CARON

Caron Products & Services

OPERATIONS MANUAL

STACKABLE CO_2 INCUBATOR

Models: 7410-5 / 7411-5 / 7420-5

PO Box 715, Marietta OH 45750 / PHONE 740 373 6809 & 800 648 3042 / FAX 740 374 3760 / caronproducts.com

Dear Valued Customer:

Thank you for purchasing CARON Products & Services equipment. We appreciate your business and look forward to being your preferred supplier of controlled environment equipment products in the future.

At CARON, we are committed to continuous quality improvement. Our goal is to supply our customers with highly reliable equipment at a fair price. In order to openly monitor our performance, we would appreciate your feedback on our products and services.

If you have questions, or any suggestions for improvement based on the installation or operation of the equipment you have purchased, please contact our service department at www.caronproducts.com or 740-373-6809.

Thanks again for your business!

Revision Log

Version	Date	Description
Rev A	01-19-2017	Initial Release
Rev B	03-13-2017	Integrated RACK product into manual
Rev C	07-31-17	Updated picture in Maintenance Section
Rev D	08-15-17	Updated consistency between all manuals
Rev E	05-18-18	Added Screen Saver feature
Rev F	07-17-18	Updated PM Kit info
Rev G	05-24-19	Updated for CE compliance; adjustable temperature analog output; Added model 7420

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WARRANTY INFORMATION

CO_2 INCUBATOR, RACK300,RACK301,RACK302, RACK303,SHLF335, SHLF337 LIMITED WARRANTY

Please review this section before requesting warranty service. At CARON, one of our primary goals is to provide customers with high levels of personal service and top quality products, delivered on time, backed by technical service and supported for the life of the product.

Before contacting us for warranty service, please be aware that there are repairs that are not covered under warranty.

WARRANTY DEFINED

Caron Products & Services, Inc. (herein after CARON) hereby warrants that equipment manufactured by CARON is free from defects in materials and workmanship when the equipment is used under normal operating conditions in accordance with the instructions provided by CARON.

COVERED:

- Parts and labor for a period of two (2) years from date of shipment.
- Any part found defective will be either repaired or replaced at CARON's discretion, free of charge, by CARON in Marietta, OH. Parts that are replaced will become the property of CARON.
- If CARON factory service personnel determine that the customer's unit requires further service, dependent of the model involved, CARON may, at its sole discretion, provide a service technician to correct the problem, or require the return of the equipment to the factory or authorized service depot.
- CARON will have the right to inspect the equipment and determine the repairs or replacement parts necessary. The customer will be notified, within a reasonable time after inspection, of any costs incurred that are not covered by this warranty prior to initiation of any such repairs.

NOT COVERED:

- Calibration of control parameters.
- Improper installation; including electrical service, gas and water supply tubing, gas supplies, room ventilation, unit leveling, facility structural inadequacies or ambient conditions that are out of specification.
- Cost of express shipment of equipment or parts.
- Any customer modifications of this equipment, or any repairs undertaken without the prior written consent of CARON, will render this limited warranty void.
- CARON is not responsible for consequential, incidental or special damages; whether shipping damage or damages that may occur during transfer to the customer's point of use. When the equipment is signed for at the customer's site, ownership is transferred to the customer. Any damage claims against the shipping company become the responsibility of the customer.
- Repairs necessary because of the equipment being used under other than normal operating conditions or for other than its intended use.
- Repair due to the customer's failure to follow normal maintenance instructions.
- Parts considered consumable; including: light bulbs, filters, gases, etc.
- Damage from use of improper water quality.
- Damage from chemicals or cleaning agents detrimental to equipment materials.
- Force Majeure or Acts of God.

This writing is a final and complete integration of the agreement between CARON and the customer. CARON makes no other warranties, express or implied, of merchantability, fitness for a particular purpose or otherwise, with respect to the goods sold under this agreement. This warranty cannot be altered unless CARON agrees to an alteration in writing and expressly stated herein shall be recognized to vary or modify this contract.

Ohio Law governs this warranty.

State of California Proposition 65 Warnings:

WARNING: This product contains one or more chemicals known to the State of California to cause cancer.
WARNING: This product contains one or more chemicals known to the State of California to cause birth defects or other reproductive harm.

EQUIPMENT INTERNATIONAL LIMITED WARRANTY

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- If CARON or their authorized representatives determine that the customer's unit requires further service, CARON or the representative may, at its sole discretion, provide a service technician to correct the problem, or require the return of the equipment to the an authorized service depot.
- CARON or their authorized representative will have the right to inspect the equipment and determine the repairs or replacement parts necessary. The customer will be notified, within a reasonable time after inspection, of any costs incurred that are not covered by this warranty prior to initiation of any such repairs.

NOT COVERED:

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- Any customer modifications of this equipment, or any repairs undertaken without the prior written consent of CARON, will render this limited warranty void.
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Caron Products & Services, Inc.
PO Box 715 · Marietta, OH 45750
740-373-6809

INTERNATIONAL SYMBOLS AND DEFINITIONS

Help

Information

Warning of hazardous area, consult manual for details

Warning of dangerous electric voltage

Warning of heavy object may cause back strain or back injury

Heavy Object, Multi-Person lift required

Earth (ground) protective conductor

WARNINGS

Local government may require proper disposal

Harmful / Irritant

Corrosive

Oxidizer

The Wally incubator is designed to be used under the following conditions

- indoor use only;
- altitude up to 2,000 m;
- temperature 5°C to 25°C
- maximum relative humidity: non-condensing.
- mains supply voltage fluctuations up to +/- 10% of the nominal voltage; damage may occur if voltage varies more than 10%.
- transient overvoltages up to the levels of overvoltage category II
- temporary over voltages occurring on the mains supply
- Pollution Degree 2.

Using the Wally incubator and or any of the RACK300, RACK301 or RACK302, accessories associated with the Wally product in any environment other than that is stated, could cause equipment failure, or personal harm to user.

Identification Tag

Equipment Maintenance and Service

When Service is required to the unit, removing the access screw to allow entry to high voltage wiring and CO2 or N2 gases. Only qualified Service Technicians should work on equipment.
Make sure unit is unplugged from outlet. Electrical shock could occur if unit is plugged. Turn off all CO2 and N2 gases at supply bottles, if gases are leaking inside the control housing technician could be exposed to CO2 and N2 which can cause asphyxiation in high concentrations or dizziness.

The glass doors on the 7410-5 & 7411-5 contain PCM (phase change material), when heated is translucent and the temp is 37˚C / 98.6˚F. If door glass appears white then PCM is cool. If chamber has been running, allow PCM to cool and return to a solid condition before servicing glass doors. If door(s) need service and PCM in glass door is translucent, liquid contents can spill from the top of the glass panels. This is not recommended.
Wear gloves whenever handling this product. Avoid skin contact.

After repairs have been made, reinstall service panels and fasteners. Plug in power cord turn on CO and N2 gas and verify that unit is working properly before resuming normal use.

Repairs to any Wally accessories RACK300, RACK301 and RACK302 use only Caron approved components.

Please contact the Service Department at 740-373-6809 or www.caronproducts.com for details.

EQUIPMENT OVERVIEW

Congratulations! You have just purchased Wally the latest technology in incubators. This manual covers the accessories that go with the Wally product line. Before using the equipment, familiarize yourself with key components of the product and thoroughly read this manual.

WARNING: *Assembling racks require 2 or more people depending on the size of the parts. Hanging the Wally incubator on the various racks will also require two or more people. Do not attempt to assemble and install Wally incubator with only one person.*

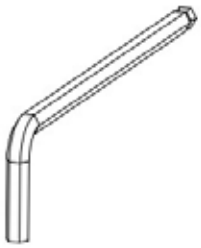
Tools required:

PHILLIPS SCREWDRIVER

SCR-414

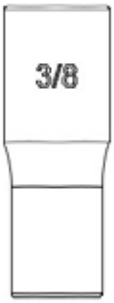
SCR-129

3/16" ALLEN WRENCH

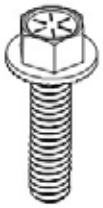


SCR-430

3/8" DEEP WELL SOCKET

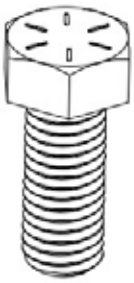


SCR-427



SCR-429

3/4" DEEP WELL SOCKET



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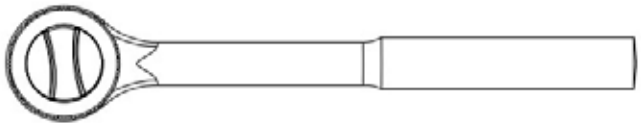


RACHET

WAS-615

WAS-614

INSTALLATION

Unpacking

Your new unit has been thoroughly packaged to avoid shipping damage. However, the unit should be fully inspected upon arrival before signing for receipt. If the package has visual damage, notes should be made on the freight bill and signed by the delivery company. In the event of concealed damage after the unit is uncrated, keep the carton and packaging material. Call the shipping company within 7 days of receipt, request inspection and retain a copy of the inspection report.

Caron provides full on-site installation services for all models. Our installation services guarantees the proper set-up and startup of all equipment. Please contact the Service Department at 740-373-6809 or www.caronproducts.com for details.

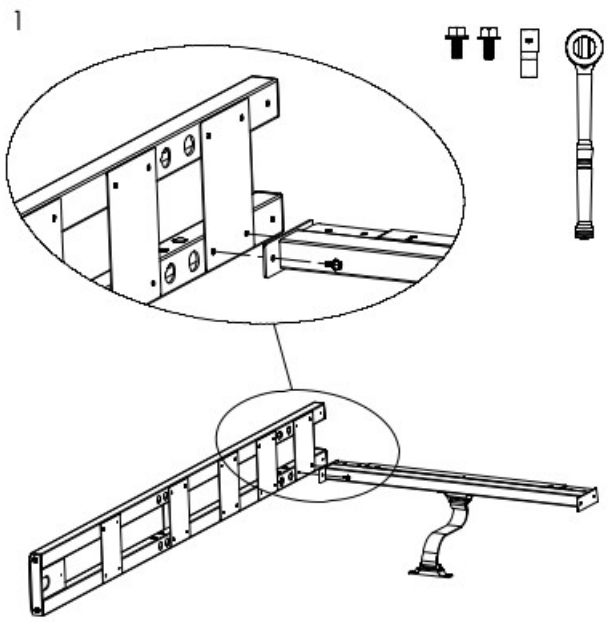
Choosing a Location

This unit needs to hang on a rack or use wall mount brackets to be supported. It cannot stand alone and does not have leveling feet. There are 4 configurations available to mount the incubator:

- RACK300 Floor Rack (single sided)
- RACK301 Floor Rack (double sided)
- RACK302 Benchtop
- RACK303 Wall Mounted

RACK300, RACK301 ASSEMBLY

1



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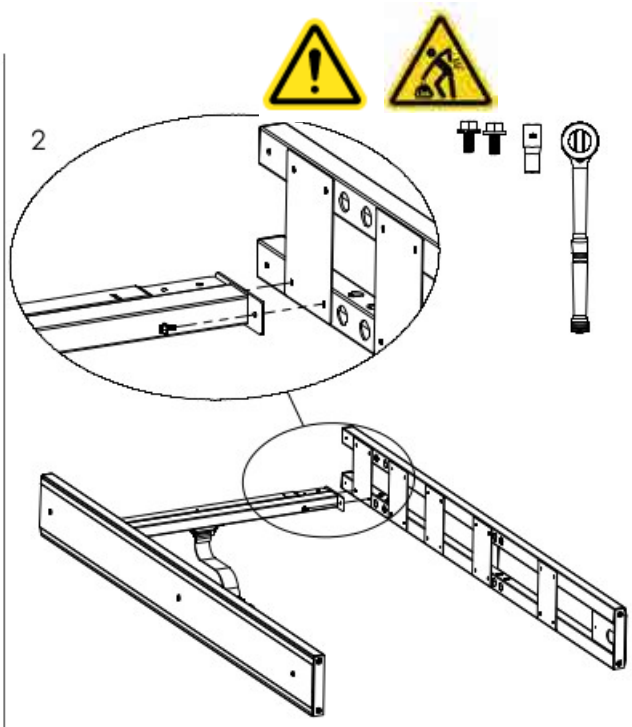

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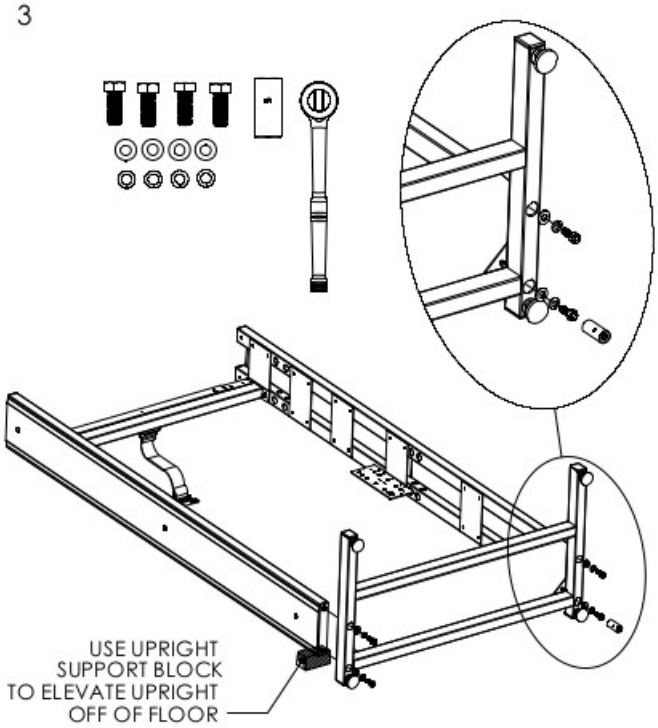

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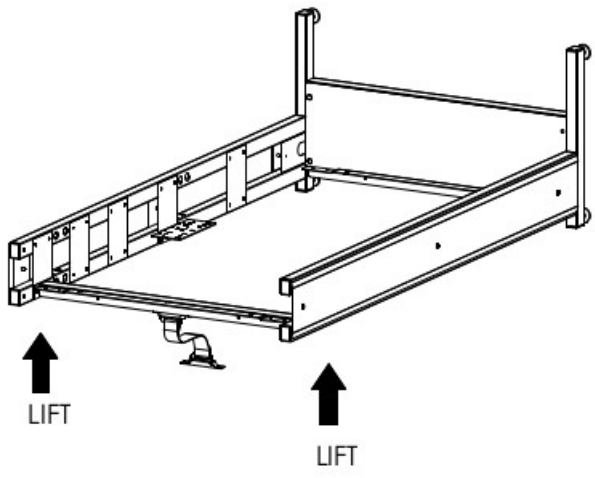

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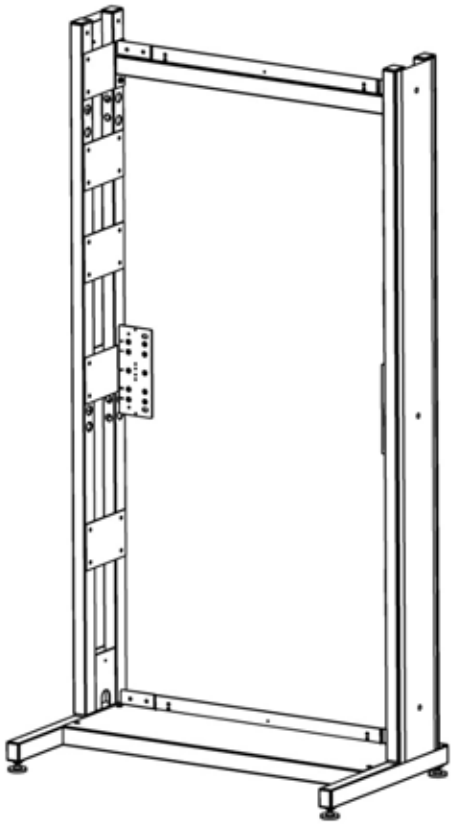

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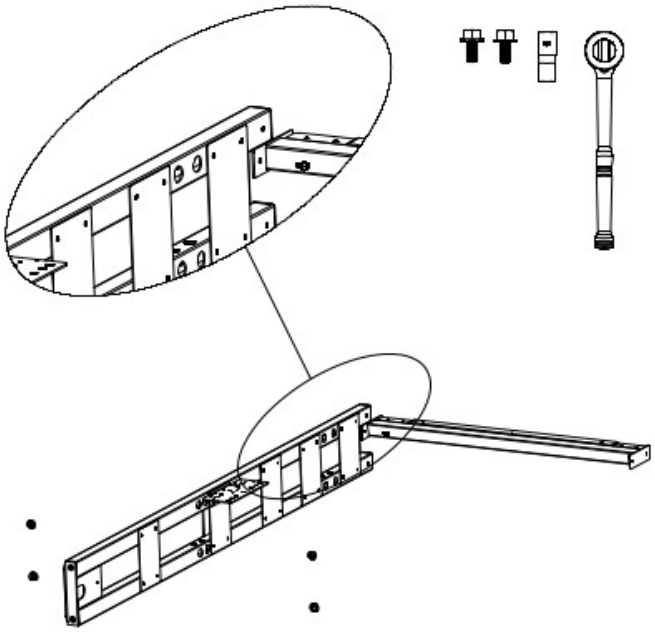

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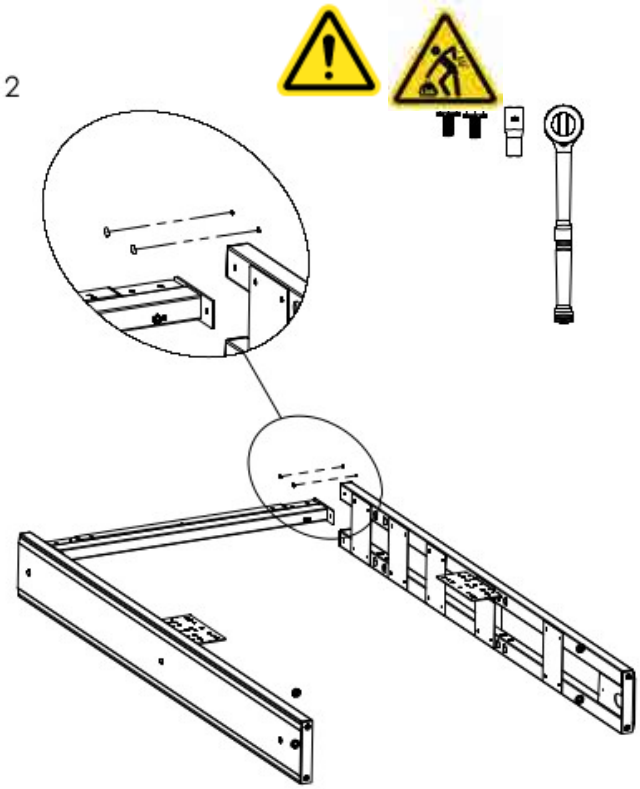

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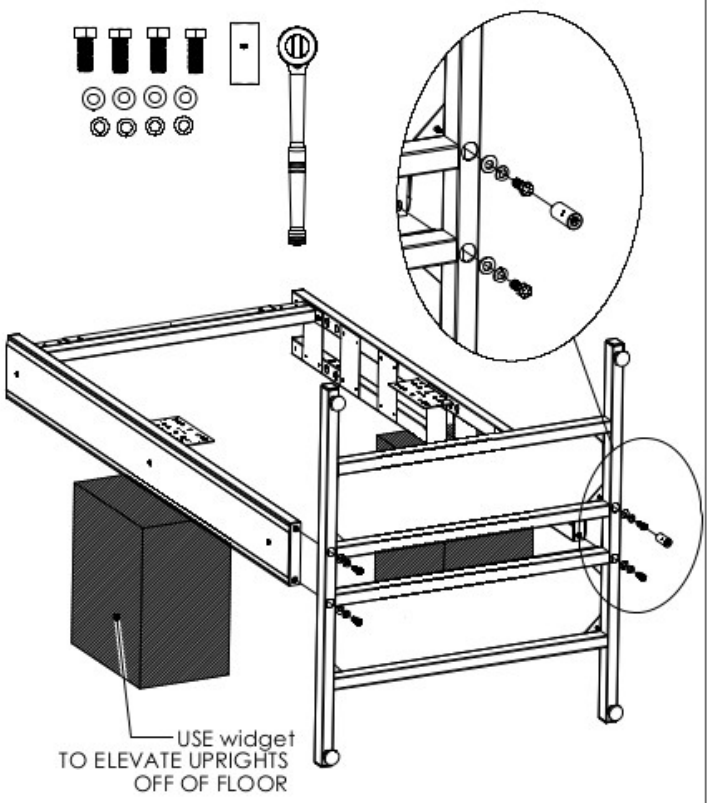

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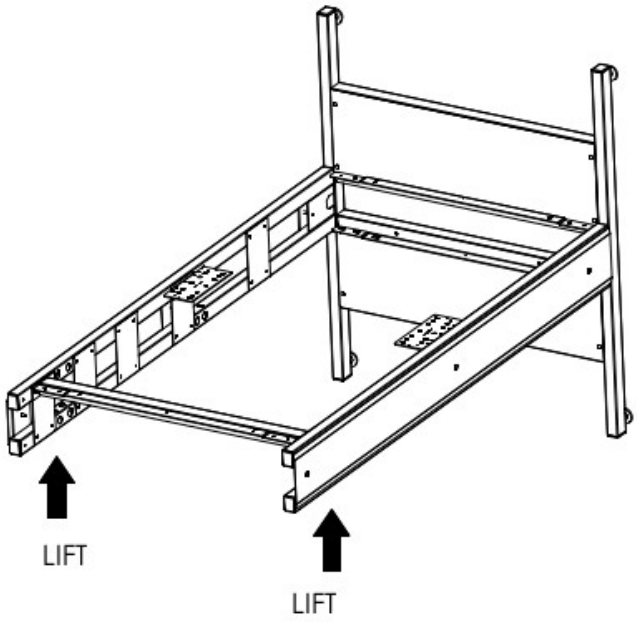

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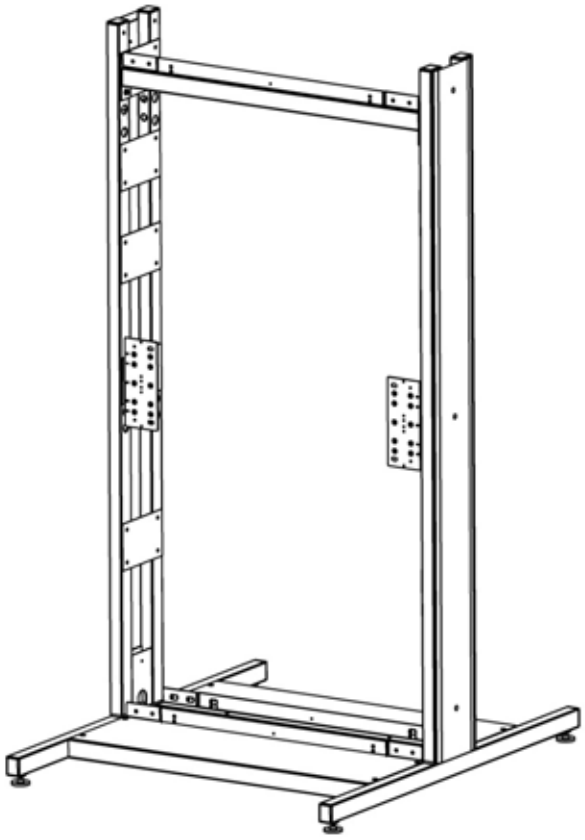
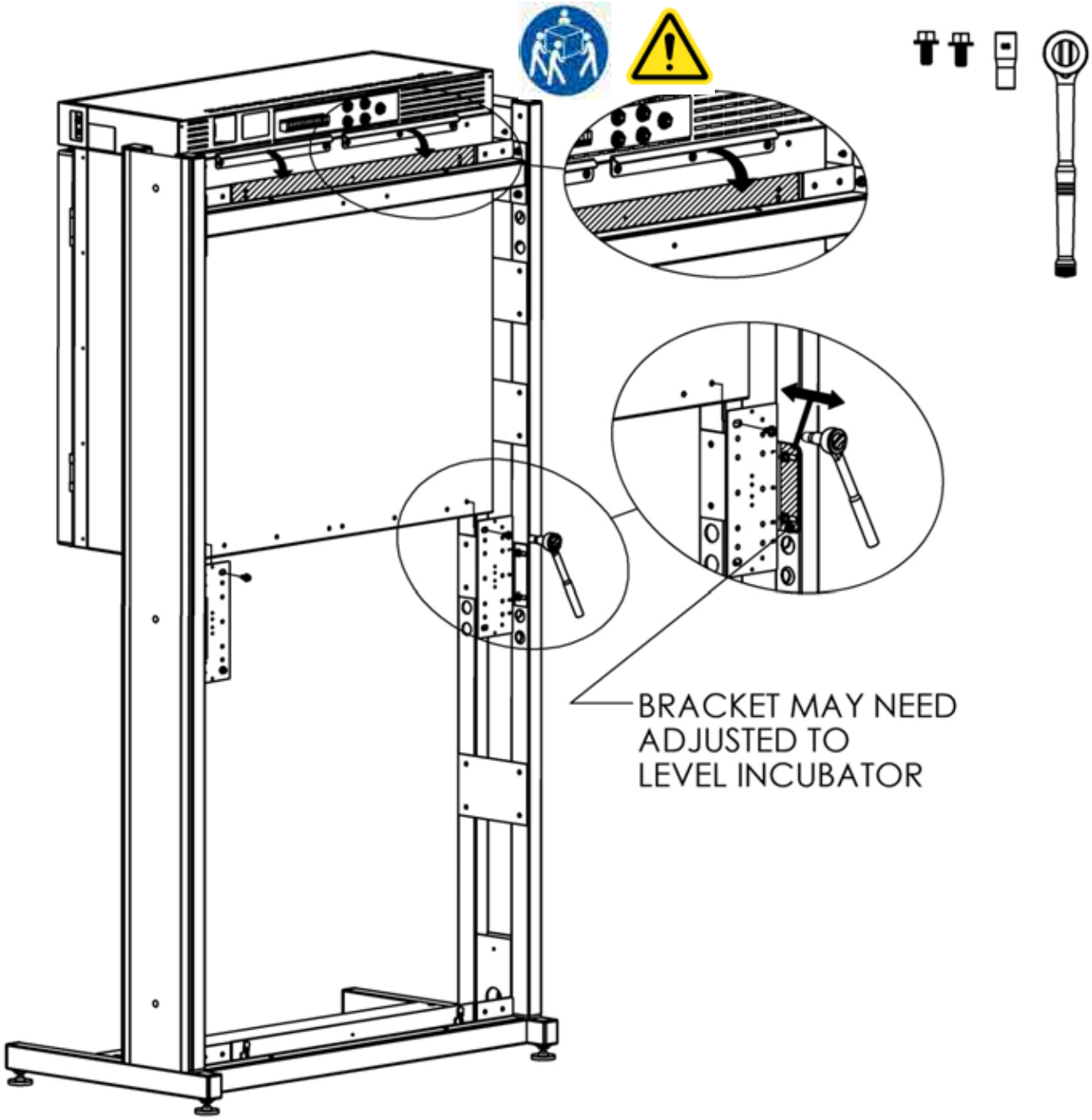
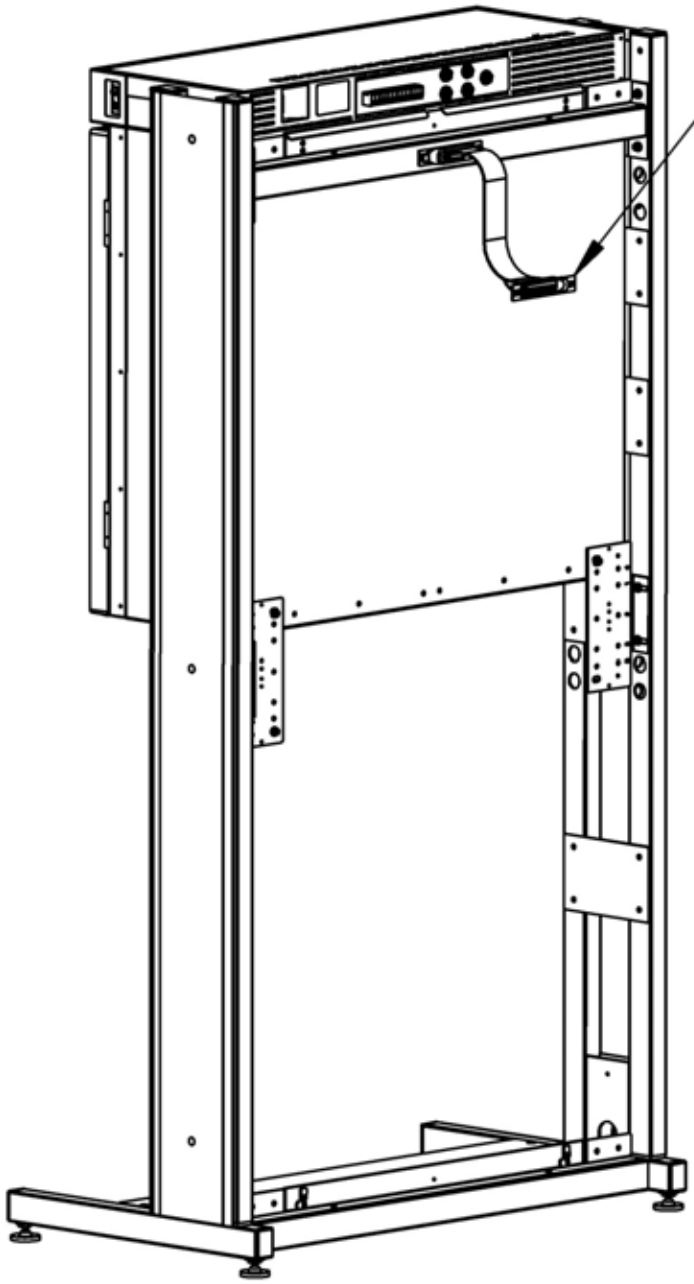


Mounting incubator on RACK300, RACK301 top installation

To install the incubator on the top position of RACK300 or RACK301, install the incubator angle screws and incubator angles to the top position of the incubator. Once fasteners are secure, hang the incubator onto the frame angle as shown below. Once incubator is positioned, secure the bottom of the incubator to the (2) brackets near the bottom with the mounting screws.

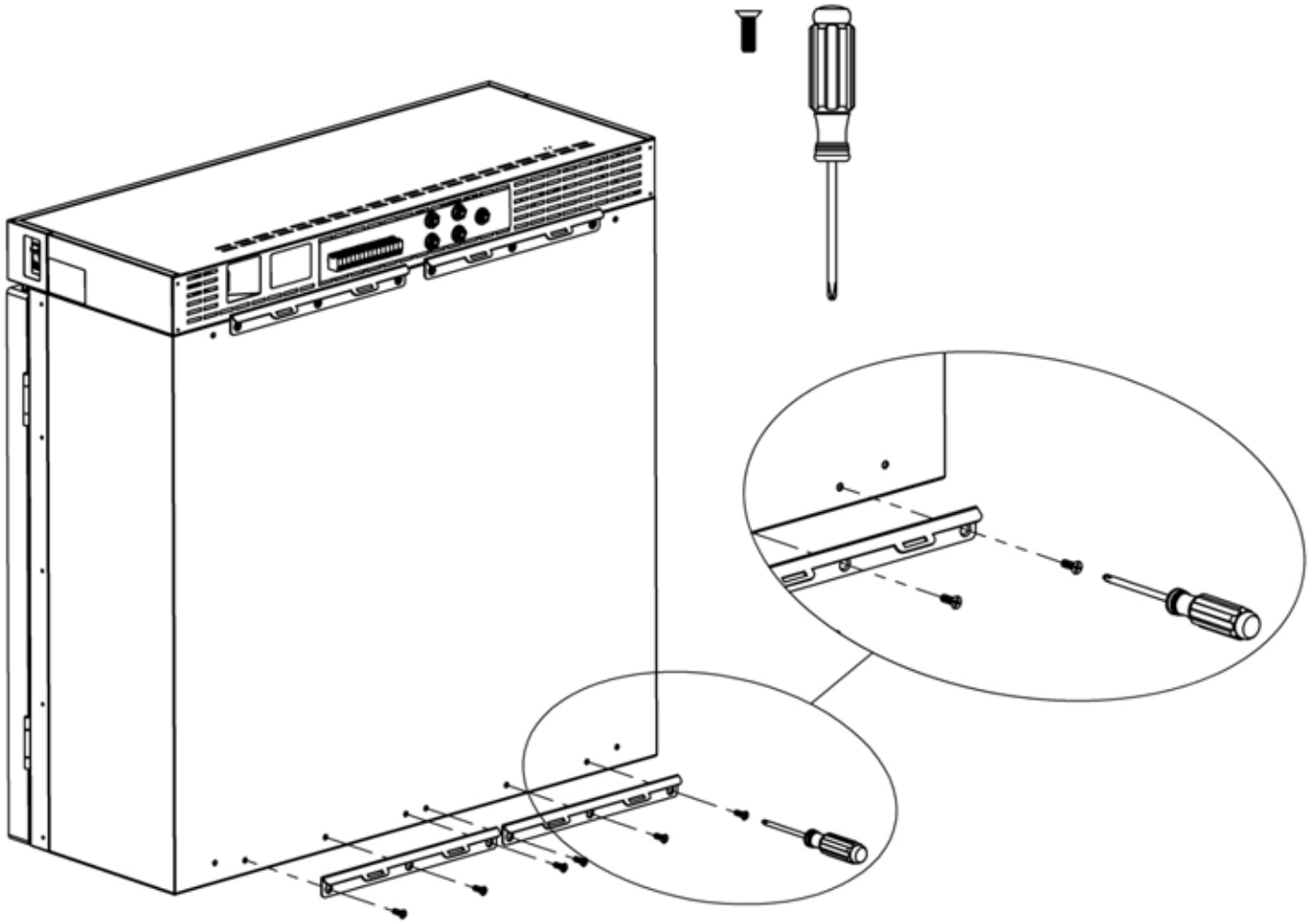


Once unit is in desired location, determine if local building codes and ordinances require securing rack to wall or permanent structure. If so, use provided tether strap. Some building codes may require more than one strap to secure rack due to building codes.

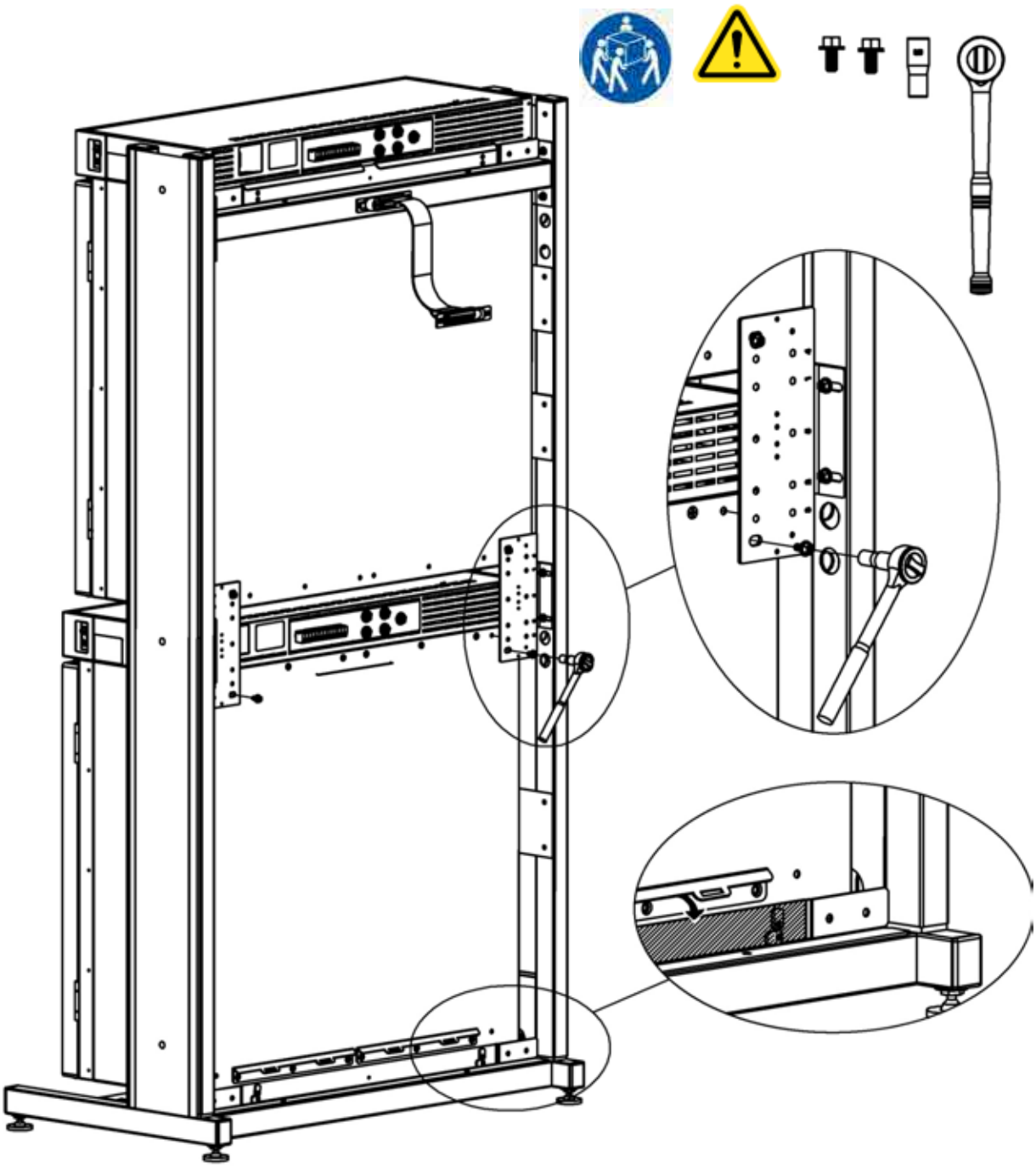

MOUNT TETHER STRAP TO WALL
OR STURDY SUPPORT
IF REQUIRED BY LOCAL CODE

Mounting incubator on RACK300, RACK301 bottom installation

To install the incubator on the bottom position of RACK300 or RACK301, install the incubator angles to the bottom position of the incubator.



