Published in TaT, Issue 40, August 2014.

YOU SAID IT!

Ethanol madness

This Civic arrived at our workshop running very rough.

The scan tool read multiple misfires on all four cylinders.

We asked the owner if he had been fueling with E10, and he denied using it. (Apparenty most people are in denial over ethanol use, perhaps because they don't want it known that they buy cheaper fuel.)

Nevertheless, we decided to go on our gut feeling and hook up a Coda flow pressure fuel gauge.

A water mix was clearly visible in the sight glass.

The fuel tank was removed to completely clean out the contaminated fuel.

The fuel pump assembly was dismantled and it was there we discovered the corroded fuel pump and components.

A complete new assembly was installed and the problem was solved.

There's no doubt that using E10 fuel is false economy and a disastrous mix to use in any motor vehicle.

For most vehicle owners, there is no long term dollar saving when measured against future expensive, and unexpected, repair bills.

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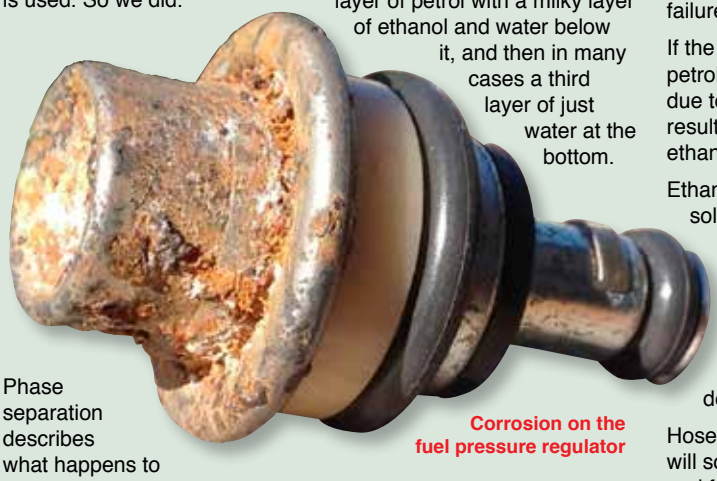
(We checked with Tony, who confirmed that he kept these corroded parts because it was the worst case of corrosion he has seen – and he has seen many.

He also suggested we check out 'phase separation' to advise technicians what actually occurs in the tank when ethanol is used. So we did.



Corrosion on the fuel pressure regulator

Phase separation describes what happens to petrol containing ethanol when water is present.

When petrol containing even small amounts of ethanol comes in contact with water, either liquid or in the form of humidity, the ethanol will pick up and absorb some or all of that water.

When it reaches a saturation point the ethanol and water will 'phase separate', actually coming out of solution and forming two or three distinct layers in the tank.

When this happens, serious and even catastrophic engine problems can occur without warning. There will be an upper layer of petrol with a milky layer of ethanol and water below it, and then in many cases a third layer of just water at the bottom.

If this happens and you try to start the engine one or more of the following problems can occur.

If your fuel tank pick-up tube is in the water layer, most likely the engine will fail to start.

If the engine is running and suddenly draws water you can have damage from thermal shock or hydro-lock. If the pick-up tube draws the ethanol-water mixture or just ethanol you can have problems where the engine will operate in an extreme lean condition, which can cause significant damage or even catastrophic failure.

If the pick-up tube draws the petrol, it will operate very poorly due to lower octane that is the result of no longer having the ethanol in the fuel.

Ethanol is a strong, aggressive solvent and will cause problems with rubber hoses, o-rings, seals, and gaskets. These problems are worse during extended storage when significant deterioration will take place.

Hoses will delaminate, o-rings will soften and break down, and fuel system components made from certain types of plastics will either soften or become hard and brittle, eventually failing. Fuel system components made from brass, copper and aluminium will oxidise to the point of failure.

Source:
fuelschool.blogspot.com.au

This corrosion on the fuel pump and pressure regulator was the worst ever seen at this workshop