

Baja SAE Technical Inspection Bulletin

2016-3



Introduction

- This bulletin will cover technical inspection issues experienced during the first two competitions of 2016 (Tennessee and California).
- This bulletin will also offer guidance on how certain rules will be enforced.
- The 2016 BSAE competition year has several new rule changes.
- It is your responsibility to read the rules and prepare your car accordingly.
- If you are unsure about a rule, you can make use of the Rules Question feature on BajaSAE.net, or ask fellow competitors on the BajaSAE.net forums.

Outline

- Fire Extinguisher Mounts
- Seat Belts
- Kill Switch Mounts
- Driver Equipment
- Seat Mounting
- Brake Lines
- Throttle Cable
- Frame
- Black Flag Statistics

Fire Extinguisher Mounts

- Overall the new fire extinguisher mounts continue to work well.
- There were a few issues found in technical inspection:
 - Accessibility to pull knob
 - Extinguisher clamp positioning
 - Proper fasteners
- Since 2015 there have been zero fire extinguisher mount failures.

Fire Extinguisher Mounts

1. Appropriate hardware (Flat-head socket head cap screw that fits the hole)
2. Proper clamp routing through notches
3. Clamp hardware positioned away from pull knob.



Fire Extinguisher Mounts

- Improper hardware for mount design.
- Insufficient clearance around pull-knob.
- Sharp edges near pull knob.



Fire Extinguisher Mounts

- Improper hardware for mount design.
- Insufficient clearance around pull-knob.
- Sharp edges near pull knob.



Fire Extinguisher Mounts

- Make sure the clamps are positioned to not present a hazard to track workers reaching for the extinguisher.
- Make sure the clamps are positioned to not snag the driver's clothing as they exit the vehicle.
- Check to see you have sufficient clearance and access to the pull knob.

Seatbelts

- Tech inspectors found several cars where the belts were out of adjustment. Belts must have room for all drivers and still have room to be adjusted tight or loose.
- A few teams were required to move their anti-submarine belt mounting point because it was too far forward, twisted, or redirected too much. Always refer to the installation instructions.
- Some teams still install seat belt tabs in bending. Make sure the seat belt loads are directed to the frame in tension.
- Lap belt angles must be such that forces are directed to the hip bones and not the drivers stomach/intestines. The lap belt angles will be the final deciding factor for mounting point location questions.

Kill Switch Mounts

- Issues with kill switches included:
 - Insufficient Clearance
 - Improper Angle
 - Lack of graded fasteners.

This kill switch had the proper and graded fasteners, but did not have sufficient clearance for access by track workers.

The switch is set back laterally from the edge of the frame, and longitudinally too close to the RRH. This position makes it difficult to actuate the kill switch.



Driver Equipment

- CHECK YOUR DATES – several teams were sent away because their equipment:
 - Did not have a date tag.
 - Was expired.
- Do not remove any SFI tags.
- Check your helmets for the Snell sticker **under the helmet liner**. See 2016 rules for a photo of the sticker.
- Many date tags are not coincident with the SFI tag. The date tag is sewn on in a different location. See photo in rule B10.5.3
- Wrist restraints must be separate items left-to-right. Wrist restraints joined with a common ring in the center are not acceptable.
- Make sure your wrist restraints have plenty of adjustment to keep your arms within the vehicle.

