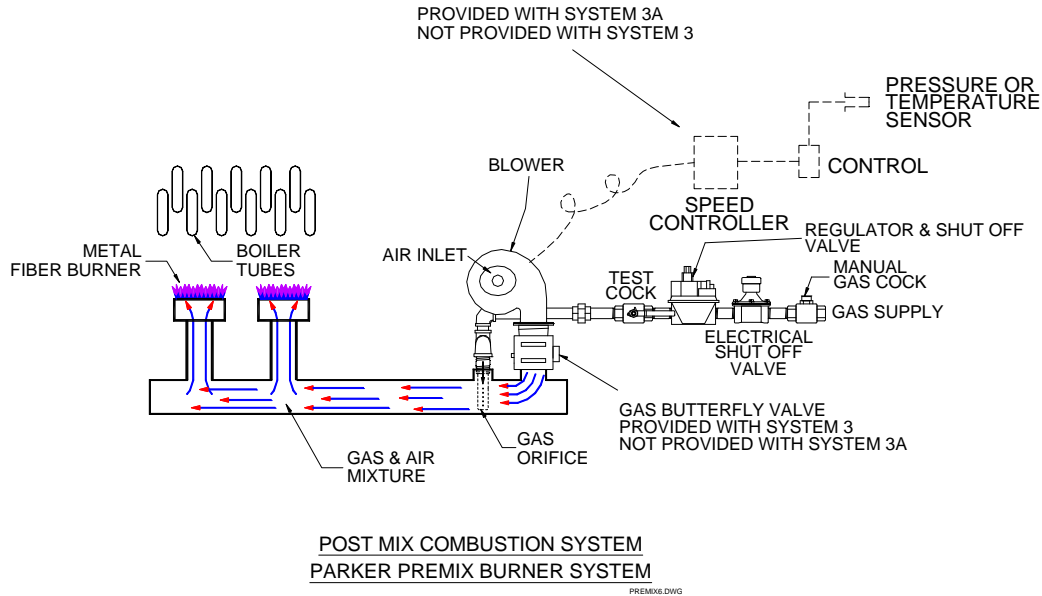


**SUPPLEMENTAL START-UP INSTRUCTIONS  
 SYSTEM 3  
 POST MIX SYSTEM  
 "L" LOW NO<sub>x</sub> SYSTEMS**



These supplemental start up instructions must be used in conjunction with the normal Installation and Start Up Check Off Sheets for Parker Hot Water, Steam, or Thermal Fluid Heaters. (Bulletins ISCS 101-5, ISCS201, ISCS207 or ISCS210).

These instructions are to be followed after the Installation and Check Off has been completed to the Start Up Section. The start up portion of ISCS101-5, ISCS201, ISCS207 or ISCS210 should also be followed in addition to these instructions (some items may be redundant).

Read complete instructions before proceeding, and familiarize yourself with all the system's components. Verify that your equipment has been installed in accordance with the Manufacturer's current instructions.

**CAUTION: Initial adjustment and light-off should be undertaken only by trained and experienced personnel familiar with combustion systems, with control/safety circuitry, and with thorough knowledge of the overall installation.**

Start up technician should be familiar with the installation so proper air fuel ratios can be set, check the permit conditions so NO<sub>x</sub> and CO values can be set to satisfy the job requirement. Combustion Analyzer with NO<sub>x</sub>, CO and O<sub>2</sub> measurement is required.

	<b>For Initial Premix Metal Fiber Burner System Start-up:</b>	<b>Y</b>	<b>N</b>
1.	<b>Check all electric circuitry.</b> Verify that all control devices and interlocks are operable and functioning within their respective settings/ranges. Be sure all air and gas manifolds are tight and that test ports are plugged if not being used. Tighten all terminals conduit and linkages. Refer to normal Start up Sheets.		
2.	<b>All boiler gas valves turned off.</b>		
3.	<b>Notify Boiler Inspection Jurisdiction if required.</b>		
4.	Remove cabinet door on pilot side.		
5.	<b>Insure that all burners are straight and level.</b> Insure that no shipping damage has occurred.		

