

Warewashing Systems

J120 S

INSTALLATION, OPERATION, AND SERVICE MANUAL



J120 STEAM BOOSTER

J120 Steam Booster Manual • 07610-002-99-02-D

REVISION HISTORY

| Revision Letter | Revision Date | Made by | Applicable ECNs | Details |
|--------------------|------------------|---------|-----------------|---|
| A | 10-27-04 | CBW | 7201 | Initial release of manual. |
| В | 1-16-06 | CBW | 7615 | Removed 208 and 230 V versions and added 120 and 200 V. Added applicable service kits. |
| С | 3-22-13 | KP | N/A | Updated to new format. |
| D | 7-12-17 | JH | N/A | Updated to new format. Updated the Dimensions page. |



Warewashing Systems

J120 Steam Booster

Water temperature booster, steam-heated.

The manufacturer provides technical support for all of the equipment detailed in this manual. We strongly recommend that you refer to this manual before making a call to our technical support staff. Please have this manual open when you call so that our staff can refer you, if necessary, to the proper page. Technical support is not available on holidays.

Contact technical support toll free at 1-888-800-5672.

Technical support is available for service personnel only.

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SCHEMATICS

| J120 Steam Booster |
|--------------------|
|--------------------|

GUIDES



SYMBOLS



- risk of injury to personnel.



- risk of damage to equipment.



- risk of electrical shock.



caustic chemicals.



- reference data plate.



- lockout electrical power.

NOTICE - important note.

ABBREVIATIONS & ACRONYMS

ANSI - American National Standards Institute CFM - Cubic Feet per Minute ER - Energy Recovery GHT - Garden Hose Thread GPM - Gallons per Minute GPG - Grains per Gallon HP - Horse Power Hz - Hertz ID - Inside Diameter kW - Kilowatts NFPA - National Fire Protection Association NPT - National Pipe Thread ppm - Parts per Million PSI - Pounds per Square Inch V - Volts

SPECIFICATIONS

DIMENSIONS



| E | Main Electrical Connection (7/8" Hole) |
|----|--|
| W1 | Main Inlet Water Connection (3/4" NPT) |
| | |
| W2 | Water Outlet Connection (3/4" NPT) |

| PS | Steam Pressure Relief Outlet (1" NPT) |
|----|--|
| S | Steam Supply to Booster (1" NPT) |
| С | Steam Condensate Connection (3/4" NPT) |

NOTICE For best performance, the J120 should be installed no more than 20 feet from the dishmachine.

OPERATING PARAMETERS

J120 Steam Booster

| Electrical Requirements: | |
|---|------------|
| Voltage | 120 or 200 |
| Frequency | 50 or 60 |
| Phase | Single |
| Water Deminerator | |
| water Requirements: | |
| Minimum Incoming Temperature (°F) | 110 |
| Flow Pressure (PSI) | 20 ± 5 |
| Steam Requirements: | |
| Incoming Steam Pressure (PSI) | 10-30 |
| Heating Capacity at 20 PSI for 70° Rise (GPH) | 280 |
| Heat Exchanger Specifications:* | |
| Tubeside Working Pressure (PSI) | 125 |
| Shellside Working Pressure (PSI) | 125 |
| Tubeside Hydrostatic Test Pressure (PSI) | 250 |
| Shellside Hydrostatic Test Pressure (PSI) | 188 |
| Maximum Operating Temperature (°F) | 295 |
| Maximum Shellside Steam Pressure (PSI) | 125 |
| Heat Exchanger Specifications: | |
| Water Outlet Safety Valve Set Pressure (PSI) | 125 |
| Steam Relief Valve Set Pressure (PSI) | 50 |

*Indicates typical design criteria but is subject to change without notice. For more information, contact an authorized service agent.

INSTALLATION

INSTRUCTIONS

INSPECTION

Do not throw away the packaging if damage is evident!

