clamps should be positioned close to the driver as not to interfere with a track worder reaching for the extinguisher pull knob release.
  - Be sure your fire extinguisher has the factory seal/tag that retains the pin. **Fire extinguishers without the factory seal will not be accepted.** The use of zip ties to retain the pin is not acceptable.
  - Nozzle must be pointed in one of the directions:
    1) Pointed directly at the firewall
    2) Pointed out of the vehicle away from the driver

Cockpit

- **Steering Shiedling**
  - The tie rods, tie rod ends, and steering rack must be completely covered by the steering box cover.



Large gap allows road debris into the cockpit. Gap also allows room for entanglement and does not offer protection to driver from broken steering components.



The addition of a side shield covering this approximate area would be required to pass inspection. Recommended material thickness no less than 0.0625 inches.

Guards

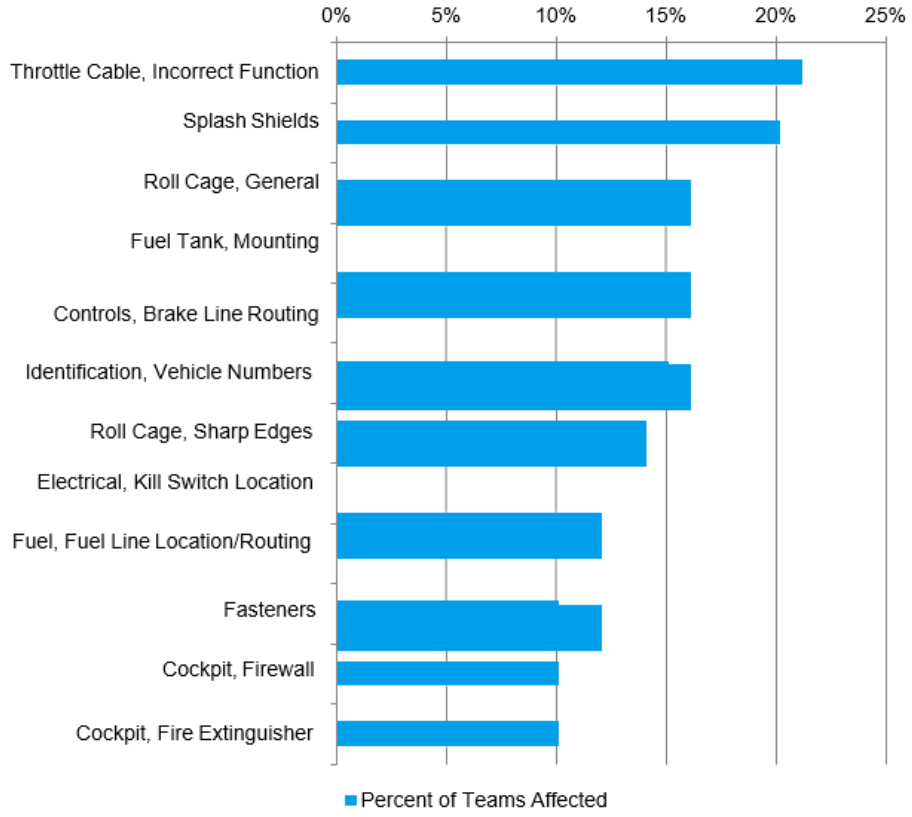
- **Guards**
  - Guards should be durable, and securely attached to the vehicle.

    Technical inspectors will try to shake or move guards when they are installed on the vehicle.
  - Finger guarding should prevent a searching finger from contacting rotating equipment.
  - Bare shafts in the final drive are allowed in B.9.1. bare shafts are considered to have zero features. For example, a bare shaft with a keyway is considered to have a feature (the keyway, with or without keystock). The shape change of the keyway provides a feature which may injure a searching finger and must be guarded.
  - Bare shafts rotating faster than the final drive are not allowed per B.9.3/.
  - There are specific guarding requirements for 4WD/AWD vehicles with driveshafts passing through the cockpit. Section B.9 has been reorganized in the rules to help with clarity regarding 4WD/AWD. As always please submit a rules question if you are still unclear abut something.

Vehicle Numbers

- **Tech inspectors will be giving extra scrutiny to the vehicle numbers.**
- **Numbers must be:**
  - Of the required font and weight. (Century Gothic BOLD or Highway Gothic)
  - Have a minimum height of 6 inches
  - Have minimum edge clearance of 1 inch.
  - Be of one color
  - Be placed against a single-color background that is highly contrasting with the numbers.
  - Be horizontal (+/- 3 degrees)

Technical Inspection Data (2019)



2019 Baja SAE California Missed Technical Inspection Items

- At recent competitions, very few teams needed major roll cage modifications.
- Throttle cable function, roll cage design, and splash shield design continue to be the most common issues.