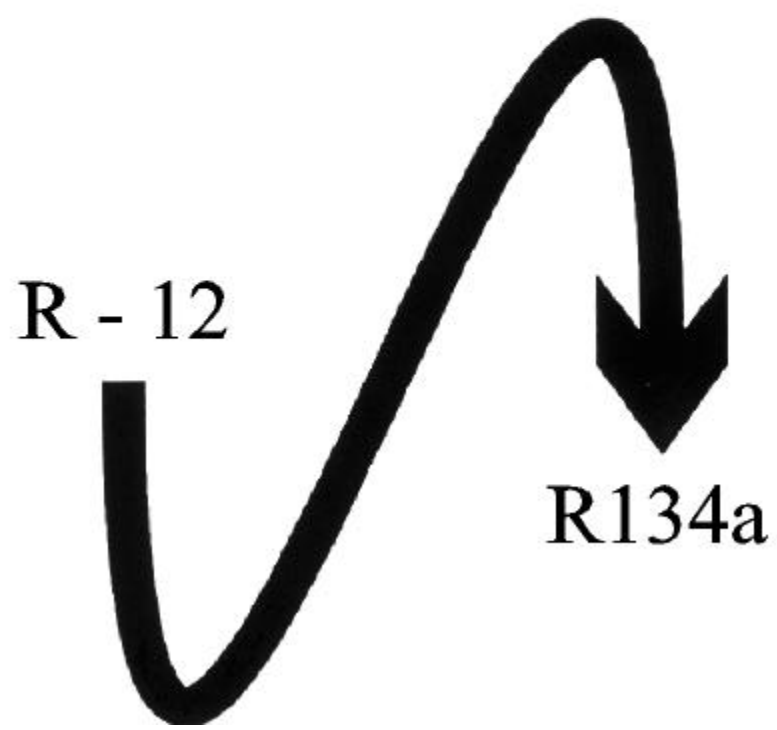


Recommended Procedure
For Sanden R-12 Compressors
Retrofitted With R134a



The use of R134a in mobile A/C systems designed for R-12 refrigerant causes higher discharge pressures (as much as 10-15%) and necessitates changing the compressor lubricant from mineral oil (5GS) to PAG oil (Sanden's SP-10 or SP-20) to ensure compatibility.

These changes result in greater wear to the internal components of the compressor. Therefore, to ensure consistent and expected reliability, Sanden does not recommend using R134a in systems and compressors designed for R-12.

However, Sanden understands the realities of the automotive service markets and consumer preferences. If a retrofit is required, please follow the vehicle manufacturer's published retrofit procedures. Ensure all work done complies with SAE recommended practices as described in J1660 & J1661:

- Repair any problems or leaks before retrofitting.
- Affix labels to the vehicle showing conversion status.
- Observe all safety recommendations.

If an OEM retrofit procedure is not available, Sanden recommends the following procedure:

Sanden Procedure for Conversion from R-12 to R134a

1. If the R-12 vehicle air conditioning system is operational, run it at idle with the A/C blower on high speed for five (5) minutes to optimize the amount of oil in the compressor.

Recover all R-12 refrigerant from the vehicle's A/C system. Evacuate the A/C system for at least thirty (30) minutes to a vacuum of 29 in. Hg, using R-12 equipment, to remove as much R-12 as possible from the residue mineral oil. Remove all R-12 service equipment.

3. Remove the compressor from the vehicle.
4. Remove the compressor oil plug and then drain as much mineral oil as possible from the compressor body.
5. Drain mineral oil from the cylinder head suction and discharge ports while turning the shaft with a socket wrench on the clutch armature retaining nut.
6. Remove the existing R-12 receiver-drier or accumulator-drier from the vehicle and discard. Allow as much oil as possible to drain from the A/C hoses.
7. Change any O-rings on the receiver-drier or accumulator-drier joints to approved HNBR O-rings; check and replace other O-rings that have been disturbed.
8. Replace the receiver-drier or accumulator-drier with a new R134a compatible one

which contains XH7 or XH9 desiccant.

9. If a CCOT system is being repaired due to compressor damage, or foreign matter is found in the oil drained from the system, this foreign matter must be removed from the system. At this time an in-line filter should be installed in the liquid line. Allow as much oil as possible to drain from the A/C lines when installing the filter. Change any O-rings disturbed in the installation of the filter to approved HNBR O-rings.
10. Perform any necessary repairs to the compressor or A/C system.
11. Using the original refrigerant oil quantity specification, add SP-20 or SP-10 oil to the compressor (SP-10 for TR, SDV-710, SDB-705, SDB-706 and SDB-709; SP-20 for all other SD compressors).
12. Replace the compressor oil plug O-ring with an HNBR O-ring.
13. Reinstall the compressor oil plug. The plug seat and O-ring must be clean and free of damage. Torque the plug to 11-18 ft lb (15-25 N m, 150-250 kgf cm).
14. Change any seals at the compressor ports to approved HNBR seals.
15. Reinstall the compressor to the A/C system.
16. Disable the R-12 service fittings to prevent any refrigerant other than R134a from being used. Permanently install R134a quick connect service fittings to the A/C system.
17. Connect R134a service hoses and other equipment. Re-evacuate the system for thirty (30) minutes using the R134a equipment.
18. Charge the A/C system with R134a. Generally, about 5% (by weight) less than the R-12 charge amount is required. Leak check the system per SAE J1628 procedure.
19. If the A/C system is a CCOT type, which has been repaired due to damage or the discovery of foreign material in the oil drained from the system, run the system for sixty (60) minutes to capture this material in the filter installed in step 9. Recover the refrigerant, remove and dispose of the filter, reconnect the lines, evacuate for at least forty-five (45) minutes, and recharge the A/C system. This step should not be necessary for TXV systems, since the drier is fitted with an internal filter.
20. Check the A/C system operating parameters. The system should function correctly within acceptable limits of temperatures and pressures. This will ensure that the correct amount of R134a has been charged.

21. In extreme circumstances when expected cooling performance cannot be achieved and high discharge pressures are experienced, it may be necessary to add more condensing capacity to the A/C system. An electric fan(s) and/or a larger capacity condenser can be used.
22. Replace all R-12 compressor labels with retrofit labels per SAE J1660 in order to provide information on the R134a retrofit which has been performed.

**Basic Sanden R-12 Compressor Retrofit
Specifications for Refrigerant Oil**

Model	Retrofit PAG oil amount in fluid ounces (cc)	
	Expansion valve systems	Orifice tube systems
SD-505	3.4 ± 0.5 (100 ± 15)	No standard
SD-507	5.5 ± 0.5 (165 ± 15)	No standard
SD-508	7.2 ± 0.5 (210 ± 15)	9.5 ± 0.5 (280 ± 15)
SD-510	No standard	8.1 ± 0.5 (240 ± 15)
SD-708	4.6 ± 0.5 (135 ± 15)	No standard
SD-709	4.6 ± 0.5 (135 ± 15)	8.1 ± 0.5 (240 ± 15)

Note 1: For long hose, dual evaporator systems, etc. the procedure in the Service Manual should be used.

Note 2: It is recommended that the oil quantity in all cases be reconfirmed after the compressor is installed.

R -12 To R134a Conversion Procedure

