HumidiClean™

Series HC- 6100/6300/6500/6700 Humidifiers

Installation, Operation and Maintenance Instructions

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Please read and save these instructions.

The Armstrong HumidiClean humidifier converts ordinary tap water or purified water to steam for distribution to raise the relative humidity level.

To allow HumidiClean to function to its full capability, be certain to install in accordance with Armstrong recommendations.

DANGER: ELECTRICAL SHOCK HAZARD HIGH VOLTAGES EXIST INSIDE THE HUMIDIFIER

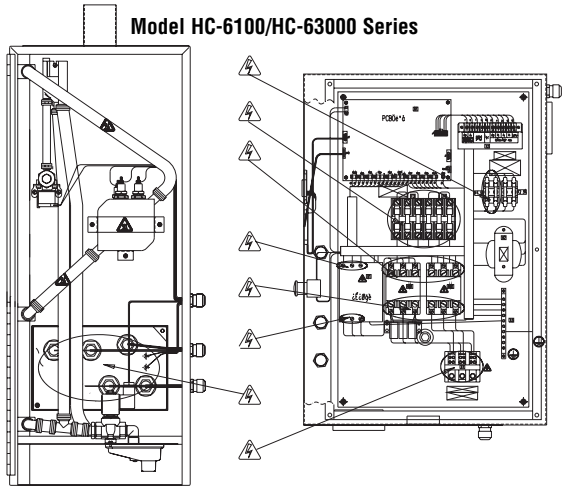
TO PROTECT YOURSELF AND OTHERS FROM ACCIDENTAL SHOCKS:

1. Keep the humidifier locked during normal operation and store the key in a safe location away from the humidifier.

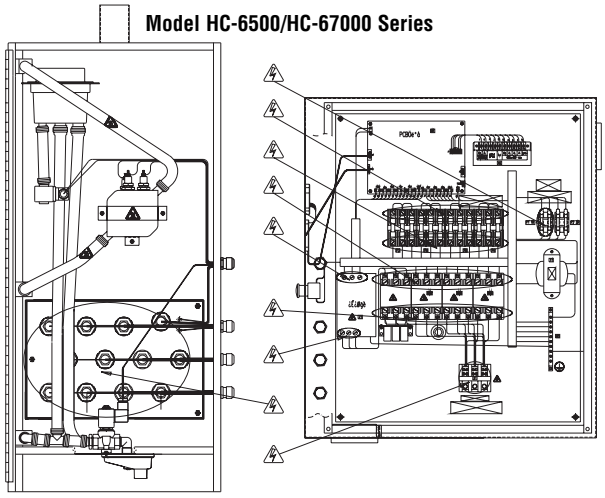
2. **ALWAYS DISCONNECT THE POWER SUPPLY AT THE CIRCUIT BREAKER OR SAFETY SWITCH BEFORE OPENING ANY COVERS AND DOORS!**

3. Before servicing the humidifier, learn where the high voltage parts are. **KEEP HANDS AND METAL TOOLS AWAY FROM THESE AREAS!**

Model HC-6100/HC-63000 Series



Model HC-6500/HC-67000 Series



6010-ISO Electrical Shock-Electrocution

Warning: All wiring and installation must be completed by qualified personnel only and per the relevant local or national codes on electrical wiring. Negligence of this warning might result in the loss of property or personal damage.

6043-ISO Burn Hazard Hot Surface

Warning: High Temperature! Material that is not resistant to high temperature should not come in contact with these areas. Negligence of this warning might result in the loss of property or personal damage.

Warning: Do not operate the supplied humidifier in combustible or explosive surroundings.

Warning: Do not operate the supplied humidifier if there is any damage to the cabinet or any components in humidifier are damaged.

Warning: The main switch should be a connection breaker which has over current and leakage current protecting functions per code EN60947-3 or EN60947-2 if point gap required by EN60947-3 can be fulfilled.

4. **Physical environment and operating conditions**
   • Ambient temperature + 4°C ~ + 38°C (40°F to 100°F)
   • Humidity = 50 % at 40°C (104°F), = 90 % at 20°C (68°F)
   • Altitude = 1000 m (above mean sea level) (**3300 ft**)

5. **Transportation and storage conditions**
   Electrical equipment shall be designed to withstand, or suitable precautions shall be taken to protect against, the effects of transportation and storage temperatures within a range of -25°C to + 55°C (-15°F to 130°F) and for short periods not exceeding 24h, up to +70°C (160°F). Suitable means shall be provided to prevent damage from humidity, vibration and shock.

6. **Requirements**
   The supply disconnecting device (i.e. a switch-disconnect, a disconnect used in combination with switching devices, or a circuit-breaker) shall fulfill all of the following requirements:

   - Isolate the electrical equipment from the supply and have one OFF (isolated) and one ON position only, clearly marked with "O" and "I" (symbols 60417-2-IEC-5008 and 60417-2-IEC-5007, see 10.2.2), with the actuating directions in accordance with IEC60447. Circuit-breaker that, in addition, has a reset (tripped) position between "O" and "I" are also deemed to satisfy this requirement

   - Have a visible gap or a position indicator which cannot indicate OFF (isolated) until all contacts are actually open and there is an adequate isolating distance between all the contacts in accordance with IEC 60947-3

   - Have an external operating means (e.g. handle), (exception: power-operated switchgear need not be operable from outside the enclosure where there are other means to open it). The handle should be BLACK or GREY (exception: see 10.7.4)

   - Be provided with a means permitting it to be locked in the OFF (isolated) position (e.g. by padlocks). When locked, remote as well as local closing shall be prevented

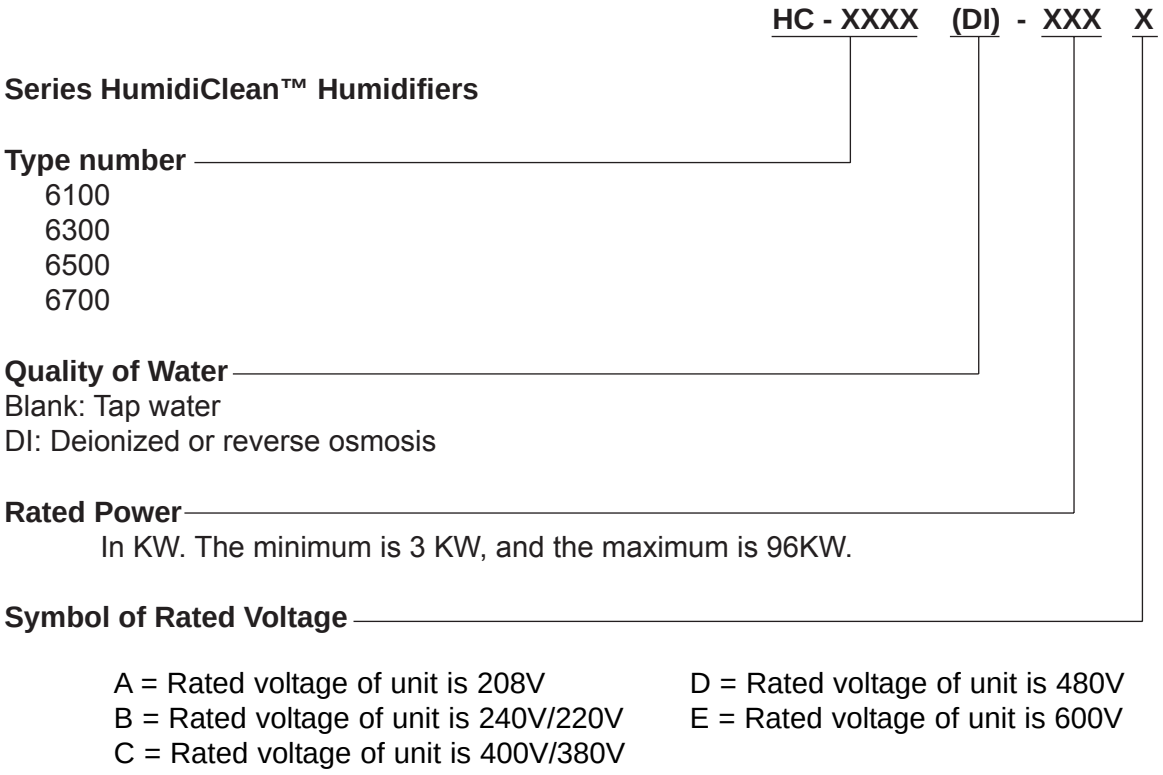
   - Disconnect all live conductors of its power supply circuit. However, for TN supply systems, the neutral conductor may or may not be disconnected. It is noted that in some countries, disconnection of the neutral conductor (when used) is compulsory

   - The handle of the supply-disconnecting switch shall be located between 0.6m and 1.7m (2 ft. and 5-1/2 ft) above the servicing level

   - The disconnecting switch must have over current and overload protecting functions and initialize them as low as possible under normal running

- This disconnecting switch should have leakage current protecting function. The max leakage current should be less than 30mA
- The disconnecting switch should have a breaking capacity sufficient to interrupt the largest normal running current of loads. The breaking capacity required should be selected according to the table, 7-1, 7-2, 7-3 and 7-4 located on page 7.

