



Refrigeration Preventative Maintenance

Scope of Work

Overview

The purpose of this scope of work (SOW) is to help the refrigeration technician complete a thorough inspection and validation of all refrigeration equipment (monitored self-contained included). The technician is to ensure proper operation of refrigerated equipment by performing the actions and duties outlined in this SOW.

It will be the technician's responsibility to complete refrigeration PM validation form. The completed validation form **must** be attached to work order 2. If work order 2 is not used, the completed validation form will be attached to work order 1.

This program is executed throughout the year at all designated locations. Stores will receive one refrigeration PM work order per year. Stores receiving a remodel or gas conversion in the same fiscal year, will not receive a refrigeration PM work order. PFresh/Gen. Merch./Small Format stores remodeled two years prior and four years prior, will not receive a refrigeration PM work order. Select stores may receive two WOs per year. New stores receive WO 2nd year after Turn Over.

Expectations

Target Refrigeration Operations Technical Lead Team expects technicians to follow these basic guidelines:

- Work to be scheduled at vendors discretion within the LOS time period for WO #1 & #2
- Dispatch as first call of the day utilizing a single high-level technician
- Complete both WO#1 and WO#2 in as few of trips as possible
- It will be the technician's responsibility to become familiar with all written SOW's related to the RPM program

Scope

Schedule:

Refrigeration Preventative Maintenance

Cycle	LOS Start	LOS Finish	WO LOS
January	Monday, January, 30 th 2023	Wednesday, February 22 nd , 2023	21
February	Monday, February 27, 2023	Wednesday, March 22 nd , 2023	21
March	Monday, April 3, 2023	Wednesday, April 26 th , 2023	21
April	Monday, May 1 st , 2023	Wednesday, May 24 th , 2023	21
May	Monday, May 29 th , 2023	Wednesday, June 21 st , 2023	21
September	Monday, October 2 nd , 2023	Wednesday, October 25 th , 2023	21
October	Monday, October 30 th , 2023	Wednesday, November 22 nd , 2023	21
November	Monday, November 27 th , 2023	Wednesday, December 20 th , 2023	21

Pework and Planning:

- Vendor will receive store list with corresponding schedule dates (Cycles) for all stores, prior to the beginning of a new calendar year. Store schedules are subject to change and will be communicated to individual vendors on an as needed basis.
- Vendor will receive work orders from Target at least 1 week before LOS start date.
- Refrigeration vendor is responsible to:
 - Contact Property Management Lead using the following email address convention: TXXXX.PML@target.com (where XXXX is the four-digit location number) with the week of the scheduled service with a request that the PML respond to acknowledge receipt.
 - Additionally, contact any other parties impacted by the program due to uniqueness of sites (malls, downtown areas/high-rises, etc).
 - Scheduled services shall be performed Monday through Friday starting during normal business hours.
 - Overtime is not allowed for this program.

Technical Execution/Best practices:

- Technician must call FMOC prior to shutting down any equipment. FMOC is to put equipment in test mode to prevent system alarms and subsequent work orders.
 - Once service is complete and equipment has been restored, technician is to call FMOC and remove equipment from test mode.
 - FMOC phone number: 1 888 888 0304
1. Complete Acid test on each compressor rack (test kit included in work order 1 NTE)
 - a. Use acid kit test equivalent to: Phase 3 Nu-calgon Refrigeration Oil acid test kit
 - b. Note results of Refrigeration Oil acid test on WO 2
 2. Check conditions of oil separator filter, oil line filter, liquid line dryer, and ensure suction filters have been removed.
 3. Calibrate all pressure transducers (+/- 5% psi) and temperature sensors (+/- 5% degrees F).
 - a. If above 5% threshold, replace sensor and/or transducer
 4. Set/verify DDR/OLDR valve, condenser holdback valve and receiver pressurization valve (see Refrigeration PM Best Practices)
 - a. If the receiver pressurization valve does not hold set pressure and is an A8 please replace valve with an A9 (5/8 port 5/8 connection).
 5. Verify subcooler operation and ensure subcooler is achieving designed liquid temperature as found in Einstein controller.
 - a. Ensure no liquid is being injected into vapor injection header
 6. Verify and set all safeties on all compressors.
 - a. Compressor replacements are **not in scope**
 - b. Request corrective maintenance work order from PML if compressor needs replacement
 7. Verify proper operation for the condensers (including: Fluid coolers, Evaporative condensers, Adiabatic condensers, and Air cooled condensers).
 - a. Request corrective maintenance work order from PML if condenser parts need replacement
 - b. If abnormally high pressure for ambient conditions, perform non-condensable test (see Refrigeration PM Best Practice)
 8. Water cooled systems
 - a. Verify pump skid is operational and pumps have equalized runtime
 - b. Use E2 to graph pump discharge and suction pressure to verify no leaks in the glycol system
 - i. A downward trend in graph may indicate a glycol leak and require further investigation

