

HEATMOR™

STAINLESS STEEL

Outdoor Furnaces



www.heatmor.com

800 CSS SUPPLEMENT

Manufacturing quality outdoor furnaces since 1984.

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MODEL 800 CSS STAINLESS STEEL OUTDOOR FURNACE



INSTALLATION SHOULD BE PERFORMED BY A QUALIFIED INSTALLER AND WILL COMPLY WITH ALL THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION OVER THE INSTALLATION.



READ THROUGH THE ENTIRE OPERATORS AND MAINTENANCE MANUAL AND THIS SUPPLEMENT BEFORE OPERATING YOUR HEATMOR™ STAINLESS STEEL OUTDOOR FURNACE MODEL 800 CSS.



NOTE: NEVER START A FIRE INSIDE THE FIREBOX UNTIL THE WATER JACKET IS FULL OF WATER AND SAND HAS BEEN ADDED TO THE BASE TO THE CORRECT LEVEL.

Units are Safety Listed by Omni Test Laboratories

Report # 0275WB012S

Listed to UL2523-18 and CSA B366.1-11





MODEL 800 CSS FURNACE SPECIFICATIONS

Specifications	Model 800 CSS
Overall Width (inches) Base Width (inches) (footprint)	87 84
Overall Height (inches) (With chimney stub)	114
Overall Length (inches) Base Length (inches)(footprint)	98 84
Total weight (lbs.) (Without Water)	4960
Water Capacity (US. Gal.)	450
Forced Draft (C.F.M.)	350 secondary 150 primary
Chimney Size (inches)	16
Max. Wood Length (inches)	54
Insulated Heating Area (sq.ft.)* 1 Loading per day 2 Loading per day	Approx. 12,000 Approx. 25,000
Firebox Width (inches)	60
Firebox length (inches)	54
Firebox height (inches)	60
Volume of firebox (cu.ft.)	112
Fire Door Size (inches)	56 x 50
Flue transfer area (sq.ft.)	32
BTU'S (maximum)**	900,000
Water Jacket Steel Gauge	Stainless 7
Firebox Steel Gauge	Stainless 7
Base Steel Gauge	Stainless 7
Base of Unit to Bottom of Loading Door (inches)	18
Sand required during initial setup.	3/4 yd.
Warranty – Workmanship (Includes total unit)	Limited LIFETIME Warranty



MODEL 800 CSS FURNACE SPECIFICATIONS (CONTINUED)

Warranty –Corrosion (Includes total unit)	Limited LIFETIME Warranty
Approvals Test Standards	UL 2523 - 18 CSA-B366.1-11
Hookup Location	Back
Total Heat Extraction area sq.ft	168.50
Type of Fuel	WOOD ONLY
Electrical Supply 1 Phase	115 Volts, 60HZ

*This is an estimate only. Actual loadings per day may vary depending on structures heated and type of wood used.

**This value should only be used as an indication of the furnace's heat recovery ability. Sustained outputs at this rate will increase the loadings per day.
Some types of wood may prevent the furnace from reaching this maximum output.

Bladder

Principle of the Bladder

The Bladder of the Model 800 CSS works on the same principles outlined in “Bladder Assembly” section of the Operators and Maintenance Manual.

Operation of the Bladder

The bladder of the model 800 CSS furnace has a capacity of approximately 20 gallons. It operates slightly different than the other furnaces. The bladder is a solid walled 7 GA tank separate from the main water jacket. As water expands, the bladder is filled from the bottom. If the bladder fills, the water overflows into the stand pipe and out. As the water contracts, it returns to the waterjacket through the bottom connection on the bladder.