Model Description



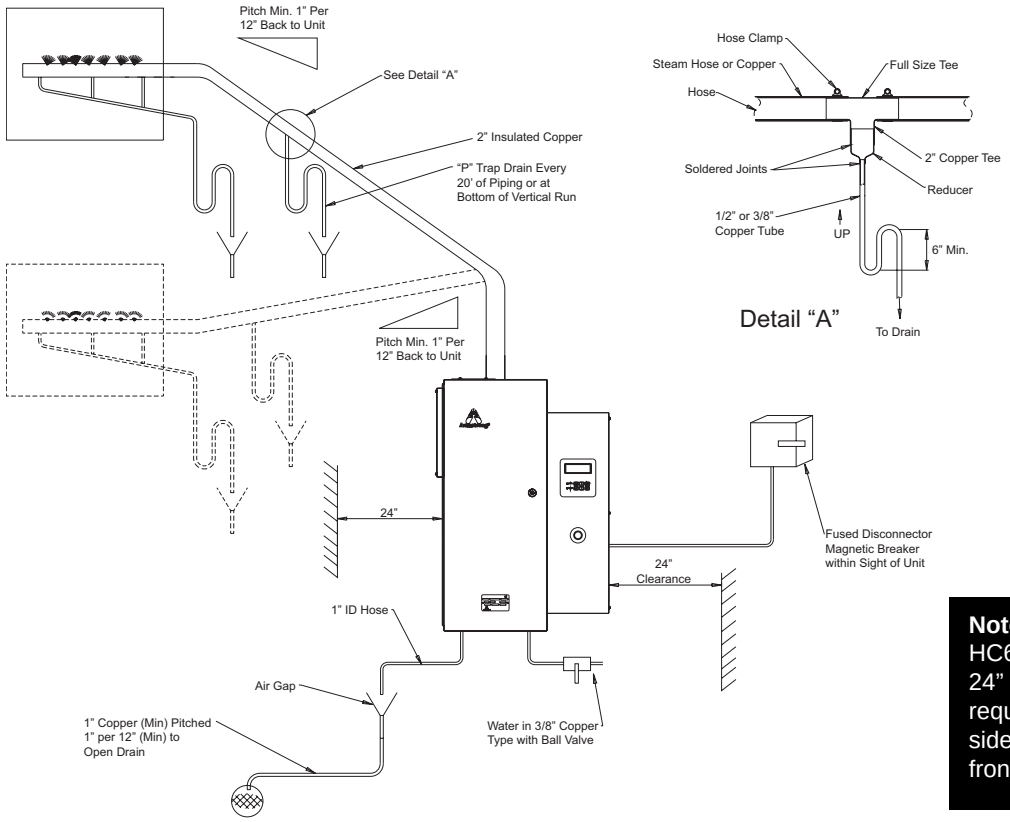
Pre-Installation

1. **Check Shipment.** A claim should be filed with the transportation company, (and reported to Armstrong), if any items are missing or damaged.

2. **Check Local Codes.** The installation of HumidiClean should be in accordance with all applicable building, plumbing, and electrical codes.

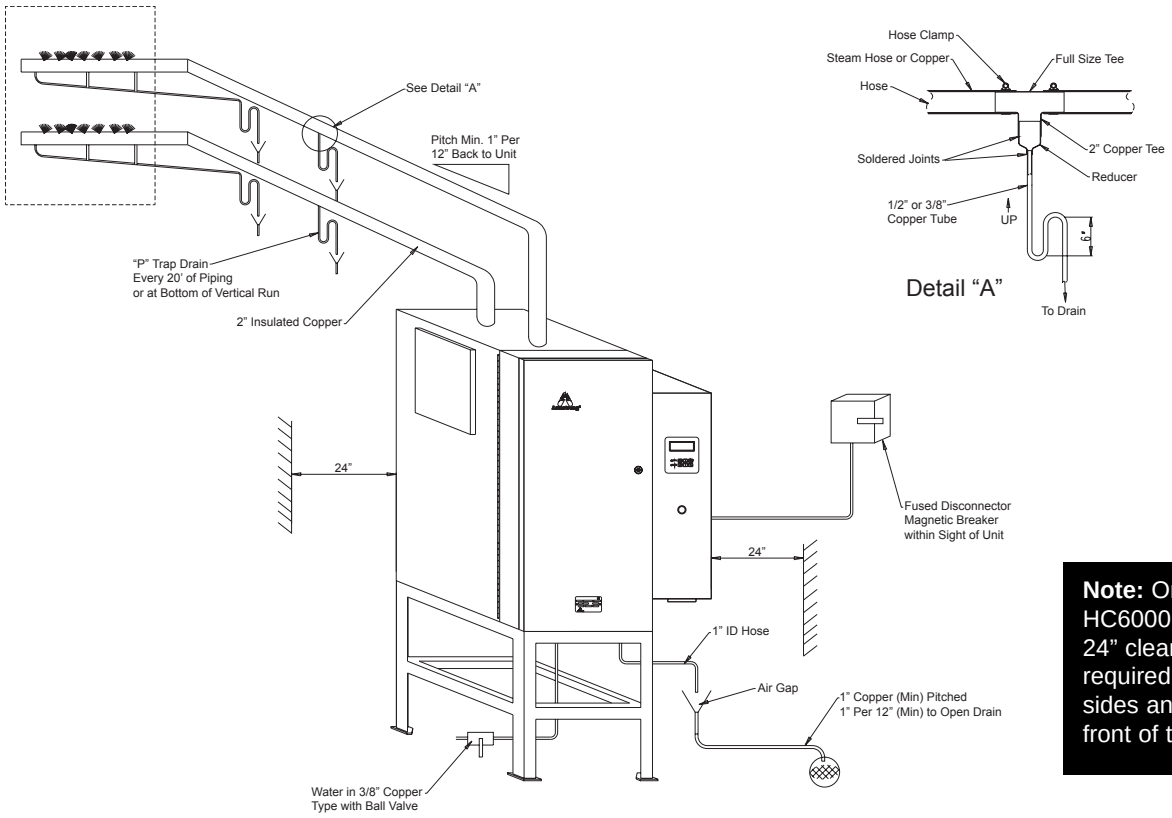
3. **Site Selection.** The humidifier should be installed in an easily accessible location. **Do not install the unit where malfunction of the humidifier might cause damage to non-repairable, irreplaceable or priceless property.** Refer to Installation section for other details regarding site selection.

Figure 5-1 HC-6100/6300 Installation



Note: On all HC6000 models 24" clearance is required on both sides and the front of the unit.

Figure 5-2 HC-6500/6700 Installation



Note: On all HC6000 models 24" clearance is required on both sides and the front of the unit.

Installation

HC-6100/6300 Mounting

The HumidiClean models HC-6100/6300 are designed to be wall mounted. A wall mounting bracket and lag screws are provided for mounting on 410 mm (16”) centers. The operating weight of the unit is 106 kg (233 lbs). A clearance of 600 mm (23”) on the front and sides of the cabinet is required for servicing.

1. Position wall mounting bracket level on wall and mark hole pattern. Make sure holes line up with studs or other sturdy structure.

2. Use 3/8" x 1-1/2" lag screws provided to secure the bracket.

3. Hang the humidifier on the wall mounting bracket. The dry weight of the unit is 70 kg (154 lbs).

HC-6500/6700 Mounting

The HC-6500/6700 HumidiClean is designed to be floor mounted on a level surface. The operating weight is 230 kg (507 lbs), a clearance of 600 mm (23”) is required for the front and sides.

Water Fill Supply

The humidifier can use any potable or purified water supply. Water pressure must be 25-120 psig. Water temperature must be less than 60°C (140°F).

1. Install a shut-off valve near the unit.

2. Connect the water supply to the 3/8" compression fitting on the fill water solenoid valve on models HC-6100/6300. The HC6500/6700 is supplied with a compression filling for 10mm plastic tubing. A 6’ piece of 10mm plastic tubing is included for the larger models. The knock-out for the water supply tubing is under the fill valve in the bottom wall.

Electrical Service Wiring

1. Connect main power supply wiring to high voltage terminals in unit. Read breaker size required on humidifier's nameplate and refer to Table 7-1 and 7-2 for HC-6100/6300 wire (gage) required; Table 7-1, 7-3 and 7-4 for HC-6500/6700. Make sure an interlocking circuit breaker or safety switch (not furnished) is accessible and within sight of the unit.