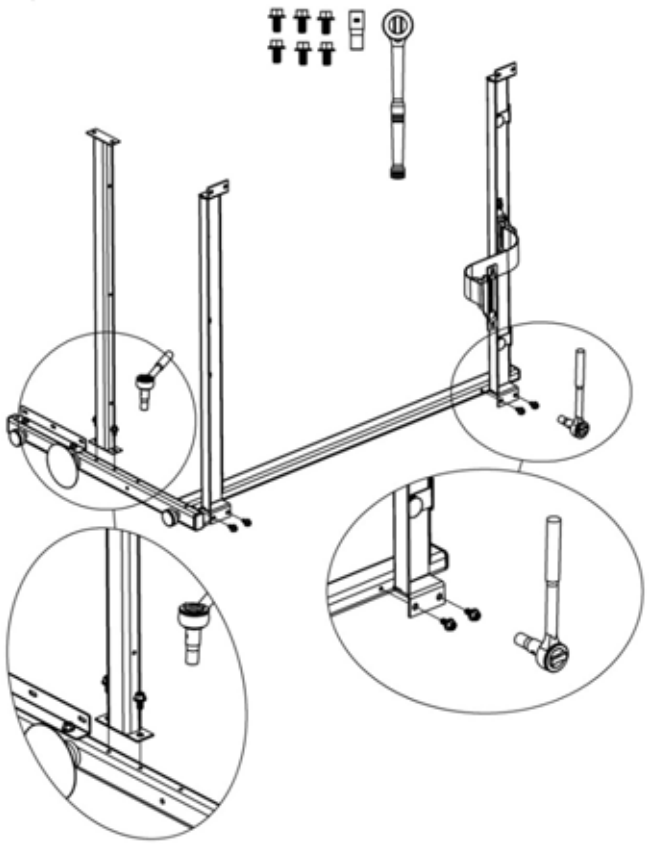
Once fasteners are secure, hang the incubator onto the frame angle as shown below. Once incubator is positioned, secure the top of the incubator to the (2) brackets near the middle, with the mounting screws provided.



Once unit is in desired location, determine if local building codes and ordinances require securing rack to wall or permanent structure. If so, use provided tether strap. Some building codes may require more than one strap to secure rack due to building codes.

RACK302 ASSEMBLY

1



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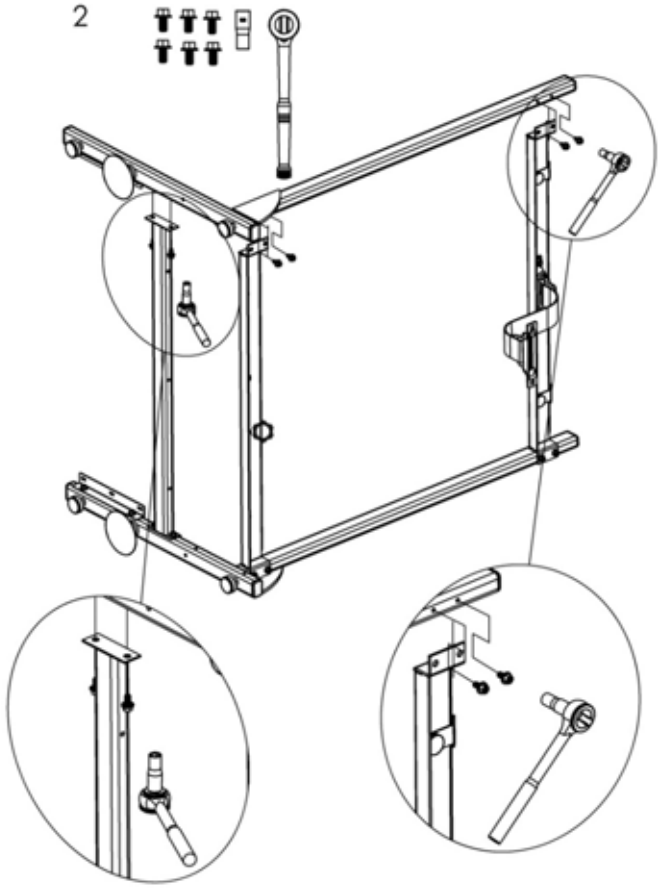

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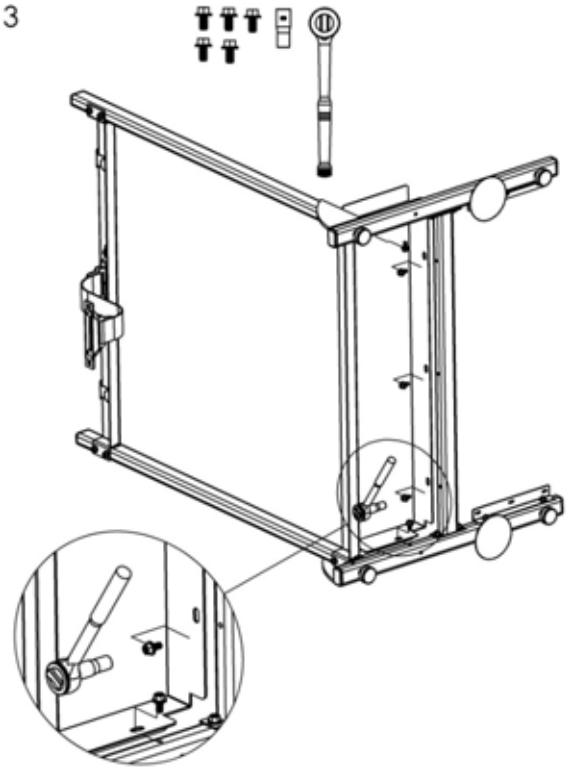

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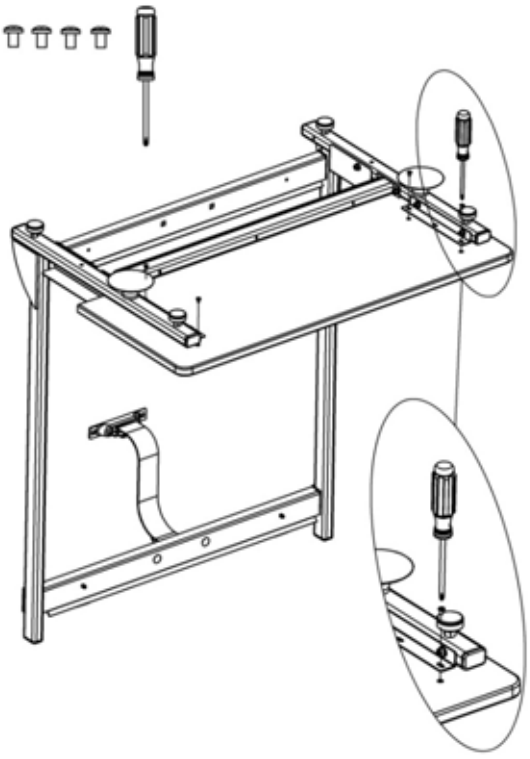
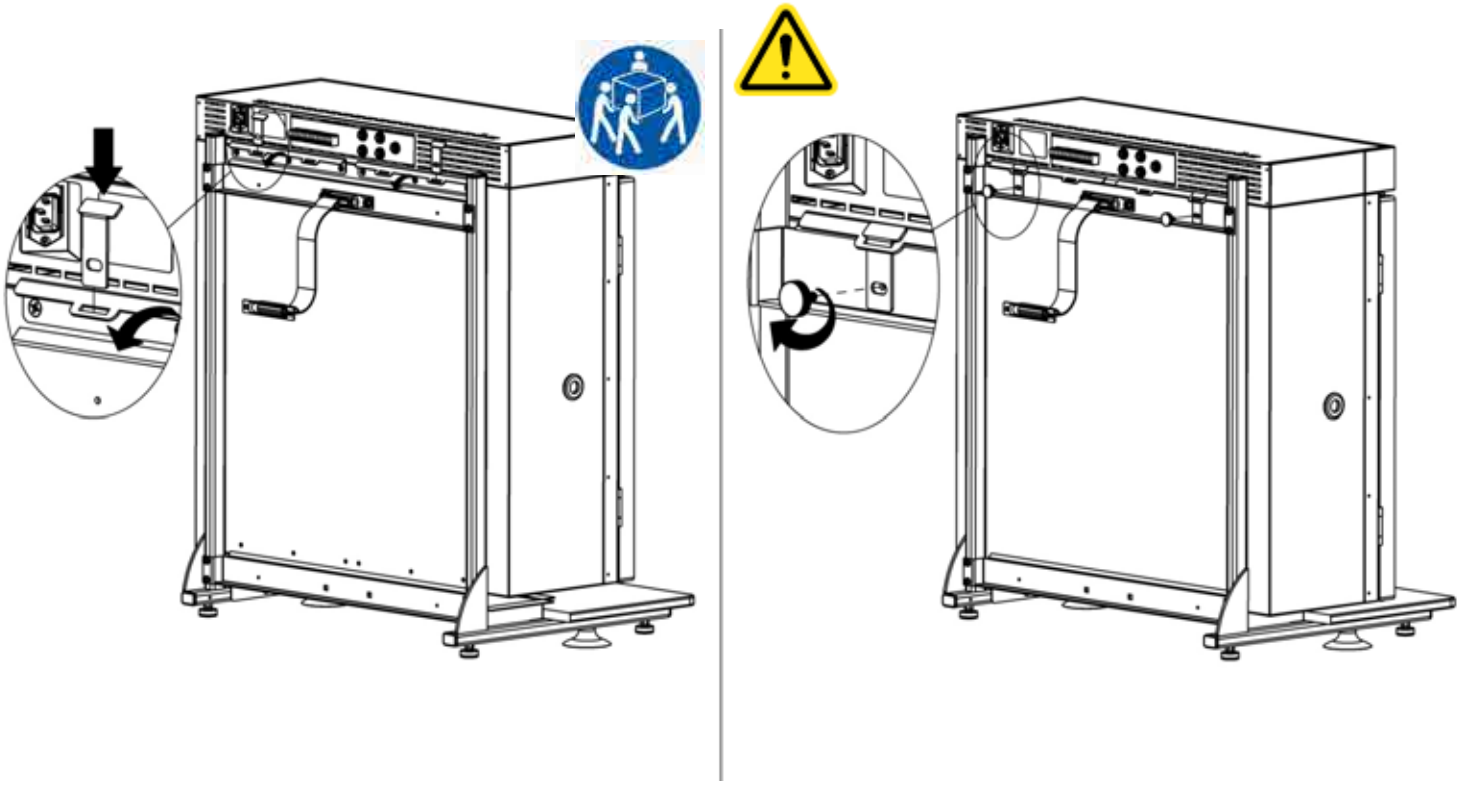


5

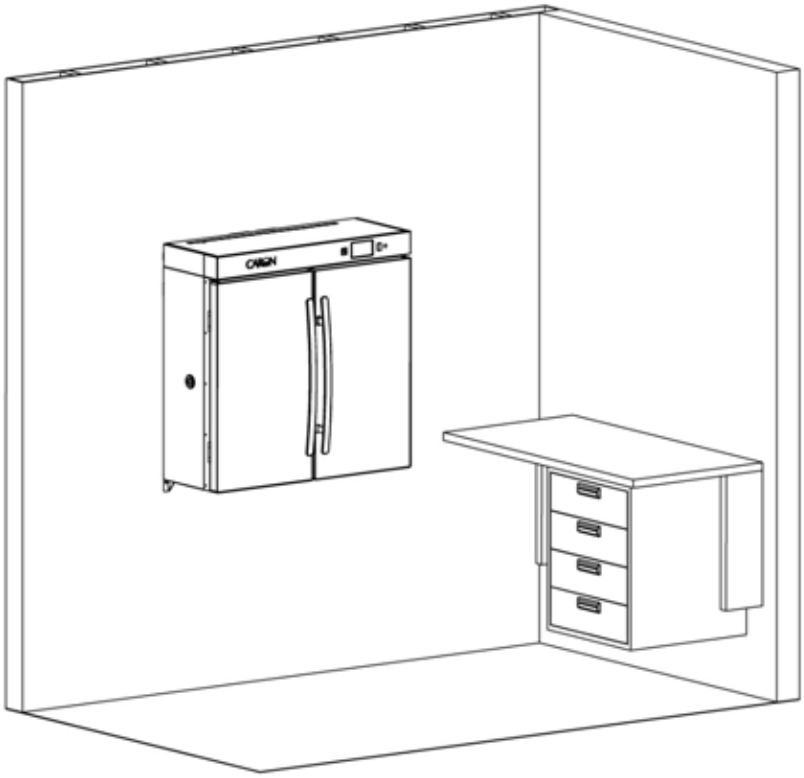
Installing Incubator on RACK302

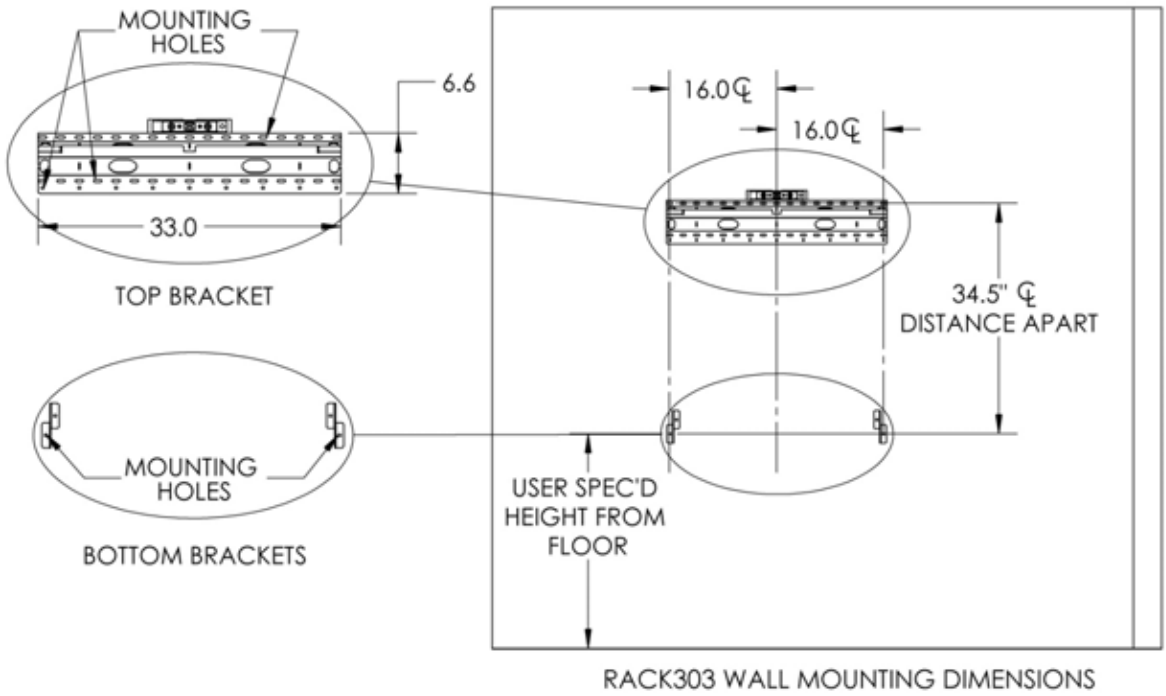
Align incubator angle with the frame angle, drop incubator into position. Insert Retainer bracket(s). Align holes in Retainer brackets with holes in frame and install Retainer Bracket Fastener and secure. Once unit is in desired location, determine if local building codes and ordinances require securing rack to wall or permanent structure. If so, use provided tether strap. Some building codes may require more than one strap to secure rack due to building codes.



Installing Incubator on RACK303

If floor space is limited the Wally Incubator can be mounted to a wall.

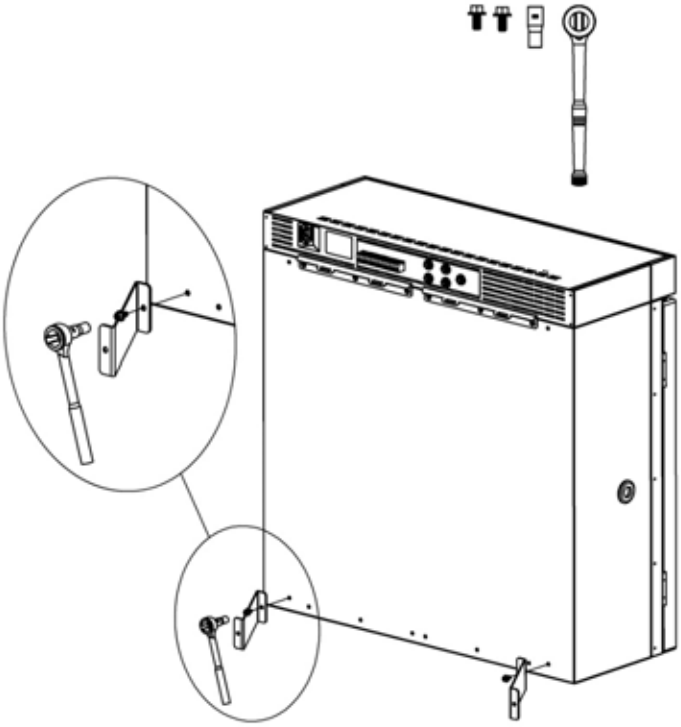


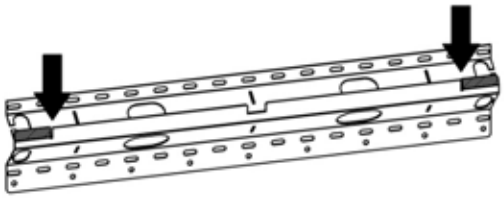


RACK303 WALL MOUNTING DIMENSIONS

Top Bracket must be mounted level, this allows all of the weight on the incubator to be distributed evenly.

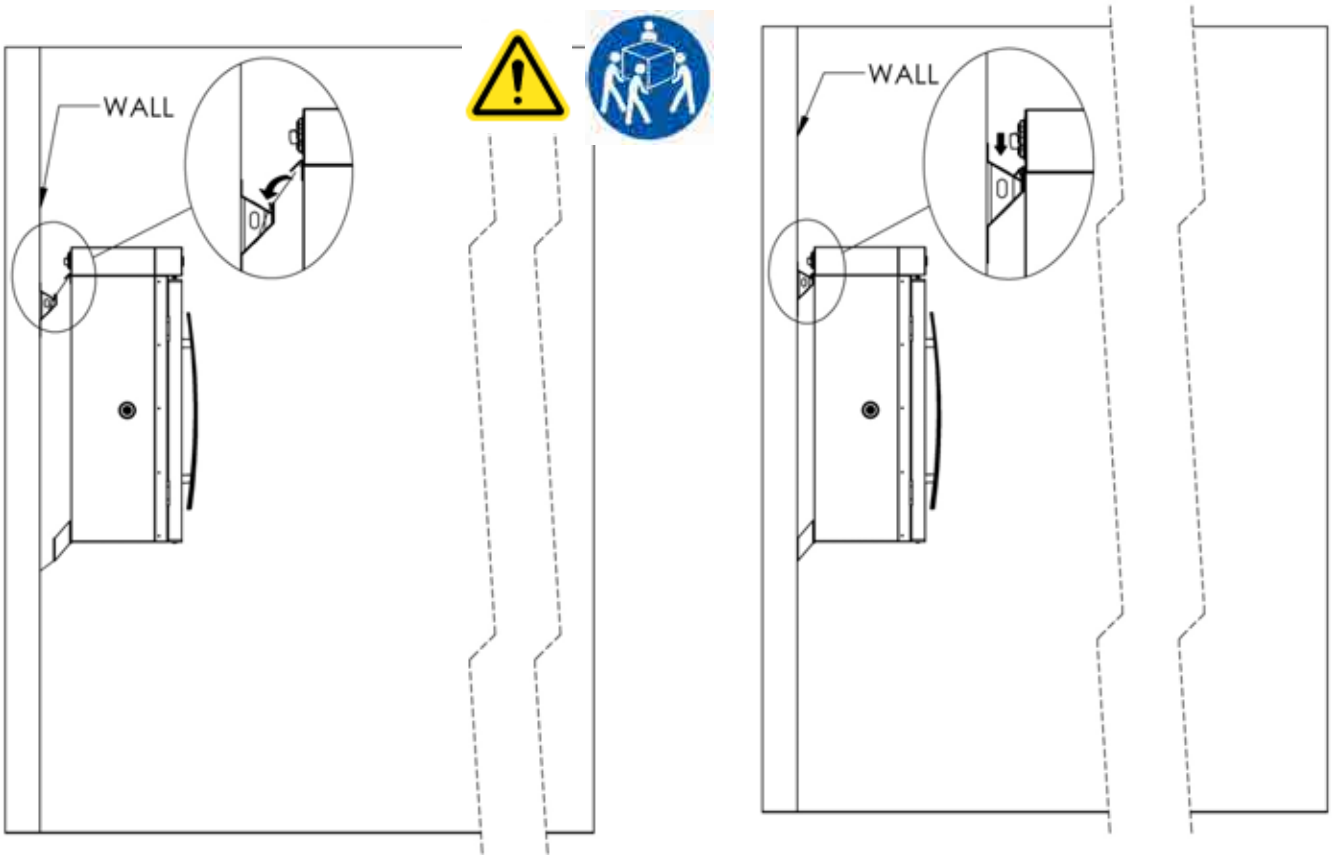
NOTE….UPPER WALL MOUNT BRACKET SUPPORTs 2/3 OF THE WEIGHT OF THE INCUBATOR. IT IS NOT RECOMMENDED ONLY USING (2) FASTENERS TO SECURE INCUBATOR ON TOP MOUNTING BRACKET, MINIMUM OF 6 FASTERNERS REQUIRED TO ANCHOR PROPERLY AND SAFELY. Building Engineer or Architect will have to assess site where incubator is to be mounted as well as fasteners to ensure that wall area and fasteners will structurally support 220 lbs (100 kg) of weight. May require additional structure within or attached to the wall, to accommodate and distribute weight of incubator. Mounting incubator to a wall is the sole responsibility of the user. Caron does not take any responsibility for damages or injury that may occur as a result of improper installation.



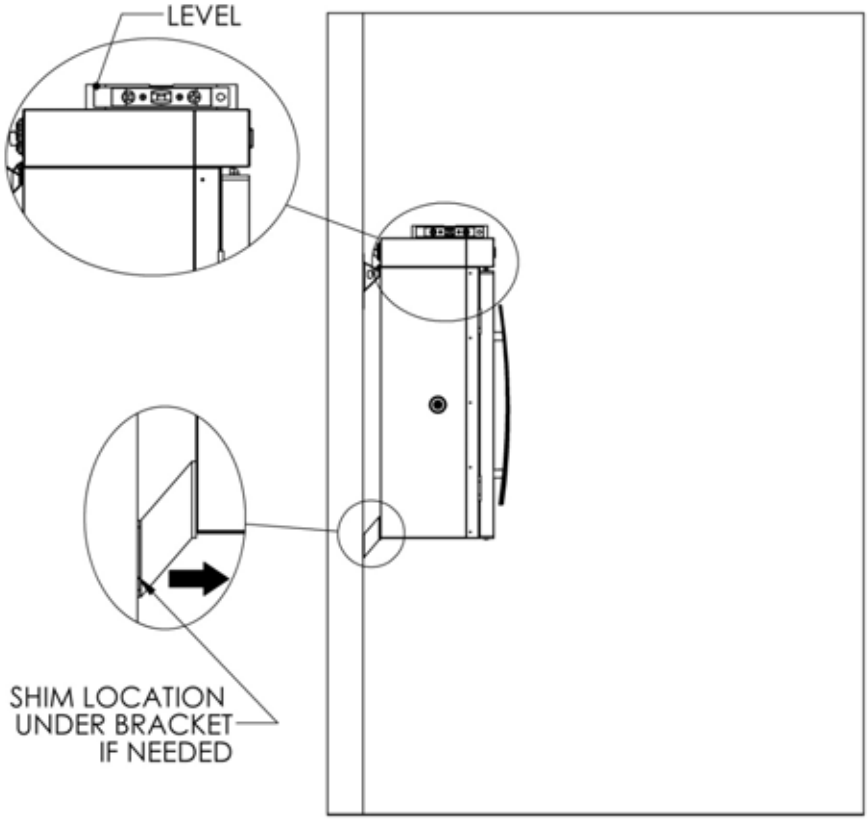


INCUBATOR ANGLE LOCATED BETWEEN SHADED AREAS

Incubator needs to be positioned between the shaded areas called out above. This will center the unit on the wall mounting bracket.



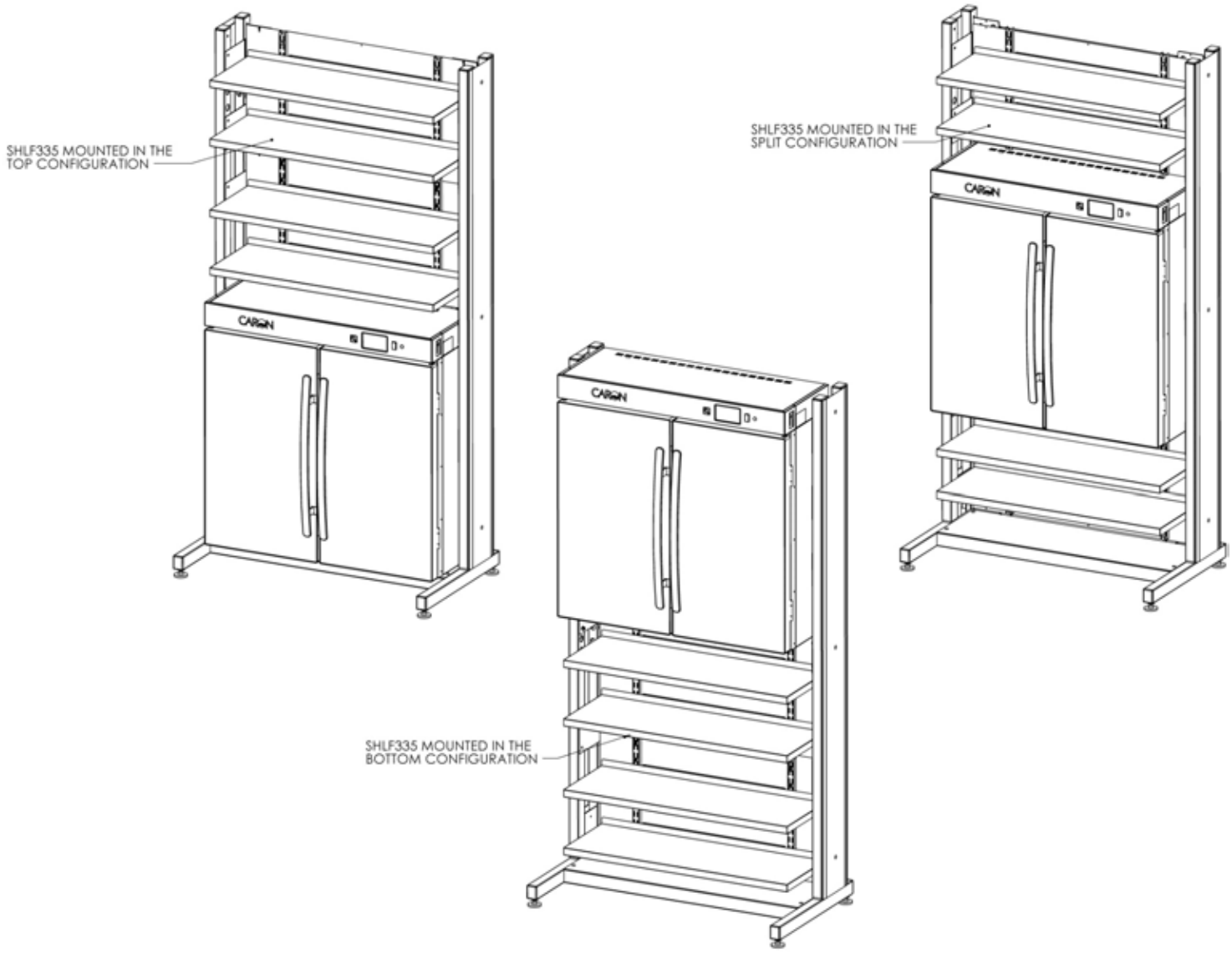
After anchoring top wall bracket to wall, hang the incubator. The incubator may need shims under the bottom brackets. Check front to back level of the chamber. Then secure bottom brackets to wall.



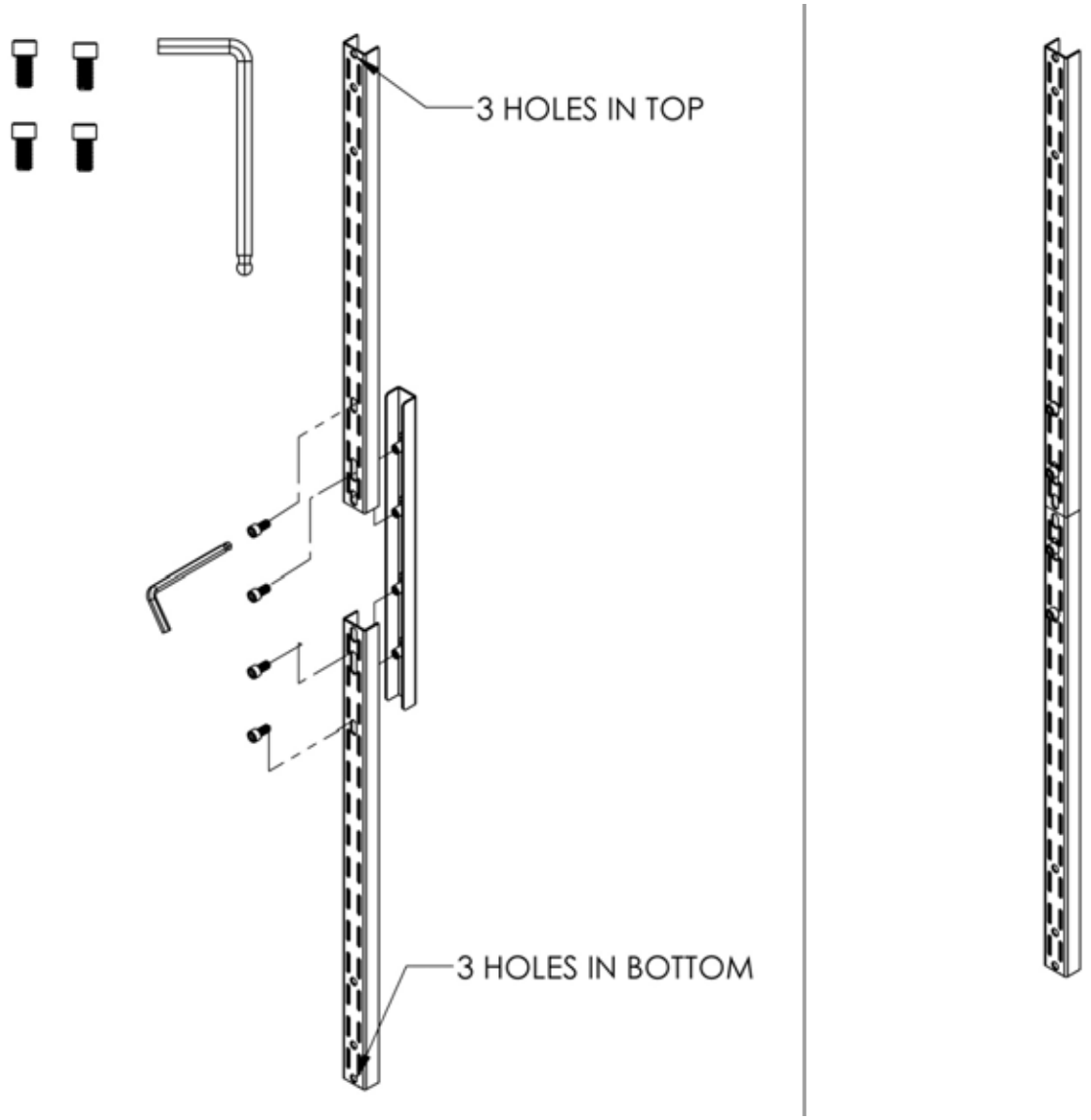
Option SHLF335 Accessory Installation

The SHLF335 shelving system accessory can be added to RACK300 and RACK301.

Each shelving unit comes with 4 metal shelves, brackets and hardware. SHLF335 can be configured in three different ways, as a single unit on the top of the rack, as a single unit on the bottom of the rack, or split-mount on the top and the bottom of the rack.

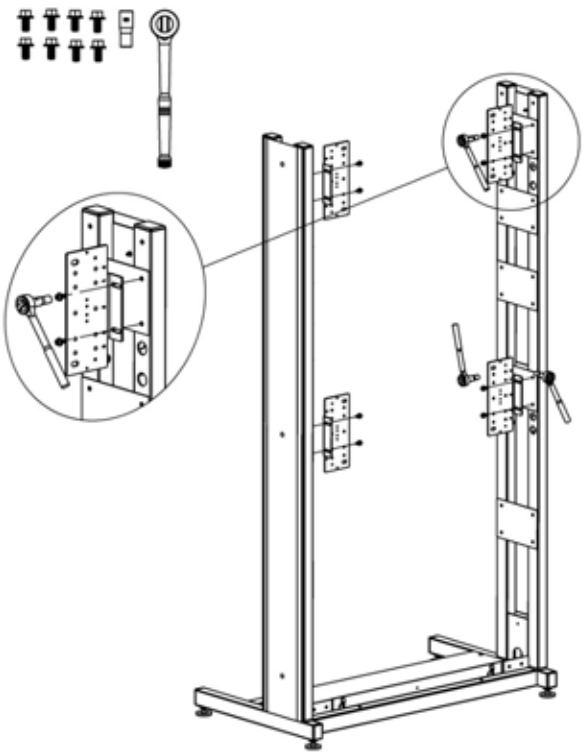


If shelves are mounted in either Top or Bottom configurations, then shelf track needs to be assembled according to the diagram below.
If shelves are mounted in the split configuration orient the shelf track as shown omit shelf track reinforcement and screws.



