This pre start-up checklist shows items that must be completed prior to a scheduled start-up. If the answer to any questions is "No" (when it should be "Yes"), is left blank or contradicts the requirements of NFPA 20, the installation is not ready for start-up. Indicate “N/A” for not applicable wherever appropriate. These questions should be answered in conjunction with the fire pump (mechanical) contractor and electrical contractor. Check list must be returned signed and dated below.


The sole purpose of this pre start-up checklist is to serve as a guide only. Armstrong does not assume any liability or responsibility for the accuracy of this list or any items omitted. This list does not absolve the installing contractors of their responsibilities for proper installation in accordance with the local and national codes and standards.

<table>
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<tr>
<th>Project Name:</th>
<th>Site Address:</th>
<th>City:</th>
<th>State:</th>
<th>Insuring Authority:</th>
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Flow Test to be performed by: Company Name: ____________________________
Contact: ____________________________ Tel: ____________________________ Fax: ____________________________

Pre Start-Up Check Date: __________________________________________________________________________

Pre Start-Up Checklist completed by: a) Company Name: ________________________________________________
b) Contact Name: ________________________________________________
c) Telephone: ____________________________ Fax: ____________________________

I. NAMEPLATE DATA (must be taken directly from each equipment nameplate):
1. Pump Model Number: __________________________________________ Pump S/N: _____________________
2. Rated Flow: _______________________ Rated Pressure:_____________ Pump Speed: ________________rpm
3. Controller Mfg: _____________________ Model Number: ____________________________________________
5. Motor Mfg: ________________________ Model Number: ____________________________________________
7. Voltage: __________________________ Phase: ____________________ Hz: ___________________________
8. Jockey Pump Model Number: __________________________________ _______________

II. GENERAL INSTALLATION: YES NO
1. Visual Inspection done of the overall pump assembly
   (No visible sign of cracks, damage, rust or watermarks)............................................................................. ___ ___
2. All mechanical installation in accordance with NFPA 20............................................................................. ___ ___
3. All electrical installation in accordance with the Canadian Electrical Code................................................. ___ ___
4. All electrical supplies correspond to all motor and controller nameplates................................................... ___ ___
5. Entire pump assembly base securely anchored with foundation bolts of suitable
   size embedded in the concrete floor............................................................................................................ ___ ___
6. Entire pump assembly base grouted sufficiently substantial to absorb any vibration
   and to form a rigid support for the base plate.............................................................................................. ___ ___
7. Entire pump assembly base level and aligned with all connecting piping and fixtures....................................... ___ ___
8. Fire Pump System manual c/w certified performance curve and wiring diagrams available for start-up... ___ ___
9. Entire system has been bled of all air.......................................................................................................... ___ ___
III. MAIN FIRE PUMP INSTALLATION – ELECTRIC DRIVEN:
1. Drive to Pump direction of rotation correct. (Verified in conjunction with an electrician)..........................YES NO
2. Pump rotates freely when turned by hand. ..................................................................................................YES NO
3. Impellers set 1/2” from the bottom of the bowls. .......................................................................................YES NO
4. Discharge piping supports c/w anchors installed near to but independent of the pump assembly ..........YES NO
5. System piping does not exert any strain on the pump discharge head. ......................................................YES NO
6. Listed OS&Y Gate Valve or Butterfly Valve on pump discharge line ..........................................................YES NO
7. A Listed Check Valve is installed and is in the proper direction. ...............................................................YES NO

IV. JOCKEY PUMP INSTALLATION:
1. Jockey pump inlet and outlet are in the proper location ........................................................................YES NO
2. Jockey pump direction of rotation is correct. ...............................................................................................YES NO
3. Jockey pump suction line is piped ahead of the main fire pump suction OS&Y Gate Valve .......................YES NO
4. Jockey pump discharge line is piped after the main fire pump discharge valve (OS&Y or Butterfly). ..........YES NO
5. Jockey Line contains 2 isolation gate valves and a check valve. .................................................................YES NO

V. PUMP MINIMUM FITTINGS:
1. Main fire pump and Jockey pump sensing lines totally independent of each other and connected to their respective controllers in accordance with NFPA 20 Figure A.10.5.2.1 (a) & (b). ............YES NO
2. Each sensing line 1/2” non-ferrous metallic piping ....................................................................................YES NO
3. Each sensing line has 2 bronze check valves each with a 3/32” diameter hole drilled in the flapper ..........YES NO
4. Discharge gauge with 3-1/2” dial face with pressure range twice the rated working pump pressure but not less than 200 psi) with 1/4” gauge valve .....................................................................................YES NO