	<b>For Initial Premix Metal Fiber Burner System Start-up (Continued):</b>	<b>Y</b>	<b>N</b>
6.	<b>Look for dirt or metal flakes on burner surface.</b> If present blow off with air, or vacuum burners with soft brush.		
7.	<b>Insure carryover tube, ignitor, &amp; flame rod or scanner are in proper position.</b>		
8.	Check Blower and gas butterfly valve for solid mounting. Check all bolts and connections for leaks. Check gas butterfly is locked in position. Note: Some systems may not have gas butterfly.		
9.	Insure that stack or roof jointing compound or sealant is not present inside stack so if heat is applied to stack no sealant will drip onto burners.		
11.	Gas line blown out, thoroughly cleaned, tested for leaks. Install gas pressure gauges of proper ranges upstream and at blower mixer gas inlet test tap.		
12.	System installer, plumber, owner and/or Gas Co. technician shall if safe turn on gas at meter and bleed air from gas line to proper safety standards if required to allow safe gas flow to boiler.		
13.	Gas line size proper.		
14.	Shut-off valve with handle and union installed ahead of boiler.		
15.	Gas pressure at test opening on boiler inlet to Manufacturer's specifications.		
16.	On Steam Boilers open water supply and boiler feedwater valves. <b>Never operate the boiler feed pump with any valve in the suction or discharge piping closed as this will damage the pump.</b> Check for water and proper float valve level in return tank. (see ISCS 101-5)		
17.	For Hot Water Boilers or Thermal Fluid Heaters insure proper circulation. (see ISCS 201 or 207)		
18.	Check electrical wiring per wiring diagram. With Boiler Control Switch off, turn on electrical to boiler if safe, hot lead (black wire) should read 115 VAC to ground, neutral white wire should read 0 VAC to ground. (Not applicable if 3 Phase power is provided.) Check for proper voltage and disconnet.		
19.	Turn Boiler Controls Switch, on. Main Burner Switch, off. On Steam Boilers pump will be energized. Check boiler feed pump for proper start, stop and rotation. Fill and flush boiler (see ISCS 101-5).		
20.	Check low water cutoff control or controls for proper installation and operation. Test for proper manual reset function.		
21.	Open upstream main gas cock. Downstream gas valve and pilot gas valve closed. Reset gas pressure switches if required.		
22.	For an instant, turn on Main Burner Switch. (This will start Blower Motor.) Check for proper motor rotation and impeller direction, no grinding. Verify that all control interlocks are working. Insure all is safe.		
23.	Check for finger guard on the fan inlet.		
24.	<b>With pilot and downstream gas valves closed attempt to fire boiler.</b> (I.E. Turn Boiler Controls and Main Burner Switch on.) Boiler should purge, ignitor should spark but no pilot will be established. Check for flame failure lockout.		
25.	<b>With upstream and pilot gas cocks open and downstream gas valve closed,</b> attempt to light pilot burner. Repeat procedure as necessary until pilot ignites as air might have to be bled out of fuel supply lines before reliable pilot flame is established.		
26.	<b>After pilot ignition before main flame period turn flame safeguard to check position, adjust pilot flame</b> for good stable flame shape. Adjust pilot to give the strongest and most stable flame signal through flame safety circuit. Normally 6" W.C. gas pressure is required at pilot. The signal strength (or range) will be determined by the specific type of flame safeguard you have with your boiler.		
27.	Re-light and refine pilot gas adjustment and light off's as necessary to get reliable pilot ignition. With pilot established the flame safeguard should now power your main fuel shut-off valve(s) if (run, check) switch were turned to run position.  <b>CAUTION: After completing the steps above, re-check all interlocking safety components and circuitry to prove that they are properly installed, correctly set, and fully operational. If in doubt, shut the system down, close gas valves and contact responsible individual before proceeding further.</b>		

	<b>For Initial Premix Metal Fiber Burner System Start-up (Continued):</b>	<b>Y</b>	<b>N</b>
28.	<p><b>Light main burners as follows:</b> First turn off all switches and turn flame safeguard to run position. Turn on Boiler controls &amp; main burner switches &amp; with gas pilot established and flame supervision system in operation, open the downstream fuel shut-off valve which will allow fuel flow to the blower mixer. There is a 10 second trial period for main flame establishment after pilot is established. If boiler does not ignite on first attempt slightly increase upstream gas pressure regulator setting. Verify that after fuel valves open a proper gas pressure is observed at gas inlet pressure tap. Set gas pressure per nameplate on unit, usually 3-4" W.C.</p> <p><b>NOTE:</b> At this point, it is more important to get any kind of a flame as soon a possible. The flame geometry can be adjusted and refined as needed later. If after increasing gas pressure regulator setting ignition does not occur, it may be necessary to cut air flow by closing gas butterfly slightly.</p>		
29.	Provide more gas or less air until ignition occurs. Move in small increments.		
30.	Set gas pressure per nameplate & specification data.		
31.	Cycle boiler to assure good reliable light off all burners. Observe even blue flame uniformly distributed on burner surface.		
32.	Replace cabinet door with burner off.		
33.	Adjust for proper NOx level & draft. The air butterfly valve can be adjusted to optimize combustion. Fine gas pressure (Nox) adjustments should be performed by adjusting gas pressure regulator. More gas increases Nox and lowers CO.		
34.	Secure air butterfly in position by tightening wing nut, securing screws.		
35..	Check firing rate of boiler with a fuel meter if available. Note at 30ppm Nox @ 3% O <sub>2</sub> . Boiler should be at rate.		
36.	After adjusting, allow boiler to reach operating temperature and refine adjustments as needed for hot conditions.		
37.	<b>Plug all test connections not in use to avoid fuel leakage.</b> Replace equipment cover caps.		
38.	<b>Check out overall system operation.</b>		
39.	<p><b>Re-check all safety system interlocks</b> for proper setting and operation.</p> <p><b>WARNING: Test every UV installation for dangerous spark excitation from ignitors and other possible sources of direct or reflected UV radiation. Use only gas-tight scanner connections.</b></p>		
40.	<b>Before system is placed into full service,</b> instruct operating personnel on proper start-up, operation, and shut down of system. Establish written instructions for their future reference.		
41.	<b>Completely go through installation and start up check off sheet and include this document as well as combustion report forms with start up sheet for file copy and owner.</b>		

**VII. List any items that are not approved as satisfactory or that may be questionable:**

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2. \_\_\_\_\_
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4. \_\_\_\_\_
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