SHLF335 ASSEMBLY Shelves mounted in top position

1



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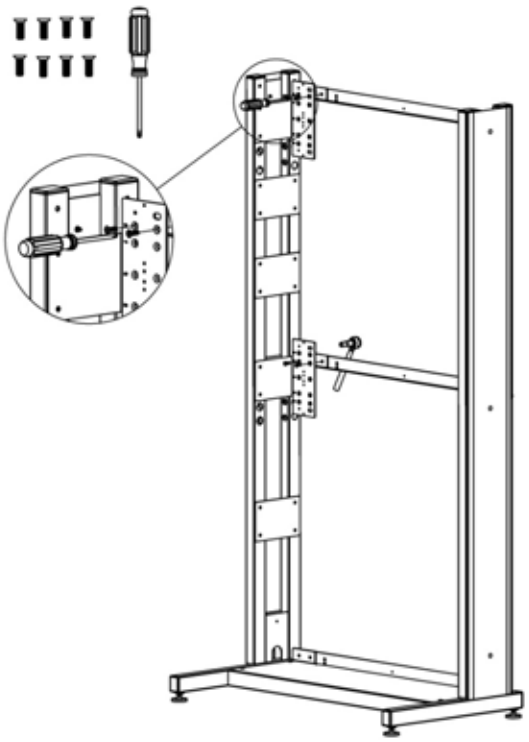

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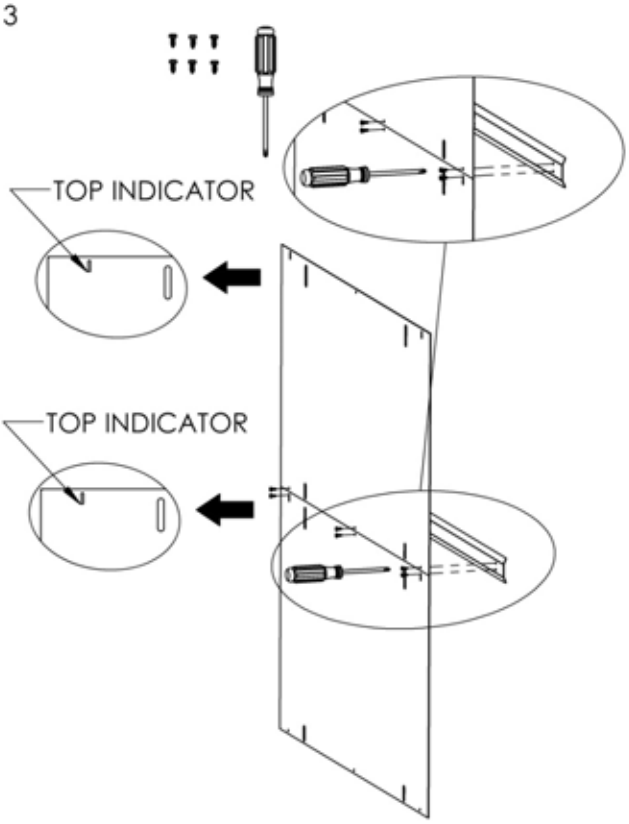

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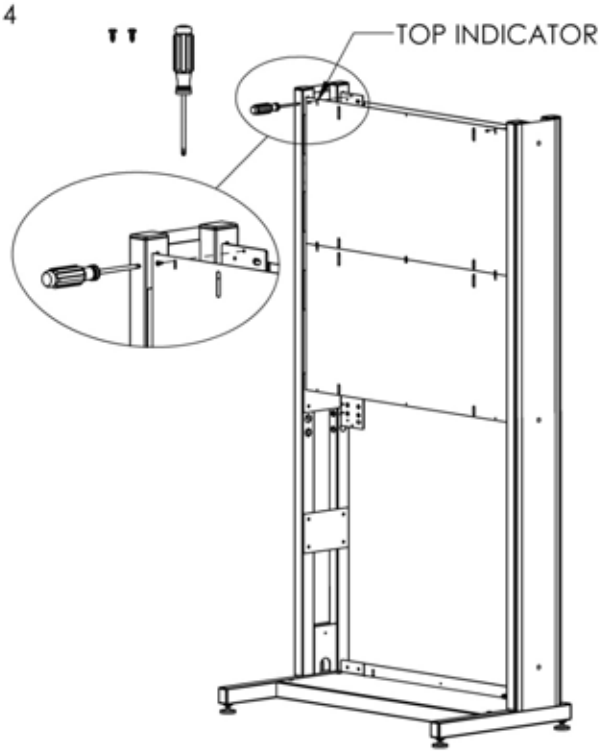

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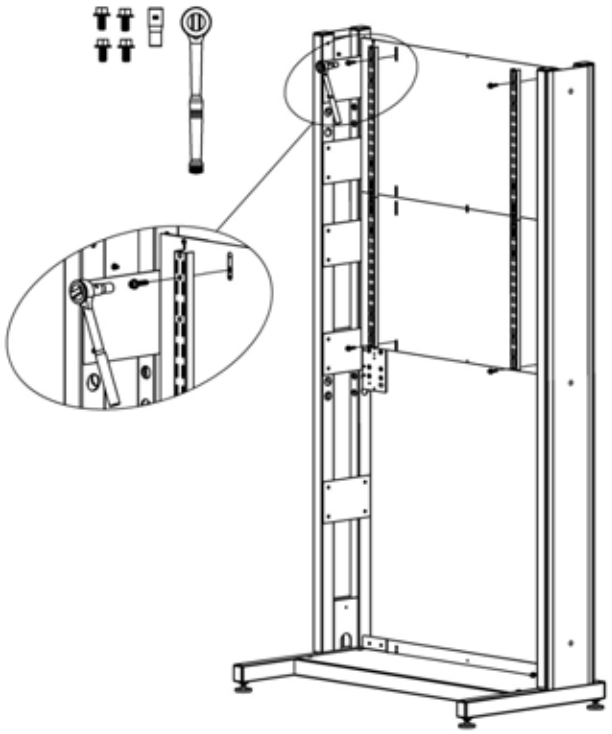

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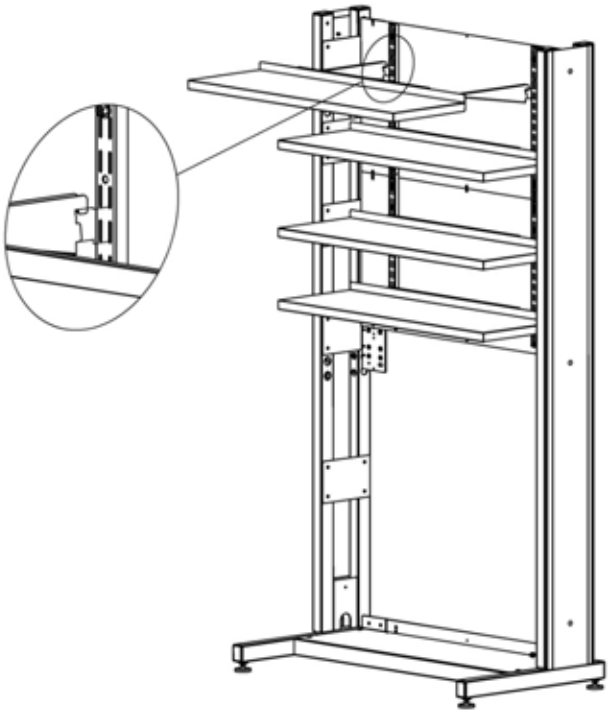
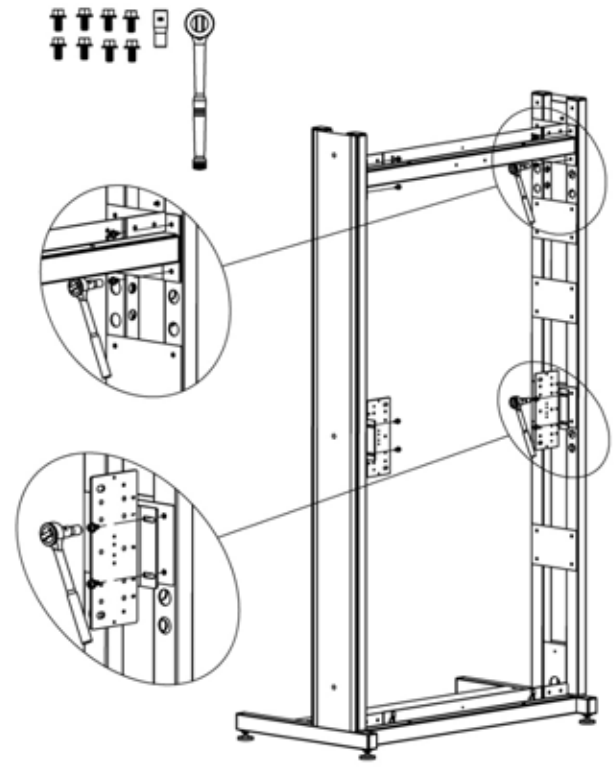


SHLF335 ASSEMBLY Shelves mounted in bottom position

1



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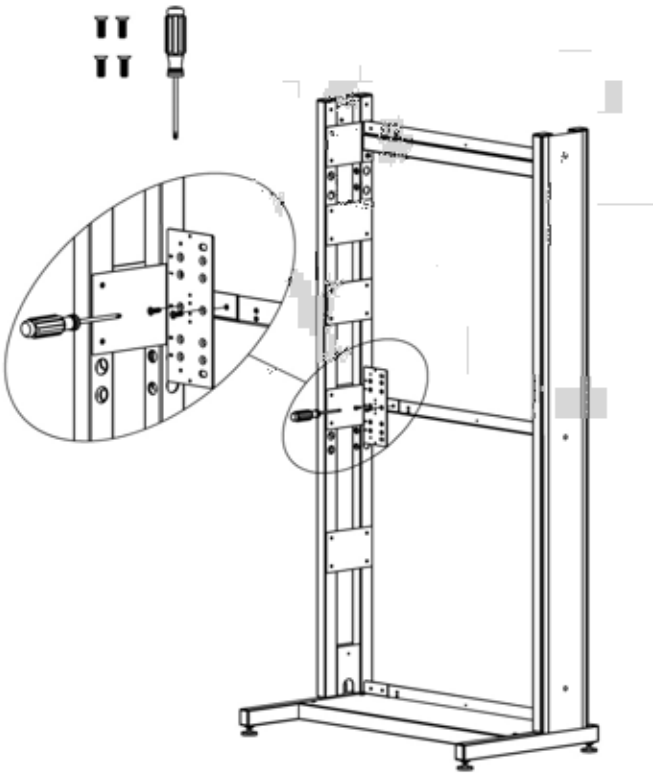

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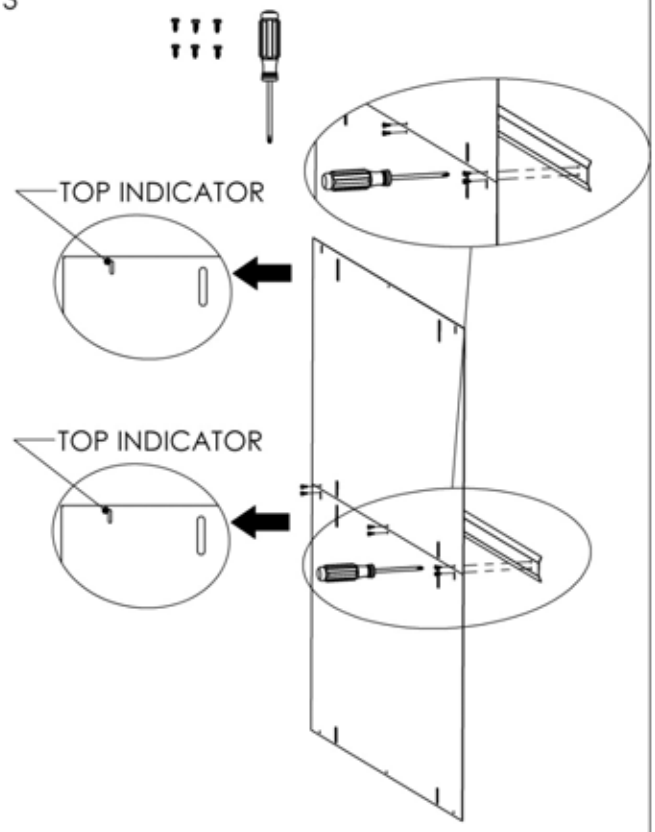

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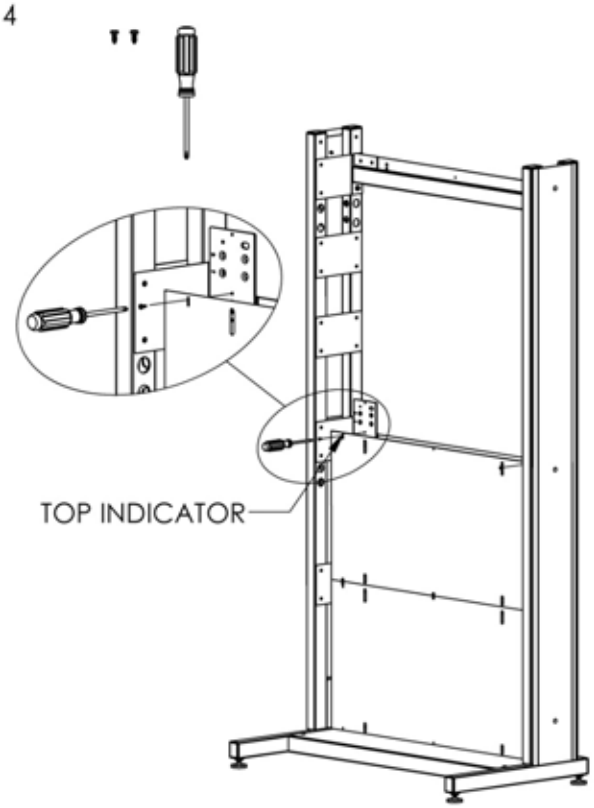

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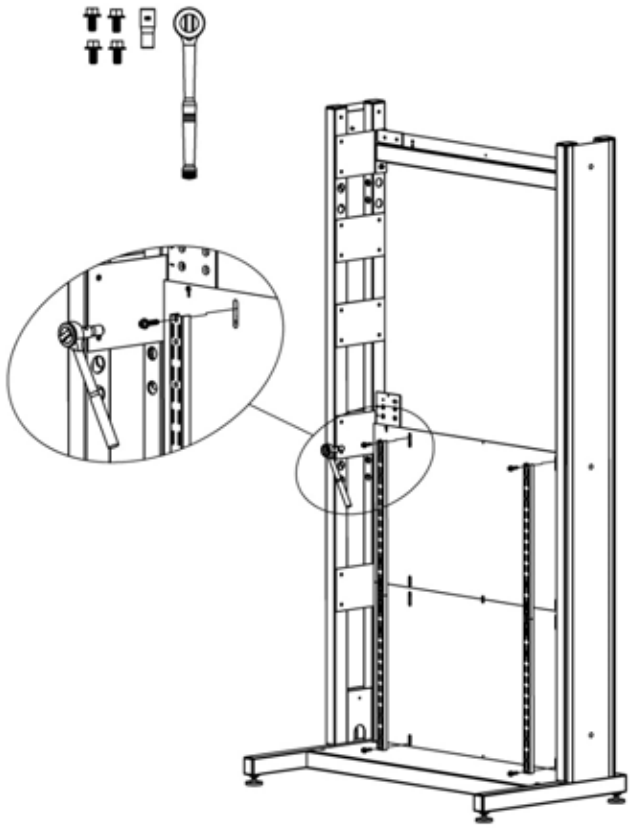

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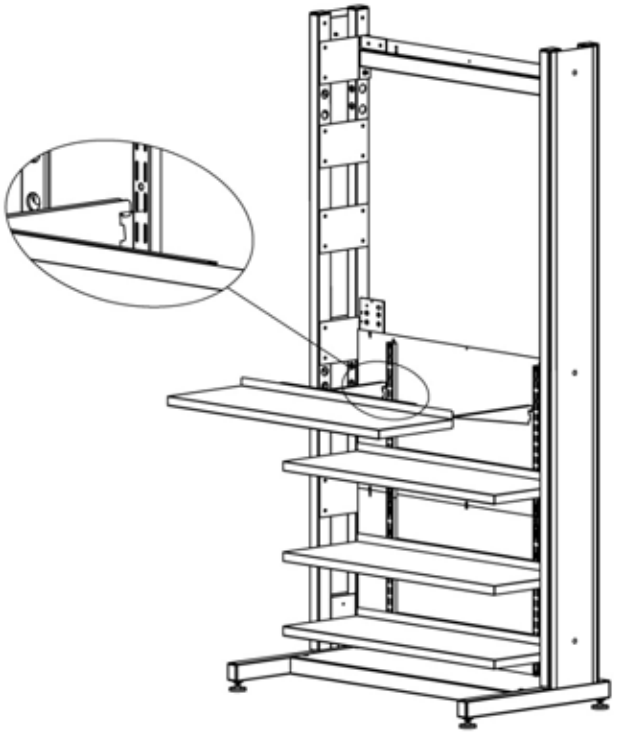
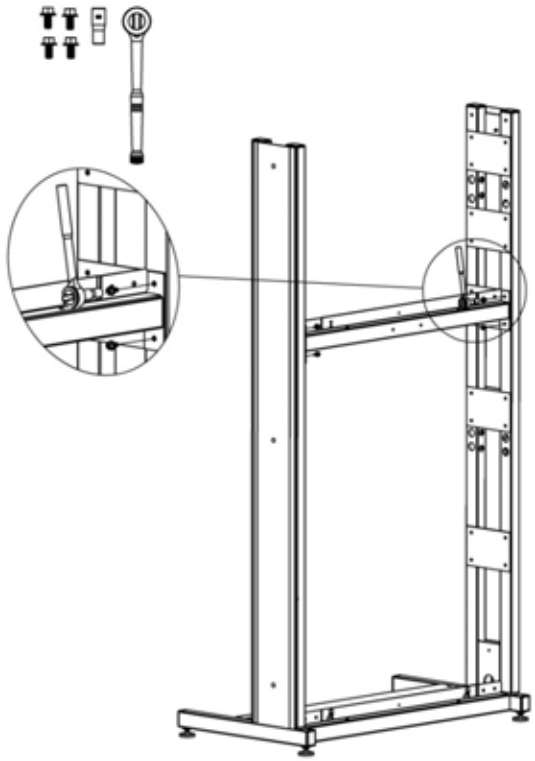


SHLF335 ASSEMBLY Shelves mounted top & bottom position

1



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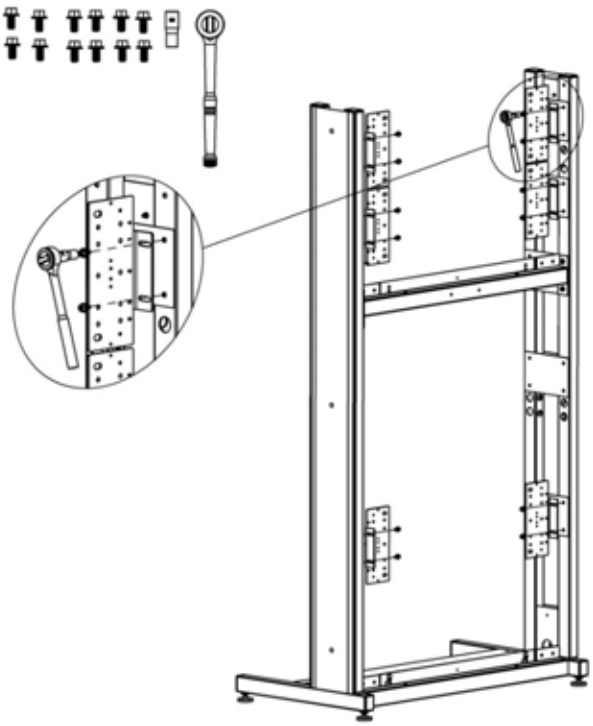

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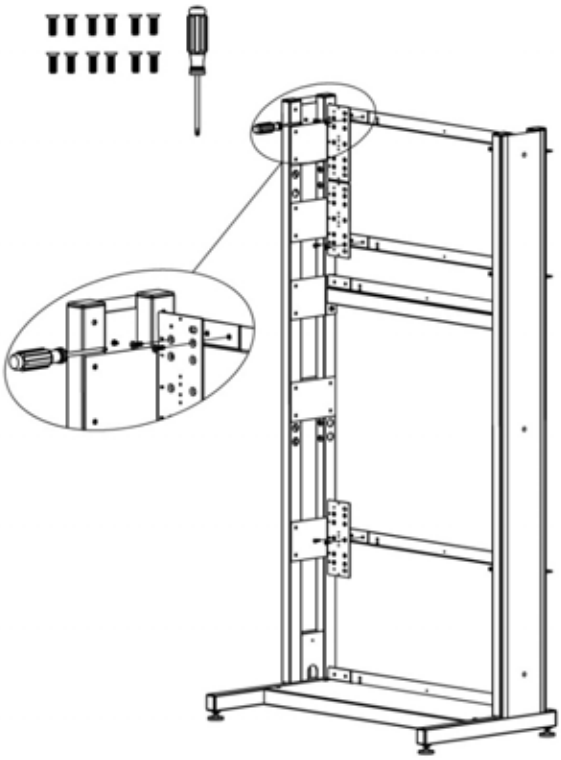

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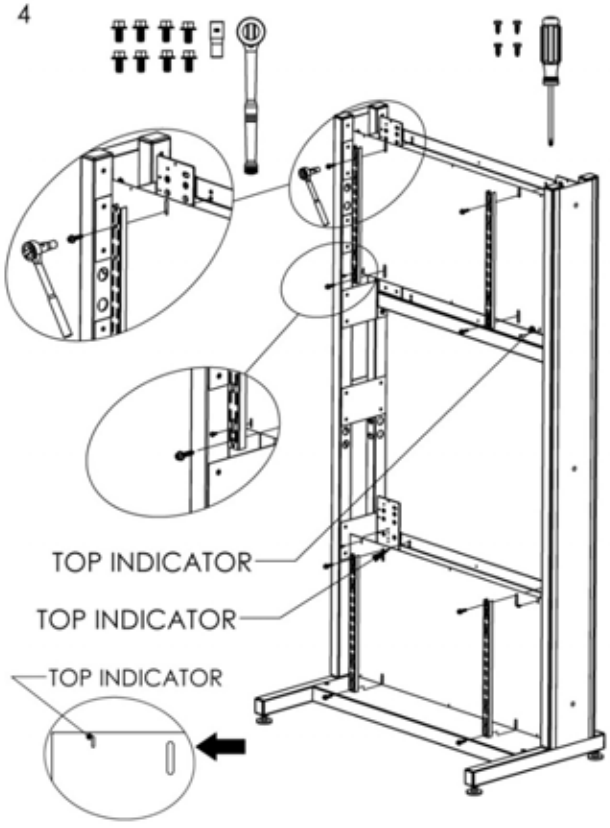

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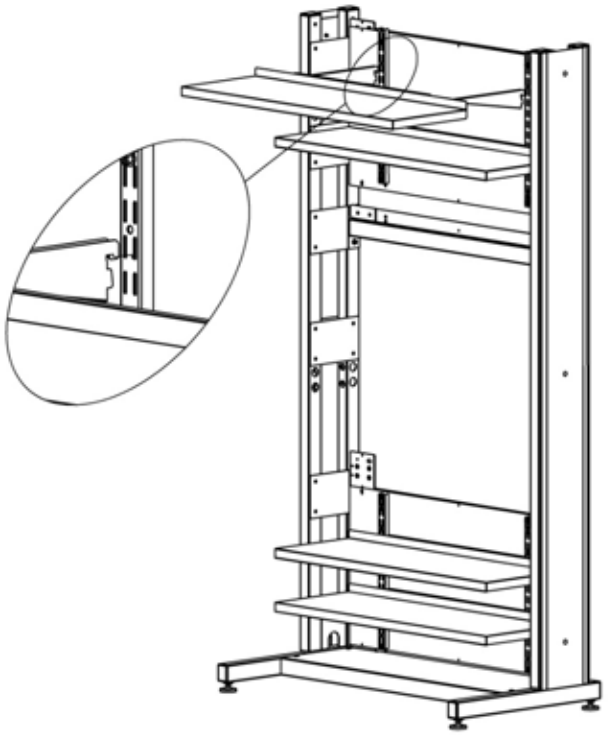
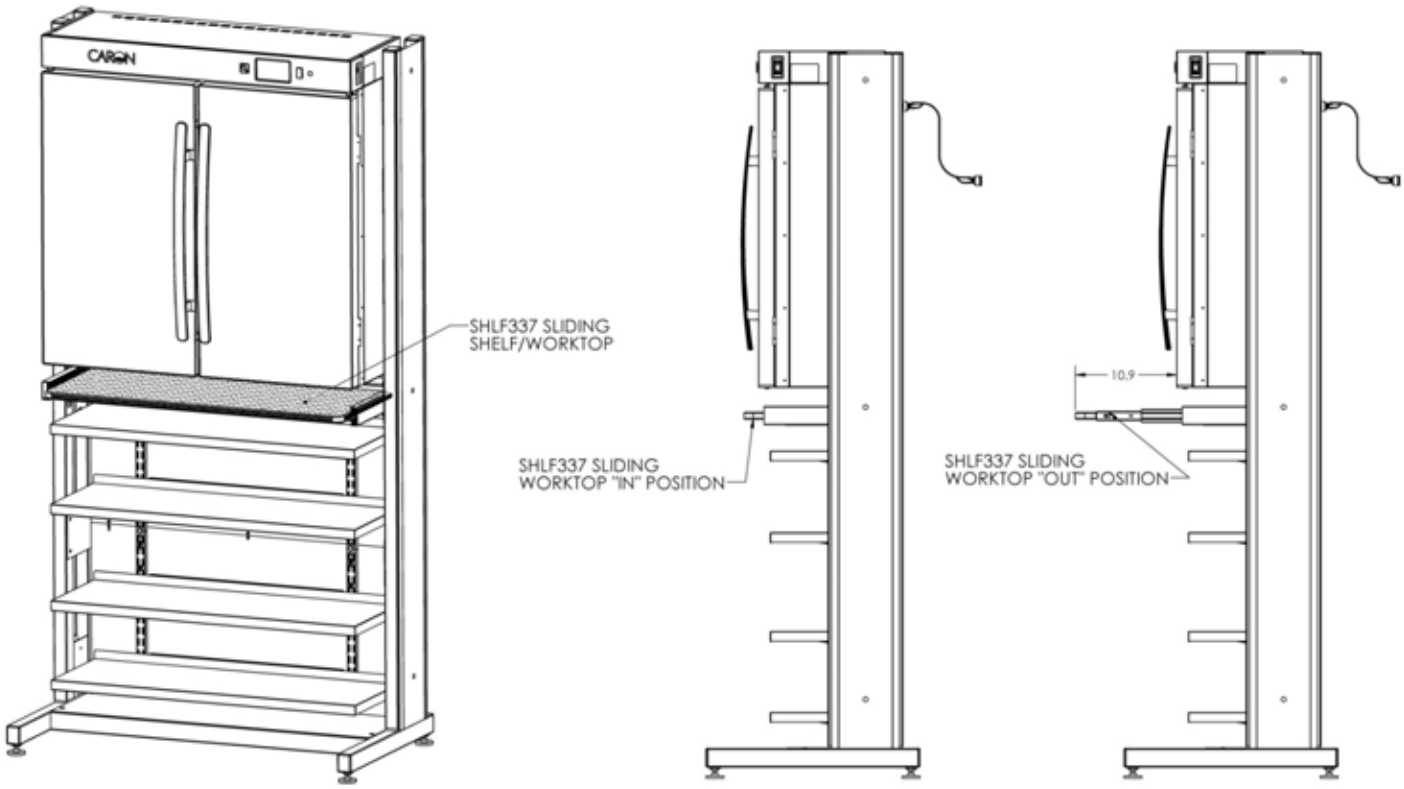


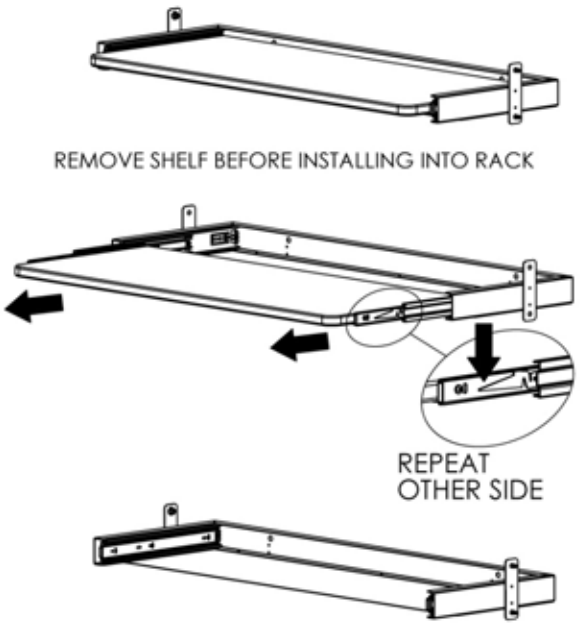
Option SHLF337 Accessory Installation

This accessory requires SHLF335 to be installed in the lower position only. The model 7410/7411 incubator is placed on the top of the rack and allows the user to have a slide out worktop, which can be pushed back out of the way when not in use. This can be installed with Wally already in place on rack.



SHLF337 INSTALLATION

1



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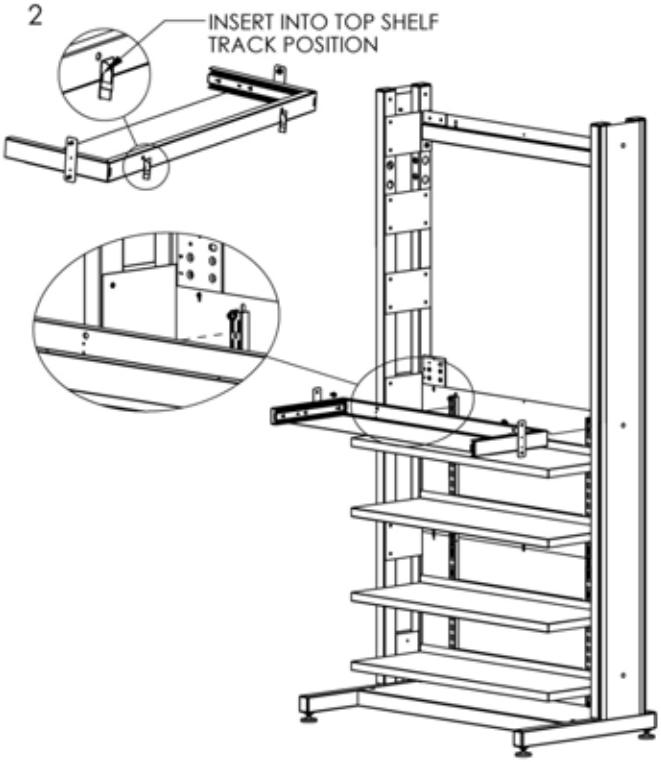

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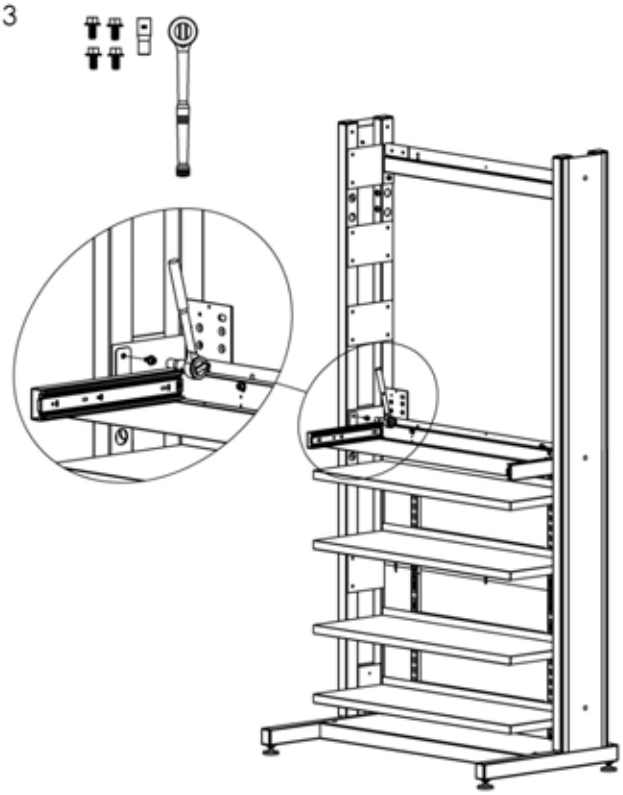

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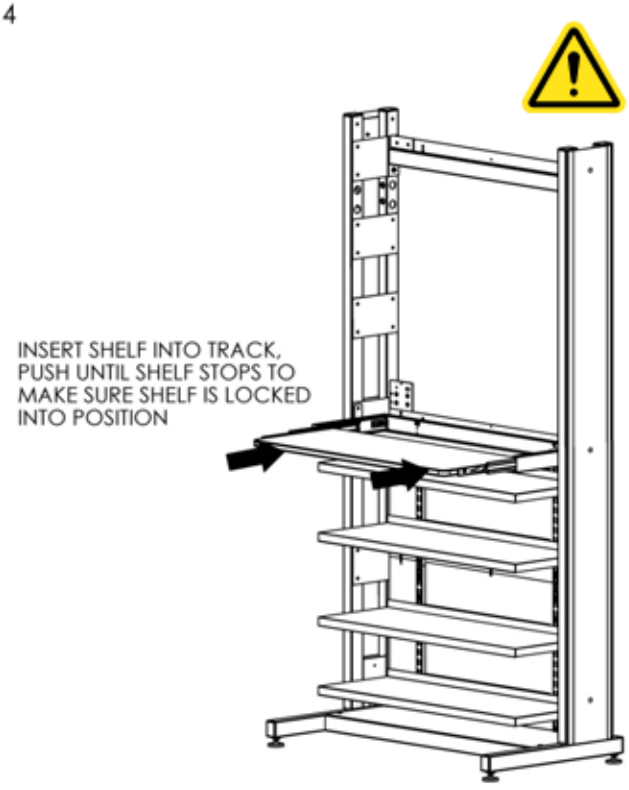
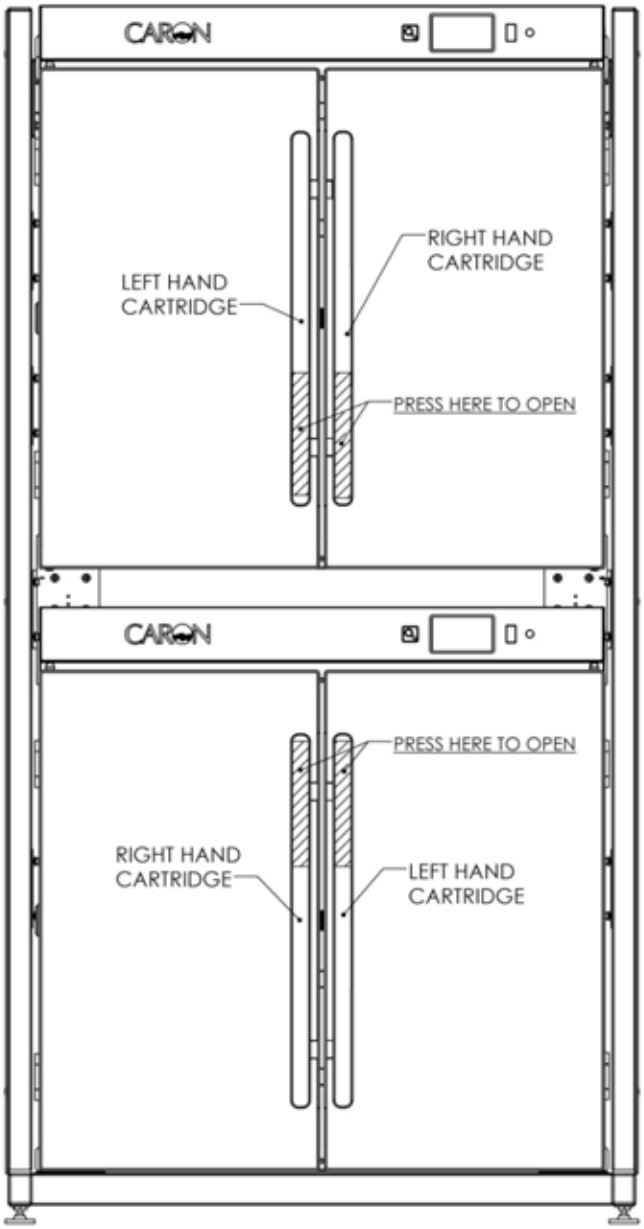


SWAPPING DOOR HANDLES (7410-5 & 7411-5 Models only)

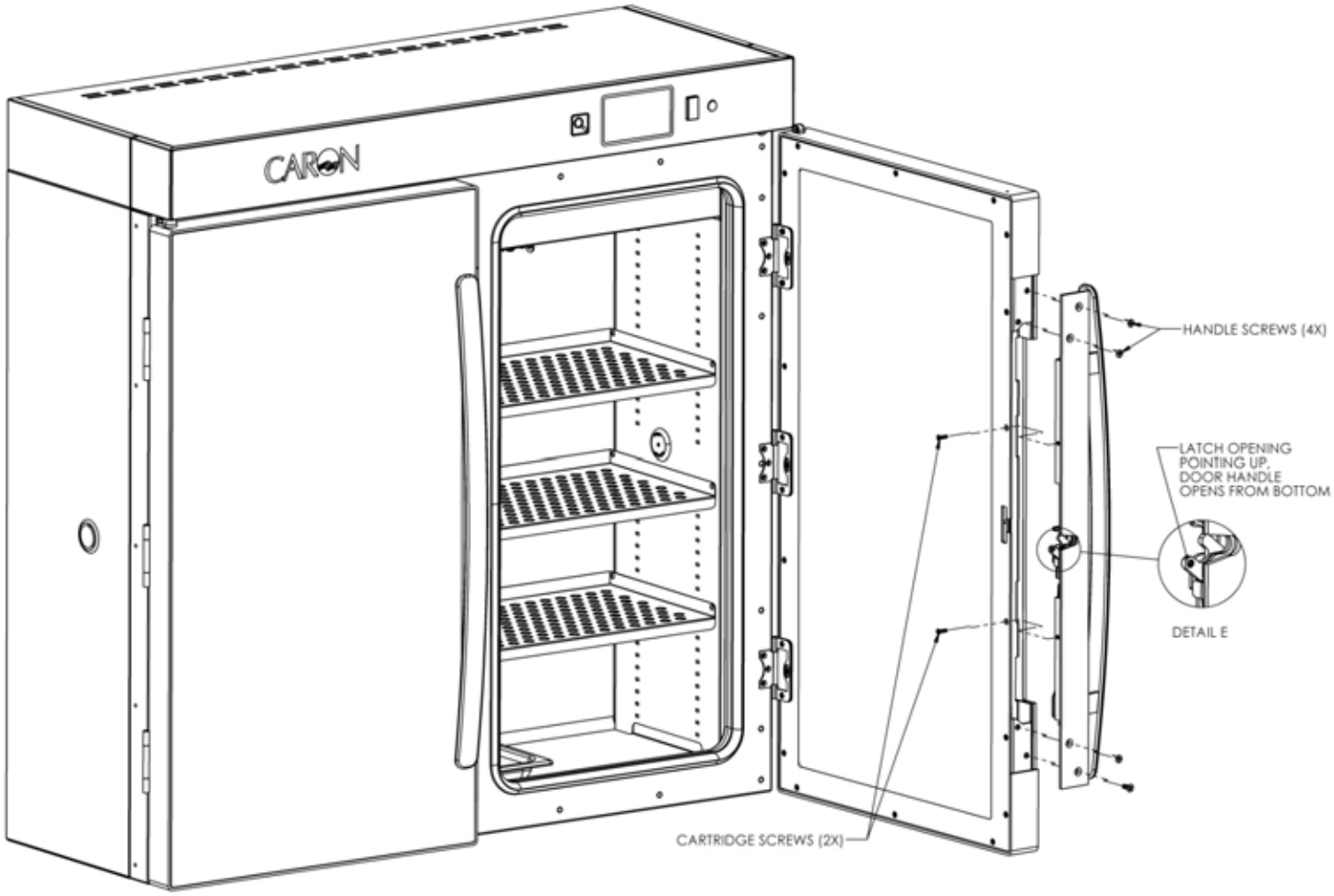
The door handles on Wally can be swapped around to accommodate a top or bottom mount on a RACK300 or RACK301. In this stacked configuration the doors are easier to open. Placing the right hand handle on the left hand door, and the left hand handle on the right hand door, will allow the door to be opened from the top of the unit instead of having it open from the bottom position which is the standard configuration for the door handles.



