# WASHER-EXTRACTOR
# INSTALLATION AND OPERATION MANUAL
# HX SERIES (HXC/HXO)

B&C TECHNOLOGIES

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# INTRODUCTION

# The HX Series Washer-Extractor

The HX line is a professional fixed-mount washer-extractors in a series of several smaller and larger models from B&C Technologies. It is an open pocket washer-extractor with a large door opening for quick and easy loading and unloading. It has been developed for on-premises markets, and is suitable for commercial and industrial laundries, hotels, and other places where laundry might be processed.

The design allows for top performances at the lowest possible operation cost and investment. The flexible electronic control center ensures that maximum productivity is obtained.

The HX series of washer-extractors utilize high quality materials, such as 304 (18/8) stainless steel in vital parts that come into contact with the wash solution. It has a stainless steel cabinet built for long longevity, with easily removable panels all around the machine.

The key advantages of this series are the simplicity of the microprocessor and the completely electronic AC drive system, which utilizes only one totally enclosed motor. The system allows for washing and extracting at any speed, as well as mechanical action to suit any textile fiber. The high speed final extraction (400G) saves time and energy in the finishing operation.

A four compartment supply dispenser for powder and liquid detergents is standard. Eight connections for external chemical supplies are also provided on a terminal strip in the back of the machine.

The HX series is also prepared to connect with water reuse systems. The systems can be installed separately on top of the machine. They are available in either single or dual tanks, resulting in water savings of up to 40%. The tanks can be equipped with or without steam heat, depending on installation and operation. The water reuse system is programmable by the machine's electronic control center.

The microprocessor that is standard on all on-premises laundry (OPL) machines can be remotely programmed by an Android smart phone through Bluetooth. This provides a simple and easy programming of any wash formulas with any water level, time, or speed.

## CONTACT

For technical assistance or customer service, we can be reached in the following ways:
Phone: 850-249-2222
E-mail: service@bandctech.com
Website: www.bandctech.com

## REPLACEMENT PARTS

In the event that literature or replacements parts are required, contact the local distributor of the equipment or contact B&C Technologies at the above phone number/ addresses.

# GENERAL SPECIFICATIONS: HX 200G WASHERS

| MODEL | | | HX-22 | | HX-35 | |
|---|---|---|---|---|---|---|
| UNITS | Metric | US | Metric | US | Metric | US |
| CAPACITY (1:10) | kg | Lbs | 8.24 | 18.2 | 13.5 | 29.7 |
| OVERALL DIMENSIONS | | | | | | |
| A - Width | mm | inch | 660 | 26 | 769 | 30.3 |
| B - Depth | mm | inch | 864 | 34 | 1050 | 41.3 |
| C - Height | mm | inch | 1013 | 39.9 | 1115 | 43.9 |
| WEIGHT AND SHIPPING INFO | | | | | | |
| Net weight | kg | Lbs | | | | |
| Domestic shipping weight | kg | Lbs | | | | |
| CYLINDER INFORMATION | | | | | | |
| Diameter | mm | inch | 526 | 20.7 | 610 | 24 |
| Depth | mm | inch | 379 | 14.9 | 462 | 18.2 |
| Volume | Liters | cu. ft | 82.4 | 2.91 | 135 | 4.77 |
| CYLINDER SPEEDS (programmable) | | | | | | |
| Wash | g | rpm | 0.8 | 52 | 0.8 | 49 |
| Distribution | g | rpm | 3 | 100 | 3 | 94 |
| Maximum Extract | g | rpm | 200 | 818 | 200 | 760 |
| DOOR OPENING AND HEIGHT | | | | | | |
| Diameter | mm | inch | 381 | 15 | 418 | 16.5 |
| Door bottom above floor | mm | inch | 324 | 12.8 | 350 | 13.4 |
| DRIVE INFORMATION | | | | | | |
| Number of motors | | | 1 | 1 | 1 | 1 |
| Size of motor | kW | hp | 0.76 | 1 | 1.12 | 1.5 |
| WATER INLETS | | | | | | |
| Hot water size | DN | NPT | 20 | 3/4 | 20 | 3/4 |
| Cold water size | DN | NPT | 20 | 3/4 | 20 | 3/4 |
| Additional water inlets | DN | NPT | 20 | 3/4 | 20 | 3/4 |
| Steam inlet size | DN | NPT | 13 | 1/2 | 13 | 1/2 |
| DRAIN OUTLETS AND CAPACITY | | | | | | |
| Number of drains | | | 1 | 1 | 1 | 1 |
| Drain size | mm | inch | 51 | 2 | 51 | 2 |
| ELECTRICAL HEATING | | | | | | |
| 208-240VAC, 50/60Hz, 3PH | Breaker | Amps | 30 | 24 | 30 | 26 |
| 380-480VAC, 50/60Hz, 3PH | Breaker | Amps | 30 | 13 | 15 | 14 |
| ELECTRICAL SERVICES | | | | | | |
| 208-240VAC, 50/60Hz, 1PH | Breaker | Amps | 15 | 6 | 15 | 8.1 |
| 208-240VAC, 50/60Hz, 3PH | Breaker | Amps | 15 | 3.4 | 15 | 3.6 |
| 380-480VAC, 50/60Hz, 3PH | Breaker | Amps | 15 | 1.7 | 15 | 1.8 |

# GENERAL SPECIFICATIONS: HX 200G WASHERS

| MODEL | | | HX-50 (200G) | | HX-65 (200G) | | HX-85 (200G) | | HX-110 (200G) | |
|---|---|---|---|---|---|---|---|---|---|---|
| UNITS | Metric | US | Metric | US | Metric | US | Metric | US | Metric | US |
| CAPACITY (1:10) | kg | Lbs | 19.6 | 43.2 | 27.5 | 60.6 | 36 | 79.3 | 45.4 | 100 |
| OVERALL DIMENSIONS | | | | | | | | | | |
| A - Width | mm | inch | 769 | 30.3 | 872 | 34.3 | 1050 | 41.4 | 1051 | 41.4 |
| B - Depth | mm | inch | 1130 | 44.5 | 1194 | 47 | 1394 | 55 | 1394 | 55 |
| C - Height | mm | inch | 1209 | 47.6 | 1312 | 51.6 | 1591 | 62.6 | 1591 | 62.6 |
| WEIGHT AND SHIPPING INFO | | | | | | | | | | |
| Net weight | kg | Lbs | | | | | | | | |
| Domestic shipping weight | kg | Lbs | | | | | | | | |
| CYLINDER INFORMATION | | | | | | | | | | |
| Diameter | mm | inch | 681 | 26.8 | 790 | 31.1 | 920 | 36.2 | 920 | 36.2 |
| Depth | mm | inch | 539 | 21.2 | 561 | 22 | 544 | 21.3 | 683 | 26.9 |
| Volume | Liters | cu. ft | 196 | 6.93 | 275 | 9.71 | 360 | 12/7 | 454 | 16.1 |
| CYLINDER SPEEDS (programmable) | | | | | | | | | | |
| Wash | g | rpm | 0.8 | 46 | 0.8 | 43 | 0.8 | 40 | 0.8 | 40 |
| Distribution | g | rpm | 3 | 90 | 2 | 82 | 3 | 76 | 3 | 76 |
| Maximum Extract | g | rpm | 200 | 725 | 200 | 673 | 200 | 624 | 200 | 624 |
| DOOR OPENING AND HEIGHT | | | | | | | | | | |
| Diameter | mm | inch | 483 | 19 | 508 | 20 | 651 | 25.6 | 668 | 26.3 |
| Door bottom above floor | mm | inch | 418 | 16.5 | 483 | 16.6 | 569 | 22.4 | 582 | 22.9 |
| DRIVE INFORMATION | | | | | | | | | | |
| Number of motors | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Size of motor | kW | hp | 1.5 | 2 | 3 | 4 | 5.5 | 7.5 | 7.5 | 10 |
| WATER INLETS | | | | | | | | | | |
| Hot water size | DN | NPT | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 |
| Cold water size | DN | NPT | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 |
| Additional water inlets | DN | NPT | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 |
| Steam inlet size | DN | NPT | 13 | 1/2 | 13 | 1/2 | 20 | 3/4 | 20 | 3/4 |
| DRAIN OUTLETS AND CAPACITY | | | | | | | | | | |
| Number of drains | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Drain size | mm | inch | 51 | 2 | 76.2 | 3 | 76.2 | 3 | 76.2 | 3 |
| ELECTRICAL HEATING | | | | | | | | | | |
| 208-240VAC, 50/60Hz, 3PH | Breaker | Amps | 60 | 48 | 60 | 52 | 80 | 75 | 80 | 78 |
| 380-480VAC, 50/60Hz, 3PH | Breaker | Amps | 30 | 24 | 30 | 26 | 40 | 38 | 40 | 39 |
| ELECTRICAL SERVICES | | | | | | | | | | |
| 208-240VAC, 50/60Hz, 1PH | Breaker | Amps | 15 | 8.1 | 20 | 16.1 | 30 | 22 | 40 | 31 |
| 208-240VAC, 50/60Hz, 3PH | Breaker | Amps | 15 | 4.7 | 15 | 4.7 | 15 | 12.7 | 20 | 18 |
| 380-480VAC, 50/60Hz, 3PH | Breaker | Amps | 15 | 2.3 | 15 | 3.5 | 15 | 6.3 | 15 | 9 |

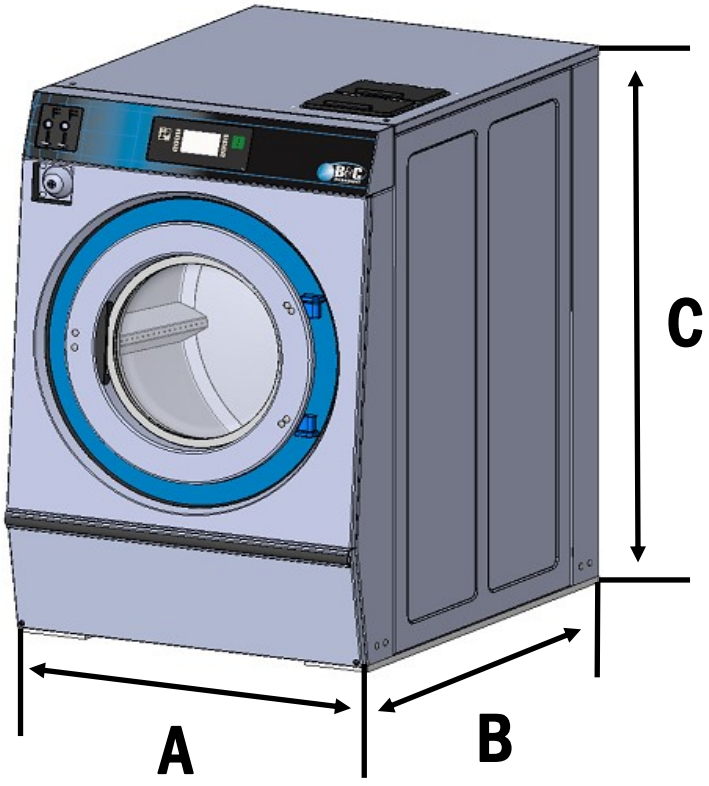
# GENERAL SPECIFICATIONS: HX 400G WASHERS

| MODEL | | | HX-50 | | HX-65 | | HX-85 | | HX-110 | |
|---|---|---|---|---|---|---|---|---|---|---|
| UNITS | Metric | US | Metric | US | Metric | US | Metric | US | Metric | US |
| CAPACITY (1:10) | kg | Lbs | 19.6 | 43.2 | 27.5 | 60.6 | 36 | 79.3 | 45.4 | 100 |
| OVERALL DIMENSIONS | | | | | | | | | | |
| A - Width | mm | inch | 769 | 30.3 | 872 | 34.3 | 1050 | 41.4 | 1051 | 41.4 |
| B - Depth | mm | inch | 1130 | 44.5 | 1194 | 47 | 1394 | 55 | 1394 | 55 |
| C - Height | mm | inch | 1209 | 47.6 | 1312 | 51.6 | 1591 | 62.6 | 1591 | 62.6 |
| WEIGHT AND SHIPPING INFO | | | | | | | | | | |
| Net weight | kg | Lbs | | | | | | | | |
| Domestic shipping weight | kg | Lbs | | | | | | | | |
| CYLINDER INFORMATION | | | | | | | | | | |
| Diameter | mm | inch | 681 | 26.8 | 790 | 31.1 | 920 | 36.2 | 920 | 36.2 |
| Depth | mm | inch | 539 | 21.2 | 561 | 22 | 544 | 21.3 | 683 | 26.9 |
| Volume | Liters | cu. ft | 196 | 6.93 | 275 | 9.71 | 360 | 12/7 | 454 | 16.1 |
| CYLINDER SPEEDS (programmable) | | | | | | | | | | |
| Wash | g | rpm | 0.8 | 46 | 0.8 | 43 | 0.8 | 40 | 0.8 | 40 |
| Distribution | g | rpm | 3 | 90 | 2 | 82 | 3 | 76 | 3 | 76 |
| Maximum Extract | g | rpm | 400 | 1025 | 400 | 950 | 400 | 880 | 400 | 880 |
| DOOR OPENING AND HEIGHT | | | | | | | | | | |
| Diameter | mm | inch | 483 | 19 | 508 | 20 | 651 | 25.6 | 668 | 26.3 |
| Door bottom above floor | mm | inch | 418 | 16.5 | 483 | 16.6 | 569 | 22.4 | 582 | 22.9 |
| DRIVE INFORMATION | | | | | | | | | | |
| Number of motors | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Size of motor | kW | hp | 1.5 | 2 | 3 | 4 | 5.5 | 7.5 | 7.5 | 10 |
| WATER INLETS | | | | | | | | | | |
| Hot water size | DN | NPT | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 |
| Cold water size | DN | NPT | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 |
| Additional water inlets | DN | NPT | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 | 20 | 3/4 |
| Steam inlet size | DN | NPT | 13 | 1/2 | 13 | 1/2 | 20 | 3/4 | 20 | 3/4 |
| DRAIN OUTLETS AND CAPACITY | | | | | | | | | | |
| Number of drains | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Drain size | mm | inch | 51 | 2 | 76.2 | 3 | 76.2 | 3 | 76.2 | 3 |
| ELECTRICAL HEATING | | | | | | | | | | |
| 208-240VAC, 50/60Hz, 3PH | Breaker | Amps | 60 | 48 | 60 | 52 | 80 | 75 | 80 | 78 |
| 380-480VAC, 50/60Hz, 3PH | Breaker | Amps | 30 | 24 | 30 | 26 | 40 | 38 | 40 | 39 |
| ELECTRICAL SERVICES | | | | | | | | | | |
| 208-240VAC, 50/60Hz, 1PH | Breaker | Amps | 15 | 8.1 | 20 | 16.1 | 30 | 22 | 40 | 31 |
| 208-240VAC, 50/60Hz, 3PH | Breaker | Amps | 15 | 4.7 | 15 | 4.7 | 15 | 12.7 | 20 | 18 |
| 380-480VAC, 50/60Hz, 3PH | Breaker | Amps | 15 | 2.3 | 15 | 3.5 | 15 | 6.3 | 15 | 9 |