Before installing the booster, check the packaging and booster for damage. Damaged packaging indicates possible damage to the product. If there is any type of damage to both the packaging and booster, DO NOT THROW AWAY THE PACKAGING. The booster has been previously inspected at the factory and is expected to arrive in new, undamaged condition. However, rough handling by carriers or others might result in damage to the booster while in transit. If this occurs, DO NOT RETURN THE BOOSTER TO THE MANUFACTURER. Instead, contact the carrier and ask them to send a representative to the site to inspect the damage and request that an inspection report be completed. Contact the carrier and dealer that sold you the booster within 48 hours of receipt to report possible freight damage.

MOUNTING The booster should come pre-assembled and must be permanently mounted in place. The platform has pre-punched holes in the legs for mounting to the floor. Once the booster is secured to the floor, attach the water and steam lines in accordance with applicable codes.



NOTICE The booster must be properly mounted and leveled before being used.

PLUMBING



The plumber MUST flush the incoming water line! All plumbing connections must adhere to local, state, territorial, and national codes. The installing plumber is responsible for ensuring the incoming water lines are flushed of debris before connecting the machine. Note that chips and materials from cutting processes can become lodged in the solenoid valves and prevent them from opening or closing. Any valves that are found to be fouled or defective because of foreign matter left in the water line and any subsequent water damage are not the responsibility of the manufacturer.

The booster is designed to take incoming water from a minimum temperature of 110°F to approximately 180°F for use in the final rinse of the dishmachine. Water is supplied to the booster and is heated by tubes carrying steam. Heat is transferred from the steam into the water, raising the temperature. Install condensate drains in accordance with applicable codes.

The booster is designed to operate at a water flow rate of 20 ± 5 PSI. The assembly comes with a water pressure regulator, which is preset at the factory. However, adjustment might be required, so ensure proper flow pressure before operating.



WARNING! The booster is designed to heat water to a minimum of 180°F and is extremely hot during operation. Advise personnel that touching booster components can result in severe burns or injuries.

ELECTRICAL POWER CONNECTIONS



All electrical connections must be made in accordance with applicable portions of local, state, territorial, and national codes.

- 1. Disconnect electrical power at the breaker or disconnect switch and tag-out in accordance with applicable procedures and codes.
- 2. Route incoming power lines within conduit that will connect via fittings to the prepunched holes in the back of the control box.
- 3. Install power and ground wires to lugs as indicated by the appropriate decals in the control box (L1 and L2). Use copper conductors only. Use of an anti-oxidation agent is recommended on power connections. Tighten all connections.

OPERATION

INSTRUCTIONS



WARNING! The heat exchanger used in the booster is a pressure vessel with very precise operating parameters. Safety equipment such as relief valves should never be tampered with or disabled. These devices protect the equipment from damage and the operator from injury or death.

- 1. Ensure that water, steam, and any condensate drains are connected to the booster.
- 2. Start the water flow first, open the condensate drains, and then begin steam flow.
- 3. On the control box, press the power switch and put it in the "ON" position. The power light should come on.



CAUTION! Do not shock the system by applying the steam before the water. This can cause damage to the booster.

OPERATION NOTICE Parenthetical references correspond to the booster schematic.

- 1. When the power switch (S1) is placed in the ON position, power is provided to both the power light (E1) and the thermostat (TS1).
- 2. The thermostat (TS1) will close when the water falls below the minimum setpoint, energizing the steam solenoid light (E2) and steam solenoid (FS1).
- 3. The steam solenoid (FS1) will remain open, allowing steam into the booster, until the water temperature reaches the desired temperature. At that point, the thermostat (TS1) will open, de-energizing the steam solenoid (FS1) and steam solenoid light (E2).



WARNING! Remember that all of the components in the control box are under line voltage. Never remove or open the control box cover during normal operation!