2. The humidifier cabinet must be grounded. A ground lug is provided in the cabinet.

3. Use only wire with copper conductors rated at 90°C (194°F) or higher for power supply and grounding.

Table 7-1. Recommended Branch Circuits

Rating Amp		1-12	13-15	16-20	21-24	25-32	33-40	41-48	49-64	68-80	81-100	101-120	121-140	141-60
Wire	(AWG)	14	12	10	10	8	8	6	4	3	1	0	0	0
	(mm2)	3	4	6	6	10	10	16	25	35	50	50	70	95
Circuit Breaker		15	20	25	30	40	50	60	80	100	125	150	175	200

Table 7-2. Steam Capacities and Rating Amperages

Volts (Vac)	HC6100/HC6100DI								HC6300/HC6300DI			
	3 KW Unit			9 KW Unit			15 KW Unit		18 KW Unit		30 KW Unit	
	Nominal Amperage Rating Phase		Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Phase		Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)
	Single	Three		Single	Three							
208	13.3	7.7	3.8 (8.3)	39	23	11 (24)	37	18 (40)	46	22 (48)	74	36 (80)
240	12.9	7.5	4.1 (9)	38	22	12 (27)	36	20 (45)	44	25 (54)	72	41 (90)
400	—	4.7		—	14		23		28		46	
480	—	3.8		—	11		18		22		36	
600	—	3		—	9		15		18		30	

Table 7-3. Steam Capacities and Rating Amperages

Volts (VAC)	HC6500/6500DI									
	30 KW Unit		33.5 KW Unit		40 KW Unit		48 KW Unit		45 KW Unit	
	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)
208	84	41 (90)	—	—	—	—	—	—	125	61 (135)
240	—	—	—	—	96	54 (120)	—	—	—	—
400	—	—	51	45 (100)	—	—	73	65 (144)	—	—
480	—	—	—	—	—	—	58		—	—
600	—	—	—	—	—	—	47		—	—

Table 7-4. Steam Capacities and Rating Amperages

Volts (Vac)	HC6500/HC6500DI						HC6700/HC6700DI	
	50.3 KW Unit		60 KW Unit		72 KW Unit		96 KW Unit	
	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)	Nominal Amperage Rating Three Phase	Steam Output kg/hr (lb/hr)
240/220	—	—	144	82 (180)	—	—	—	—
400/380	77	30 (68)	—	—	110	98 (216)	145	130 (288)
480	—	—	—	—	87		116	
600	—	—	—	—	70		93	

Drainage

Connect HC-6000 drain to suitable waste drainage system. HC-6000 drain water may be as hot as 70°C (158°F). Use clear drain hose provided and 25 mm (1”) copper pipe pitched away from unit at 25 mm (1”) inch per foot. An air gap to prevent back flow is required. See Figure 7-1.

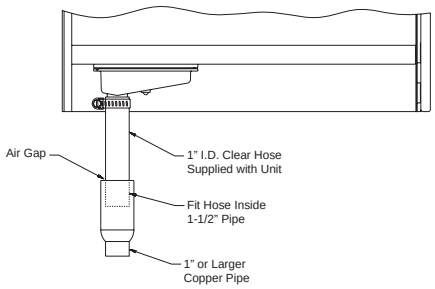


Figure 7-1 HC-6100/6300/6500/6700

Duct Steam Distribution

1. The dispersion tube should be proper length. Verify correct size from Table 8-1.
2. Install dispersion tube(s) horizontally in duct so holes face upward. Air flow must be vertical up or horizontal. Do not restrict duct with a height of 200 mm (8”) or less. Installations over 10 m/s (2000 FPM) air velocity are not recommended. Consult factory if air flow is vertical down or air velocity is over 10 m/s (2000 FPM). Do not install in ducted systems with static pressure exceeding 150 mm (6”).
3. The dispersion tube(s) should be located upstream of a straight duct run, without obstructions, 3 m (10 feet) or more in length. Consult the factory if this distance is not available.
4. Use the template provided to cut dispersion tube installation holes. Fasten the mounting plate to duct with sheet metal screws. If the dispersion tube is 900 mm (35”) or longer, support the far end with threaded rod or similar means.
5. **Note:** For steam being generated from a deionized (DI) or reverse osmosis (RO) water source, the use of 50 mm (2”) insulated stainless steel piping in lieu of copper is required. Pipe used for steam dispersion piping must be oil and contaminate free. Premature element failure could result if oils or contaminates are present. Contact the factory with questions. Connect dispersion tube(s) to HumidiClean tank using 50 mm (2”) nominal insulated copper pipe and hose cuffs provided. We do not suggest steam distribution piping of field supplied rubber based compounds to be used for any HumidiClean application. Pitch pipe back to unit 25 mm (1”) per foot. The steam pipe must be free of kinks and sags to allow for gravity drainage of condensate. Maximum pipe run distance from tank to dispersion tube is 12 m (40 feet) equivalent piping length. Avoid excessive use of elbows or 45°changes in direction. A "P" trap drain should be installed every 6 m (20 feet), of piping run or at the bottom of vertical runs that cannot drain back to the tank. See Fig. 8-3 for "P" trap detail.
6. If duct static pressure plus piping back pressure is greater than 0.5 in HG (6" WC), please consult the factory.

Table 8-1. Dispersion Tube Length

Model HC6100, HC6100DI	Model HC6100, HC6100DI "D" Dia.	Model HC6300, HC6300DI, HC6500, HC6500DI, HC6700, HC6700DI	Model HC6300, HC6300DI, HC6500, HC6500DI, HC6700, HC6700DI "DL" Dia.	Steam Disp. Tube Length "L" mm (in)	Duct Width	
					Minimum mm (in)	Maximum mm (in)
D-1	1-1/2"	DL-1	2-3/8"	305 (12)	280 (11)	406 (16)
D-1.5		DL-1.5		457 (18)	432 (17)	559 (22)
D-2		DL-2		610 (24)	584 (23)	864 (34)
D-3		DL-3		914 (36)	889 (35)	1168 (46)
D-4		DL-4		1219 (48)	1194 (47)	1473 (58)
D-5		DL-5		1524 (60)	1499 (59)	1778 (70)
D-6		DL-6		1829 (72)	1803 (71)	2083 (82)
D-7		DL-7		2133 (84)	2108 (83)	2388 (94)
D-8		DL-8		2438 (96)	2413 (95)	2692 (106)
D-9		DL-9		2743 (108)	2718 (107)	2997 (118)
D-10		DL-10		3048 (120)	3023 (119)	3302 (130)

Fitting Style	Equivalent Linear Piping (feet)
2" - 45° Elbow	2.8
2" - 90° Elbow	5.5
2" - 90° Long Elbow	3.5
2" - Tee	12

Figure 8-2

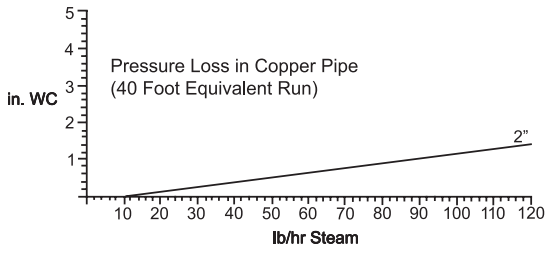
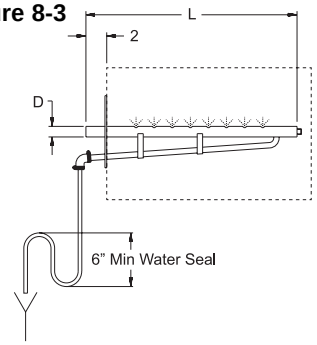


Figure 8-3



Area Steam Distribution

The EHF-3 fan package (minimum of 2 required for HC-6500/6700) is designed to be hung on a wall to operate as a remote mounted, direct area discharge option. It incorporates a blower rated at 120v-2.90 amps. CFM rating is 465 @ 1530 RPM. The fan package requires a separate 120 volt power supply (optional step down transformer available). Consult Armstrong Installation **Bulletin IB-95** for more information.

Alternative for shortened non-wettable vapor trail

For applications with particularly limited downstream absorption distance, Armstrong HumidiPack or ExpressPack may be considered. HumidiPack is a prefabricated separator/header and multiple dispersion tube assembly. ExpressPack is a multi-tube steam dispersion panel which is shipped unassembled. The Armstrong HumidiPack or ExpressPack provide uniform distribution and shortened non-wetting vapor trail. Consult Armstrong Installation **Bulletin No. 560 or Bulletin 573** for more information.

Control Wiring

When knock-out for sensor wiring is removed, an IP65 compliant cable bushing will be required to keep the electric cabinet in compliance with IP32.

Wiring for low voltage controls should not be run in same conduit as the power supply. Use of shielded wire or a separate dedicated metal conduit is required. When shielded cable is used, shield is to be grounded at the humidifier only. The wire should not be longer than 30 meters (100 ft). If the wire is out of this limit, please contact Armstrong. Refer to Figures 10-1 and 10-2 for wiring schematics.

Control Humidistat

1. Locate control humidistat where it will sense the average air condition of the space to be humidified. Avoid areas of restricted circulation or locations where the sensor will be subjected to drafts, localized heat or moisture sources.
2. Optional duct mounted humidistats are available to sense return or exhaust air, if preferred.
3. Set DIP switch S-2 on the PC board to the proper range for the humidistat control signal to be used. See Figure 9-1 . Also set voltage source DIP switch (S1 and S3) to proper range. See Fig. 9-1 for location of switches and pages 10 and 11 in tandem with the applicable wiring diagram below for correct switch settings.
4. Wire standard Armstrong 0-10 Vdc humidistat as shown in Figure 10-1. For use of alternative humidistats or RH sensor, please refer to Figure 10-2.