# GENERAL SPECIFICATIONS

## Dimensions

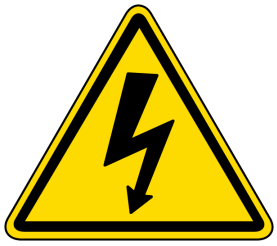
| | HX-22 | | HX-35 | | HX-50 | | HX-65 | | HX-85 | | HX-110 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch | mm | inch |
| A | 660 | 26 | 769 | 30.3 | 769 | 30.3 | 872 | 34.3 | 1051 | 41.4 | 1051 | 41.4 |
| B | 864 | 34 | 1050 | 41.3 | 1130 | 44.5 | 1194 | 47 | 1167 | 46 | 1394 | 55 |
| C | 1013 | 39.9 | 1115 | 43.9 | 1209 | 46.6 | 1312 | 51.6 | 1591 | 62.6 | 1591 | 62.6 |



# SAFETY

# Explanation of Key Symbols

Anyone operating or servicing this machine must follow the safety rules in this manual. Particular attention must be paid to these DANGER, WARNING, and CAUTION blocks which appear throughout the manual.



This warning symbol alerts you to the presence of dangerous voltages.

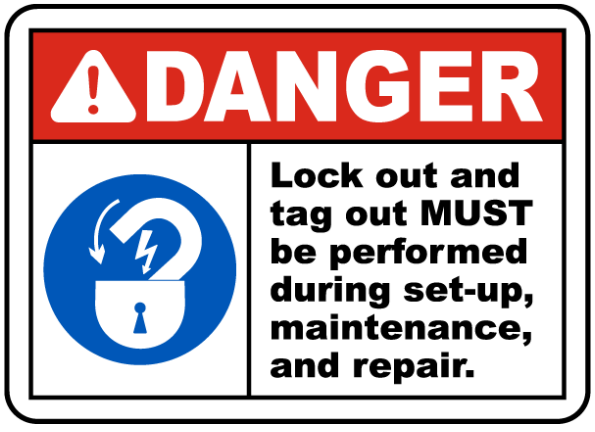
This warning symbol indicates the presence of hot surfaces that could cause serious burns. Stainless steel and steam lines can become extremely hot and should not be touched.

This warning symbol alerts you to important instructions concerning the machine and possible dangerous conditions.

This warning symbol indicates the presence of possible dangerous pinch-points. Moving mechanical parts can crush and/or sever body parts.

This warning symbol alerts you to the presence of possible dangerous drive mechanisms within the machine. Guards should always be in place when the machine is operation.

This warning symbol indicates the presence of possible dangerous chemicals. Proper precautions should be taken when handling corrosive or caustic material.




For good safety, a lock out and tag out must be performed during set-up, maintenance and repair of the machines. This eliminates unintended operation of the machine.

# SAFETY

# Introductory Checklist

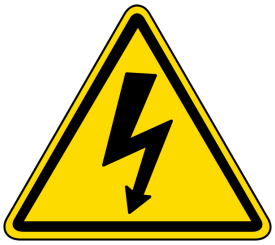
Before the initial start up of a B&C washer extractor, perform the following safety checks:

1. Make sure all electrical and plumbing connections have been made in accordance with applicable codes and regulations.
2. Make sure the machine is grounded electrically.
3. Make sure the machine has flexible water fill and drain connections of the correct size, length, and type, with no kinks and that they are securely attached and/or clamped.

Before the machine is placed in operation, the door safety interlock must be checked for proper operation as follows:

1. When the machine is energized and in operation, the loading door must be locked in the closed position. Verify this by attempting to open the loading door when the machine is operating. If necessary, check the door safety interlock and sensors for proper operation. Consult the service manual, or call a qualified service technician if necessary.
2. When the washer's loading door is open, it should not be possible to start the machine. Verify this by attempting to start the washer with the door open. Also, close the door without locking it and verify that it is not possible to start the machine with the door unlocked. If necessary check the door lock sensors for proper operation. Consult the service manual or call a qualified service technician. If additional information is required, contact your local distributor or call the manufacturer of the machines.

READ THE INSTRUCTION MANUAL TO ENSURE EVERYTHING FITS THE MACHINE



Before servicing any equipment, make certain it is disconnected from the electrical power source. Never allow operation of the machine when any safety devices are malfunctioning. Never bypass safety devices.

THIS WASHER IS DESIGNED FOR FABRIC WASHING ONLY.

DO NOT ADD GASOLINE, DRYCLEANING SOLVENT OR OTHER FLAMMABLE AND CORROSIVE SOLUTIONS TO THE WASHER.

# SAFETY

# Operator Safety Checklist

To provide personal safety and keep machines in proper working order, follow all maintenance and safety procedures presented in this manual. If questions regarding safety arise, contact the factory immediately. Use factory authorized spare parts to avoid safety hazards.

To ensure the safety of machine operators the following maintenance checks must be performed daily:

1. Prior to operating the machine, verify that all warning signs are present and legible. Missing or illegible signs must be replaced immediately. Make certain that spares are available.
2. Check door interlock before starting operation of the machine. See Introductory Checklist (p.8).
3. Do not attempt to operate the machine if any of the following conditions are present:

3a. The door does not remain securely locked during the entire cycle.

3b. Excessively high water level is evident.

3c. Machine is not connected to a properly grounded circuit.

Never insert hands or objects into cylinder until it has completely stopped. Doing so could result in serious injury

Never operate the machine with a bypassed or disconnected out-of-balance switch. Operating the machine with severe out-of-balance loads could result in personal injury and serious equipment damage.

# SAFETY

# Environmental Conditions

Safe operation requires an appropriate operating environment for both the operator and the machine. If questions regarding safety arise, contact the factory.

## AMBIENT TEMPERATURE

Water in the machine will freeze at temperatures of 32F (0C) or below. Temperatures above 120F (50C) will result in more frequent motor overheating and, in some cases, malfunction or permanent damage to solid state devices that are used in the machines. Special cooling devices may be necessary.

## HUMIDITY

Relative humidity above 90% may cause the machine's electronics or motors to malfunction and may trip the ground fault interrupter. Corrosion problems may occur on some metal components. If relative humidity is below 30%, belts and rubber hoses may eventually develop dry rot. This condition can result in hose leaks, which may cause hazards external to the machine in conjunction with adjacent electrical equipment.

## VENTILATION

The need for make-up air openings for such laundry room accessories as dryers, ironers, water heaters, etc. must be evaluated periodically. Louvers, screens, or other separating devices may reduce the availability of air openings significantly.

## RADIO FREQUENCY EMMISSIONS

A filter is available for machines in installation where floor space is shared with equipment sensitive to radio frequency emissions. All machines that are shipped to CE countries are equipped with this filter and comply with the EMI regulations.


EMI Filter

## RADIO FREQUENCY EMMISSIONS

A filter is available for machines in installation where floor space is shared with equipment sensitive to radio frequency emissions. All machines that are shipped to CE countries are equipped with this filter and comply with the EMI regulations.

## ELEVATION

If the machine is to be operated at elevations over 3,280 feet (1,000 meters) above sea level, pay attention to water levels and electronic settings ( particularly temperatures) or the desired result may not be achieved. Water pressure should also be checked.

## CHEMICALS

Keep stainless steel surfaces free of chemical residues to avoid corrosion.

## WATER DAMAGE

Do not spray the machine with water. Short circuiting and serious damage may result. Repair immediately all seepage due to faulty gaskets etc.

Do not place volatile or flammable fluids in any machine. Do not clean the machine with volatile or flammable fluids such as acetone, lacquer thinners, enamel reducers, carbon tetrachloride, gasoline, benzene, naphtha, etc. Doing so could result in serious personal injury and/or damage to the machine.

# SAFETY

# Service and Maintenance

## MACHINE LOCATION

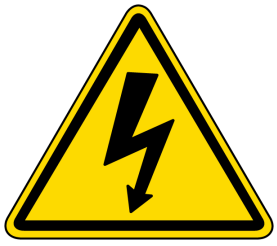
### FOUNDATION

The concrete floor must be of sufficient strength and thickness to handle the floor loads generated by the machines at high extract speeds.

### SERVICE AND MAINTENANCE SPACE

Provide sufficient space to allow a comfortable performance of service procedures and routine maintenance. This is especially important for machines equipped with AC inverter drives. Consult the installation

Replace all panels that are removed to perform service and maintenance procedures. Do not operate the machine with missing guards or with broken or missing parts. Do not bypass any safety devices.



Always disconnect power and water supplies before a service technician performs any service procedure. Where applicable, steam and/or compressed air supplies should also be disconnected before service is performed.

## INPUT AND OUTPUT SERVICE

### WATER PRESSURE

The best performance will be realized if water pressure is provided at a pressure 30-85 psi (2.0-5.7 bar). Although the machine will function properly at lower pressures, increased filling time will occur. Water pressure higher than 120 psi (8 bar) may result in damage to the machine's plumbing, component failure, and/or personal injuries.

### OPTIONAL STEAM HEATING PRESSURE

The best performance will be realized if the steam pressure provided is 30-80 psi (2.0-5.4 bar). Steam pressure higher than 15 psi (8.5 bar) may result in damage to steam components, and could cause personal injuries. For machines equipped with optional steam heat, install piping in accordance with approved commercial steam practices. Failure to install the supplied steam filter may void the warranty.

### DRAINAGE SYSTEM

Provide enough drain lines or troughs to accommodate the total quantity of water that could be drained if all machines on the site were drained at the same time from the highest attainable level. If drain troughs are used, they should be covered to support foot traffic.

### POWER

For personal safety and proper operation, the machine must be grounded in accordance with state and local codes. The ground connection must be to a proven earth ground, not to conduits or water pipes. An easy-access disconnect switch should be provided. Ensure that a ground wire from a proven earth ground is connected to the ground lug in the electrical junction box on this machine. Without proper grounding, personal injury from electrical shock could occur and machine malfunctions may be evident. Computer-controlled machines must have a proper ground to prevent computer malfunctions.

# SAFETY

# Inverter

Machines equipped with AC inverter drives require special attention with regards to the operating environment.

- An especially dusty or linty environment will require a more frequent cleaning of the AC drive cooling fan filter and of the AC drive itself.
- Power line fluctuations from sources such as uninterruptible power supplies (UPS) can adversely affect machines equipped with an AC drive. Proper suppression devices should be utilized on the incoming power to the machine in order to avoid problems.
- A clean power supply free from voltage spikes and surges is absolutely essential for machines equipped with AC drive. Nonlinear inconsistencies (peaks and valleys) in the power can cause the AC drive to generate nuisance errors. If the voltage is above 230V for 200V installations or above 440V for 380-400V installations, a buck/boost transformer is recommended. If the voltage is above 240V or 480V a buck/boost transformer is required unless the factory advises differently.
- Sufficient space to perform service procedures and routine preventive maintenance is especially important for machines equipped with AC drives.


AC Inverter Drive

# SAFETY

# Misuse

Even though this machine is an atmospheric vessel, never use it for any purpose other than washing fabrics.

- Never wash petroleum-soaked rags in the machine. This could result in an explosion.
- Never wash parts in the machine. This could result in serious damage to the cylinder.
- Never stone wash in the machine. It could wear the cylinder and serious damage might occur to the machine.
- Never use the machine for dying and harsh chemicals that can cause corrosion and other health hazards.
- Never allow children to play on or around the machine. Death or serious injury can result if children become trapped in the machine. Do not leave children unattended while the machine door is open. These cautions apply to animals as well.

# INSTALLATION

# Theory of Operation

The B&C HX models use a single speed motor to drive the cylinder via V-belts in all speeds. The cylinder is supported by two spherical roller bearings located in a cast iron housing. The larger high speed OPL machines are provided with a special CARB bearing in the front and a tapered spherical bearing in the rear.

The motor is controlled by the AC inverter drive located in the control box under the top cover, and by the computer control located in the front of the machine. Machine speeds are fully programmable and can be set to any speed within minimum and maximum limits.
Reversing actions can also be programmed, with normal reversing action being 18 seconds forward, pause for 3 seconds, then 18 seconds reverse. Any temperature between 70F to 200 F (20-95C) can be programmed. Any water level in the range of the machine parameters can be programmed in centimeters. The computer will automatically provide safety levels for steam injections and door operations.

Water entry into the machine is through an air gap vacuum breaker utilizing electro-magnetic water valves controlled by the computer. By using this breaker, backflow into the water supply is impossible. The computer also controls the drain, supply dispenser, any external liquid supplies, steam injection, and any other vital functions of the wash program. The computer can even record cycles and other data of importance that could be used for maintenance purposes.

The steam, if installed, is injected in the bottom of the shell via a steam injector. The steam is controlled by a steam valve that is programmed by the computer.

