2012 Rules Change Proposals Decisions

Posted by Sterling Doc - 10 Nov 2011 20:22

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While the wording is still in progress, I wanted to get a draft of the decision on the rules change proposals out there now. The intent is to have the final wording of the approved changes off to NASA by Dec 1st.

1) Ram Air

-No change to current rule.

There was a lot of discussion on this, as many good points were raised on both sides by the drivers on the threads. There was clearly divided opinion on this on the forums. Interestingly, the comments when this was clarified last year were uniformly positive. In the end, it was felt that there was not enough evidence that this would be problematic to warrant overturning what is now an established rule. We thought through the case of the 924S, and decided that any potential disadvantage (if any) of not having the foglight to duct through is offset by the 924S's known aero advantage. If there is significant data to the contrary, we will look at that next year.

2) Header coating

-Denied

There was little support for the need for this (outside of the requesting driver) on the forums, or elsewhere. Cost and performance concerns outweighed the claim of improved engine longevity, which was deemed doubtful

3) Castor block mount repair

We decided to allow repair of this, just as crash damage can be repaired. It is incumbent on the racer that the end result retain OEM geometry, and alter the original structure in the minimum way required to

effect the repair. Phil's specific proposed fix to his car was thought to be reasonable, as a guide. No new rule required

4) Turbo valve springs

-Allowed

[i] After further research to establish no reasonable performance benefit from turbo valve springs, the cost savings was thought to warrant a rule change (Apologies to BJ, who requested this last year!)

5) Urethane in windows of the transmission mounts.

-Allowed

Some research indicated that does this may improve CV joint life. While this research was not conclusive, the minimal cost of this modification was not thought to be prohibitive. Also noted was that this modification may save the cost of a new trans mount, which is quite expensive

6) Enlarge oiling hole for crank.

-Allowed, but definition needed

Rod bearing failures, while much less common with cross drilling the crank, are still seen. A simple modification to improve oil flow to this problematic area was thought to have merit

7) Lexan Hatch

-Denied

The cost for implementing this class wide far outweighs the potential benefits, which were deemed to be minimal. There was little support for this outside of the requesting driver. This ruling is highly unlikely to change in the future

8) Turbo Oil FIlters

-Allowed, no rule change needed

Oil filters are not regulated

9) Allow replicating plastic ducting to radiator

-Allowed

Many times these plastic parts are missing, or broken on donor cars, and are critical to maintaining cooling. Replicating this ducting is encouraged if it is missing. No restrictions on materials for this

10) Allow Turbo Axles

-Approved

Late turbo axles are both stronger, and cheaper than the N/A ones. Some suppliers, such as Paragon, have superseded the N/A part with the Turbo one. Dimensions, and performance potential, are the same. The turbo axle has 25 splines, and the N/A, 33 splines. Many of you may have turbo axles in, and not realize it. This rule makes that clearly legal.

Further discussion points among the series directors for future rules consideration:

We have been collecting data from the best motors at Nationals, and elsewhere.

There is increasingly solid evidence that shaving the head on a 9.5:1 piston motors does not allow the same performance *potential* as the 10.2:1 compression motors. The increasing scarcity of of '88 pistons is also becoming an issue. Over the next year, we will be taking a close look at defining the difference in performance potential, and considering options to bridge that gap.

We will also be looking at ways to alleviate issues in parts availability, possibly through aftermarket suppliers, and possibly through rules adjustments. It is too early to go into details about this, but we want to be proactive on dealing with these issues.

None of this impacts next year directly, including the 2012 Nationals.

Expect these bigger issues to be tackled for the 2013 rules.

Keep in mind, that if you are spending extra money building an '88/10.2 compression piston motor this year, the advantage of doing so, may be short lived.

Let me be clear that we will *not* be outlawing '88 motors. They have been, and will remain legal.

However, a carefully executed performance adjustment on the '88 motors, or allowance for the low compression motors is very possible for 2013. We will be looking into, and testing options over the next year.

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Re: 2012 Rules Change Proposals Decisions

Posted by Sterling Doc - 15 Nov 2011 14:55

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loftygoals wrote:

Sterling Doc wrote:

BJ, here is a link to the dyno results from the best motors at Nationals.

Thanks for the data! You don't have any of the tq plots do you? I'd be interested in slightly lower than 4k, too. With the wide gearing in our transaxles, 3.5k is important. There are a lot of corners where you "bog" down low in third, because you'd run out of revs too quickly if you use 2nd.

I will try to get some of my own dyno information together over the off season. I think I could get 3-4 of the Texas cars on the dyno for some investigation.

I'm willing to bet that I can find a few secrets in these motors. I don't like secrets in a spec series, so I will of course share anything I find. As much as I'd like to build every spec motor in the country, I don't want this to become like some other spec series where you have to buy a $20k motor from a shop that knows the recipe for the secret sauce to run out front.

-bj

-bj

BJ, I entered all the data using the original plots, and a ruler, as each dyno was on a different scale. The look much more different when put on the same plot! It would take me a while to go back, and do the TQ, or 3,500 RPM plots. I'll see if I can get to it, but it will be a while.