SHUTDOWN WARNING! The booster is designed to heat water to a minimum of 180°F and is extremely hot during operation. Advise personnel that touching booster components can result in severe burns or injuries. Do not attempt to clean, wipe-down, or perform any maintenance on the booster until it has cooled-down to an acceptable temperature.

- 1. Turn the power switch to the "OFF" position. The power light should go off.
- 2. Secure steam flow to the unit.
- 3. Secure water flow to the unit.
- 4. Close the condensate drains as required by applicable procedures and codes.

MAINTENANCE

PREVENTATIVE MAINTENANCE



WARNING! Maintenance should only be performed by an authorized service agent. The J120 is designed to operate at temperatures capable of causing burns to personnel. Always allow the unit to cool-down to an acceptable temperature before performing any maintenance.

NOTICE Very little maintenance is required on the J120. As long as the steam and water used with the unit have the proper filtration and are operated at the correct temperature and pressures, the booster should deliver many years of reliable service.

PRESSURE REGULATOR

Incoming water pressure can be regulated by adjusting the water pressure regulator on the system. In order to adjust pressure:

- 1. Loosen the top nut on the regulator. This will allow you to turn the adjusting screw.
- Turn the adjusting screw clockwise to increase pressure and counter-clockwise to decrease. Pressure can be read on the pressure gauge located on the water-outlet side of the heat exchanger.
- 3. Once the desired pressure is reached, tighten the top nut to ensure the adjustment cannot be accidentally changed.

The water pressure regulator has an internal strainer that can be removed through the bottom hexagonal plug. This should be checked periodically depending on the water quality. It is important that the water supply to the water pressure regulator be secured before cleaning the strainer.

RELIEF VALVES, SAFETY VALVES, & THERMOSTAT

These components are shipped from the factory preset and should not be changed. None of these components are considered adjustable and no adjustments should be made. If a component does not appear to be working properly, then it should be repaired or replaced immediately by an authorized service agent.

TROUBLESHOOTING

COMMON PROBLEMS



WARNING: Inspection, testing, and repair of electrical equipment should only be performed by an authorized service agent. Many of the tests require that the unit have power to it and live electrical components be exposed. **USE EXTREME CAUTION WHEN TESTING THE MACHINE.**

| PROBLEM | POSSIBLE CAUSE | REMEDY |
|---|--|---|
| Power light does not come on. | Power not connected to the unit through the control box. Service breaker tripped or open. Loose power switch connections. Power switch is faulty. Power light is faulty. | Open the control box cover and verify that incoming power lines are connected and tight. Verify the breaker is closed. Ensure the connections are tight. Replace the power switch. Replace the light. |
| Water pressure is too low. | Water pressure regulator is out of adjustment. Water pressure regulator internal strainer is clogged. Water pressure regulator is faulty. Water pressure gauge is faulty or cut off from the system. Heat exchanger is clogged. | Follow the instructions provided in the maintenance section and adjust the flow pressure to 20 ± 5 PSI. Follow the instructions provided in the maintenance and clean. Replace the regulator. Verify the test cock valve under the gauge is open to allow sensing of line pressure. Replace gauge if necessary. Replace the heat exchanger. |
| Solenoid valve is not opening/ closing. | Power not connected to the unit through the control box. Service breaker tripped or open. Loose power switch connections. Power switch is faulty. Thermostat is faulty. Solenoid wires are loose or broken. Faulty solenoid coil. | Open the control box cover and verify that incoming power lines are connected and tight. Verify the breaker is closed. Ensure the connections are tight. Replace the power switch. Replace the thermostat. Verify that wires are sound and connections are tight. Replace the solenoid. |
| Outlet water temperature too low. | Power not connected to the unit through the control box. Service breaker tripped or open. Loose power switch connections. Power switch is faulty. Thermostat is faulty. Solenoid wires are loose or broken. Faulty solenoid coil. Steam flow pressure is too low. Water flow pressure is too high. Heat exchanger is clogged. Insufficient steam volume to unit. | Open the control box cover and verify that incoming power lines are connected and tight. Verify the breaker is closed. Ensure the connections are tight. Replace the power switch. Replace the thermostat. Verify that wires are sound and connections are tight. Replace the solenoid. Verify the steam flow is 10-30 PSI. Follow the instructions provided in the maintenance section and adjust the flow pressure to 20 ± 5 PSI. Replace the line size and flow pressure. |







