Prefunctional Checklist

Project _____

PC-_____PUMP #'s_____

Included components: VFD's_____

Associated checklists: __Chiller, Cooling Tower, CHW & CDW Piping, __Boiler and HW Piping, __Other _____

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

Notes:

2. Requested documentation submitted

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--->						
Manuf.	1					
	2					
	3					
Model	1					
	2					
	3					
Serial #	3					
Volts/Ph/A	1					
	2					
	3					
RPM	1					
	2					
	3					
GPM	1					
	2					
	3					
Motor Hp	1					
	2					
	3					
Motor Effic	1					
	2					
	3					
Head	1					
	2					
	3					

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

Notes:

4. Physical Installation Checks

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

Check Equip Tag->						Contr.
General Installation						
Label permanently affixed						
Pumps in place and properly grouted						
Vibration isolation devices installed and functional						
Factory alignment appears correct						
Field alignment, if required, completed						
Seismic anchoring installed						
Temperature, pressure and flow gages and sensors installed						
Pump lubricated						
Piping (immediately around pump, see full piping checklist)						
Pipe fittings complete and pipes properly supported						
Pipes properly labeled						
Pipes properly insulated						
Strainers in place and clean						
Piping system properly flushed						
Valves properly tagged						
Sensors calibrated (See calibration section below)						
Electrical and Controls						
Power disconnects in place and labeled						
All electric connections tight						
Proper grounding installed for components and unit						
Motor safeties in place and operable						
Control system interlocks hooked up and functional						
All control devices, pneumatic tubing and wiring complete						
VFD						
VFD powered (wired to controlled equipment)						
VFD interlocked to control system						
Pressure or other controlling sensor properly located and per drawings and 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						

Notes:

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

Check Equip Tag->						Contr.
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						
VFD speed at panel matches BAS readout						
TAB						
Installation of system and balancing devices allowed balancing to be completed following specified NEBB or AABC procedures and contract documents						
Final						
Startup report completed with this checklist attached						
Safeties installed and safe operating ranges for this equipment provided to the commissioning agent						

- ***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.
The HOA switch properly activates and deactivates the unit						
Pump rotation verified correct						
No unusual noise or vibration						
No leaking apparent around fittings						
Measure line to line voltage phase imbalance for each pump: (%Imbalance = 100 x (avg. - lowest) / avg.) Record imbalance of each pump in cell. Imbalance less than 2%?						
Record full load running amps for each pump. _____rated FL amps x _____srvc factor = _____ (Max amps). Running less than max?						
Specified sequences of operation and operating schedules have been implemented with all variations documented						
Specified point-to-point checks have been completed and documentation record submitted for this system						

- ***The checklist items of Part 5 are all successfully completed for given trade.___ YES ___ NO***

Notes:

6. Sensor and Actuator Calibration [ ]

All field-installed temperature, relative humidity, CO, CO_2 and pressure sensors and gages, and all actuators (dampers and valves) on this piece of equipment shall be calibrated using the methods and tolerances given in the Calibration and Leak-by Test Procedures document. All test instruments shall have had a certified calibration within the last 12 months: Y/N_____. Sensors installed *in* the unit at the factory with calibration certification provided need not be field calibrated.

Sensor or Actuator & Location	Loc-ation OK	**1st** Gage or BAS Value	Instr. Meas'd Value	**Final** Gage or BAS Value	Pass Y/N?

Sensor & Location	Loc-ation OK	**1st** Gage or BAS Value	Instr. Meas'd Value	**Final** Gage or BAS Value	Pass Y/N?

Gage reading = reading of the permanent gage on the equipment. BAS = building automation system. Instr. = testing instrument. Visual = actual observation. The Contractor's own sensor check-out sheets may be used in lieu of the above, if the same recording fields are included and the referenced procedures are followed.

- ***All sensors are calibrated within required tolerances*****.....**___ ***YES*** ___ ***NO***

-- END OF CHECKLIST --

Notes: