

koura
Klea®

R-134a to Klea® 456A (R-456A) Vehicle Conversion Guide

www.klea.com

orbia 
Advancing life together

Important Information

Please read before servicing a system using Klea® 456A

Klea® 456A is a new alternative refrigerant which is compatible with existing R-134a Air-Conditioning systems, providing similar A/C cooling performance.

Legal Obligations. This document does not outline your legal obligations relating to the servicing of the A/C system, including in particular any obligations arising from EU Regulation (EU) No 517/2014 and EU Directive 2006/40/EC and their UK implementing regulations, on, among other things, certification, training (and that of your employees), record keeping, letters of assurance, and recovery, reclaiming, and recycling of fluorinated gases.

You should at all times comply with all applicable local laws and regulations and nothing in these guidelines should be construed as creating an obligation where such an obligation would conflict with any such law or regulation. The manufacturer does not accept any liability in relation to your or your employees' non-compliance with all applicable laws and regulations.

Only for trained professionals. These guidelines assume you are a professional trained in relevant safety procedures, the proper maintenance of A/C systems and F-Gas certified in the proper handling and disposal of refrigerant. Please do not use this product unless you have such training and experience.

Use professional judgement. These guidelines should always be applied in accordance with your professional judgement at the time of servicing the vehicle, with each individual model of vehicle in mind. The manufacturer is not liable for any failure or damage related to use of Klea® 456A where such failure or damage is due to non-compliance with these guidelines or best practices.

Warranties. It is your responsibility to make customers aware that Klea® 456A is an aftermarket product and is therefore not necessarily approved by the original equipment manufacturer (OEM). The customer should be asked to check the terms of any warranty or guaranty given by the OEM if they have a concern that using Klea® 456A will invalidate the warranty/guarantee.

How to convert an existing R-134a vehicle A/C system to use Klea® 456A

Equipment Required

- R-134a service charging equipment
- Klea® 456A service charging equipment (without refrigerant identifier)
- Klea® 456A refrigerant cylinder
- Shrieve Zerol HD46 refrigerant oil
- Shrieve Zerol HFO refrigerant oil
- Normal R-134a refrigerant handling PPE (Personal Protection Equipment)

Equipment Preparation

Prepare the Klea® 456A service charging equipment by pre-charging the internal holding cylinder from the Klea® 456A refrigerant cylinder to its maximum capacity, or at least a minimum of 50% fill.

Klea® R-134a to Klea® 456A Vehicle Conversion Guide

The following gives a step by step guide on the process to convert a vehicle that either is, or was, charged with R-134a, to enable it to use Klea® 456A.

Basically, it is a matter of recovering the R-134a with the R-134a service equipment, then charging the vehicle with Klea® 456A from the Klea® 456A service equipment, however there are a few care points that need to be adhered to, as shown in the following step by step guide.

1. Connect the R-134a service equipment charging lines to both of the vehicle A/C service ports
 - It is important to connect both service ports, so as to enable the most effective recovery of the R-134a.
2. Following the service equipment instructions, start the refrigerant recovery

3. Ensure the refrigerant is fully recovered by conducting a deep recovery
 - Sometimes refrigerant can get partially trapped behind the compressor reed valves and takes a little while to be released
 - Monitor the service equipment pressure gauges over a period of some 10-15 minutes for any pressure increase and repeat the recovery process to ensure all refrigerant is fully recovered
4. Following the service equipment instructions, start the vacuum process and vacuum for 10-15 minutes
 - This helps to ensure the A/C system is absolutely fully empty
5. Monitor and record any oil that has been recovered from the A/C system
6. Disconnect the A/C charging lines from both vehicle A/C service ports
7. Evaluate how much oil needs to be replaced into the vehicle A/C system, which is the same quantity that has been removed, which;
 - could be oil that has been removed during the recovery process
 - could be oil required due to the replacement of component parts
 - if replacing a compressor, drain the oil out of the old compressor and measure the quantity, then drain the oil out of the new compressor, so as to enable the same quantity removed from the old compressor to be replaced
8. Using the original vehicle guidelines for oil quantity, establish the quantity of oil to be replaced into the system
9. The recommended oil for Klea® 456A systems is Shrieve Zerol HD46
 - Zerol HD46 is a double end-cap PAG oil, with improved properties in terms of compatibility, stability and miscibility over the existing PAG oils of ND-oil8, ND-12, SP-10, SP-A2 etc, ideal for Klea® 456A, R-134a and R-1234yf systems
 - Any existing PAG oil within the vehicle is compatible with Klea® 456A and Zerol HD46, so is OK to leave in the A/C system
10. To aid the vehicle system conversion to Klea® 456A, it is recommended to also add 15ml of Shrieve Zerol HFO oil into the A/C system
 - Zerol HFO is an additive oil which helps blend the original system oils of ND-oil8, ND-12, SP-10, SP-A2 etc, with the Klea® 456A refrigerant.
11. Replace the required quantity of Zerol HD46 oil, plus the 15ml of Zerol HFO oil, into the system by either;
 - Injecting it into the system via a component, e.g. the compressor or A/C pipe
 - Adding it to the oil fill bottle of the Klea® 456A service equipment

