

Performing a Clean-up After a Burnout

When the motor of a hermetic or semi-hermetic compressor burns out, it is possible for contaminants to form in the compressor, depending on the severity of the motor burn. It is also possible for these contaminants to be pumped out into the system. If this occurs, the contaminants must be removed from the system - otherwise they will surely cause the new compressor to fail.

A common cleanup procedure used on severely contaminated systems is the repetitive filter changeout method. When a technician encounters a compressor with a burned motor winding,

- The first step in the repair process is to determine the degree of the burn. This can be done by taking an oil sample from the compressor or a refrigerant sample from the system and testing its acidity level.
- If the test shows no signs of acids in the system, then it can be adequately cleaned up simply by installing an oversized liquid-line filter-drier.
- However, if either test sample shows acids, the system should be considered severely contaminated and the repetitive filter changeout method should be used.

DO IT RIGHT

1. The first step is to recover the refrigerant from the system. It may be possible to reuse it if it can be cleaned up adequately. However, this may not be possible or may be very difficult to do in the field. Normally it's best to properly dispose of the old refrigerant and recharge the system with new.
2. The old compressor needs to be removed from the system. Any reusable components - such as the crankcase heater, unloaders, and/or pressure controls - should be transferred to the new compressor, which is then installed into the system.
3. The technician needs to examine the severity of the contamination of other system components and determine whether they need to be cleaned or replaced. This includes examining the metering device, any liquid-line solenoids, or any other flow-control device.
4. The next step is to install a suction-line filter-drier and an oversized liquid-line drier into the system. Use filter-driers that are recommended for cleaning up a system after a severe motor burn. Also, the suction-line filter-drier should have access ports at its inlet and outlet so the pressure drop across the drier can be measured later.

After all the components have been examined, replaced, or cleaned, and the filter-driers are installed, the system should be properly evacuated using a quality vacuum pump and vacuum gauge. Triple evacuate the system at this time.

5. Recharge and start up the system according to the manufacturer's recommendations.
6. Let the system run one to two hours while observing pressure drop across the suction-line filter-drier. If its pressure drop becomes excessive, replace both the liquid-line and suction-line filter-driers. Also, take an oil sample and test its acidity level. If the test still shows signs of contamination, replace the oil charge.
7. Start up the system again and let it run for another one to two hours, observing the pressure drop across the suction-line filter-drier. If the pressure drop again becomes excessive, change the filter-drier again and check the oil. Repeat this process until the pressure drop across the suction-line filter-drier stays below the recommended value.

ENSURING RESULTS

Once this occurs, let the system run for 24 hours, then check the pressure drop across the suction-line filter-drier and take another oil sample. If the pressure drop is good and the oil sample shows no sign of contamination, the system can be considered clean.

At this point, remove the suction-line filter-drier from the system. Recheck the oil in two weeks to make sure the system remains clear of contaminants.

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