**This Prefunctional Checklist should be completed as part of startup and initial checkout of the equipment in preparation for Functional Performance testing.**

|  |  |
| --- | --- |
| PC: | **23 22 23** |
| **ITEM:** | **HVAC Pumps** |
| **ID:** |  |
| **AREA SERVED:** |  |

Form Filled Out By:

|  |  |  |
| --- | --- | --- |
|  | Name & Company | Date |
| GC |  |  |
| MC |  |  |
| EC |  |  |
| BC |  |  |
| CC |  |  |
| OR |  |  |
| A/E |  |  |
| CA |  |  |

GC = General Contractor; MC = Mechanical Contractor; EC = Electrical Contractor; RMCS = Refrigerant Management Control System Contractor, OR = Owner Representative; A/E = Architect/Engineer; CA = Commissioning Agent

XX = No Initials Required

# DOCUMENTATION VERIFICATION

Check if OK. Enter note number if deficient.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Item** | **GC** | **MC** | **EC** | **RMCS** | **OR** | **A/E** | **CA** |
| Product information submitted |  |  |  |  |  |  |  |
| Shop drawings submitted |  |  |  |  |  |  |  |
| Manufacturer’s installation instructions submitted |  |  |  |  |  |  |  |

# MODEL VERIFICATION

Fill in requested information.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Specified | **Submitted** | **Installed** |
| Manufacturer |  |  |  |
| Model Number |  |  |  |
| Mark No |  |  |  |
| Design Flow-GPM |  |  |  |
| Head (FT) |  |  |  |
| Motor Data – HP |  |  |  |
| Motor Data – Volts |  |  |  |
| Motor Data - FLA |  |  |  |

# INSTALLATION VERIFICATION

This checklist does not take the place of the manufacturer’s recommended checkout and startup procedures or report**.**

Check if OK. Enter Outstanding Item Note number if deficient.

| **No** | **Checks** | **GC** | **MC** | **EC** | **RMCS** | **OR** | **A/E** | **CA** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Pump and motor are in good condition with no dents or damage. |  |  |  |  |  |  |  |
| 2 | Pump is level and properly supported. |  |  |  |  |  |  |  |
| 3 | Maintenance access is acceptable for pump and components. |  |  |  |  |  |  |  |
| 4 | Equipment and area clean. |  |  |  |  |  |  |  |
| 5 | Vibration isolation installed. |  |  |  |  |  |  |  |
| 6 | Pump lubricated. |  |  |  |  |  |  |  |
| 7 | Compression tank is located on the suction side of the pump (Closed heating system) |  |  |  |  |  |  |  |
| 8 | Pump drive properly aligned. |  |  |  |  |  |  |  |
| 9 | Drive guard or shield is properly installed. |  |  |  |  |  |  |  |
| 10 | Thermal insulation properly installed and according to specification. |  |  |  |  |  |  |  |
| 11 | Instrumentation installed according to specification (gauges, flow meters, etc). |  |  |  |  |  |  |  |
| 12 | Piping system has been thoroughly cleaned and flushed of all foreign materials and sediment prior to pump installation. |  |  |  |  |  |  |  |
| 13 | Pipe fittings, unions, and pump connections are tight with no leaks. |  |  |  |  |  |  |  |
| 14 | Suction and discharge piping are independently supported and properly aligned so that no strain is transmitted to the pump when flange bolts are tightened. |  |  |  |  |  |  |  |
| 15 | All valves are operational and accessible. |  |  |  |  |  |  |  |
| 16 | All valves are properly tagged or labeled. |  |  |  |  |  |  |  |
| 17 | Check valve is installed at the pump discharge before the isolation valve. |  |  |  |  |  |  |  |
| 18 | Check, control, and balancing valves are installed in the correct direction. |  |  |  |  |  |  |  |
| 19 | P/T ports are installed at the pump suction and discharge flanges and are accessible for taking measurements. |  |  |  |  |  |  |  |
| 20 | Pump and piping have been pressure checked with no leaks present. |  |  |  |  |  |  |  |
| 21 | Electrical power has been supplied to the pump motor and has been verified to be correct. Starter has been verified acceptable for the supplied voltage and phase. |  |  |  |  |  |  |  |
| 22 | Pump and components are properly grounded. |  |  |  |  |  |  |  |
| 23 | Overload protection is the correct size and type for the equipment. |  |  |  |  |  |  |  |
| 24 | All electrical connections and terminations are secure |  |  |  |  |  |  |  |
| 25 | A power disconnecting device is installed and located within site and less than 50 ft. of the pump motor starter. |  |  |  |  |  |  |  |
| 26 | Power disconnecting device is capable of disconnect the pump motor and starter from their power source. |  |  |  |  |  |  |  |
| 27 | Schedules have been implemented in the RMCS System |  |  |  |  |  |  |  |
| 28 | Safeties installed and operational. |  |  |  |  |  |  |  |
| 29 | Verify all pressure and temperature sensor readings at the RMCS match manual gauge readings. |  |  |  |  |  |  |  |
| 30 | All control components related to the pump operational sequences have been installed and are functional (differential pressure sensors, temperature sensors, bypass valves, etc.) |  |  |  |  |  |  |  |
| 31 | Startup strainers are in place prior to startup. |  |  |  |  |  |  |  |
| 32 | Pump is primed before startup. |  |  |  |  |  |  |  |
| 33 | With power off, remove the coupling guard and rotate the pump shaft by hand to verify it turns freely and also to release entrapped air from the impeller passageways. |  |  |  |  |  |  |  |
| 34 | Energize the pump to verify correct pump rotation. Rotation should correspond with the directional arrow on the pump casing. (clockwise when viewed from the end of the motor) |  |  |  |  |  |  |  |
| 35 | Verify no unusual noise or vibration while the pump is in operation. |  |  |  |  |  |  |  |
| 36 | Verify startup strainers are removed once pump is to be placed in normal operation. |  |  |  |  |  |  |  |

# OUTSTANDING ITEMS

Note outstanding items in table below. Use numbers referenced above.

|  |  |  |
| --- | --- | --- |
| Resolved (Initial / Date) | **Note** | Description |
|  | **1.** |  |
|  | **2.** |  |
|  | **3.** |  |
|  | **4.** |  |
|  | **5.** |  |
|  | **6.** |  |
|  | **7.** |  |
|  | **8.** |  |
|  | **9.** |  |
|  | **10.** |  |

# FIELD NOTES

Fill in as appropriate.

|  |
| --- |
|  |
|  |
|  |
|  |
|  |

# SIGN OFF

System / Equipment have been installed in accordance with the Contract Documents and is ready for Functional Testing.

|  |  |  |
| --- | --- | --- |
|  | **Signature** | **Date** |
| **Contractor’s Representative** |  |  |
| **A /E Representative** |  |  |
| **Commissioning Agent** |  |  |
| **Owner’s Representative** |  |  |

##### END OF CHECKLIST