

## Crash safety

Posted by Big Dog - 17 Oct 2008 13:37

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I just got (or read) the September issue of Velocity, the POC mag. There is an article &quot;Crash Protection Revisited&quot; in the issue. Following are some of the highlights.

NASCAR is the most progressive group in responding to crash issues. They also have the most experience with 3,000 per year. With all of their cameras and other gear, they have lots of data.

NASCAR seats are the safest!

Multiple impacts in a crash are the rule.

Tight belts are VERY important but still allow more body movement than one might expect.

The lap belts must be loaded first and 6 point belts do that best.

The double crotch belts must be anchored in the same plane as the lap belts, in other words, the best place is the same place is where the lap belts mount.

This loads the lap belts first, the upper torso next and the Hans last.

A seven point harness adds a seventh belt to anchor the driver down into the seat in case of a rollover, NOT as an anti-sub belt.

5 point belts do not work!

Make sure the belts cover the Hans completely from top to bottom.

The seat is the foundation of everything. If the seat breaks, the rest of the restraint system doesn't do much. Most crashes involve side impacts (remember that most crashes involve multiple impacts) and the seat is the primary source of side impact protection. The three areas of side impact protection are the hips, shoulders and head/neck. All three must be protected by the seat.

There is a LOW opinion of plastic seats!

The seat can't be TOO strong and NASCAR has the BEST seats.

Wearing cotton/nylon under a fire suit is a BAD idea. It is better to wear nothing at all. Nomex underwear is much better.

Heat stress is a BIG deal to avoid to help in avoiding crashes by helping with mental functions.

The presentation may be available from the SCCA. I will try to get it and let you all know so anyone that wants to see it can.

Safety first, gentlemen.

Big Dog

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## Re:Crash safety

Posted by pixrken - 17 Oct 2008 14:23

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Hi Big Dog,

I thought this issue is too important to be in the NorCal subsection and moved it to Race Car Build instead.

Is this report available online?

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## Re:Crash safety

Posted by rd7839 - 18 Oct 2008 03:28

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I certainly don't want to be the one who says safety is not important but i think that report is like comparing apples to.....well maybe small apples. There are major differences in our type of racing and NASCAR's. The biggest, I believe is also my major disagreement with the safety study they did; the seat is not the cornerstone of safety, the DRIVER is. NASCAR even at the local level is populated with drivers all trying to get to Sprint Cup. They try to make a name for themselves to attract attention. They tend to be VERY aggressive and take chances we don't. For us there is no big name sponsorship deal waiting for the winner, no big prize money to help pay for the \$20,000 race motor, and no autograph seekers who can say I knew him when. I know when I get on the track with my fellow 944'ers, I can count on them to race me safely, give me room when I need it, and I believe they know they can expect the same from me. Last race at Thunderhill Jerry made an incredible pass on me in a corner where nobody passes. I could have easily squeezed him out, running him off track but that would have been dangerous for both of us. Although I didn't expect the move in that corner I knew he was there and I have a lot of respect for his driving and him as a person so I gave him the room. I was also very excited for him, it truly was a great move. I watched a video I believe from the Rocky Mt. area where a guy made an incredible sideways pass and what struck me was the guy being passed was actually cheering. I think that attitude goes a long way to making us safe.

I think our biggest safety issue now is not necessarily our gear but the tracks we race on. We had a serious crash earlier this year at Infineon that had this been at Thunderhill or Buttonwillow, he would still be cleaning out dirt from inside the car. Instead he hit a concrete wall at a very high speed. I was there when Dale Earnhardt jr hit the wall at Infineon on the warmup lap. VERY minor spin that ended up being ugly. I did some laps in a 4 cylinder car on a paved oval and the first thing I noticed when I tried to go flat out through a corner was the concrete comes up very fast! Throw 30 more cars on the track and it can get very dangerous.

I guess what I'm trying to say is lets not have a knee jerk reaction to safety. We made big strides this year with the HANS rule and we use safety gear that has performed well for us. Respect for other drivers and knowledge of your own limitations should be our primary focus, except maybe going home to our families Sunday night.

