

BULLETIN



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PRODUCT

GENERAL

SERVICE & PARTS

Date: 30 October 2002

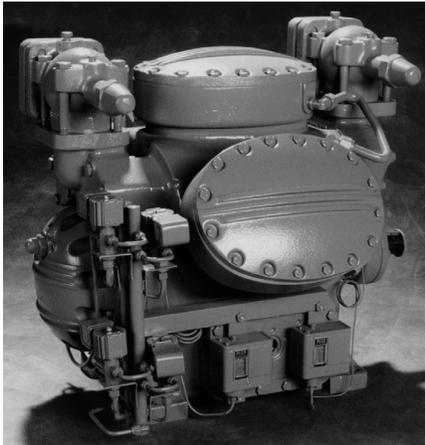
Number: 02T-1

Issued By: P. Tollar

Subject: *NEW 5F & H COMPRESSOR MODELS AND PRODUCT IMPROVEMENTS*

Product Name 5F & H

Product Family



DESCRIPTION

Carlyle's 5F & H compressors have been considered industry workhorses for over 50 years. These compressors combine high efficiency and durability with complete serviceability. Carlyle has reviewed the application of these compressors in commercial refrigeration with our valued customers and made a number of changes to make them even easier to apply. **Carlyle will begin accepting orders in August 2002. Contact your Carlyle Regional Sales Manager on pricing or availability.**

NEW MODELS WITHOUT PRESSURE SWITCHES

Historically Carlyle has only offered the 5F & H models with the high, low and oil safety switches attached to the compressor with capillary tubes connecting the switch to the respective pressure reading areas on the compressor. This has been a concern for our refrigeration customers who prefer to use switches without capillary tube connections. In an effort to better

serve these customers, we are now offering the 5F & H models without the switches. The new models are listed below:

Current OEM Sales Package (with Hi/Lo & OPSS Switches)	New OEM Sales Package without Switches	Compressor Nameplate P/N (without Switches)
5F20-C654D 5F30-C664D 5F40-909 5F60-909	5F20-C654D (same) 5F30-C664D (same) 5F40-C14901 5F60-C14901	5F20-C654 5F30-C664 5F40-C149 5F60-C149
5H40-909 5H46-404 5H60-C119 5H66-404 5H80-A204 5H86-404 5H120-A204 5H126-404	5H40-C14901 5H46-C14901 5H60-C14901 5H66-C14901 5H80-C14901 5H86-C14901 5H120-C14901 5H126-C14901	5H40-C149 5H46-C149 5H60-C149 5H66-C149 5H80-C149 5H86-C149 5H120-C149 5H126-C149

It should be noted in light of our new product offering, Carlyle is requiring the OEM manufacturers to supply their own UL approved high, low and oil safety switches as a condition of warranty. In addition the switches must have trip settings within Carlyle’s approved range for the application. For high, low and oil safety pressure switches – see current 5F & H Installation, Startup and Service Instructions. For customers wishing to continue using the existing high, low and oil safety switches, accessory packages with cap tubes will be available. The current oil safety switch package is 5F20-212. An additional accessory High/Low pressure switch package is now being set-up that includes the mounting bracket and hardware. The part number of this new package is 5H40-A722.

All the 5F models and the 5H40, 5H46 and 5H60 models have been UL Listed. The larger 5H66 through 5H126 compressors do not have UL or CSA approval. This old UL Listing required compressors be shipped by us with high-pressure switches. The new 5F’s and 5H40 through 5H60 models without pressure switches will continue to be supplied with UL Listing & CSA code approvals but the OEM will be required to supply a UL/CSA approved high pressure switch to maintain these approvals. The UL Listing and CSA approval is covered in the UL file below, due to harmonized codes between the United States and Canada. All the 5F & H compressors are also ISO 9002 registered. The code approvals are shown in the following files:

- UL File number – SA5605
- CSA File number – SA5605
- ISO 9002 Certificate Number A2899

FACTORY INSTALLED WATER-COOLED HEADS

Applications with Refrigerant 22 at higher compression ratio’s, such as low temperature refrigeration, require the use of water cooled cylinder heads to keep the compressor internal temperatures within acceptable operating limits. In the past this water-cooled head accessory package was added in the field or at our OEM customer’s facility. We are now adding a factory-installed option. Shown below are the new compressor model and package part numbers that offer this feature.

New Sales Package with Water-cooled Heads (OEM Order P/N)	Compressor Nameplate P/N with Water-cooled Heads
5F20-C86401	5F20-C864
5F30-C86401	5F30-C864
5F40-C86401	5F40-C864
5F60-C86401	5F60-C864
5H40-C86401	5H40-C864
5H46-C86401	5H40-C864
5H60-C86401	5H60-C864
5H66-C86401	5H66-C864
5H80-C86401	5H80-C864
5H86-C86401	5H86-C864
5H120-C86401	5H120-C864
5H126-C86401	5H126-C864

Note the above models supplied with water-cooled heads do not have high, low or oil safety switches supplied with them. As noted in the prior section, Carlyle requires the OEM manufacturers to supply their own UL approved switches or use the switches shown in the 5F20-212 and 5H40-A722 accessory packages. The OEM should also set the high, low and oil safety switch to settings recommended in Carlyle’s 5F & H Installation, Startup and Service Instructions. Carlyle has maintained the code approvals with these new water-cooled head models on the models 5F and 5H40 through 5H60 models.

