

## Fuel Cell Fill Question.

Posted by 1M Fan - 26 Nov 2015 21:04

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I'm a little confused about fuel cells. In building a new car and want to install a small

Fuel cell, 8 gallons or a little larger. The rules say they can be used, but also state you must fill gas via the factory fill. Does that still apply to fuel cells? It will be more expensive, much harder to install and build the bulkhead if I have to plumb the factory fill.

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## Re: Fuel Cell Fill Question.

Posted by AgRacer - 02 Dec 2015 06:04

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I have had tank pressure issues on an off again. Last time I had my trans out I went through all of the lines on top of the tank and replaced one or two things but it didn't really change anything for the positive. When the tank does pressureize, I only really notice a slight fuel smell in the car after the session, and then when I open the cap there is a rush of air sound.

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## Re: Fuel Cell Fill Question.

Posted by Crooks - 02 Dec 2015 08:51

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Ok so the deal with building pressure in the fuel tank has to do with two things.

1) The fuel system circulates fuel at whatever rate the pump will perform; at full throttle a lot of fuel gets used so the recirculation and heat generation is minimized. At idle most of the fuel recirculates and builds up a LOT of heat. (I was working on my fuel cell pick-up and had the car running at idle, within a few minutes the fuel was warmer than bath water). If we sit in the hot pits at idle for an extended period the fuel gets very warm, then we go on track we burn some off some fuel but the vapor in the tank expands and pressurizes the tank. I'm not sure of the numbers but 5 or 10 PSI wouldn't be out of question. That is a lot of pressure for system that was designed to operate at atmospheric pressure.

2) I haven't looked, in detail, at the 944 system but all non-pressurized fuel systems need to be vented from the highest point of the tank to atmosphere the vent tube should not vent into an area that is subject to high heat or sparks as during filling some of the displaced air (fuel vapor) will be discharged through the vent. The vent needs to have a gravity operated valve that will shut the flow off in that event that the tank is inverted (for you guys in the S.E. that's upside down). Our buddy's at the EPA have, with infinite wisdom, determined that the vapor should be incinerated in the engine as gas vapor will poison some ameba or something. This has led to the venting complications we are experiencing.

A good gas cap that has a vent and check valve will solve the issue, also as a side issue, a gallon of

cold gas has more BTU's than a gallon of hot gas, don't let your car idle for an extended period before a race.

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