Figure 9-1

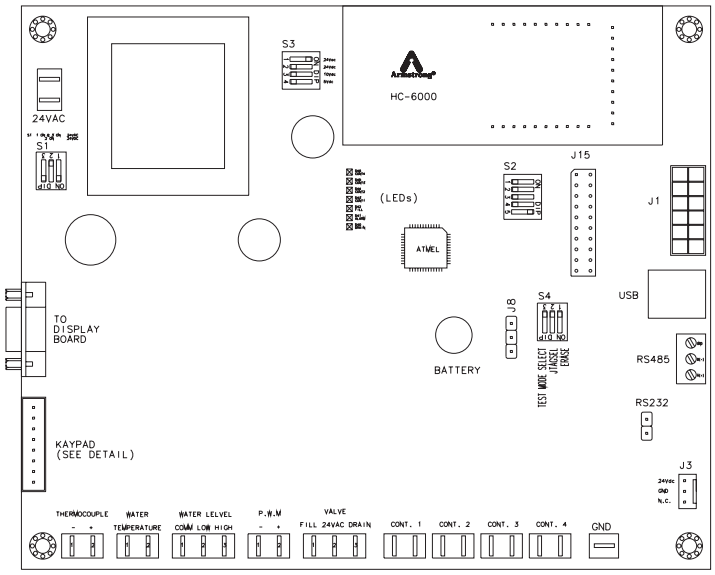
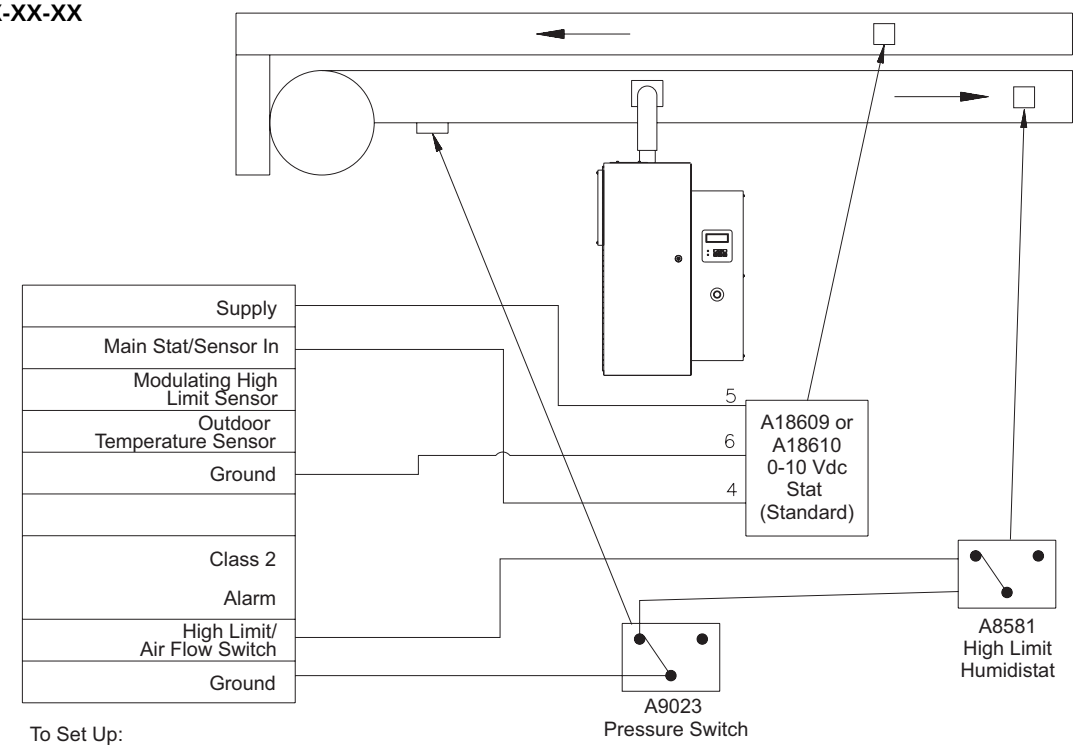
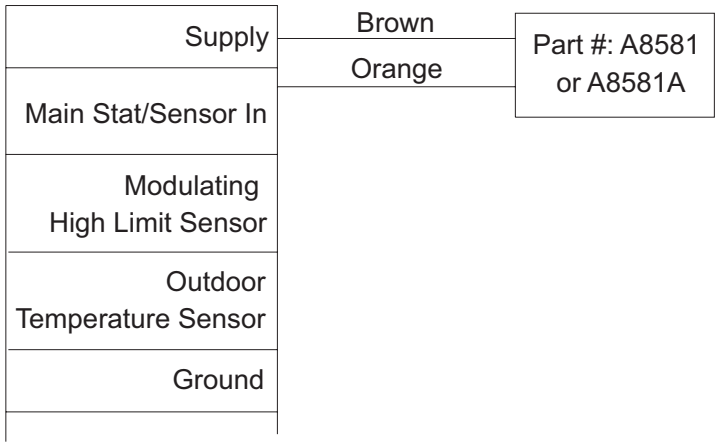


Figure 10-1
Standard Humidistat
H200-XX-XX-XX



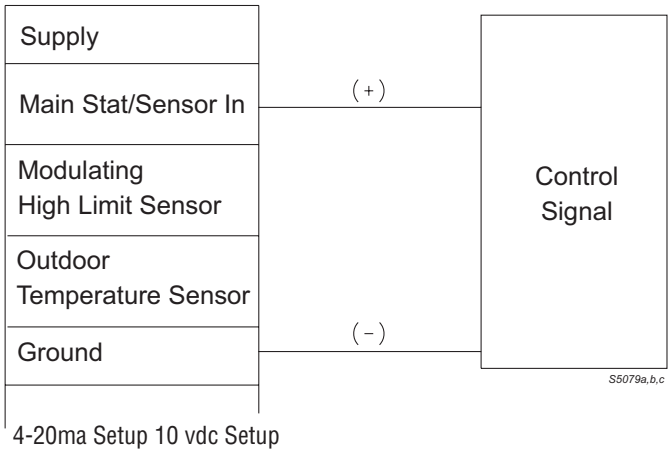
To Set Up:
1) S1-1, 3 Off, S1-2 On
2) S3-1 On, S3-2, 3, 4 Off
3) S2-1, 2, 3 Off
4) Select 0-10vdc “Signal Type” in the Operational Setup Menu.
5) Select Humidistat Sensor Select in the Operational Setup Menu.

Figure 10-2
On/Off Humidistats



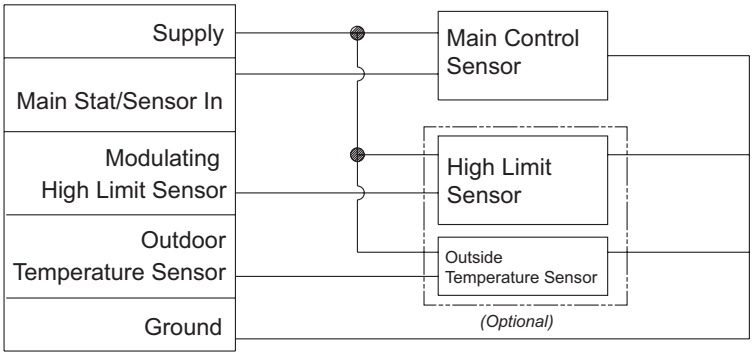
1) S1-1, 3 On, S1-2 Off
2) S3-4 On, S3-1, 2, 3 Off
3) S2 Off (All)
4) Select “On/Off” Control Type in the Unit Configuration Menu.

Figure 11-1
0-10 Vdc or 4-20mA Control Signal



4-20ma Setup 10 vdc Setup
1) S3-1 On, 3-2, 3, 4 Off (Default)
2) S1-2 On, S1-1, 3 Off (Default)
3) S2-1 On, S2-2, 3 Off if 4-20ma
   S2-1, 2, 3 All Off If 0-10vdc
4) Select Corresponding Control Signal
   Type In Operation Setup Menu.

Figure 11-2
RH Sensors/Transmitters



Switch Positions			
SYM	**Function Description**	**Settings**	
S2	Input Signal Type Select	1: Stat/Main Sensor	
		2: High Limit Sensor	
		3: Outside Temp. Sensor	
		On: Current Signal	
		Off: Voltage Signal	
		4&5: Outside Temp. Sensor	
		4 on 5 off: Thermistor	
		4 off and 5 on: Temp. Sensor	
S1 and S3	Power Supply	**S1**	**S3**
	For Sensors Select (S1 and S3 together)	24Vac: S4-2 on S4-1, 3 Off	S3-1 on S3-2, 3, 4 off
		24Vac: S4-1, 3 on S4-2 Off	S3-2 on S3-1, 3, 4 off
		10Vac: S4-1, 3 on S4-2 Off	S3-3 on S3-1, 2, 4 off
		5Vac: S4-1, 3 on S4-2 Off	S3-4 on S3-1, 2, 3 off
At one time, only one digit of S3-1, 2, 3 or 4 should be on.			

Select RH sensor in sensor select window in operation setup menu if using high limit sensor, select high limit sensor, set high limit set point, 85% default.
If using out temperature sensor, select “outside temperature”.
Select signal type in operation setup menu.
Select desired RH in operation setup menu.
Verify PID settings in operation setup menu.

