Compressor Installation

1 PREPARATION

Before heading to a call to install a new compressor make sure of the following -

- What type of failure was diagnosed?
- Acid Test should have already been performed on diagnosis so that acid abatement protocol could be properly quoted. Was it?
- Do you have enough of the appropriate refrigerant to complete the job?
- Do you have a new capacitor that matches the new compressor?
- Do you have a new suction and liquid line drier for the system (bi-flow drier for heat pumps)
- Do you have test kits, driers and acid inhibitors for burnout applications?
- Do you have fittings and copper pipe to properly install the new compressor?
- Do you have a new plug or lead kit for the new compressor?
- Is the compressor warranty? and is the job billing or COD?

2 UPON ARRIVAL

Before removing the new compressor from the box confirm the following -

- Confirm the diagnosis of the previous technician - If it was a diagnosed burnout check the wires, check the crank case heater and check the terminals on the compressor. If it was a non-pumping diagnosis make sure to check that it is not actually a reversing valve or TXV issue.
- Confirm that the compressor you have is a correct replacement and that the feet bolts either match or can be adapted
- Confirm whether the system has a factory hard start kit if so it will need to be replaced. If it has an aftermarket start kit it must be removed.

3 COMPRESSOR REMOVAL

1. Fully recover the refrigerant charge
2. Unwire the compressor completely and tape wires away from the compressor to prevent damage to them. Mark the wires as to which terminals they went to for reference.
3. Cut both of the lines as near to the old compressor as possible, un-sweating the lines is not recommended as the old oil will likely catch on fire and possibly cause injury or wire damage.
4. Remove the foot bolts to the old compressor
5. In cases of possible burnout use an acid test kit to confirm if burnout protocol should be followed. (Mainstream Quikcheck for residential, Sporland Test-All for larger commercial systems)
6. Remove the old compressor carefully you may use a compressor lift tool to assist. Do not strain your back while doing this, if it is too heavy call for back up.

4 BURNOUT PROTOCOL

1. If the system has a suction accumulator, remove the accumulator and extract, capture and properly dispose of old oil from it and then blow out the accumulator with nitrogen (Note: in severe burnouts a new accumulator should be ordered and replaced with the compressor)
2. In cases of severe burnout some contractors will add an acid inhibitor / neutralizer to the new compressor. This is highly disputed in the industry so consult your manager on whether or not this is part of your protocol.
3. Install a suction line drier in a location where it can be easily removed later. On heat pump systems ensure that it is either located in common suction or that the system head mode is disabled (low voltage R wired to O)
4. Test Pressure drop across the suction drier after 1hr of run time. If more than a 2 PSI drop exists, replace the drier.

5. Set on schedule to return and retest oil + either replace or remove suction drier. Remember to remove O to R Jumper if one was installed.

5 INSTALLING THE NEW COMPRESSOR

1. Remove any old liquid and or suction driers that exist from previous work, some systems may have factory driers that should also be removed.
2. Install a new liquid line or bi-flow drier in the liquid line either outside of the condensing unit or next to the air handler. (do not install in the discharge line near the compressor, many systems have a discharge muffler near the compressor that looks a drier but it is not) Make sure that the arrow on suction and liquid driers is pointed in the direction of flow.
3. Reinstall the suction accumulator (if there is one) and also install the new suction drier in cases of high acid
4. Put the new compressor in place being careful not to strain your back.
5. Pipe in the new compressor, use heat shield near the compressor to ensure you do not overheat it. Be careful with the flame so you do not damage wires in the area.
6. Tighten down the foot bolts.
7. Flow nitrogen with 3-5 SCFM while brazing. This means FLOWING through the system, not brazing under pressure.
8. Install a new compressor capacitor as well as new plug and lead kit as needed. Make sure you have the correct wires on the correct terminals.

6 CHARGING AND TESTING

1. Pressurize the system with nitrogen by allowing the nitrogen to enter the liquid / discharge port. pressurize to an exact number (usually 100psi) and make a note of what is set to.
2. Bubble test all new joints and observe concealed areas with a mirror
3. If the system has held pressure for at least 20 minutes proceed on... if the pressure drops, first bubble test your gauges and ports and then proceed to do a deeper leak check.
4. Check the oil in your vacuum pump for level and clarity.
5. Evacuate the system to 500 microns or less for at least 30 minutes. If evacuation stalls in the range of the boiling pressure for more than 10mins, break the vacuum with nitrogen and re-evacuate. Watch vacuum pump oil for cloudiness.
6. Liquid charge the system by weighing in a factory charge into the liquid line, Never add liquid directly to the new compressor into the suction or discharge ports.
7. If the compressor has a crankcase heat, power on the HV with the system off so that the compressor can be warmed to reduce liquid slugging on startup.
8. Wait for charge to equalize and compressor to warm, then run the system with your amp clamp on the compressor common lead. Make sure the compressor is drawing normal amperage and pressures are normal. If the compressor makes strange noises or draws high amperage shut it off immediately and diagnose.
9. Once the charge has stabilized set it to factory superheat / subcool specs
10. Check the superheat, subcool, head / suction pressure, system split and all amperages and note them on the invoice or job sheet. Also check filter and coil conditions (these should have been checked upon diagnosis but it is good to double check)
11. Check the system in both heat and cool modes according to the type of system, checking against manufacturer recommendations and specs.
12. Clean the drain line and drain pan and observe condensate drainage

Finally - Make sure whether or not the compressor is under warranty. If it is under warranty get all the data needed for the claim and tag it to the old compressor. Ask the office for further instruction on completing the claim.