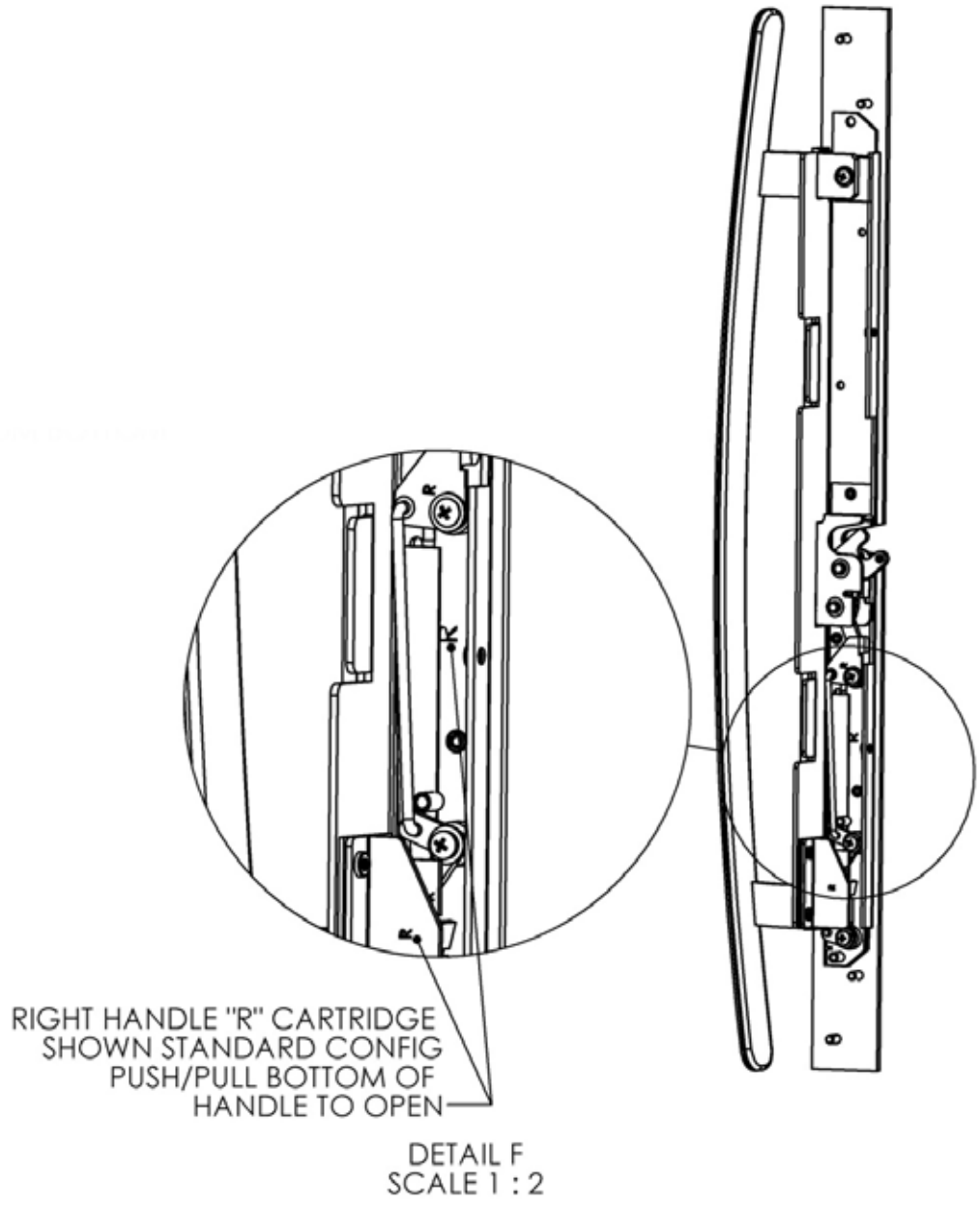
RACK300 OR RACK301
DOOR HANDLE ORIENTATION

Removing the door handle cartridge (7410-5 & 7411-5 Models only)

This handle swapping is a very simple task to complete and only requires a Phillips screwdriver. Open the door, press the door latch in before removing door handle cartridge. Remove the (6) screws that secure the handle in place, then grab the handle and slide the handle cartridge out of the door frame.

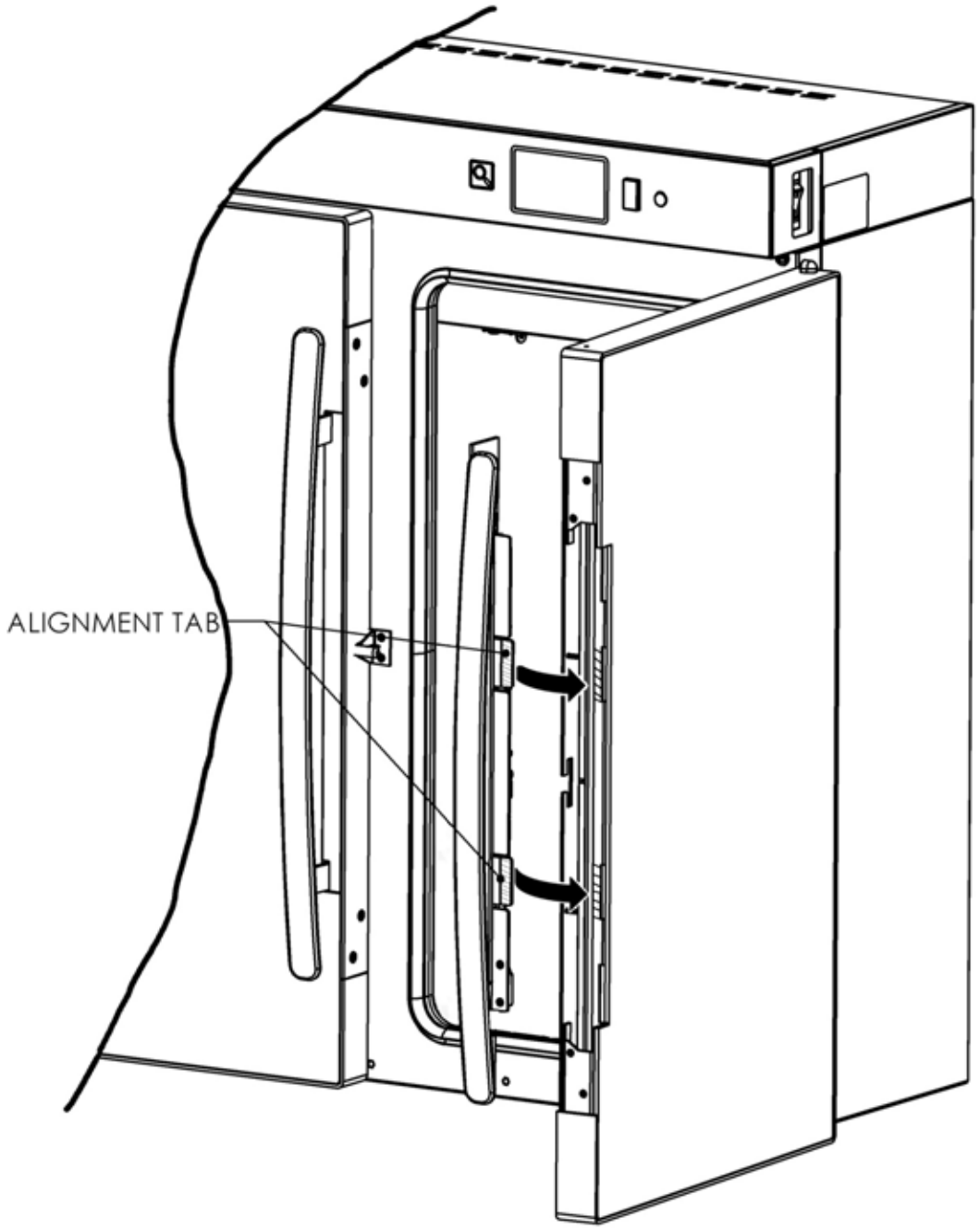


To identify the left / right handles they are clearly marked on the inside. Right hand door handle indicated by “R” marking on inside of handle.

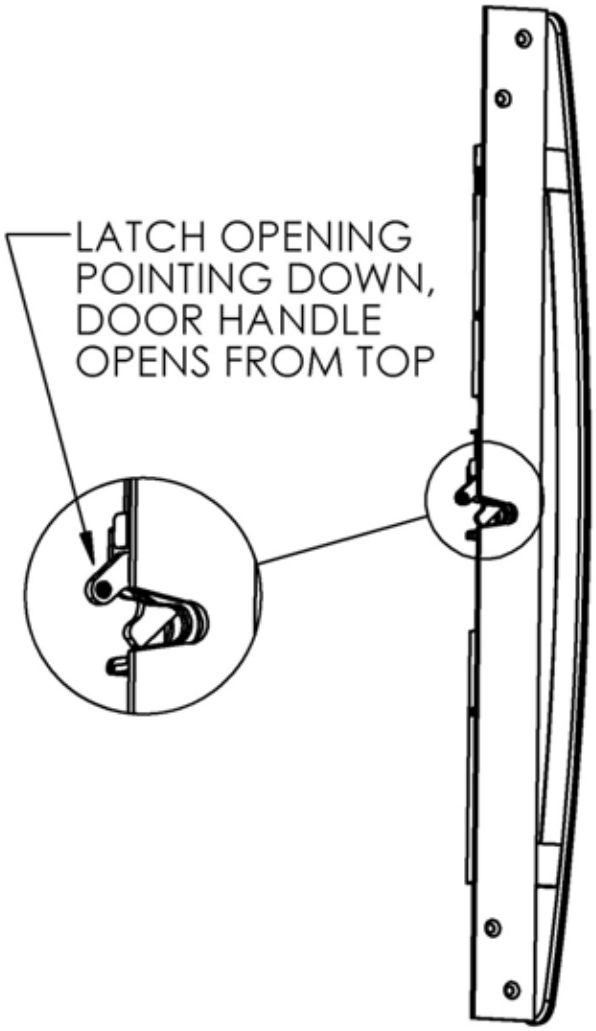


Remove the left handle cartridge from the left side door. The left side handle cartridge is labeled “L” similar to the right handle cartridge.
Flip the right handle cartridge over and insert it into the opening in the left hand door.

To insert swapped handle into door frame, make sure that the alignment tabs slide into the openings indicated on the pic below. Once the handle is in place insert the screws that were removed from the handle cartridge.



Since the left handle cartridge is now in the right hand door, the orientation of the latch opening should point down. Repeat steps to attach right door handle cartridge on left hand door.



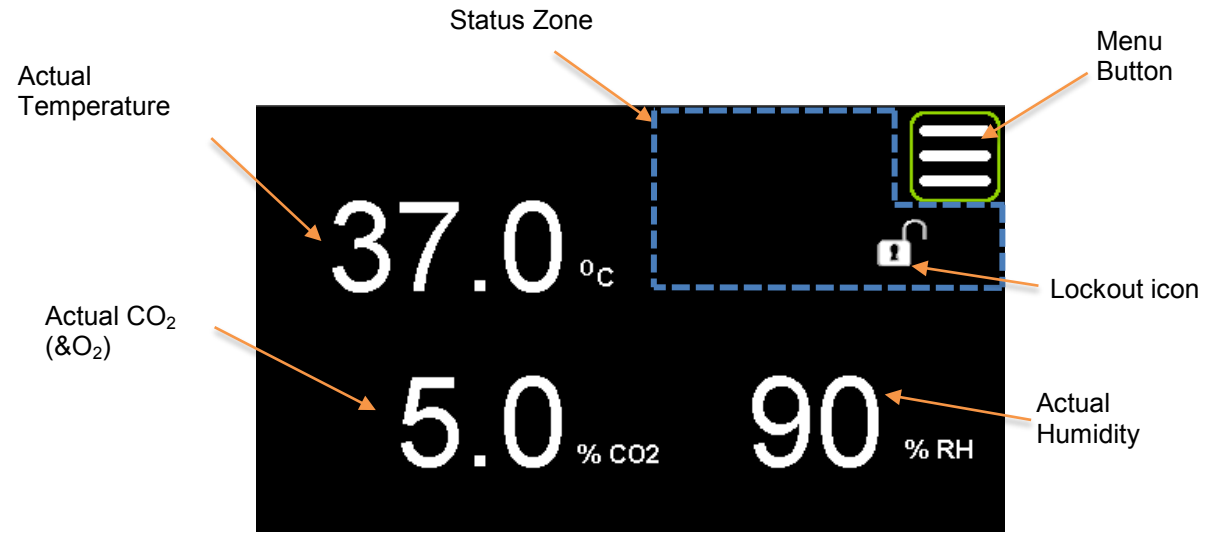
LEFT HANDLE ORIENTATION
FOR A RIGHT HAND DOOR

Section 2

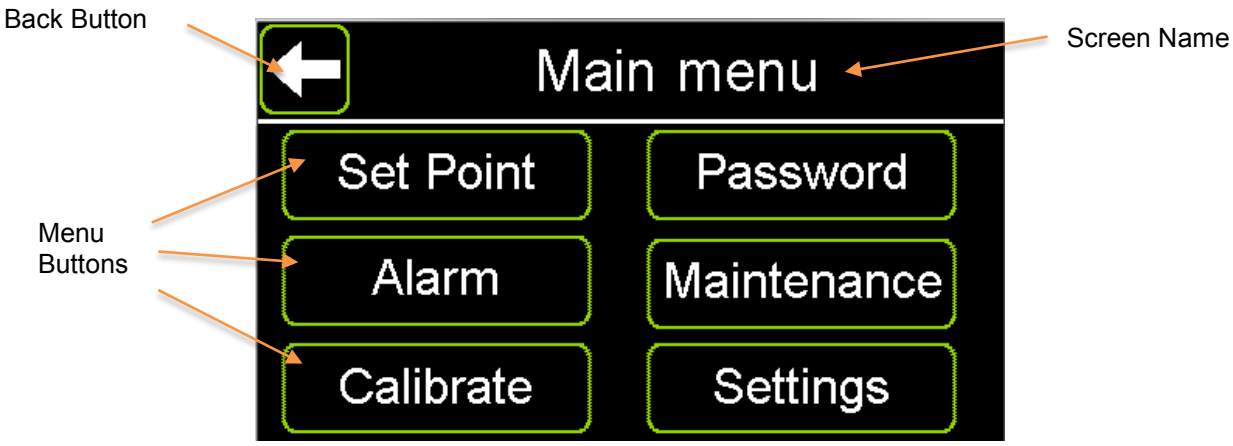
EQUIPMENT OVERVIEW

Congratulations! You have just purchased Wally the latest technology in CO_2 incubators. Before using the equipment, familiarize yourself with key components of the product and thoroughly read this manual.

Color Touchscreen
CO2 Sample Port
Push to open door handles
Access Port
7420-5 SHOWN ON THIS PAGE
HEPA Filter
Adjustable Shelves



(Home Screen)



(Main Menu Screen)

INSTALLATION

Unpacking

Your new unit has been thoroughly packaged to avoid shipping damage. However, the unit should be fully inspected upon arrival before signing for receipt. If the package has visual damage, notes should be made on the freight bill and signed by the delivery company. In the event of concealed damage after the unit is uncrated, keep the carton and packaging material. Call the shipping company within 7 days of receipt, request inspection and retain a copy of the inspection report.

Caron provides full on-site installation services for all models. Our installation services guarantees the proper set-up and startup of all equipment. Please contact the Service Department at 740-373-6809 or www.caronproducts.com for details.

Choosing a Location

Note: All weights listed is with the Wally Incubator empty.

When empty and unboxed, this product weighs around 200 lbs (91 kg). Ensure that sufficient resources are available to safely move it.

This unit is must be mounted to one of the following accessory items listed below. Do not set on a bench or other surface by itself without being secured to one of the racks. Incubator falling over could result in serious injury.

This unit needs to hang on a rack or use wall mount brackets to be supported. It cannot stand alone and does not have leveling feet.
There are 4 different configurations to mount this cabinet:

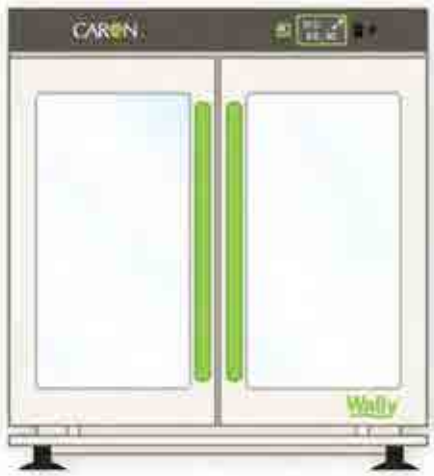
- RACK300 Floor Rack (single sided)
- RACK301 Floor Rack (double sided),
- RACK302 Benchtop
- RACK303 Wall Mount

When loaded and in-use, this product can be heavy. Installer is responsible for adequate fastening and support of fixture.

If the Wall Mount RACK303 configuration is used then the wall needs to be inspected by an architect, engineer to make sure that the wall is capable of supporting up to 220 lbs (100 kg). Special wall anchors and/ or methods of attaching the Wall Mount brackets may be required to reflect integration.

NOTE:
Installation pictures show 7410-5 & 7411-5 units. The 7420-5 incubator installs in the same manner

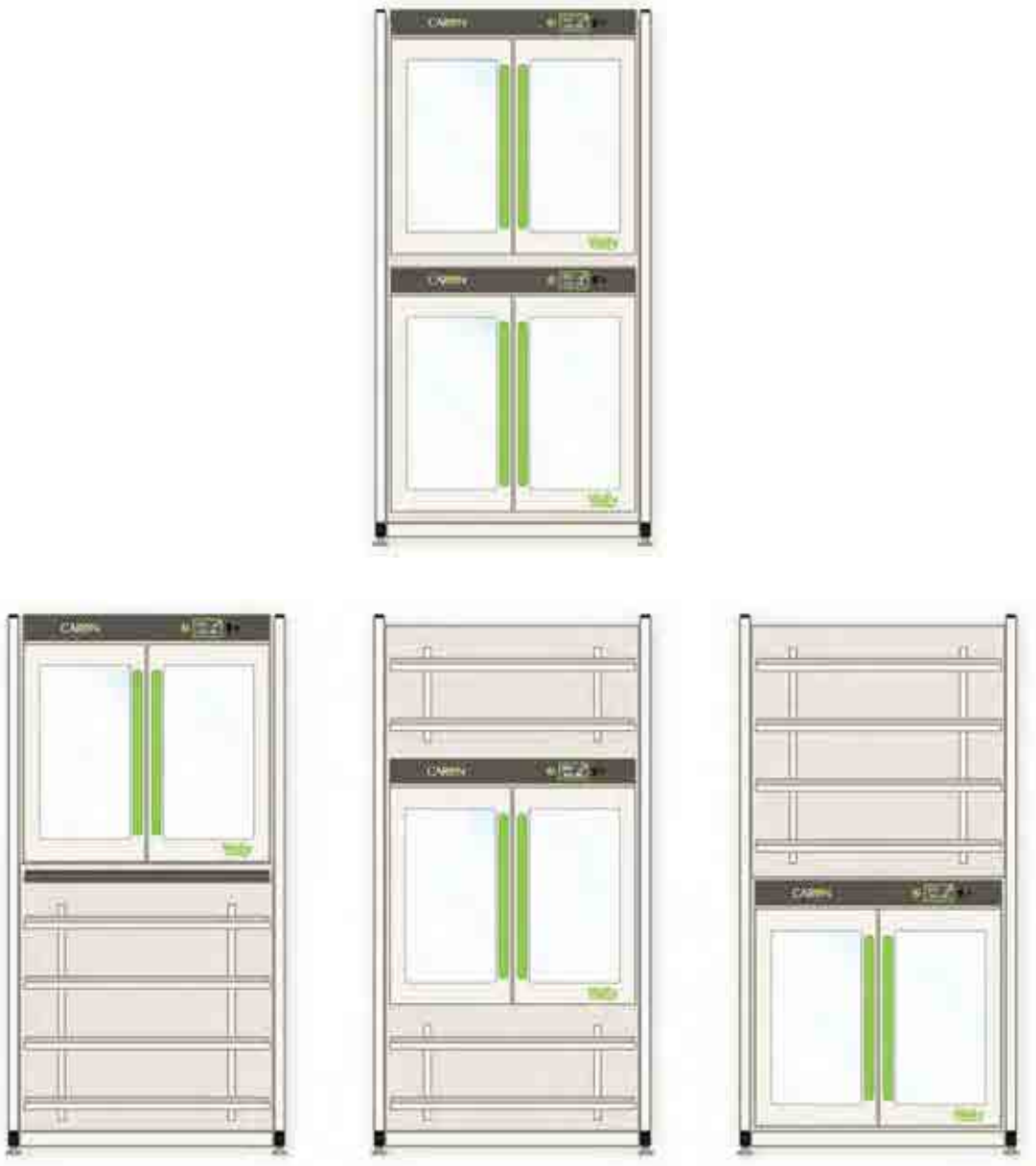
If a Benchtop RACK302 configuration is used then the bench or worktop needs to be inspected by an architect, engineer to make sure that the benchtop is capable of supporting 270 lbs (123 kg).



If a Floor Rack configuration is used, RACK300 (one side) or RACK301 (two side) then the floor space area needs to be inspected by an architect, engineer to make sure that the floor space area is capable of supporting the weight of the frames with units.

- 350 lbs (159 kg) for (1) Wally on RACK300. Up to 550 lbs (250 kg) if RACK300 has (2) Wally units.
- 375 lbs (170 kg) for (1) Wally on RACK301. Up to 1000 lbs (454 kg) if RACK301 has (4) Wally units.

<u>Refer to Section1 for more details on setting up a Wally Rack</u>



RACK301 with Wally shown with option SHLF335 and choices of shelving configurations.

To ensure proper operation, the unit must be located on a firm level surface and/or level on a wall. The unit should be located in an 18°C – 25°C ambient area and where there is no direct airflow from heating and cooling ducts as well as out of direct sunlight. Allow 4" (10 cm) of clearance on all sides of the product to allow for connections and airflow. Attach tether strap to rack and building wall to prevent unit from tipping, RACK301 can be top heavy if Wally is mounted on the top part of the rack. Refer to page 20.

The unit requires a dedicated electrical connection.
Power requirements vary depending upon the incubator model, see Connecting Electrical Power section.
Choose a location where these facilities are, or can be made available.

Preliminary Cleaning

Your new incubator was thoroughly cleaned prior to leaving the factory. It is recommended, however, to clean all interior surfaces with a general purpose laboratory cleaning agent to remove any shipping dust or dirt prior to using the product.
Use only isopropyl or ethanol type cleaners/ wipes on interior surfaces.
Dry all interior components with a sterile cloth as necessary.

Use only isopropyl or ethanol type cleaners/ wipes on interior surfaces after using Caron STER301 H2O2 Sterilization Module. High concentrations of Hydrogen Peroxide can cause stainless steel to have blemishes

If unit has a surface that contains signs of rust, clean right away to keep interior chamber clean from becoming contaminated.

Do not use citric acid type cleaners on any painted surfaces. Do not use aggressive solvent cleaners, Sodium Hypochlorite (bleach) on interior surfaces, or exterior surfaces, these chemicals can cause pitting in stainless steel.

If there are any questions regarding compatibility of cleaning agents that should be used.
Contact Caron Service Department at 740-373-6809 or www.caronproducts.com for details.

Installing HEPA Filter

This incubator has a HEPA filter to provide a clean air environment. The HEPA filter is located inside the chamber, and needs to be installed. To install HEPA filter, press the black buttons on the ends of the filter housing. The filter housing will drop down out of the plenum.

Remove HEPA filter from packaging and install with black gasket facing up as shown.

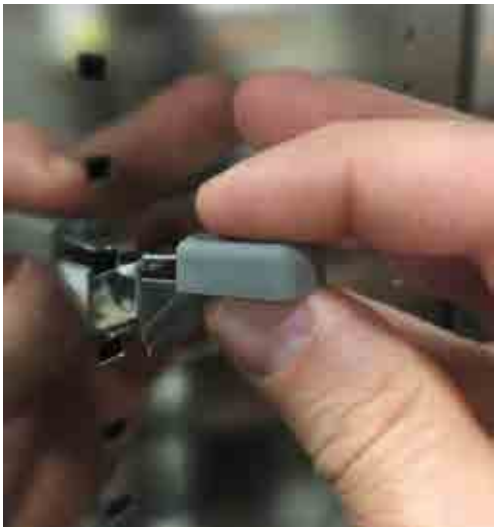
Align black button tabs to openings in plenum and press firmly into place.

Installing the Port Stopper

The incubator has an access port built into the left side of the cabinet. The port is designed to allow customer access for equipment validation and for installation of other equipment inside the chamber. This port should be sealed with the provided stopper to allow the incubator to function properly. Install the stopper provided in the port on the left side of the unit.

Installing the Shelves

Each new incubator includes three perforated stainless steel shelves. Each shelf requires 4 shelf clips for installation. Prior to installation, take time to consider what the height of the product being placed in the incubator will be and set the shelf spacing accordingly. Additional shelving (SHLF334) can be purchased through CARON customer service if necessary.



To install the shelf, slide back the grey rubber pad on the shelf clip and insert the clip into the rectangle cutouts on the side wall of the incubator.
Then press the grey rubber pad into place against the side wall.
Slide shelf in door opening and shelf rests on top of clips.

Each shelf is capable of supporting a uniformly distributed load of 13 lbs / 6 kg . The maximum incubator capacity is 52 lbs / 24 kg.

Leveling the Unit / Rack

RACK301/RACK302 Floor Rack and RACK302 Benchtop configurations have adjustable pads to level the unit. Load the incubator onto the rack before making leveling adjustments to ensure that incubator is level.
RACK303 Wall Mount: level during the installation of the wall mount bracket.

Filling Humidity Pan (Standard)

Use only distilled or deionized water with a resistivity between 50KΩ-CM and 1MΩ-CM and a pH of greater than 6.5. Using water outside this range will void your warranty.

Do not use water that contains chloramines. Chloramines can damage internal rubber gaskets resulting in leaks.

The standard unit comes with a humidity pan that sits on the floor of the incubator. To fill pan with water either remove the pan from the incubator or leave the pan inside the incubator.

Connecting the Water Supply (Optional HUMD310 only for 7410-5 & 7411-5 units)

To ensure proper operation, distilled or deionized water is required as a supply on units that have humidity control.

A one-touch water inlet fitting on the back of the unit and ¼" blue tubing are provided to connect the water supply to the incubator. Connect an appropriate water supply to the fitting. Incoming line pressure should be regulated to not exceed 80 psi (5.5 bar).

Connecting a CO_2 supply

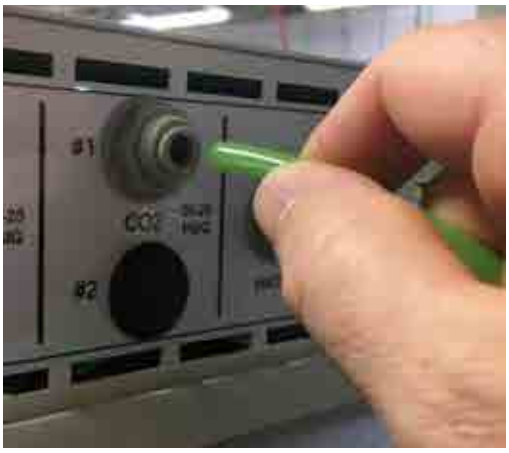
High concentrations of carbon dioxide can cause asphyxiation. The use of CO_2 monitors and alarms is recommended for areas where CO_2 can collect.

The CO_2 gas supply should be 99.5% pure and should not contain a siphon tube. Gas pressure to the unit must be regulated to 15-20 psi (1.0- 1.4 bar). Failure to do so could cause tubing to burst.

The CO_2 supply should be 99.5% and not have siphon tubes. CO_2 pressure should be regulated to 15-20 psi (1.0-1.4 bar). CO_2 tank regulators can be purchased through CARON customer service. Once the cylinder regulator is installed, connect the outlet of the regulator to the hose barb fitting using the tubing and clamps provided. An inline HEPA filter is provided to remove any contaminants in the CO_2 gas supply. Check the connections closely for leaks.

If the unit is equipped with a built in gas guard system, there will be 2 gas inlets. Each of the inlets should be connected to an individual gas tank as described above.

To connect the CO_2 supply, locate the one-touch CO_2 inlet fitting on the back of the unit connect with the ¼" green tubing, or use a one touch to hose barb fitting and adapt to a soft hose.



N_2 Connection

Low levels of oxygen can cause suffocation. The use of O_2 monitors and alarms is recommended for areas where N_2 is used to suppress oxygen

The N_2 gas supply should be 99.5% pure and should not contain a siphon tube. Install a 2 stage gas pressure regulator with a maximum adjustment of 25 psi (1.7 bar). Inlet pressure must be regulated to 15 psi (1.0 bar).

The N_2 supply should be 99.5% and not have siphon tubes. N_2 pressure should be regulated to 15-20 psi (1.0-1.4 bar). N_2 tank regulators can be purchased through CARON customer service. Once the cylinder regulator is installed, connect the outlet of the regulator to the hose barb fitting using the tubing and clamps provided. An inline HEPA filter is provided to remove any contaminants in the N_2 gas supply. Check the connections closely for leaks.

If the unit is equipped with a built in gas guard system, there will be 2 gas inlets. Each of the inlets should be connected to an individual gas tank as described above.

Connect N_2 the same way that CO_2 connections are made. A one-touch N_2 inlet fitting on the back of the unit and ¼" yellow tubing, or use a one touch to hose barb fitting and adapt to a soft hose.

Connecting Electrical Power

Connect each incubator to a grounded circuit.
Failure to do so could result in electrical shock.

The unit requires a dedicated electrical outlet. See table below for model specific power required and connection.

Model #	Power Requirements	Plug Connection
-1	115V, 60Hz, 5A FLA	NEMA 5-15
-2	230V, 60Hz, 2A FLA	NEMA 6-15
-3	230V, 50Hz, 2A FLA	CEE 7/7

When the required electrical connection is available, plug the provided power cord into the unit and the electrical outlet.

Do not use other type of detachable MAINS cord with an inadequate RATED cord(s). Use Mains cord provided with unit or it could result in personal injury or fire.

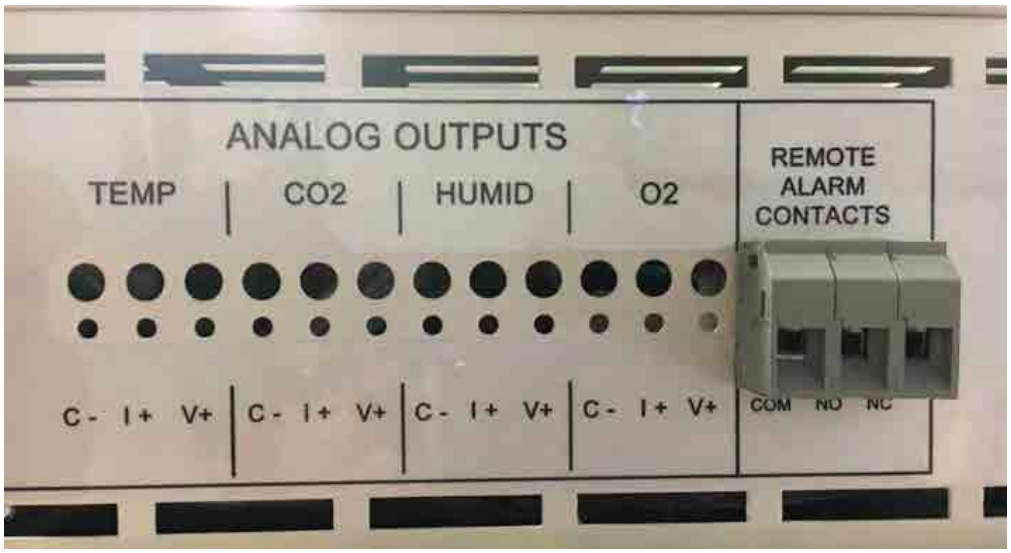
OPTIONAL ACCESSORY INSTALLATION

Connecting Alarm Contacts (ALRM302)

With the purchase of ALRM302, a set of terminals on the rear of the unit is provided to monitor temperature, humidity, CO_2, & O_2 alarms.

With the alarm contacts, the terminals provided allow for a NO (normally open) output, a NC (normally closed) and COM (common) connection. In the event of an alarm condition or power failure, the NO contact will close, and the NC contact will open. Once the alarm is cleared, the contacts return to their normal conditions. Insert the appropriate wire into the terminal and tighten down the screw terminal on top of the connector.

Terminal Connection	Unit off	Normal	Alarm
N/O to C	Closed	Open	Closed
N/C to C	Open	Close	Open



Installing Carboy Water System (BOTL302)

The optional 4 liter carboy water system is preassembled and shipped with the chamber. This carboy sits on top on the Wally Incubator and provides water for the HUMD310 Controlled Humidity option.

Squeeze the flow restriction clamp, fill the carboy with water as described in the “connecting a water supply” section of the manual. Connect the preassembled tubing provided with the carboy to the water inlet on the rear of the incubator. Release flow restriction clamp.

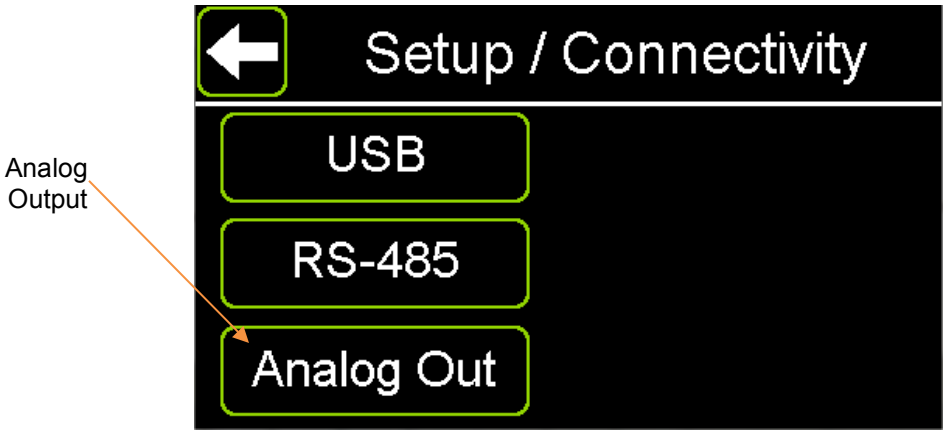
Connecting Analog Outputs (OUTP302, OUTP303, OUTP304)

With the purchase of OUTP302, OUTP303 or OUTP304, the controls are equipped with analog outputs.
OUTP302 provides 2 connections for monitoring temperature and CO_2.
OUTP303 provides 3 connections for monitoring temperature, CO_2 & humidity (or O_2).
OUTP304 provides 4 connections for monitoring temperature, CO_2, O_2 & humidity.

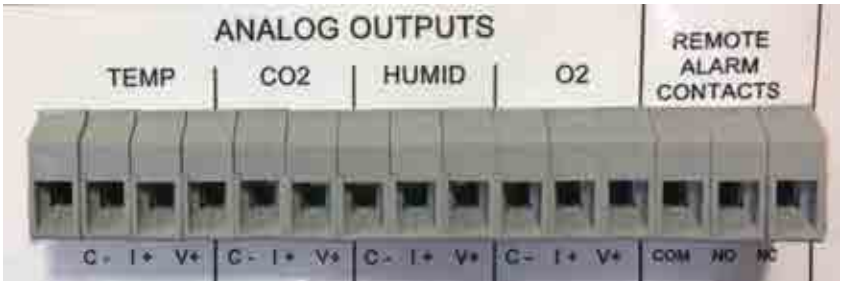
Analog outputs provide either a milliamps (4-20mA) or voltage (0-5V) signal output to represent each of the displayed temperature, humidity, CO_2 and suppressed O_2 values. These options can be used for connection to in-house data acquisition, recorder, or alarm system. The temperature parameter (only) is adjustable in its scaling and is accessible through the Main Menu / Settings / Setup / Connect / Analog Out screen.

Parameter	Analog Output	Current	Corresponding Value
Temperature	0 – 5 V	4-20 mA	-50 – 100 °C (adjustable*)
Humidity	0 – 5 V	4-20 mA	0 – 100 %RH
CO_2	0 – 5 V	4-20 mA	0 – 20 %CO_2
O_2	0 – 5 V	4-20 mA	0 – 21 %O_2

*Default range is -50 to +100C. Temperature scale low range is adjustable from -50 to 0C. Temperature scale high range is adjustable from 1 to 100C.



Connect shielded wires to the appropriate signal terminals: I(+) for current (mA) or V(+) for voltage (DC). For both current and voltage outputs, C(-) is common terminal.



OPERATION

Before the Wally incubator can be commissioned for use, make sure that the following items have been completed:

- Chamber is mounted to RACK300, RACK301 RACK302 or RACK303.
  Refer to Section1 for more details on setting up a Wally Rack

- The appropriate utilities connected to the chamber.

With the above mentioned steps complete, the power switch located on the right side, near the top of the unit exterior, can be turned on.

The following steps apply to the 7410-5 & 7411-5 models only

If chamber is mounted in a lower position on RACK300 or RACK301, make sure that door handles have been flipped for ease of operation.

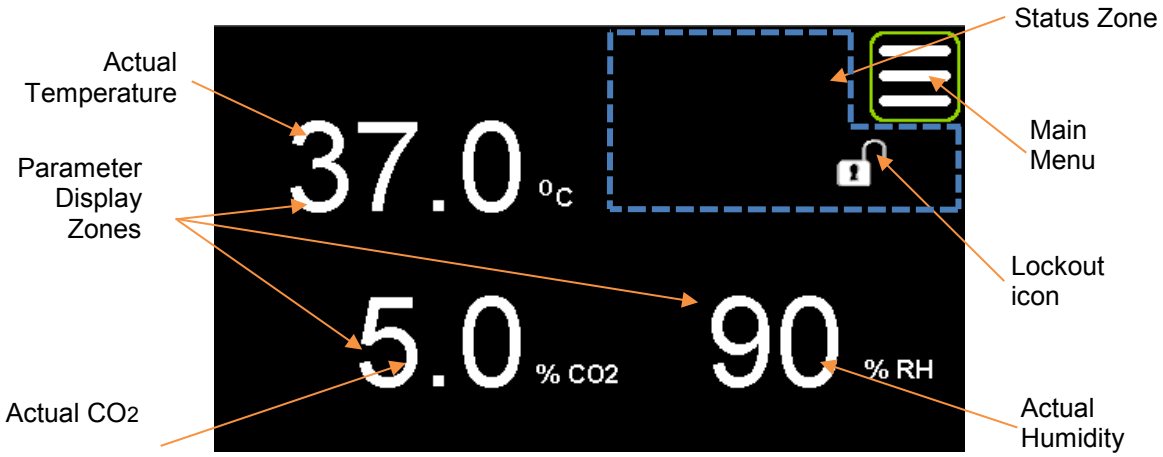
Refer to the cling located on the door explaining how the doors open and close.

The chamber has thermal Gel in the glass panels which looks like “ice or frost” and is opaque when the unit is first turned on. The chamber will have to run overnight or about 12 hours before doors start to become translucent.

When the chamber’s setpoint become stable it can be used for cell culturing and can be commissioned for use, however, you will not get the benefit of the unit’s power loss protection if the thermal Gel is not fully melted.

