



HUMIDITY CHAMBER

WITH MICROPROCESSOR CONTROL

MODELS: HC5/HC5R

INSTALLATION AND OPERATIONAL MANUAL

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LAB Online Exhibition



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These units are for professional, industrial or educational use where the preparation or testing of materials is done at approximately atmospheric pressure and no flammable, volatile or combustible materials are being heated. These units are not intended for hazardous or household locations or use.











RECEIVING AND INSPECTION

Your satisfaction and safety require a complete understanding of this unit. Read the instructions thoroughly and be sure all operators are given adequate training before attempting to put the unit in service. **NOTE: This equipment must be used only for its intended application; any alterations or modifications will void your warranty.**

- 1.1 Inspection:** The carrier, when accepting shipment, also accepts responsibility for safe delivery and is liable for loss or damage. On delivery, inspect for visible exterior damage, note and describe on the freight bill any damage found, and enter your claim on the form supplied by the carrier.
- 1.2** Inspect for concealed loss or damage on the unit itself, both interior and exterior. If necessary, the carrier will arrange for official inspection to substantiate your claim.
- 1.3 Return Shipment:** Save the shipping crate until you are sure all is well. If for any reason you must return the unit, first contact customer service for authorization and supply nameplate data, including model number and serial number. Please see the manual cover for information on where to contact customer service.
- 1.4** Verify that all of the equipment indicated on the packing slip is included with the unit. Carefully check all packaging before discarding. These units are equipped with 6 shelves, 2 shelf support assemblies, 1 fan cover and 4 leveling feet.

GRAPHIC SYMBOLS

Your incubator has been provided with a display of graphic symbols which is designed to help in identifying the use and function of the available user adjustable components.

- 2.1  Indicates that you should consult your manual for further description or discussion of a control or user item.
- 2.2  Indicates “**Temperature**”.
- 2.3  Indicates “**Over-Temperature Safety**”.
- 2.4 C° Indicates “**Degrees Centigrade**”.
- 2.5  Indicates “**AC Power ON**”.
- 2.6  Indicates “**Water Jacket Low**”.
- 2.7  Indicates “**ON/I**” and “**OFF/O**”.
- 2.8  Indicates “**Relative Humidity**”.
- 2.9 **%RH** Indicates “**Percent Relative Humidity**”.
- 2.10  Indicates “**Potential Shock Hazard**” behind this protective partition.
- 2.11  Indicates “**Protective Earth Ground**”.
- 2.12  Indicates “**Manual Adjustable Component**”.

THEORY OF OPERATION

- 3.1 Model HC5:** The Model 9000 Humidity Chamber is designed to maintain temperature between 35°C and 70°C, and relative humidity between 40-95%. Reference Section 9.0, Unit Specifications, for an illustration of the relative humidity performance characteristics

Chamber humidification is achieved by means of a low-pressure vapor generator injecting water vapor through a small orifice. The water vapor is introduced into the chamber at the blower discharge.

It should be noted that this unit incorporates an exhaust fan dehumidification system. Ambient relative humidity will limit the units ability to achieve lower relative humidity settings. The exact lower limit can be determined by using a psychometric chart to extrapolate the lower limit at higher temperatures and ambient humidity.

- 3.2 Model HC5R:** The Model 9000L humidity chamber is designed to maintain temperature between 10° and 70°C and relative humidity between 40-95%. Reference Section 9.0, Unit Specifications, for an illustration of the relative humidity performance characteristics. The unit cooling system allows control at or below ambient temperatures.

Chamber humidification is achieved by means of a low-pressure vapor generator injecting water vapor through a small orifice. The water vapor is introduced into the chamber at the top right side.

Ambient relative humidity will limit the unit's ability to achieve lower relative humidity settings. The exact lower limit can be determined by using a psychometric chart to extrapolate the value when ambient conditions are heated to the higher chamber temperatures.

NOTE: The HC5R should remain upright for 24 hours prior to powering up. This will allow the oil to settle in the compressor.

INSTALLATION

Local city, county or other ordinances may govern the use of this equipment. If you have any questions about local requirements, please contact the appropriate local agency. Installation may be performed by the end user.

Under normal circumstances this unit is intended for use indoors, at room temperatures between 5° and 40°C, at no greater than 80% Relative Humidity (at 25°C) and with a supply voltage that does not vary by more than 10%. Customer service should be contacted for operating conditions outside of these limits.

- 4.1 Power Source:** The electrical supply circuit to the humidity chamber must conform to all national and local electrical codes. Consult the unit's serial data plate for the voltage and ampere requirements before making connection. VOLTAGE SHOULD NOT VARY MORE THAN 10% FROM THE SERIAL PLATE RATING. This unit is intended for 50/60 Hz application. A separate circuit is recommended to prevent possible loss of product due to overloading or failure of other equipment on the same circuit.

CAUTION: Make sure that the chamber is located in its intended position & level before filling the water jacket.