The cylinder is perforated, allowing water to pass through and drain from within during the appropriate steps. Lifting ribs inside the cylinder lift the load from the wash solution and allow the load to tumble and fall back into the solution when the load reaches the approximate 10-11 o'clock or 1-2 o'clock positions. This mechanical action removes soil from the fabric. Furthermore, the lifters are perforated on the top so that water can cascade over the goods and wet them quickly. This reduces the water consumption as water is picked up at the cylinders lowest point and splashed over the goods at the highest point as the cylinder rotates.

A stainless steel door is provided for loading and unloading. A door lock system prevents operation of the machine while the door is open. During operation, the door is locked using magnetic solenoids and a manual latch for safety reasons. The door is provided with a magnetic sensor that indicates when the machine is locked and ready to start.

The AC drive, contactor, control transformer, circuit overload protectors, input power supply connections, and external supply connections are in the electrical box under the top cover. The supply dispenser is mounted on the left side at the top of the washer. It has four compartments - two for powder and two for liquid detergent. The supplies are flushed down at the proper time in the wash cycle, all controlled by the computer.

The vacuum breaker in the back of the machines has a connection for an external central liquid supply unit. Electrical connections are provided for the control of the external liquid system inside the main connection box.

# INSTALLATION

# Inspection and Uncrating

## DELIVERY INSPECTION

Upon delivery, visually inspect the crate, protective cover, and unit for any visible shipping damage. If the crate, protective cover, or unit are damaged, or signs of possible damage are evident, have the carrier note the condition on the shipping documents before the shipping receipt is signed, or advise the carrier of the conditions as soon as it is discovered.

Remove the crate and protective cover as soon after the delivery as possible. If any damage is discovered upon removal of the crate and/or protective cover, advise the carrier and file a written claim immediately.

Keep the manuals, installation instructions, and the wiring diagram that accompany the machines in a safe place for easy reference. They have been included with the machine at no charge. Additional copies are available at a nominal charge.

## CUSTOMER SERVICE

If literature or replacement parts are required, contact the source from whom the machine was purchased, or contact:

B&C Technologies

| | |
|---|---|
| Phone: | 850-249-2222 |
| Fax: | 850-249-2226 |
| E-mail: | info@bandctech.com |
| Website: | www.bandctech.com |

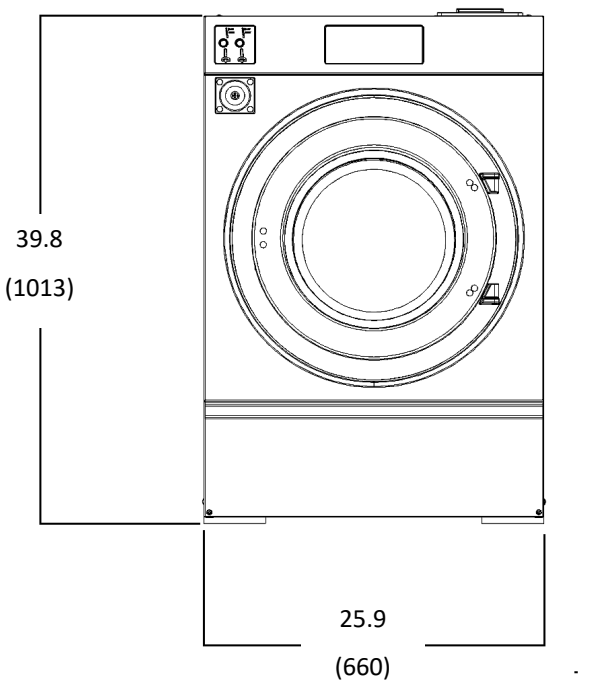
We will be able to direct you to the nearest authorized parts distributor.

A record of each machine is on file with the manufacturer. The serial number decal is located at the rear of the machine. Always provide the machine's serial number and model number when ordering parts, or when seeking technical assistance.

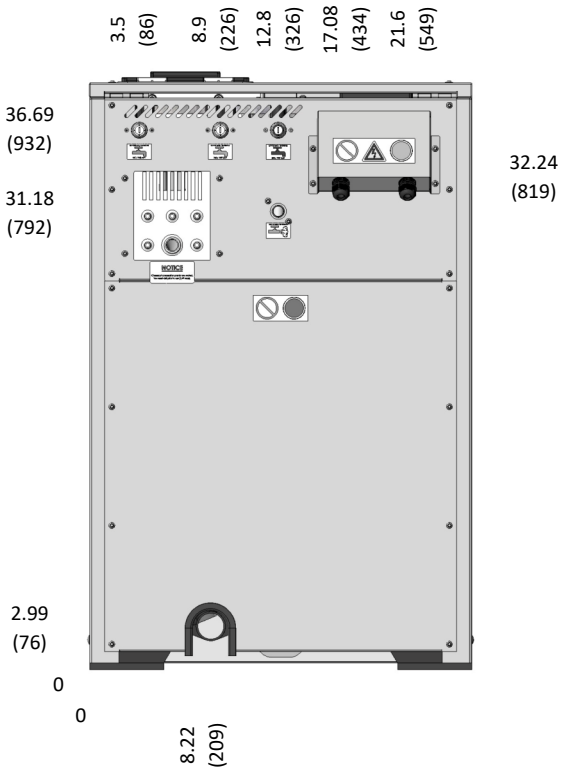
# INSTALLATION

# Model HX-22 Technical Specifications

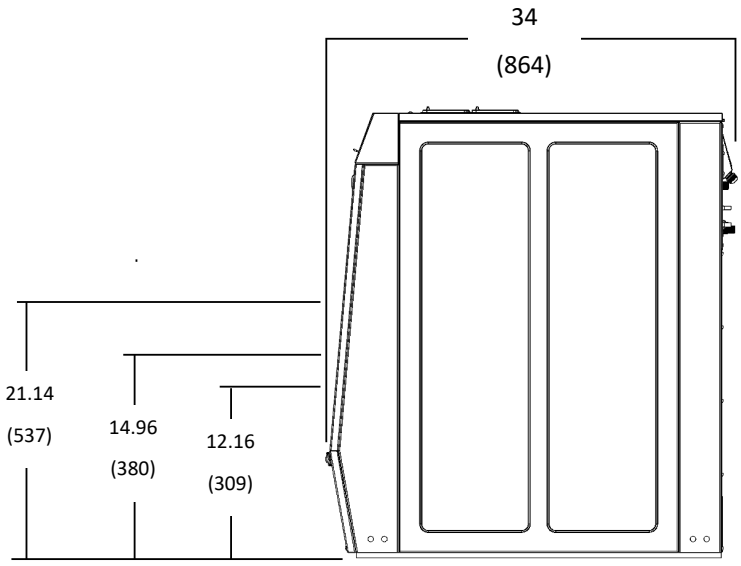
## FRONT




## REAR



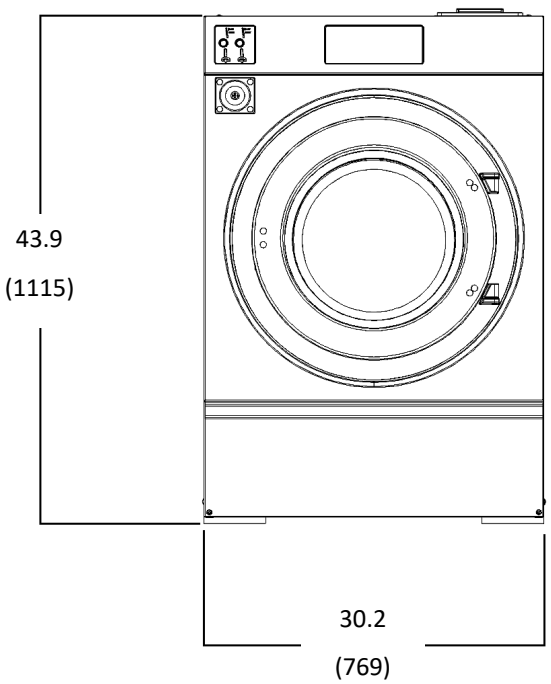

## SIDE



# INSTALLATION

# Model HX-35 Technical Specifications

## FRONT

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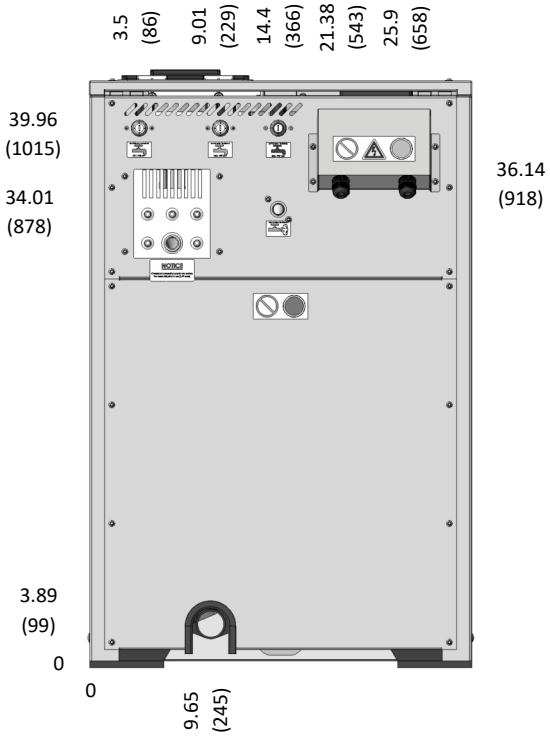


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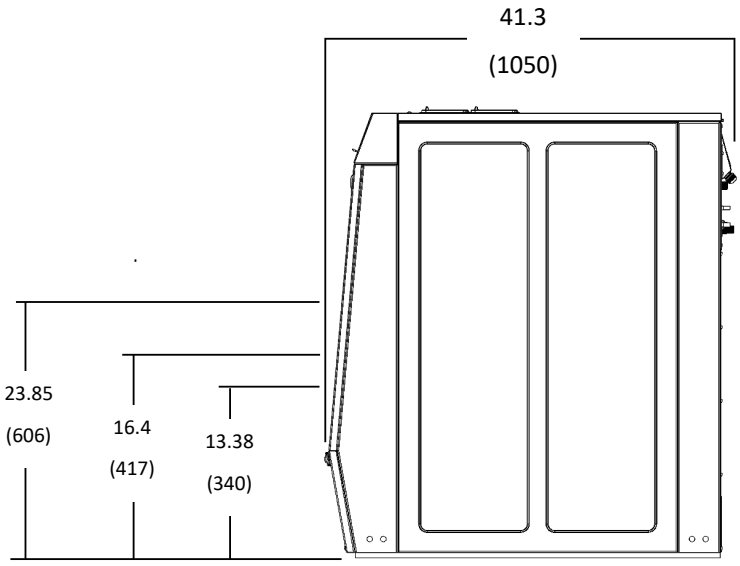
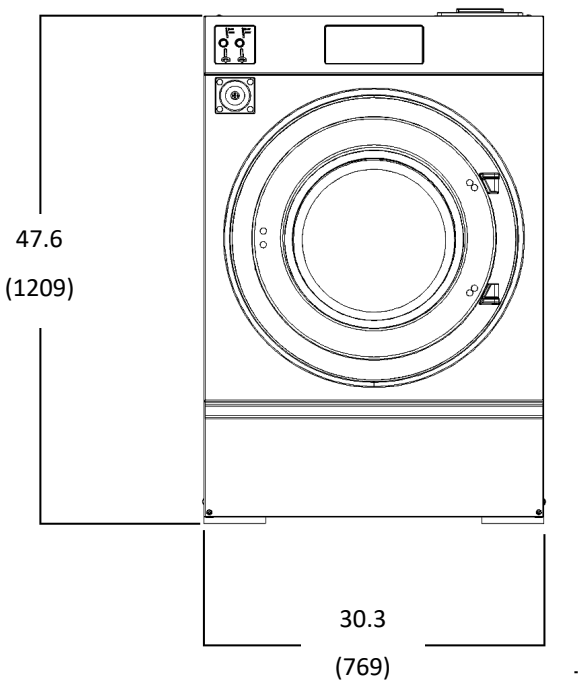


# INSTALLATION

# Model HX-50 Technical Specifications

## FRONT

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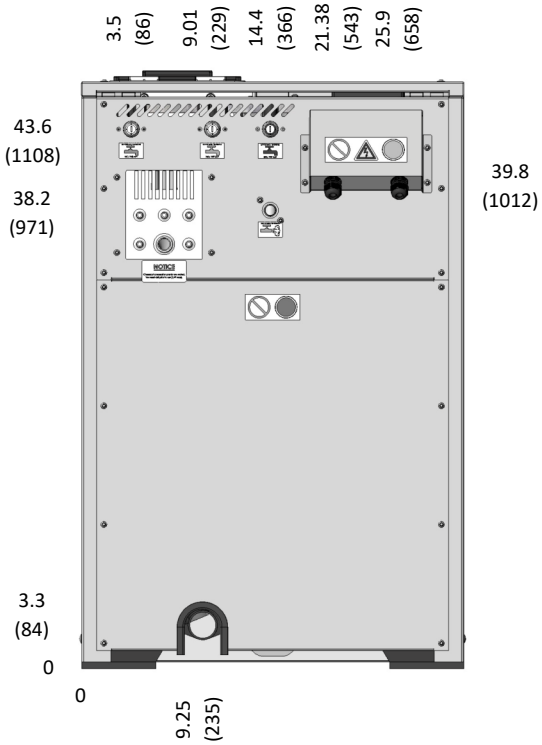
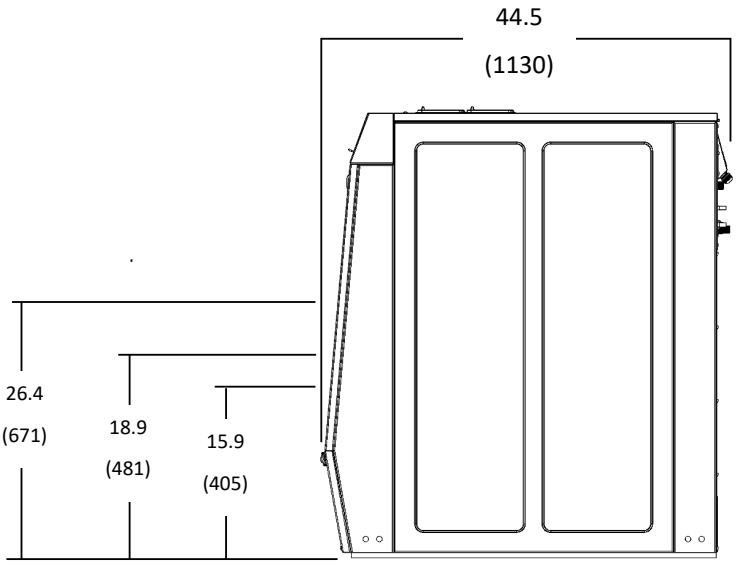