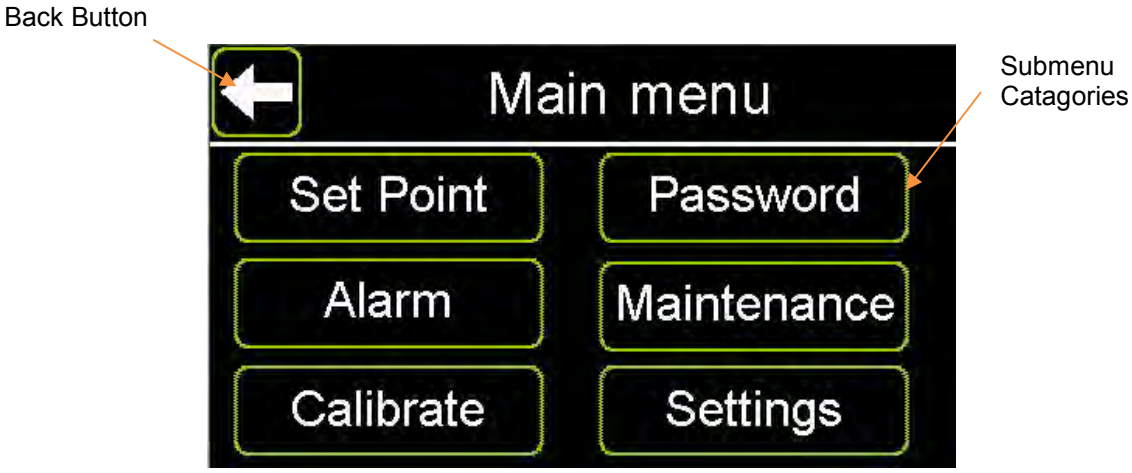
When the doors are fully translucent, the unit’s thermal protection is at its peak.

Within a few minutes, temperature and humidity will begin to approach setpoint. Here is an overview of the home screen



(Home Screen, CO_2)

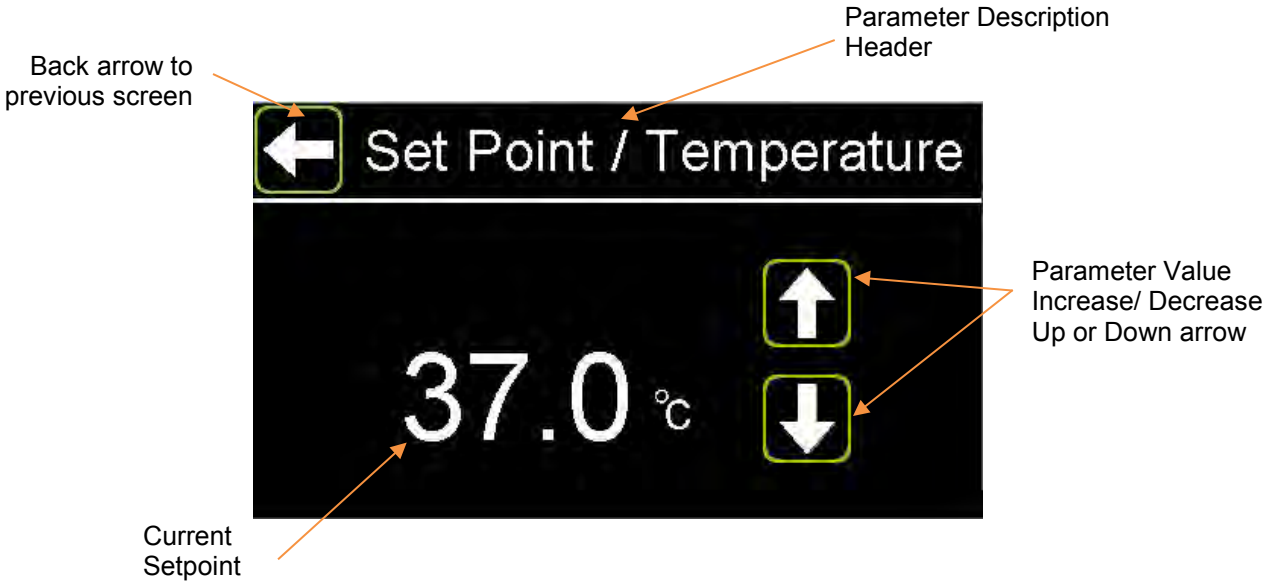
(Home Screen, O_2)



(Main Menu Screen)

Changing Parameters

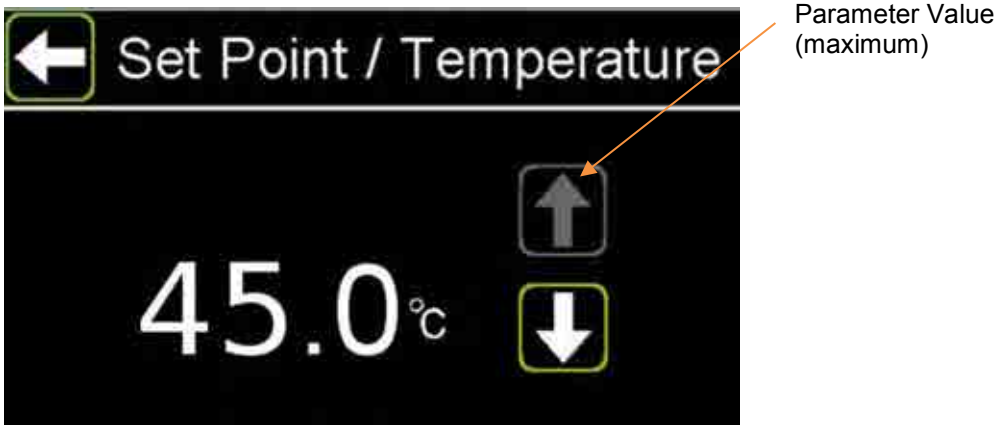
This control system interface uses touch to enter all parameter values. When any button is pressed, the value displayed will scroll up or down on the current display.



The Parameter Description Header describes what parameter is about to be changed.

Press the Up arrow or Down arrow to scroll up or down to the desired parameter value. Holding down on the Up or Down arrow buttons allows the numerical values to increase from 1's, 10's to 100's.

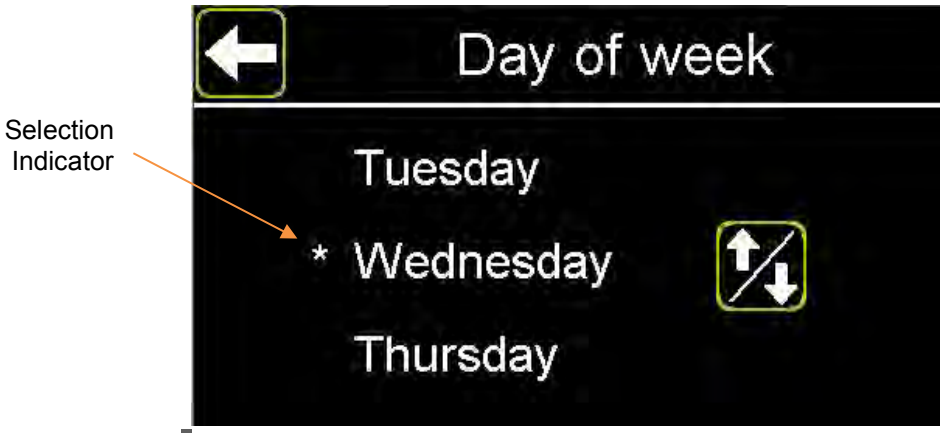
When scrolling Up or Down and once the maximum parameter value for that parameter is reached, the Up or Down arrow icon will change from white to a greyed-out icon indicating that there are no other choices beyond that point.



When the parameter value is reached, pressing the Back arrow to the previous screen saves that value.

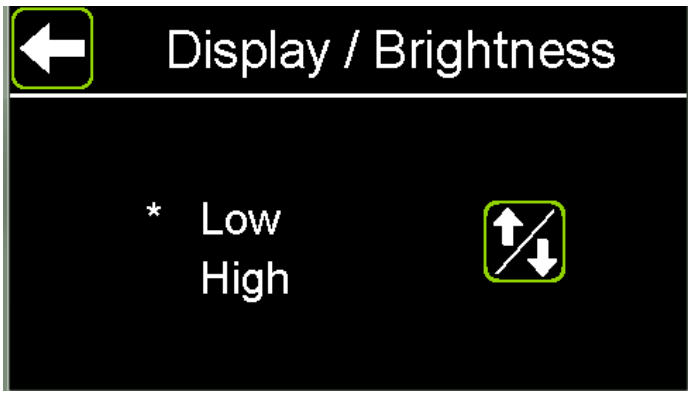
Note: If the user decides not to change any values after 2 minutes, the screen returns to the Home Screen. If any values were changed and the Back arrow was not pressed, the changes will not be saved and after 2 mins of inactivity the screen will return to the Home Screen.

Another method of selecting parameters is by pressing the Up/Down button.
The available choices scroll to the end of and then change direction allowing the user to select the desired parameter value.



Changing the Display Brightness / Screen Saver

To save power and ensure long product life, the touchscreen display has a few features that can be changed to reduce screen brightness and initiate a Screen Saver mode Display Brightness and Display Saver can be changed under the Setup Menu.



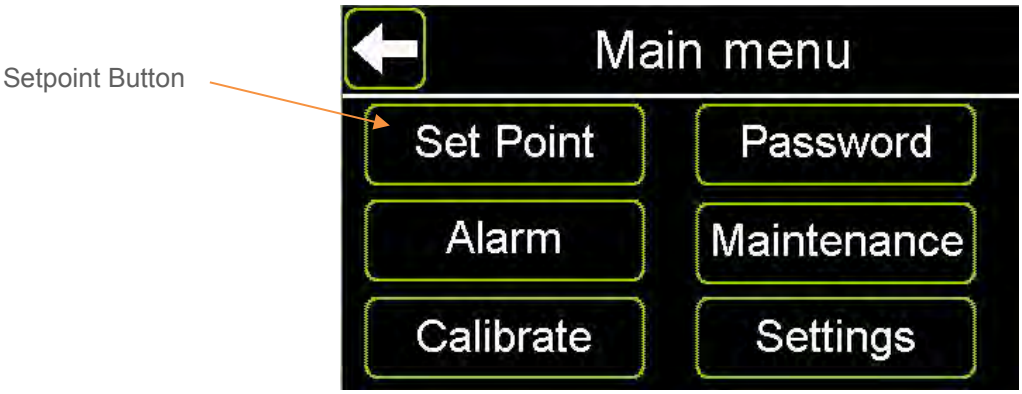
By pressing the Screen Saver button “on” this will automatically enter screen saver mode after 15 minutes. At this time, the screen will be completely blank (ie. black). The illuminated Caron logo (see Equipment Overview section) shows that the unit is powered on and functioning. To wake-up the touchscreen, simply press anywhere on the touchscreen and the main screen will display. If the unit has an alarm condition, the

touchscreen will not go into screen saver mode. If an alarm condition occurs while in screen saver mode, the display will automatically wake up and display the alarm.

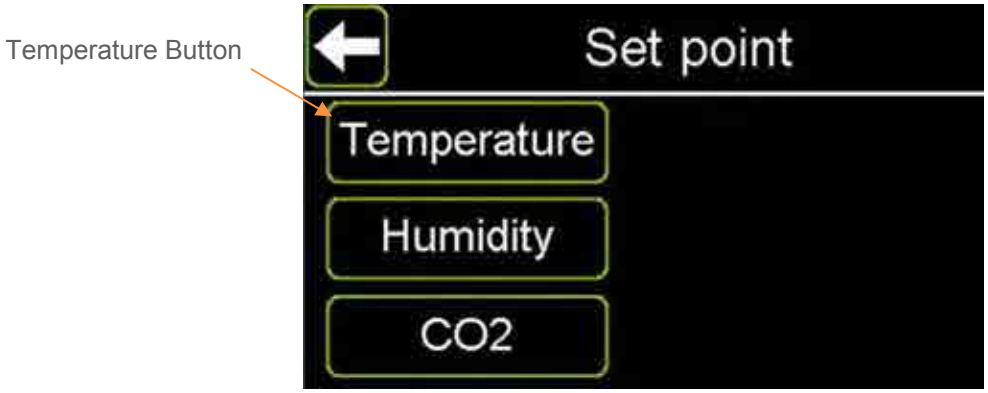
Changing the Temperature Setpoint

Here is an example of how to change the temperature setpoint in this case from 37.0 °C to 30.0 °C.

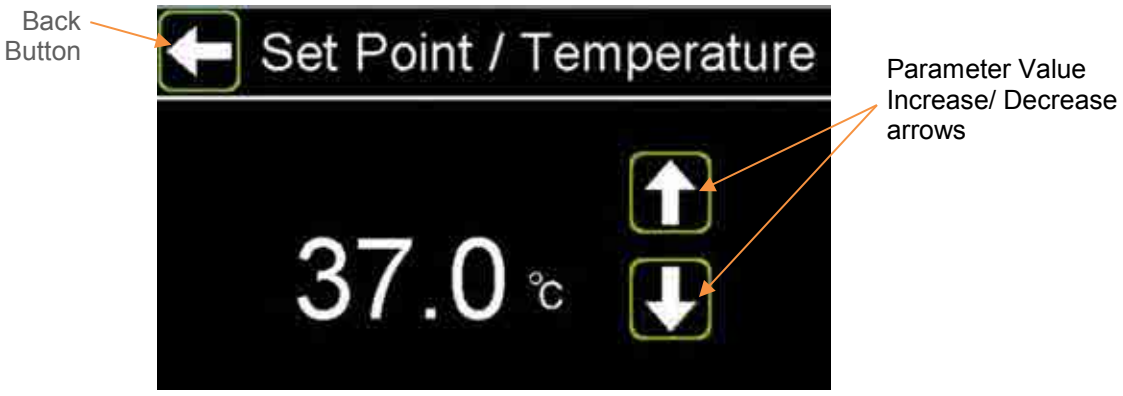
To set the temperature setpoint, press the (Main Menu) button on the right side of the screen.



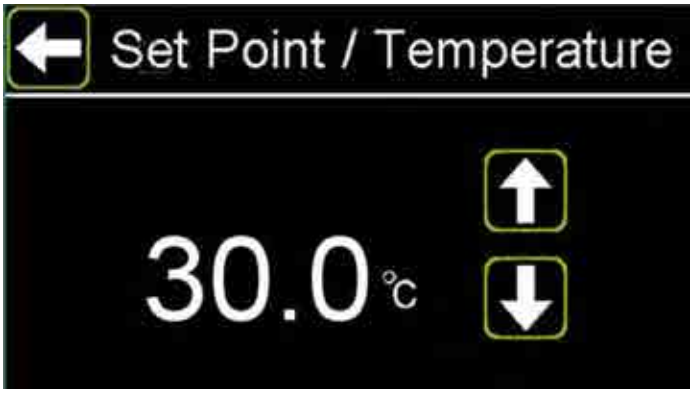
Once the Main Menu screen appears, press the Setpoint button. (In this example the temperature setpoint has a value of “37.0”; this will vary with different initial setpoint values.)



On the Main Menu screen, press the (Temperature) button.



On the Main Menu screen, press the (Up arrow, Down arrow) buttons to scroll to the parameter value of 30.



Pressing the (Back button) will confirm setpoint changes are made. Continue pressing Back button until back to Home Screen.

Changing the parameter values for Humidity, CO_2 and O_2 follow the same process.

OPTIONAL ACCESSORY OPERATION

Using the Carboy Water System (BOTL302) (Not available on 7420-5)

This is a gravity fed system and the carboy has to be placed at a higher level than the Water connection fitting.

To fill the carboy while attached to the incubator, unscrew the cap. Fill carboy with distilled or deionized water (see Connecting the Water Supply section for details). The carboy holds 4 liters.

If the carboy must be removed in order to fill it up, squeeze the flow restriction clamp. Push against the water fitting collar on the incubator and pull the carboy hose fitting out. Repeat in reverse order to reinstall carboy fitting. Release flow restriction clamp to allow water to flow

Water fitting collar

Operation of the Data Logger (DLOG301)

The DLOG301 option provides the customer with a means of logging data electronically for viewing at a later date. Logged variables are temperature, humidity, CO_2 and N_2 (but only if the chamber is equipped with those features.) All data is time-stamped with year, month, day of the month, hour, minute, 24 hour time (ISO 8601 format). This data is stored internally in the non-volatile memory.

Note: The date and time are logged within the actual file name. The file's "Date modified" field is not maintained and therefore may not reflect the actual date and time the file was created.

Data is logged every 5 minutes (provided the unit is on); more than 10 years of data can be stored in memory. If the internal memory fills up, new data overwrites the oldest data.

Continuous writing to the flash drive necessitates a high quality industrial grade device. Use only the flash drive provided by Caron (or equivalent: single level cell memory, algorithms, error correcting code).

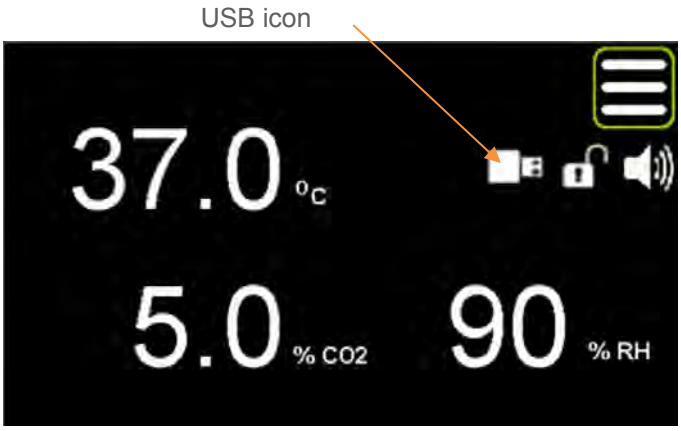
File name format is "DATE START YYYY-MM-DDTHH-MM_.csv" (hours in 24 hour time)

When the chamber is on, the chamber's history data is being stored even when a flash drive is ***not*** inserted in the USB port. This data may be retrieved anytime using the provided USB flash drive.

Here are the methods for retrieving data:

Continuous logging of data

Insert the flash drive into the chamber's USB port. When first inserted, it creates a .csv file called 'DATA START' with the current date and time in the file name. At 5 min intervals, the chamber's process values are appended to the file. (The file will get as large as the flash drive permitting several years of uninterrupted data storage.)



USB icon appears in the Status bar indicating that data is being written to flash drive.

To retrieve the data press the ‘Eject’ button, then insert the flash drive into a computer to upload the data.

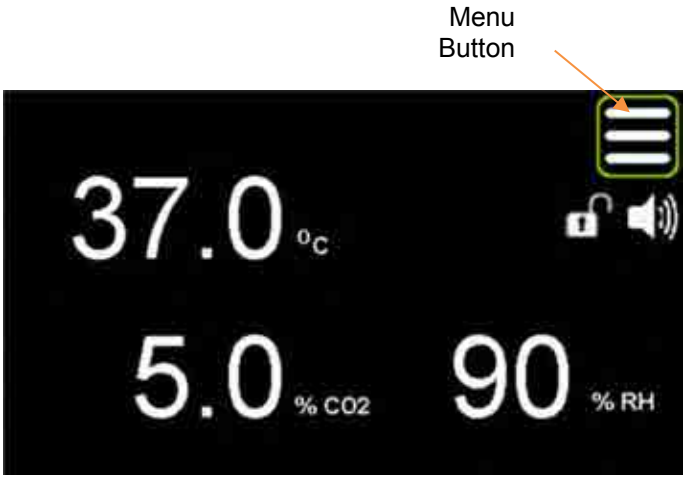
Upon re-insertion of the flash drive, a new .csv file is created, even if the old file is still present. File name nomenclature is “DATE START YYYY-MM-DDTHH-MM_.csv”.

History Retrieval

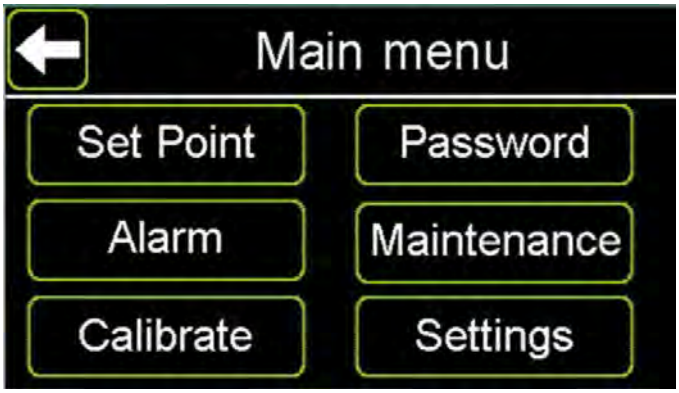
Select the ‘Auto Export’ feature on the USB menu screen. Insert the flash drive into the chamber’s USB port. A new .csv file is automatically created on the flash drive with all the stored history data. The file name nomenclature is “DATE END YYYY-MM-DDTHH-MM_.csv”.

There is also an ‘Export All’ feature to indicate if the upload should include all data (since the unit has been used) or just the history data since a flash drive was last inserted. An ‘Info’ button will appear in the status bar warning the user not to remove the flash drive while the data is being uploaded. The length of time to upload the file will depend on the file size. When the ‘Info’ button disappears from the status bar, press the ‘Eject’ button to safely remove the flash drive. Now the data can be uploaded to a computer for viewing.

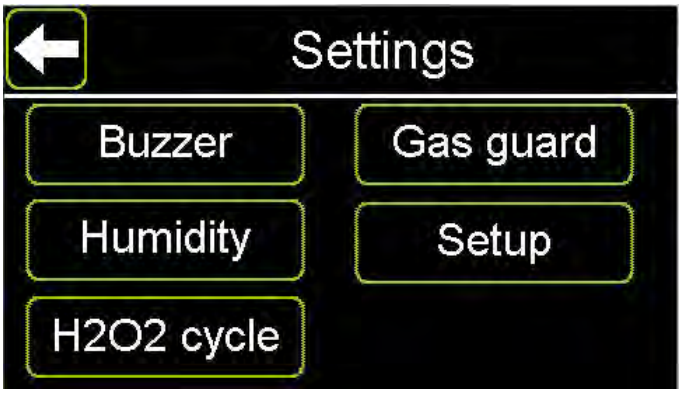
When using the Continuous Logging of Data method, nothing on the touch screen has to be set up. However using the History Retrieval method will require going into the USB screen to select either the ‘Auto Export’ or ‘Export All’ buttons before inserting flash drive into USB port.
To select the ‘Auto Export’ and ‘Export All’ buttons.



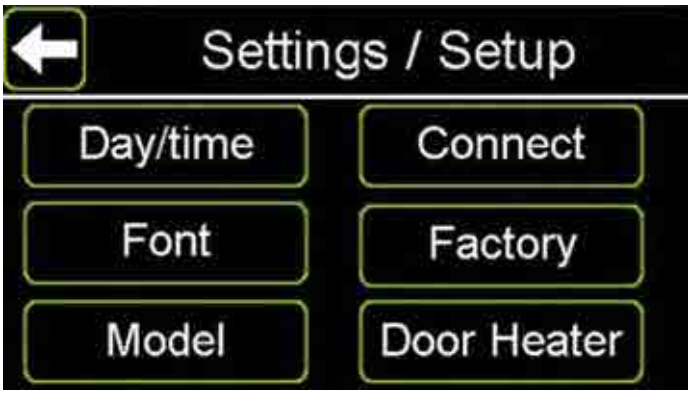
Menu button…..



Settings…….



Setup…..



Connect….

USB….

When the (Export All) button is selected this will retrieve all of the data from when the chamber was first turned on, up to the current time when flash drive was removed from USB port.

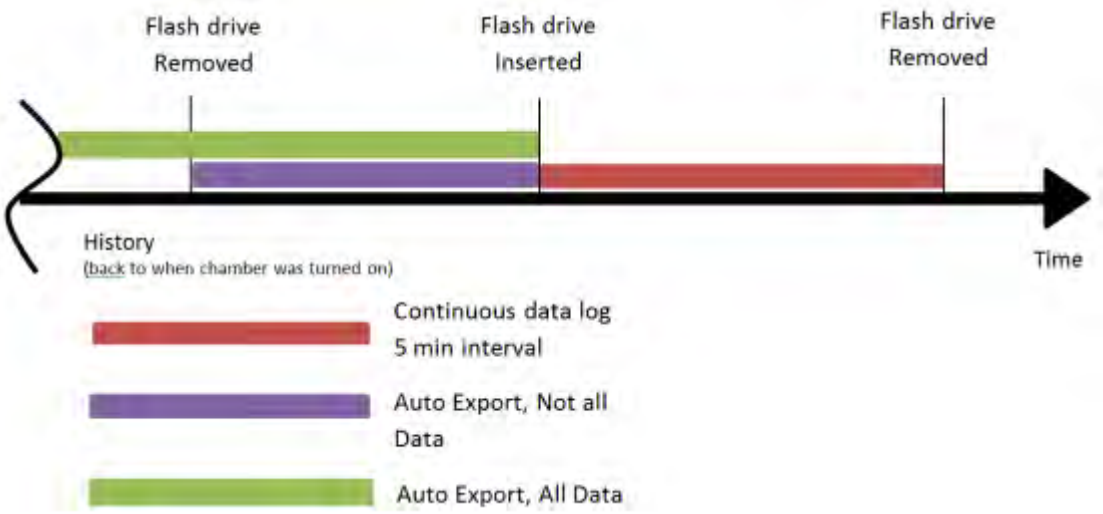
When the (Auto Export) button is selected this will retrieve the data from the previous time when data was retrieved, up to the current time when flash drive was removed from USB port.

When flash drive is inserted into the USB port a ‘USB flash drive’ icon and flashing ‘Info’ button appears in the status bar indicating that the data is being downloaded to the flash drive. Once ‘Info’ icon stops flashing select the (Eject) button.

Wait until the USB icon disappears to safely remove the flash drive from the USB port.

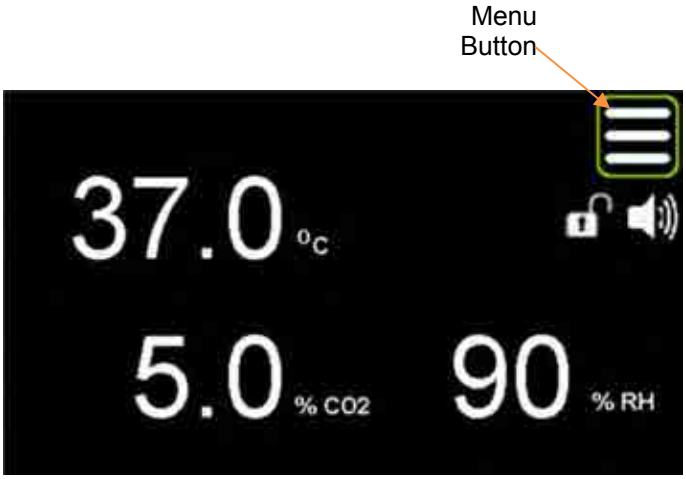
Note: Press the Eject button before removing the flash drive from the chamber, otherwise there could be the risk of corrupt data.

Here is a graphic to illustrate how the data retrieval works.

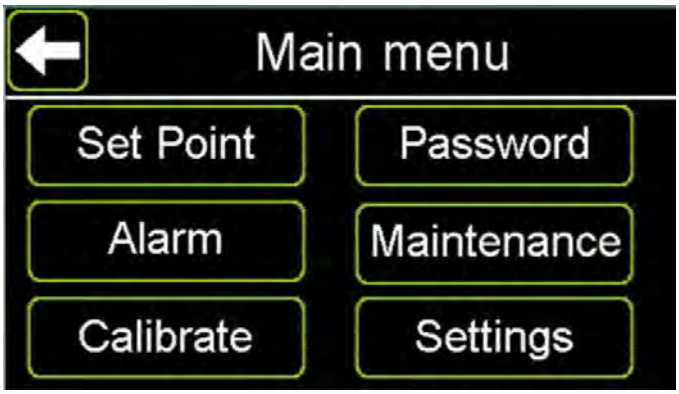


Erasing Data Stored Internally

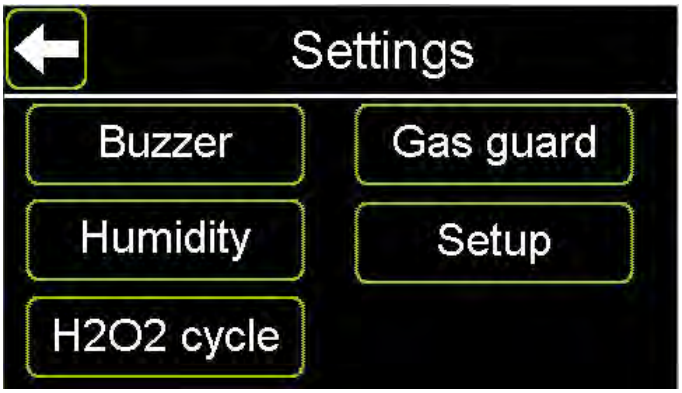
The user can erase data that has accumulated within the internal memory of the incubator. This can be beneficial when running a long term test on a sample inside the incubator, allowing the user to only extract the data that refers to that test. The data from the factory testing has been erased from the incubator before being shipped to the customer. The Erase All feature will not erase data that is on the USB stick, only the internal memory of the incubator.



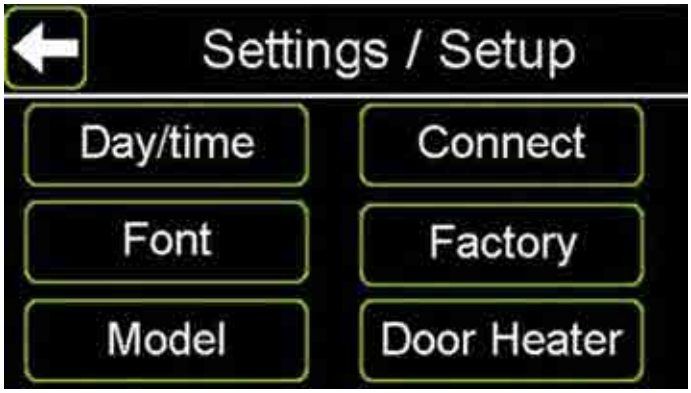
Menu button….



Settings….



Setup….



Connect….

USB….

Erase All…. (no USB stick present)

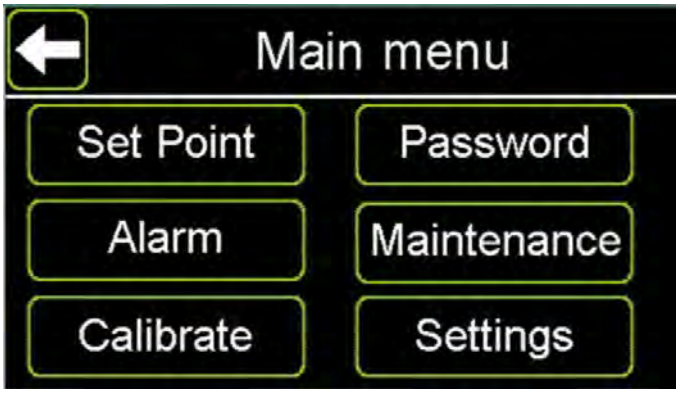
Press the (Erase) button to remove accumulated data from incubator. Press the Back button to confirm changes. Repeatedly press the Back button to return to the Home screen.

If the USB stick is inserted into the USB port, the Eject button can be used as shown below.

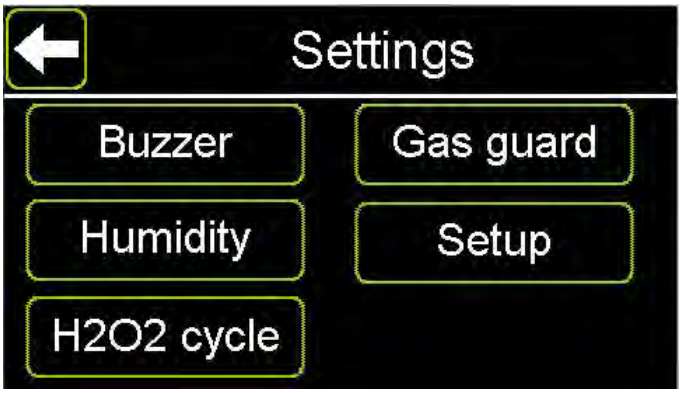
RS-485 Communications (non-standard)

This is a non-standard option. Consult factory for details.
Steps for RS-485 Connections / Address assignment.

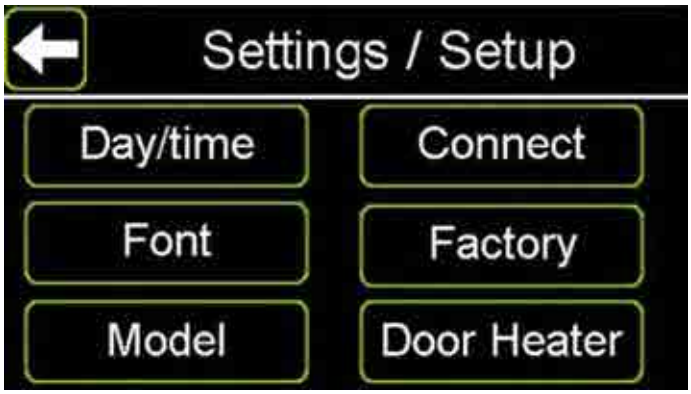
Menu button….



Settings….



Setup….



Connect….

USB….

Once the appropriate address has been selected, press the Back button to confirm changes and setup next address or repeatedly press the Back button to return to the Home screen.

Built In Gas Guard System (GASG303)

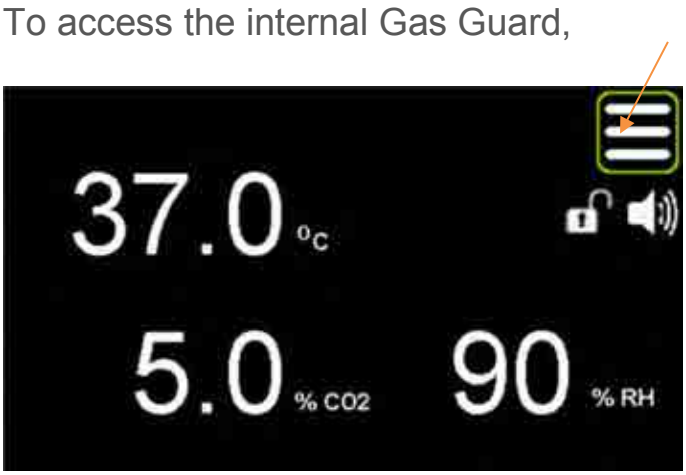
An optional built in gas guard system is available to allow two tanks of CO_2 to be connected to an incubator, requiring approximately 15 psig (103 kpa) of gas pressure. The unit is designed to automatically switch from the primary tank to the secondary tank when low gas pressure of approximately 10 psig (70 kpa) is detected on the primary tank. This allows for a continuous supply of CO_2 to an incubator after the primary tank is empty. In addition, the user is notified of a tank empty scenario via an audible and visual alarm.

The CO_2 gas supply should be 99.5% pure and should not contain a siphon tube. Gas pressure to the unit must be regulated to less than 30 psig (207 kpa). Failure to do so could cause tubing to burst.

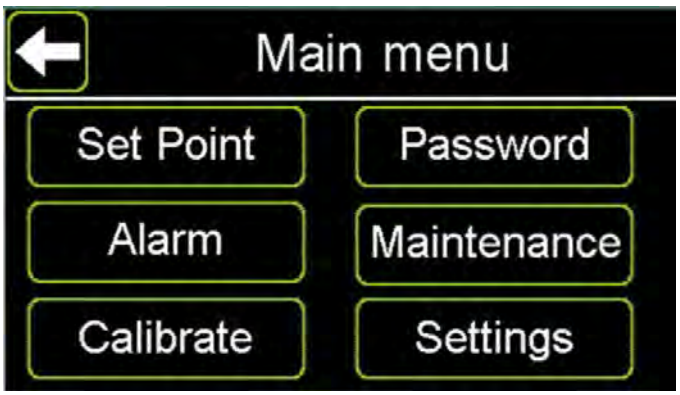
The CO_2 gas supplies must be equipped with two stage regulators to ensure that the incoming gas to the unit is regulated to appropriate levels. The high pressure stage should have a 0-2000 psig (0-13789 kpa) range, and the low pressure gauge should adjust from 0-30 psig (0-206 kpa). When connecting the gas supplies, adjust each tank output to 20-25 psig (138-172 kpa). If the appropriate regulators are not available, contact CARON customer service to purchase them.

Once the cylinder regulators are installed and adjusted on each tank, connect the outlet of the regulator on Tank 1 to the hose barb fitting labeled Tank 1 on the back of the unit. Repeat the process for Tank 2. Turn on the regulated gas supplies and check the connections closely for leaks.

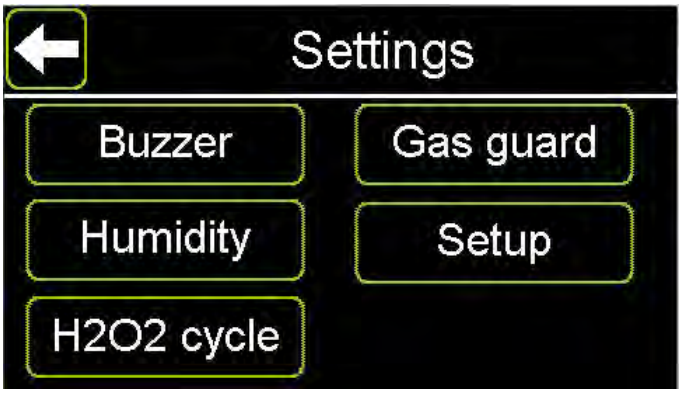
To access the internal Gas Guard,



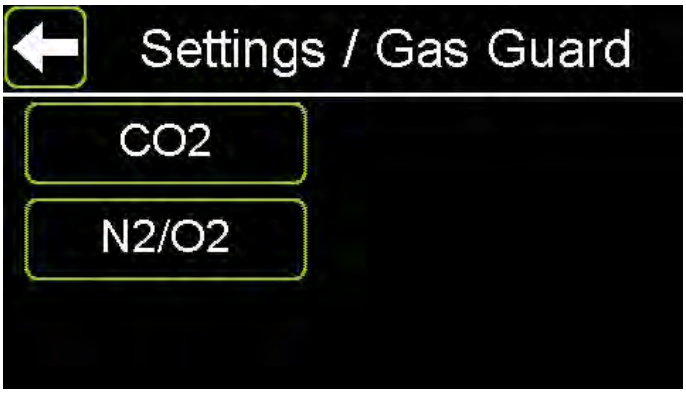
Menu button…..