High Limit Humidistat

Remove the jumper tab from ground and in of high limit/pressure switch connections and wire the high limit stat between these terminals. Refer to Figure10-1 (the overall wiring diagram) for more inform ation. A duct mounted high limit humidistat is recommended to prevent over-saturation of the duct air. Use an on-off controller that opens on fault (high humidity). Humidistat should be set for a maximum of 90% RH. Alternately, a modulating high limit humidistat may be used on applications such as variable air volume (VAV). Locate the high limit humidistat approximately 3m (10 feet) downstream of the dispersion manifold. If 3m (10 feet) is not available, consult the factory. Note: High limit humidistat will be wired in series with duct pressure switch, if used, see Figure 10-1.

Airflow/Pressure Switch

An airflow switch is recommended to deactivate the humidifier when there is insufficient air flow in a duct system. A duct pressure switch is preferred as an airflow sensor. The pressure switch should open on insufficient airflow (opens on fault). Airflow switch should be mounted in supply air duct upstream of humidifier dispersion. Remove the jumper tab from ground and in of high limit/pressure switch connections and wire the airflow sensor between these terminals. See Figure 10-1 (the overall wiring diagram) for more information. Complete installation and wiring instructions are contained in the duct pressure switch package. **Note:** Duct pressure switch will be wired in series with high limit humidistat, if used, see Figure 10-1.

State light will flash green if either high limit or air pressure switches are open.

Alarm Circuit

The terminals 3 & 4 (normally open relay external alarm) are connections for a class II NEC alarm circuit (switch closure only, 1 amp. maximum @ 24 Vdc or 0.5 amp. @ 125 Vac). The switch will close if the unit encounters an error or when service life has expired it will not engage if high humidity/sail switch circuit is open.

Display Menu

The menu can be accessed via the keypad below the LCD, on the front of electric cabinet. Use the UP or DOWN to change the menu in current level; press ESC to previous menu level; press ENTER to access the current menu. Pressing ENTER will activate selection cursor, press UP(DOWN) to increase (decrease) the value, press ENTER to confirm the change or ESC to cancel.

Run Menu	
Armstrong HC-6000	Enter to get into main menu This screen will only display for 1 minute after the unit is powered up; then it will automatically go to 'Unit Status'.
Language	Language select
Unit Status	Unit status display
Operation Setup	Operation variable setup
Unit Configuration	Unit configuration setup
Language	
English	English - Default Chinese
Unit Status	
Unit Status 1	
Unit Demand: XXX%	Demand
Steam Output: XXX lb/hr	Steam Output
Unit Status 2	
Water Level: Normal	Water Level State: Low, Normal and High
Gen, Fill, Drain	Idle = No demand; unit idle Gen = Steam Generation Fill = Filling Drain = Draining Heat = Elements are energized to heat water to selected aquastat setting
Temperature	
Water Temp: XXX C/XXX F	Temperature of water
Heat TEMP: XXX C/XXX F	Temperature of heating elements
Timers	
End of Life: 0:00	EOL-TMR:0000:00 (Default) RUNTIME:0000:00 DRAIN-TMR: 0000:00 ONTIME:0000:00 OFFTIME:0000:00
RH Display	
Room Current RH: XX%	This menu will be displayed only when "RH Sensor" is selected Room Current RH: XX% (Default) Room Desired RH: XX% Duct Current RH: XX% High Limit Setpoint: XX% Outside Temperature: XX°C/XX°F

Operation Setup

Enter Password 0000 (Default)

Desired RH Desired RH: XX % Current RH: XX% *LT RT move the cursor UP DN to increase/decrease value*	This menu is displayed when RH sensor is selected Default: 50%
Steam Generation	Steam Gen (Default) Manual Drain Manual Fill Unit Stop
Modulating Fill Cycle	Enabled (Default) Disabled If modulating fill cycle is enabled: **Fill Valve Off Time** 30 seconds **Fill Valve On Time** 10 seconds
Error Reset Error Reset?	**Error Reset** Confirm Cancel
Aquastat Temperature of water 180°F/80°C	The maximum is 80°C/180°F, the minimum is 4°C/40°F. If the set point is lower than 40°F, then function is disabled. When disabled the unit will go into a 3 minute warm-up when turned on.
Network Setup Disabled	Disabled (Default) Enabled
Mode Change Slave ID 1 (Default)	Value: 1 to 127
Communication Type MODBUS	MODBUS (Default) PSP (includes LonWorks/BACNet)
Password New Password	0-9 Default: 0000 A-Z a-z
End of Life (Run Time Accumulation Hours)	500 750 1000 (Default) 1250 1500 1750 2000 2250 2500 2750 3000 No Beds

Operation Setup - Continued

Drain Frequency	6
Default: 12 hours	12 (Default)
	24
	48
	96
	No Drain
	Real Time
	Real Time Set
	24 Hour Clock
Drain Time	
	1
	5 (Default)
	10
Load Default	
Reset all to Default?	Confirm Cancel
Signal Type	
	0-10 Vdc (Default)
	0-5VDC
	1.9V - 3.9V
	4-20mA
Sensor Select	
	Humidistat (Default)
	RH Sensor
	High Limit Sensor
	High Limit Set Point 85% (Default)
	Outside Temperature
	High Limit Set 1°C / Low Limit Set 1°C
	Lowest RH Set Point 15% (Default)
PID Settings	PB Proportion Brand 0-900
PID PB 10; PID IRV 10	IRV Integral Reset Value 0-500
PIDF DG 200; PID SI 10	DG Derivative Gain 0-500
	SI Interval 0-30
Records	
Error List	01 05-04-01 16:00 (example)
See Page 25 for list of possible errors.	Fill time out to low level
Display the RH graph	RH graph of the last 30 days
	This menu can be shown when RH sensor is selected
Set Date and Time	
YYYY-MM-DD; Time (24 Hr. Format)	Date and Time from realtime IC
Save Settings	SAVE SETTINGS
	Confirm Cancel
	Must be done after any 'Operation Setup' menu changes.

Unit Configuration

Enter Password ARMH

Run Mode

Run (Default)
Test

Contactor Count

1
2
3
4

Control Type

PWM (Default)
On/Off

Power Settings

1000 W
3000 W
5000 W
6650 W
8000 W

Ionic Time Reset Clear Ionic Time
Confirm Cancel

Error Record Clear

Clear Error List
Confirm Cancel

User Password Reset User Password Reset
Confirm Cancel

Temperature Compensation **Factory Use Only**
Water Compensation
Heater Compensation

Start-Up Procedure (Before “Power On”)

1. Examine the electrical compartment for any loose or disconnected component wiring. Check all high voltage screw terminal connections at contactor, terminal strip, fuse block & power module for tightness.

2. Remove Side Panel. Remove tank access panel by unscrewing all black knobs. Make sure all ionic beds are fastened securely to mounting pins. Position access panel on tank making sure the gasket is in place and tighten all black knobs. **Note: Ionic beds not used on DI/RO units.**

3. Check and recheck incoming voltage source and control wiring for proper connections and tightness of connections.

4. Turn on water supply and check for leaks.

5. Make sure access doors and panels are secure.

Principle of Operation

The HumidiClean humidifier converts ordinary tap water or purified water to steam for distribution to raise the relative humidity level. The demand for humidity is sensed by a humidistat or sensor which sends a control signal to the HumidiClean. The HumidiClean is connected to the power supply (208, 220/240, 380/400, 480 or 600 Vac) through a separate circuit breaker supplied by the customer. When power is initially supplied to the unit from the circuit breaker, the LCD will display "ARM-STRONG HC6000". The "POWER" LED will come on and the unit's fill valve solenoid is energized to allow water to enter the tank at a rate of 1.5 L/min (.31 GPM)(HC-6500/6700 fill rate is 7.5 L/min (1 GPM)). **Note:** When unit is turned on the drain valve will energize for 6 sec. or until water level drops below the high water probe. If water level in tank is above the low water level switch, assuming the air proving switch is close, the high limit humidity switch is closed and the unit status is 'STEAM GEN', the heating elements will be activated.

The water fill solenoid continues to be activated until the water level in the tank has energized the high water switch. Note: If fill or drain valves are not energized when power is first applied, check LCD for diagnostic code. See DIAGNOSTICS section. The heating elements will remain on to preheat the water inside the tank until the temperature of water has reached the aquastat set point. During this preheat cycle the amperage draw of the tank can be checked with a clamp on amp meter. The amperage draw on all high voltage wires connected to the main power supply terminal block should correspond to the value on the nameplate. If aquastat has been disabled, the humidifier will go into a 3 minute warm-up once the water hits the low water probe.

After the heat-up time, the HumidiClean will continue to produce steam based on the demand signal, read from the humidistat or calculated by reading the relative humidity and setpoint. If the demand signal drops below 2% or the high limit/sail switch circuit opens, the contactor(s) will open and the unit status will be "IDLE". Note: If the humidifier shuts off due to low humidistat demand, a demand signal of 4% or greater is needed to re-initiate "STEAM GEN." If all the signals are consistent as stated above, HumidiClean will produce steam continuously and refill the tank with water when the low water level is reached. These fill intervals will operate based on modulating fill settings in software.