9. Check and adjust superheats as needed
 - a. Ensure all evaporator fans are operational.
 - b. All cases on a circuit and evaporator coils in walk-ins should be within 1 degree of setpoint.
 - c. Verify rack S/H at suction header is operating within 25 to 50 degrees
 - d. EEPR valve should average 20-40% closed.
10. Override all WattStoppers found on glass door cases (see Refrigeration PM Best Practice).
11. Leak check RTCR/Racks, cases, walk-ins, and CUs.
12. Ensure racks are running at 25-35% full condenser 30-40% split condenser refrigerant in the receiver. Super Target's may not fall under these parameters. Escalate through service manager to reach out to technical lead.
 - a. Pull Einstein graph of rack receiver long term liquid level analog sensor control (RCVR-LV-LT) and identify if rack system has a slow leak.
 - b. Leak check Racks, Condensers, Walk-ins, and Sales Floor Cases using electronic leak detection system and soap bubbles.
 - c. Ensure leak detection systems are fully operational in all walk-ins, at the DCR, or in the PUC per attached Refrigeration PM Validation Form.
 - d. Use test gas to validate PPM alarm threshold level for each leak detection sensor.
 - e. Validate WI horns and strobe lights are functioning during the leak detection sensor test
 - f. Validate alarm is registering on Einstein controller.
 - g. Validate front office remote alarm horn, light and silence switch are functional.
13. Small format locations **and** select self-contained cases (including: experience center, orchard bins, grab-n-go's, stockroom upright coolers/freezers, and order pick-up)
 - a. Spot check air filters on condensing units (filters could be mounted on top or bottom of unit)
 - i. If dirty, contact PML to clean filters.
 - b. Clean excessive dust/debris from condensers, fan cages, and fan blades
 - i. CO2 can be used to clean. Damp rag should be held on back of components during cleaning to prevent dust from blowing on nearby food product.
 - c. Spot check condensate drain pans, if applicable
 - i. If dirty, contact PML to clean drain pans. Cleaning drain pans is **not in scope**.
14. Update all pipe tags and circuit boards to newly implemented Unified Naming process. If not completed, work with PML to create CM WO to complete below scope of work.
 - a. Pipe tags and labels will be developed and shipped from EMC to the vendor's location upon request.
 - b. Vendor is expected to bring the pipe tags and labels to each store serviced and correctly update the tags that corresponds with the asset that pipe/circuit is connected to.
 - c. Pipe tags/labels will be not be shipped in a quantity that is unique to each store. The vendor is expected to identify the correct tag amongst a group of tags.
 - d. EMC will provide an old versus new diagram in order for the vendor to determine which old tags must be replaced by which new tags.
 - e. Each pipe shall be given an updated name with three digits. *Example: (A19)*
 - If the first digit (A) shall be the system identifier that denotes the dependency as described in system operation.
 - The next two digits (19) portray the system circuit identifier that represents a certain branch of the system identifier (A).
 - Diagram below shows how the Pipe tag should correspond with the asset name. In the case of the example above the highlighted green section would be labeled (A19).

Asset name: XXXX_XXX_XXX_X

- f. Vendor is expected to correctly label the circuit board identifying the assets and their updated name.
 - Circuit board labels shall follow the same naming guard rails as the pipe tags.

Super Target's with Remote Headers: Due to pressure drop with R448 & R449, the condensing set-point at 85F will not provide adequate liquid pressure to maintain case temperature. Because of this pressure drop the condensing set-point will vary depending on system characteristics. The condensing set-point has been determined and set by Target Refrigeration Authority (TRA) or Target Refrigeration Operations Technical Lead (TL) and should not be changed to operational guidelines.