NEW 5H40 TO 5H86 MODELS FOR EXTERNAL CAPACITY CONTROL

Carlyle compressor is introducing 5H40, 46, 60, 66, 80, and 86 compressor models that have been specifically set up for operation with external capacity control.

The Carlyle 5F/H open drive compressors all have built-in capacity control that gives excellent part load performance. The compressors can be unloaded in steps to allow the compressor capacity to match the system load. This not only improves system energy efficiency, but also helps to keep the air or product temperature more uniform.

For air conditioning applications, the compressors have a built-in unloader control that operates off of suction pressure

(Figure 1). As the suction pressure changes at the unloader set point, the compressor will load or unload. This unloader mechanism operates satisfactorily for air-conditioning, but the 11-psi pressure swing between completely loaded to unloaded is too large for most refrigeration duty or process cooling applications.

In this application, system designers have utilized our external 3-way capacity control system (Figure 2). This allows finer pressure control to keep the process or refrigerated product at the proper temperature.

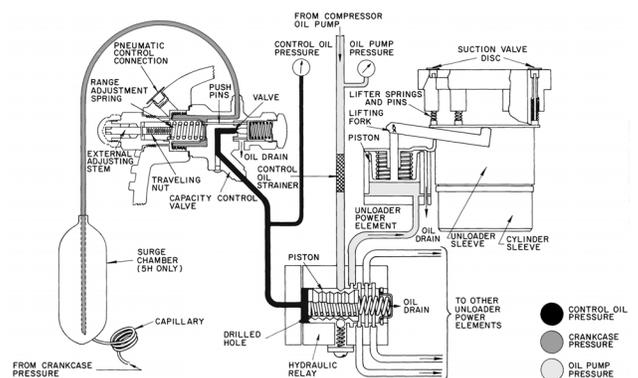


Figure 1 – Capacity Control – 5H40, 60, 66, 80, 86

To adapt the current 5H40 to 5H86 models, the OEM has been required to deactivate the compressor’s built-in suction pressure capacity control by adding a blank off plate.

The new models will avoid this requirement by eliminating the components required for suction pressure capacity control. This will also avoid the potential for any possible internal or external leaks of these components.

Shown in Figures 2 and 3 is an outline of the new 5H40 to 86 compressor pump cover and bearing head. All the connections will be available for external capacity control connections.

A label will be supplied with these new models warning the compressors must have external capacity control (or external tubing connected from the oil pump to all the unloader part connections) to operate the compressor at full load. Otherwise the compressor will operate permanently unloaded and this can damage the compressor.

The new external capacity control models can be converted back to the current suction pressure unloading models by installing the 5H40-A564 pump end cover and control valve assembly.

The new models built for external capacity control will also be supplied without pressure switches. The OEM must supply their own UL-approved high, low and oil switches. See the recommendations in the earlier section. The 5H40 though 5H60 models will also continue to maintain their UL recognition on these new models.

Carlyle is also offering this option with water-cooled heads. The part numbers below give the package numbers that should be used to order these new models for external capacity control (with or without water-cooled heads).

New OEM Sales Package (External Capacity Control)	New OEM Sales Package (External Cap. Cont & Water-cooled Heads)
5H40-C83401	5H40-C87401
5H46-C83401	5H46-C87401
5H60-C83401	5H60-C87401
5H66-C83401	5H66-C87401
5H80-C83401	5H80-C87401
5H86-C83401	5H86-C87401

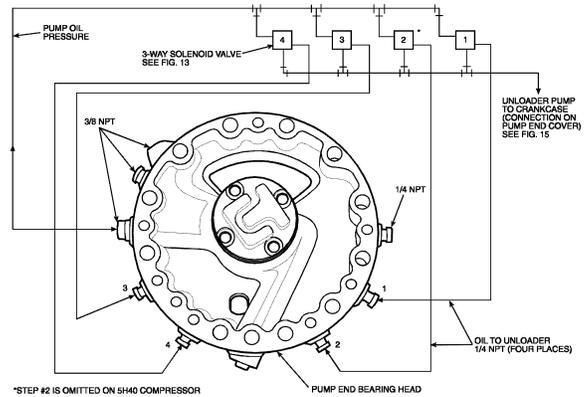


Figure 2 – Bearing Head Pump Assembly

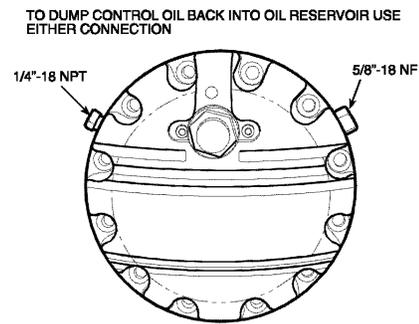


Figure 3

Warning – this model must have the external capacity control connected or the compressor will operate fully unloaded!