I very much agree that keeping this info public is best for the series, and appreciate the help that you and others have given to make it so. We are looking into many options to balance the motors cost effectively, but we need to do some testing first. We are in the process of gathering the motors, and parts to do this right. We need GOOD data, more than we need it fast...

Have you double checked the port volumes? I've never heard the ports themselves were different between the early and late heads, just the combustion chamber shapes. This would be good information to have verified.

Post up your info when you get it.

Thanks!

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Re: 2012 Rules Change Proposals Decisions

Posted by dmdirks - 15 Nov 2011 22:30

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Sterling Doc wrote:

This would seem to support your theory, however, Dave Dirk's results would not be consistant with that. I'll let Dave fill in the details of his results, if he feels comfortable with that.

Just for the record, your engine has 9.5:1 pistons and max shave (0.892"?). My engine has 10.2:1 pistons and the head was shaved to 0.935", so it's not really an apples-to-apples comparison.

I'm not sure we can isolate the ports in the 6R head as the cause for your power drop-off at high rpm. There are other variables which we don't know, such as:

- Do we know your fuel and ignition systems were working perfectly? I seem to recall you were running below 12.0:1 A/F.

- Do we understand the effects of reshaping the combustion chamber by shaving the head to min for 9.5:1 pistons? This effectively removes the shallow "shelf" above the spark plug.

- Perhaps something else is wrong mechanically? I have found intake manifold gaskets installed incorrectly, effectively blocking off a portion of the intake runner.

So basically we need to take a step back and look at this as a system first.

BJ- may I ask how were the volumes of the ports measured? If this was done with the valves installed, different valve types and seat heights will affect this measurement.

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Re: 2012 Rules Change Proposals Decisions

Posted by joepaluch - 16 Nov 2011 05:06

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loftygoals wrote:

joepaluch wrote:

The issues of spinning rod bearings is complex...

Great summary of the issue, Joe. I should have mentioned that I agree that #2 gets the least oil and it is the most commonly effected when there is a problem.

Sterling Doc wrote:

ISV / Auxillary air valve can be deleted or disabled. Associated lines must be plugged if deleted. It is recommended to maintain factory idle control.

Sounds good, but why is it recommended to retain? Is the deletion of the venturi valve covered under updating and back dating? I don't believe the 88's had the venturi.

-bj

Because no idle control valve screws up the idle. The ISV and Aux Air Vavle are designed to make the car idle properly when cold or hot. When they are missing or don't work you get funky idle. Bad things can result. Nothing terminal, but it is a pain. IMHO the cars work better when the idle properly in all conditions.

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Re: 2012 Rules Change Proposals Decisions

Posted by joepaluch - 16 Nov 2011 05:23

Don't forget also there is a slight revision to the late cam vs the early cam. I believe the exhaust duration changed slightly. Not to metion a cam can wear down and cause issues of its own.

Also there could be other factors such as oil weight, or gearbox oil weight that could be a small influence. The thing to consider is that when looking for 2-4 hp type numbers on a chassis dyno there are lots of noise factors. Carefull planning can try to deal with these, but at somepoint you have to just say the dyno method can't resolve below a certain HP spread. I tend to think that at 2 hp forget it. Trying to determine a 2 hp difference between two cars is frought with challanges. Once you get 4 or 5 you are starting to see something.

We also need to put in perspective that 2-4 hp range is pretty good considering we are using old motors with various number of hours on them and initial produced over a 5 year period. At somepoint you just have to say enough.

To me we do need to understand the impact of 10.2:1 pistons vs 9.5:1 and have some understanding on how shaving can close the gap. Even so we can never ensure two cars on grid will have idential peak power or power curves. If we were dealing with all new motors and had the money to spend to ensure all motors were perfectly identical then maybe. However given that fact that mostof our best part sources are junk yards we have realize we can never be 100% equal. We just need to do the best we can.

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Re: 2012 Rules Change Proposals Decisions

Posted by Sterling Doc - 16 Nov 2011 05:30

Dave, I certainly agree that my result seems like an outlier, and are in no way conclusive, only interesting.

We don't have AFR's on the compliance dyno, but the particular dyno I referenced on my car was done on earlier the same day, and does have AFR's, though I'm not sure they are ones I trust - the probe fell out of the exhaust halfway through the second run, and was pretty variable when it was "in" . My recorded AFR's varied between 13 and 14 until about 5,200, and then went up to between 14 & 15 from there. Based on that data, I moved my AFM one click richer, but did not have time to retest. Strangely, when I went for my compliance dyno later that day after the race, that change cost me nearly 5 HP, and 8 ft. lbs or torque (DOH!) I need to go back, and look at what my Traqmate recorded my AFR's at, as I'm not sure the dyno AFR's were correct. The configuration of my exhaust may have caused issues with the AFR readings.

I have another shaved 6R head on that motor now (though slightly less shaved than the other one). It wold be interesting to retest this, and swap AFM's, etc.

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