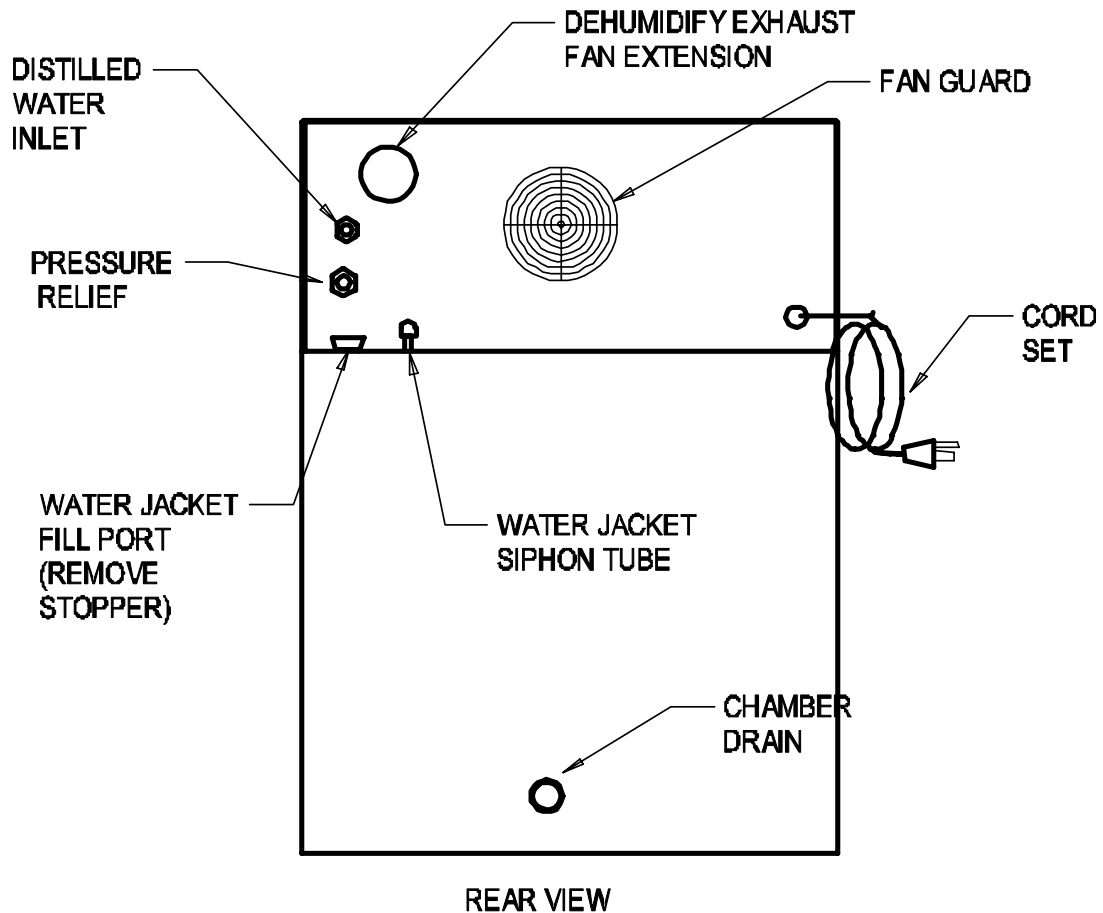
- 4.2 Location:** In selecting a location, consider all conditions which might affect performance such as heat from radiators, ovens, autoclaves, etc. Avoid direct sun, fast moving air currents, heating/cooling ducts and high-traffic areas. Allow a minimum of 5cm between the unit and walls or partitions which might obstruct free air flow.
- 4.3 Lifting / Handling:** These units are heavy and care should be taken to use appropriate lifting devices that are sufficiently rated for these loads. Units should only be lifted from their bottom surfaces. Doors, handles and knobs are not adequate for lifting or stabilization. The unit should be completely restrained from tipping during lifting or transport. All moving parts, such as shelves and trays should be removed and doors need to be positively locked in the closed position during transfer to prevent shifting and damage.
- 4.4 Leveling:** The unit must sit level and solidly. Leveling feet are supplied and must be installed in the four holes in the bottom corners of the unit. With the feet installed and the unit standing upright, each foot can be raised by turning it

in a counterclockwise direction. Adjust the foot at each corner until the unit stands level and solid without rocking. If the unit must be moved, turn the leveling feet all the way clockwise to prevent damage while moving.

- 4.5 Water Drain Line:** On the external back bottom of the unit, there is a line for excess condensation to drain from the bottom of the unit (**See Figure 1**). This line should be run into a floor drain, but can be run to a shallow pan with an automatic sump pump. Under no circumstances should this line be plugged. If the line is plugged the condensation will pool on the floor of the test chamber and flow out when the door is opened.
- 4.6 Vapor Trap:** Located in the water drain line, this must be filled with approximately ½ cup of DISTILLED WATER. This will prevent the chamber humidity from escaping and still allow any condensation to drain away. If the unit is not used for a long period of time this trap should be flushed and refilled with DISTILLED WATER.
- 4.7 Filling and Draining the Water Jacket:** The front panel of the incubator has a WATER LOW warning light. Fill the water jacket with DISTILLED WATER by means of the fill port located at the top right rear of the unit. STOP filling when the WATER LOW warning light goes off. When full, the unit holds approximately 15.5 U.S. gallons (58 liters). To drain the jacket, attach a suitable hose to the siphon tube marked SIPHON HERE located to the left of the fill port mentioned above. Start a siphon and allow unit to empty into a drain or catchments area.
- 4.8 Humidification Water Supply:** On the back of the body there is a ¼ inch compression fitting marked WATER IN. This fitting should be attached to a DISTILLED WATER supply source. **Deionized or tap water should not be used. They will have a detrimental effect on the unit causing corrosion or obstructions and premature failure of this assembly.** A continuous supply is required to maintain the operating level. If the supply is disconnected or in some other manner cut off from the vapor generator, the level will drop and the float switch in the vapor generator will shut the vapor generator off.
- 4.9 Pressure Relief:** This valve is located just below the WATER IN fitting and is marked RELIEF. It provides pressure relief for the steamer humidifier system. The cracking pressure range is set for 3-5 PSI. Please note that the protective shipping cap should be removed prior to operation.
- 4.10 Shelves and Interior Parts:** Internal parts consist of a left and right duct with shelf slides attached, a top duct/fan cover, and shelves. Shelves can be installed at even spacing or as desired. (**See Figure 2**) The glass door gasket is also removable by unbolting the gasket guards. See Cleaning prior to assembling.

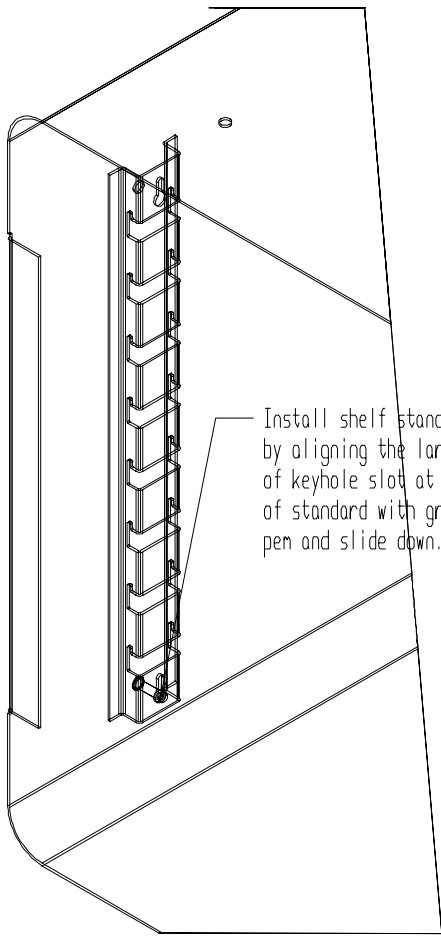
4.11 Cleaning: The unit chamber should be cleaned and disinfected prior to use. Remove all of the interior parts, if assembled, and clean thoroughly, including all corners using a suitable disinfectant that is appropriate to your application. Regular periodic cleaning is required. Special care should be taken when cleaning around sensing heads to prevent damage. DO NOT use chlorine-based bleaches or abrasive cleaners, as this will damage the stainless steel interior.