Settings…….



Setup…..



CO2…..

Tank Selection…..

Press the button to select the active / full tank.

The factory default “master tank” is Tank 1. When the appropriate gas pressure is supplied to both tanks, the master tank will always be used as the gas source. The unit will swap from the master tank to the alternative tank whenever a low gas pressure condition is detected.

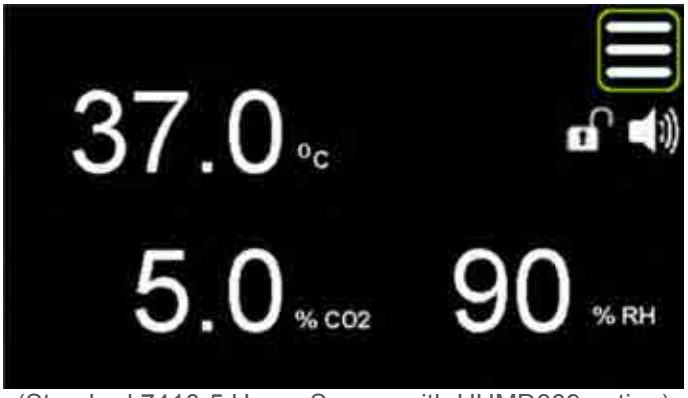
Built In Gas Guard System (GASG304)
Same as GASG303, except for N_2.

Humidity options

All Wally models come standard with a water pan for elevated humidity inside of the chamber. There is no display or control in this configuration. Humidity is based on the temperature of the incubator.

(Standard 7410-5 Home Screen)

Option HUMD309 adds a humidity sensor, and the humidity parameter value %RH is displayed on the Home screen. This option works with the humidity pan already provided with the incubator, and allows the user to view the actual humidity level inside the incubator on a %RH basis. This option will not allow a user to have control of the humidity level.

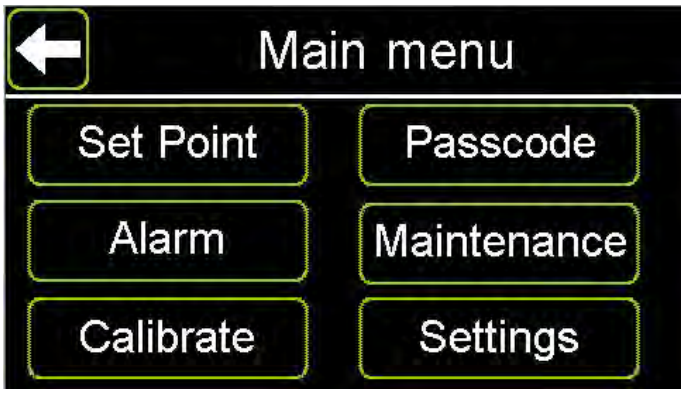


(Standard 7410-5 Home Screen with HUMD309 option)

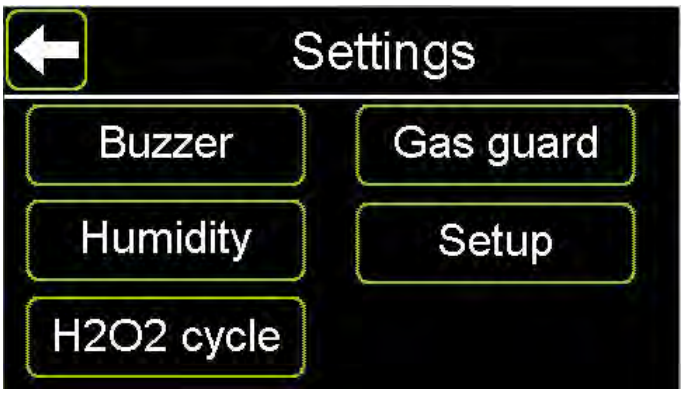
Option HUMD310 (not available on 7420-5) adds a humidity sensor and gives the user full control of humidity levels inside the incubator. The option removes the water pan inside the incubator, replacing it with an ultrasonic humidity delivery system that injects water vapor into the airstream. It requires an external water source carboy, facility-provided water purification system or unit specific purification system such as optional Caron CRSY Condensate Recirculator.

Option HUMD310 can also disable humidity control.

Press the Menu button



Settings…….



Humidity…….

Press the button to select the Off. Press the Back button to confirm changes. Repeatedly press the Back button to return to the Home screen.

(Home screen with humidity control disabled)

With Humidity Control disabled the user can still monitor the humidity levels which will remain visible on the Home screen.

When the humidity control has been disabled, the humidity setpoint button will be greyed out, informing user that control function is not currently accessible. To control humidity setpoint, humidity control has to be enabled.

Sterilization Cycle (STER301 option)

Option STER301, H_2O_2 Sterilization module can be used to sterilize the model 7410-5 / 7411-5 incubator. All 7410-5 & 7411-5 Incubators are shipped "H_2O_2-ready and are fully compatible with the optional STER301 Module. The purpose of the sterilization cycle is to eliminate common microbial contamination in your incubator and extend the time between manual cleaning cycles. The sterilization cycle is intended to be used as a reactive system to eliminate contamination. It is not necessary to run the cycle at a fixed time interval.
Connecting the STER301 module to the incubator will override the incubator's control features and only allow the sterilization process to function.

Hydrogen Peroxide is a hazardous chemical. Procedural, safety, and SDS instructions must be followed.

User is responsible for initiating decontamination process. Wear eye protection, protective clothing or garment and be aware not to inhale Hydrogen Peroxide.
Exposure to industrial strength concentrations (typically > 34%) can cause severe irritation or burns to the skin, eyes, and respiratory tract. ingestion or any other internal use of hydrogen peroxide at any concentration or for any purpose.

If H2O2 product is spilled inside chamber wipe up spill with absorbent towel and dispose in proper waste bin.
Before initiating a sterilization cycle, the following steps must be completed:

1) Remove all samples, products, equipment, etc from the incubator.
2) Power down the incubator.
3) Remove HEPA filter / housing and place on shelf.
4) Pull out STER301 power cord inside of plenum housing.
5) Refer to STER301 Sterilization Cycle User's Manual for instructions of how to operate sterilization module with Wally.

CALIBRATION

The temperature (°C), humidity (%RH), CO_2% and O_2% systems can all be calibrated as necessary. CARON recommends an annual calibration check of each system.

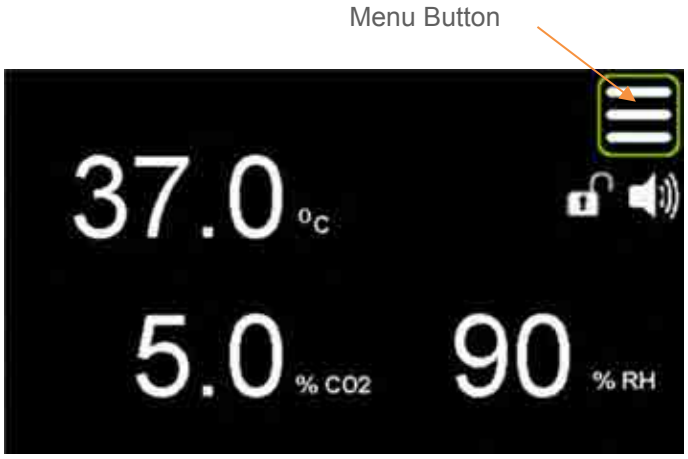
Note: O_2 Sensor calibration process is different than described in this section. The sensor will need calibrated every 6 months, See below.

Before making a calibration adjustment, allow the cabinet to stabilize a minimum of 12 hours from the most recent power off condition. If the unit has been in operation, allow a minimum of 3 hours of stable operation at all setpoints.
If you do not have the appropriate reference instruments to perform calibration, contact CARON's service department for on-site calibration at www.caronproducts.com. Caron also provides validation services to ensure that the unit is functioning properly according to IQ, OQ and PQ protocols, which satisfy FDA guidelines for qualification verification of equipment.

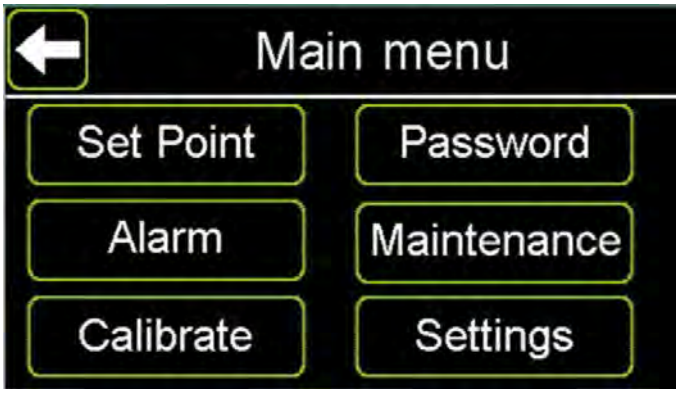
Be sure that all reference instruments are calibrated to an appropriate standard.

The Calibration Screen

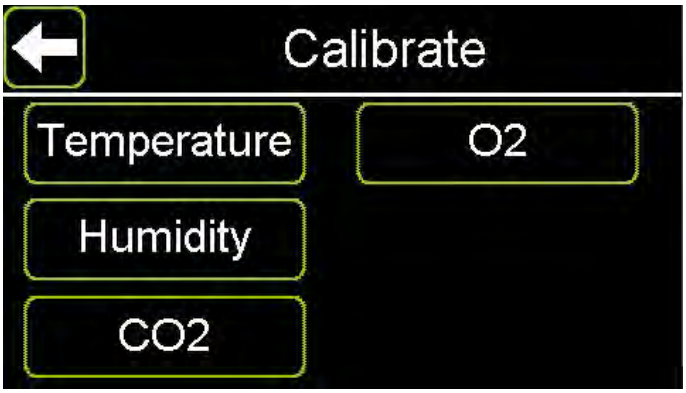
To get to the calibration screen from the home page:



Home Screen…..

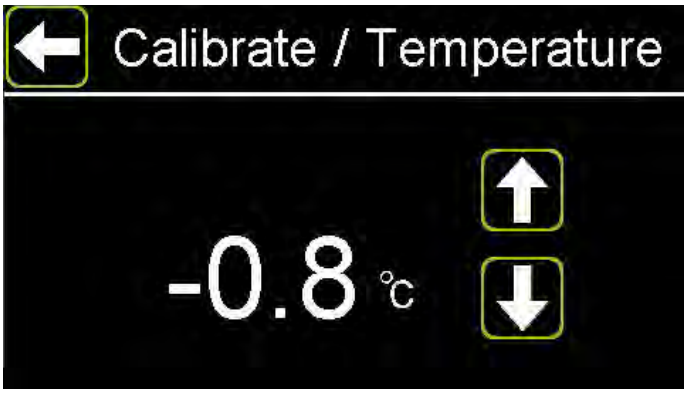


Calibrate…….



(Model 7411-5)

Temperature….



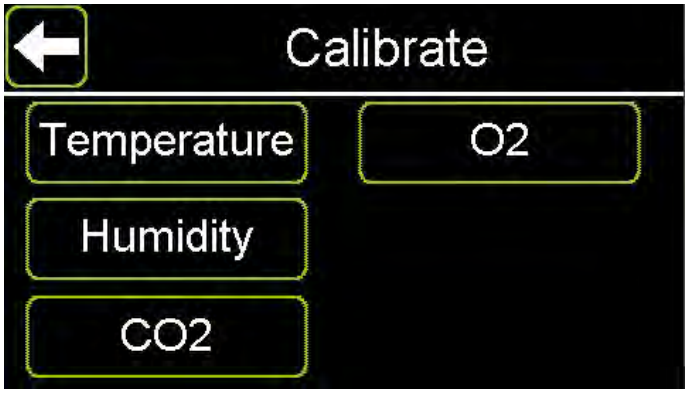
Increase or decrease parameter offset

Pressing the (Back button) will confirm changes are made back to Calibrate screen. Other sensors can be calibrated using the same process (except O_2) or continue pressing Back button until you return to Home Screen.

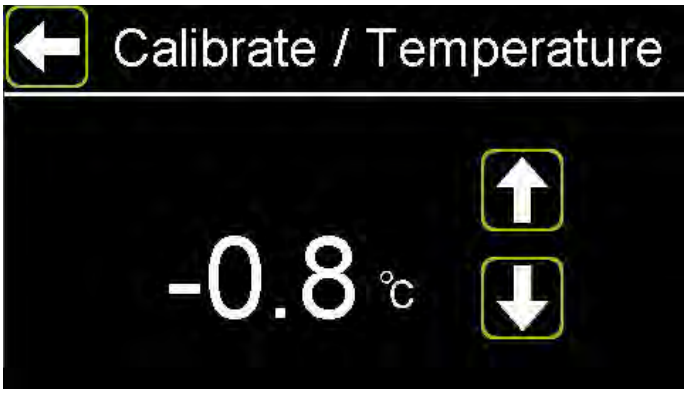
Calibrating Temperature

If temperature calibration is needed, the following steps can be taken:

Locate the reference instrument's temperature sensor in close proximity to the cabinet's geometric center. Be sure that the stabilization times described earlier have been satisfied prior to performing calibration.



At the calibrate screen, press the (Temperature) button.



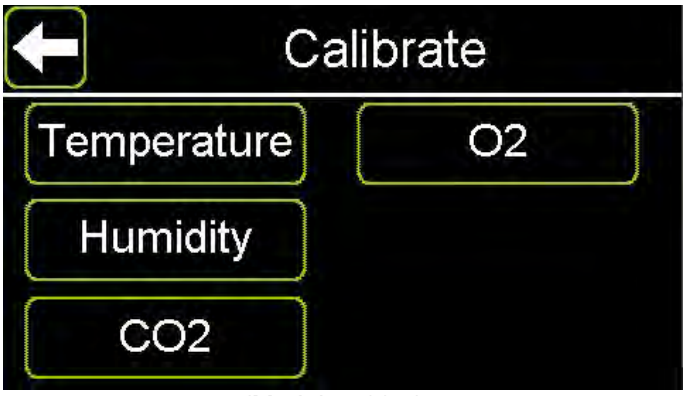
Enter the temperature offset by using the Up and Down arrow buttons. The Up arrow will increase the offset value. The Down arrow decrease the offset value. Press the Back button when complete to confirm changes.

Temperature calibration (example)

If the chamber temperature display reads 40.0°C and the calibrated independent sensor shows 40.3°C, set the temperature offset value to 0.3°C. If the calibrated independent sensor shows 39.6°C, then the entered offset should be negative. In this example, the required offset to temperature would be -0.4°C.

Calibrating Humidity

If humidity calibration is needed, the following steps can be taken:
Locate the reference instrument's humidity sensor in close proximity to the cabinet's geometric center. Be sure that the stabilization times described earlier have been satisfied prior to performing this calibration.



(Model 7411-5)

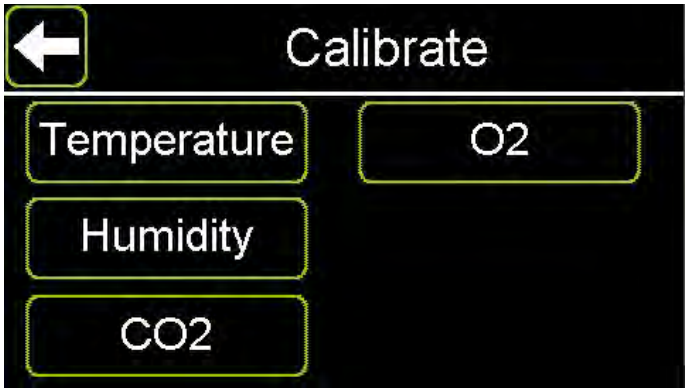
At the calibrate screen, press the (Humidity) button.
Enter the Humidity offset by using the Up and Down arrow buttons. The Up arrow will increase the offset value. The Down arrow decrease the offset value. Press the Back button when complete to confirm changes.

Humidity calibration (example)

If the chamber humidity display reads 80% and the calibrated independent sensor shows 83%, set the humidity offset value to 3.0%. If the calibrated independent sensor shows 74%, then the entered offset should be negative. In this example, the required offset to humidity would be -6.0%.

Calibrating CO_2

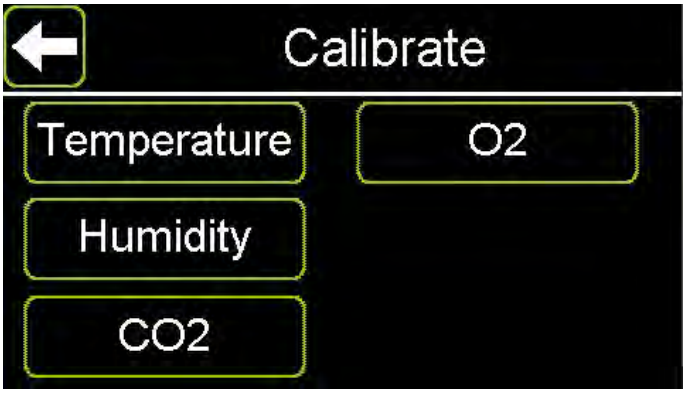
If CO_2 calibration is needed, the following steps can be taken:
Locate the reference instrument's CO_2 sensor in close proximity to the cabinet's geometric center. Be sure that the stabilization times described earlier have been satisfied prior to performing this calibration.

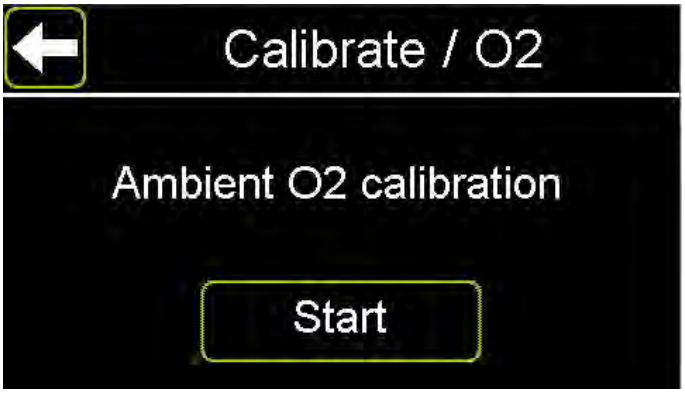


Enter the CO_2 offset by using the Up and Down arrow buttons. The Up arrow will increase the offset value. The Down arrow decrease the offset value. Press the Back button when complete to confirm changes.

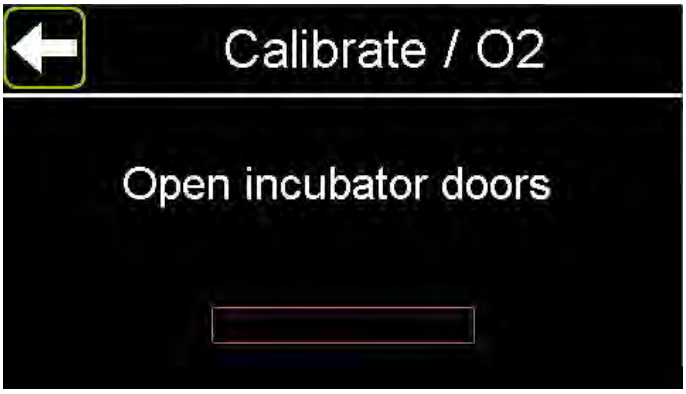
Calibrating O_2 Sensor to Ambient.

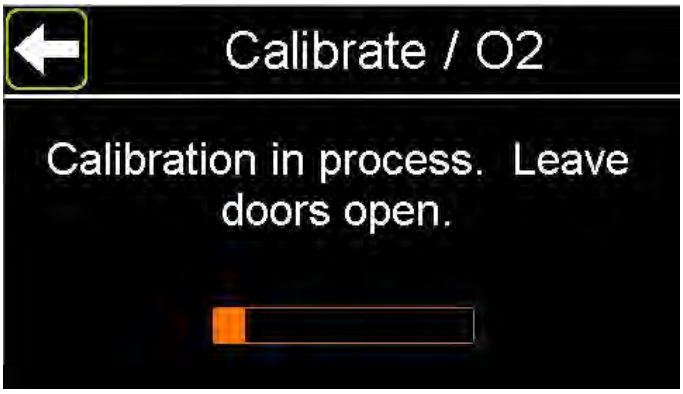
O_2 sensor calibration is based on 21% oxygen level (ambient room oxygen).



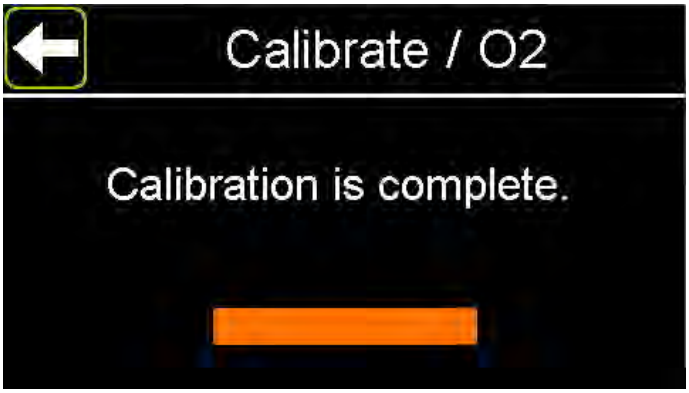


On the Calibrate screen press the O_2 button. Open incubator doors all the way.





Press Start button. During this time (approximately 60 seconds) the O_2 sensor will be calibrated.



O_2 calibration complete. Press back arrow to go to previous screen or continue pushing back arrow to Home Screen.

If either door is closed during the O_2 Calibration cycle, Calibration of the sensor will be aborted, and O_2 calibration process will have to be restarted.

O_2 calibration can be aborted any time by pressing Back button.

ALARMS

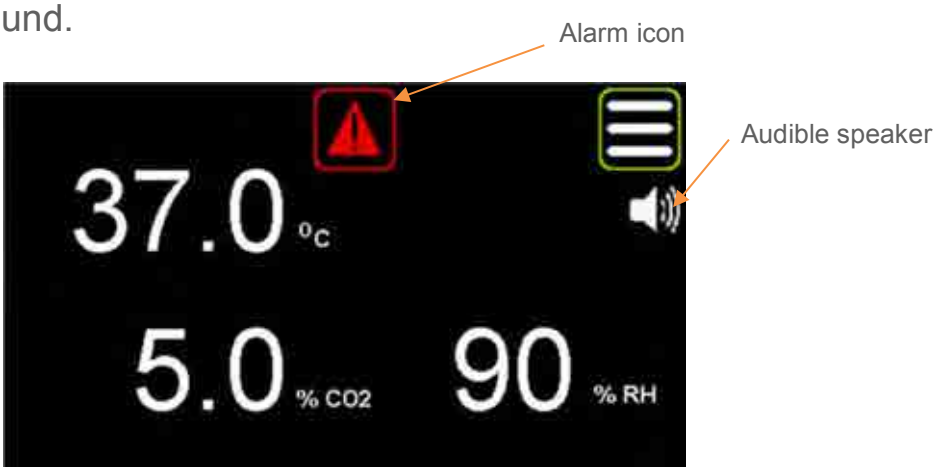
Alarm System Overview

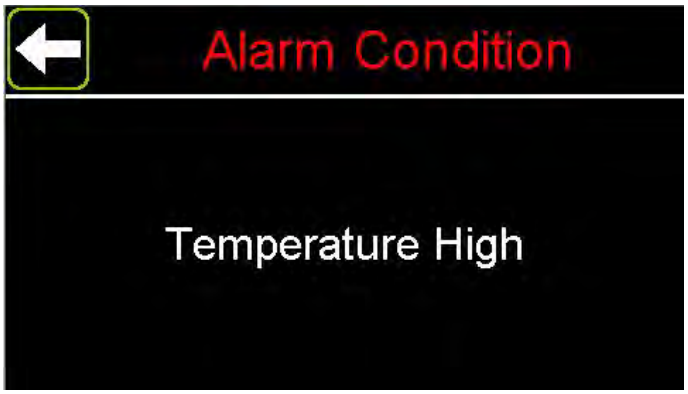
The incubator control system is equipped with an alarm system that constantly monitors temperature, CO_2 and humidity (on controlled humidification models with RH monitoring) to ensure the user is notified if the cabinet goes into an alarm condition. Notification occurs via an alarm pop-up window and an audible alarm. Each alarm condition has been factory programmed to minimize nuisance alarms while maximizing warning time. There is a 2 hour time delay after start-up and setpoint changes. To avoid nuisance alarms after a routine door opening, an alarm condition must be present for 15 minutes (45 minutes for humidity) before the operator is alerted. If the optional remote alarm contacts are present, in an alarm condition, the dry contacts will change state.

The following alarm messages may be displayed:

- Incubator temperature is higher than setpoint temperature
- Incubator temperature is lower than setpoint temperature
- Incubator humidity is lower than humidity limit
- Incubator humidity is higher than setpoint humidity
- Incubator humidity is lower than setpoint humidity
- Incubator CO_2 is higher than setpoint CO_2
- Incubator CO_2 is lower than setpoint CO_2
- Incubator O_2 is lower than setpoint O_2
- Incubator O_2 is higher than setpoint O_2
- Temperature sensor error

In the event an alarm occurs, the alarm indicator icon will appear on the status bar, and an audible alarm will sound.



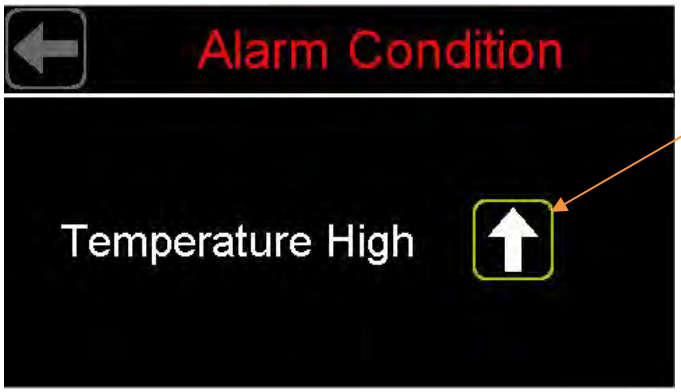


Pressing the (Alarm) icon will display which parameter is out of range. Press Back arrow button to return to home screen.

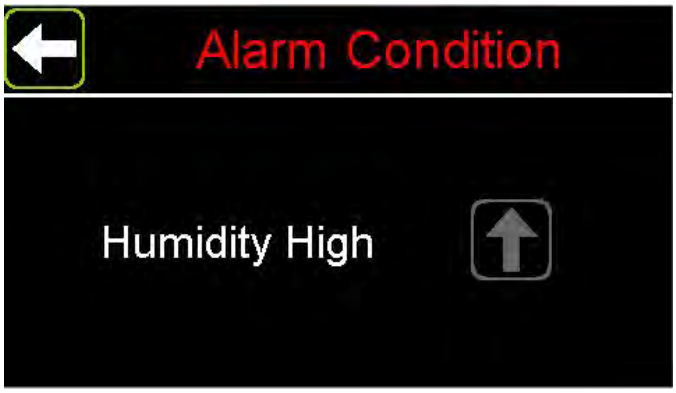
Pressing the Snooze button will Mute the parameter alarm and silence the audible alarm for 1 hour.

Multiple Alarms

If there are multiple parameter alarms, after pressing the flashing (Alarm) icon the Up arrow will indicate that there is more than one alarm condition.



The Back arrow will be “greyed” out forcing the user to press the Up Arrow button to review all alarm conditions.



Once all of the alarm conditions have been revealed, press the Back arrow button.

Audible Alarm Snooze Function:

When in an alarm condition, the Audible Alarm can be temporarily silenced to avoid being a nuisance to those nearby. The Audible Alarm will repeat after 1 hour has passed, if the condition has not been corrected. (The audible alarm will not sound if the alarm is muted, see Audible Alarm Mute)

Press the Snooze button, the audible alarm is silenced for a period of 1 hour.

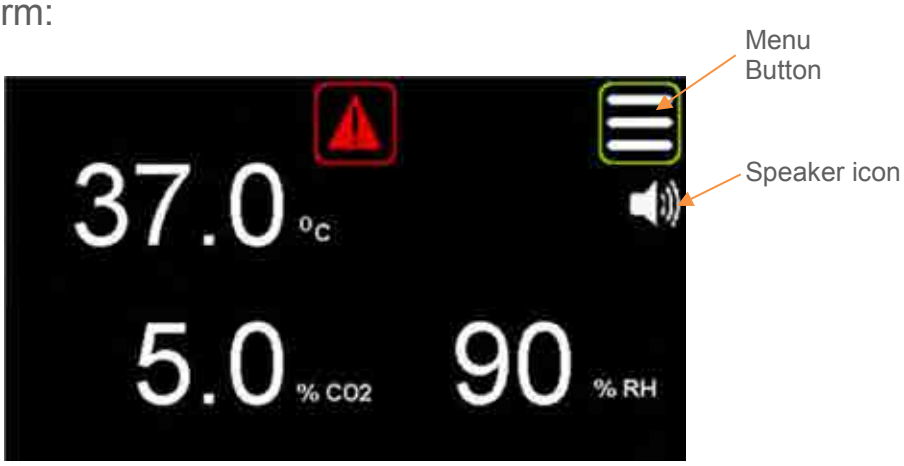
When the alarm condition is corrected the alarm indicator and the audible alarm will automatically turn off (unless there is another alarm condition).

To check the alarm condition, press the (Alarm) button on the status area. The alarm window will be displayed. If the Snooze button has already been pushed and 1 hour has not passed the Snooze button will be “greyed” out.

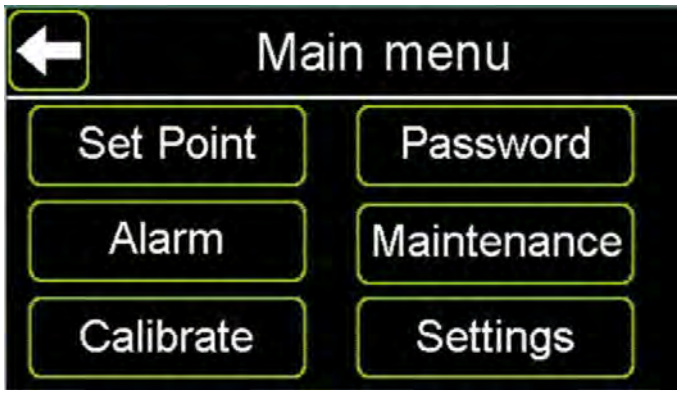
If you press the Back Arrow button, the Alarm Window will close, but the alarm will still be present as a flashing alarm icon on the status bar for the remainder of the 1 hour of time. It will not reset the 1 hour alarm countdown time if the alarm condition is viewed on the pop up window.

Audible Alarm Mute:
By factory default, when an alarm condition is present, the audible alarm will sound. This audible alarm can be muted in an 'on/off' fashion eliminating all audible sounds. (Muting the audible alarm will silence it until manually 'un-muted'. This is different than 'snooze' in the fact that the snooze can only be enabled when an alarm condition is present and only lasts for 1 hour.) When the audible alarm is muted, the alarm icon continues to flash and the remote alarm contacts (optional) remain in the 'alarm' state.

To mute the audible alarm:



Press the (Menu) button.



Press the Settings button.

Press the button to select the Mute option. Press back arrow to go to previous screen or continue pushing back arrow to Home Screen.

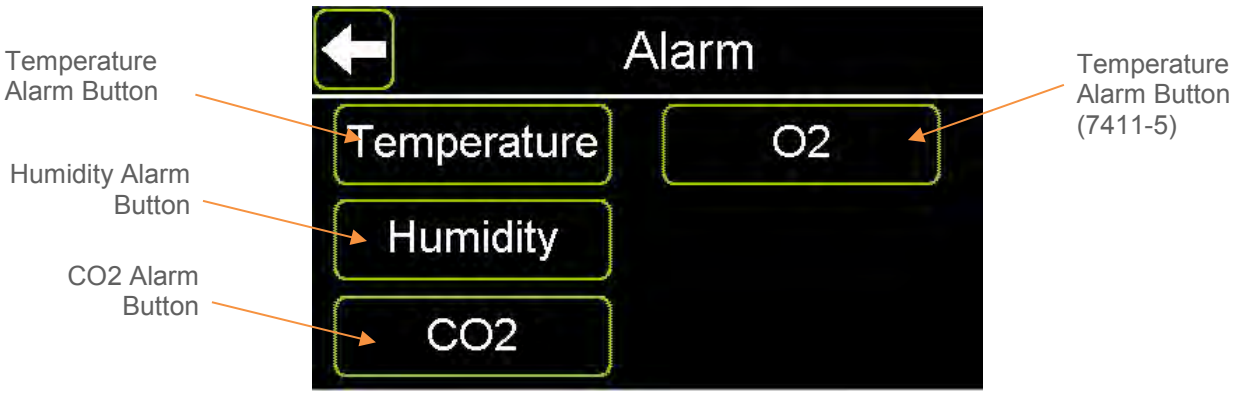
The Home Screen now has an icon showing the audible alarm has been Muted.

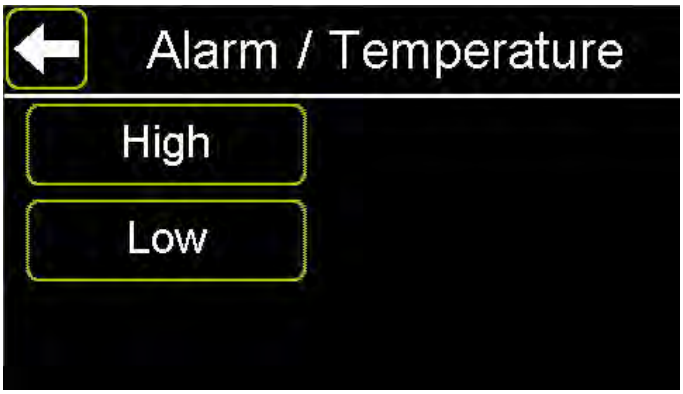
Changing Alarm Setpoints

All alarm setpoints were pre-set at the factory to minimize nuisance alarms that could be created as a result of door openings. Alarm setpoints can be changed based on individual user requirements. Alarm values are deviations from the setpoint and are not actual setpoint values.
To change the alarm setpoints:

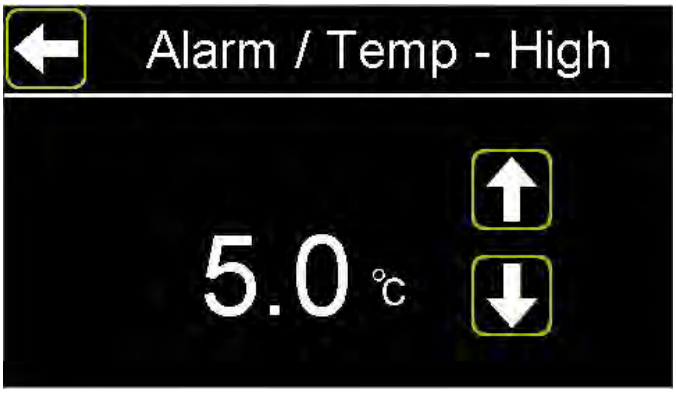
Press the Menu button.

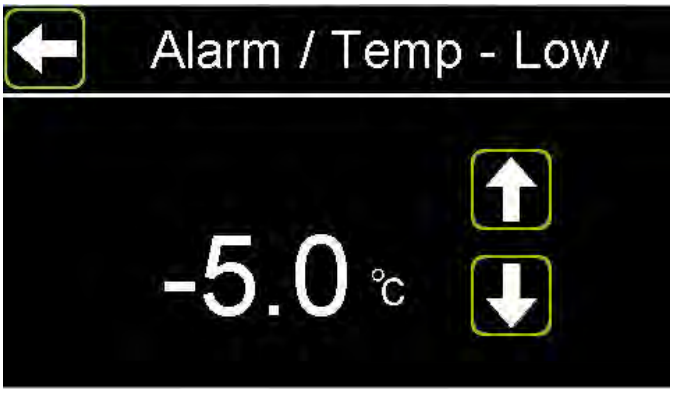
Press the Alarm button.





Choose High or Low alarm settings.





Press the Up or Down arrows to desired setting. Press the (Back button) to confirm changes.

Same steps to setup Alarms / CO_2 and Alarms / Humidity (HUMD310).

Note: High and low humidity alarm can only be set if unit has controlled humidity option (HUMD310). With humidity display only (HUMD309), only the low humidity alarm can be set.

ALERTS

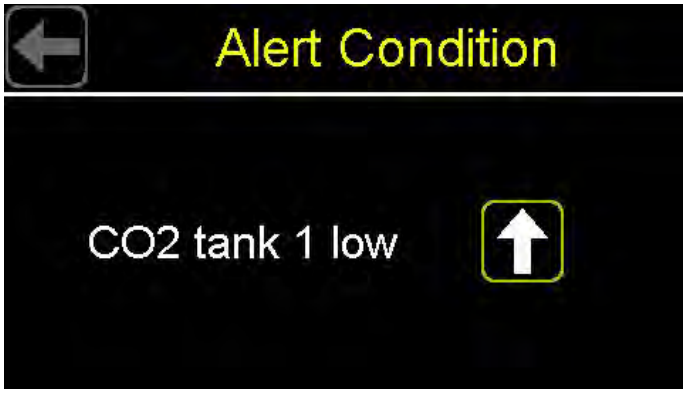
Alert System Overview

The incubator control system is equipped with an Alert system that constantly monitors the incubator, notifying the user if the incubator needs any type of service and to ensure good running performance of the incubator. Alerts draw user attention to regular maintenance needs, and minimize the risk of a future alarm condition.

