

# Sanden Compressor Installation Instructions

## Safety Precautions

1. Be aware that air bags can be deployed accidentally.
2. Smoking or open flames around refrigerant can cause dangerous fumes.
3. Always wear safety glasses and rubber gloves because refrigerant can freeze parts of the body and PAG oil is harmful.
4. Provide adequate ventilation and do not breathe oil vapors. Refrigerant is heavier than air and drops downward and can cause suffocation.
5. Recover refrigerant before opening plumbing connections or the oil plug on the compressor to avoid the dangerous release of high pressure gas.

Follow all Federal, State and Local Regulations

Refer to the Sanden Compressor Service Manual at [www.sanden.com](http://www.sanden.com) for detailed technical specifications and other additional compressor replacement refrigerant retrofit procedures.

## Important Sanden Compressor Oil and Refrigerant Specifications

1. New Sanden compressors are shipped with all the oil required for a normal OEM system for which they were intended. In most cases no additional oil should be added. For R-134a A/C systems the original Sanden PAG oil shipped in the new Sanden compressor is the best lubricant for compressor durability.
2. For a few rare cases such as very large A/C systems with long hoses which use more than 4 pounds of refrigerant, additional Sanden oil may be required. Consult the OEM manufacturer's specification for oil and refrigerant quantities.
3. All Sanden R-134a SD7H15 piston compressor models use Sanden SP-15 PAG oil for service. SD5H models are shipped with SP-20 PAG but can be serviced with SP-15 PAG. Chrysler TR Scroll model compressors also use SP-15 PAG oil for R-134a.
4. All Sanden R-134a compressors SD7B10, TRSA12 for GM, TR Scroll for Honda, SDV and PXE for VW and other PXV and PXE models use Sanden SP-10 PAG oil.
5. All Sanden R-12 applications use Sunico 5GS mineral oil which sells at refrigeration supply houses and is not available from Sanden.
6. Sanden's part # for SP-10 PAG oil is #3201-1996 and SP-15 is #7803-1996.
7. SP-10 PAG has a viscosity of 46 centistokes at 40 deg. C. and SP-15 PAG is 80 centistokes.
8. The use of other oils such as Ester, often called POE, or refrigerants other than pure R-134a or R-12 will void the warranty.

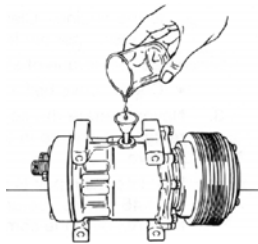
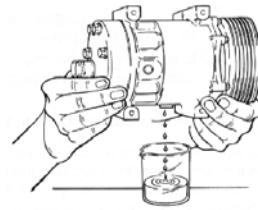
## Replacing the Compressor

The following guidelines will help to insure the replacement compressor reliability:

Oil Amount for compressor swap with no internal compressor damage and no system flushing is required.

The goal of this procedure is to measure the oil amount in the failed compressor and adjust the amount in the new compressor to equal that of the failed compressor.

1. Remove the oil plug from the failed compressor and drain as much oil as possible from the suction and discharge ports and from the crankcase into a suitable container. Drain for about 3 minutes while turning the front shaft nut one half turn every minute. Also slightly tilt the compressor back and forth a few times to help the oil reach the oil drain hole.
2. Measure and record the amount of oil drained from the compressor.
3. Drain oil from the new compressor following step 1.
4. Replace some of the new oil back into the new compressor in an amount equal measurement taken in step 2.
5. Re-install oil plug. The aluminum seal seat and O-ring must be clean and not damaged. Torque to 11-15 ft•lb (15-20 N•m, 150-200 kgf•cm). Be careful not to cross thread the oil plug.



### Proper A/C System Operation and Cleanliness for Warranty Coverage

When a compressor fails due to internal failure as evidenced by poor pumping or the shaft locked up or uneven turning, then contamination is circulated in the system both in the forward and reverse direction and must be flushed with proper flushing fluid. Contamination is circulated in the forward direction until the compressor is disengaged and then the rapid equalization of pressures causes contamination to flow in reverse back up the suction line to the evaporator. The warranty and reliability of a replacement compressor depends upon returning the A/C system to like new conditions in terms of cleanliness and proper operation of the system components as follows:

1. Always replace the receiver drier in a thermostatic expansion valve system or accumulator in an orifice tube system. They contain desiccant material which absorbs moisture and acid contamination from the A/C system. These components cannot be cleaned by flushing.
2. Always replace the orifice tube or inspect the expansion valve and replace if blocked by debris.
3. When a compressor fails internally, tinny particles mix with the oil that circulates around the entire A/C system. This contaminated oil must be flushed out of the A/C components that will be reused. Blowing air through the components does not remove the contaminated oil. The best flushing method is closed loop power flushing using refrigerant because it is relatively easy to remove all of the flushing refrigerant. Another flushing procedure is to back and forward flush with an effective fluid solvent several times until the exiting flushing fluid is clean. Then Nitrogen or clean, dried air must be blown through the components to blow out the flushing fluid. Residual flush that remains inside the A/C system washes oil off the compressor parts and causes failure. Newer condensers with micro channel passageways and hoses with mufflers are nearly impossible to clean properly and need to be replaced.
4. Proper evacuation to remove residual flush, air and moisture is absolutely necessary. An adequate vacuum pump should evacuate the entire sealed A/C system for 45 minutes.
5. Remember, oil is already shipped inside the Sanden A/C compressor, so in most cases do not add more oil after flushing the system.
6. Use an electronic leak detector or florescent dye to check for leaks. Leaks are the number one cause of compressor overheating and failure.
7. If the compressor discharge pressure is too high, this does not indicate a compressor problem. The problem could be that the condenser air flow is too low or blocked internally or there is air or contaminated/mixed refrigerants in the system.
8. Power to the clutch while it is engaged should be a minimum of 12.5 volts.
9. Modified compressors are not warranted.