VI. SENSING LINES FOR MAIN FIRE PUMP & JOCKEY PUMP:
1. Fire Pump Controller installed not less than 12 inches above the floor .....................................................YES NO
2. Fire Pump Controller is located within sight of the motor ..........................................................................YES NO
3. The appropriate incoming power service is connected and installed as per NFPA 20 and 70 .....................YES NO
4. Motor terminations complete. ..................................................................................................................YES NO
5. Proper materials used (including Liquid-tite conduit, etc.) .....................................................................YES NO
6. Listed termination kits used. ....................................................................................................................YES NO
7. Motor rotation verified and correct ........................................................................................................YES NO
8. Fuses available and installed prior to start-up date (Jockey Pump Panel) ................................................YES NO
9. Separate manual and wiring diagram inside each controller enclosure ..................................................YES NO
10. Listed Pressure Recording Device installed ............................................................................................YES NO

VII. FIRE PUMP AND JOCKEY PUMP CONTROLLERS:
1. Listed Automatic Power Transfer Switch installed as per NFPA 20 ..........................................................YES NO
2. Emergency power generator installed and start-up completed.................................................................YES NO
3. Proper size circuit breakers installed. ..........................................................................................................YES NO
4. Emergency power conductors wired and engine start circuits installed from the generator to the fire pump power transfer switch .........................................................................................YES NO

VIII. AUTOMATIC POWER TRANSFER SWITCH (if applicable):
1. Listed Main Relief Valve installed. .............................................................................................................YES NO
2. Located between the pump discharge and the check valve. .....................................................................YES NO
3. Max Suction Pressure __________, Pump Shut-Off Pressure __________, System Rated Pressure __________
X. DISCHARGE CONE (if applicable):
1. Discharge cone installed on the outlet line of the main relief valve............................................................. YES NO
2. Provides for a visual indication of water movement or has a sight glass. ............................................................. YES NO
3. Piped to the drain or back to the pit............................................................................................................. YES NO

XI. FLOW METER (if applicable):
1. Listed for fire pump service and installed in proper direction. ..................................................................................... YES NO
2. Flow meter gauge display has a range of at least 1.75 times the rated flow of the fire pump. .................................................... YES NO
3. Capable of being isolated and removed without affecting fire pump service. ................................................................. YES NO
4. Straight pipe length before and after flow meter in accordance with manufacturers specifications.............. YES NO

XII. TEST FITTINGS (if applicable):
1. Test tee installed after the check valve and before the discharge butterfly valve....................................... YES NO
2. Hose valve header sized and contains the right number of hose valve outlets according to NFPA 20 Table 5.25. .......................................................................................................... YES NO
3. Ball drip valve installed prior to the hose valve header ............................................................................... YES NO
4. Indicating gate valve or Indicating butterfly valve installed between Test-Tee and Hose Valve Header.... YES NO

Signed: ________________________________________________ Date: ___________________
I certify the above items are completed and were checked at the job site and the pump equipment is ready for a start-up and performance test.

Once fully completed, please return the above Pre Start-Up Check List to ____________________________________________ (local Armstrong Service Dealer/Agent) to the attention of ____________________________________________.

Please note, all fire pump start-up requests may require a minimum of 2-3 weeks advanced notice in order to schedule a date with the appropriate parties (equipment representatives & their technicians). The actual scheduled start-up date(s) will be determined based on the availability of these parties. It is the responsibility of the installing contractor to arrange for the other required parties to be present and have the installation ready on the scheduled date for the subject start-up. Scheduling of fire pump start-up will commence only once the installation is deemed ready for start-up as derived from the answers provided on this form.

Important: A standard start-up is based on a maximum 3 hours at the job site. Should the time required to complete the start-up exceed this standard duration or should the start-up service need to be repeated due to circumstances caused by other parties, or situations out of our control, any additional service or incurred costs are the sole responsibility of the installing contractor.

Before performing any tests, to avoid false alarms where a supervisory service is provided, the alarm receiving facilities must always be notified by the building owner or designated representative. Prior to the Start-Up, the Installing Contractor must ensure that the Pre-Start-Up Verification has been performed and provide confirmation to the local U.S. Armstrong representative ensuring:
1. Pump Alignment.
2. System Integrity.
3. Electrical Integrity.
4. All applicable items on the Pre Start-Up Checklist have been verified and answered accordingly.
5. The installation is ready for start-up (including all air bled from the system and ready to flow water) and is in accordance with all applicable national and local codes and standards.
6. All applicable documentation is on-hand at start-up (including pump certified performance curve(s), equipment manuals & wiring diagrams).
7. All the appropriate parties (e.g. AHJ-Fire Marshall, Electrician, Millwright/Pipe Fitter, Building Owner/Representative, etc.) will be present throughout the entire start-up.