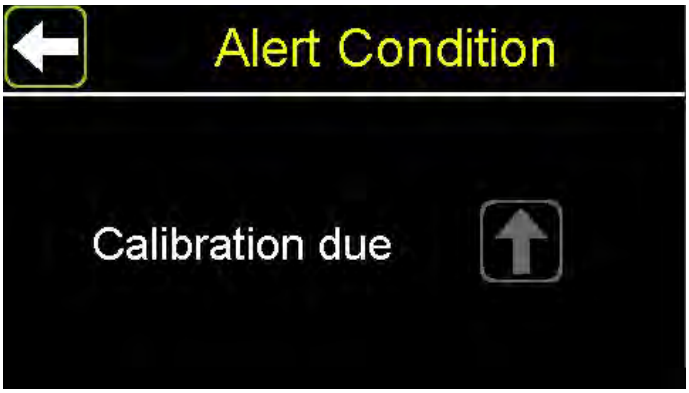
Some of the alert features are: check the wick (Controlled RH units only), gas guard CO_2 &/or N_2 tanks low, check the CO_2/HEPA air filter, check the O_2 sensor, and equipment calibration is due.

Notification occurs via an Alert icon on the status area. When the Alert icon is pressed, a pop up window will display the alert condition(s). Each alert condition parameter is factory pre-set; no adjustment is necessary. Alerts are cleared through the Maintenance screen.

Press the Alert icon.



The Alert pop up window will appear displaying the alert message. Press the Up Arrow, scrolling to see what other Alert conditions are present.



After reviewing all Alerts, the Up Arrow will grey out.
Press Back Arrow button to make the pop up window disappear.

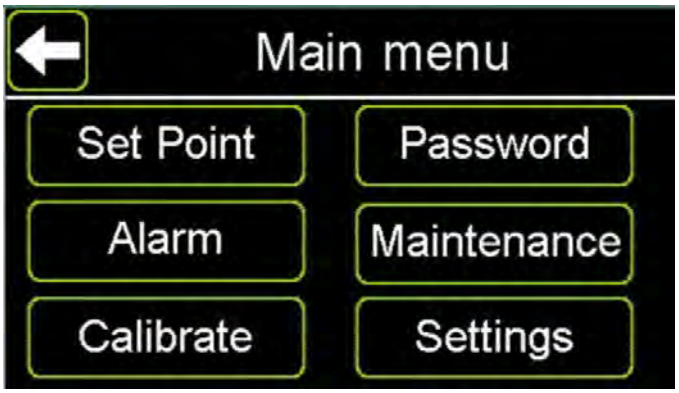
Resetting Maintenance Alerts

Maintenance Menu Screen lets users check to see how much time remains until their next routine service or calibration. This is very convenient to inform the user that a particular item will need to have service performed soon. After service has been completed, the item needs to be reset, causing the alert to disappear.

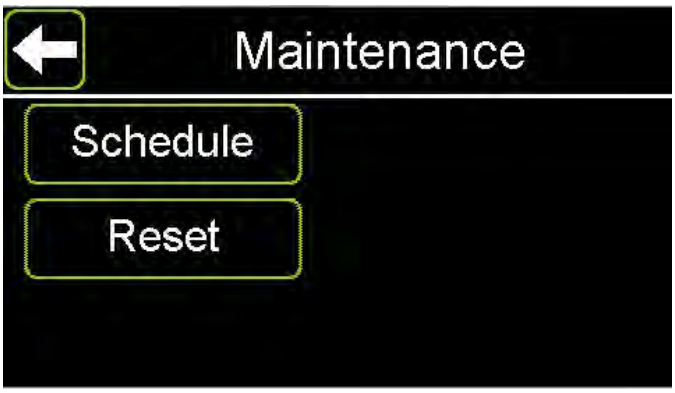
The items below are factory set for maintenance:
(Exact list depends on unit configuration, options)

- CO_2 / O_2 / HEPA filters
- Calibration: Temperature, Humidity, CO_2 / O_2
- Ultrasonic humidifier Wick
- Replace O_2 sensor

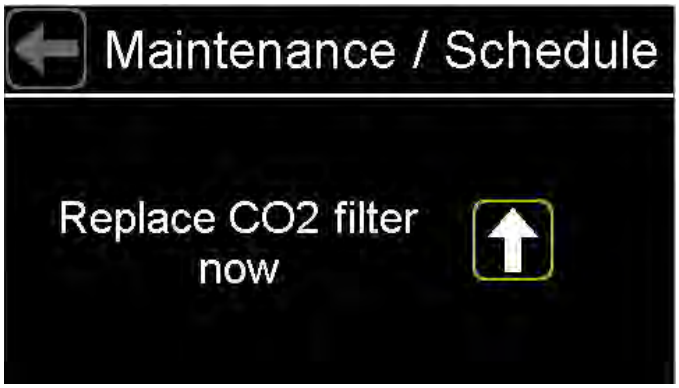
Press the Menu button.



Maintenance….



Schedule….



CO_2 Filter….

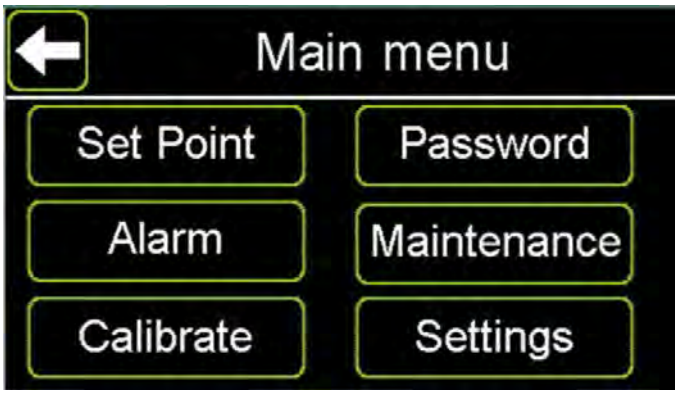
The Maintenance/Schedule Screen informs the user what items are on schedule for Maintenance. Using the Up arrow, scroll through the list. When the Up arrow becomes greyed out, that is the end of the list. Press the (Back button) to confirm changes and exit current screen.

Once a Maintenance item is displayed on the Alert screen, it will continue to be present as an icon in the Status Bar until the Maintenance item is corrected and the (Reset) button is pressed resetting the replacement time to “new” status.

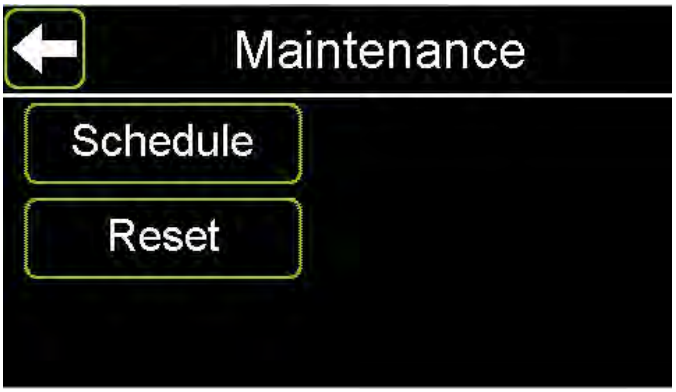
When an Alert notification occurs, contact www.caronproducts.com with the serial number of the chamber to order preventative maintenance kit(s).

To reset a Maintenance Alert:

Press the Menu button.



Maintenance….



Reset….

Replace the appropriate components and then press the Reset button.

Press the (Back button) to confirm changes and exit current screen.
If this was the only Alert on the Home Screen, then the Alert Icon will disappear from the screen.

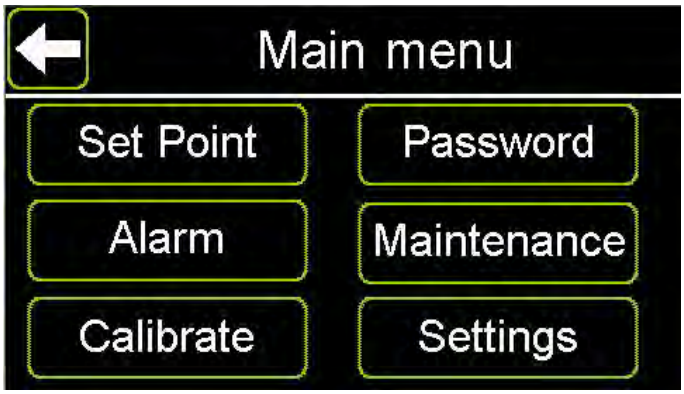
ADVANCED FEATURES

Setting the Time & Day

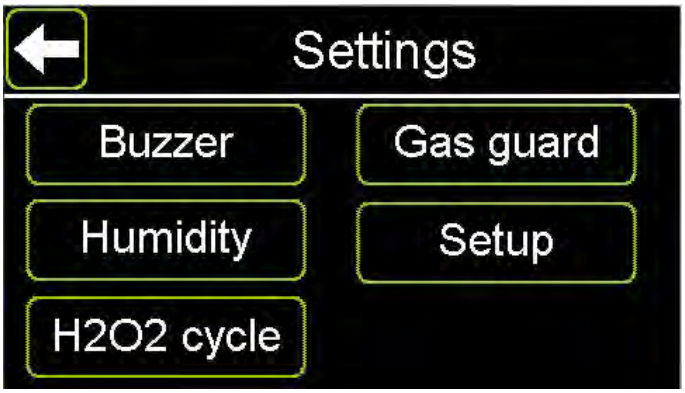
The incubator has an internal real-time clock that keeps track of the day and time. It is set at the factory to Eastern Standard Time (US) and may need to be adjusted for your local time zone. To keep the clock accurate, it will need to be adjusted manually for daylight savings time changes (if appropriate). To set the day & time:

Menu Button

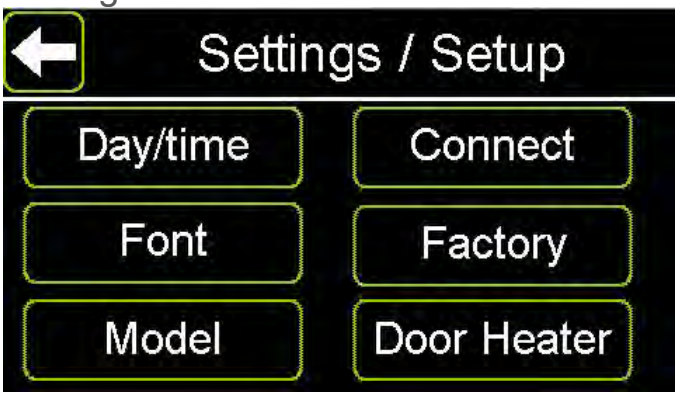
Press the Menu button.



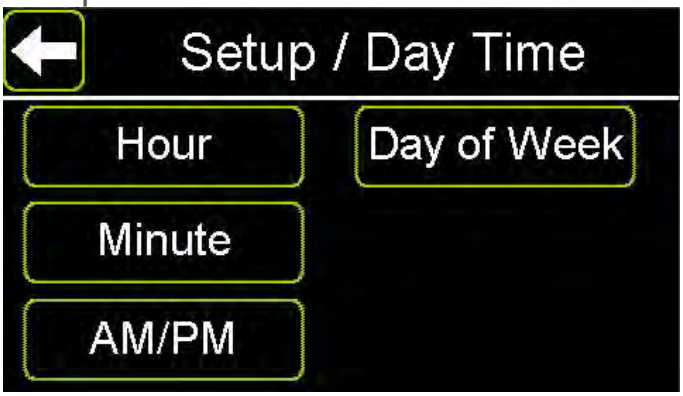
Settings….



Setup….



Day / Time….



Choose feature to setup…..

Press the button to select the Day. Press the (Back button) to confirm changes, and go to previous screen to setup Time, Hours, Minutes. When setup is complete, press the Back button until returning to Home Screen.

Time of Day….. Press the button to select AM or PM

Hours…..

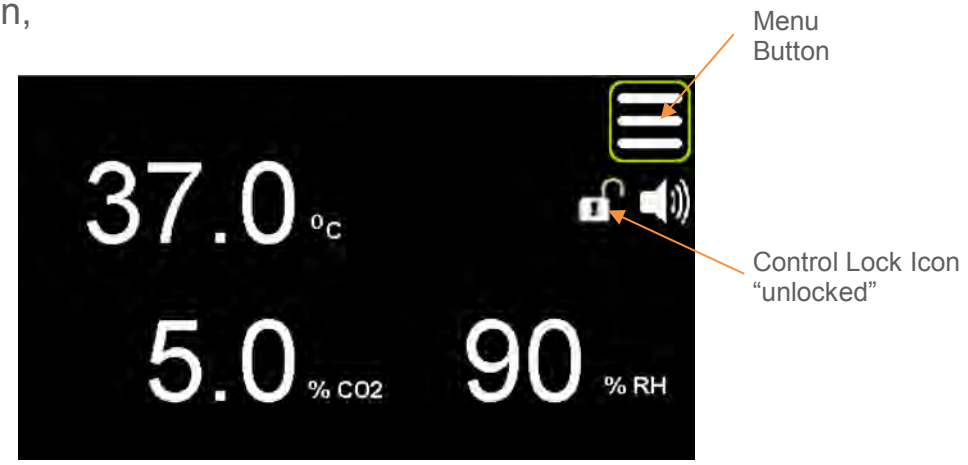
Minutes…..

Press the (Back button) to confirm changes. Press the Back button repeatedly to return to Home Screen.

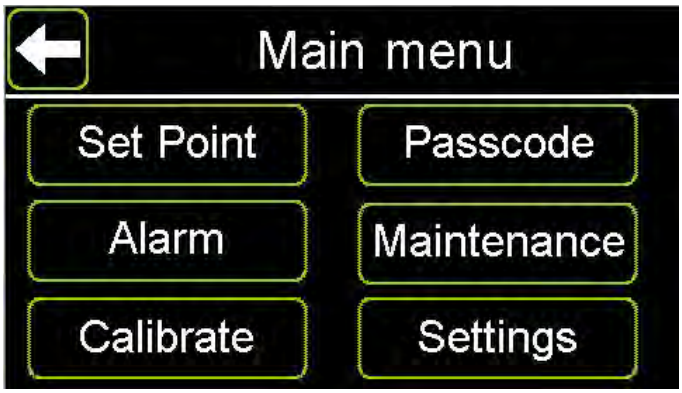
Locking the Controls

To prevent unauthorized and accidental changes, the touchscreen can be locked-out. The passcode is required to lock-out the controls and the same passcode is used to unlock it. The default passcode is '1234'. This passcode can be changed by the user to create a unique 4-digit passcode. There is also a feature that will let you change the passcode from the factory default to a user defined passcode. The factory default for the screen lock is "unlocked"

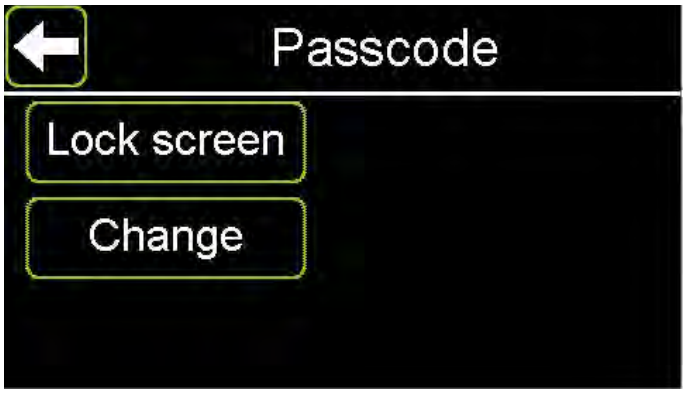
To lock the touchscreen,



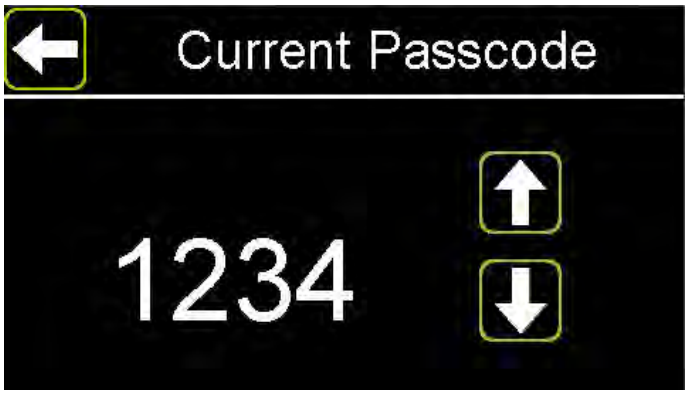
Press the Menu button.



Passcode….

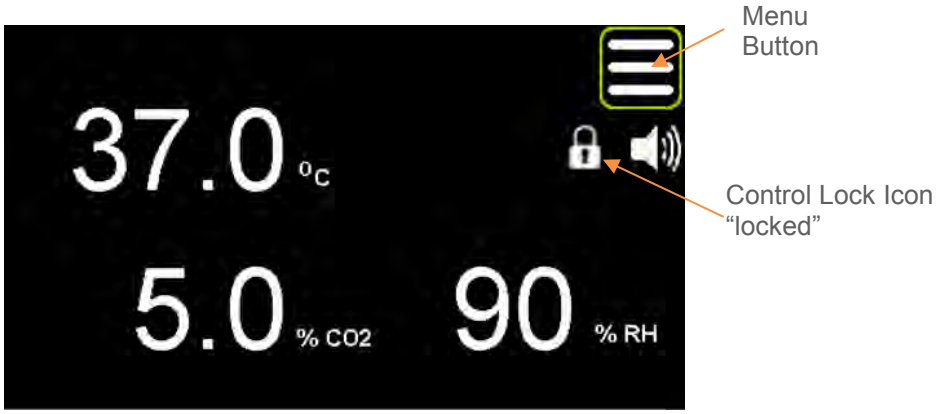


Lock Screen…..

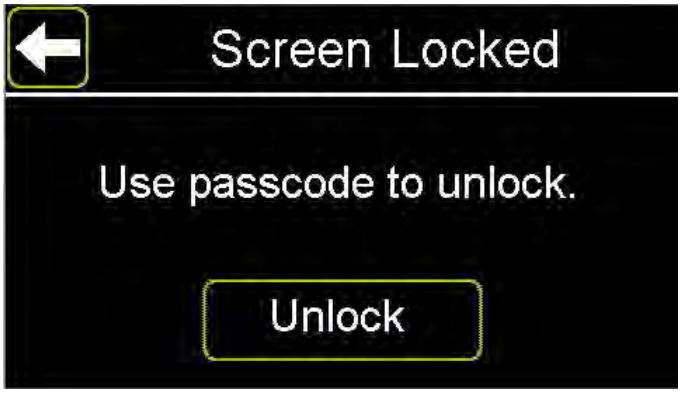


Lock screen: Press Up or Down arrow to default Passcode ‘1234’.Press the (Back button) to return to Home Screen…Touchscreen is now “locked”

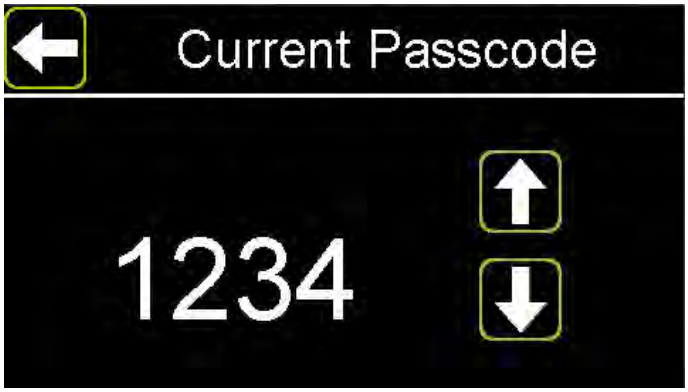
Unlocking Screen



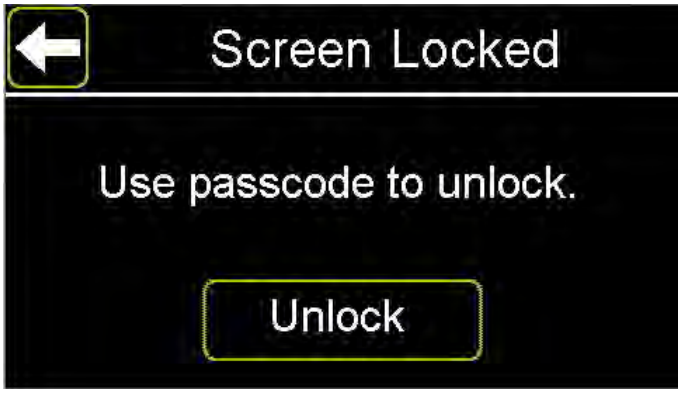
When the screen is locked, accessing the Menu button, the screen display will read…



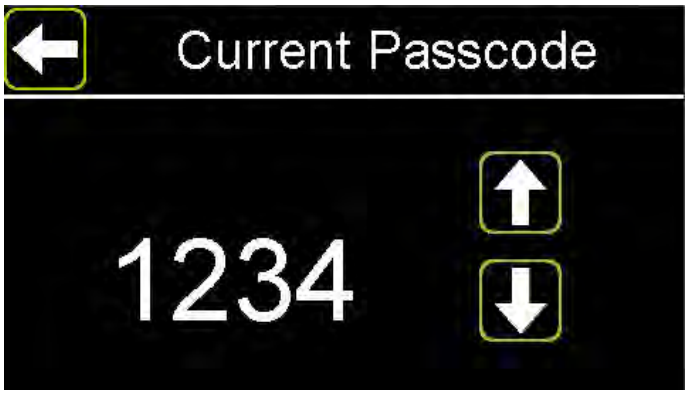
Press Unlock to enter Passcode…



Enter Passcode….(default ’1234’) to unlock screen. Press the (Back button) to return to Home Screen. Touchscreen is now “unlocked”.

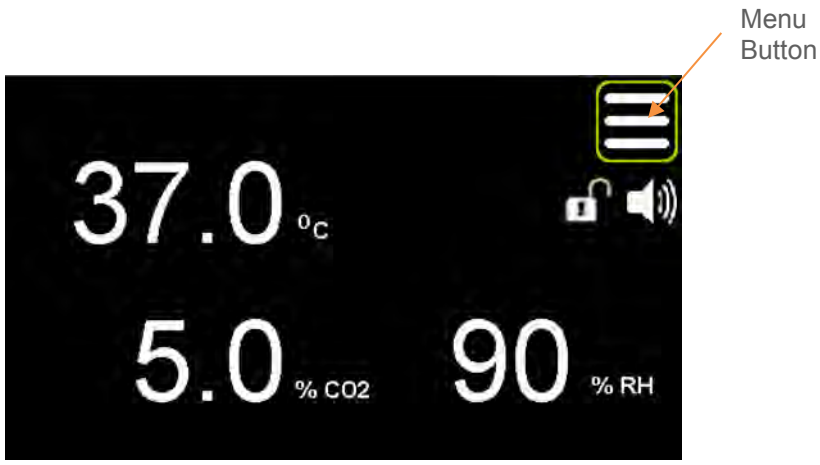


If wrong Passcode is entered on the Unlock screen, this screen will be displayed. Press the (Back button) to return to Current Passcode screen and re-enter correct Passcode.

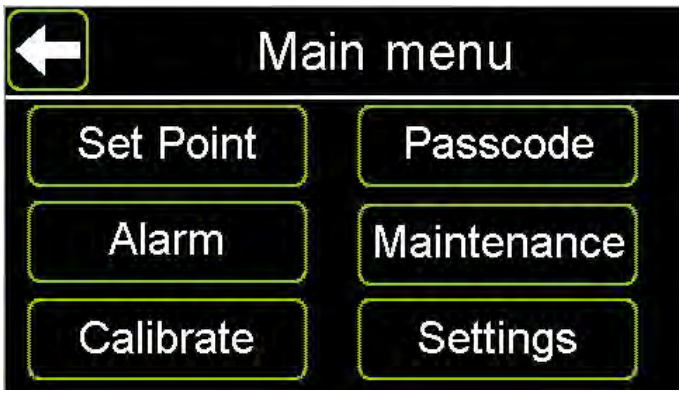


Press the (Back button) to return to Home Screen.

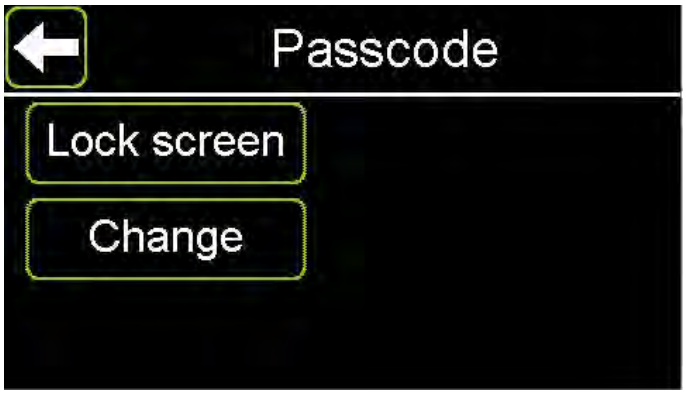
Changing Passcode



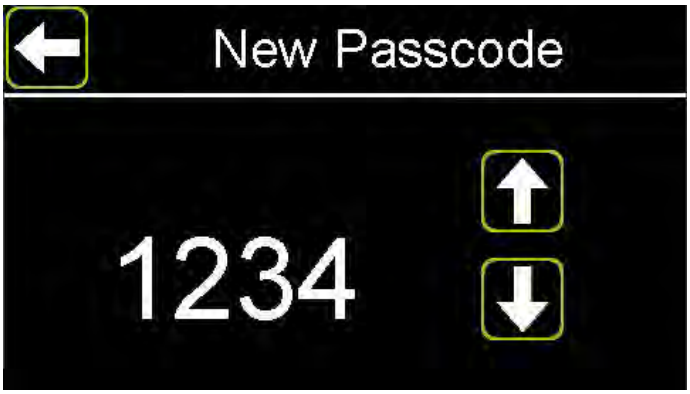
Press the Menu button.



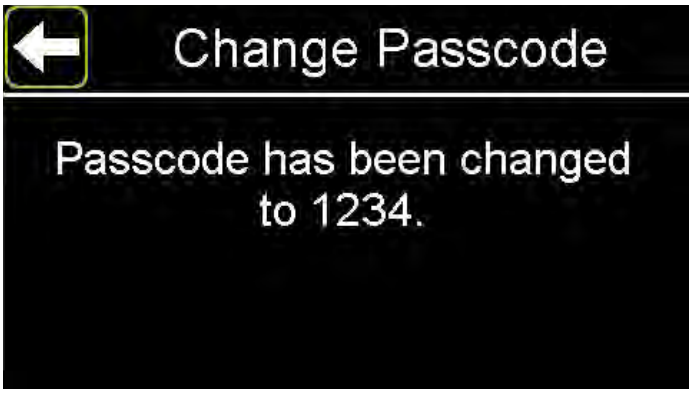
Passcode….



Change…..



Press the Up or Down arrows to enter a new Passcode number.



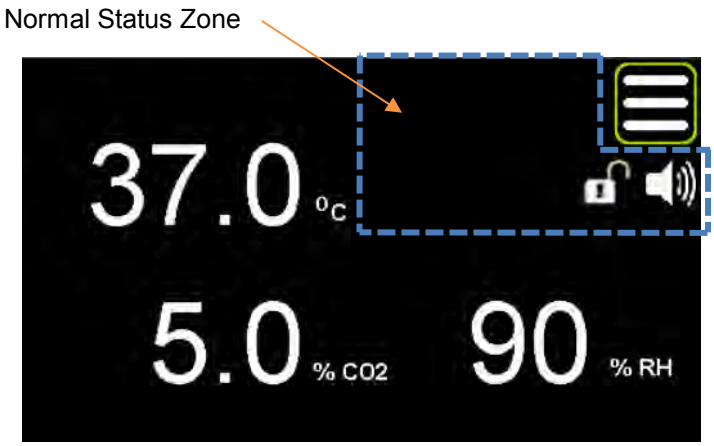
Press the (Back button) to confirm changes made to new Passcode number.

Press the (Back button) to return to Home screen.

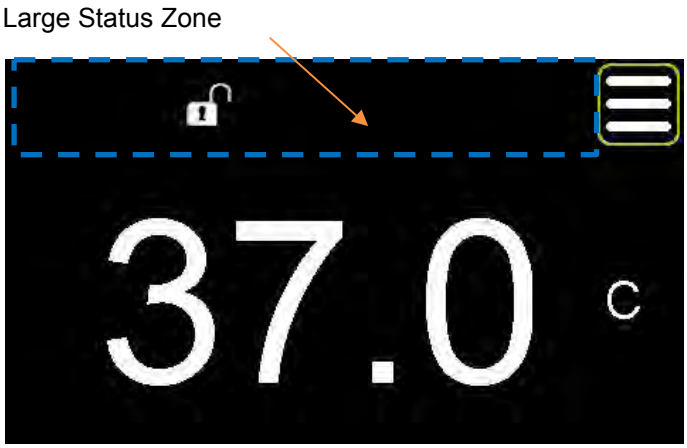
Now, when locking / unlocking touchscreen use new Passcode number.

Changing the Touchscreen Parameter Display To Large Font

This incubator touchscreen offers the option of a larger parameter display font size that can be seen from a greater distance than the factory font size. This feature only applies to the current values that are on the Home screen. Each parameter is displayed on the screen and scrolls through all of the current incubator parameter values ie, Temperature, Humidity, CO_2 and (O_2, 7411-5). The Normal parameter display "status" zone changes location on the Home screen. All features of Screen Lock, Buzzer, and Humidity Control etc….. have not changed, just moved to a different location on the Home Screen when using the Large Font Mode.



Normal Parameter display font size….



Large Parameter display font size….

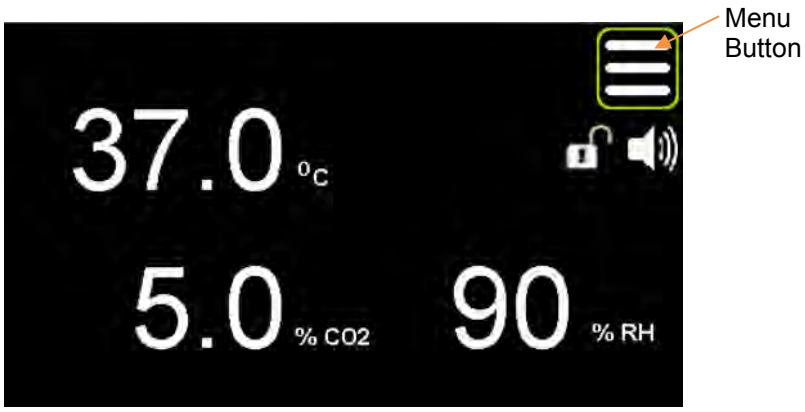
Temperature…..

Humidity…..

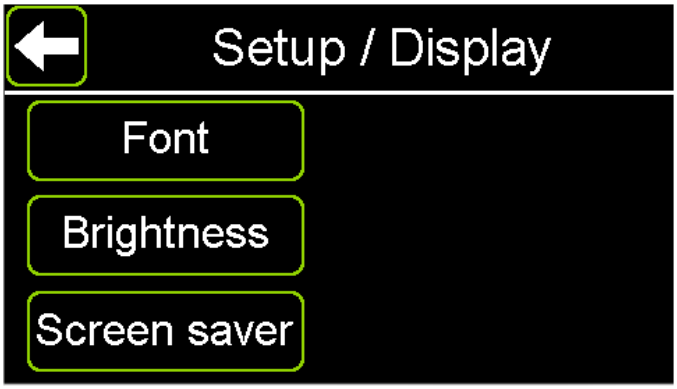
CO_2…….

O2…….

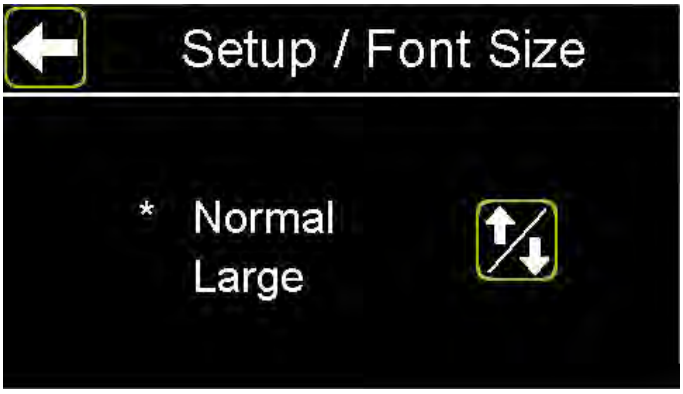
To change to Large Font Mode for the display,



Press the Menu button.



Press the Font button to access the Font Size screen.



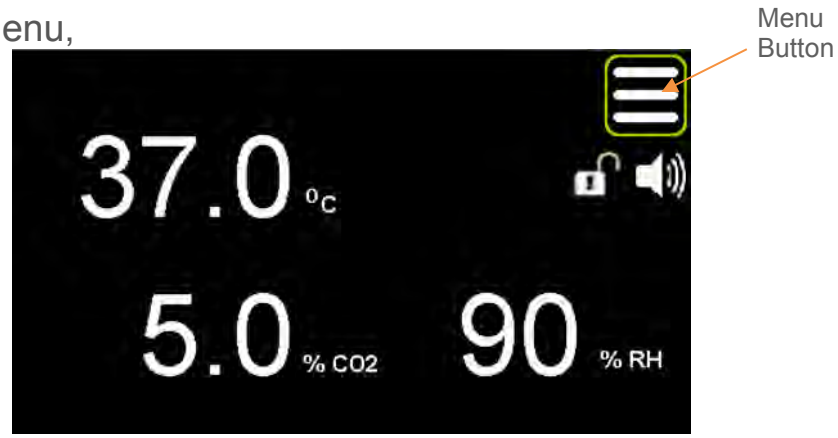
Press the button to select the Large font size. Press the Back button to confirm changes. When complete, press the Back button repeatedly until returning to Home Screen. Large Font display is now enabled.

Setup Menu & Troubleshooting

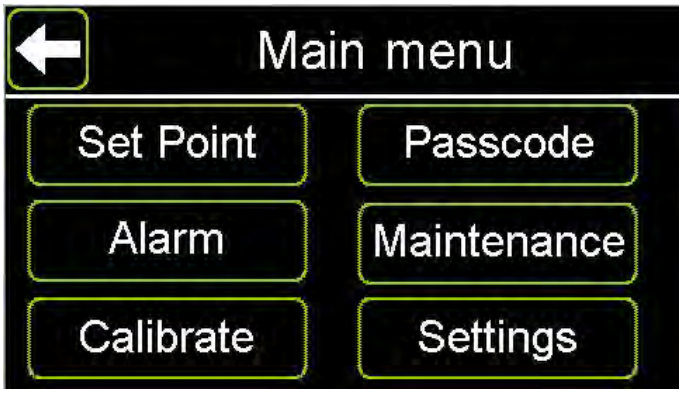
The incubator control system is equipped with advanced features which allow the user to:

- View the current Incubator model configuration
- See and alter the percent output of the door heater control system

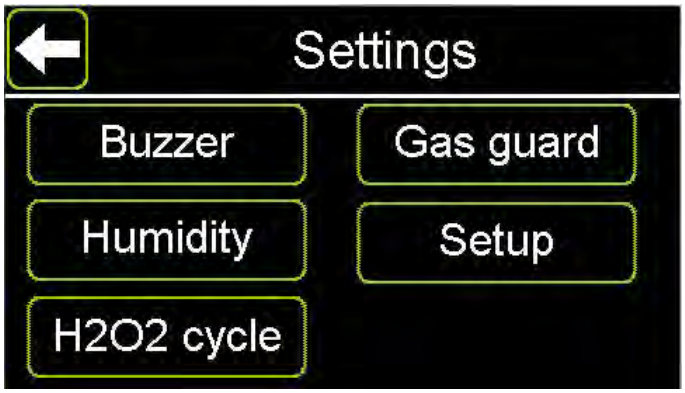
To access the Setup Menu,



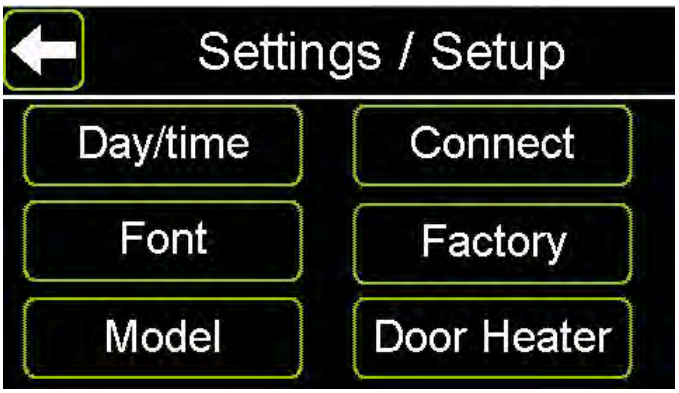
Press the Menu button.



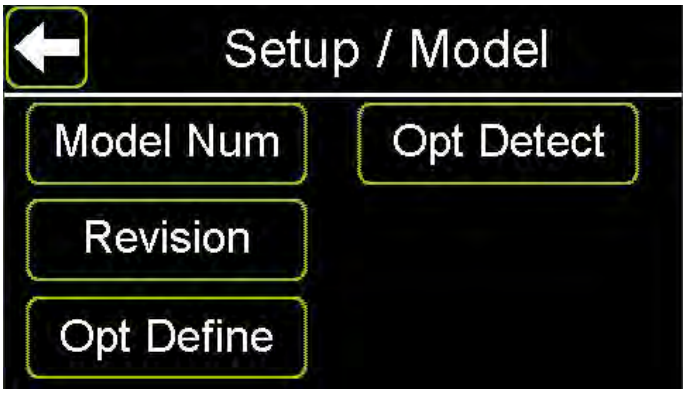
Settings….



Setup….



Model….

