

# COMPRESSOR CHANGE-OUT TECHNICAL EVALUATION FORM

It is recommended that when a compressor is being replaced a complete evaluation of the part and system be made. Changing the compressor is one of the larger repairs that a service technician can encounter during the repair of a heating and cooling system. This checkout form has been developed to help guide the technician through the repair process.

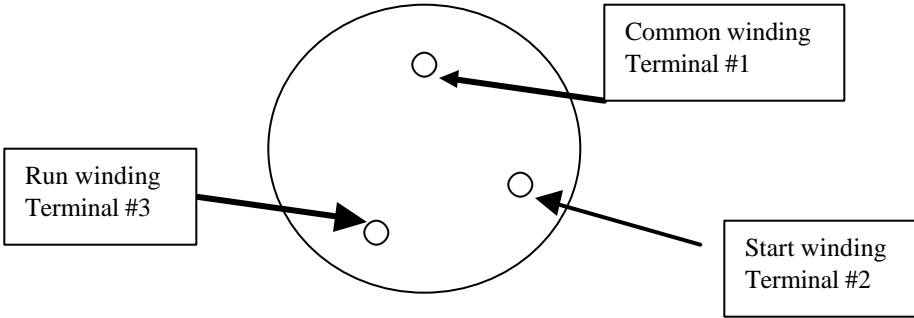
## Testing the existing compressor

**Important Note:** Before making any electrical checks disconnect all electrical power to system including Indoor and outdoor power sources.

**To make the following tests disconnect power wiring going to compressor!!**

Is the compressor single  $\emptyset$   Is the compressor 3  $\emptyset$  208/230v  Is the compressor 3  $\emptyset$  460v

Winding ohm readings



The diagram shows a circular terminal block with three terminals. Arrows point from labels to each terminal: 'Common winding Terminal #1' points to the top terminal, 'Run winding Terminal #3' points to the bottom-left terminal, and 'Start winding Terminal #2' points to the bottom-right terminal.

# COMPRESSOR CHANGE-OUT TECHNICAL EVALUATION FORM



## Compressor Winding Information

Ohm $\Omega$  Reading between terminal 1 and 2 = \_\_\_\_\_  $\Omega$  (Ohm reading)  
Between terminal 1 and 3 = \_\_\_\_\_  $\Omega$   
Ohm reading between terminal 2 and 3 = \_\_\_\_\_  $\Omega$   
Ohm reading between terminal 1 and ground \_\_\_\_\_  $\Omega$   
Ohm reading between terminal 2 and ground \_\_\_\_\_  $\Omega$   
Ohm reading between terminal 3 and ground \_\_\_\_\_  $\Omega$   
Winding reading(1,2) + (1,3) = (2,3) ***if not compressor winding is damaged***

Note: A reading of infinity to ground should be detected between each terminal to ground. **If not**, test for short to ground at the compressor windings.

## Capacitor testing

Run capacitor value \_\_\_\_\_ mfd. Did capacitor test good with capacitor tester or volt ohm meter  yes  no

## Other Inspections

# COMPRESSOR CHANGE-OUT TECHNICAL EVALUATION FORM



Inspect all wiring, is there any damage to wire or wire terminals  yes  no

Inspect compressor contactor, are the contact points burned  yes  no

Has the compressor failed any of the winding tests  yes  no, if so than an acid test must be made of the compressor oil

Has acid been detected in the compressor oil  yes  no

**Whenever the system is opened to the Atmosphere, it is required that a replacement Liquid line drier be installed at the outdoor unit. When Acid is detected in a system utilizing a acid test kit, a Suction Line Filter Drier must be installed!!!**

### Compressor Mechanical Tests

**Note: before the mechanical testing can be completed the compressor and the unit wiring must be reconnected as per unit electrical wiring diagram.**

With the unit connected to electrical power, will the compressor operate  yes  no

If no: revert back to compressor winding information and collect information again.

### Compressor Pressure Information

Discharge pressure at compressor \_\_\_\_\_ psig

Suction pressure at compressor \_\_\_\_\_ psig

Superheat at suction tubing at outdoor unit \_\_\_\_\_ F°

Sub cooling at the liquid line leaving the outdoor unit \_\_\_\_\_ F°

Amp draw at run winding \_\_\_\_\_ a. Amp draw at start winding \_\_\_\_\_ a.

Amp draw at common winding \_\_\_\_\_ a

Voltage at compressor contactor terminal T1 and T2 \_\_\_\_\_ v.(single phase )

T1, T2, \_\_\_\_\_ v. T2, T3, \_\_\_\_\_ v. T1, T3 \_\_\_\_\_ v. (3 Ø)

# COMPRESSOR CHANGE-OUT TECHNICAL EVALUATION FORM



**If the Compressor will not operate:**

What is the lock rotor amp rating on the listed for that unit \_\_\_\_ amp?

What is the lock rotor amp draw on the common wire to the compressor \_\_\_\_\_ amp?

What is the lock rotor amp draw on the run winding \_\_\_\_ amp?

What is the lock rotor amp draw on the start winding \_\_\_\_ amp?

**If a compressor failed and the cause has not been determined and eliminated, the replacement compressor will fail.**

Since you cannot see inside of a hermetically sealed compressor the oil is a valuable service tool on what caused the failure. Make an oil inspection and measurement tool out of an old clear one gallon milk jug. Prior to use add ounce lines to the jug.

- The oil quantity is listed on the compressor data tag.
- Place the removed compressor on a secure tailgate or bench.
- Slowly tip the compressor toward the open suction stub.
- Place the milk jug under the suction stub to capture the used oil.
- Look at the clarity and quantity of the coil.
- Once done with your inspection pore the oil back into failed compressor suction stub.

	Compressor fail because of:	Oil looks like this:	Caused by a system issue:	
1.	Flooding	Sparkly pieces of ground up bearing	Check metering device, over charge, low indoor airflow, lack of load on the evaporator	
2.	Flooded startups then get better quickly	Small chunks of broken scroll wrap	Refrigerant migration into compressor during off cycle, indicated by noise & vibration	
3.	Slugging	Big chunks of brokenparts, vented terminal pin	Buried line set, evaporator above and no inverted suction loop	
4.	Loss of lubrication	No or very little oil remaining	Low velocity, low load, short cycling, traps, piping errors, cause by system issue, accumulator "J" tube orifice clogged preventing oil return	
5.	Contamination			
6.	Overheating			
7.	Electrical Problems			

***For additional compressor pressure and temperature testing questions refer to the A/C and/or Heat Pump Field Assistance Request Form!***

Technician's Name: \_\_\_\_\_ Date: \_\_\_\_\_