

**REFR. LEAK.CAL.01 ANNUAL REFRIGERATION LEAK DETECTOR CALIBRATION TASK**

REFR. ANNUAL.CAL.01 Annual Refrigeration System and Leak Detector Calibration PM PM Plan: ARFG03

**Perform Leak Detector Calibration :**  
 Contractor to calibrate and confirm calibration of refrigerant leak detection system.  
 If leak detection system is infra-red type, contractor to change all end-of line filters prior to re- calibrating system.  
 If leak detection is piezoelectric type (MRLDS) – contractor confirm operation of system and re-calibrate.

System	Required Check	Requirement		
<b>Leak Check Each Refrigeration System</b>	All Refrigeration Units and Piping	Leak check all systems and piping with electronic leak detector		
	Vibration	Visually check refrigeration compressors and compressor rack for visible signs of vibration		
	Oil Residue	Visually check refrigeration compressors, refrigeration compressor rack, and condensing units for visible signs of oil residue		
	Excessive Heat			
	Oil Level	Look at each sight glass and verify that oil level is between 1/3 and 1/2 of glass		
	Foam in Oil	Look at each sight glass for foam.		
	Loose or missing Covers	Look at all cover, cover plates, etc.		
	Noise Level			
	Valve Caps	Look at each valve and ensure that all valves have valve cap in place		
	Test refrigeration system for non-condensibles			
	Execute oil acid test	Test acidity of refrigeration oil.		
	High / Low Pressure Switches	Verify settings and operation of switch		
	Oil Failure Switch	Verify settings and operation of switch		
	Check oil pressure			
	Replace compressor contactor			
	<b>Compressors/ Compressor Racks/ Condensing Units</b>	Electrical Connections	Verify tightness of all electrical connections	
	Amp Draws on Contactors/Breakers	Compressors/defrost/phase loss/		
	Fan motor	Look at condenser fan to verify that it is rotating		
	Fan guards	Inspect for broken, missing, or loose fan guards		
	Loose panels / components	Inspect all panels and covers		
	Valve caps	Inspect all valves to ensure that valve caps are in place		
	Clean or dirty?	Inspect inlet side of condenser for dirt, cotton, or other debris that will impact air flow		
	Fin condition	Inspect condenser coil surface for damaged or loose fins		
	Air flow?	Verify that air can flow/ is flowing through condenser		
	Clean Condenser	Contractor to pressure wash condenser		
	Pressure switches			
	Fan Cycling / condenser split	If system is so equipped, verify operation and settings		
	Electrical Connections	Verify tightness of all electrical connections		
	<b>Air Cooled Condenser Cycle Testing Condensers</b>	Cycle test condensers and System	Cycle test for high & low ambients and Controls low/high	
		Fan motor	Look at condenser fan to verify that it is rotating	
		Fan guards	Inspect for broken, missing, or loose fan guards	
		Loose panels / components	Inspect all panels and covers	
	Valve caps	Inspect all valves to ensure that valve caps are in place		
	Clean or dirty?	Inspect inlet side of condenser for dirt, cotton, or other debris that will impact air flow		