Materials:

- Acceptable items on work order 1 include: Acid test kit
- Acceptable items on work order 2 include:
 - Rack oil filters and liquid driers
 - Case liquid line strainers (replace any plugged liquid driers with strainers)
 - Walk-in liquid line driers (do not replace with strainers)
 - Rack contactors
 - Condensing unit parts
 - Rack and case valve replace and rebuild
 - Sensors/control boards/leak detection devices (REMS parts to be ordered from EMC)
 - Fan motors for cases or walk ins (excludes condenser fans)
 - Walk in door parts-all types
 - Walk in evaporator coil cleaning
 - Case and walk in super heat/balancing
 - Leak repair
 - Refrigerant
 - Oil
 - Deicing cases

Not In Scope

- Self-contained refrigeration units including: check lane coolers, Starbucks self-contained, food avenue, bulk ice, and pet fresh
- Compressor replacements
- Case cleaning services
- Condenser Coil cleaning services
- Out of scope repair/replace items can be directed to PML who can create a corrective maintenance work order

Roles and Responsibilities

Vendor

- Schedule and execute program SOW within LOS dates provided on work order
- Complete refrigeration PM validation form and attach to work order 2. If work order 2 is not used, attach validation form to work order 1.

Target Refrigeration Team

- Supply vendor with a list of stores and respective cycles
- Supply work orders to vendor 1 week prior to LOS start date
- Support vendor and store team's technical inquires to program
- Monitor and track all validation forms are completed and attached to appropriate work order
- Monitor and process work order proposals
- Track all call backs to site for work previously completed under PM SOW
- Monitor program cost and completion of all work orders

Store team

- Supporting check in/check out

- Providing access to equipment (as needed)
- CM work order creation as needed by vendor and as specified in store team SOW
- PML validation

Work order Definitions

Two separate work orders are issued to the service vendor in order to support this program.

Work order 1 (WO1)

- Work order 1 is issued to the service vendor for completion of actions as outlined in the above *technical execution/best practices* section of this document.
- LOS for work order 1 is 30 days (unless otherwise noted above)
- Not to Exceed (NTE) contracted dollar amount
- Utilize catalog contracted rate when invoicing WO1
- Refrigeration PM validation form is to be attached to WO1, if WO2 is completed at \$0

Work order 2 (WO2)

- Work order 2 is for any additional parts or repairs that could not be completed within the NTE for WO 1
- If and when work is quoted on WO2 refrigeration PM validation form is to be attached. Otherwise, form will be attached to WO1
- LOS for work order 2 is concurrent with work order 1 (unless otherwise noted)
- **If WO2 extends past LOS...** technician must communicate an estimated completion date with PML
 - Please understand that Target guidelines dictate, PMLs are to contact service vendor and inquire on completion date on **ALL** work orders past LOS
- **Labor hours for WO2 are to be broken down, per task**
- Any other observations for repair should be shared with the PML. Vendor should work with the PML to create a corrective maintenance work order for items found outside of scope.
- Stores that do not require work to be performed on WO2 should be completed at \$0 based on the following:
 - If no work was needed, complete the following steps:
 - Update to NTE to \$0
 - Add a note in the long description: "PML validate at \$0 per HQs request – No work needed"
 - Update to VCOMP status
 - DO NOT, UNDER ANY CIRCUMSTANCE, CANCEL A WORK ORDER (unless directed by Target HQ)
- In the event an error occurs with a work order and cannot be rectified by vendor, a replacement work order can be requested by contacting program manager.

Invoicing

- Work orders are to be invoiced within 7 days of work order completion date.
- It is important for vendors to meet all LOS deadlines. Target has provided each vendor with their specific site list as well as scheduled cycle dates prior to the program roll-out.
 - Failure to meet the LOS deadlines for WO completion, SLAs, or pull-through proposal submittal, may result in cancellation of incomplete work orders and/or loss of sites for future cycles
 - All work orders not in VCOMP or COMP statuses in Maximo 30 days after the LOS deadline will be subject to closure.

Refrigeration PM Validation Form

- The Refrigeration PM Validation Forms **MUST** be completed and attached to work order 2
 - If work order 2 is not used, Refrigeration PM Validation form is to be attached to work order 1

Validation

Vendor responsibilities:

Complete Refrigeration PM Validation Form and attach to appropriate work order

Target HQ responsibilities:

Review open work orders past LOS

Additional Resources-Provided via email to primary vendor contact

- Refrigeration PM Validation form
- Refrigeration PM Best Practices

- PM Operational Standards (Target ROG)

Revisions

Version 1 2016 Completely revised sow

Version 1.1 2017 New verbiage to have systems put in test mode; Added Work order 2 acceptable items

Version 1.2 2019 Addition of PM validation form attachment process, WattStopper wire out, pump skids, small formats and self-contained; removed FM survey;