BRA Fact finders

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Danger. Do not mix refrigerants !

Existing systems should only be "topped up" with the refrigerant already contained within them. Certain sectors within the refrigeration industry have advocated the uncontrolled topping-up of existing systems with a different refrigerant to the one they contain. This will form a "cocktail" of chemicals in unknown proportions in the system. The reasons why this is bad practice are

~ Performance may change in an unexpected way
~ Pressure gauges, with temperature scales, will show false information
~ The cocktail cannot be reclaimed - it will eventually have to be incinerated at high cost
~ Pressures may exceed values allowed by pressure regulations
~ Compressor warranty may be invalidated

But we used to do it in the past. Mixing of refrigerants is nothing new. For many years, relatively small amounts of R12 have been added to low temperature R502 systems to "get the oil around" .With new HFC refrigerants that are incompatible with mineral oils, uncontrolled "topping up" could cause problems rather than solve them.

But it will work 0K won't it? From a practical standpoint, mixed refrigerants can obviously work. For instance, R502 systems could be topped-up with R22 based hydrochlorofluorocarbon (HCFC) blends specifically designed for retrofit use. Oil return and compressor component protection will both generally be acceptable. However, meaningful interpretation of system operating parameters is impossible as vapour pressures (and therefore temperatures) will not correlate with those of either the original or added refrigerants.

But we have no R12. The system must either be retrofitted with R134a or a transitional blend HFCs should never be added to CFC/HCFC containing equipment. Should this type of "topping-up" occur, equipment performance and reliability is likely to be severely affected, with a resulting loss of compressor lubricity and system oil transport. Therefore, R 134a should never be mixed with R12. Additionally R134a should never be added to a system containing R12 due to safety concerns. There is the potential to form high pressure 12/134a azeotropic mixtures. Should this occur, generated pressures may well exceed system pressure ratings resulting in mechanical failure or release of material to atmosphere.

But won't it be sorted out when it's reclaimed ? These mixtures cannot be separated and reprocessed and must be destroyed by high temperature incineration. This will result in considerable extra cost being passed on to the generator of the waste, or end-user, to pay for destruction. In a worst case scenario, this undesirable practice could result in the unscrupulous deliberately venting material to atmosphere. Following implementation of the Environmental Protection Act, the venting of any refrigerant to atmosphere is illegal and all waste refrigerant should be recovered.

General rule: Never mix refrigerants if they have a different 'R' number.

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