

Oil Check and Adding Oil to the Compressor

⚠ WARNING

Before doing any of the work below, read the information under [Safety Precautions 100](#). Failure to read the safety precautions and to be aware of the dangers involved when working with refrigerant, could lead to serious personal injury.

General Information

Compressors are charged with 10 fl oz (296 mL) of refrigerant oil. When the air conditioning system is operating, some refrigerant oil leaves the compressor and is circulated through the system with the refrigerant, but the refrigerant oil cannot leave the system except when there is a leak, when the refrigerant is recovered, or when a system part is replaced.

It is important that the air conditioning system has the correct amount of refrigerant oil for proper operation. Too little oil will result in compressor failure. Too much oil will degrade the performance of the air conditioner and may cause damage to the compressor.

IMPORTANT: Whenever the air conditioning system is discharged or recovered, the recovered oil, from the charging machine, must be measured in order to know how much oil must be returned to the system. When a system component is replaced, a quantity of new oil equal to the recovered oil plus the oil coating the inside of the component must be returned to the system. New oil must be from a container that has not been opened or that has been tightly sealed since its last use.

Order Sanden PAG oil SKI 7803 1997 (type SP-20) for an 8.45-ounce (250-mL) can of refrigerant oil from your local Freightliner parts distribution center. Tubing, funnels, or other equipment used to transfer the oil should be very clean and dry.

When handling refrigerant oil:

- Be sure that the oil is free of water, dust, metal powder, and other foreign substances;
- Do not mix the refrigerant oil with other types or viscosities of oil;
- Quickly seal the oil container after use. Refrigerant oil absorbs moisture when exposed to the air for any period of time.

Checking and Adding Refrigerant Oil**⚠ WARNING**

Do not remove the oil fill plug on the refrigerant compressor without first recovering the system. Failure to recover the system could cause uncontrolled release of high-pressure refrigerant, which can freeze skin and eye tissue causing serious injury or blindness.

1. Before beginning the refrigerant recovery process, make sure that the oil accumulator and oil drain bottle on the recovery/recycle machine are emptied of oil from previous repairs.
2. Recover all of the refrigerant from the system. See [Section 83.04, Subject 220](#) for instructions.
3. Drain the recovered oil into the calibrated drain bottle of the recovery/recycle machine. Record the amount of oil recovered.
4. Inspect the refrigerant oil. If the oil has any of the following characteristics, flush and charge the system with 10 fl oz (296 mL) of oil.
 - silver or black oil—indicates metal in the air conditioning system due to compressor wear
 - milky oil—may indicate moisture in the system
 - grit or debris in the oil
5. Properly dispose of the recovered oil.
6. After repairs are finished, refer to [Table 1](#) and use the following equation to determine the quantity of refrigerant oil that needs to be added to the system.

$$[\text{Quantity Recovered}] + [\text{Quantity for All Replaced Components}] = [\text{Quantity to add to the System}]$$

[Table 1](#) provides the quantities of oil that need to be added to the system for each component that was replaced. Add the quantities listed in the table for each component that was replaced. Use the sum of the quantities or 6 fl oz (177 mL), whichever is less.

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Refrigerant Oil Quantities for Replaced Components	
Add the quantities listed in this table for each component that was replaced. Use the sum of the quantities or 6 fl oz (177 mL), whichever is less.	
Component	Quantity: oz (mL)
High Pressure Line (main A/C)	1 (30)
Low Pressure Line (main A/C)	2 (59)
High Pressure Line (auxiliary A/C)	1 (30)
Low Pressure Line (auxiliary A/C)	3 (89)
Condenser	1 (30)
Evaporator (main A/C)	3 (89)
Evaporator (auxiliary A/C)	2 (59)
Receiver-Drier	3 (89)
Minor Leak at Connector Only	0.5 (15)
Major Leak at Connector Only	2 (59)

Table 1, Refrigerant Oil Quantities for Replaced Components

7. Remove the oil fill plug on the refrigerant compressor and add the refrigerant oil. Never add more than 8 fl oz (237 mL) to the system unless the system has been flushed.
8. Evacuate, charge, and leak test the refrigerant system. See [Section 83.04, Subject 220](#) for instructions.

Adjusting the Refrigerant Oil Level in a New Compressor

Sanden refrigerant compressors are charged with 10 fl oz (296 mL) of refrigerant oil. If the air conditioning system has been flushed, the compressor will need a 10-ounce charge. If the system has not been flushed, use the following procedure to adjust the oil level in the compressor.

Use the "Worksheet for Adjusting the Refrigerant Oil Level in a New Compressor" shown in [Fig. 1](#) to adjust the refrigerant oil level in a new compressor.

Oil Check and Adding Oil to the Compressor

Worksheet for Adjusting the Refrigerant Oil Level in a New Compressor

1. Drain the oil from the old compressor.
 - 1.1 Remove the oil plug and drain as much oil as possible into a clean, calibrated container.
 - 1.2 If there are caps on the suction and discharge ports, remove them.
 - 1.3 Drain the oil from the suction and discharge ports into the container while turning the shaft clockwise using a socket wrench on the armature retaining nut.
 - 1.4 Enter the amount of oil that was drained from the compressor. 1.
2. See Table 1 of this subject to determine the total amount of refrigerant oil that is needed for each component that was replaced. Enter the amount, up to 6 fl oz (177 mL), here. 2.
3. Add the amounts from steps 1 and 2 and enter the total. 3.
4. Subtract the total in step 3 from 10 and enter that number. For example, if the total in line 3 was six, the calculation would be $10 - 6 = 4$. 4.
5. Refer to the table below for the amount of oil that must be drained from the new compressor.

If the number in step 4 is:	Drain this amount from the new compressor:
a negative number(-)	2 fl oz (59 mL)
0	2 fl oz (59 mL)
1	2 fl oz (59 mL)
2	2 fl oz (59 mL)
3	3 fl oz (89 mL)
4	4 fl oz (118 mL)
5	4 fl oz (118 mL)
6	4 fl oz (118 mL)
7	4 fl oz (118 mL)
8	4 fl oz (118 mL)
9	4 fl oz (118 mL)
10	4 fl oz (118 mL)

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Fig. 1, Worksheet for Adjusting the Refrigerant Oil Level in a New Compressor