Figure 1

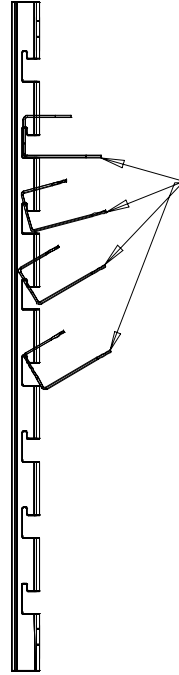


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Figure 2



Install shelf standard by aligning the large end of keyhole slot at both ends of standard with groove in pen and slide down.



Align shelf slider between shelf standard and slide into place at a slight angle in shelf standard slots. Then lift and rotating into place until base of slide is parallel to liner bottom. As illustrated from the bottom up.

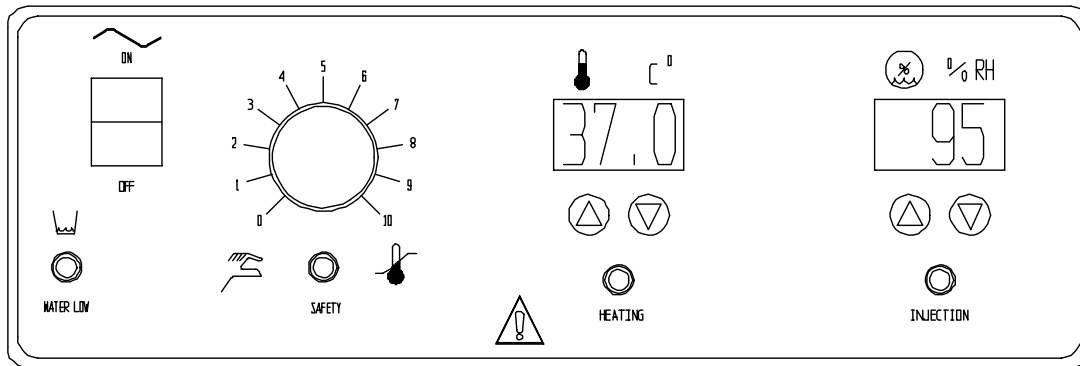
CONTROL PANEL OVERVIEW

(See Figure 3)

- 5.1 Power Switch:** The main power I/O (on/off) switch controls all power to the unit and must be in the I/ON position before any systems are operational.
- 5.2 High Limit Safety Thermostat:** This control consists of an adjustable knob and a scaled dial from 1-10. The Safety is independent of the Main Control and guards against any failure of the Main Control which would allow the temperature to rise past the set point. When properly set, the Safety takes control of the heating element if the temperature rises to this Safety set point, and allows continued use of the chamber until the problem can be resolved or service can be arranged.
- 5.3 Safety Light:** This pilot lamp is on when the High Limit Safety Thermostat has been activated. Under normal operating conditions this pilot light should never be on.
- 5.4 Main Temperature Controller:** This controller is marked C° and consists of the digital display and UP/DOWN arrow pads for inputting set point temperatures and calibration. It can be set in .1 degree increments and displays chamber temperature in .1 degree increments.
- 5.5 Heating Light:** This pilot lamp is on when the Main Temperature Controller has activated the heating elements. It is on continually while the chamber is reaching set point, and cycles on and off while the controller maintains set point.
- 5.6 Relative Humidity Controller:** This control is marked %RH and consists of a digital display and UP/DOWN arrow pads for inputting set point percents and calibration. This control can be set in 1% increments and displays chamber humidity in 1% increments.
- 5.7 Injection Light:** This pilot lamp is on when the Humidity controller has activated the vapor injection solenoid. It is on continually while the chamber is reaching humidity percent set point, and cycles on and off while the controller maintains set point.

- 5.8 Water Jacket Low Indicator:** Located just below the power switch and marked WATER LOW , this light is on when the water in the jacket is low, indicating DISTILLED WATER needs to be added to the jacket.
- 5.9 Door Heat Control:** Located in the upper corner of the outer door liner, this control consists of an adjustable control knob and scale with a line marked 38° for reference. This control allows the door to maintain a temperature consistent with that of the water jacket and prevent condensation from forming on the glass door.

Figure 3



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OPERATION

It is recommended that your unit be allowed to reach operating temperature before engaging the humidifying system. This requires setting the RH set point to 0 (zero) until the unit is at operating temperature. See Section 6.7 for changing the RH set point. The water jacket must be filled prior to setting temperatures.

CAUTION: When opening the door at high temperatures there is a danger from steam/high humidity escaping. The door should be opened a small amount then paused until the steam dissipates.

- 6.1 Turn the power switch to the I/ON position. Turn the High Limit Safety Thermostat to its maximum position, clockwise and place the shelves in the chamber.
- 6.2 Place a reference thermometer in the chamber where it can be easily viewed, and so that it is not touching any shelves or chamber walls. Taping the thermometer to a petri dish is a method that works well. A second reference thermometer taped to the outer door is advisable for calibrating the door controller.
- 6.3 **Set Main Temperature Control:** To enter the set point on the control, push and release either the Up or DOWN arrow pad one time and the digital display will start to blink from bright to dim. While blinking, the display is showing the set point, which can be changed to the desired temperature by pushing the UP or DOWN arrow pads. If the arrow pads are not pushed within five (5) seconds, the display will stop blinking and will read the temperature in the chamber. Allow at least twenty-four (24) hours for the temperature to stabilize. It is recommended that set point adjustments are made again after the calibration procedure is completed.
- 6.4 **Set Door Temperature:** The door temperature is adjusted at the factory. The heated door feature helps eliminate condensation on the glass door and inside the chamber. If an adjustment is needed, the control for this feature is located at the upper left top of the outer door liner. It consists of an adjustment knob and a graduated scale. Note that the door temperature can be adjusted to keep condensation from forming but cannot eliminate it once formed. Use a dry towel to wipe off the inner door before resetting the control. Increase the door temperature with clockwise adjustments. If condensation appears on the window during use, it usually indicates the door

temperature is too low. If condensation occurs on the inner walls during use, it usually indicates the door temperature is too high. Adjust the control up or down until whichever condensation problem exists, disappears. Usually a door temperature of 1°C above the chamber temperature will prevent any condensation from occurring, but often each application needs custom adjustment. Allow at least 24 hours between adjustments to allow the chamber conditions to totally stabilize.

