Tech Chat

With Ken Mortimer

Your BMW requires "benzin". The Norton prefers "petrol". A Bultaco runs best on "gasolina". And Ducati, nothing but "benzina" please. Indians and Harleys ask for "Ethyl", if she's workin'. wink, wink!

To most of us it's just gas.

We all buy our fair share and thankfully have little to think about beyond choosing regular or premium and which station in town is currently cheapest. But an understanding of how the changes in fuels affect our bikes, particularly when not in use, may be helpful.

What do you need to know about gasoline? First off; today's product differs from the fuels of even a short time ago. We all know that lead was removed from North American gas back in the 1970's. And we know that up to 10% ethanol is allowed in Canadian gas. (more about Ethanol later) The fuel companies claim that this has not affected the storage quality and although I can find no hard data, anecdotally I can tell you that today's gasoline has a much shorter shelf life than you may think.

A day doesn't pass that we are not dealing with the effects of stale fuel at the shop. And service schools, tech bulletins and product owner's manuals all deal with the subject.

Gasoline has an octane rating and this is a measurement of the fuel's ability to resist detonation. Higher octane does not result in more power or better mileage in of itself. However fuel companies add more and different detergents to their premium gas so it is possible to feel some benefits over the cheap stuff.

Regular gas in Canada is rated at 87 octane, premium varies between retailers but is in the 93 range. But it doesn't stay that way for long. Octane drops about one point for every month it is in storage.

This probably won't affect your daily use vintage bike but maybe your collection includes a vintage off road machine that sees less use? Maybe only once a year at your section's "Dirt Bike" event?

And think about some of the other, more seasonal use, gas powered items that you own. Chainsaws, grass trimmers and leaf blowers are the most prone as their carbs are the size of an ice cube. As a colleague of mine likes to say, "A gnat's eyeball could block the main jet this carb...". So it doesn't take much gummy fuel deposit to postpone the yard cleanup.

To help prevent future troubles all the manufacturers recommend the use of fuel stabilizers. And not only when storing for the off season. The Stihl company retails their own branded two stroke oil that contains a fuel stabilizer component. And certain lawn mowers sold in the U.S. under the Craftsman label have a system that automatically drops some stabilizer into the fuel tank each time you fill it up. These manufacturer's concerns are proof positive that we are not purchasing the same fuels our grandpas did.

Now you don't need to add stabilizer with every fill up on your motorcycle but it may be something to think about for the "occasional use" bikes you may have.

The big enemy of gas in storage is air, or more specifically, oxygen. As fuel deteriorates some of the molecules break down and evaporate. Others link up and form the gummy deposits that block carb passages. That is why it has long been recommended to fill the tank before storing your bike. This lessens the amount of surface area that is exposed to the air. Fuel stabilizers work by "coating" the exposed area and preventing the air from reaching the gas.

So the best advice for storing your bike over the winter? Fill the tank. Allow some room for expansion. Add the recommended amount of stabilizer, (it will tell you on the product label). Run the bike to operating temp. Close the petcock. Drain the carb float bowls and fuel filter. Running the engine until it runs out of gas will still leave some in the float bowl so it is best to drain rather than starve. (there is much more to a total storage routine but this is another topic, subject to much debate and I'll leave it for another time)

And storing gasoline? Don't purchase any more than you plan to use within 30 days. And rotate your jerry cans. If you find you have some that is iffy, burn it in something that has a large tank and mix it with fresh. More cylinders help too. In other words dump it in your half ton with the V8 rather than your single lung '73 Honda XL100.

Let's say our favourite previous owner, good old Dipstick Duncan has sold you a bike with a tank half full of something he claims was from "just last season...or maybe the one before..." You need to know that there is NO WAY to bring back bad gas. Stabilizer, gas line anti-freeze, Uncle Jim's homemade wine; you are wasting good chemicals adding anything to sour fuel. Dispose of it in an approved manner and flush the fuel system. You may get lucky and fresh gas might be all that is needed. Or you may find yourself having to go much further. (Carb cleaning, petcock rebuilding etc)

Getting back to Ethanol; be more careful if you are running two stroke bikes. Ethanol burns with 43% less energy than normal gasoline and therefore your old smoker will need carb adjustments or possibly jetting changes to prevent lean running. Ethanol can also damage older, (pre 1980's) fuel system components such as rubber lines and gaskets.

In the U.S., Mercury Marine Corp did some fuel sampling from the systems of outboard motors that suffered power head failures. They found up to 30% Ethanol in the gas they tested. How can this be when the limit is 10%? This is due to "phase separation", a chemical process that occurs if enough moisture is introduced into gas containing Ethanol. In a nutshell, the majority of the Ethanol collects at the bottom of the fuel tank. When a dose of this nearly straight Ethanol is introduced into the engine bad things happen. Of course this was the result of using gas that had been stored improperly and/or for too long and is much more prevalent in a marine environment, so no need to panic.

Can you avoid buying gas with Ethanol? One major Canadian fuel retailer says its "unlikely" Ethanol will be added to their premium product. For now. So maybe a change in grade is all it will take.

Some added advice for everyday fuel purchases... Try to buy from higher volume outlets, especially if you are running premium. Also, some folks are wary of filling up when the delivery tanker is on site fearing the process stirs up sediment from the bottom of the storage tank.

(Thanks to our editor for these tips as apparently she has been the victim of somewhat less than volatile fuel purchases in her worldly travels!)

One thing is for certain when it comes to gasoline; times are changing and the changes are not over yet.
Want to read more about Ethanol and two strokes? Check out www.mercurymarine.com

....Ken

This month's favourite product/tool:

In the January Tech Chat I mentioned using an "impact driver". I consider this a must have tool when working on motorcycles. They are available from many sources in either 3/8" or 1/2" square drive and usually come with a variety of interchangeable "bits". Normally Phillips and slot heads are supplied but any socket of the correct square drive size can be used. When struck on their business end with a hammer, an internal cam mechanism changes the striking force into rotation and the sharp blow is just the thing for loosening stubborn bolts etc.

I always advise the buying the best quality you can afford. Beware of the cheapest examples as I've seen some break on the first use. Be VERY careful of using the cheap brand "bits". Perhaps a compromise would be a lower cost impact driver with some good quality socket bits of the type you will need most often.

Remember to take the proper safety precautions when using an impact driver: safety glasses or goggles are a must and never use a hammer with any mushrooming on the face, a loose head or a damaged handle.

Tech Tip for February:

Having trouble fitting the rubber airbox boot (or boots) over the carb throat (or throats)? Honda inline four cylinder with stock airbox perhaps. (bin there-done that-no fun!) Fashion yourself a tool from a coat hanger. Cut a piece of the hanger about 8- 10" long. Make a 90 degree bend about 1/2" from one end. Give the boot a liberal spray with silicone spray, grease-less lubricant, (available from many manufacturers through any automotive or hardware outlet) and then use your tool by hooking the bent end between the boot and the carb and "working" it around the circumference. The tool will help to open the lip of the boot and allow it to slip over the carb throat. You can make whatever bends are needed to fit the tool around the carb, or between multiple carbs.

PS- in some cases I've used two of these tools, one in each hand while a colleague held some pressure on the airbox...

I continue to look for reader input, please e-mail me with your tips and favourite tools or products for inclusion in a future Tech Chat. Thanks, kmortimer@persona.ca

Crossword from John Pepper (answers in March newsletter)