

2.0 – Compressor Lubrication System

2.1 Compressor Lubrication

All refrigeration compressors must have adequate lubrication to ensure trouble-free operation and a long life. When starting up any new system, some oil will be lost to coat the inside of the piping, some oil will be lodged in low velocity areas of the system, and some will be kept in circulation. This loss must be made up by adding oil to the system after the initial start-up. Very low compressor oil levels can cause complete loss of lubrication and may result in an immediate compressor failure if not protected against.

The loss of oil can also be caused by flooded starts or refrigerant migrating into the oil during an off period and pulling the oil out of its sump during the sudden pressure drop of a start-up.

While it has always been apparent that very low oil levels can cause compressor damage, it has also become apparent that excessive oil charges can shorten the compressor's life. Oil levels above the center of the O6E compressor sightglass cause elevated crankcase and oil temperatures, increased power consumption, and possible valve plate gasket failures. This problem of excessive oil charges has been mainly evident on O6E multiple compressor applications but does not appear to have caused any difficulties with the application of O6D compressors.

The oil level should be observed in the sightglass immediately after the compressor shutdown, while it is still warm. The level observed when the compressor is not running for a long period may be a mixture of oil and refrigerant which would not be a true indication of the oil level when the compressor is running.

If the oil level in the sightglass of an O6E compressor is less than one-eighth (1/8) up from the bottom of the glass, this indicates a low oil level. If the oil level is up more than one-half (1/2) from the bottom, this indicates a high oil level. Therefore, the oil level should be 1/8 to 1/2 up the sightglass when the compressor is running for O6E compressors.

Figures 6, 7, and 8 show different oil levels when a single O6E compressor is running. The photos in each figure show the right and left sightglass of the same compressor (only one sightglass is factory supplied). If the level is not the same in each glass, consider the true oil level to be the lower level. The difference in levels is due to the rotation of the crankshaft. The crankshaft and running gear are producing the windage required to push the oil down on one side while raising it on the other. Reversing the direction of rotation of the motor will reverse this relationship.

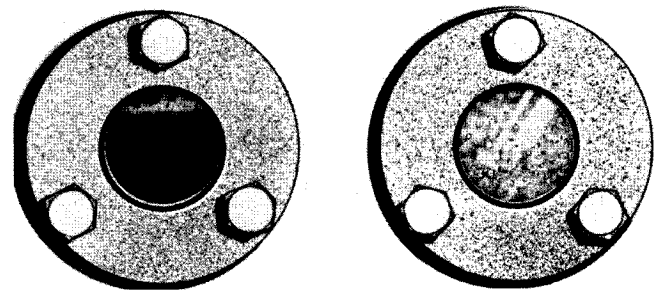


Figure 6—High Oil Level

The oil level in Figure 6 is at least 7/8 of a sightglass. Note the high oil level in the left sightglass, and solid foam in the right sightglass. Whenever the glass is filled with foam, excessive oil is indicated and oil should be removed.