- 6.5 Calibrating Temperature Control:** Compare the reading on the reference thermometer with the digital display. If there is an unacceptable difference, put the display into calibrate mode by pressing both the UP and DOWN arrow pads at the same time and holding them in until the two outside decimal points start to flash. When the decimal points are flashing, the display can be calibrated to match the reference thermometer by pressing the UP or DOWN arrow pads until the display reads the correct value. Allow the unit to stabilize again until five (5) consecutive readings at five (5) minute intervals read a constant value.
- 6.6 Set the High Limit Safety Thermostat:** After the Main Temperature Control is set and calibrated the High Limit needs to be set. First turn the control knob counterclockwise just until the Safety Indicator light comes on. Then slowly turn the knob clockwise just until the safety Indicator light goes off. The safety Thermostat should now be set approximately 1°C above the Main temperature Control set point.
- 6.7 Set Humidity Control:** First, place a reference hygrometer in the chamber where it can be easily viewed. To enter set point mode on the Humidity Control push and release either the Up or DOWN arrow pad and the digital display will start to blink from bright to dim. While blinking, the display is showing the set point which can be changed using the UP or DOWN arrow pads. If the arrow pads are not pressed within five(5) seconds the display will revert to showing the process or actual parameter within the chamber. Allow at least twenty four (24) hours for the unit to stabilize.

CAUTION: When opening the door there is a danger from the steam/high humidity escaping. The door should be opened two to three inches then paused until the steam cloud dissipates.

- 6.8 Calibrating Humidity Control:** Compare the reading on the reference hygrometer with the digital display. If there is an unacceptable difference, put the display into calibrate mode by pressing both the UP and DOWN arrow pads at the same time until the display begins to blink. When the display is blinking it can be calibrated to match the reference hygrometer by using the Up/Down arrow pads until it reads the correct value. If the arrow pads are not pressed within five (5) seconds, the display will revert to showing the process or actual parameter within the chamber. Allow the unit to stabilize again.

MAINTENANCE

Note: Prior to any maintenance or service on this unit, disconnect power cord from the power supply.

- 7.1 Cleaning:** The unit chamber should be cleaned and disinfected on a regular basis. Remove shelving, shelving supports and fan guard then clean thoroughly, including all corners using a suitable disinfectant that is appropriate to your application. Regular periodic cleaning is required. Special care should be taken when cleaning around sensing heads to prevent damage. **DO NOT** use chlorine-based bleaches or abrasive cleaners as this will damage the stainless steel interior.
- 7.2** Remove and reinstall the gasket carefully when cleaning the chamber interior. Remove this gasket by removing the stainless retaining brackets from the sides, top and bottom interior of the chamber. This is done by unscrewing the retaining nuts and washers from each bracket and pulling the bracket off the retaining studs. Reverse the above steps when reinstalling the gasket.
- 7.3 Storage:** If the humidity chamber is to be turned off it can be reactivated without controller adjustments. The vapor trap should be flashed out and refilled with distilled water and the humidification water supply connected. Prior to storage the interior should be wiped dry to eliminate contamination. If the unit is to be transported disconnect the water supply, clean the water drain line, and screw the leveling feet in. See Section 4.3 Lifting/Handling for transport instructions.
- 7.4** There is **NO** maintenance required on the electrical components. If the unit fails to operate as specified please review the troubleshooting guide prior to calling for technical support.

TROUBLESHOOTING

Always make a visual inspection of the unit and control console when troubleshooting. Look for loose or disconnected tubing and wires which may be the source of the trouble.

TEMPERATURE

Temperature too high

- 1/ controller set too high-see Section 6.3
- 2/ controller failed on – call Customer Service
- 3/ wiring error – call Customer Service

Display reads "HI" or "400"+

probe is unplugged, is broken or wire to sensor is broken – trace wire from display to probe; move wire and watch display to see intermittent problems

Chamber temp goes way over set point and then settles to set point

Recalibrate – see Section 6.5

Temperature too low

- 1/ high limit set too low – Reset Safety Thermostat see Section 6.6
- 2/ controller set too low – see Section 6.3
- 3/ unit not recovered from door opening – wait for display to stop changing
- 4/ unit not recovered from power failure or being turned off – incubators will need 24 hours to warm up and stabilize
- 5/ element failure – see if heating light is on; compare current draw to data plate
- 6/ controller failure – confirm with front panel lights that controller is calling for heat
- 7/ high limit failure – confirm with front panel lights that Safety is operating correctly
- 8/ wiring problem – check all functions and compare wiring to owners manual - especially around any areas recently worked on
- 9/ loose connection – check shadow box for loose connections

Display reads "LO"

- 1/ sensor is plugged in backwards – reverse sensor wires to controller
- 2/ if ambient temperature is lower than range of unit – compare set points and ambient temperature to rated specifications in Section 9.0

Unit will not heat over a temperature that is below set point

- 1/ confirm that fan is moving and that amperage and voltage match data plate – check fan motor motion in shadow box and feel for air movement in chamber
- 2/ confirm that set point is set high enough –turn Safety Thermostat all the way clockwise and see if heating light or safety light comes on
- 3/ check connections to sensor
- 4/ check calibration – See Section 6.5

Unit will not heat up at all

- 1/ verify that controller is asking for heat by looking for Heating light – if pilot light is not on continuously, there is a problem with the controller
- 2/ check amperage – amperage should be virtually at maximum rated (data plate) amperage
- 3/ do all controller functions work?
- 4/ is the Safety Thermostat set high enough? – for diagnostics, should be turned fully clockwise with the pilot light never on
- 5/ HAS THE FUSE/CIRCUIT BREAKER BLOWN?