Fire Door

Principles of the Fire door

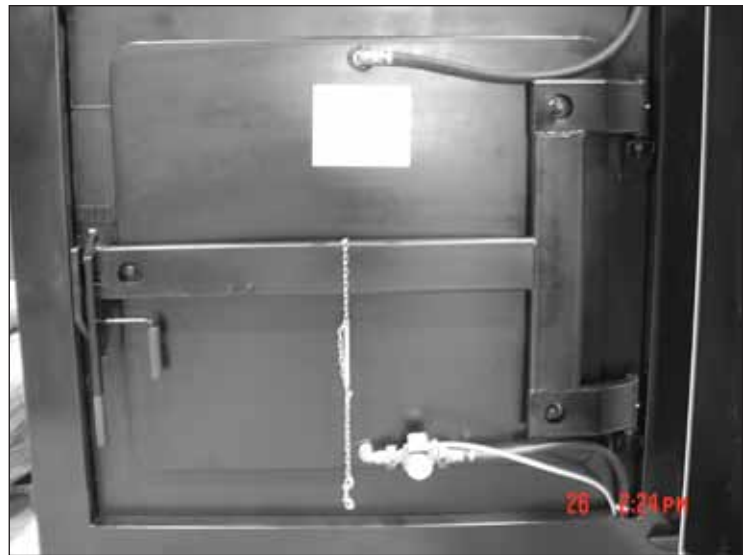
The model 800 CSS fire door is water cooled to prevent warping of the door. Because it is water cooled, the outer surface will never be hotter than the water in the furnace. The model 800 CSS requires a pump to move the water through the door in a loop between the fire door and the main water jacket. The fire door pump is a Taco model 007.

Removal and Replacement

If your fire door needs to be removed or replaced on your Model 800 CSS, please contact your local dealer for assistance.

Opening the Fire Door

It is important to always stand behind the fire door when opening it. Open the door just slightly to allow air to the firebox. This clears the firebox of smoke that may be lingering in the firebox. Once the smoke is evacuated from the firebox, it is safe to open the door fully, always standing behind the door for safety. Refer to the “Safe Furnace Operation Guidelines” section of the Operators and Maintenance Manual for further instruction on safe opening of the fire door.



Refer to Safe Operating Guidelines for further instructions on how to safely open and close the fire door or contact your local dealer. Ask for a demonstration.

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Adjustment of the Model 800 CSS Fire Door

The fire door hinges of the Model 800 CSS are stronger, more permanent, hinges than the residential models. Unlike the residential models, the hinges are not utilized for adjustment.

There are two major parts that make up the fire door of the Model 800 CSS, the door water jacket and the door-mounting frame. The water jacket is mounted to the door frame with three one inch threaded studs and held in place with two jamb nuts and two washers on each stud. When making adjustments, it is important not to loosen more than two studs at a time. The holes in the doorframe are larger than the studs to allow for movement required to align the door with the doorframe. Please follow the recommended instructions for proper adjustment of the fire door or contact your local dealer for further details.



If there is smoke leakage around the fire door at any point, and the gasket has been found to not be the problem, the door should be adjusted. Prolonged exposure to smoke and heat can cause permanent damage to the fire door gasket, magnify leakage problems, and create safety concerns. If the door seems to be aligned properly with the fire door frame, adjusting the fire door towards the fire door frame will likely solve the leakage problem. Using a socket, loosen the outer and inner nuts located on the horizontal door support arm. This will move the door towards the firebox creating a tighter seal between the door seal gasket and doorframe. Once the door has been adjusted to the correct depth, the inner and outer nuts should, once again, be tightened against each other to hold the door in that position.

Alignment

- 1) The fire door should be positioned over the fire door frame so that there is an equal distance between the fire door and the fire door frame on all four sides. Generally, this can be achieved by returning the three adjustment studs to the center of their respective holes. The model 800 CSS fire door is heavy; safe adjustment can be done with the assistance of a hydraulic or manual jack and a small pry bar. Loosen the doorframe jamb nuts just enough to allow the door to move. Center the door vertically in the frame. Move the door horizontally right to left with the use of a small pry bar between the door mounting frame and a jamb nut. When the water jacket is centered on the doorframe, the jamb nuts should all be tightened.
- 2) The next procedure is to seat the door water jacket evenly around the fire door frame. It is best to start with the water jacket away from the fire door frame approximately a ¼”.
- 3) If the right side of the door is not seated against the fire door frame, loosen the top right adjustment, first the outer jam nut, then the inner jam nut may be turned until the water jacket is seated about 1/8” into the silicone seal.
- 4) Follow the same procedure on the bottom adjustment until the right edge is seated evenly. Now tighten the bottom adjustment.
- 5) To ensure the left side of the door is sealed, follow the same procedure as the right side with left side adjustment only.