| ITEM | QTY | DESCRIPTION | PART NUMBER |
|------|-----|--------------------------------|-----------------|
| 1 | 1 | Water Inlet Plumbing Assembly | See page 9. |
| 2 | 1 | Steam Inlet Plumbing Assembly | See page 11. |
| 3 | 1 | Water Outlet Plumbing Assembly | See page 10. |
| 4 | 1 | Platform Weldment | 05700-002-36-72 |
| 5 | 2 | U-Bolt | 05306-002-89-27 |
| 6 | 1 | Heat Exchanger | 04420-002-43-94 |
| 7 | 1 | Steam Outlet Plumbing Assembly | See page 12. |
| 8 | 1 | Control Box Assembly | See page 13. |



WATER INLET PLUMBING ASSEMBLY

Complete Water Inlet Plumbing Assembly 05700-002-36-74



| ITEM | QTY | DESCRIPTION | PART NUMBER |
|------|-----|--|-----------------|
| 1 | 1 | Water Pressure Regulator, 3/4" NPT | 06685-011-58-22 |
| 2 | 1 | Nipple, Brass, 3/4" NPT x 6" Long | 05700-001-26-74 |
| 3 | 3 | Elbow, 90-degree Brass, 3/4" NPT | 04730-206-13-00 |
| 4 | 1 | Nipple, Brass, 3/4" NPT x 4" Long | 04730-207-05-00 |
| 5 | 1 | Union, Brass, 3/4" NPT | 04730-212-05-00 |
| 6 | 1 | Nipple, Brass, 3/4" NPT x 2" Long | 04730-207-46-00 |
| 7 | 1 | Bushing, Hex, 1 1/4" NPT x 3/4" NPT, Reducer | 04730-011-88-80 |
| 8 | 1 | Nipple Brass, Close, 3/4" NPT | 04730-207-34-00 |



WATER OUTLET PLUMBING ASSEMBLY

Complete Water Outlet Plumbing Assembly 05700-002-36-75



| ITEM | QTY | DESCRIPTION | PART NUMBER |
|------|-----|---|-----------------|
| 1 | 1 | Bushing, Hex, 1 1/4" x 3/4" NPT Reducer | 04730-011-88-80 |
| 2 | 2 | Nipple, 3/4" NPT, Close Brass | 04730-207-34-00 |
| 3 | 2 | Tee, 3/4" x 3/4" x 3/4" NPT, Brass | 04730-211-01-34 |
| 4 | 1 | Bushing, 3/4" x 3/8" NPT, Brass | 04730-011-89-19 |
| 5 | 2 | Nipple, Brass, 3/4" NPT x 2" Long | 04730-207-46-00 |
| 6 | 1 | Union, Brass, 3/4" NPT | 04730-212-05-00 |
| 7 | 1 | Nipple, Brass, 3/4" NPT x 4" Long | 04730-207-05-00 |
| 8 | 1 | Elbow, 90-degree, 3/4" NPT, Brass | 04730-206-13-00 |
| 9 | 1 | Relief Valve, Steam, 3/4" NPT | 04820-100-07-06 |
| 10 | 1 | Nipple, Brass, 3/4" NPT x 6" Long | 05700-001-26-74 |
| 11 | 1 | Tee, Brass, 3/4" x 3/4" x 1/4" NPT | 04730-211-04-00 |
| 12 | 1 | Ball Valve, Test Cock, 1/4" NPT, Bronze | 04810-011-72-67 |
| 13 | 1 | Gauge, 0-100 PSI, 1/4" NPT | 06685-111-88-34 |