Indicated chamber temperature unstable

- 1/ ± 0.1 may be normal
- 2/ is fan working? – remove top panel and verify movement of cooling fan in center of shadow box
- 3/ is ambient radically changing – either door opening or room airflow from heaters or air conditioning ? – stabilize ambient conditions
- 4/ sensor miss-located, damaged or wires may be damaged - check mounts for control and Safety Thermostat sensors, then trace wires or tubing between sensors and controls
- 5/ calibration sensitivity – call Customer Service
- 6/ high limit set too low – be sure that safety is more than 5 degrees over desired set point; check if safety pilot is on continuously; turn controller knob completely clock-wise to see if problem solved then follow instructions in owner's manual for correct setting – see Section 6.6 for setting high limit
- 7/ electrical noise – remove nearby sources of RFI including motors, arcing relays or radio transmitters
- 8/ bad connection on temperature sensor or faulty sensor – check connectors for continuity and mechanical soundness while watching display for erratic behavior; check sensor and wiring for mechanical damage
- 9/ bad connections or faulty solid state relay – check connectors for mechanical soundness and look for corrosion around terminals or signs of arcing or other visible deterioration
- 10/ WATER JACKET EMPTY OR LOW – CHECK INDICATOR WARNING LIGHT OR WATER LEVEL AT FILL PORT IN BACK OF UNIT.

Will not maintain set point

- 1/ assure that set point is at least 5 degrees over ambient
- 2/ see if ambient is fluctuating

Display and reference thermometer don't match

- 1/ calibration error – see Section 6.5
- 2/ temperature sensor failure – evaluate if pilot light is operating correctly
- 3/ controller failure – evaluate if pilot light is operating correctly
- 4/ allow at least two hours to stabilize
- 5/ see if reference thermometer is certified

Reference thermometer does not match digital display

See Temp-10

Can't adjust set points or calibration

- 1/ turn entire unit off and on to reset
- 2/ if repeatedly happens, call Customer Service

Calibrated at one temperature, but not at another

This can be a normal condition when operating temperature varies widely. For maximum accuracy, calibration should be done at or close to the set point temperature.

HUMIDITY LEVEL

Can't achieve rated humidity/temp

- 1/ check ambient and refer to chart in Section 9.0 for spec limits
- 2/ relative humidity sensor or controller failure
- 3/ check for bad door seal
- 4/ check for leaking water around steamer
- 5/ confirm a sufficient and distilled water source
- 6/ calibrate humidity sensor with reference hygrometer
- 7/ assure that pressure relief valve is closed
- 8/ assure that steamer is working (see Humid-4)
- 9/ leaks in air intake flapper

Can't decrease humidity to set point

- 1/ check ambient and refer to chart in Section 9.0 for spec limits
- 2/ assure that exhaust fan is working
- 3/ assure that exhaust fan blower casing is free of pooled water
- 4/ check solid state relay
- 5/ set point has to be 10 percentage points below reading on control to turn exhaust fan on
- 6/ injection valve stuck open
- 7/ condensate drain tube plugged and pool of water in bottom of chamber

Can't adjust set points or calibration

- 1/ confirm all wire connections
- 2/ confirm software revision
- 3/ call Customer Service

Steam generator not working

- 1/ check if fill solenoid, injection valve, relief valve, float switch and relays are working – see schematic in Section 9.0
- 2/ check for water leaks around steamer

- 3/ verify that relays are working
- 4/ verify that float switch is working
- 5/ confirm that heater is working
 - a- power to coil
 - b- is unit burned/shorted out
- 6/ pressure switch is working
- 7/ plumbing leak

Humidity unstable

- 1/ circulating fan failure
 - a- motor failure or no voltage to motor
 - b- fan not turning
 - c- ducts blocked
- 2/ relative humidity is lower than the unit can achieve at that operating temperature, see Humidity Chart Section 9.0
- 3/ chamber leaks
 - a- motor shaft seals
 - b- door seal
 - c- air intake flapper

REFRIGERATION HC5R ONLY

Temperature will not reach set point

- 1/ assure that power is going to heating coils
- 2/ if the displacement is erratic, see if air is being circulated
- 3/ confirm that controller is calling for heat (check front panel light)
- 4/ if light not coming on, check control set point and High Limit set point
- 5/ confirm that fan is operating and airflow is not blocked
- 6/ RESET BY TURNING UNIT OFF AND ON

Unit won't cool

- If the compressor is running:
- 1/ see if condenser is cold but free of ice
 - 2/ be sure that fan is circulating air in the chamber and over the compressor
 - 3/ confirm proper sensor location and operation
 - 4/ look for leaks in the chamber or around the door gasket
 - 5/ assure ample room around the unit as described in Section 4.2
 - 6/ adjust calibration on controller
 - 7/ compare ambient specifications to specs in the manual
 - 8/ call customer service
- If compressor isn't running:
- 9/ check for non-operating solid state relay
 - 10/ confirm that motor is operable
 - 11/ check if motor has voltage to it
 - 12/ see if refrigeration is running too hot and thermal cutoff activated:
 - a- dirty coil or poor circulation
 - b- coil next to heat source
 - c- ambient temperature too high

Ice build up in chamber

- 1/ look for leak in door gasket

- 2/ door open too often
- 3/ open container inside the chamber
- 4/ check tightness of seal around all chamber wire and plumbing access to outside

Making noise

- 1/ assure that fan is not miss-aligned
- 2/ Steady internal clicking may be broken spring or valve – call Customer Service

MECHANICAL

Glass door not sealing

- 1/ stretch and tuck gasket
- 2/ align clamps till they hold gasket tight
- 3/ check physical condition of gasket
- 4/ tighten door latch till it pulls glass in
- 5/ assure that gasket clamps are in original location

Motor doesn't move

- 1/ if shaft spins freely: check connections to motor and check voltage to motor;
- 2/ if shaft rubs or is frozen, relieve binding and retest

Motor makes noise

- 1/ If noise is from the motor, tap the top of motor shaft with ball peen hammer.
- 2/ If the sound gets worse, tap the other end of the shaft - avoiding touching the fan blade
- 3/ If there is no change, call Customer Service.
- 4/ If noise is from shaft or fan blade, realign shaft.

Outer door not sealing

- 1/ adjust hinge blocks or twist the door.
- 2/ Confirm that unit has not been damaged and body is not square.