Remember: When adjusting the seating of the fire door, loosen only one adjustment at a time. After completion, make sure all adjustments are tight.

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Fire Door Latch & Deadbolt

Principles of the Fire Door Latch

The purpose of the fire door latch is to secure the fire door during operation. The fire door latch is not adjustable on the Model 800 CSS.

Principles of the Fire Door Deadbolt

The purpose of the fire door deadbolt is to provide additional safety for the operator. Pulling parallel to the doorframe on the deadbolt handle opens the deadbolt.



Fire Door Chain

The fire door chain prevents the outer door of the Model 800 CSS from swinging open uncontrollably. It is recommended to install a post to the side of the furnace, to secure the outer door from opening or closing during loading procedures (see Site Preparation Specifications).



Fill Line

The purpose of the Fill Line is to avoid a situation where the furnace is overfilled with wood. An over filled furnace will smoke more than one that has been properly filled with wood. A properly filled furnace will have fewer problems with debris in the secondary airbox.



Firebox Door Hoses and Elbows

Principle of the Door Hoses

The door hoses allow water to circulate between the firebox door and the water jacket. On the Model 800 CSS, a circulating pump that is mounted on the lower door hose, speeds up this circulation.

Maintenance/Result

Proper maintenance of the door hoses and elbows will ensure that water is able to flow through the firebox door. Build-up (calcium) in the elbows is possible over time, which slowly reduces the water flow through the door. If water does not flow freely through the door hoses to the firebox door, you may hear popping sounds in the door. Once the hoses are around five years old, or if they begin to show signs of wear, they should be replaced. Replacement of the hoses should only be done with the furnace shut down and the water temperature less than 100 degrees Fahrenheit. To clean the elbows, remove the hoses and use a pipe cleaning brush to clear out the build-up.

Removal and Replacement

To remove and replace the door hoses, use the following steps:

- 1) Turn off the power to the combustion blowers by turning off the combustion blower switch.
- 2) Ensure the fire in the firebox is extinguished, and allow the water to cool.
- 3) Once the water has cooled, turn off the main power source for the furnace.
- 4) Clamp each of the hoses in the middle of the hose to stop water flow.
- 5) Clamp each of the new hoses in the middle of the hose as well.
- 6) Loosen the hose clamps on each end of the door hose.
- 7) Remove the first end of the door hose needing replacement.
- 8) Push on the end of the new door hose and repeat the steps for the other end.
- 9) Tighten the hose clamps, securely fastening the door hose ends.
- 10) Remove the clamps in the middle of the new hoses. This will allow water to flow through the door once again.
- 11) Check for leaks.
- 12) Repeat the above steps if additional hoses must be changed.
- 13) Turn on the main power source for the furnace.
- 14) Turn on the combustion blower switch to resume normal furnace operation.

Firebox Door Circulating Pump

Principle of the Circulating Pump

Increases water circulation through the firebox door to eliminate any boiling within the firebox door. Natural thermal siphoning is not adequate flow through such a large door.

Removal and Replacement

To remove the firebox door circulating pump, use the following steps:

- 1) Turn off the power to the combustion blowers by turning off the combustion blower switch.
- 2) Ensure the fire in the firebox is extinguished, and allow the water to cool.
- 3) Once the water has cooled, **turn off the main power source for the furnace.**
- 4) Clamp each of the hoses in the middle of the hose to stop water flow.
- 5) Using wrenches, loosen and remove the pump flange bolts to remove the circulating pump. If the top hose is pinched properly, there should be minimal water loss when the lower hose and flange is separated from the pump.

- 6) With the pump removed, disconnect the wiring from the pump and attach to the new pump to be installed. If you are not comfortable or experienced in doing electrical repairs, have the electrical work done by a certified professional.
- 7) Mount the pump in place and tighten the flange bolts. Ensure the pump is circulating in the correct direction (pushing water into the firebox door)
- 8) Remove the clamps in the middle of the new hoses. This will allow water to flow through the door once again.
- 9) Check for leaks. Re-tighten as necessary.
- 10) Turn on the main power source for the furnace.
- 11) Turn on the combustion blower switch to resume normal furnace

Air Supply

Combustion Blower Power Switch

Principle of the Combustion Blower Power Switch

The Combustion Blower Power Switch is located at the front of the unit, making it easy to switch the blowers on or off during loading or maintenance.