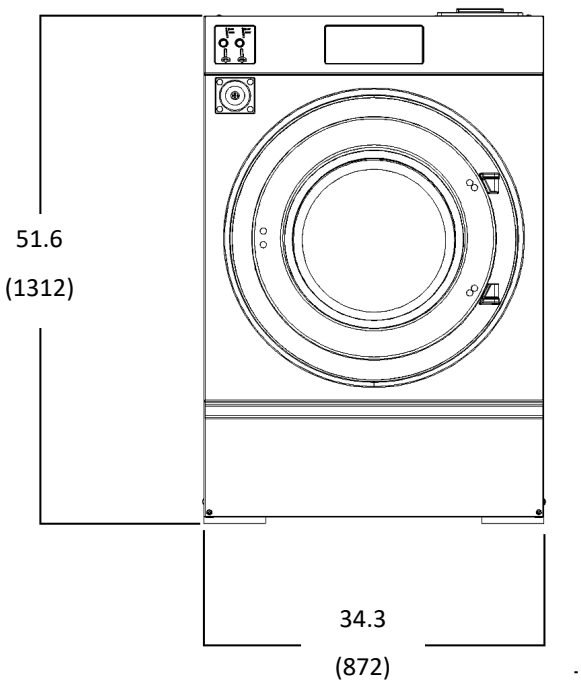

## SIDE



# INSTALLATION

# Model HX-65 Technical Specifications

## FRONT

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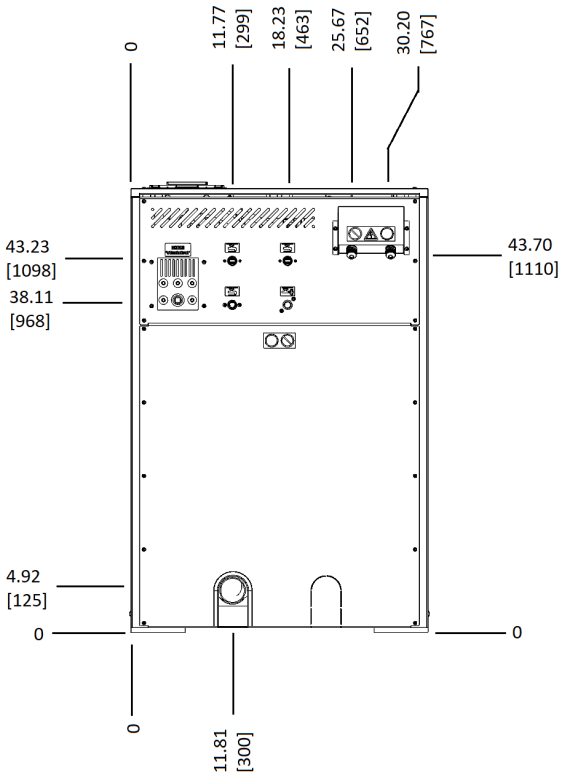
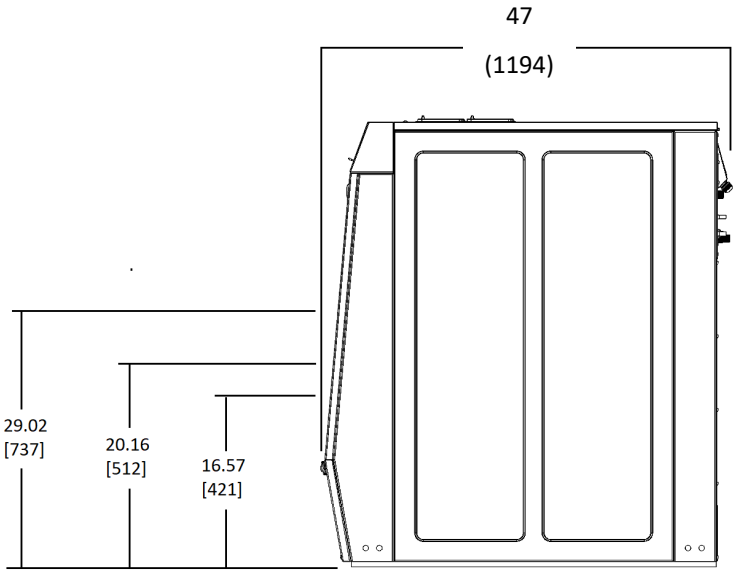



## SIDE

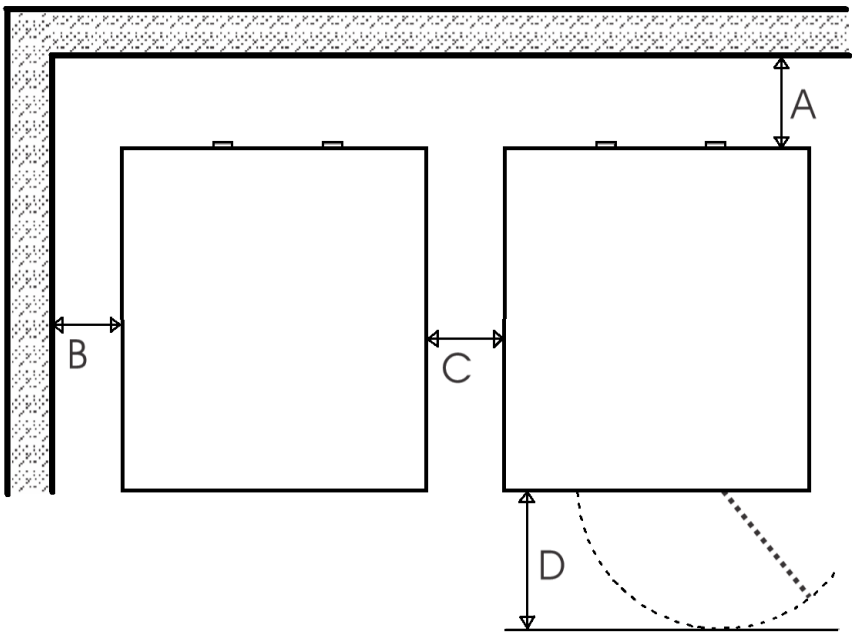


# INSTALLATION

# Dimensional Clearances

When installing a washer-extractor, it is important to allow adequate clearance on all sides of the machine, even if it can be serviced from the front, back, or top. The side panels can be removed if needed for service. When multiple machines are installed, it is important to allow for the specified minimum clearances between the machines in an OPL installation.

The table below shows the recommended minimum clearances for the various freestanding models. Dimensions between coin-operated machines are different.




| | mm | inch |
|---|---|---|
| A | 760 | 30 |
| B | 460* | 18* |
| C | 460* | 18* |
| D | 840 | 33 |

* These side dimensions (B/C) can be as small as 0.5 inches (13mm), however the side panels will not be removable.

NOTE

The dimensions are approximate and subject to normal manufacturing tolerances. If exact dimensions are required for construction purposes, request certified drawings from the factory. We reserve the right to make changes at any time without notice.

# INSTALLATION

## Machine Foundation

A proper foundation is an absolute necessity when installing a fixed mount washer-extractor. Do not neglect details when doing foundation work. These details will ensure a stable installation, reducing the possibility of excess vibration at high speeds.

The machine must be anchored to a smooth and leveled surface so that the entire base of the machine rests supported on the mounting surface. Do not support the machine at only four points.

A concrete base designed to elevate the washer-extractor to a more comfortable working height may be used. This also allow for a high drain if a separate drain trough is used. Use care when designing a base, as the forces generated during extraction are extreme. The base must be adequately tied into the existing floor

Do not attempt to install this machine on wooden floor of any kind, above ground level, or over basements. Installation must be slab on grade or equal.

Ensure that the machine is installed on a levelled floor of sufficient strength and that the recommended clearances for inspection and maintenance are provided. Never allow the inspection and maintenance space to be blocked.

### Floor Load Data (400G)

| | STATIC LOAD | | DYNAMIC LOAD | | DYNAMIC FREQUENCY |
|---|---|---|---|---|---|
| MODEL | Lbs | kN | Lbs | kN | Hz |
| HX-50 | 1400 | 6.21 | 2112 | 9.4 | 17.1 |
| HX-65 | 1769 | 7.85 | 2904 | 12.9 | 15.9 |
| HX-85 | 2200 | 9.76 | 3787 | 16.8 | 12.7 |
| HX-110 | 2400 | 10.65 | 4800 | 21.3 | 12.7 |

# INSTALLATION

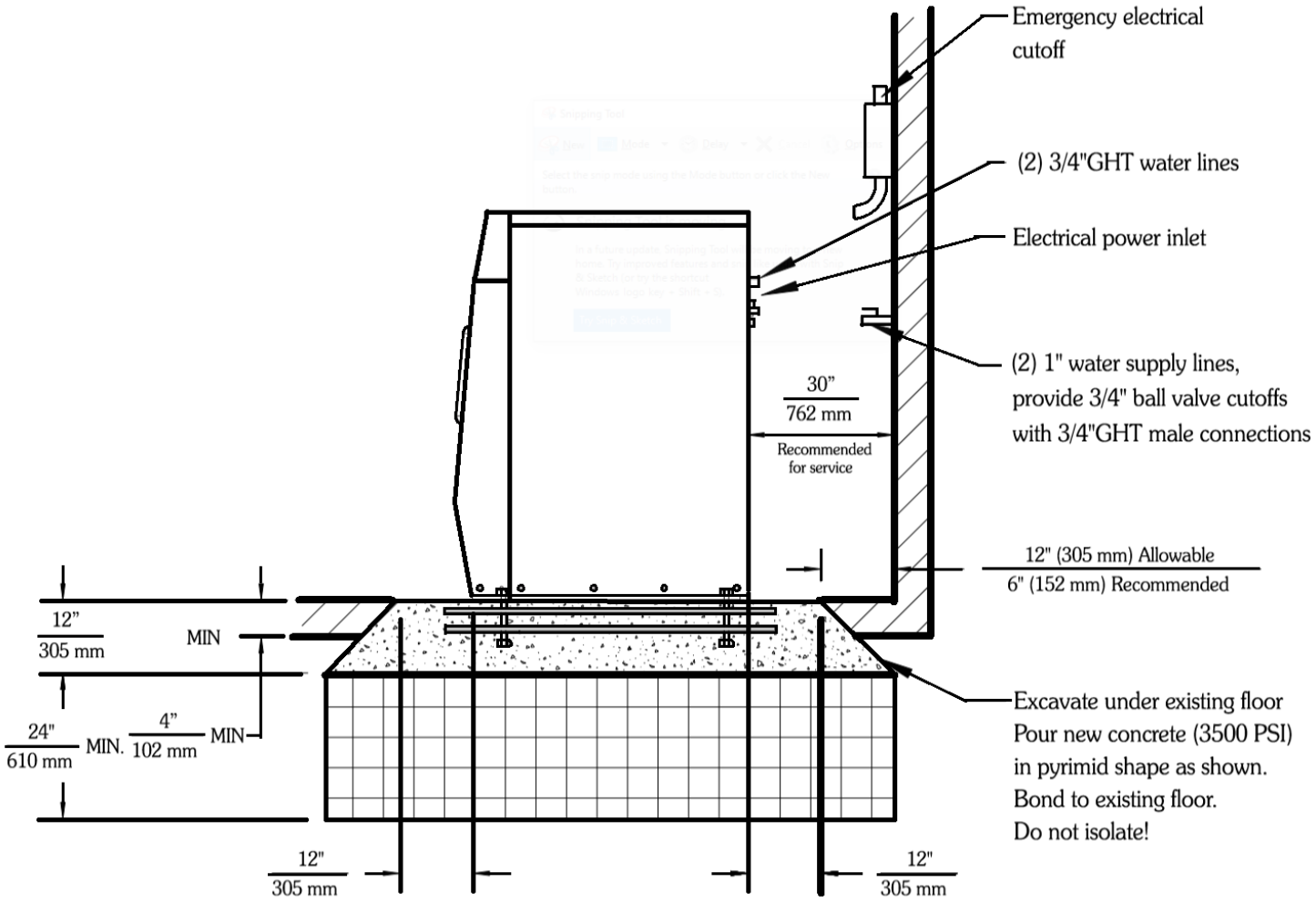
# Machine Foundation

## Floor Load Data (200G)

| | STATIC LOAD | | DYNAMIC LOAD | | DYNAMIC FREQUENCY |
|---|---|---|---|---|---|
| MODEL | Lbs | kN | Lbs | kN | Hz |
| HX-22 | 450 | 2.00 | 752 | 3.3 | 13.8 |
| HX-35 | 700 | 3.11 | 1190 | 5.3 | 12.8 |
| HX-50 | 1050 | 4.66 | 1763 | 7.8 | 12.1 |
| HX-65 | 1200 | 5.32 | 2419 | 10.8 | 11.2 |
| HX-85 | 2050 | 9.09 | 3160 | 14.1 | 10.4 |
| HX-110 | 2300 | 10.21 | 4006 | 17.8 | 10.4 |

# INSTALLATION

## A Proper Foundation



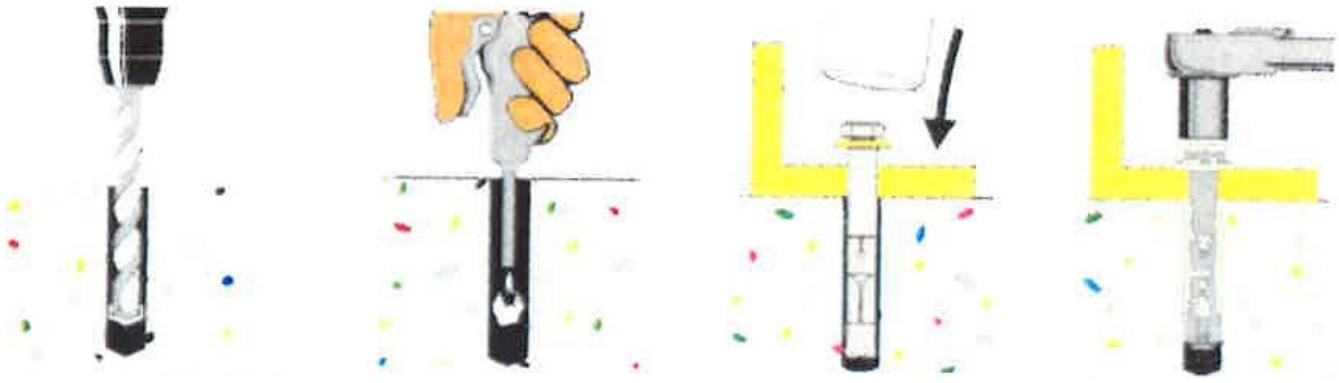
# INSTALLATION

# How To Install Foundation Bolts

All B&C washer-extractors must be secured using machinery anchor bolts. High strength machinery anchors should be embedded in 3500 psi (24000N/m2) reinforced concrete, as seen in the figure below.