Power to the heating elements is switched on and off by the triacs in the power module to achieve a modulating output based on the demand signal. The triac utilizes a 1/2 second cycle time. For example, with a 50% humidistat demand signal the triacs would be on for 1/4 second and off for 1/4 second. If the triacs are fully on, the green "SIGNAL" LED on the power module will be on constantly. When the triacs start to modulate (switch power to the heating elements on and off) the LED will show the triac on condition and will appear to flicker or blink.

As HumidiClean continues to produce steam, the unit will accumulate and memorize the heating element active time for the purpose of defining a drain cycle and service life (this memory is not affected by power outages). When the HumidiClean heating elements have been on for the drain frequency setting, the unit activates the drain and fill solenoids and begins draining the tank. The tank will drain with the water being tempered from an activated water fill solenoid. The drainage from the tank will pass the low water switch, opening the switch and shutting off power to the heating elements. The drainage from the tank should not exceed 70°C (158°F). The drain cycle is controlled by the user inputted valves in the operation setup menu. Once the unit has timed out of the drain cycle and all of the switches are still in position to generate steam, the water fill solenoid switch is activated to fill the tank and the cycle starts over again.

Completing a Service Life Cycle

When 90% of the setting service time has accumulated, the "STATE" LED on the control panel will blink in yellow. (Refer to EOL settings, for bed life duration settings). If the HumidiClean is not serviced at this time; the unit will continue to operate for the remaining 10% of the service life setting. When 100% of the bed life setting has been reached, the **"STATE"** LED will be on in red. The unit will drain the tank and not respond to a call for demand.

A. Servicing the Unit

1) **Save the settings, consult the OPERATION SETUP** menu
2) Go to **Steam Gen.** Menu
    a) Drain tank by operating menu from "STEAM GEN." to "MANUAL DRAIN" position.
    b) Once the tank is drained, shut power off to unit and allow the tank to cool.
    c) Remove the cabinet access panels, and slowly open tank access panel.

3) **Ionic Bed Inspection**
Remove and inspect one of the ionic beds and inspect the drain screen at the bottom of the tank. If the bed does not appear to be saturated with mineral deposit (a full bed will weigh 1.1 kg (2.6 lbs) dry and if the drain screen is clear, you have two options.
    a) **Reset the Ionic Bed service life** Proceed with Step 4.
    b) **Change the service life settings** (see Operation Setup).

4) **Ionic Bed Replacement**
If the beds are saturated, remove all of them. Remove any large pieces of scale from the tank. Cleaning the side of the tank is advised at this point.

a) Chemically clean the unit with Rite-Qwik.
    i) Pour 3.75L (1 gallon) of Rite-Qwik into tank followed by 3.8 L (1 gallon) of fresh water. The HC-6500/6700 model requires 7.6 L (2 gallons) of Rite-Qwik and 7.6 L (2 gallons) of water.

    ii) Allow the solution to work until the bubbling action ceases, not to exceed 1 hour.

    iii) Clean the water level electrodes, using an emery cloth. See Page 21 for complete instructions.

    iv) Check water level canister for debris.

    v) Replace the electrodes.

    vi) Ensure drain lines are free of leaks and secure.

    vii) Check inlet screen on fill valve and remove any debris.

    vii) Fill the tank with water and drain. (Perform this step several times.)

b) Install the new Ionic Beds.

5) **Restoring the Unit to Operation**

a) Turn power on at breaker.

b) Unit should begin to fill. Maximum fill time is approximately 30-45 minutes before contactor(s) will be closed.

c) If this does not take place, operate the menu, and change the status to "STEAM GEN."

B. **Modifying the Bed Life Setting**

1) Complete the steps for servicing the unit as outlined above.

2) Change the EOL settings to desired value in Unit Status menu.

3) Save settings in menu.

End of Season Drain

If at any time during normal operation there is not a demand for a continuous 72 hour period, HumidiClean drains the tank and the PC Board initiates a drying cycle by cycling the heating elements for short intervals in order to dry the ionic beds.

Maintenance

The HumidiClean is designed to minimize maintenance. As stated in the PRINCIPLE OF OPERATION section, after the HumidiClean has accumulated 90% of the selected Service Life, in hours of heater on time, the "STATE" LED will flash (blink) in yellow. At this time the ionic beds in the tank should be replaced. If service is not performed, the unit will continue to operate for the remaining hours before shutting down completely.

Note: Service Life can be adjusted based on water quality. If Ionic Beds are relatively free of scale deposits or scale is forming on tank walls and elements because beds are saturated with scale, please consult the factory for Service Life adjustment procedures.

Replacing the Ionic Beds

1) **Save the settings, consult the OPERATION SETUP** menu
2) Go to **Steam Gen.** Menu
    a) Drain tank by operating menu from "STEAM GEN." to "MANUAL DRAIN" position.
    b) Once the tank is drained, shut power off to unit and allow the tank to cool.
    c) Remove the cabinet access panels, and slowly open tank access panel.

3) Unsnap ionic beds from support pins and slide them out through the access opening.

Figure 20-1 HC-6100/6300

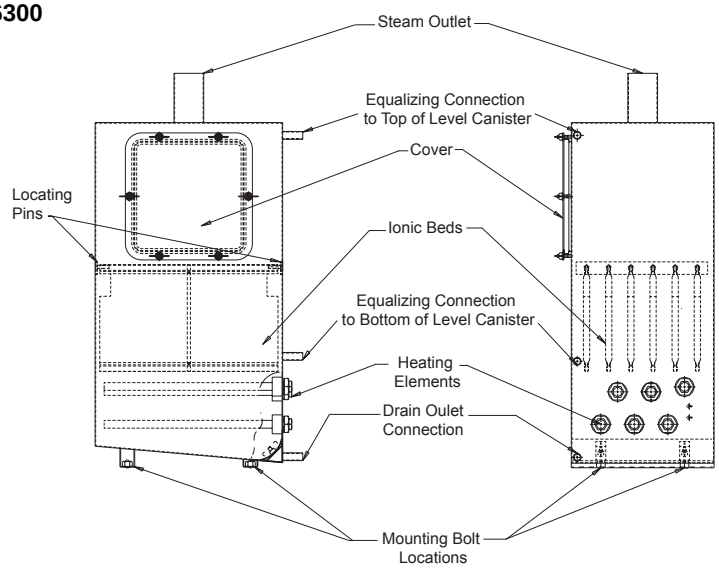
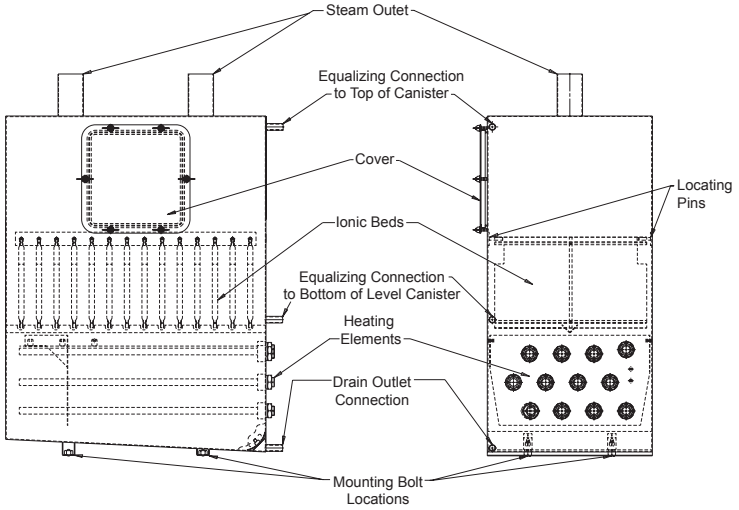


Figure 20-2 HC-6500/6700



4. Inspect tank drain screen and elements inside the tank. The elements should appear to be flaking off scale. If the drain screen appears to building deposits in the screen holes it should be cleaned. Remove any scale that appears in the bottom of the tank.

5. Install six (6) new ionic beds (14 for the HC-6500/6700), snapping them into place on the support pins.

6. Make sure access panel gasket is lapped over all edges of tank access opening. Replace and secure tank access panel.

7. Make sure both access doors/panels are secure.

8. Turn on power at circuit breaker.

9. Operate the unit configuration menu “Ionic Time Reset”, to reset the ionic bed life. All the accumulated ionic bed time has been reset to zero. The unit should now be heard filling.
   NOTE: ***The accumulated ionic bed time can be reset to zero at anytime. However, the unit should not be reset without first inspecting the ionic beds.***

10. After the unit has heated up and started making steam, turn main power off and double check tank access panel gasket for steam leakage. Hand tighten wing nuts or reposition gasket if necessary.

