

The growing number of Hybrids on the road



- The Market
- The Technical Differences
- The Equipment Needed

The Market

Hybrid technology..
..a new greener way forward



In recent years, hybrids have become much more common on the road and in the workshop. Alternatively Fuelled Vehicles (AFV) accounted for 1.6% of new vehicle registrations in 2011. So far, sales in 2012 are 3% ahead of 2011* – more encouraging signs that the number will continue to grow. There are already over 125,000* alternatively fuelled vehicles on the road.

This document will give you some basic understanding of alternatively fuelled vehicles, the differences in the a/c system from a standard combustion vehicle and the equipment that you will require to work on them.

*June 2012

Why are people buying Hybrids?

Environmentally friendly

In the past decade the importance of carbon 'footprint' has increased and more pressure is applied on the average person to help the environment. To reduce the impact of emissions on the planet, car manufacturers are challenged to reduce levels through environmentally friendly ways. This has led to the introduction of electric and hybrid solution vehicles.

Financial incentives

The consumer is now incentivised by the government to purchase electric vehicles, with grants (plug in grant of £5,000) available and continued investment in charging points.



Ongoing costs

The tax cost is lower (free on zero emission vehicles) and to recharge a battery is considerably less (2p per mile depending on tariff) than filling a tank with either petrol or diesel, so the reduction in ongoing costs are also attractive. Additionally congestion charges don't usually apply to alternatively fuelled vehicles.

Choices

Initially when people thought of a hybrid or electric vehicle, it was only one brand that would spring to mind, maybe two if you had extensive vehicle knowledge. However in 2012 there are 10+ vehicle manufacturers who will offer hybrid and electric vehicles.



The Technical Differences

The A/C systems in alternatively fuelled vehicles are different from those in standard combustion vehicles.

The Components

Compressors

In electric vehicles and some hybrids, the compressor used in the A/C system is powered by a high-voltage three phase electric motor. This is different to a traditional compressor which is driven from the vehicle crankshaft through a drive belt. As a result of having a high voltage part on the vehicle, different health and safety procedures must be followed.





Where is the motor?

The electric motor is located inside the compressor case and is in contact with the refrigerant oil. The refrigerant oil that the vehicle manufacturer specifies will have unique electrical properties that will protect you from electrical shock off the motor.

The additives in the OE oil reduce the electrical conductivity of the oil (it becomes more of an insulator).

The Consumables

Ordinary PAG refrigerant oils (PAG 46, 100 and 150) cannot be introduced into electric and many hybrid A/C systems. Oils specified by the vehicle manufacturer must be used.

The use of the wrong oil will contaminate the A/C system; the severity of the damage will depend on whether or not you switch the A/C on. If you do not run the A/C, then only the compressor will need to be replaced. However, if you do run the A/C, you will need to replace the compressor, condenser, evaporator and all the pipes.

As little as 1% contamination can lead to electrical problems such as fault codes or, in extreme cases, total vehicle shutdown.

UV dye

UV leak detection dye that is used in standard combustion vehicles should not be added to systems that use an electrical compressor. The adding of any standard UV dye can considerably reduce the refrigerant oil's electrical insulation properties.

It is important to use dye that is approved by vehicle manufacturer for use in alternatively fuelled vehicle's A/C systems.

The equipment needed

AC788PRO

Designed with the Hybrid vehicle in mind

'Faster and more powerful than ever before'



Two Circuits

The AC788PRO has two independent oil circuits, keeping the lubricants separate enables the machine to service vehicles with conventional internal combustion engines and hybrid or electric vehicles containing an electric compressor.

With an increasing number of alternatively fuelled vehicles being introduced, the AC788PRO has the flexibility and capability to give long service life in the workshop. Research data suggests that at least 60% of vehicles in circulation in 2019 will have an R134a system.**

Quick, easy and automatic

The AC788PRO is a powerful, easy-to-use refrigerant management station. It automatically controls the recovery, vacuum and recharging processes for oil, UV dye and refrigerant as well as filtering the recovered refrigerant. The operator only needs to identify the vehicle from the 4,000+ vehicle database, connect the hoses and the AC788PRO will do the rest, freeing up valuable time to attend to other labour intensive jobs.

Key Highlights

- Works on standard vehicles and hybrid / electric vehicles
- Deep recovery system – 99% recover rate
- Automatically filters recovered refrigerant
- Automatic scale platforms for oil / dye injection and oil drain
- Automatic 5 minutes vacuum leak test facility
- 4,000+ vehicle database – cars and commercial vehicles
- Integrated diagnostic function – identifies faults and fixes
- Built in printer
- Flush prepared capability
- TFT display
- Manual / Automatic mode
- Interface for data exchange
- Temperature sensor with 4m cable. Plugs into T1 socket.

**Estimated figure

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