Racing is dangerous, that's part of why we do it. I accept that risk. Every time I load my car on the trailer I know that either I can come home with a first place trophy or not come home at all. I do my best to limit the chances of the latter while dreaming of the former. REASONABLE safety is what I advocate. A NASCAR approved Lajoi racing seat costs more than my whole car while my seat is used in British Touring Car. Remember our forebears drove with no safety belts, no rollcages or fireproof undies. We've come along way since and can still come further but I for one don't want to be wrapped in 3 foot thick fireproof bubblewrap.

I trust my TC Designs rollcage, my self, NASA, and most important;y my fellow racers.

Ron Dale

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**Re:Crash safety**

Posted by Gary\_44 - 18 Oct 2008 12:09

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**Big Dog wrote:**

The seat is the foundation of everything. If the seat breaks, the rest of the restraint system doesn't do much. Most crashes involve side impacts (remember that most crashes involve multiple impacts) and the seat is the primary source of side impact protection. The three areas of side impact protection are the hips, shoulders and head/neck. All three must be protected by the seat.

I'd say the seat is only as good as what it's bolted to. NASCAR must believe that also. They and other forms of racing fabricate the seat mounts into the cage, kind of floating above the floor. In an impact the thin floor will usually deform, and I think it should, to absorb some of the impact. Racers learned a long time ago that making a car into one big rigid cage made the driver into the only deformable part, so building a cage around the driver and allowing the car to deform around him/her is now the goal.

Just something I've never understood about our builds is why this isn't common practice.

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**Re:Crash safety**

Posted by Big Dog - 18 Oct 2008 13:20

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Perhaps my write up was confusing. The article was not about NASCAR or NASCAR racing. It was about crash safety and was in the POC magazine from September. I do not know if it is available on line, Ken, but I will try to scan the article and forward it to you. Failing that, I will provide you with contact information for the editor.

While I agree that our racing is much different than NASCAR and our drivers are less aggressive. I think the point of the reference to NASCAR in the article, however, is that NASCAR has lots of wrecks that they gain information on crash safety from. Knowledge is KING and they have lots of knowledge to share

with the world on how to be safer.

I agree that the seat should not be mounted on the floor as it can, and most likely will, deform. I seem to remember that Greg's did. I saw one in Arizona that did deform and allow the seat to tilt left into the roll cage.

Another point of the article is that MOST crashes involve multiple impacts. I, personally, agree with this. Multiple impacts mean that we need to protect ourselves from impacts coming from different directions, not just front or rear or side but all of them. According to the article, the seat is the most important part in protecting us from side impacts.

As to the cost of seats, a LaJoie seat may cost several thousand dollars. My Butler Built seat cost about \$500. From my research, this is less than many, most of the seats out there. Butler builds lots of NASCAR seats. While mine may not be exactly like a full NASCAR seat, our speeds are much lower, therefore the energy is much lower. I love my seat. I feel much more comfortable in it and enjoy my racing more because I feel that I have given myself every advantage in the event of a crash. Crashes can come from my mistake, another's mistake, equipment failure, track surface issues and many other things beyond my control. Crashes don't need to be because of "aggressive" attitudes.

While track safety is an issue, my only personal choice is to choose to race at a track or not. Tracks are getting safer, cars are getting safer, equipment is getting safer. Great!

Regarding deforming, I believe that is exactly what we do when we build our cages. The rest of the car should deform, shed parts and dissipate energy to keep it away from the cage and the driver. Mounting the seat on the floor is a poor choice as the floor will deform, it is supposed to. In the cars I have looked at, the cage was generally undeformed by the crash. Our cars deformed outside of the cage with the sole exception of the floor (that the seat was mounted on). For me the lesson is clear. Our cars are incredibly strong. They protect us very well, except for the floor issue. Adding the cage makes it even better.

From my perspective, incorporating every possible safety advantage I can is my responsibility to myself, my fellow drivers and my family. That is my choice. Everyone gets to make their own choices. I am simply sharing information in case it helps someone else. I won't even go out in a DE session to scrub tires without full gear, hans, suit, etc. I believe that the one time I don't, that will be the time something happens, either my own error or someone else's.

Be safe, drive hard, have fun!

Big Dog

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