STEAM INLET PLUMBING ASSEMBLY

Complete Steam Inlet Plumbing Assembly 05700-002-98-86



| ITEM | QTY | DESCRIPTION | PART NUMBER |
|------|--------|--|------------------------------------|
| 1 | 1 | Bushing, 1 1/2" x 1" NPT, Black Iron | 04730-002-36-79 |
| 2 | 6 | Nipple, 1" NPT, Close, Black Iron | 04730-907-08-34 |
| 3 | 1 | Elbow, 1" NPT, 90-degree, Black Iron | 04730-906-03-34 |
| 4 | 1 | Tee, 1" x 1" x 1" NPT, Black Iron | 04730-911-01-34 |
| 5 | 1 | Union, 1" NPT, Black Iron | 04730-912-01-34 |
| 6 | 1 1 | Valve, Solenoid, 1" NPT, 120 V Valve, Solenoid, 1" NPT, 200 V | 04810-002-92-23 04810-002-93-66 |
| 7 | 1 | Tee, 1" x 1" x 1/4" NPT | 04730-911-01-00 |
| 8 | 1 | Nipple, Pigtail, 1/4" NPT, Black Iron | 04730-907-14-34 |
| 9 | 1 | Ball Valve, Test Cock, 1/4" NPT, Bronze | 04810-011-72-67 |
| 10 | 1 | Gauge, 0-100 PSI, 1/4" NPT | 06685-111-88-34 |
| 11 | 1 | Safety Relief Valve, 1" NPT | 04820-100-01-35 |
| 12 | 1 | Y-strainer, 1" NPT, Black Iron | 04730-217-02-32 |
| 13 | 1 | Coupling, 1/4" x 1/4" NPT | 04730-904-01-34 |



STEAM OUTLET PLUMBING ASSEMBLY

Complete Steam Outlet Plumbing Assembly 05700-002-36-77



| ITEM | QTY | DESCRIPTION | PART NUMBER |
|------|-----|--|-----------------|
| 1 | 1 | Bushing, 1 1/2" x 3/4" NPT, Black Iron | 04730-002-36-81 |
| 2 | 2 | Nipple, Close, 3/4" NPT, Black Iron | 04730-907-01-00 |
| 3 | 1 | Elbow, 3/4" NPT, 90-degree, Black Iron | 04730-906-10-34 |
| 4 | 1 | Union, 3/4" NPT, Black Iron | 04730-912-01-00 |
| 5 | 1 | Nipple, 3/4" NPT x 2" Long, Black Iron | 04730-907-05-34 |
| 6 | 1 | Steam Trap, 3/4" NPT | 06680-500-02-77 |



CONTROL BOX ASSEMBLY



| ITEM | QTY | DESCRIPTION | PART NUMBER |
|------|-----|---|------------------------------------|
| 1 | 1 | Decal, Warning, Disconnect Power | 09905-100-75-93 |
| 2 | 1 | Decal, Schematic | 09905-002-78-56 |
| 3 | 1 | Cover, Control Box | 05700-001-19-82 |
| 4 | 1 | Decal, L1, L2 | 09905-002-78-67 |
| 5 | 1 | Ground Lug | 05940-200-76-00 |
| 6 | 1 | Power Switch | 05930-011-49-55 |
| 7 | 1 | Decal, Ground | 09905-011-86-86 |
| 8 | 1 | Terminal Block Replacement Kit (block, spacer, and locknut) | 06401-003-11-78 |
| 9 | 2 | Light, Red | 05945-111-21-57 |
| 10 | 1 | Thermostat | 06680-500-01-77 |
| 11 | 1 | Conduit Fitting, 90-degree, 1/2" | 05975-011-45-14 |
| 12 | 1 | Control Box with Decal Decal Only | 06401-002-99-45 09905-002-98-93 |

SCHEMATICS

J120 STEAM BOOSTER





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