For detailed information regarding the machine anchor bolt, see the instructions included with the anchor bolts themselves. The following information is just an example

After the concrete has cured, proceed as follows:



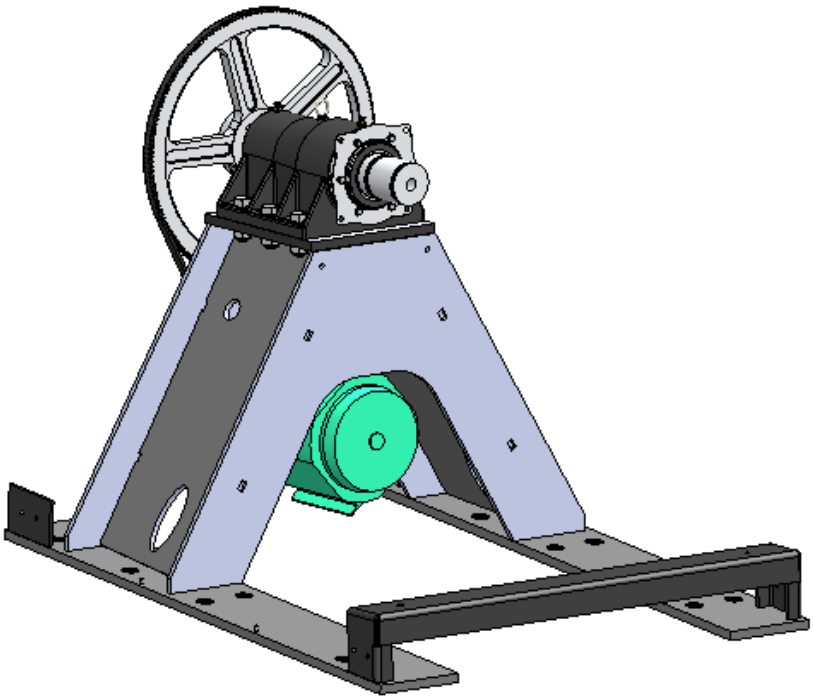
| | | | |
|---|---|---|---|
| Select a carbide drill bit with a diameter equal to the anchor diameter. Drill hole to any depth exceeding the desired embedment. | Clean hole or continue drilling to accommodate drill fines (concrete dust). Please wear eye protection. | Drive the anchor into the hole through material being fastened until washer is flush with material. | Expend bolt by tightening the anchor 3 to 5 turns, or to the specified torque requirements. |

1. Place the machine adjacent to the foundation. Do not attempt to move by pushing on the sides.
2. Remove the wood skid by unscrewing the carriage bolts holding it to the bottom frame of the machine.
3. Carefully place the machine over the anchor bolts. Raise and level it 1/2 inch above the floor on four points, using spacers that can be removed.
4. Fill the spaces between the machine base and floor with machinery grout, filling completely under the frame members. Remove the lower front panel and rear panel to gain access to all frame members. Force grout under the machine base until all voids are filled.
5. Remove the spacers carefully, allowing the machine to settle into the wet grout.
6. Attach the mounting bolts, washers, and lock nuts to the anchor bolts after the grout has hardened. Tighten the lock nuts by even increments, one after the other, until all are tightened evenly and the machine is fastened securely to the floor. The nuts should be tightened in a diagonal fashion, which will help ensure equal tension at all anchor points.