Water leaking

- 1/ If leaking inside: dry chamber, run at temperature with door open. Check all seams with flashlight including front face.
- 2/ If leaking outside: dry out and see if leak repeats and find source of leak. Sources may include: fittings that need tightening, condensation due to missing insulation or a leak developed in humidity generator.

OTHER

Controller on at all times - "locked-up"

- 1/ Adjust set point to room temperature. If the light goes out but is still heating, replace the solid state relay.
- 2/ turn unit off and on to reset
- 3/ if cannot change any condition on the front panel, call Customer Service

Front panel displays are all off

- 1/ Check for wire damage.

Unit or wall fuse/circuit breaker is blown

- 1/ check wall power source
- 2/ compare current draw and compare to specs on data plate
- 3/ see what other loads are on the wall circuit

Unit will not turn on

- 1/ check wall power source
 - 2/ check fuse/circuit breaker on unit or in wall
 - 3/ see if unit is on, e.g., fan or heater, and only the controller is off/
- check all wiring connections, especially around the on/off switch

Condensate appears on chamber walls of humidity chamber

- 1/ Some condensation may be normal
- 2/ Minimize the movement of air around the unit and reduce the number of door openings

Contamination in chamber

- 1/ see cleaning procedure in Section 7.1
- 2/ develop and follow SOP for specific application; include definition of cleaning technique and maintenance schedule

PARTS LIST

Description	115V	220V
Adjustable Feet	200129	200129
Blower Wheel, Dehumidifier	2600504	2600504
Chamber Fan Motor	4880508	4880507
Chamber Gasket	3450534	3450534
Chiller Assy, 9000L	9990568	9990561
Cordset, European	NA	1800500
Dehumidifier Motor	210002	210001
Door Control Thermostat	100001	100001
Door Heater	103068	103068
Element	120074	X1000510
Float Switch, Vapor Generator	100639	100639
Float Switch, Water Jacket	210004	210004
Glass Door Assembly	9520572	9520572
Gasket, 7 feet	3450534	3450534
High Limit Thermostat	100001	100001
Humidity Controller	1750553	1750554
Humidity Sensor	4100501	4100501
I/O (On/Off) Switch	X1000124	X1000124
Pilot Light Green	200021	200021
Pilot Light Red	200020	200020
Power Cord	100014	101990
Pressure Relief Switch	100655	100655
Pressure Switch Vapor Generator	200108	200108
Relay, Vapor Generator	891024	101613
Solenoid Valve	103092	103309
Solid State Relay	102162	102162
Temperature Controller	1750549	1750550
Vapor Generator	9990531	9990549

UNIT SPECIFICATIONS

These units are 115V or 240V. See unit data plate for individual ratings.

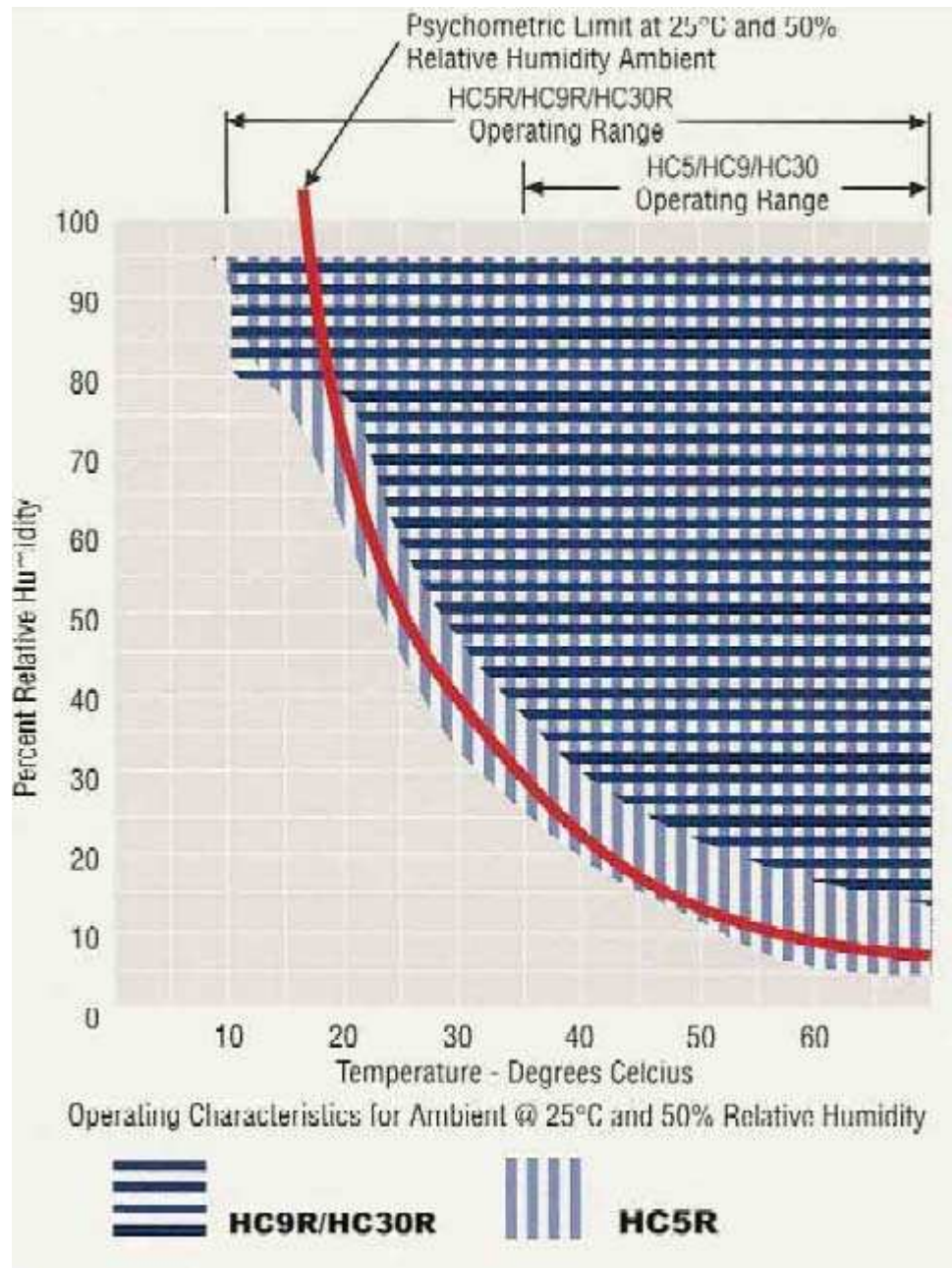
Weight	Shipping	Net
HC5	410 lbs.	250 lbs.
HC5R	425 lbs.	270 lbs.