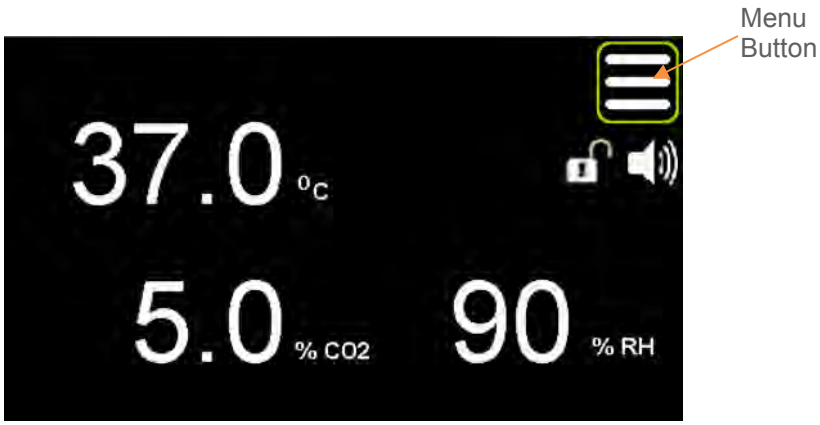


Model Num…..

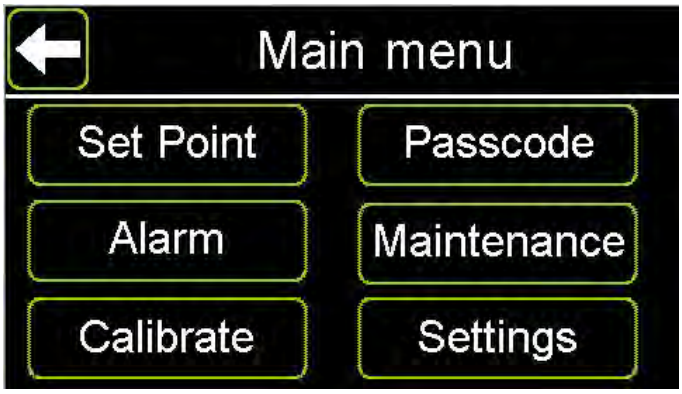
Screen displays the incubator model number

Press the Back arrow to Setup /Model screen to view Revision, Opt Define and Opt Detect menu buttons.

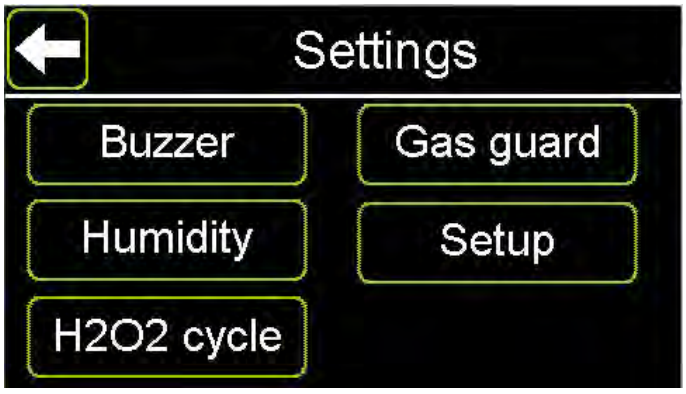
Door Heater
This incubator has a manual / automatic mode for controlling the door heater. To access the Door Heater menu…..



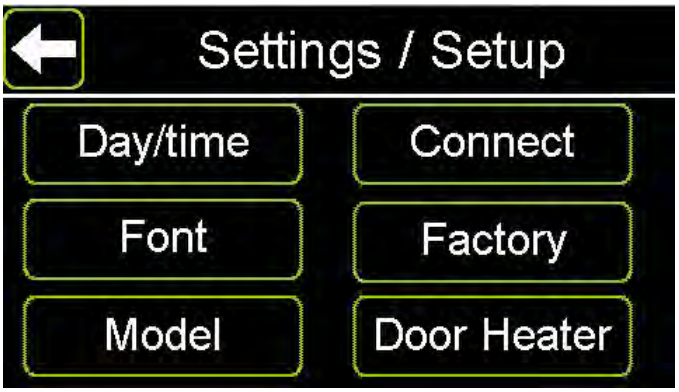
Press the Menu button.



Settings…..



Setup…..



Door Heater….

Choose Control or Output…..

When choosing the Control option, the screen will allow the user to make a choice between Manual or Automatic Door Heat Control.

Manual mode: is a constant % output of heat independent of the controls.

This can also cause a unit to go into alarm mode if High Temperature Alarm is set too close to actual setpoint.

Automatic mode: is a multiplier of the air heater percent on-time which is controlled by the setpoint of the incubator.

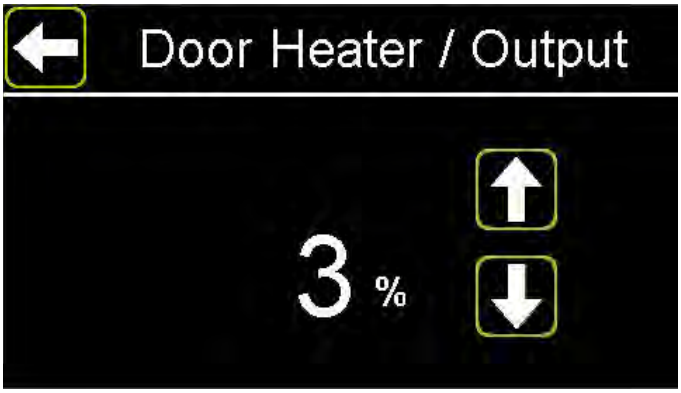
Both Manual and Automatic Door Heater Output modes values are controlled on the Door Heater/ Output Screen. In Manual Mode the value is a constant % of heat. In Automatic Mode the value is a multiplier of percent on-time.

The default is Automatic. To change this feature to Manual Door Heat Control.

Press the button to select Manual. Press the Back button to confirm change.

Changing the output of the Door Heater in Manual Mode…..

Output…..



Using Up and Down arrows, change Manual Door Heat Control to desired value.

Press the Back arrow to confirm change. Continue to press the Back button to confirm changes and return to Home screen.

PREVENTATIVE MAINTENANCE

Your CARON incubator has been robustly designed to minimize performance problems. However, regular maintenance is very important for continuous trouble free operation.

As a general rule, CARON recommends an annual calibration check of the temperature, humidity, CO_2 and O_2 *(every 6 months)* systems. CARON offers a full range of on-site calibration and validation services. We also offer preventative maintenance contracts on our equipment. Contact our service department for details at 740-373-6809 or visit us on the web at www.caronproducts.com.

Recommended Daily Maintenance Checks

Check the Temperature, Humidity, CO_2, and O_2 displays versus setpoints.
Check for and correct any alarm condition.

Recommended Annual Maintenance Checks

- Disinfect all interior surfaces with a general purpose laboratory cleaning agent or perform a full chamber sterilization using optional STER301 Sterilization Module.
- Replace chamber HEPA filter 2 times a year.
- Replace in-line CO_2 filter 2 times a year.
- Replace wick on HUMD310 nebulizer 2 times a year.
- Perform a complete calibration of the temperature, humidity, CO_2 and O_2 systems.

A full validation is recommended for GMP facilities each time a unit is installed, moved or undergoes significant repair. Contact CARON's service department to schedule on-site validation.

Caron Service Department at www.caronproducts.com or 740-373-6809.

Here is a list of PM Kits that are available for models and accessories covered in this manual.

Model	PM Kit
7410-5	PM-7410-5
7411-5	PM-7411-5
7420-5	PM-7420-5

Accessory	PM Kit	Available on Models
BOTL302	PM-BOTL302	7410, 7411
HUMD309	PM-HUMD309	7410, 7411, 7420
HUMD310	PM-HUMD310	7410, 7411
SENS300	PM-SENS300	7411
STER301	PM-STER301	7410, 7411

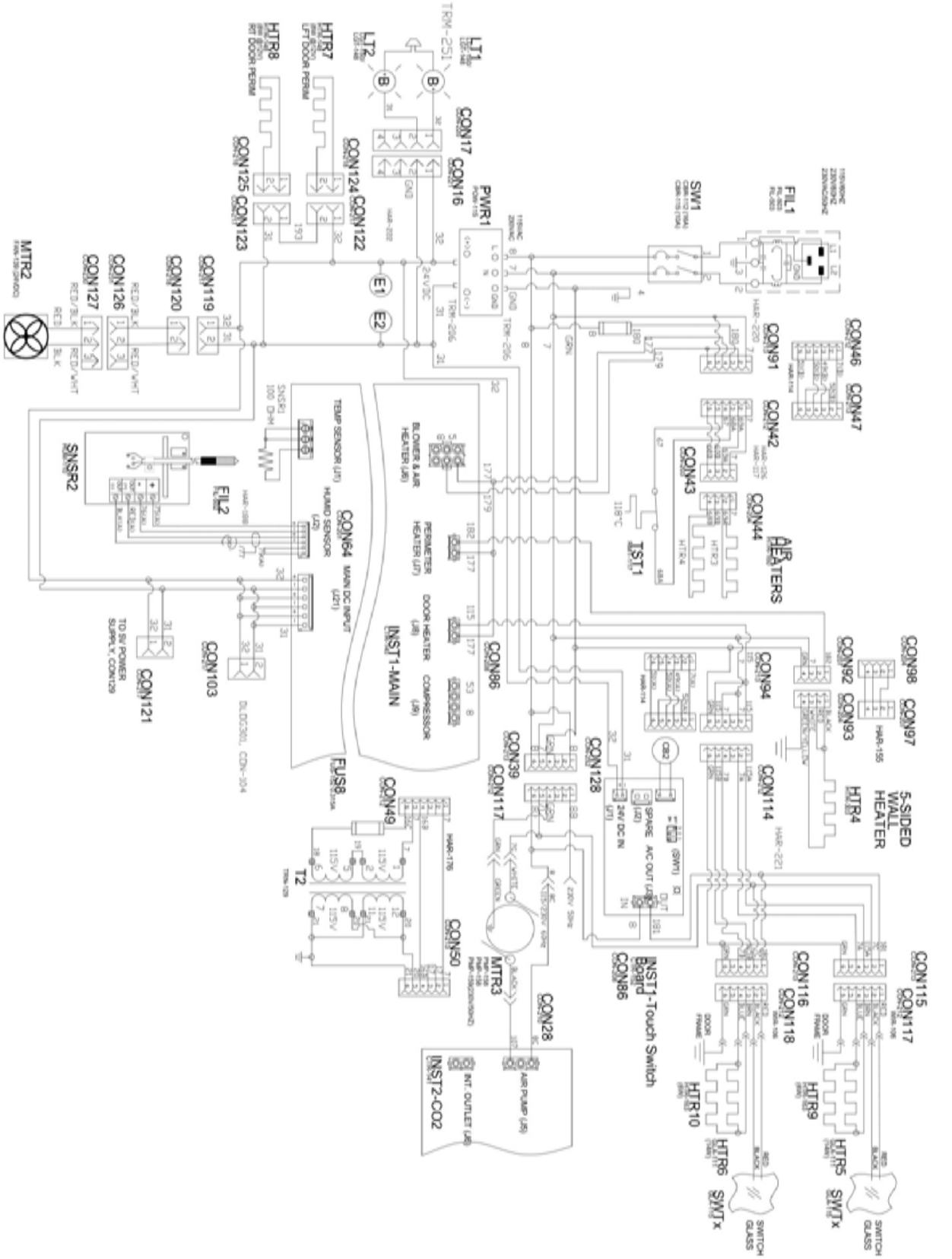
SPECIFICATIONS

MODEL	7410-5	7411-5	7420-5
Temperature Range	5°C above ambient to 45°C		
Temperature Control	± 0.1°C		
Temperature Uniformity	± 0.3°C		
Temperature Sensor	3-wire RTD		
Humidity (standard)	Elevated		
Humidity Range (HUMD310 option)	Ambient to 90% RH		-
Humidity Control (HUMD310 option)	± 3% RH		-
Humidity Sensor (HUMD310 option)	Capacitive		-
CO_2 Range	0-20% CO_2		
CO_2 Control	± 0.1% CO_2		
CO_2 Sensor	Infrared		
O_2 Range	-	1-21% O_2	-
O_2 Control	-	± 0.1% O_2	-
O_2 Sensor	-	Fuel Cell	-
Interior Dimensions	31.3" W x 9.5" D x 26" H (79.5 cm x 24.1 cm x 66 cm)		
Interior Construction	Stainless Steel, Type 304, electropolished		
Exterior Dimensions	36" W x 13.6" D x 36” H (91.4 cm x 34.5 cm x 91.4 cm)		
Exterior Construction	Cold Rolled Steel, Powder Coated		
Work Space	5 Cu. Ft. (142 Liters)		
# of Shelves	Three (3)		
Shelf Construction	Perforated Stainless Steel, Type 304, electropolished		
Shelf Dimensions	31.3" W x 8.8" D (79.5 cm x 22.4 cm)		

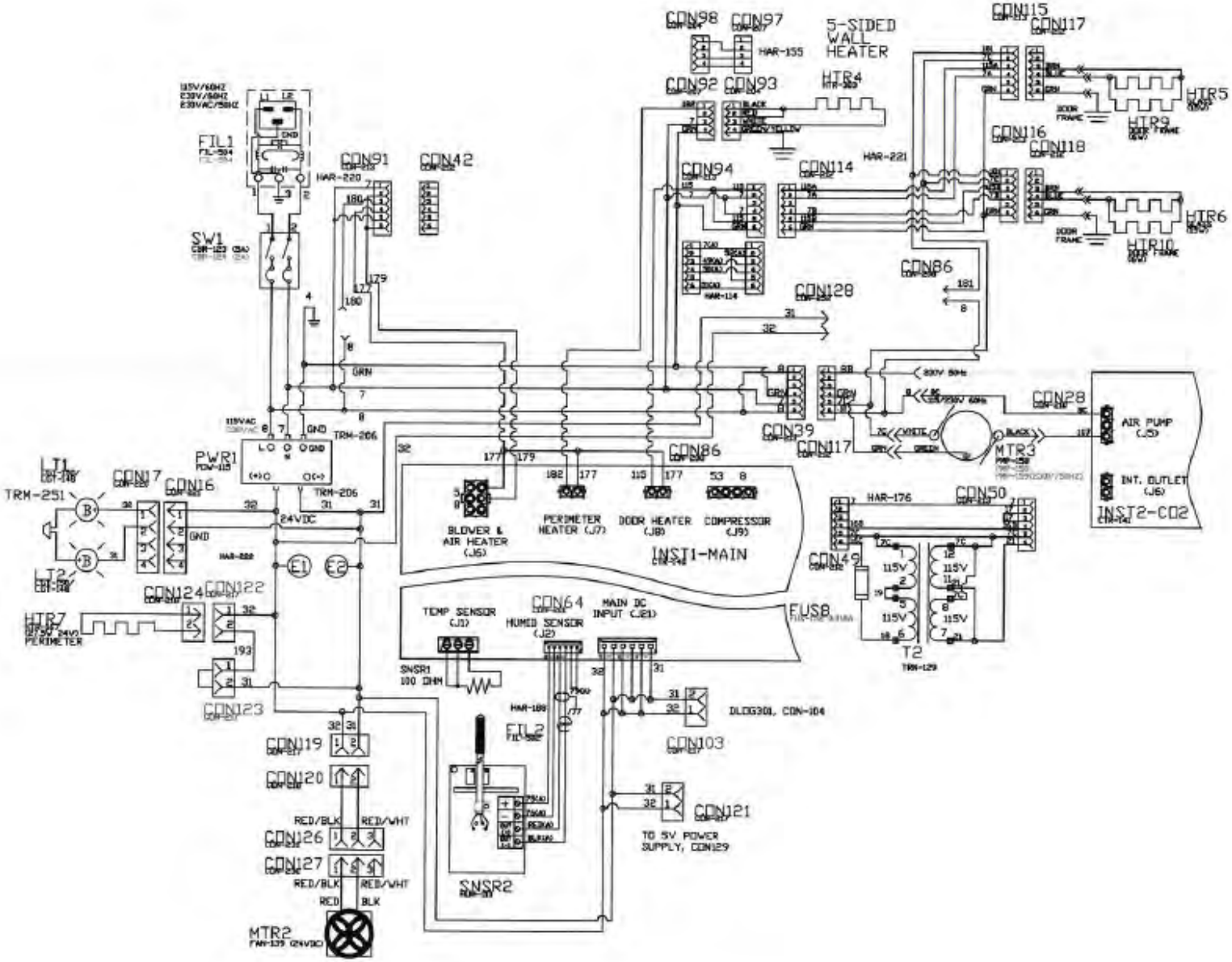
	-1	-2	-3
Electrical	115V, 60 Hz, 5A	230V, 60 Hz, 2A	230V, 50 Hz, 2A
Shipping Weight	227 lbs. (103 kg)	227 lbs. (103 kg)	275 lbs.(125 kg)**

Specifications are subject to change without notice.
Environmental Conditions: Temperature 20ºC, Humidity non-condensing
**See graph for details*
***Includes export shipping crate*

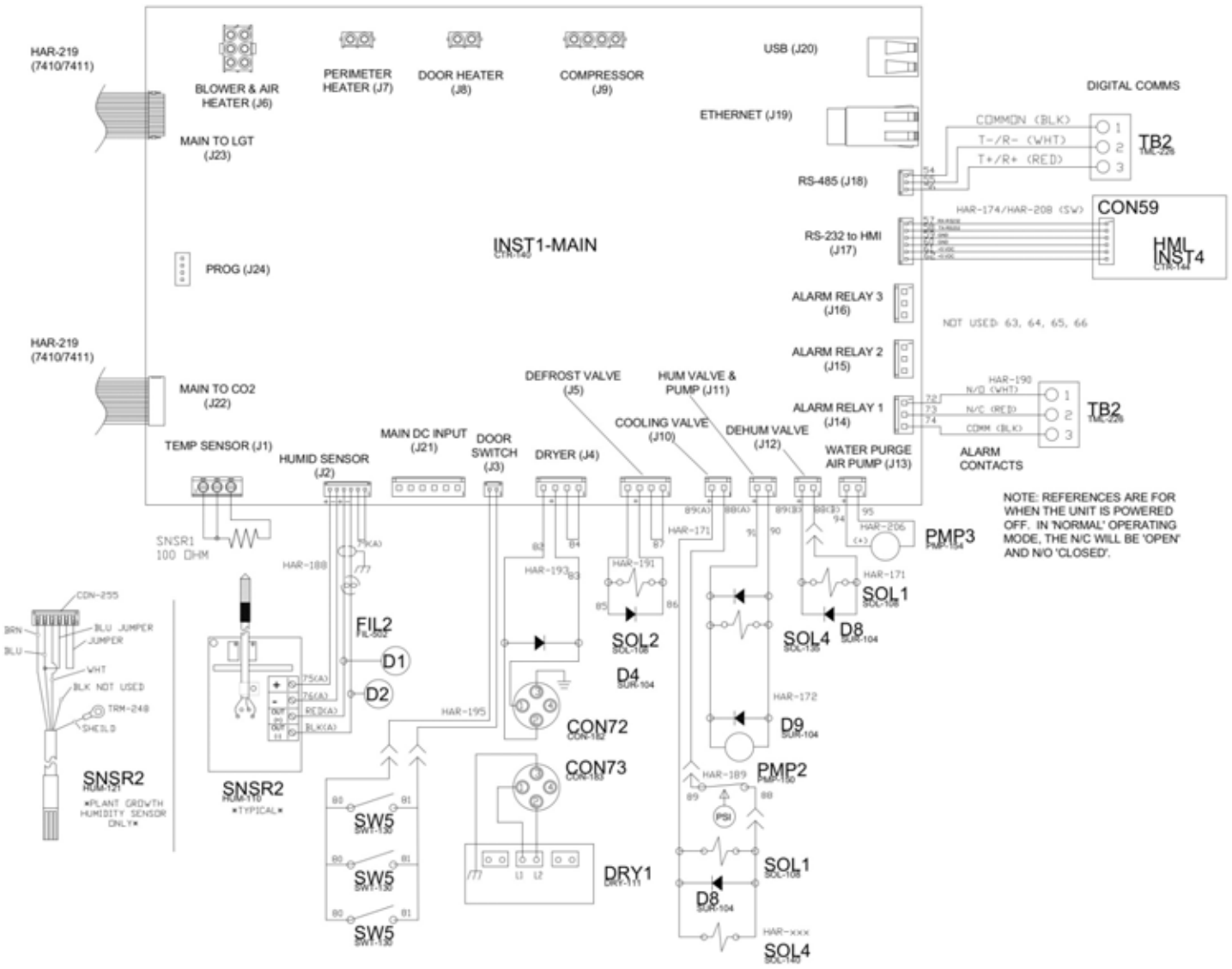
ELECTRICAL SCHEMATICS



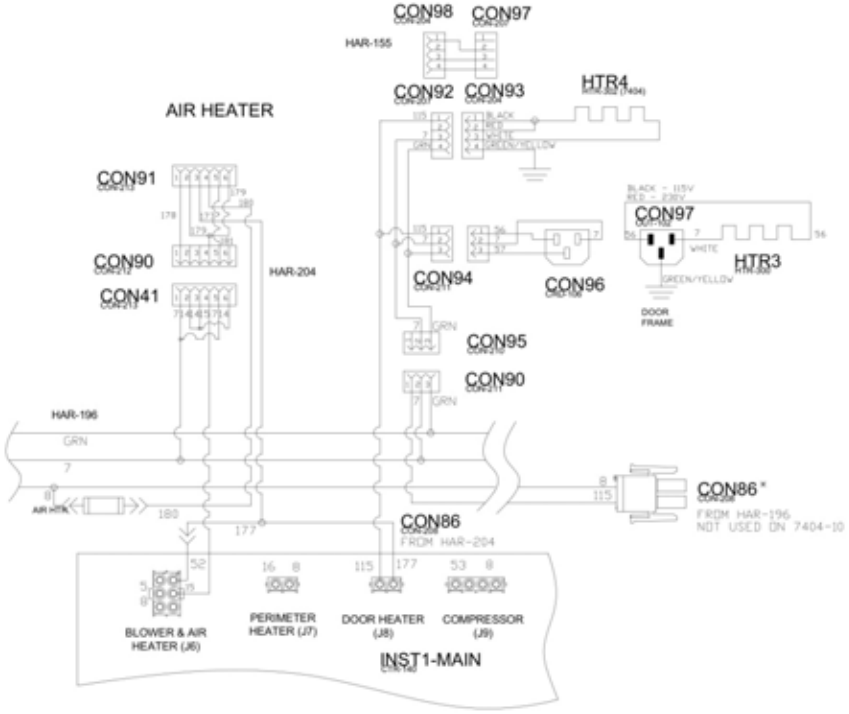
7420-5 HIGH VOLTAGE HARNESS



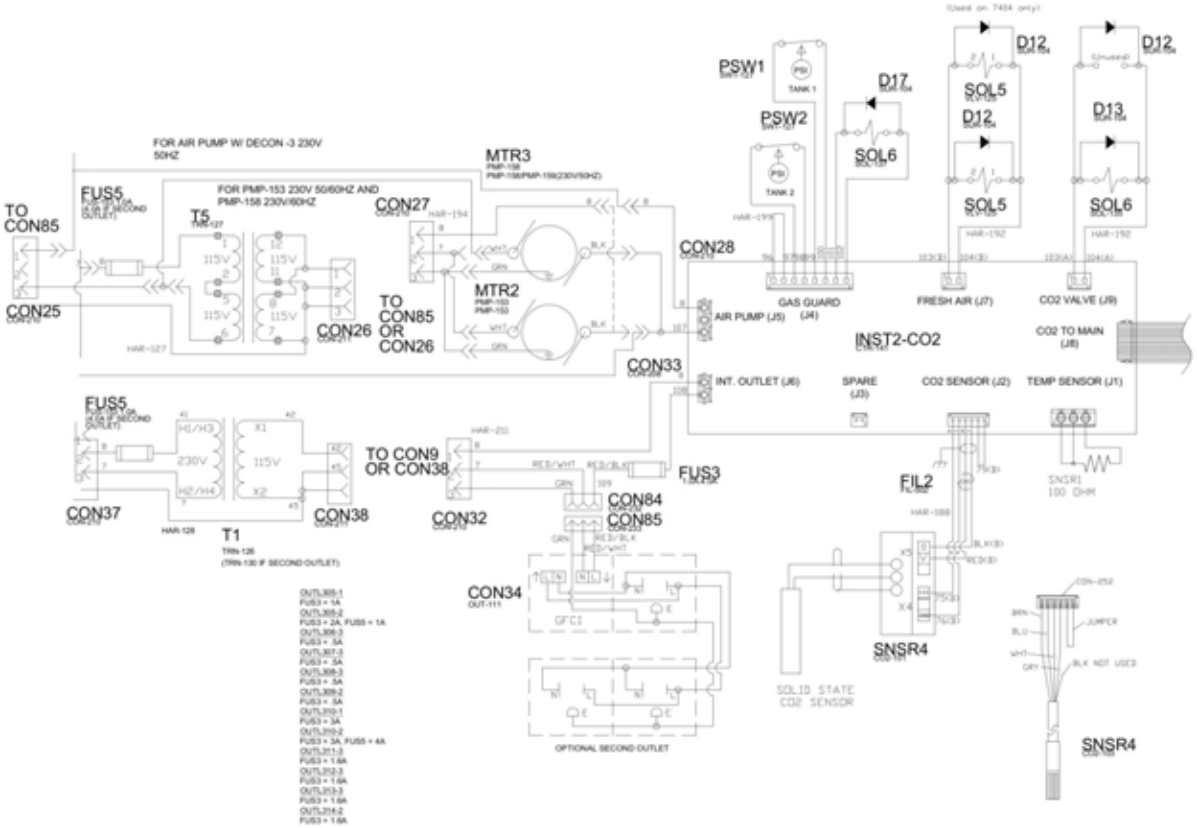
MAIN CONTROLLER BOARD (CTR-140)



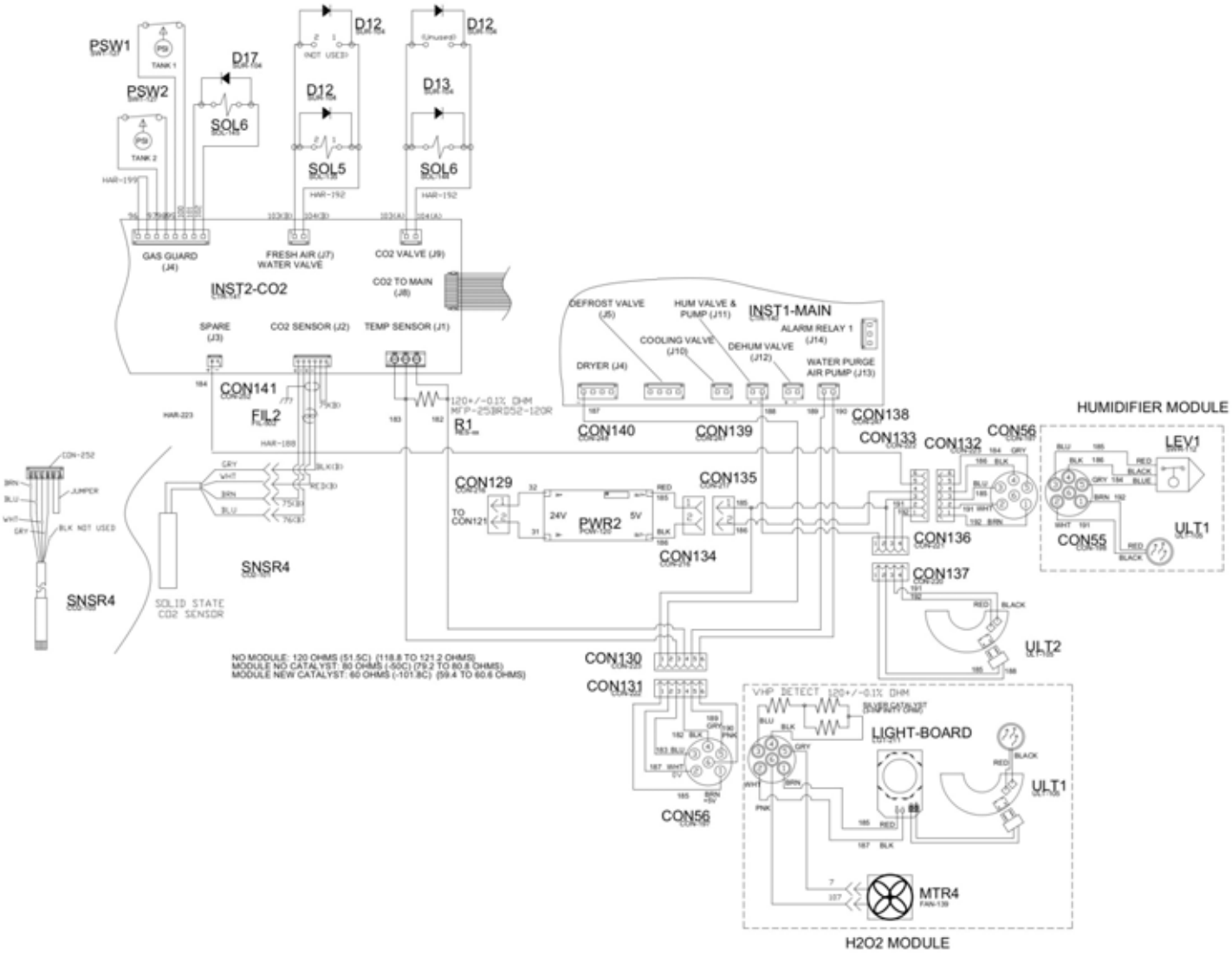
7404-10 & 7410/1-5 GELJACKET HIGH VOLTAGE HARNESS



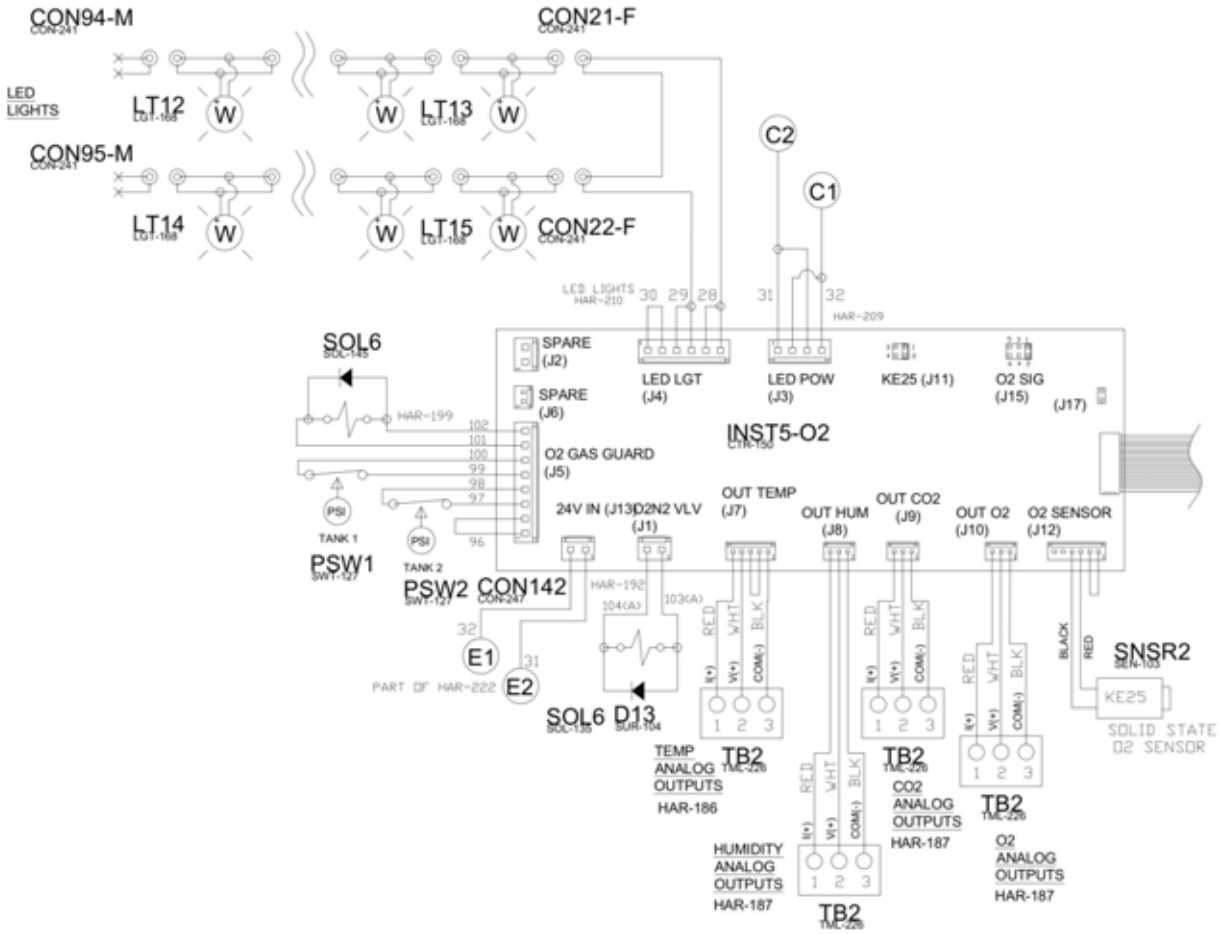
CO2 CONTROLLER BOARD (CTR-141)



HUMIDITY ULTRASONICS AND VHP MODULE



O2 CONTROLLER BOARD (CTR-150)



TROUBLESHOOTING

Problem – Unit Will Not Turn On

- Is the unit connected to a dedicated electrical circuit as defined in the Installation section of the manual?
- Is there power at the electric outlet the unit is plugged into?
- Is the unit's power switch turned on?

Problem – Unit Temperature Is Above / Below Temperature SetPoint

- Has the unit's temperature setpoint been recently lowered / raised and if so has the unit been allowed time to stabilize at the new setpoint?
- Is the access port stopper in the left side of the cabinet installed?

Unit Humidity Level Is Above / Below Humidity SetPoint

- Is the humidity pan full of water, or is the unit connected to a water source as specified in the installation section of the manual?
- Has the unit's humidity setpoint been recently lowered / raised and if so has the unit been allowed time to stabilize at the new setpoint?
- Has the door(s) been recently opened for an extended period of time?
- Is the access port stopper in the left side of the cabinet installed?

Unit CO_2 Level Is Above / Below The CO_2 SetPoint

- Is the unit connected to a pressure regulated CO_2 source as specified in the installation section of the manual?
- Has the unit's CO_2 setpoint been recently lowered / raised and if so has the unit been allowed time to stabilize at the new setpoint?
- Has the door(s) been recently opened for an extended period of time?
- Is the access port stopper installed in the left side of the cabinet?

Unit O_2 Level Is Above / Below The O_2 SetPoint

- Is the unit connected to a pressure regulated N_2 source as specified in the installation section of the manual?
- Has the unit's O_2 setpoint been recently lowered / raised and if so has the unit been allowed time to stabilize at the new setpoint?
- Has the door(s) been recently opened for an extended period of time?
- Is the access port stopper installed in the left side of the cabinet?

SPARE / REPLACEMENT PARTS

General

Part Number	Description
FAN-139	Circulating Fan
CTR-140	Main Controller Board
CTR-141	CO_2 Controller Board
CTR-150	O_2 Controller Board
CTR-151	4.3” Touchscreen, HMI
POW-115	24V DC Power Supply
CRD-113	Power Line Cord
STP-112	1” Rubber Port Stopper

Temperature Related

Part Number	Description
HTR-160	Air Heater,75W
RMT-117	118C Air Heater Thermostat
RTD-101	Temp Sensor -- RTD 100 Ohm Platinum

Humidity Related

Part Number	Description
FIT-348	Fitting,1/4” one touch- 1/4” hose barb (if Carboy)
HUM-110	RH Sensor
SOL-135	Humidification Solenoid
TUB-166	Water Supply Tubing, Blue, ¼”

CO_2 Related

Part Number	Description
CO2-103	Carbon Dioxide Sensor
SOL-135	Gas Injection Solenoid
FLTR308	Replacement Filter Kit for Model 7410 incubators

O_2 Related

Part Number	Description
SOL-135	Gas Injection Solenoid
FLTR309	Replacement Filter Kit for Model 7411 incubators
SENS300	Replacement O_2 sensor for 7411

SPARE REPLACEMENT PARTS ….cont.

Fuse Related

ID	Description	115V	230V
SW1	Main circuit breaker switch	CBR-123 (5A)	CBR-124 (2A)
FUS1	Heater fuse	FUS-164 (3A)	FUS-164 (3A)

Options Related

Part Number	Description	Option
CLM-132	Nylon tube clamp	GASG303, REGL101
FIT-348	1/4”barb-1/4” push-in adapter	GASG303, REGL101
MEM-103	USB Flash Drive	DLOG301
WIR-102	20/3 conductor shielded wire	ALRM302

Part Number	Description	Option
REGL101	CO_2 Gas Tank Regulator	GASG303, REGL101
REGL102	N_2 Gas Tank Regulator	GASG304, REGL101

Part Number	Description	Option
FLTR310	Replacement Filter Kit for Option HUMD310	HUMD310

Accessories

To order any of the Replacement Parts, please contact our service department at www.caronproducts.com or 740-373-6809.

DECLARATION OF CONFORMITY

Caron Products and Services, Inc.
27640 State Route 7
Marietta, OH 45750 USA

Declares that the product:

Designation:	7410, 7411 & 7420 Series
Model Numbers:	7410-5-3, 7411-5-3, 7420-5-3
Classification:	Electrical equipment intended for residential, commercial and lighting industrial environments
Rated Voltage:	220-240 ~ (ac)
Rated Frequency:	50Hz

Meets the essential requirements of the following European Union Directive(s) using the relevant section(s) of the normalized standards and related documents shown:

Standard: EN 61326-1:2013

Directive: EMC Directive 2014/30/EU

Standards: EN 61010-1: 2010 + Corrigendum 1: 2011 Standard for Safety for Electrical Equipment for Measurement, Control, and Laboratory Use.
Part 1: General Requirements

EN 61010-2-010: 2014 - Safety requirements for electrical equipment for measurement, control and laboratory use
Part 2-010: Particular requirements for laboratory equipment for the heating of Materials

By: Bob Dotterer
Engineering Manager
CARON Products & Services, Inc.