<b>Adiabatic Condenser / Evaporative Condenser</b>	Air flow?	Verify that air can flow/ is flowing through condenser	
	Clean Condenser	Contractor to pressure wash condenser	
	Water Treatment	Inspect condenser and sump for scaling, dirt, debris.	
	Electrical Connections	Verify tightness of all electrical connections	
<b>Water Cooled Condensers</b>	Check belts and bearings	check for scale and pitting on tube-sheets	
<b>Subcooler</b>	Oil residue	If system is so equipped, inspect subcooler for oil residue	
	Sensors / Transducers intact	If system is so equipped, verify that temperature sensors are attached to piping	
	Check Superheat	Verify superheat & Correct liquid supply temps	
<b>Oil Reservoir / Oil Separator</b>	Inspect oil reservoir / oil separator	Inspect vessel for oil residue	
	Verify oil level	Look at sight glass and verify oil level	
	Replace Oil Filters if pressure differential is over 8lbs	Replace oil separator filter annually	
<b>Filter Driers</b>	Measure temperature differential across liquid line drier. Replace drier if differential is greater than 5 degrees.	Change Filter Driers annually	
<b>Walk-in Cooler / Freezer Boxes</b>	Condensation issues	Inspect interior, and exterior of box for condensation issues or ice build up	
	Ice build up on floor	Inspect freezer floor along walls, and across doorways for ice build up	
	Door gaskets	Inspect door gasket for signs of damage, tears, or flattening	
	Door sweeps	Verify that door sweeps on cooler or freezer doors drag on the floor	
	Door closure mechanism	Verify operation of door closure mechanism	
	Latch and strike (inside and outside)	Inspect door latch and strike to ensure operation and that when closed, door is held tight to door fram	
	Lighting	Verify operation of cooler/freezer lights	
	Door Thresholds	Inspect condition of door threshold and replace as needed.	
	Verify that piping / conduit penetrations are sealed	Inspect penetrations throughwalls/ceilings to ensure that they are sealed	
	Condensation	Inspect each glass door for signs of condensation on exterior of door or between glass panes	
<b>Cooler / Freezer Roof Inspection</b>	Doors	Inspect all doors to ensure that door gaskets seal tightly to door frame when closed.	
	Inspect top deck of each cooler/freezer for condensation, mold, mildew	Inspect for mold, mildew and condensation.	
<b>Glass Doors (if so equipped)</b>	Inspect underside of building roof deck above all refrigerated or frozen spaces for water infiltration, mold, and mildew.	Inspect for mold, mildew and condensation. If found, contact Regional Maintenance Manager.	
	Door gasket condition	Inspect door gaskets for tears, damage, or flattening	
	Glass damage	Inspect glass for signs of damage	
	Loose handles	Inspect door handles to ensure that they are tight to door frame	
	Bent or inoperable door hold-opens	Inspect door hold opens.	
	In operable door closers	Verify that doors close automatically	
	Verify operation of door and door frame heaters. Replace as needed.	Replace as needed.	
<b>Strip Curtains</b>	Inspect for Damage	Inspect door curtains for signs of damage	
	Inspect of ice buildup	Inspect each evaporator for signs of ice build up	
	Fans spinning	Inspect each evaporator fan to ensure operation	
	Fan guards	Inspect for broken, damaged, or loose fan guards	
	Vibration	Inspect fan motor and fan assembly for vibration	
	Fan bearing noise	Listen to each fan motor for bearing noise	

	Fan rotation direction	Verify fan rotation	
	Coil damage / fin condition	Inspect each coil sheet for damage	
	Is the evaporator dirty	Check to see if evaporator coil is dirty	
	Cleaning of evaporator	Clean evaporator.	
	Fan guards and fan blades	Inspect for damage, clean guards and clean the fan blades	
	Inspect electrical connection on drain pan and defrost heaters.	Inspect heaters to ensure that there is clearance between the electrical connections and the copper components of the evaporator coil.	
	Inspect drain pan heaters and defrost heaters.	Ensure that heaters are operable and are held in place by the manufacturer provided brackets.	
	Replace defrost contactor		
	Inspect integrity of wiring harness for each fan motor	Inspect harness connection at motor, at terminal block, and at any plug connections. Apply dielectric grease to plug connection to retard the infiltration of moisture.	
<b>Evaporators</b>	Electrical Connections	Verify tightness of all electrical connections	
<b>Evaporator Drain Lines Evac Plumbing Systems</b>	Clean Drain lines and Evap Pans	Inspect drain pans for Ice build-up	
	Heat tape operation	Verify operation of heat tape	
	Verify that condensate drains into floor drain or reservoir	Inspect condensate drain line to ensure that it is not damaged, that it is open from evaporator drain connection to building drain	
	Check and clean evac system	Check Collectors/Buffer Boxes under fixtures and clean/ Check amps at unit/ Test system for proper operation	
<b>Piping System</b>	Vibration	Visually inspect refrigeration piping system and look specificall for vibration, shaking, movement, torn insulation	
	Torn insulation	Visually inspect piping system for signs of torn insulation	
	Condensation/Ice build up	Inspect piping system for signs of moisture, ice build up	
	Hangers- verify pipe is touching hangers, insulation is not crushed, hangers on overhead & walk-ins	Inspect piping system to ensure that hangers are not damaged and are supporting pipe throughout facility	
<b>REMS System</b>	Pressure Transducer Calibration	Contractor to verify calibration of each pressure transducer	
	Verify calibration of temperature sensors	Contractor to verify calibration of each temperature sensor. Replace if reading is not accurate.	
	Review cycle rates for refrigeration compressors.	Note is compressor cycles more that 150 times in 24 hours.	
	Verify that all refrigeration systems appear in the E2 panel	Visually check the home page on the E2 and ensure that all systems are visible.	
	Verify that site layout drawing is mounted on wall adjacent to or near E2 panel		
	Verify that site layout drawing accurately reflects building, quantity of refrigeration systems, and layout.		
<b>Leak Detection</b>	Verify callibration of leak detector	Contractor to verify calibration and operation of leak detector	
	Empty water trap		
	Repalce charcoal filter on IRLDS (Bacharach PN 3015-3125)		
	Replace Line-end Filter for each leak detection zone (Bacharach PN 3015-2906		
	Inspect end-of line water stop for each leak detection zone.		
	Verify operation of leak detector	Contractor to verify calibration and operation of leak detector	
	Replace leak detection modules (if electronic)	If system is equipped with electronic leak detector, replace module	
<b>Roof / Building Penetrations</b>	Inspect and verify that they are sealed		