Removal and Replacement

To remove the Combustion Blower Power Switch, use the following steps:

- 1) Turn off the main electrical power supply to the HEATMOR™.
- 2) Remove the switch cover plate.
- 3) Make a sketch of the location of the wires on the switch.
- 4) Remove the wires and replace the switch.
- 5) Replace the wires to the original locations.
- 6) Secure the cover plate.
- 7) Turn the main electrical power supply back on to the HEATMOR™.

Note: It is recommended to contact a licensed electrician to perform the above operation.

Combustion Air Blowers

The Model 800 CSS has two blowers, one 485 CFM and one 150 CFM blowers. The blower on the left, also called the primary air, delivers air to the fire from below the grates. The blower on the right, also known as the secondary air, delivers air into the firebox by means of an airbox on the inside, rear, wall of the firebox. The airflow of each blower is adjustable by means of a damper installed on each. This adjustable air flow is key to getting the most efficiency from your model 800 CSS Outdoor Wood Furnace.

Principle

Refer to the “Wood” section of the Operators and Maintenance Manual to gain a better understanding of how wood burns and the stages of combustion.

The air delivery of the model 800 CSS is different than the residential models because it supplies air to two areas of the fire. The primary air is supplied under the fire and is responsible for creating smoke and getting the temperature above 500 degrees fahrenheit. The secondary air is introduced into this smoke above the wood stack allowing the smoke to combust, creating



Air Supply Continued...

higher fire temperatures and less smoke.

Depending on the type of wood fuel used, different amounts of primary and secondary air are required for optimal efficiency. For example, small pieces of wood (high surface area) with low moisture content requires a small amount of primary air and a large amount of secondary air. If the opposite is done, with this type of fuel, an over-fueling situation will likely exist and the furnace will lose efficiency and smoke more. Cordwood with high moisture (30-40%) will likely require a lot of primary air and medium to large amounts of secondary air. A properly fired furnace will operate at the optimum efficiency with the least amount of visible exhaust. Once the operator is familiar with their type of fuel, they will not need to adjust the dampers on the fans.

Operation

The blowers are controlled by the TSWB Digital Controller. When the water temperature reaches the low set point of the aquastat, the aquastat will supply power to the fans until the water temperature reaches the high set point of the aquastat. When the high set point is reached, the aquastat terminates the power supply to the fans.

The dampers on the blowers give control over the airflow while the Controller is supplying power to the blowers.

Maintenance

Refer to the “Air Supply” section of the Operators and Maintenance Manual for further information on maintaining the air combustion blowers.

Flipper Assemblies

There are two styles of flipper assemblies on the Model 800 CSS Furnace. Refer to the “Air Supply” section of the Operators and Maintenance Manual for information on the primary blower flipper assembly.

The secondary blower has a different style flipper assembly, making service and maintenance easier. Instead of having the blower/flipper assembly unbolt and pull out to service, it is mounted on a hinged plate. This allows the operator to loosen one thumbnut and open the door to access the flipper assembly. For proper maintenance of the flipper assembly refer to the “Air Supply” section of the Operators and Maintenance Manual.

Secondary Air Box

Operation

The Secondary Airbox is located along the rear, interior, firebox wall. It is a means to direct air from the secondary combustion air blower to the upper area of the firebox. This is how smoke from the fire can be ignited. The secondary air box is designed as a two-piece part. The upper section can be unbolted and removed for maintenance or replacement. Do not stack anything over the opening of the secondary airbox as poor combustion could occur.



Automatic Fan Switch (A.F.S.) and Auger Tube

Automatic Fan Switch

Principle

The Automatic Fan Switch (A.F.S.) is a safety feature that allows air into the firebox before the main fire door is opened. Along with normal, recommended, safe fire door opening practices, the risk of a flash back is greatly reduced.

