



Current Information on A/C Service!

Status: December 2011

New vehicles with type approval starting from 01/01/2011 may only be filled with the new refrigerant R-1234yf.

New vehicles with type approval before 31/12/2010 will continue to be filled with the R134a refrigerant until 31/12/2016. As from 01/01/2017, all new vehicles must be filled with the more environmentally friendly refrigerant R-1234yf. Existing A/C systems for the R134a refrigerant undergoing repair may continue to be filled with R134a even after this date.

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1. Vehicle market

1.1 Information on the different vehicle manufacturers

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- A/C service units with the refrigerant R-1234yf **for OEM** must be certified.
- The first few vehicles with the new refrigerant are planned for delivery to the dealers in December of 2011.

1.2 Which vehicle categories are affected

The new EC Directive covers motor vehicles of the M1 and N1 category.

2. Refrigerant

2.1 Operational life of R134a refrigerant

A high percentage of vehicles with R134a A/C systems is expected in the field even after 2020. Therefore, as the following graphic shows, it is also sensible to purchase a new A/C service unit with R134a in the future.

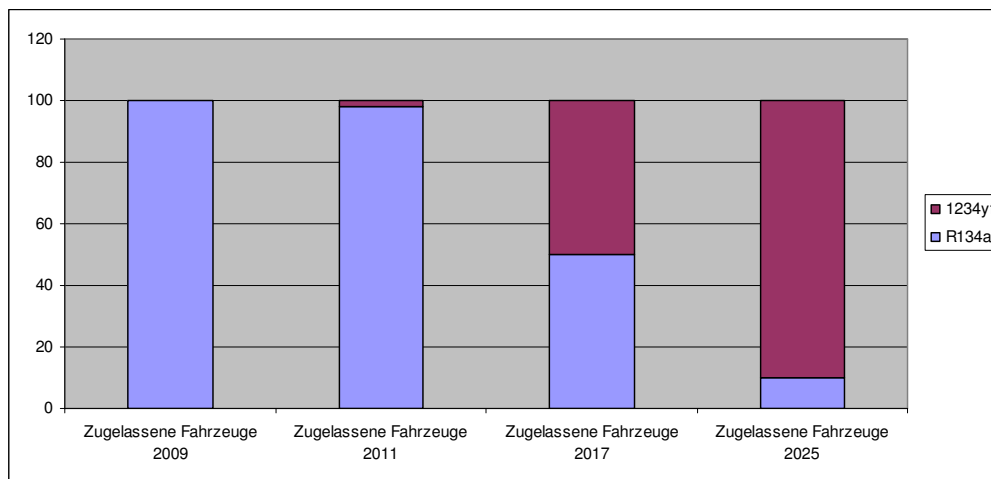


Figure 1: Number of vehicles with R134a refrigerant to be serviced

The time period for new vehicles with type approval before 01/01/2011 whose A/C systems may be filled with the previous R134a refrigerant will come to an end on 31/12/2016. As from 01/01/2017, basically only the new R-1234yf refrigerant may be used in new vehicles.

2.2 New POE compressor oil

A/C compressors in electric vehicles and many hybrid vehicles are driven by an electric motor. This motor is located inside the compressor and comes into direct contact with the refrigerant and the compressor oil. POE oil must therefore be used. Conventional PAG oil destroys the insulation of the compressor motor.

2.3 Application range of refrigerant R-1234yf

At present the use of R-1234yf refrigerant is prescribed exclusively in the *European market*.

2.4 Additional information on the design of A/C service units with R-1234yf as per VDA guidelines

- The gases which may be inside the unit need to be extracted.
- A fan should run prior to start-up for approx. 30 secs. to blow the air/refrigerant mixture out of the unit through the ventilation slots in the event of a leak and thereby reduce the concentration.
- Emergency OFF switch which on actuation immediately closes the valves on the refrigerant bottle.
- Quick-release service couplings will be changed so that there are no mix-ups.
- The base of the unit must be provided with ventilation slots to allow any emerging gas in the unit (heavier than air) to escape in a downward direction from the unit.
- An automatic pressure test must be conducted prior to each filling operation to ensure that the service unit has no leaks. The filling operation continues afterwards.
- The ATEX standard is replaced by a risk assessment, since the refrigerant is combustible.

2.5 Information on the refrigerant analysis and procedure for contaminated refrigerant

- R-1234yf must not be mixed with R134a and other refrigerants. Therefore, a gas analysis is required. This refrigerant analysis can be carried out with a unit integrated in the A/C service unit or via a separate analysis unit.
- If pure refrigerant cannot be identified, the vehicle must be drawn off with a special extractor unit, and the contaminated refrigerant stored in a recycling bottle and disposed of (German VDA standard for certification).

2.5.1 Refrigerant analysis units

- Separate refrigerant analysis units with USB ports are currently in the test phase and not yet in series production.
- As the first step there will in the course of certification be refrigerant analysis units as built-in units in the A/C service units.

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2.5.2 Extraction units for contaminated refrigerant R-1234yf

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- For possibly contaminated refrigerant there will be a separate extraction unit which where necessary can be connected to a service connection on the A/C service unit and extracts the contaminated refrigerant from the unit.
- Currently being discussed as a second variant is a vacuum bottle to be used once into which the contaminated refrigerant can be extracted and then forwarded to a disposal company.

3. What will WOW! GmbH do?

3.1 Arguments for why WOW! GmbH has decided against a combined A/C service unit

- Very large, bulky unit housing.
- Very expensive, because of two units in one housing.
- Only one service can ever be conducted at one time. Either for R134a or R-1234yf.
- If one circuit fails due to a fault, the complete unit is no longer operational.
- Most customers already have a unit for R134a systems - twice the investment costs!
- Combination units are not favoured by most of the competitors either.

3.2 The WOW! A/C solution for the refrigerant R-1234yf

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- An A/C service unit explicitly for **independent workshops with a CE certificate**. Suitable for hybrid vehicles, as additional oil tanks and a flushing circuit are integrated. There will probably only be a demand for these units at a later stage because the new vehicles must first come onto the market and these will only come through to the independent workshops after the warranty period.
- An A/C service unit for **vehicle manufacturers with the certificate of TÜV Rheinland**. This unit too is suitable for hybrid vehicles, as additional oil tanks and a flushing circuit are integrated.

From the start of 2012 WOW! will start selling the A/C service units provided the release has been granted by the respective OEMs. In other words, WOW! will not start selling for all OEMs immediately, but instead only after each released has been granted.

The WOW! A/C service unit is currently in the certification phase

The next inspection date with TÜV Rheinland is scheduled for 19.12. - 21.12.2011.



4. The WOW! Tip

4.1 Do not make any rash purchasing decisions, as

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- There are currently still no vehicles with the new R-1234yf refrigerant on the market.
- The new refrigerant will not be available to buy until the first quarter of 2012. There is currently also no information on the available container sizes of the refrigerant bottles. The hitherto familiar 12 kg bottles are expected to be used.
- At present no manufacturer can make this refrigerant available to the aftersales market, i.e. even an authorised dealer will not get any refrigerant for possible repairs.
- There is currently no wholesale dealer who can supply the refrigerant.
- The external refrigerant analysis units are still in the test phase.
- An A/C service unit with the new refrigerant cannot yet be installed at or used by the customer.

Think of the future:

When making a new purchase, we recommend buying a hybrid-capable A/C service unit!

Further information and exact legal texts are available from ZDK - Federation of the German Automotive Trades!

<http://www.kfzgewerbe.de/>