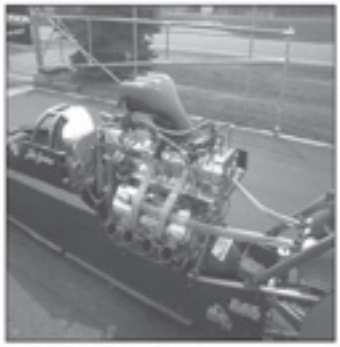
>>TECH STOP *with Bob Szabo*

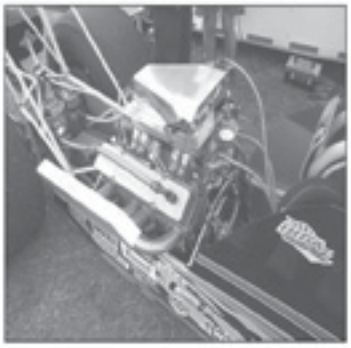
MORE ON METHANOL FOR RACING

Bob Szabo is an owner / driver of a blown alcohol drag racecar and author of the technical book: "5,000 Horsepower on Methanol," a perfect gift for Holidays. While much of it is about methanol fuel for racing, information is also provided about nitro, racing gas, nitrous oxide, and ethanol as well. His first book "Fuel Injection Racing Secrets," also a perfect gift for Holidays, is all about mechanical fuel injection for racing. It is already standard reading for a growing number of IHRA drag race competitors. Check the DRM Yellow Pages for Szabo Publishing or look on the Internet at http://www.racecarbook.com or call (707) 446 2917.

Welcome to a new year. As a continuation from our article late last year on the subject, several more IHRA racers are featured who run methanol. In comparison to racing gas, methanol costs about half as much. It is run at about twice the volume. For example, our blown alcohol bracket car uses 5 to 6 gallons per run. That is much more than typical gasoline racer consumption. As a result, fuel costs are a trade-off. In addition, the racer has to transport the fuel to those races where methanol is not sold. I know from experience that 25 gallons of fuel in the trailer is the norm for an outing. At 5+ gallons a run, my racecar may consume 50 gallons during a long weekend event. Why go to all this trouble? Because methanol has about a 30% tuning window compared to gas that is about 10%. We run our setup in the middle of our tuning window. We can lean it 15% with no damage to our engine. We can richen it 15% and still run well. Some popular & successful IHRA racers are featured next for further illustration.

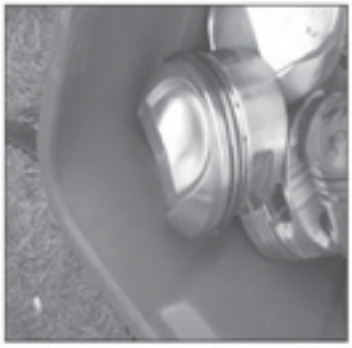


Jody Graham's Top Dragster runs supercharged methanol in a 526 cubic inch Chevy; with a now traditional high flow injector. Graham ran 6.65 seconds at 199 MPH at Norwalk. Roots supercharger with methanol has a very wide tuning range, runs cooler than gasoline, and is easy on parts when it is adjusted properly with reasonable maintenance. Roots blown methanol engines, built with the latest parts, can last a season with little breakdown. Power levels over 1,600 horsepower are really easy to achieve. Levels approaching 2,000 horsepower are also within reach, with a little more supercharger overdrive and high flow cylinder heads.



Bob Bellamy's IHRA ET dragster with unique tunnel ram and a mechanical fuel injection hat on this normally aspired race engine. This setup is proving to be advantageous in normally aspirated applications. The throttle hat assembly traps the air above a plenum. The plenum provides a unique reservoir for the ram tubes. The plenum has a specific minimum volume requirement. The plenum connects to the tunnel ram tubes. The tunnel ram tubes join the intake port for a specific volume of air and fuel that fills the cylinder for each intake valve event. With the proper size plenum and intake tube/port volume in relationship to the cylinder, very high volumetric efficiency can be achieved, yielding high horsepower. Intake combinations such as this can make 600 to 1,000 horsepower from a small block engine in different stages of tuning from less expensive, lower RPM setups to more expensive, higher RPM setups.

Ethanol versus methanol in a Funnycar battle, in front of a pumped up IHRA evening racing crowd, between Mark Thomas' Ethanol Performance '06 Monte Carlo and Thomas Carter's Jawbreaker '05 Camaro. Alcohol Funnycar rules specify a maximum 14-71 Roots supercharger; and are typically run at 50% overdrive for 14,000+ RPM blower speed. Intake manifold temperature is a critical measurement with high overdrive applications such as this. If excessive manifold heat occurs, it is responsible for a dramatic loss in performance. Tuners use ignition retard and/or fuel system enrichment to aid manifold temperature control. Some of the methanol dissociates into other compounds during blower boost (if so equipped) and engine compression. That results in combustion of methanol and the other compounds. Intake manifold temperature has a big effect on the amount of dissociation and the resulting tune-up to compensate.



Racer's bin of various methanol pistons with melted domes and other heat damage. The top of this piston shows a sunken pocket from the top (left side in photo) through the valve clearance pocket. Further heating would have resulted in melting a hole in the piston, burning the wrist pin, and the connecting rod. Some pistons can be burned so badly that the crank case oil is ignited from the burning combustion that is piercing the piston dome. While methanol has a wide tuning range, many teams run it at an air to fuel ratio lean limit. Occasional piston dome melting such as this is the peril. When it occurs, often the upper ring land is collapsed around the upper piston ring. The result can be a scuffed cylinder. Pistons from this team were available at an IHRA national event as souvenirs. I imagine every failed part from a drag racecar has a story: a big win or a big loss. I had a few through the years figuring out normally aspirated and blown methanol race engine combinations.