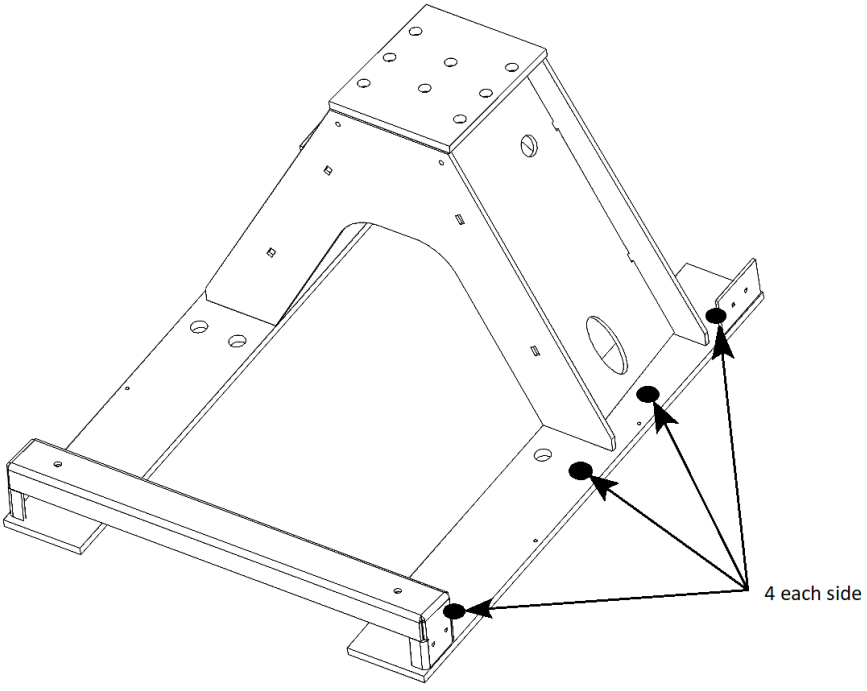
# INSTALLATION

# Foundation Bolt Locations

## Picture of Frame



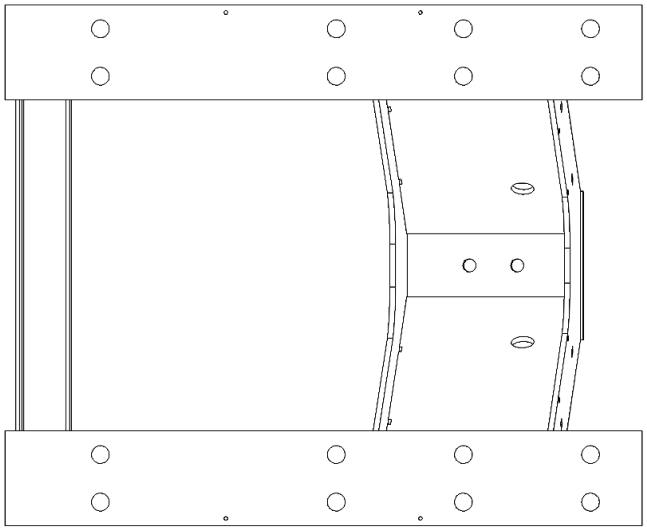
## Typical Grouting Pattern



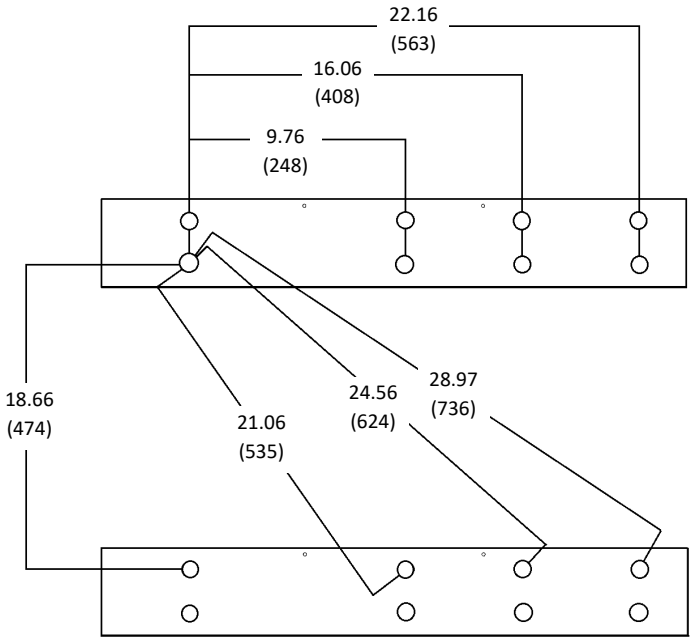
# INSTALLATION

# HX-22 Mounting Bolt Locations

FRONT



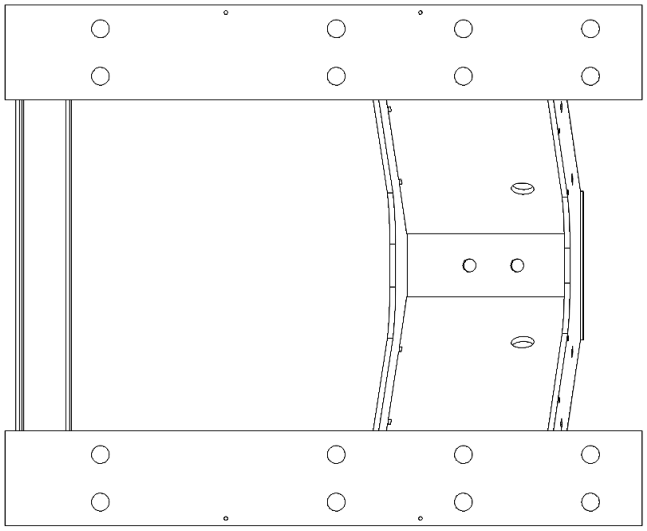
FRONT



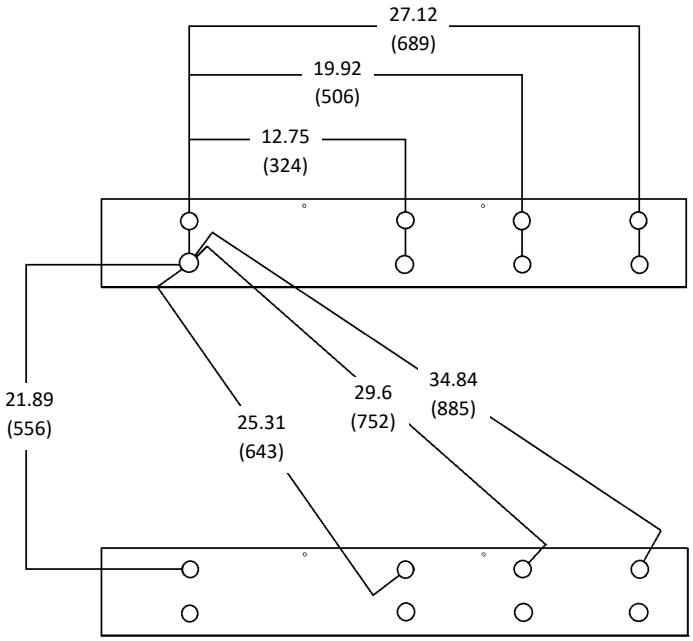
# INSTALLATION

# HX-35 Mounting Bolt Locations

FRONT



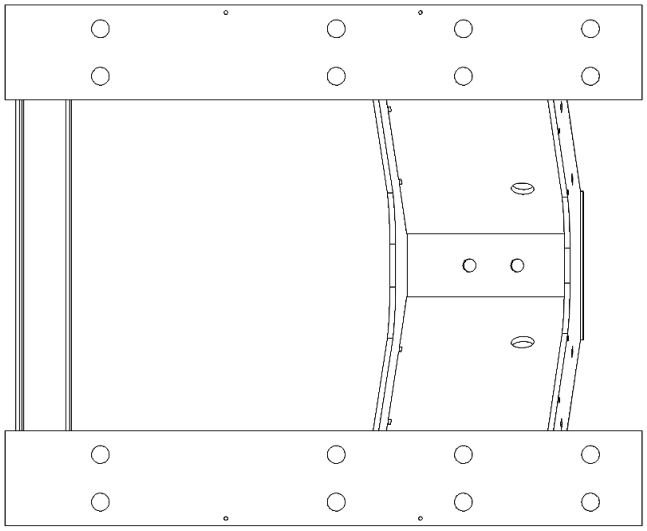
FRONT



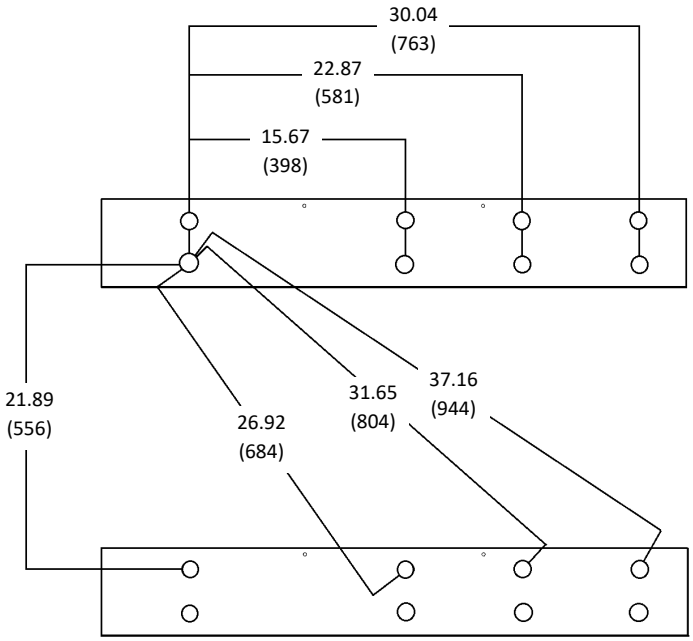
# INSTALLATION

# HX-50 Mounting Bolt Locations

FRONT



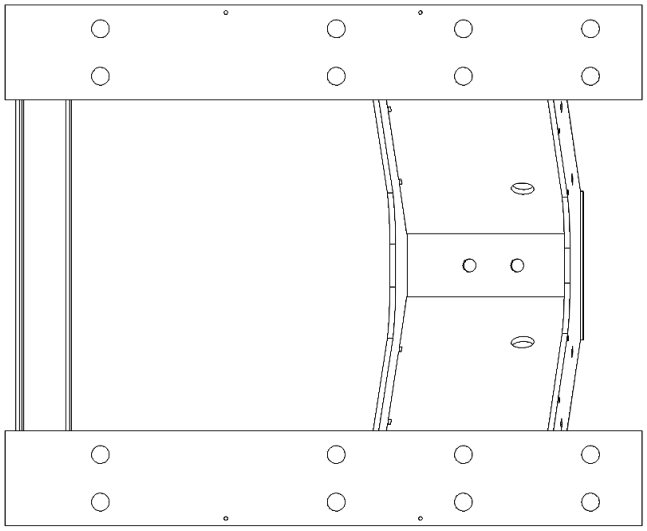
FRONT



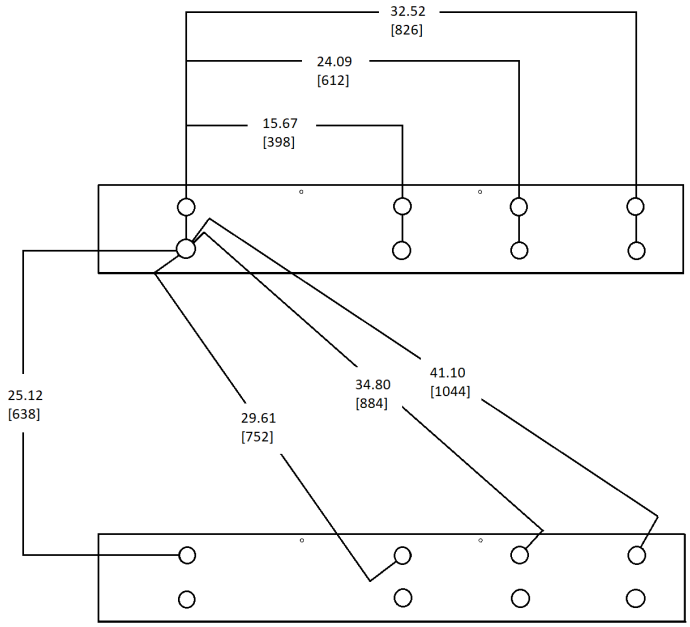
# INSTALLATION

# HX-65 Mounting Bolt Locations

FRONT



FRONT

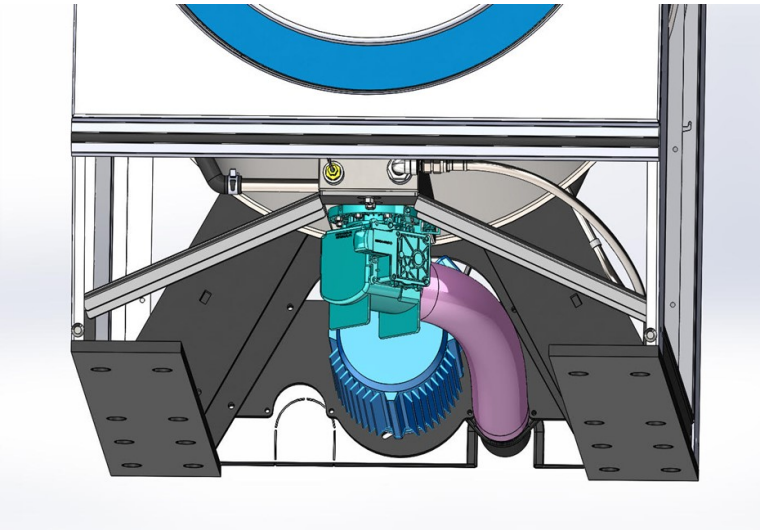


# INSTALLATION

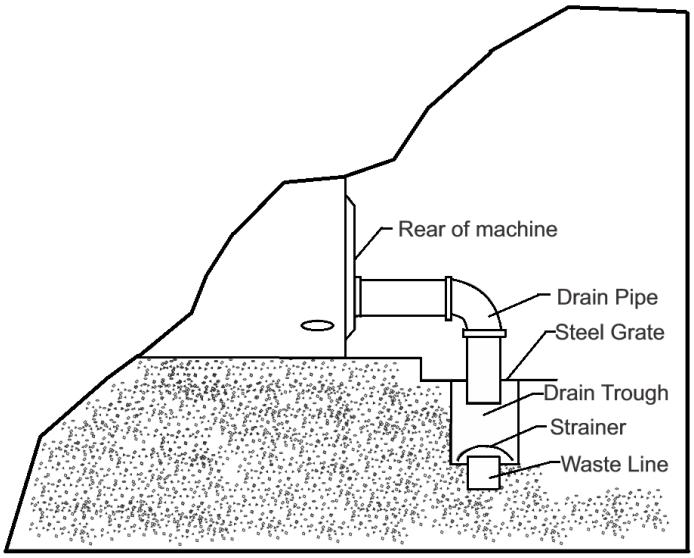
# Drain Valve Connection

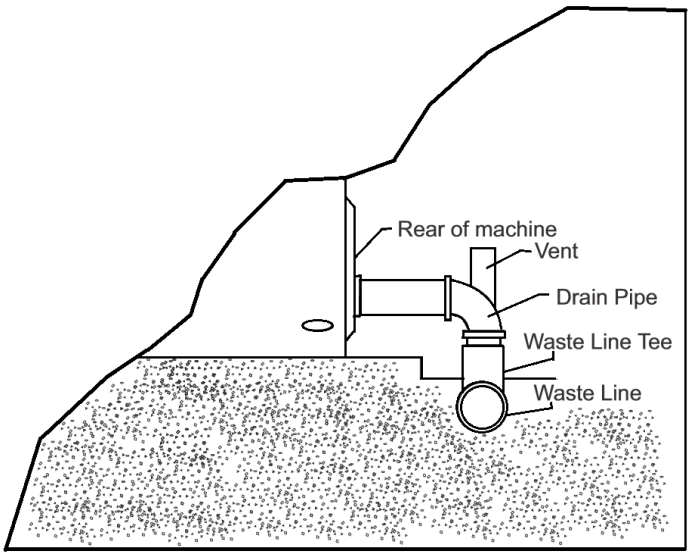
The drain valve is located in the front of the machine, allowing for easy service and maintenance.

Simply remove the lower front panel and the drain valve is right there with a removable seal.



## Drain Connections



# INSTALLATION

## Electrical Connection

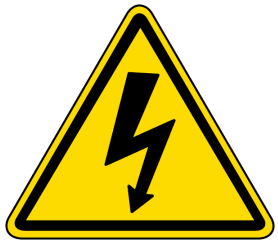
The AC drive requires a clean power supply free from voltage spikes and surges. A voltage monitor should be used to check incoming power. The customer's local power company may provide such a monitor.

The AC drive provides for an internal circuit breaker. A separate circuit breaker governs the control circuit.

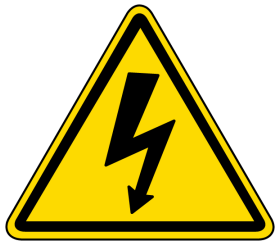
If the input voltage measures above 230V for a 200V drive, or above 440V for a 400V drive, either ask the power company if their representative can lower the voltage or install a step-down transformer kit, which is available from the manufacturer. Voltages above 250V and 490V require additional measures. Contact the distributor or the manufacturer for assistance.

This machine must be installed, adjusted, and serviced by a qualified electrical maintenance personnel familiar with the construction and operation of this type of machinery. They must also be familiar with the potential hazards involved. If a warning is not observed, personal injury or warranty-voiding equipment damage may result.

When controlling the AC drive with a parameter unit, the machine's computer and its safety features are bypassed. This will allow the cylinder to rotate at high speeds with the door open. When using a parameter unit to control the AC drive, a large sign should be placed on the front of the machine warning people of the imminent danger.



Never touch terminals or components of the AC drive unless power is disconnected and the "CHARGE" indicator LED is off. The AC drive retains potentially fatal voltage for some time after the power is disconnected. There are no user-serviceable parts inside the AC drive. Tampering with the drive will void the warranty.



Dangerous voltages are present in the electrical control boxes and at the motor terminals. Only qualified personnel familiar with the electrical test procedures, test equipment, and safety precautions should attempt adjustment and troubleshooting. Disconnect power from the machine before removing the control box cover, and before attempting any service procedures.

# INSTALLATION

# Electrical Connection

| | 208-230V, 1PH | | | 208-230V, 3PH | | | 380-460V, 3PH | | |
|---|---|---|---|---|---|---|---|---|---|
| Model | Max Amps | Breaker | Wire Size* | Max Amps | Breaker | Wire Size* | Max Amps | Breaker | Wire Size* |
| HX-22 | 6 | 15 | 14ga/1.5mm | 3.4 | 15 | 14ga/1.5mm | 1.7 | 15 | 14ga/1.5mm |
| HX-35 | 8.1 | 15 | 14ga/1.5mm | 3.6 | 15 | 14ga/1.5mm | 1.8 | 15 | 14ga/1.5mm |
| HX-50 | 8.1 | 15 | 14ga/1.5mm | 4.7 | 15 | 14ga/1.5mm | 2.3 | 15 | 14ga/1.5mm |
| HX-65 | 8.8 | 15 | 14ga/1.5mm | 5.1 | 15 | 14ga/1.5mm | 2.5 | 15 | 14ga/1.5mm |
| HX-85 | 22 | 30 | 14ga/1.5mm | 12.7 | 15 | 14ga/1.5mm | 6.3 | 15 | 14ga/1.5mm |
| HX-110 | 31 | 40 | 8ga/10mm | 18 | 20 | 10ga/2.5mm | 9 | 15 | 14ga/1.5mm |

*Wire sizes shown are for copper THHN 90 conductor, per NEC article 310 (USA).

The machine should be connected to an individual branch circuit, not shared with lighting or other equipment. Since this is a vibrating machine, the use of an SO cable or similar with a twist-lock plug to connect the machine to main power is recommended. A shielded liquid tight conduit, or an approved flexible conduit installed in accordance with applicable codes is also acceptable. The connection must be made by a qualified electrician using the wiring diagram provided with the machine. See the electrical connection data chart above for correct wire sizes.

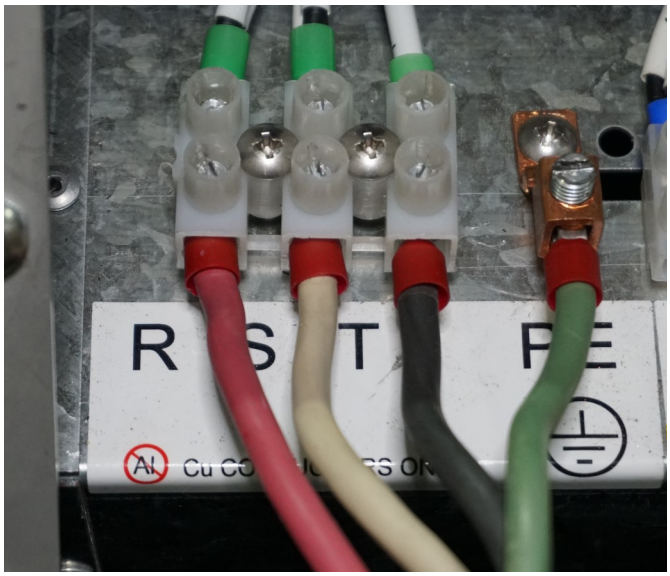
For personal safety and proper operation, the machine must be grounded in accordance with state and local codes, and in the USA in accordance with the National Electric Code, article 250-96.

The ground connection must be to a proven earth ground, not to water pipes or conduits. If a DELTA supply system is used, the high leg should be connected to T, since control voltage is derived from R and S.

Insure that the control transformer taps are connected in accordance with the incoming line voltage. Verify connections as shown on the schematic with each machine.

