777 EDUCATION AND CONSULTING, INC.

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HVAC SOLUTIONS

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REPAIR VS REPLACE

Repair vs Replace

With the advent of 13 SEER minimum efficiencies, installed costs of air conditioners has increased substantially. As a result more compressors will be replaced in 2006 than were replaced in years past. Where it used to cost only slightly more to replace the condensing unit rather than the compressor, we contractors must now give the customer a price on replacing the complete system with a 13 SEER unit or better. The old evaporator probably won't work with 13 SEER condensing units.

While it is still legal to install units with lesser efficiency, when those units have been depleted from inventory only the new units will be available. It became illegal to manufacture units less than 13 SEER as of **January 23, 2006**.

So, prepare yourself and your company for more repairs and fewer replacement sales in 2006 and beyond.

Most Expensive Repair

Replacing the compressor in an air conditioner is typically the most expensive air conditioner repair you offer your customers. Do it right and the replacement will last for years. Do it wrong and the new compressor may not last the summer.

Do It Right

First, determine the cause of the failure.

- Mild Burnout
- Mechanical Failure
- Severe Burnout

Before making a determination of the cleanup procedure to follow, perform an acid test with any of the acid test kits available at your favorite wholesaler. Whether your acid test is positive or negative follow the manufacturers procedure for compressor replacement. If manufacturer requirements are not known, the following will give you some guidance.

Acid Test Negative

1. Recover refrigerant and remove compressor by cutting lines with a tubing cutter,
2. Using nitrogen, reverse purge condenser coil and evaporator coil,
3. Install new compressor,
4. Install or replace liquid line drier,
5. Leak check using regulated dry nitrogen according to supplier's specifications (low side test pressure should be used),
6. Evacuate the system to 500 microns,
7. Accurately charge the unit and check for proper operation.

Acid Test Positive

1. Recover refrigerant and remove compressor by cutting lines with a tubing cutter,
2. Using nitrogen, reverse purge condenser coil and evaporator coil,
3. Install new compressor,
4. Install or replace liquid line drier with the next size larger,
5. Install **suction line drier**,
6. Leak check using regulated dry nitrogen according to supplier's specifications (low side test pressure should be used),
7. Evacuate the system to 500 microns,
8. Accurately charge the unit,
9. Operate system for two hours and recheck acid level of crankcase oil. If oil is still acid, change both driers and operate system for another two hours. Continue this process until the crankcase oil is non-acid. Follow suction drier pressure drop restrictions of the system manufacturer.

Remove the suction line drier when cleanup is finished as indicated by a negative acid test.

Suction line dryer note: at no time should the suction line dryer pressure drop exceed 5 psig (some manufacturers recommend 8—10 psig maximum) — measure this drop with the same pressure gage. If your pressure drop exceeds 5 psig it must be replaced immediately. A pressure drop of 5 psig or less, for no more than 24 hours is acceptable. Return to the job and remove the suction line drier—it should be used for clean up only.

The preceding guidelines assume you are replacing a hermetically sealed compressor. A semi-hermetic compressor affords the service technician the opportunity to disassemble the compressor and determine what happened. Be sure to get manufacturer approval for disassembly if the compressor is in warranty. What may show up as a motor burnout may actually be caused due to lack of lubrication which resulted in rotor drag and eventual motor failure. Lack of lubrication can be caused by liquid floodback, slugging, dirt in the system, etc.

It is also recommended that you change the contactor, run capacitor, and the start components, if so equipped. If one of these items is faulty you could ruin the new compressor in a short time. These items are cheap insurance against a repeat failure.

Need more information? Behler-Young will be having a **Compressor Diagnostics** seminar this month. The course description follows.

For a complete Behler-Young training schedule, through June 2006, visit —

www.behler-young.com

And click on ***"Dealer Training"***. The July—December 2006 schedule will be available at the end of May.

Compressor Diagnostics

At this seminar students will learn the basic differences between scroll and reciprocating compressors, how to diagnose motor winding electrical problems, what causes electrical and mechanical failures, proper cleanup procedures, and how to prevent repeat compressor failures. Students should have a working knowledge of air conditioning systems. 6:00 p.m. - 9:00 p.m. Tuesday, May 16 (Grand Rapids); Wednesday, May 17 (New Hudson)

New Courses
Coming To Behler-Young This Fall

- ***IAQ For HVAC Professionals***
- ***Electric Meter Usage For HVAC Technicians***

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