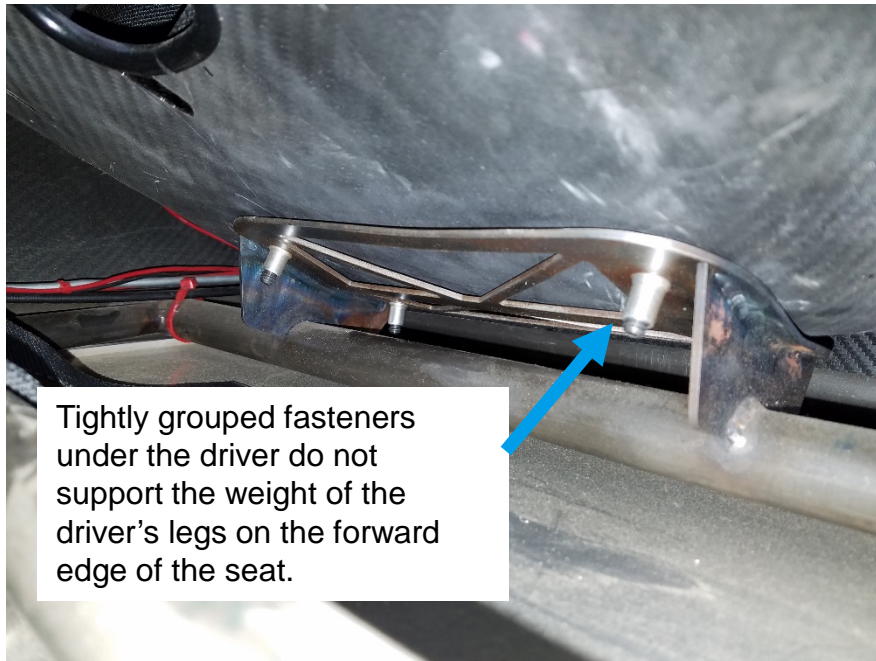


Seats and Seat Mounts

- A few teams showed up with conventional seats that were constructed of very thin and flexible carbon fiber. These seats did not meet the requirement of “generally rigid”.
- Most commercially available aluminum, steel, or composite seats are considered “generally rigid”.

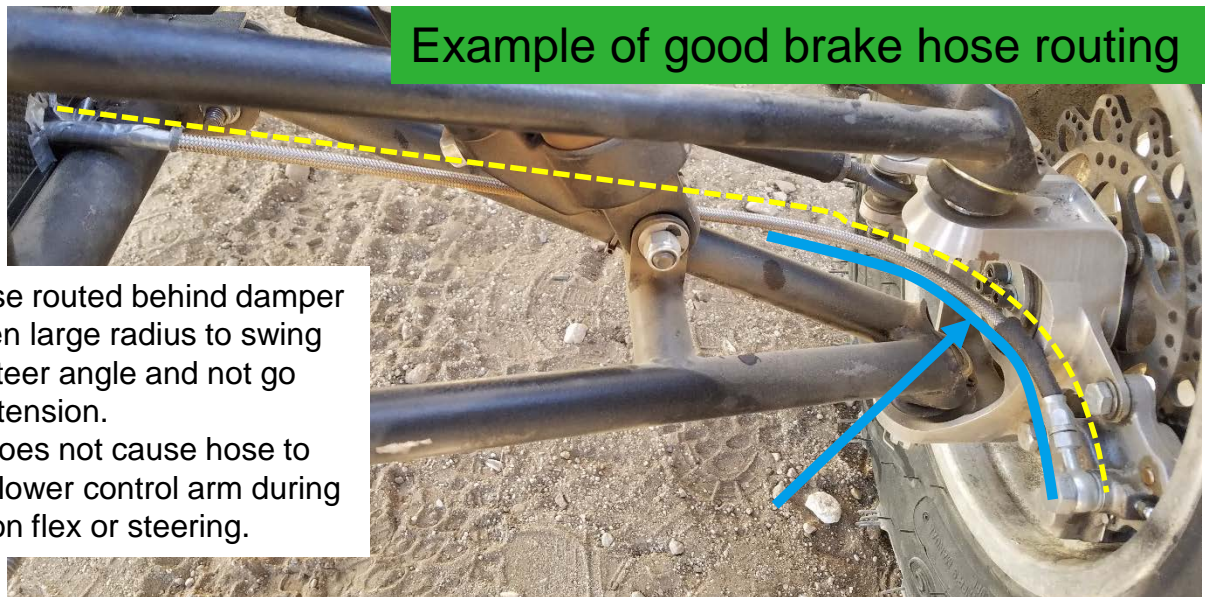
Seats and Seat Mounts

- Some teams are concentrating their seat mounts in a small area right under the driver. These types of mounts fail to evenly distribute vertical load (B10.7.3) and do not work with the safety harness to secure the driver within the envelope of the roll cage (B10.7).



Brake Lines

- Many teams at California did not have properly routed or assembled brake lines.
- Brake lines should be routed to:
 - Avoid being pinched by suspension parts
 - Have full range of motion in steering and suspension motion.
 - Never be loaded in tension at the extremes of steer angle
 - Have high clearance to prevent from being pinched or severed by obstacles.



Throttle Cable

- Many teams spent long hours fixing their throttle cables in California before passing tech inspection.
- The throttle cable and pedal system must actuate the throttle arm on the engine from idle to full throttle.
- Idle position is with the throttle arm all the way to the left (when facing the flywheel) and contacting the edge of the throttle plate.
- Full throttle position is with the throttle arm all the way to the right (when facing the flywheel) and contacting the edge of the throttle plate.
- The throttle system must have a positive forward stop at the pedal, and return to idle when released.

Frame

- You must have all frame documentation ready and available during frame inspection. Failure to be ready will delay your inspection and others behind you. You also risk being sent to the back of the inspection line. Online submission for frame pre-check does not count.
- LFS Tubes are PRIMARY members and must be constructed of proper size and material tubing.
- LC between point C on the roll cage must be located at the start of the bend (RHO side). (If RHO and FBM are the same tube.
- Holes in the frame larger than 1/8" need to be reinforced with a welded in sleeve. See next slide for details.