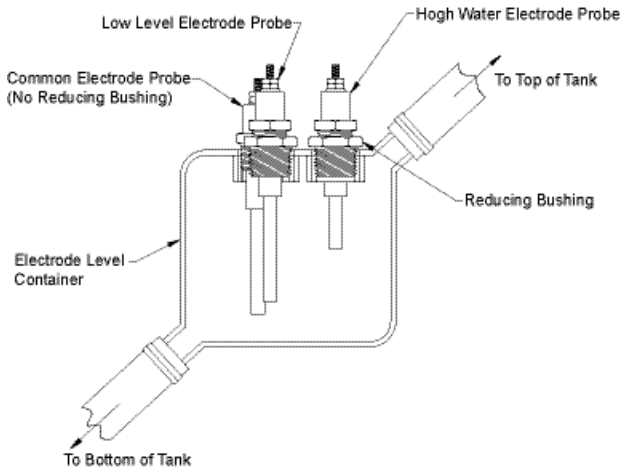
Cleaning the Water Level Electrodes

1. If there is water in the steam generating tank, operate menu to "MANUAL DRAIN". The drain valve should energize, and the unit should completely drain.

2. After the tank has drained, turn off the main power at the disconnect.

3. Unclamp and remove the 5/8" ID Silicone tubing from the top outlet of the level canister.

4. Disconnect wires #21 (high level probe), #20 (low level probe) and #19 (common probe) from the probes, noting the probe and wire locations. **Note: Level control float switches are used for DI, RO, or very pure water. Cleaning should not typically be required.**



5. Unscrew the probes from the level canister using the hex nut fitting on the probe (Note: Level canister bushings may be removed with the probes, if necessary).

6. Use a wire brush, wire wheel, or similar means to clean scale deposits off the stainless steel tip of the probe. Cleaning of the Teflon insulating jacket (white portion) should not be needed.

7. Wipe probes with a clean dry cloth.

8. Inspect the interior of the level canister. If large amounts of scale or debris are present, remove the canister from the cabinet by removing the two clamping bracket screws and disconnecting the 5/8" ID Silicone hose at the bottom of the canister. Flush the canister with water to remove debris and reinstall.

9. Reinstall the probes and probe wires in their proper locations. The high water probe (shortest) goes in the right hole of the canister. The low water probe (medium length) goes in the left front hole of the canister. The common probe (longest) goes in the left, rear hole of the canister.

10. Reconnect the 5/8" ID Silicone hose(s).

Removing the Tank, HC-6100/6300 Only

1. Operate menu to "MANUAL DRAIN" and allow unit to complete a deep drain. (**Caution:** Tank will still be quite warm).

2. Turn off circuit breaker.

3. Unlock and open front and side doors. Remove left side panel.

4. Disconnect 3 hoses from front of tank; rubber hose cuff at steam outlet; heating element leads at contactor, fuses, or power module; and thermocouple wires.

5. Loosen and remove 2 mounting bolts at the bottom of tank. Slide tank out left side of cabinet (be sure tank had time to cool after operation).

Troubleshooting

Notice: This troubleshooting guide is offered to aid in servicing the HC-6000 humidifiers. It is intended for use by electricians and technical service personnel familiar with electrical and electronic equipment. Many steps in the troubleshooting procedures require measurements of high voltages and involve working near exposed live parts. **KNOW WHERE THE HIGH VOLTAGE PARTS ARE, AND KEEP HANDS AND METAL TOOLS AWAY FROM THEM.** All resistance checks should be made with main power OFF and the component disconnected from wiring. All continuity checks should be made with main power OFF. If unsure concerning any of the following procedures, PLEASE consult the Armstrong Humidification Group at Phone: (269) 273-1415.

Humidifier will not fill with water when power is applied.

1. Make sure the status in menu is "Steam Gen.".

2. Make sure "STATE" LED is red. If so, refer to MAINTENANCE or DIAGNOSTICS section of this manual.

3. Make sure "POWER" LED is lit. If not, check voltage at secondary side of the main power transformer. Voltage should be 24-28 VAC. No or low voltage is an indication of a problem with the supply voltage or transformer. Verify supply voltage and make sure it is the same as voltage rating on humidifier nameplate. Check secondary power fuses.

4. Check the voltage to the fill valve. Voltage should be 24-28VAC (voltage should be taken with wires connected). If voltage is present, fill valve solenoid coil is probably defective. Coil resistance should be 18Ω (8.3Ω for HC-6500/6700) with wires disconnected.

5. Check for water in cabinet bottom or in fill cup overflow line. If present, see "Water in bottom of cabinet" on page 24.

6. If no voltage is present to fill valve, check water level. If it is above 2/3 full in electrode level canister (float canister for DI units), the drain valve has to open to drain water below high water level before the fill valve is energized.

7. Check for 24-28 Vac power to drain valve (voltage should be taken with wires connected). If power to drain valve is OK, check drain valve coil resistance with wires disconnected. It should be approximately 10Ω (8.3Ω HC-6500/6700).

8. If drain valve and fill valve are both energized and water is below the 1/3 full level in the electrode canister (float canister for DI units), make sure the status of Steam Generation in menu is "STEAM GEN.". Perform continuity check to be sure.

9. If drain valve only is energized and water level is below the 2/3 full level in electrode canister (float canister for DI units), there may be excessive debris in electrode canister (float canister for DI units). Inspect and clean if needed. See page 21 for Cleaning Procedure for Electrodes.

10. PC board may be defective. Consult the factory.

Humidifier fills with water, but does not turn "STEAM GEN" message on for 3 minutes after reaching low water level.

1. Perform steps 1 through 3 from above "Humidifier will not fill..."

2. **For Tap Water:** Check AC voltage across the common electrode (longest) and the low level electrode (medium length). The voltage will be approximately 17-20 VAC if the circuit is open. When the water level closes, circuit voltage should drop to <5 volts.

   (a) If voltage is not 17-20 VAC with circuit open, check continuity of wires from electrodes to PC board. If continuity is OK, the PC board is likely defective.

   (b) If voltage is 17-20 VAC with circuit open, but does not drop when water contacts the two electrodes, the water may be too pure (consult factory) or if the voltage drops very slowly to about 5 volts then the electrodes need cleaning. See page 21 for cleaning procedure for electrodes.

3. **For DI Water:** Check continuity across the two wires to the low water float switch. If no continuity, switch may be defective or "hung up". Make sure movement of switch is vertical so the float arm swings freely.

4. If high limit/sail circuit is closed, low water level circuit is closed, and there is a calling for humidity, the status of steam generation should be "STEAM GEN.". If not, PC board or wiring harness is defective.

"STEAM GEN." turns on after initial fill to low water level, but amperage draw check shows low or no amperage draw.

1. Check for line voltage to heating elements at secondary side of contactor and/or power module. Verify power supply is same as voltage rating on humidifier nameplate.

2. If voltage is correct, the heating elements are likely defective. Turn off main power, disconnect all elements and check element resistances (see resistance chart on Page 36 and 38). Look for open circuits or elements with high resistance.

3. If voltage is not present at elements, check primary voltage fusing.

4. If fuses are OK, check voltage to contactor coil.
   (a) If voltage is 24-28VAC at contactor coil, check coil resistance. It should be 8Ω with wires disconnected. If resistance is OK, check voltage drops across the contactor.

   (b) If no voltage to contactor coil, check continuity of wires from PC board to contactor. If continuity is OK, PC board is likely defective.

5. Check voltage signal to power module. The voltage across TAB8-1 and TAB8-2 (low voltage signal to power module) should be 12 Vdc.
   (a) If no or low voltage, the PC board is likely defective.

   (b) If voltage is OK, but green "SIGNAL" LED on the power module is not on, power module is defective.

6. If green "LOAD" LED on power module is on, check voltage drops across power module.

Humidifier overfills with water on initial fill.

1. Check electrode canister (float canister for DI units) and level electrodes for debris or scale build up. Clean as needed. See Page 21 for cleaning procedure for electrodes. On DI Units, the high water float switch may be defective or "hung up". Check continuity across wires to the switch. Make sure switch movement is vertical so float lever arm swings freely.

2. The fill valve may be stuck open. Turn off power to the humidifier. If fill valve does not close, clean or replace valve.

3. If the high water circuit is closed and the fill valve shuts off when the power is turned off, the PC board is defective.

Humidifier runs continuously, %RH is well over set-point.

1. Verify humidistat signal isn't sending false 100% demand.
2. Verify humidistat or RH sensor is wired correctly and stat/sensor dip switches (S2 & S3, See Fig. 10-1 and 11-1) on the PC board are set correctly for the humidistat signal.

3. If humidifier generates steam with the humidistat disconnected.
   (a) Check for power at the contactor coil. If 24-28 VAC, PC board is defective.

   (b) Check voltage drop across contactor. If voltage drop is low (it should be line voltage), remove, disassemble and inspect contactor.

   (c) Check green "SIGNAL" LED on power module. If it is ON or blinking, PC board is likely defective.

   (d) Check voltage drop across power module. If voltage drop is low (it should be line voltage), power module triacs may be failed closed. Shut off main power and perform continuity check across high voltage input and output terminals. Continuity indicates a shorted triac. Note: Some power modules have two triacs rather than three. Check schematic on power module to verify.

Humidifier runs continuously, %RH is well under set-point.

1. Verify humidistat/RH sensor is wired correctly and dip switches (S2 & S3, See Fig. 10-1, 11-1 and 11-1) on the PC board are set correctly for the humidistat signal.

2. Check humidistat demand signal at low voltage terminal strip. It should be close or at 100%.

3. If humidifier is a three phase model, verify all three phases of power are present and equal.

4. Check amperage draw on all high voltage power lines with a clamp on amp meter. They should be same or very close to amperage rating on the humidifier's nameplate if the humidistat demand is 100%.

