

## PUMPS

### 1. INTRODUCTION

This sample pre-functional checklist is for hypothetical pumps.

### 2. APPLICATION

Checklist items are to be completed as part of installation, start-up, and initial quality control inspection. This checklist does not take the place of the manufacturer's recommended checkout and start-up procedures or reports.

Line items shall be complete and shall be checked off only by parties having direct knowledge of that line item being completed.

Inapplicable line items shall be identified as such by:

- "N/A" for non-applicable line items.
- "BO" for line items by others.

Contractors assigned responsibility for checklist line items shall be responsible for those line items, even if line item is sub-contracted.

Identify line item status by:

- Indicating line item is complete by checking respective box.
- Indicating line item is incomplete by recording a remark number in respective box and providing associated comment below table.

"Contr." column or abbreviations in brackets to the right of an item identifies responsible contractor.

### 3. APPROVALS

Contractor signature signifies equipment identified herein and systems integral to them are complete and ready for functional performance testing with the exception of consequential items.

_____ (General Contractor Signature)	_____ (Company)	_____ (Date)
_____ (Mechanical Contractor Signature)	_____ (Company)	_____ (Date)
_____ (Controls Contractor Signature)	_____ (Company)	_____ (Date)
_____ (Test & Balance Contractor Signature)	_____ (Company)	_____ (Date)
_____ (Electrical Contractor Signature)	_____ (Company)	_____ (Date)

#### 4. CHECK-OFF ITEMS

CHECKED ITEM	EQUIPMENT IDENTIFICATION										CONTR.
<b>General Installation</b>											
Permanent equipment label has been affixed.											
Installation has been completed and has been verified to be in good condition.											
Equipment has been verified to be properly grouted.											
Site is sufficiently clean for testing.											
Vibration isolation components have been verified to be installed and released from shipping locks.											
Seismic anchoring has been installed.											
Factory alignment has been verified to be correct.											
Field alignment has been completed.											
Pressure gages have been installed.											
Equipment has been lubricated.											
Chemical treatment system installation has been completed.											
Expansion tank installation has been completed.											
Expansion tank has been verified to not be air bound.											
<b>Piping System</b>											
Pipe fittings have been installed and pipes have been properly supported.											
Pipe labeling has been completed and flow direction has been indicated.											
Pipe fittings and accessory installation has been completed.											
Strainers have been installed and cleaned.											
Isolation and balancing valves have been installed.											
Valves have been installed in correct direction.											

CHECKED ITEM	EQUIPMENT IDENTIFICATION										CONTR.
Flow switch(es) has (have) installed.											
Flow meters have been installed.											
Temperature and pressure sensors have been installed.											
Air vents and bleeds have been installed at system high points and have been verified to be functioning properly.											
System flushing has been completed and strainers have been cleaned.											
System has been filled with working fluid.											
Pressure/temperature plugs have been installed at each control sensor and in accordance with drawings.											
Makeup water shut-off valve has been installed.											
Chemical treatment system installation has been completed.											
Pipe insulation installation has been completed.											
<b>Electrical and Controls</b>											
Power has been provided to unit and disconnect has been installed.											
All electrical components have been grounded.											
Sensors have been calibrated.											
Control system interlocks have been made and have been verified to be functioning properly.											
All control devices, pneumatic tubing, and wiring installations have been completed.											
Overcurrent heater size has been verified to be correct.											
Motorized valves have been verified to be functioning properly.											
Motor efficiencies have been verified.											

CHECKED ITEM	EQUIPMENT IDENTIFICATION										CONTR.
<b>Test and Balance</b>											
System and balancing devices have been verified to allow balancing to be completed in accordance with NEBB or AABC procedures.											
<b>Operation</b>											
Safeties have been energized and tested.											
Equipment has been verified to start and operate correctly.											
Equipment has been verified to not produce unusual noise or vibration.											
Pump rotation has been verified to be correct.											
System has been checked for leakage around fittings.											
Line-to-line voltage phase imbalance has been verified to be less than 2% according to: %Imbalance = 100 x (avg. - lowest)/avg.). Record actual value below:											
Actual imbalance (%):											
Full load running amps has been measured. Record measured value below:											
Actual full load amps:											
Rated full load running amps and service factor have been recorded. Record measured values below:											
Actual rated full load amps:											
Actual service factor:											
Hand-Off-Auto switch has been verified to properly activate and deactivate equipment.											
As-built operation sequences and schedules have been completed with all variations documented and submitted to CxC.											

CHECKED ITEM	EQUIPMENT IDENTIFICATION										CONTR.
Specified point-to-point checks have been completed and documentation record has been submitted to CxC.											
<b>Final</b>											
Startup report has been submitted to CxC which includes: <ul style="list-style-type: none"> <li>• Manufacturer's written certification that all specified features, controls, and safeties have been installed and are functioning properly.</li> <li>• Manufacturer's written certification that installation and applications comply with manufacturer's recommendations.</li> </ul>											
Piping and pump construction checklists have been completed and submitted to CxC.											
Water treatment report has been submitted to CxC.											
Safeties have been installed and safe operating ranges have been submitted to CxC.											
<b>NOTES:</b>											
01											
02											

-- End of Checklist --