

Prefunctional Checklist

Project _____

PC-___ AIR HANDLER UNIT, AHU #'s _____

Components included: ___ supply fans, ___ return and exhaust fans, ___ coils, ___ valves, ___ VFD, ___ dampers

Associated Checklists: CHW, HW Piping, _____

1. Submittal / Approvals

Submittal. The above equipment and systems integral to them are complete and ready for functional testing. The checklist items are complete and have been checked off only by parties having direct knowledge of the event, as marked below, respective to each responsible contractor. This prefunctional checklist is submitted for approval, subject to an attached list of outstanding items yet to be completed. A Statement of Correction will be submitted upon completion of any outstanding areas. None of the outstanding items preclude safe and reliable functional tests being performed. ___ List attached.

Mechanical Contractor	Date	Controls Contractor	Date
Electrical Contractor	Date	Sheet Metal Contractor	Date
TAB Contractor	Date	General Contractor	Date

Prefunctional checklist items are to be completed as part of startup & initial checkout, preparatory to functional testing.

- This checklist does not take the place of the manufacturer’s recommended checkout and startup procedures or report.
- Items that do not apply shall be noted with the reasons on this form (N/A = not applicable, BO = by others).
- If this form is not used for documenting, one of similar rigor shall be used.
- Contractors assigned responsibility for sections of the checklist shall be responsible to see that checklist items by their subcontractors are completed and checked off.
- “Contr.” column or abbreviations in brackets to the right of an item refer to the contractor responsible to verify completion of this item. A/E = architect/engineer, All = all contractors, CA = commissioning agent, CC = controls contractor, EC = electrical contractor, GC = general contractor, MC = mechanical contractor, SC = sheet metal contractor, TAB = test and balance contractor, ___ = _____.

Approvals. This filled-out checklist has been reviewed. Its completion is approved with the exceptions noted below.

Commissioning Agent	Date	Owner’s Representative	Date
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2. Requested documentation submitted

Notes:

AHU PREFUNCTIONAL CHECKLIST
PC- _____

Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->						Contr.
Manufacturer's cut sheets							
Performance data (fan curves, coil data, etc.)							
Installation and startup manual and plan							
Sequences and control strategies							
O&M manuals							

- **Documentation complete as per contract documents for given trade** YES NO

3. Model verification [Contr = _____]

1 = as specified, 2 = as submitted, 3 = as installed. Check if Okay. Enter note number if deficient.

Equip Tag-->					
1					
Manuf. 2					
3					
1					
Model 2					
3					
Serial # 3					
1					
Capacity 2					
3					
1					
Volts/phase 2					
3					

- **The equipment installed matches the specifications for given trade** YES NO

4. Installation Checks

Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->						Contr.
Cabinet and General Installation							
Permanent labels affixed, including for fans							
Casing condition good: no dents, leaks, door gaskets installed							
Access doors close tightly - no leaks							
Boot between duct and unit tight and in good condition							
Vibration isolation equipment installed & released from shipping locks							
Maintenance access acceptable for unit and components							
Sound attenuation installed							
Thermal insulation properly installed and according to specification							
Instrumentation installed according to specification (thermometers, pressure gages, flow meters, etc.)							
Clean up of equipment completed per contract documents							

Notes:

AHU PREFUNCTIONAL CHECKLIST
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Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->						Contr.
Filters installed and replacement type and efficiency permanently affixed to housing--construction filters removed							
Valves, Piping and Coils (see full piping checklists)							
Pipe fittings complete and pipes properly supported							
Pipes properly labeled							
Pipes properly insulated							
Strainers in place and clean							
Piping system properly flushed							
No leaking apparent around fittings							
All coils are clean and fins are in good condition							
All condensate drain pans clean and slope to drain, per spec							
Valves properly labeled							
Valves installed in proper direction							
OSAT, MAT, SAT, RAT, chilled water supply sensors properly located and secure (related OSAT sensor shielded)							
Sensors calibrated (See calibration section below)							
Motors: Premium efficiency verified, if spec'd?							
P/T plugs and isolation valves installed per drawings							
Fans and Dampers							
Supply fan and motor alignment correct							
Supply fan belt tension & condition good							
Supply fan protective shrouds for belts in place and secure							
Supply fan area clean							
Supply fan and motor properly lubricated							
Return/exhaust fan and motor aligned							
Return/exhaust fan belt tension & condition good							
Return/exhaust fan protective shrouds for belts in place and secure							
Return/exhaust fan area clean							
Return/exhaust fan and motor lube lines installed and lubed							
Filters clean and tight fitting							
Filter pressure differential measuring device installed and functional (magnahelic, inclined manometer, etc.)							
Smoke and fire dampers installed properly per contract docs (proper location, access doors, appropriate ratings verified)							
All dampers close tightly							
All damper linkages have minimum play							
Low limit freeze stat sensor located to deal with stratification & bypass							
Ducts (preliminary check)							

Notes:

AHU PREFUNCTIONAL CHECKLIST
PC-_____

Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->						Contr.
Sound attenuators installed							
Duct joint sealant properly installed							
No apparent severe duct restrictions							
Turning vanes in square elbows as per drawings							
OSA intakes located away from pollutant sources & exhaust outlets							
Pressure leakage tests completed							
Branch duct control dampers operable							
Ducts cleaned as per specifications							
Balancing dampers installed as per drawings and TAB's site visit							
Electrical and Controls							
Pilot lights are functioning							
Power disconnects in place and labeled							
All electric connections tight							
Proper grounding installed for components and unit							
Safeties in place and operable							
Starter overload breakers installed and correct size							
Sensors calibrated (see below)							
Control system interlocks hooked up and functional							
Smoke detectors in place							
All control devices, pneumatic tubing and wiring complete							
VFD							
VFD powered (wired to controlled equipment)							
VFD interlocked to control system							
Static pressure or other controlling sensor properly located and per drawings and calibrated							
Static pressure or other controlling sensor calibrated							
Drive location not subject to excessive temperatures							
Drive location not subject to excessive moisture or dirt							
Drive size matches motor size							
Internal setting designating the model is correct							
Input of motor FLA represents 100% to 105% of motor FLA rating							
Appropriate Volts vs Hz curve is being used							
Accel and decel times are around 10-50 seconds, except for special applications. Actual decel = _____ Actual accel = _____							
Lower frequency limit at 0 for VAV fans and around 10-30% for chilled water pumps. Actual = _____							
Upper frequency limit set at 100%, unless explained otherwise							
Unit is programmed with full written programming record on site							
TAB							

Notes:

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Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->						Contr.
Installation of system and balancing devices allowed balancing to be completed following specified NEBB or AABC procedures and contract documents							
Final							
Smoke and fire dampers and unpowered TU's are open							
Startup report completed with this checklist attached							
Safeties installed and safe operating ranges for this equipment provided to the commissioning agent							
If unit is started and will be running during construction: have quality filters on RA grills, etc. to minimize dirt in the ductwork and coils and in any finished areas. Verify moisture migration is not a problem, due to improper pressures between spaces.							

- **The checklist items of Part 4 are all successfully completed for given trade.** ___ YES ___ NO

5. Operational Checks (These augment mfr's list. This is not the functional performance testing.)

Check if Okay. Enter comment or note number if deficient.

Check	Equip Tag->						Contr.
Supply fan rotation correct							
Return/exhaust fan rotation correct							
Fans > 5 Hp Phase Checks: (%Imbalance = 100 x (avg. - lowest) / avg.) Record all 3 voltages in cell. Imbalance less than 2%?							
Record full load running amps for each fan. _____ rated FL amps x _____ srvc factor = _____ (Max amps). Running less than max?							
Return /exhaust fan acceptable noise & vibration							
Supply fan has no unusual noise or vibration							
Inlet vanes aligned in housing, actuator spanned, modulate smoothly and proportional to input signal and EMS readout							
All dampers (OSA, RA, EA, etc.) stroke fully without binding and spans calibrated and BAS reading site verified (follow procedure in Calibration and Leak-by Test Procedures). List dampers checked: _____							
Valves stroke fully and easily and spanning is calibrated (follow procedure in Calibration and Leak-by Test Procedures). List each actuated valve here when spanned: _____							
Valves verified to not be leaking through coils when closed at normal operating pressure (follow procedure in Calibration and Leak-by Test Procedures).							
The HOA switch properly activates and deactivates the unit							

Notes:

