Automotive Air Conditioning Analysis:
Become a Smart Recycler and Beat the Gas Price Rise!

Since the carbon tax was introduced by the Gillard government in June this year there has been much uncertainty in our industry over the true price of gas. Now many months on we begin to see the real value of this carbon tax with prices settling around the 50 -70 dollar mark. But what next? It is safe to assume that the price will not recede. The introduction of replacement gases such as r134yf are limiting supplier investment into r134a and the Montreal protocol is preventing the use of close substitutes in other industries. It appears r134a is quickly earning itself the name 'liquid gold'. In this issue we will be looking at how to safely recycle and re-use this liquid gold and put money back in your pocket!

Step 1: Determine the type of gas in the system:

Before refrigerant can be recycled it must first be correctly identified. When a car comes into the workshop we do not know if it contains a quality re-usable source of r134a. In many cases there is high levels of air, blend gases or mixtures of refrigerant from "top up's". The system could be filled with nitrogen from previous leak testing and we have even seen systems filled with LPG! The last thing we want to do is reclaim these contaminates into our clean recyclable gas bottles. Some very expensive late model recycling stations will do this test for you, but for the workshops not ready to invest in such a machine, refrigerant identifiers are an affordable alternative.

At a starting cost of just under a thousand dollars you can purchase a machine like the one pictured below. It is the simplest design in the range and when plugged onto the low side of the system the device conducts a simple pass/fail test. Easy and safe!

More advanced machines such as the Ultima ID made by Neutronics Identify a larger range of refrigerants and produce a print out with a breakdown of the content in the system.

For the purpose of recycling your r134a the cheaper simpler machine will work effectively.

Step 2: Recovering and recycling:

Many automated recycling machines available today will recover, filter and recycle gas at the touch of a button. So once you have identified the refrigerant it is as simple as plugging in the machine and you're saving money. However, there are still some problems to be aware of when recycling. Many of the later model recycling stations will also auto purge the air from the reclaimed bottles, a very important process as a bottle with air is a bottle that cannot be used! But for those who have recycle stations that don't have this function, here is a very simple way to accurately purge the air from your bottles, using tools readily available in your workshop. Using your thermometer, find the ambient air temperature next to your bottle. Now using a pressure relation chart, find the pressure your bottle should contain. I used this iPhone app by DanFoss that can be found for free in the app store.

Once you know what pressure your bottle should be at, you can see that anything over this will be air. It is important to note at this point that you should leave your bottle to sit overnight to settle before purging air. Attach the vapour side of your bottle through a high side gauge and then to an empty bottle as pictured below.

Finally open the tap until the pressure drops to the predetermined point and you're done, check again with the analyser, make sure the air is gone and you have one free bottle of recycled gas! With the right tools recycling is simple and with the price of refrigerant is so high there has never been a better time to start!

Don’t Seal that Leak!

“A cheap fix is what the customer wants”… I recently came across this comment posted on a website advertising stop leak products for A/C systems. Less than a couple of weeks later I noticed a similar comment on an online forum and thought of re-evaluating its use! But then we received ‘that car’, the one that shows you why you have avoided the quick stop leak fix for so many years. A late model ford focus appears in our workshop in need of serious attention and this is what we found.

The picture above is the orifice tube and as you can see the goo has hardened and caused a complete blockage of the system, starving the compressor of oil and refrigerant and causing it to seize. We later found the condenser to have a major leak that had been successfully repaired by the use of stop leak, but at the cost of a seized compressor and a system full of hardened goo. Below is a picture of the gunk that has been flushed from the evaporator.

Stop leak should not be used, especially in late model vehicles. Components such as the variable control valves, compressor valve plates and orifice tubes are not designed to handle its use. Logically speaking, if stop leak was so effective it would be include from factory. Stop leak is not a cheap alternative! It might provide a short term repair and in some cars it might even work, but the risk is not worth it. Avoid a disappointed customer, find the leak and fix it the right way. As the saying goes, ‘Do it right, Do it once!

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