Refrigeration Preventative Maintenance

Validation Form

Store T#_____

Instructions

Please complete each step and attach a copy of this form to the work order. If the PM includes pull-though work, please attach to work order 2. If there is no pull-through work, please attach to work order 1.

Any acceptable items defined in the Refrigeration Preventative Maintenance SOW Materials section found during this form's completion to need repairs should be proposed on refrigeration PM work order 2.

Convential Compressor Racks and Remote Condensing Units

☐ **Complete acid test on each rack**

- If acid is indicated during test, please list rack(s) _____
- If acid is indicated, propose on work order 2 to install acid core dryers and oil change

☐ **Preform non-condensable check on all RTCR/Racks per attached best practice**

- If failed, please list rack(s) _____

☐ **Check conditions of oil, oil separator filter, oil filter, liquid line filter dryer, and ensure suction filters are pulled for all RTCR/Racks**

- List rack(s) that require oil change _____

☐ **Set DDR valve, condenser holdback, and receiver pressurization valve per attached pest practice and Target ROG for all RTCR/Racks**

* If RPV needs replacement, replace with A9 5/8 port 5/8 connection

- Rack_____ DDR_____ CHB_____ RPV_____
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- Rack_____ DDR_____ CHB_____ RPV_____

☐ **Verify proper sequence of operation for all condensers (fans, valves, etc.)**

☐ **Check condition of the condenser coil (damaged, deteriorated, etc.)**

- Note condenser findings on WO2 and attach pictures

☐ **Measure and record the temperature split across all condenser coils according to refrigeration industry standards (air in and out)**

- List rack(s) _____

☐ **Ensure racks are running at 25-35% full condenser 30-40% split condenser refrigerant in the receiver**

- List rack(s) not within guidelines _____ and propose on WO2
- Super Target's may not fall under these parameters. Have service manager to reach out to technical lead.

☐ **Verify proper sequence of operations and set-up for subcooler (temp/pressure sensors, EPR, settings in subcooler controller, and vapor injection valves). Set according to Target ROG settings.**

- Rack(s) _____

☐ **Check condition of the compressor contactors and repair or replace as necessary for proper operation**

- Propose any necessary work on WO2

☐ **Tighten all high/low voltage electrical connections in all RTCRs/DCRs/racks and condensers**

☐ **Ensure proper sequence of operation for all compressor safeties**

- Low pressure setting below REMS setting / high pressure setting above REMS setting
- Verify oil controls and demand cooling functions

☐ **Silicone all rub points in all RTCRs/racks**

☐ **Check full operations of all CUs and set per Target ROG (safeties, pressure controls, and pump down). Validate compressor low pressure operating control CUT IN and CUT OUT settings are dialed in to prevent compressor from operating in a vacuum**

☐ **Salesfloor HVAC conditions (take field reading at sensor location with sling using standard HVAC/R practices)**

- Dry bulb _____ Wet bulb _____ R/H% _____ Dew point _____
  - If less than 5%, enter off-set into E2 controller / If greater than 5%, contact EMC for new sensor

☐ **For systems with adiabatic air cooled condensers, inspect filter media for deterioration and/or material buildup**

☐ Validate RTCR exhaust fan and louver are both functioning fper E2 commands

Co2 Sub-Critical Trans-Critical Compressor Racks_

☐ **Complete acid test on each rack**

- If acid is indicated during test, please list rack(s) _____
- If acid is indicated, propose on work order 2 to install acid core dryers and oil change

☐ **Preform non-condensable check on all RTCR/Racks per attached best practice**

- If failed, please list rack(s) _____

☐ **Check conditions of oil, oil separator filter, oil filter, liquid line filter dryer, and ensure suction filters are pulled for all RTCR/Racks**

- List rack(s) that require oil change _____

☐ **Gas cooler Danfoss Electronics IPro or other**

- Validate transducer and temp sensor location and accuracy

☐ **Flash Gas regulator (similar to A9 receiver pressurization valve) closes to maintain desired pressure**

- Validate transducer and temp sensor location and accuracy

☐ **Check temp differential across heat exchangers**

- Validate sensor location and accuracy

☐ **Heat Reclaim**

- Validate sensors and valves are functioning per E2 commands

☐ **Verify proper sequence of operation for all condensers (fans, valves, etc.)**

☐ **Check condition of the condenser coil (damaged, deteriorated, etc.)**

- Note condenser findings on WO2 and attach pictures

☐ **Measure and record the temperature split across all condenser coils according to refrigeration industry standards (air in and out)**