Dimensions	Exterior WxDxH (in.)	Interior WxDxH (in.)
HC5	25 X 26.25 X 46.25	19.5 X 18.5 X 24.75
HC5R	25 X 26.25 X 46.25	19.5 X 18.5 X 24.75

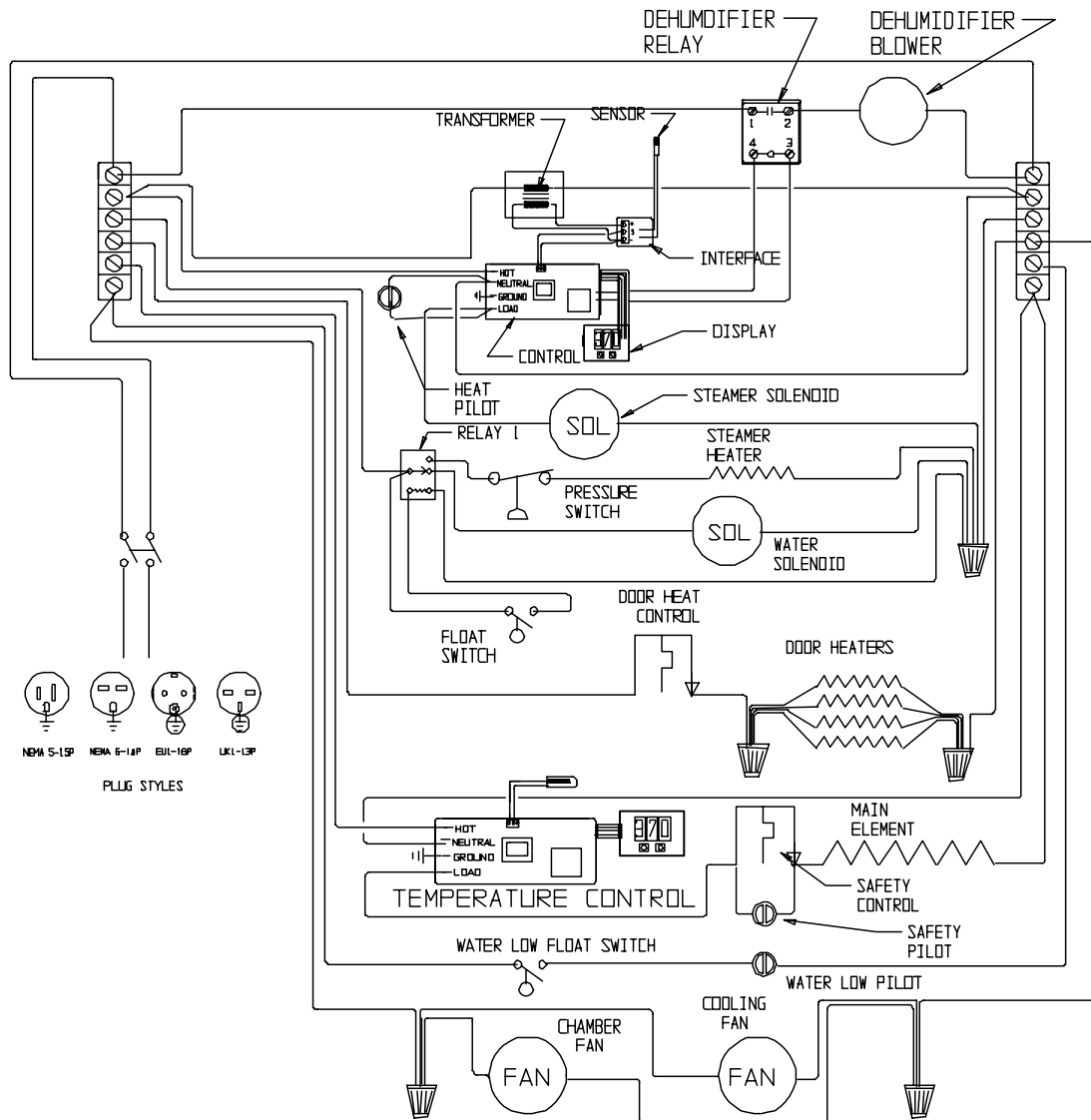
Capacity	Cubic Feet
HC5	5.5
HC5R	5.5

Temperature	Range	Uniformity	Humidity
HC5	35° to 70°	±0.2°C at 37°C	40-95%
HC5R	10° to 70°	±0.2°C at 37°C	40-95%