Frame

This team, one of a few, had holes drilled straight through critical frame tubes. This tube was used to mount seat belts.

One of these holes was used for a seat back plane mount, another for seat belt lateral restraint bolts, and a third was hidden by the seat belt. This team was required to weld in reinforcing inserts to prevent crushing the tube when installing the seat bolts.

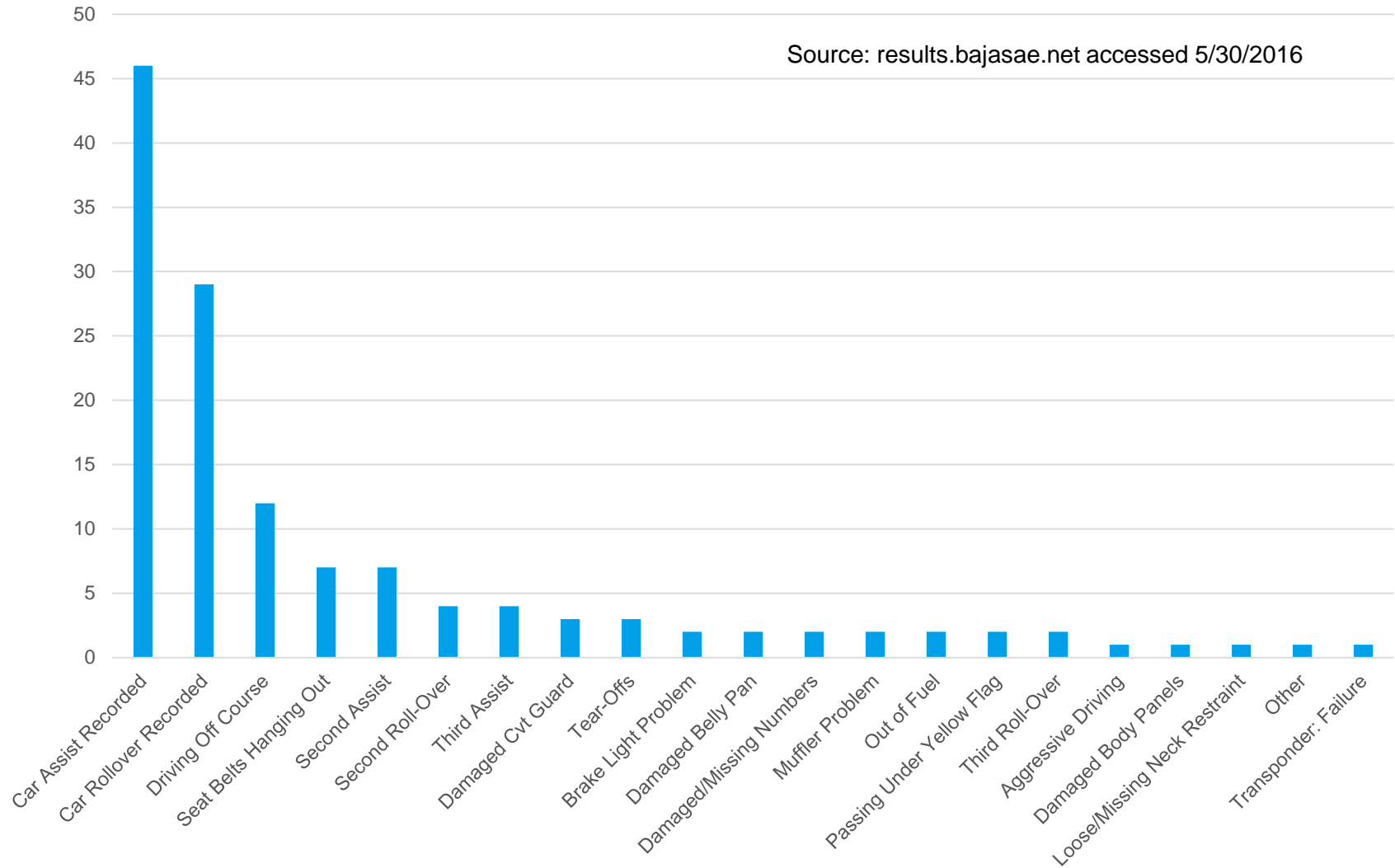
Black Flag Statistics

- DES, Digital Engineering Solutions, creator of BajaSAE.net, the online rules inquiry, and live event scoring has developed new black flag tracking software.
- The software is used by race officials to keep track of penalties and safety issues throughout the race.
- The following slides show details of the black flag calls made during the endurance race at California.