12. Connect the Klea® 456A service equipment charging lines to both of the vehicle A/C service ports
 - It is important to connect both service ports, so as to enable the most effective vacuum and charging of the Klea® 456A
 - Note that the vehicle service ports remain unchanged and are common to those used for R-134a
13. Following the Klea® 456A service equipment instructions, start the refrigerant vacuum & fill process with the Klea® 456A service equipment
 - Set the vacuum process time for a recommended minimum of 20 minutes
 - Oil fill as required to replace any oil removed with Zerol HD46, plus adding the recommended 15ml of Zerol HFO
 - Set the refrigerant fill in line with the original vehicle fill quantity
14. Monitor the process throughout
15. Once the vehicle charging process is complete, start the vehicle engine, switch on the A/C to allow the refrigerant to circulate for a few minutes, and check the A/C system operation, as per the original vehicle requirements.
 - Operating temperatures and pressures will be similar to R-134a
16. Once happy with the system function, follow the Klea® 456A service equipment instructions for disconnecting the charging lines from the vehicle.
17. The final steps required are to clearly identify the change of refrigerant to Klea® 456A on the vehicle by fitting:
 - A new Klea® 456A label in a prominent position, ideally over the original label
 - A coloured heat shrink wrap over the two charge port caps
18. Replace the two charge port caps onto the vehicle
19. The vehicle is now converted to operate using Klea® 456A refrigerant

FAQs

- **What if there is still a small amount of R-134a remaining in the service equipment after a deep recover and vacuum**
 - As Klea® 456A contains ~45% of R-134a, small amounts can be accommodated
- **Does the system need to be flushed with Klea® 456A?**
 - No, if the conversion guidelines are followed this is not necessary.
- **How stable is the Klea® 456A composition?**
 - The composition remains stable and within specification as long as the service equipment internal cylinder maintains a minimum of 40% fill
- **What if the service equipment internal cylinder is below 40% fill capacity?**
 - If it falls below the 40% level, there is a potential for the % composition to drift outside of optimum specification,.
- **Is the process any different when ‘topping up’ with Klea® 456A, rather than with R-134a?**
 - “Topping up” with any refrigerant is not recommended, as this does not allow measurement of the correct quantity of refrigerant charge in the vehicle. You must follow applicable laws and regulations in servicing A/C systems.
 - The vehicle system should be recovered and recharged with the correct quantity of Klea® 456A in line with these guidelines
- **What should be done with the oil coming out with the (recovered) R-134a charge?**
 - Any recovered or removed R-134a oil should be discarded and replaced with Zerol HD46
- **Can I use the same leak detection devices?**
 - Yes, because Klea® 456A contains a percentage of R-134a, existing leak detection equipment is suitable for use with Klea® 456A too
- **Is Klea® 456A compatible with the refrigerant dye?**
 - Yes
- **Is there a different rate of oil recovery?**
 - The oil recovery rate will be similar to R-134a
- **What should I do if I suspect the Klea® 456A is out of specification / mixed with R-134a?**
 - In this scenario, the cylinder should be returned to your supplier for re-composition