**NOTE**
Do not use phase adders (Roto-Phase) on inverter driven equipment.

Electrical Connections

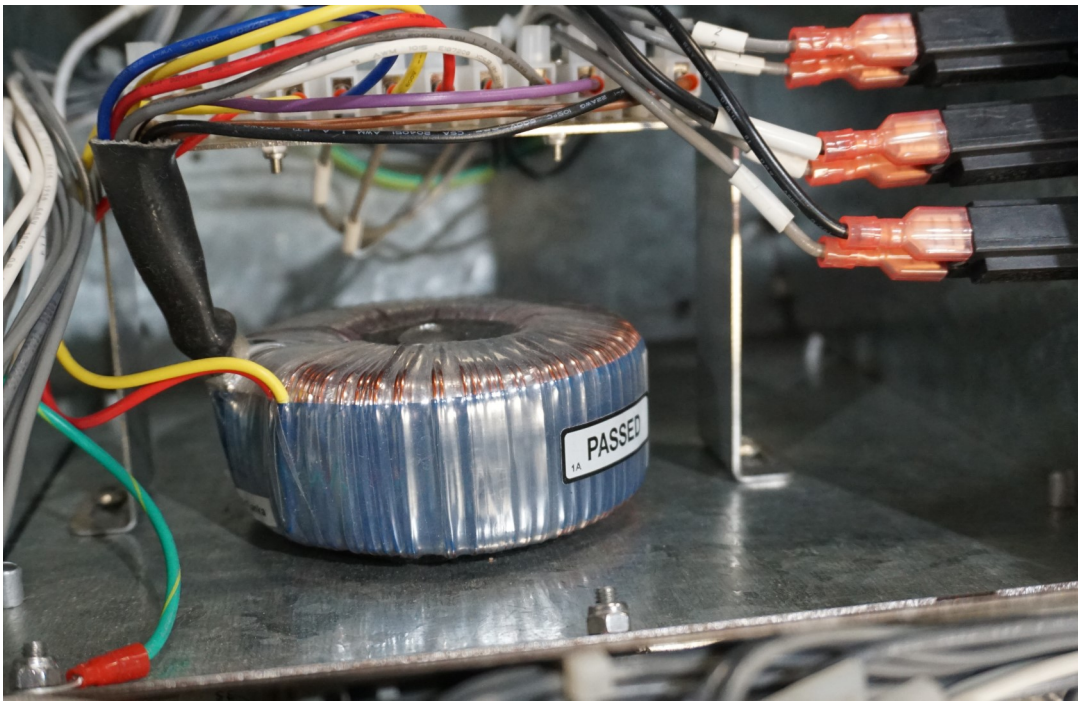


# INSTALLATION

# Internal Control Circuit Breakers

The machine is equipped with a control transformer and circuit breakers to protect the controls of the machine. The control transformer will provide 24V output to the control system

If you suspect there is no power to the controls inside the machine, check the circuit breakers and reset them if needed. If the circuit breakers trip again, please have a technician check the internal control system of the machine. There could also be a problem with the external chemical dispensing system, if connected to the machine.




Control Transformer

# INSTALLATION

# Water Connections

Individual hot and cold plumbing lines with individual shut off valves must be available to the machine. Hot water should be a minimum of 160G (70C). If lower temperature water is used, the machine should be equipped for steam heating or electrical heating in order to heat the wash solution to the desired temperature. For the best performance, water should be provided at a pressure of 30-85 psi (2-7 bar). Although the machine will function properly at lower pressures, increased fill time will occur.

Flush the water system for at least two minutes prior to initial use.

Use flexible hoses and install separate screen filters in the lines to keep rust and other foreign particles out of the solenoid valves. Hang the hoses in a large loop and do not allow them to kink. The water connections to the machine should be supplied by hot and cold water lines in the dimensions shown in the table below. Installation of additional machines will require proportional larger water lines.

To avoid eventual water hammer in the water line, suitable devices to reduce the water hammer should be installed.

## Recommended Supply Water Line Pipe Sizes

| Number of Machines | HX-35 | | HX-50 | | HX-65 | | HX-85 | | HX-110 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DN | inch | DN | inch | DN | inch | DN | inch | DN | inch |
| 1 | 20 | 3/4 | 20 | 3/4 | 25 | 1 | 25 | 1 | 25 | 1 |
| 2 | 20 | 3/4 | 20 | 3/4 | 25 | 1 | 25 | 1 | 25 | 1 |
| 3 | 20 | 3/4 | 20 | 3/4 | 32 | 1-1/2 | 40 | 1-1/2 | 40 | 1-1/2 |
| 4 | 25 | 1 | 25 | 1 | 40 | 1-1/2 | 40 | 1-1/2 | 40 | 1-1/2 |
| 5 | 25 | 1 | 25 | 1 | 50 | 2 | 50 | 2 | 50 | 2 |
| 6 | 32 | 1-1/2 | 32 | 1-1/2 | 50 | 2 | 50 | 2 | 50 | 2 |

# INSTALLATION

# Steam Connections

Never touch internal or external steam pipes, connections, or components. These surfaces can be extremely hot and will cause severe burns. The steam must be turned off, allowing the pipe, connections, and components to cool before anything can be touched. For machines equipped with optional steam heat, install piping in accordance with approved commercial steam practices.

Steam requirements are shown in table below.
Failure to install a steam filter may void the warranty.

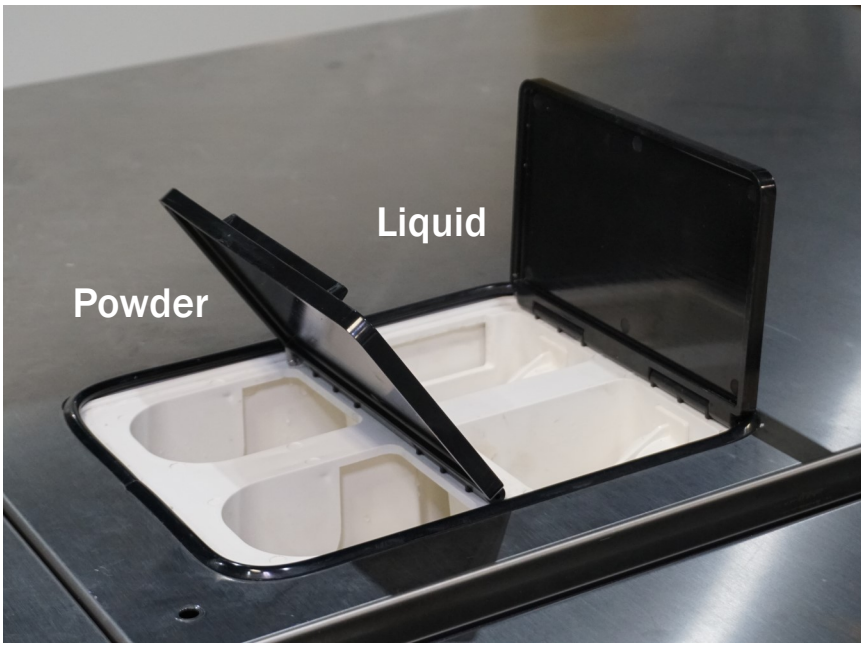
## Steam Inlet Consumption and Line Sizes

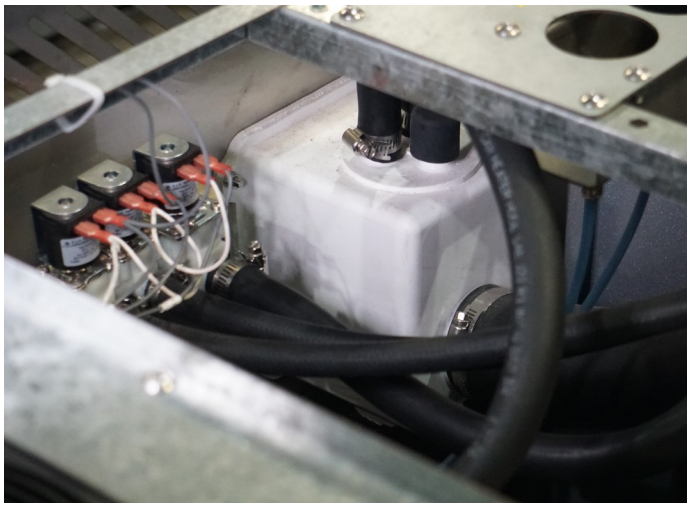
| | Steam Inlet Size | | Required Steam to Heat Bath 10F (5.5C) Low Level (15%) | | Required Steam to Heat Bath 10F (5.5C) High Level (15%) | | Average Steam Consumption Per Cycle | |
|---|---|---|---|---|---|---|---|---|
| Model | DN | inch | kg | Lbs | kg | Lbs | kg | Lbs |
| HX-35 | 13 | 1/2 | 0.5 | 1.1 | 0.7 | 1.4 | 10 | 22 |
| HX-50 | 13 | 1/2 | 0.7 | 1.7 | 0.9 | 2.1 | 14 | 34 |
| HX-65 | 15 | 1/2 | 1.0 | 2.3 | 1.3 | 2.8 | 20 | 46 |
| HX-85 | 15 | 1/2 | 1.3 | 2.9 | 1.7 | 3.7 | 26 | 58 |
| HX-110 | 25 | 3/4 | 1.7 | 3.7 | 2.1 | 4.6 | 34 | 74 |

# INSTALLATION

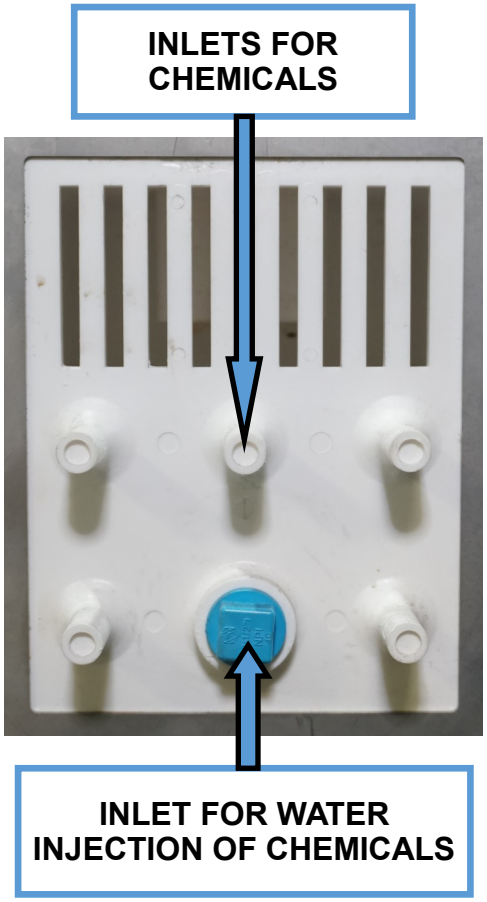
## External Chemical Supply

The standard supply compartment on the HX machine is located on right side of the top cover. The supply compartment has four pockets: two for liquid, and two for powdered, both marked on the lids. The powdered pockets are located in the front, while the liquid pockets are in the rear of the compartment, both with their own separate lids to prevent spilling into the wrong pocket. When pouring powder, the rear lid should be closed and when pouring liquid, the front lid should be closed. External supply connections for the HX washer-extractor models are located on a vacuum breaker on the rear of the machine. Hose connections should be made via the supplied nipples or the flushing connection. You must drill the nipples prior to use (max: 1/4 inch drill). A 1/2 inch NPT connection is also provided for flushing systems.



Back Flow Preventer



# INSTALLATION

# External Chemical Supply

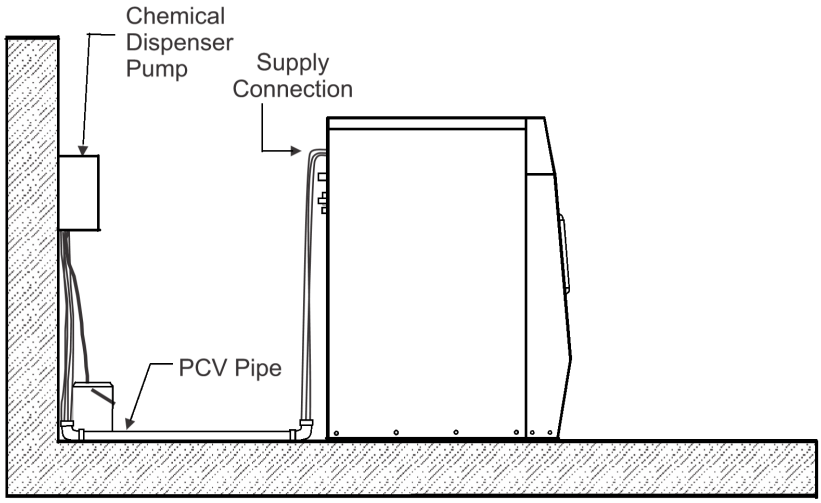
Connection terminals are located in the rear control box for output signals to the chemical injection supply pump. Terminals SUPPLY 1 through SUPPLY 8 provide signals for external chemical supply pumps.

The signal is a maximum 1 amp at 24V, 50/60Hz. Do not attempt to increase fuse ratings as this may cause damage to the washer-extractor circuitry. Any injection system pump that requires 24-220VAC must be powered by a separate external power source.

Chemical Injection Connection Terminals


Attempting to obtain power from the machine terminals may damage the machine circuit and/or the chemical injection system.

Chemical Injection Setup

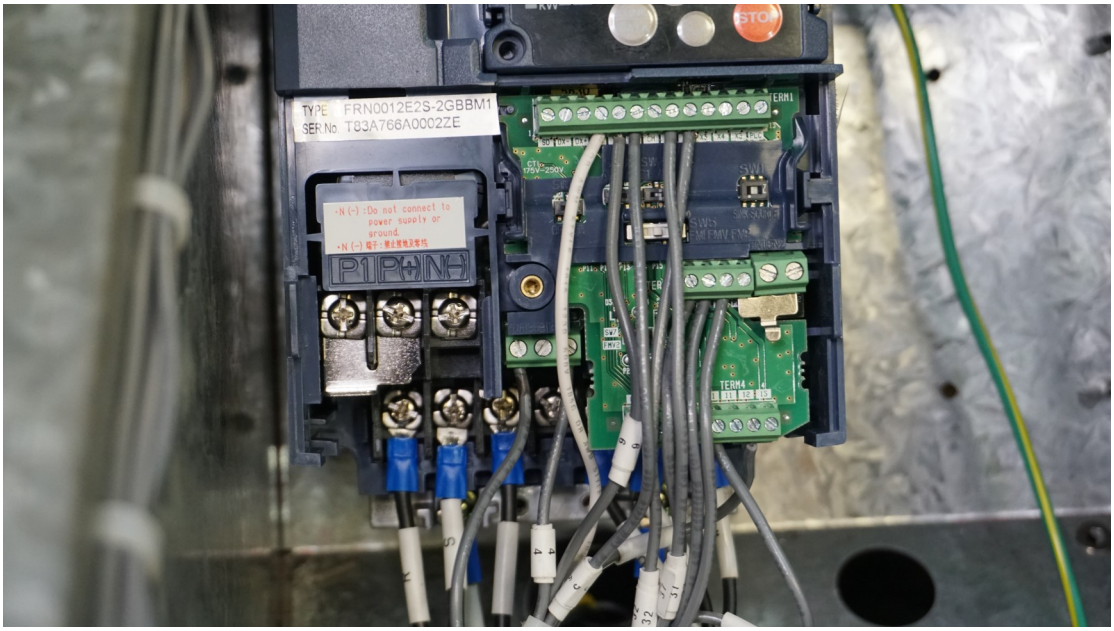


# INSTALLATION

# Control Function Test

The machine should be cleaned after the installation is complete. A function test should be executed on the unloaded machine as follows:

1. Check the proper supply for such characteristics as correct voltage, phase, and cycles to be certain they are correct for the machine.
2. Open manual shut-off water valves to the machine.
3. Press the emergency stop button.
4. Apply power to the machine.
5. Inspect the door interlock before starting the machine.
6. Attempt to start the machine with the door open. The machine should not start with the door open.
7. Close the door without locking it and attempt to start the machine. The washer should not start with the door unlocked.
8. Close and lock the door, then start a cycle. Attempt to open the door while the cycle in progress. The door should not open. If the door lock and interlock are not functioning properly, call a service technician.
9. Run a test program (30) that goes through most machine functions. Press key 3 and key 0 on the keypad, then press enter and the start key. Run the complete program, checking operation of water inlet valves, drain, and extract functions.
10. Cylinder rotation must be counter clockwise in the extract step. If the rotation is not correct, disconnect power to the machine. A qualified technician must reverse the leads between the AC drive and the motor.