- List rack(s) _____

☐ **Ensure racks are running at 25-35% full condenser 30-40% split condenser refrigerant in the receiver**

- List rack(s) not within guidelines _____ and propose on WO2

☐ **Verify Hot Gas Bypass**

- Zero Zone Rack check superheat on medium temp header
- L&P Hussmann Rack validate superheat at heat exchanger
- Kysor Warren Rack FTE system validate superheat control

☐ **Check condition of the compressor contactors and repair or replace as necessary for proper operation**

- Propose any necessary work on WO2

☐ **Tighten all high/low voltage electrical connections in all RTCRs/DCRs/racks and condensers**

☐ **Ensure proper sequence of operation for all compressor safeties**

- Low pressure setting below REMS setting / high pressure setting above REMS setting
- Verify oil controls, oil solenoid operation, validate sensors

☐ **Silicone all rub points in all RTCRs/racks**

☐ **Check full operations of all CUs and set per Target ROG (safeties, pressure controls, and pump down)**

Validate compressor low pressure operating control CUT IN and CUT OUT settings are dialed in to prevent compressor from operating in a vacuum

☐ **Salesfloor HVAC conditions (take field reading at sensor location with sling using standard HVAC/R practices)**

- Dry bulb _____ Wet bulb _____ R/H% _____ Dew point _____
  - If less than 5%, enter off-set into E2 controller / If greater than 5%, contact EMC for new sensor

☐ **For systems with adiabatic air-cooled condensers, inspect filter media for deterioration and/or material buildup**

☐ Validate RTCR exhaust fan and louver are both functioning per E2 commands

Walk-ins

☐ **Check to ensure all walk-in doors close and all door alarms and switches are operational, validate door alarm horn functions per ROG**

☐ **Inspect all walk-in door gaskets for tears or rips, ensure gasket is completely attached to door, making a complete seal around entire perimeter**

☐ **Check for heavy ice buildup in walk-in freezer**

☐ **Ensure all evaporator fans are operational**

☐ **Ensure all walk-ins terminate defrost correctly, ensure fans cycle off and delayed on during defrost (electric and hot gas only)**

- Validate the fan delay control is dialed in to prevent fan from energizing too soon

☐ **Check walk-in freezers for strip curtains; inform PML of any missing or damaged curtains (strip curtain is PML responsibility)**

- Strip curtains should be trimmed to ½ - 1" from finished floor

☐ **Check that evaporators in all walk-ins are clean**

- Propose cleaning on WO2

☐ **Check and balance superheat on all walk-in evaporators**

- All coils on a circuit should be within one degree of set-point

Salesfloor Cases

☐ **Check sales floor cases for ice buildup in the drain pan (viewed through the return air grill)**

☐ **Ensure all systems are properly terminating during defrost**

☐ **Check conditions of wires and contactors in the anti-sweat control panel (lighting, door heat panel)**

☐ **Check and balance superheat on all cases**

- All coils on a circuit should be within one degree of set-point
- EEPRs should average 20-40% closed

Leak Check

*Replacement parts for leak detection system should be ordered through EMC

☐ **Leak check racks, condensers, walk-ins, and salesfloor cases using electronic leak detection system and soap bubbles**

☐ **Ensure leak detection system is fully operational in all walk-ins, at the DCR, and in the PUC**

☐ **Use test gas to validate PPM alarm threshold level for each leak detection sensor**

☐ **Validate WI horns and strobe lights are functioning during the leak detection sensor test**

☐ **Validate alarm is registering on Einstein controller**

☐ **Validate remote alarm horn located at guest services, light and silence switch are functional**

- Remote alarm annunciator will only be triggered in the event of a refrigerant leak in the following locations

- WI boxes
- PUC, compressor room
- Indoor compressor racks

Refrigerant Type	System Type	Alarm Set Point (PPM)	Alarm Delay
R-404A	Leak Transducer	*65	No Delay
R-134A/R-513A	Leak Transducer	*250	No Delay
R-407A	Leak Transducer	*100	No Delay
R-448A / R-449A	Leak Transducer/IRLDS	100	No Delay/10 min if IRLDS
R-744 EMC Leak Detection	Leak Transducer	*2000	No Delay
IRLDS Leak Detection (All refrigerants)	Infrared Leak Detection System	*750	10 min.

*Industry standard is 100 ppms for Leak Transducers, but high alarm limits may reflect different values in Ultrasite depending on Refrigerant type.

Technician's Signature _____ Date _____

EPA #_____