Operation

The A.F.S. turns on the fans when the outer door is opened. This Evacuates the smoke from the firebox. For More information refer to the CSS Manual Section on Air Supply, Automatic Fan Switch



Ash Auger Tube

Principles

The auger tube cover is located under the front outer door of the furnace. **The cover must have a good seal against the auger tube.**

Ash Removal

- 1) When removing ashes, always turn off the combustion air blowers.
- 2) Remove the auger cover by loosening the two nuts that hold the auger cover on.
- 3) Insert the ash auger and remove the ashes.



Supply Line and Return Line Threaded Connectors

There are two 2.5" Supply line and two 2.5" Return line threaded connectors (female NPT) located at the back of the Model 800 CSS. A brass nipple should be used to connect any fittings to the threaded spuds. Refer to the "Supply Line and Return Line Threaded Connectors" section in the Operators and Maintenance Manual.

Low Water Cutoff (TSWB in rear) - yellow wire

Principles

The low water cutoff (located above the flue) shuts down power to the fans when the water in the furnace is low.



The only way to restore power to the fans is to fill the furnace with water. Do not fill a warm furnace with cold water.

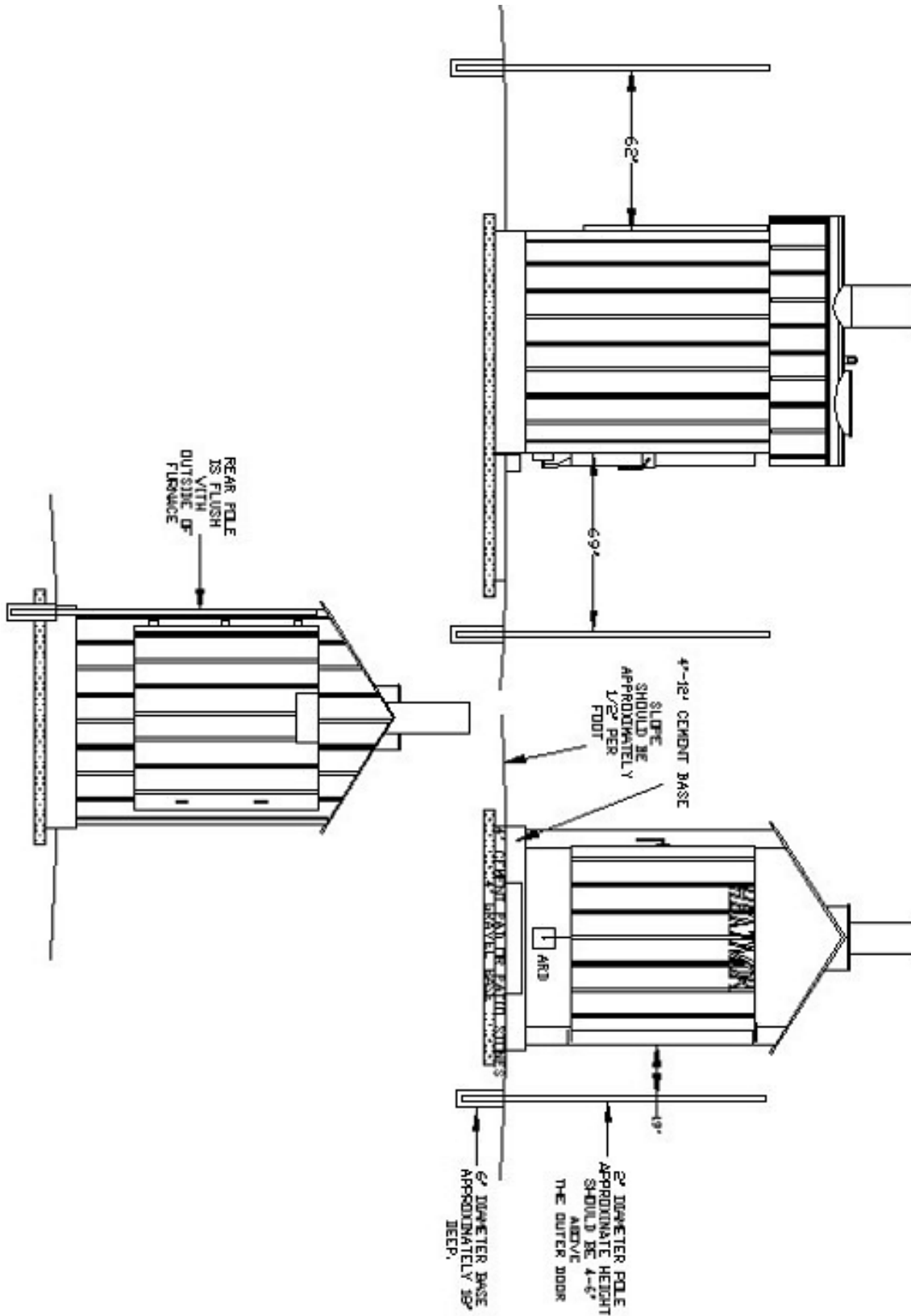
Outer Door

Operation

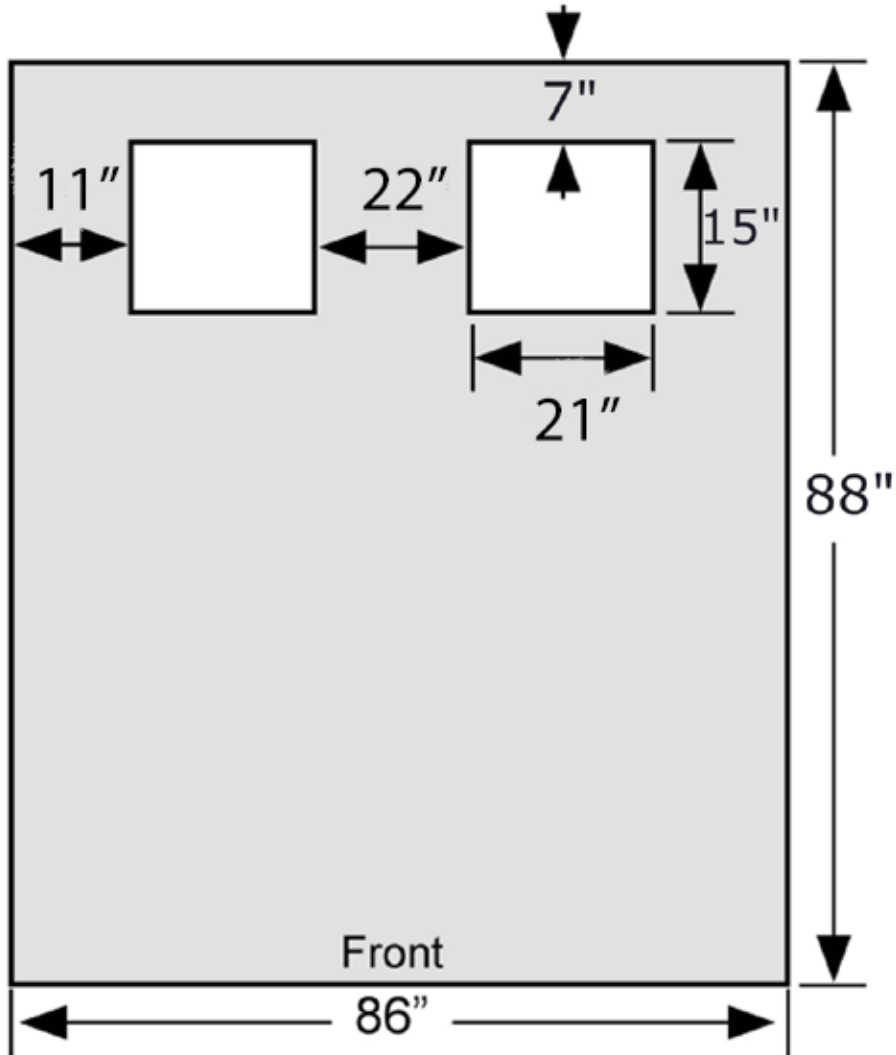
The outer door on the firebox is hinged and latched separately from the internal fire door. The door is hinged and opens to the right of the furnace. As the door opens it releases the A.F.S. which turns on the fans and forces air to enter the firebox before the fire door is opened, reducing the risk of a flashback. It is strongly recommended that a post is installed to the outside corner of the opened door to fasten the back and front external doors secure while in the open position. This reduces the risk of injury caused by the sudden movement of either large door (see drawing supplied).