Inverter Terminals

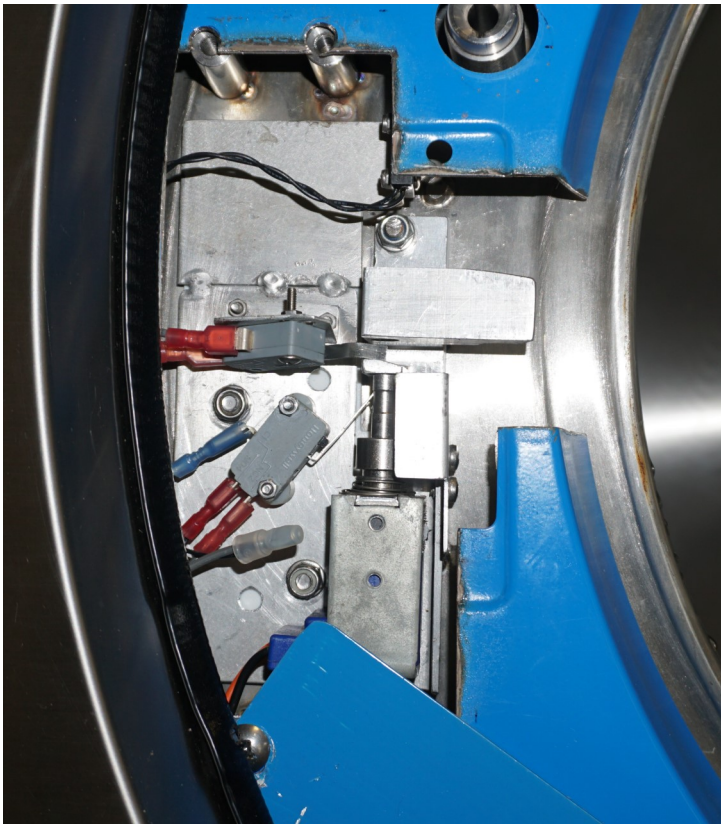
# INSTALLATION

# Door Lock Operation Test and Maintenance

The HX model door lock system uses a button to open the door. The door is then closed by pushing on the door, locking it automatically. This design eliminates many parts that could go wrong with pushing or operating a door handle. The door also has a magnetic switch that indicates whether the door is closed or not, and prevents the machine from starting.

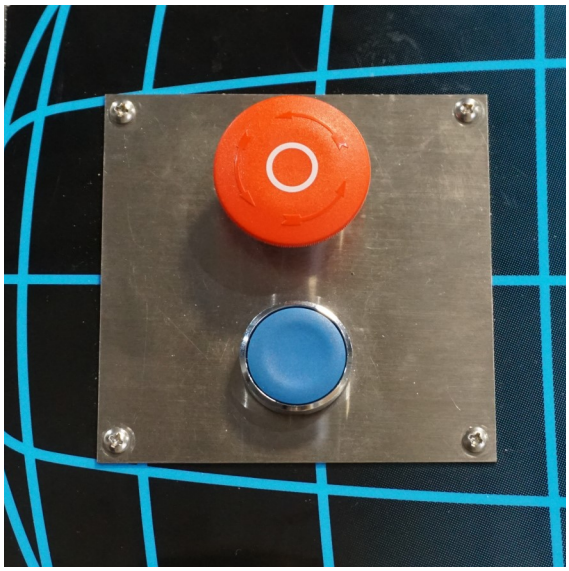
To open the door the machine must not be running a wash program. “Program N” should be displayed on the FM7 microprocessor control. If the door is closed and machine is not in operation, simply push the blue door lock button and the door will open. To close the door, swing it closed and it will automatically lock. If it does not lock just push the door to close and engage the lock. When you start a wash program, the door is locked and cannot be accidentally opened.

Door Lock



## PERIODIC DOOR LOCK MAINTENANCE

- The door should be tested every day to ensure safe operation by attempting to start a program with the door open. If the machine begins operation in this state it should immediately be removed from service, locked out, and a qualified service technician must be called to repair it.
- If the door lock is malfunctioning in any way, the machine should immediately be removed from service, locked out, and a qualified service technician must be called to repair it.
- The door pin extending into the door lock should be checked for wear and alignment weekly. It should be replaced if it appears to be bent and worn out.
- For detailed instructions on the door lock, request a detailed technical information and service bulletin about the door lock.



Door Lock Button
and Emergency Switch

# MAINTENANCE

# First Wash Cycle and General Use

## FIRST WASH CYCLE WITHOUT LAUNDRY

Before washing clothes for the first time, choose a WARM program cycle and run without clothes in the cylinder, using half of the normal recommended amount of detergent. This initial cycle serves to ensure the interior is clean before washing clothes.

## GENERAL WASHER USE

1. SORTING THE LAUNDRY

Sort laundry according to color and type of fabric. Mix large and small items, using mesh garment bags for smaller items if needed, and avoid washing a single item.

2. LOADING THE WASHER

Push the door button and swing the door fully open. Load the laundry evenly, but do not overload the washer, as doing so can result in poor cleaning. The washer should be fully loaded but not tightly packed, allowing the door to close with ease. Close the washer door by pushing it firmly until it locks.

3. DETERGENT

Open the dispenser lid on the top of the machine to add laundry products to the detergent, bleach, and fabric softener compartments. Use the front compartments for powders and the rear compartments for liquids, making sure to not mix the powder and liquid detergents as it may clog the dispenser.

# MAINTENANCE

# Daily Routine Maintenance

Routine maintenance maximizes downtime. The maintenance procedures described in this section will prolong the life of the machine and help prevent accidents.

## DAILY MAINTENANCE

1. Inspect the water valve hose connections on the back of the machines.
2. Inspect the steam hose connections for leaks, where applicable.
3. Verify the insulation is intact on all external wires, and that all connections are secure. If bare wire is evident, call a service technician.
4. Check the door interlock before starting an operation.
5. Attempt to start the washer with the door open. The machine should not start with the door open.
6. Close the door without locking it, then attempt to start the machine. The machine should not start with the door unlocked.
7. Close and lock the door, then start a wash cycle. Attempt to open the door while the cycle is in progress. The door should not open.

## END OF THE DAY

1. Clean the door gasket of residual detergent and foreign matters.
2. Clean the automatic supply dispenser and lid inside and out with a mild detergent. Rinse with clean water.
3. Clean the washer's top, front, and side panels with a mild detergent. Rinse with clean water.
4. If possible, leave the loading door open at the end of each day to allow moisture to evaporate.

Install all panels that were removed to perform service and maintenance procedures.

Do not operate the machine with missing panels, or with broken or missing parts.

Do not bypass any safety devices.

# MAINTENANCE

# Weekly Routine Maintenance

## WEEKLY MAINTENANCE

1. Check the machine for leaks.

1a. Start an unloaded cycle to fill the machine.

1b. Verify that the door and door gasket do not leak.

1c. Verify that the drain valve is operating. If water does not leak out during the prewash segment, the drain valve is closed and functioning properly.

2. Clean the AC drive box air filters.

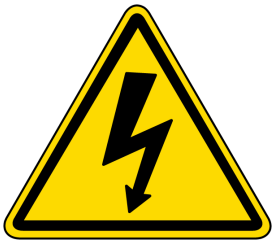
2a. Snap off the external plastic cover that contains the filter. Remove the foam filter from the cover.

2b. Clean the filter with a soap solution, or replace with a new filter.

Leave the loading door open at the end of each complete cycle to allow moisture to evaporate. Unload the machine promptly after each completed cycle to prevent moisture build up.

# MAINTENANCE

# Monthly Routine Maintenance



Disconnect power to the machine at its source before performing the monthly maintenance procedure.

## MONTHLY MAINTENANCE

1. Each month, or after every 200 hours of operation, lubricate the bearings and seals. See instructions on the rear of the machine.

1a. Use a premium grade lithium based #2 grease. Never mix two types of grease.

1b. Pump the grease gun slowly, permitting only the following number of strokes:

- Bearing grease fitting = 2 strokes
- Seal grease fitting = 1 stroke

Do not pump the grease gun if grease comes out of the bearing housing. This can result in over lubrication, causing damage to the bearings and seals.

2. If the machine is provided with automatic lubricators, check that they are injecting grease. Normally, they last for approximately one year. Mark new lubricators with an installation date.

3. Clean the AC drive filter.

3a. Remove the AC drive box cover.

3b. Blow the fins clean using compressed air at a pressure of 60-90 psi (4-6 bar) or by using canned compressed air. Use care to avoid damaging the cooling fan or other components.

No amount of visible foreign matter should be allowed to accumulate on fins or finger guards.

4. Use the following procedure to determine if the V-belts require replacement or adjustment. Call a qualified service technician in either case.

4a. Check V-belts for uneven wear and frayed edges.

4b. After disconnecting power to the machine and removing the panels for access to the drive belts, verify that the V-belts are properly tensioned. Loosen the tension adjusting bolts and adjust the belts to the proper tension, then the bolts should be tightened.

4c. Verify that the V-belts are properly aligned by checking the pulley alignment. Place a straight edge across both pulley faces. The straight edge should make contact with the pulley in four places.

# MAINTENANCE

# Routine Care of Stainless Steel

Maintain the natural beauty of stainless steel and prolong the machine's service life by following these steps:

1. Ordinary deposits of dirt and grease can be removed with detergent and water. The metal should be thoroughly rinsed and dried after washing. Periodic cleaning will help maintain the bright surface appearance and prevent corrosion.
2. Contact with dissimilar metal should be avoided whenever possible. This will help prevent galvanic corrosion when salty water or acidic solutions are present.
3. Salty or acidic solutions should not be allowed to evaporate and dry on stainless steel, for it may cause corrosion. Ensure that the stainless steel is wiped clean of acidic solution residues.
4. Deposits that stick to the stainless steel should be removed, especially in crevices and corners. When using abrasives, always rub in the direction of the polish lines or grain of the stainless steel to avoid scratch marks. Never use ordinary steel wool or steel brushes on the stainless steel. Use stainless wool or soft non-metal bristle brushes.
5. If the stainless steel appears to be rusting, the source of the rust may actually be an iron or steel part not made of stainless steel, such as a nail or screw. One remedy is to paint all carbon steel parts with a heavy protected coating. Stainless steel fasteners should be used when possible.
6. Discolorations or heat tint from overheating may be removed by scoring with powder or by using special chemical solutions.
7. Sanitizers or sterilizing solutions should not be left in stainless steel equipment for prolonged periods of time. They often contain chlorine, which may cause corrosion. The stainless steel should be cleaned and rinsed thoroughly of any solution containing chlorine.
8. When an external chemical supply system is used, make certain that no siphoning of chemicals occurs when the washer-extractor is not in use. Highly concentrated chemicals can cause severe damage to stainless steel and other components within the machine. Damage of this kind is not covered by the manufacturers warranty. Locate the pump below the washer’s injection point to prevent siphoning chemicals into the machine.

# MAINTENANCE

# Decommissioning

In the event that the machine must be decommissioned, adhere to the following steps:

1. Remove the chemical injection supply system, if applicable.
2. Have a qualified electrician disconnect power to the chemical injection system and the recirculation pump at the source.
3. Using the manufacturer's instructions, carefully remove the chemical injection system from the machine. Make certain that no chemicals come into contact with skin or clothing.
4. Clean the interior of the machine, both the cylinder and shell.
5. Flush the dispenser with water.
6. Run a short rinse cycle to clean chemical residues from the interior of the machine.
7. Disconnect electrical power.
8. Shut off the main power supply at the breaker box or main control panel.
9. Have a qualified electrician disconnect power to the machine at its source.
10. Disconnect hoses.
11. Disconnect drain hose from sump, gutter, or drain.
12. Turn off water supply. Disconnect individual hot and cold water inlet hoses from the machine.
13. Disconnect the compressed air supply to the machine.
14. Allow time for residual water in the cylinder to drain. Then, disconnect the drain hoses from the machine.
15. Disconnect necessary plumbing on the recirculation system, if applicable.
16. Disconnect steam hoses, if applicable.
17. Turn off the steam supply and allow time for the valve to cool.
18. Disconnect the steam hose from the machine.
19. Remove the machine from its foundation pad.
20. Keep all panels in place to provide stability when moving the machine.
21. Verify that the door is closed and secure.
22. Loosen and remove the anchor bolts holding the machine base to the floor.
23. Break the grout at each corner of the machine using a crowbar.
24. Place the machine on a skid and bolt the frame to the skid. This will facilitate the moving of the machine onto a truck.
25. Recycle. We use the highest quality materials in our products so that those materials may be recycled at the end of the product's service life.