

from the air) and should be added just prior to system start-up only. See Section 2.2, page 11 for Carlyle approved system start-up instructions and Section 3.6 below for the proper refrigerant oils.

3.6 — Refrigerants and Oils for 06D, E Compressors

The introduction of HFC/POE systems has led to confusion as to what refrigerants and oils are approved for use in Carlyle compressors. For 06CC compressors, see Section 3.7, page 72. The following sections list approved refrigerants and oils for Carlyle 06D, E compressors:

Refer to the following chart for Totaline[®] Part Numbers for available oils:

OIL	Totaline Part No.
Zerol 150	P903-2001 (1 Gal) P903-2005 (5 Gal) P903-2025 (1 Quart)
RO 15	P903-0101 (1 Gal) P903-0105 (5 Gal) P903-0155 (55 Gal)
SW 68*	P903-1001 (1 Gal) P903-1025 (1 Quart) P903-1005 (5 Gal)
E68	P903-1725 (1 Quart) P903-1701 (1 Gal) P903-1705 (5 Gal)

* Do not use in low temperature applications.

The following are approved oils for CFCs and HCFCs:

NOTE: Carlyle does not recommend the use of POE oil with R-22.

Totaline.....P903-2001
Witco.....Suniso 3GS
Shrieve Chemical.....Zerol 150
Texaco Capella.....WFI-32-150
IGI Petroleum Ind.....CRYOL -150

FOR CFCs AND HCFCs:

Carlyle has approved the use of **R-12, R-500, R-502,** and **R-22**. Selected OEMs of ultra low temperature equipment are approved to use R-13 and R-503 (contact Carlyle Engineering for correct oil).

FOR HCFC BLENDS:

Carlyle's engineering efforts were directed toward testing the new HFC refrigerants, not the interim HCFC blends. Carlyle provides tentative approvals of the following blends based on tests by the refrigerant manufacturer and feedback from field applications, not on testing undertaken by Carlyle:

- For Low Temperature applications: **R-402A (HP-80)** and **R408A (FX10)**.
- For Medium Temperature applications: **R-401A (MP-39)**, **R-402B (HP-81)** and **R409A (FX56)**.

NOTE: Carlyle compressors require alkylbenzene oil, such as Totaline[®] P903-2001 or Shrieve Chemical-Zerol 150, whenever an HCFC blend is used. In a retrofit application the amount of mineral oil cannot exceed 25% when mixed with alkylbenzene. **Carlyle does not recommend the use of POE lubricants with HCFC blends.**

WARNING

A number of HCFC blends are not approved. Some may create a hazardous situation. Carlyle requires all refrigerants used in our compressors to be A1/A1 (low flammability/low toxicity). The rating is based on ASHRAE 34 safety standard. Not all A1/A1 refrigerants are approved for use in Carlyle compressors. Some of the refrigerants or blends available are either flammable (A1/A2 or A1/A3) and/or toxic (A1/B1 or A1/B3). Some A1/A1 refrigerants can change ratings if contaminated. Any replacement refrigerant must operate with the same pressure levels and temperature ranges as the CFC or HCFC being replaced. **Do not use any refrigerant not specifically approved in this guide unless you have obtained approval from the Carlyle Compressor engineering department.**

FOR HFCs:

Carlyle has approved **R-134a, R404A, R-507, and R-407C.**

The following are approved oils for HFCs:

Totaline [®] (see Note 5).....	P903-1001, 1701
Castrol..(see Note 5)	E68
ICI Emkerarate	RL68H
CPI	CP-2916S
CPI	Solest 68
BP Marine Enersyn	MP-S68

All POE oils are very hygroscopic (will readily pick up and retain moisture from the air) and should be used completely once the container is opened. It is extremely difficult to reseal the oil container effectively enough to prevent moisture absorption, which in turn forms damaging acids.

NOTES:

1. The use of any non-approved refrigerant may be dangerous and will void the warranty.
2. Using the wrong type or weight of oil for the refrigerant selected will void the warranty.
3. Follow the refrigerant and/or oil manufacturer instructions when installing or retrofitting.
4. Contact the Carlyle Compressor engineering department before using any refrigerant or oil not listed in this guide as approved for use in a Carlyle semi-hermetic compressor.
5. Castrol SW68 (Totaline[®] P903-1001) is approved for use in Carrier chiller applications as well as Carrier and Carlyle semi-hermetic compressors for air conditioning and medium temperature applications. **Castrol SW68 (Totaline[®] P903-1001) cannot be used in any new low temperature refrigeration applications using Carlyle OEM semi-hermetic compressors. Castrol E68 is approved for use in Carlyle OEM compressors for low, medium, and high temperature ranges.**
6. All HFC/POE applications require a crankcase heater.
7. Moisture must be kept below 50 ppm for POE oils.
8. In retrofit applications, a high flow oil pump is required.