<b>Wiring- Conduit</b>	Inspect integrity of conduit runs serving refrigeration equipment		
	Check evaporator, fan motor, blade and shroud all ok		
	Check defrost termination sensor, case temperature sensor and fan klixon location and fix it if it's not in right location and replace the sensor if it's bad		
	Check the controller and it's parameter. If controller is bad, replace it.		
	Check the honeycomb and adjust or replace if needed		
	Check the defrost heater and it's connection. Check the amps drawn		
	Check the anti sweat heater, drain pan heater and all wiring connection for proper connection and function		
	Check the TXV for correct operation, check the super heat and if needed clean the screen and replace the valve if it's bad		
	Check the wire shelves placement and return grille if misplaced place them correctly		
<b>Dual temperature reach in cabinet PM</b>			
	Check the product emulator location. Make sure it is placed farther from defrost heater and as per standard		
	Check the door gasket and if damaged replace it.		
<b>Self-Contained Equipment Requirements</b>			
<b>Condensers</b>	Vacuum each condenser		
<b>Condenser Fan</b>	Clean condenser fan. Verify motor operation.		
<b>Condensate Pan</b>	Clean condensate pan and verify operation of condensate pan heater and drain lines		
<b>Evaporator</b>	Clean evaporator fins, fan blade, guard		
<b>Door Gaskets</b>	Check door gaskets for damage		
<b>Anti-sweat Heaters</b>	Verify operation of anti-sweat heaters		
<b>Electrical Connections</b>	Verify tightness of all electrical connections. Inspect connections for corrosion or damage.		
<b>Panels and trim</b>	Check fit and finish of all panels and trim		
<b>Door Hinges</b>	Verify operation of hinge.		
<b>Door Hinges</b>	Ensure that door hinge is fastened tightly to case.		
<b>Fan Switch</b>	Verify that fan switch control fans and fans come on when door is closed.		
<b>Check operating temperatures and pressures</b>			
<b>Fan Guards</b>	Inspect fan guards for damage. Ensure that they are in place and clean		
<b>Lighting</b>	Inspect light sockets for damage.		
<b>Door power plug</b>	Inspect condition of door wiring harness.		
<b>Temperature Sensor</b>	Ensure that temperature sensor is mounted in return air stream of case.		
<b>Product Emulator</b>	Ensure that product emulator is located in the interior of the case, in the lower, back, LH corner.		
<b>Controls</b>	Verify that case is visible in E2 panel.		
<b>Additional equipment</b>	Note any additional refrigerated equipment that is on site and is not monitored through the E2 control panel.		
<b>Check All pressure controls and Fan delays</b>	Check all mechanical controls for proper operation		
<b>Defrost Heater</b>	Check heater and defrost function		
<b>TXV</b>	Check TXV operation and if screen is plugged, clean it		

<b>Product Emulator</b>	All reach-in freezers and chillers must have a product emulator affixed to the rear of the inside of each unit, halfway up from the bottom, secured from interference with product and the cable securely attached to the back panel.		
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