Black Flag Statistics

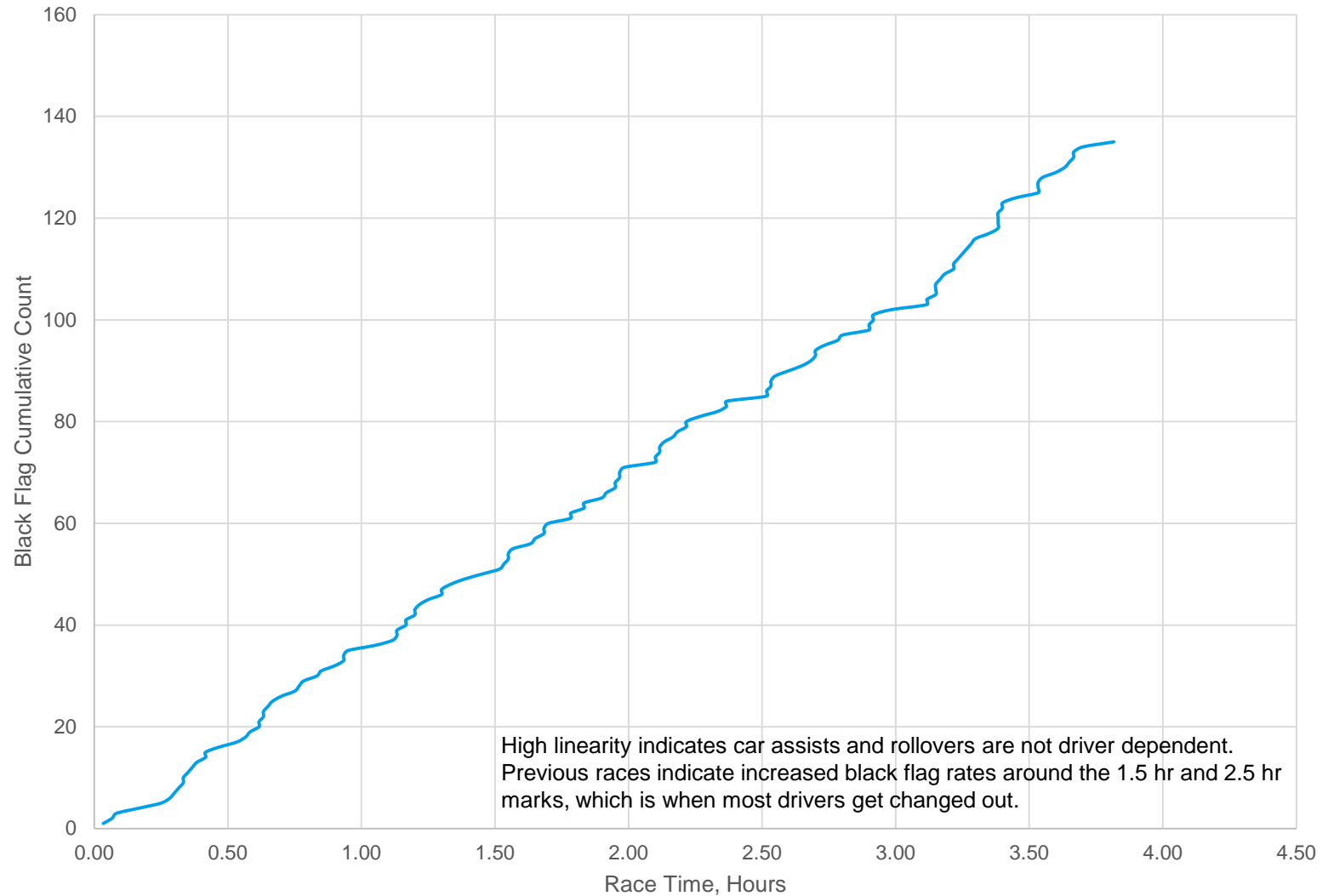
BSAE California 2016 Black Flag Types

Source: results.bjasae.net accessed 5/30/2016



Black Flag Statistics

BSAE California 2016 - Black Flag Time History



Summary

- Safety first!
- Check and double check all of your documents, driver equipment, and vehicle safety systems.
- Make use of BajaSAE.net rules inquiries if you are unsure of the interpretation of a rule.
- Make use of BajaSAE.net forums and ask fellow competitors for input.
- Read “A Guide to Successful Baja SAE Technical Inspection” on students.sae.org.
- You are responsible for reading the rule book and preparing your car accordingly.