Site Preparation Specifications – Model 800 CSS



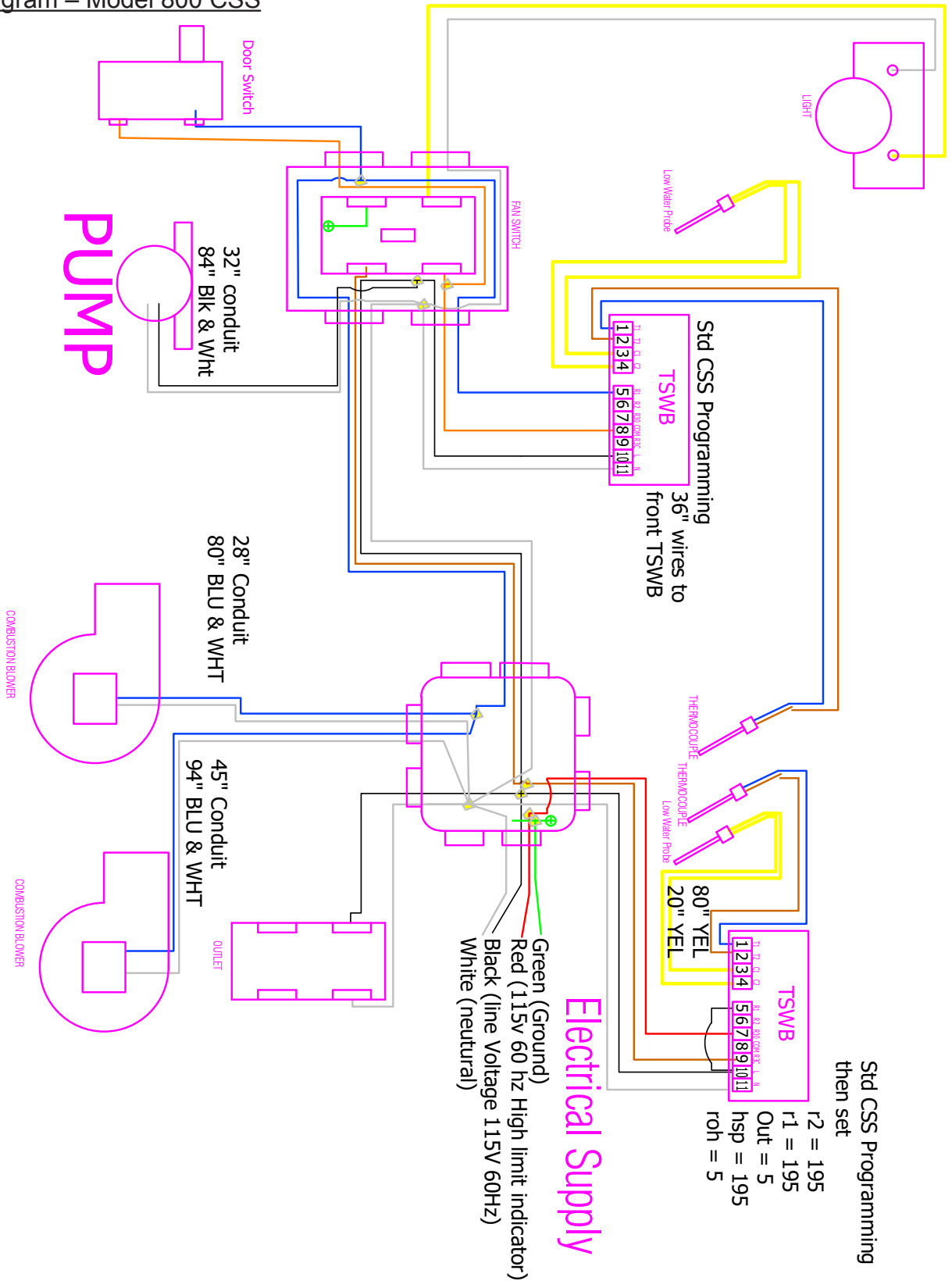
Model 800 CSS



Notes:

1. Pad sizes are shed base dimensions plus 3 inches in width and 4 inches in length.
2. Pad thickness must be at least 4 inches but not more than 12 inches.
3. All measurements are in inches.

Wiring Diagram – Model 800 CSS



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