RELATIVE HUMIDITY CHART

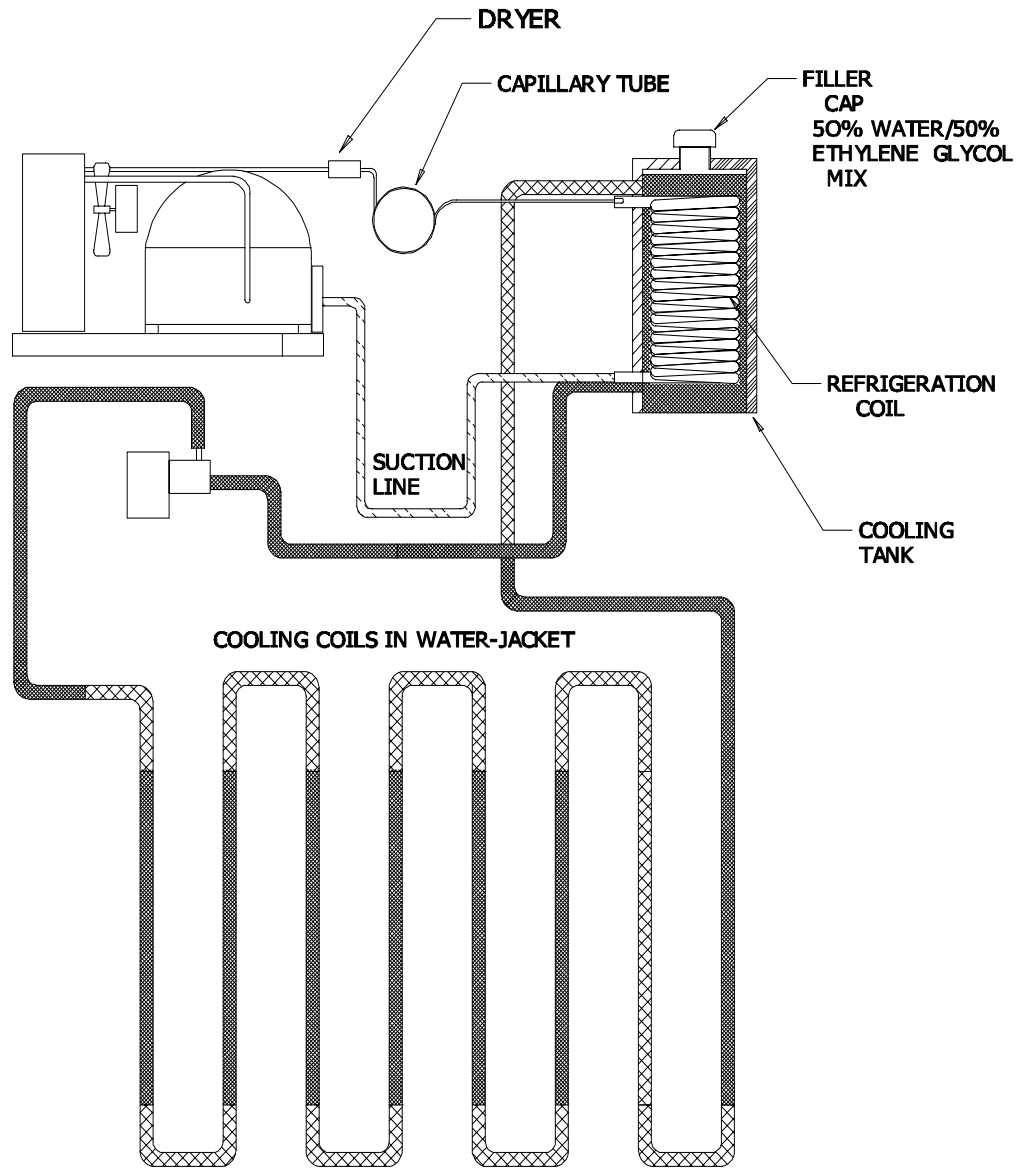


WIRE DIAGRAM HC5



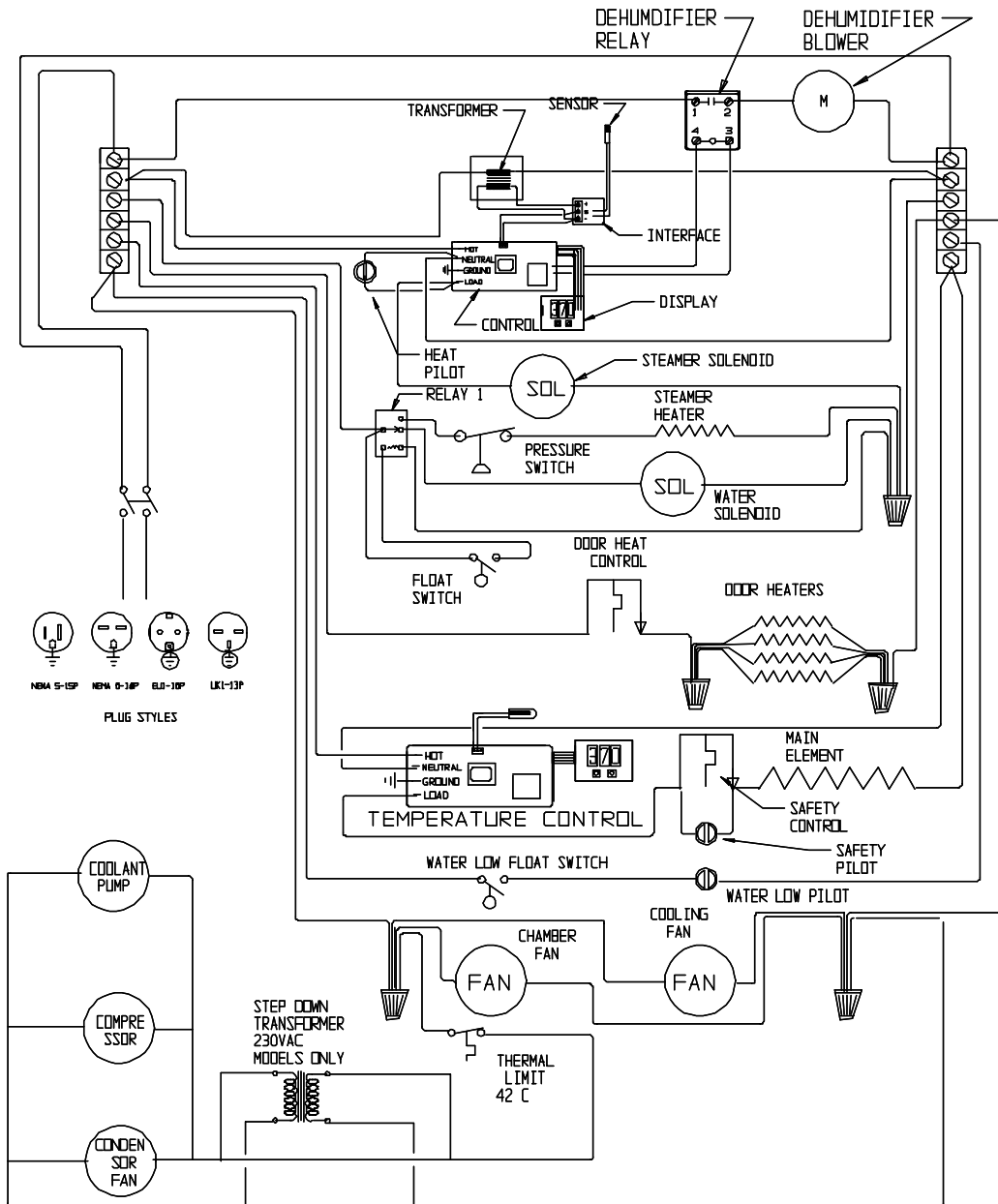
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PLUMBING DIAGRAM HC5R



9850885

WIRE DIAGRAM HC5R



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