

Standard Operating Procedure <b>Start-Up Procedures &amp; Verification for Coils</b>	SOP No. 8.037
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DCR No.: 98217  
Revision No.: New

**Effective:** 6-14-99  
**Supersedes:** New  
**Revision Date:** New  
**Page No.:** 1 of 6

- 1 Purpose
  - 1.1 Provide a standard procedure for start-up and commissioning of HVAC equipment.
  - 1.2 Provide a standard procedure for coordinating selection, receiving, check out, and acceptance of new equipment.
- 2 Scope
  - 2.1 This procedure applies to (but is not limited to) the following types of equipment: Chilled, Cooling, Hot, Heating, Preheat, Reheat, and Process.
- 3 Responsibility
  - 3.1 Project managers have overall responsibility for new equipment from procurement to start-up. To assure optimum selection of equipment and smooth commissioning, the project manager is responsible for coordinating the following activities:
    - 3.1.1 Review of customer and specific job specifications.
    - 3.1.2 Review of equipment selected with Service prior to ordering. Assure equipment is on approved list.
    - 3.1.3 Review drawings, assure drawing schedules, and equipment details are correct.
    - 3.1.4 Coordinate delivery and commissions schedule with all team members including (but not limited to): Site Foremen, Balance and Service (start-up), Customer, General Contractor, and Safety (as needed).
      - 3.1.4.1 In most cases, Start-up should be scheduled a month in advance.
      - 3.1.4.2 If exact date is known, Service should be notified with estimated time frame.
      - 3.1.4.3 Communicate specific requirements to all team players in writing and verbally.

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Revision No.	SOP No.	Page
New	8.037	2 of 6

3.1.4.4 Provide appropriate job number to team members.

3.2 Therma Service/Start-up has responsibility for the following activities:

- 3.2.1 Therma will provide a qualified service mechanic to perform equipment start-up.
- 3.2.2 The start-up technician will perform the start-up tasks as specified in the commissioning Standard Operating Procedure for that equipment.
- 3.2.3 Service will provide estimated time required to Project Manager (PM) prior to start-up. Service will meet agreed upon schedules to assure customer satisfaction.
- 3.2.4 The start-up technician will fully complete a start-up sheet for each piece of equipment. A copy of this sheet will be provided to the PM with the turnover documents: A second copy will be filed in Service by customer name and address.
- 3.2.5 All time will be charged to the appropriate job number as specified by the Project Manager. If requested, Time and Material sheets shall be completed.

3.3 The Start-up/Commissioning Coordinator has responsibility for the following activities:

- 3.3.1 Provide a communication path between the Project Manager and the Field Foremen.
- 3.3.2 Schedule qualified personnel for start-up, balance, test, and room certification as required.
- 3.3.3 Coordinate punch-list completion with Project Managers.
- 3.3.4 Coordinate start-up, service, balance, and test report documentation.

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Revision No.	SOP No.	Page
New	8.037	3 of 6

#### 4 Procedures

- 4.1 General: Service Technician is responsible for filling out start-up sheet title FN 8.037.1 for Coils. A start-up sheet will be completed for each piece of equipment. Each sheet requires the following information:
  - 4.1.1 Job identification: The job name, job number, and job address are to be completed by the start-up/commissioning coordination. These will be provided to the service technician.
  - 4.1.2 Section 5 - Equipment Description.
  - 4.1.3 Section 6 - Equipment Pre-Installation Inspection.
  - 4.1.4 Section 7 - Equipment Installation Inspection.
  - 4.1.5 Section 8 – Operational Inspection.
  - 4.1.6 Signature - As each section and page is completed, the Service Technician must print and sign his/her name and record the date. This document should also be signed off by an owner representative when required.

#### 5 Equipment Description

- 5.1 This section should be completed by the Service Technician. Any design documentation specifying equipment should be recorded in this section. This includes: Specification number, Submittal number, Process and Instrumentation Diagram number and Drawing number. Also, record which area this equipment will be serving.

#### 6 Equipment Pre-Installation Inspection

- 6.1 For each of the following items: Check Yes, No or N/A for not applicable. If No is checked, describe the difference in the comment section and notify the Project Manager immediately. Initial and date each item as it is checked.
- 6.2 Nameplate data matches vendor specifications. When the equipment is delivered, verify it matches specifications. Complete Section 5. In the “actual on site” column, record the actual data as shown on the equipment and verify that it matches the design criteria.
- 6.3 All parts are received and verify the packing slip(s).
- 6.4 Inspect for visible signs of damage, leak, or defective parts. Note any discrepancies and notify the Project Manager.

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Revision No.	SOP No.	Page
New	8.037	4 of 6

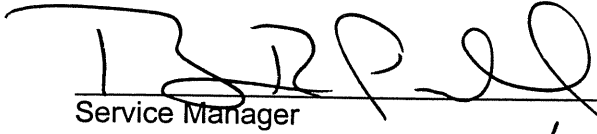
- 6.5 Connection size and location match specification.
- 6.6 Operation and Maintenance (O&M) manual is available in the field.
- 6.7 Start up technicians reviewed factory start up procedures in the Operation and Maintenance manual.
- 7 Installation Inspection
  - 7.1 For each of the following items: Check Yes, No or N/A for not applicable. If No is checked, describe the difference in the comment section and notify the Project Manager immediately. Lock Out/Tag Out procedure should be observed before most of the following steps
  - 7.2 Unit is properly installed per design.
  - 7.3 Tag number is attached to the unit. Tag should be attached to service disconnect or near unit identification plate, if mounted in a ceiling system tagging should reflect location above or below.
  - 7.4 Service clearance is adequate for maintenance. Service clearance includes access to the equipment through the ceiling systems, over duct work etc. Filter access for removal and replacement are essential.
  - 7.5 Ductwork and flex connections are connected and sealed.
  - 7.6 Connection between the unit and piping are installed per good piping practices. Check Operation and Maintenance literature and mechanical drawing design.
  - 7.7 Isolation valves are installed.
  - 7.8 In-line strainer is installed.
  - 7.9 Coil drain valve is installed.
  - 7.10 Condensate drain is tapped. Trap offset distance (inlet height minus outlet height) must be greater than the maximum negative pressure of the Air Handler for the condensate to flow. Trap depth should be at least ½ of the offset distance to keep enough water to provide a seal.
  - 7.11 Pressure and temperature test ports are installed. Check mechanical drawings details.
  - 7.12 Air bleed devices are installed. Auto vent and or valve with ¼" tube turned down.

Revision No.	SOP No.	Page
New	8.037	5 of 6

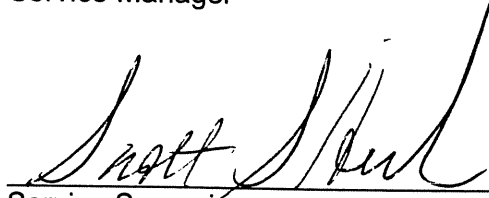
- 7.13 Control valve is installed. Check Operation and Maintenance literature and mechanical drawing details.
- 7.14 Balancing relief devices are installed. Check Operation and Maintenance literature and mechanical drawing details.
- 7.15 Pressure relief devices are installed. Check Operation and Maintenance literature and mechanical drawing details.
- 7.16 Electrical connections are secure. Check Operation and Maintenance literature and mechanical drawing details of control valve and any other electrical devices.

Revision No.	SOP No.	Page
New	8.037	6 of 6

## Document Approval

  
 Service Manager

5-18-99  
 Date

  
 Service Supervisor

5/19/99  
 Date

  
 Quality Assurance Manager

5-28-99  
 Date

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