5. Turn off power. Disconnect heating elements and check resistances - see Tables on Pages 35 and 37. If an open circuit or abnormally high resistance is measured, the heating element(s) is defective. Also, check to see if heating element leads have shorted to ground.

6. If heating elements are OK, check voltages at secondary side of the power module and contactor. If no or low voltage, check primary fusing.

7. If fuses are OK, check voltage to contactor coil.
   (a) If voltage is 24-28VAC at contactor coil, check coil resistance. It should be approximately 8Ω? with wires disconnected. If resistance is OK, check voltage drops across the contactor.

   (b) If no voltage to contactor coil, check continuity of wires from PC board to contactor. If continuity is OK, PC board is likely defective.

8. Check voltage signal to power module. The voltage across TAB8-1 and TAB8-2 (low voltage signal to power module) should be 12 Vdc at 100% power.
   (a) If no or low voltage, the PC board is likely defective.
   (b) If voltage is OK, but green "LOAD" LED on the power module is not on, power module is defective.

9. If green "SIGNAL" LED on power module is on, check voltage drops across power module.

10. If supply voltage and amperage draws are correct and elements appear OK, unit is probably undersized (not enough capacity for the application). Check sizing or consult factory.

Humidifier does not drain when manual drain.

1. Disconnect and check resistance of drain valve coil. Resistance should be approximately 10Ω (8.3Ω HC-6500/6700).

2. Make sure drain line is pitched and sized correctly. Check for blockage or obstructions in the drain line. An air gap or funnel must be used as described in Drain Line Section. - See Figure 8-3.

3. If humidifier does not drain at specified interval or when service is to be performed and drain valve and piping appear OK, there is blockage of the tank drain screen or the PC board may be defective.

Dispersion tube spits water or water is present in duct

Hint: It is very helpful to cut a small observation window in the duct and cover it with Plexiglas so the steam discharge from the manifold can be observed. This way the problem can be narrowed down to piping/steam quality (steps 1 and 2) or a condensation problem (steps 3 and 4).

1. Check distribution piping for proper pitch and size. Make sure there are no loops, dips or sags where pockets of water can collect. If such conditions exist and are unavoidable, a 'P' trap is needed to drain the low spots.

2. Make sure any drains are piped correctly and pitched to a floor drain.

3. Check duct downstream of manifold. If any obstructions (coils, elbows, fans) are within 10', the vapor (condensed steam) discharged from the manifold may be impinging on the obstacle before it has a chance to adsorb into air. This is especially true if the duct air is cold (<50°F), duct air velocity is high (>2000 FPM), or duct %RH is high (>90%). If these conditions exist and impingement is suspected, consult factory.

4. The duct air may be saturated with moisture (100% RH). A high limit humidistat/RH sensor is recommended to prevent this. See Installation section.

Water in bottom of cabinet

1. Verify that pressure equalizing tubing is hooked up from top of electrode level canister to the tank.

2. Check steam distribution piping for obstructions.

3. Verify duct air velocity is less than 2000 FPM and manifold is not in a vertical down air flow.

4. Check for leaks at fittings and clamps in water supply lines.

5. Verify that tank access panel gasket is on lip of access hole and the access panel is secured tightly.

6. Make sure the duct pressure and steam distribution back pressure does not total more than 6" WC.

Diagnostics

There are some diagnostic routines programmed into the PC board. If these routines detect a problem the unit will shut down and display the error message on LCD, the "STATE" LED will be on in red.

1 FILL TIME OUT TO LOW LEVEL - - The low level switch has not closed after 35 minutes of fill valve on time. This is only on initial start-up or after a complete drain down. **Check:** defective fill valve, debris in fill valve inlet screen or on tank drain screen, water leakage from tank or inlet tubing, no water flow or low water pressure, drain valve stuck open or leaking, defective low water level switch (electrodes need to be cleaned).

2 WATER LEVEL DROPPED BELOW LOW LEVEL - - The low level switch has not closed after 5 minutes of fill valve on time. This is only after initial start-up fill and boil-down sequence.
Check: debris in water switch canister, defective fill valve, no water flow or low water pressure, drain valve stuck open, defective low water level switch (electrodes need to be cleaned).

3 WATER LEVEL ABOVE HIGH LEVEL TIME OUT - - The high water switch is still closed 5 minutes after the fill valve has turned off upon hitting the high water level and a 30 second drain does not drop the water below the high water level. **Check:** defective high water level switch, debris in level canister, fill valve stuck open, drain valve is defective or scale buildup in drain line.

4 ILLEGAL LEVEL SWITCH STATE - - The high level switch is closed and the low level switch is open. **Check:** defective level switch(es), debris in electrode level canister, scale on electrodes or canister, improper wiring of electrodes or float switches.

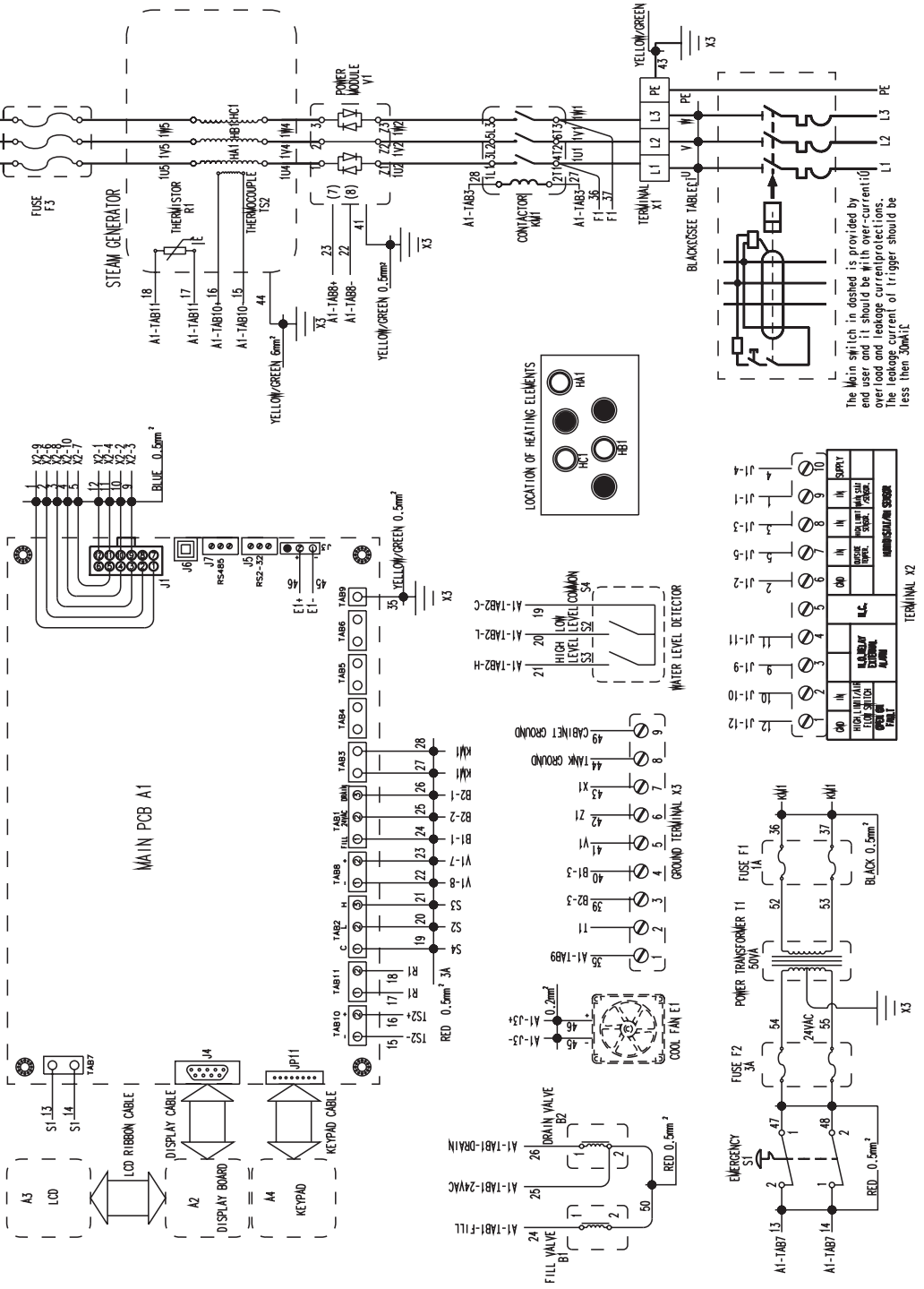
5 OVER TEMPERATURE - - Internal temperature exceeds safe level. **Check:** low water in tank, scale buildup on Thermocouple heating element surface, defective Thermocouple. See Clearing "Error" Codes section.

6 WATER LEVEL HAS NOT DROPPED BELOW LOW LEVEL - - The low water level switch has not opened after a complete drain. Unit drains frequency and duration can be set in menu. **Check:** defective low water level switch or electrodes, defective drain valve, debris on low water level float switch or electrodes, tank drain screen, or in drain valve

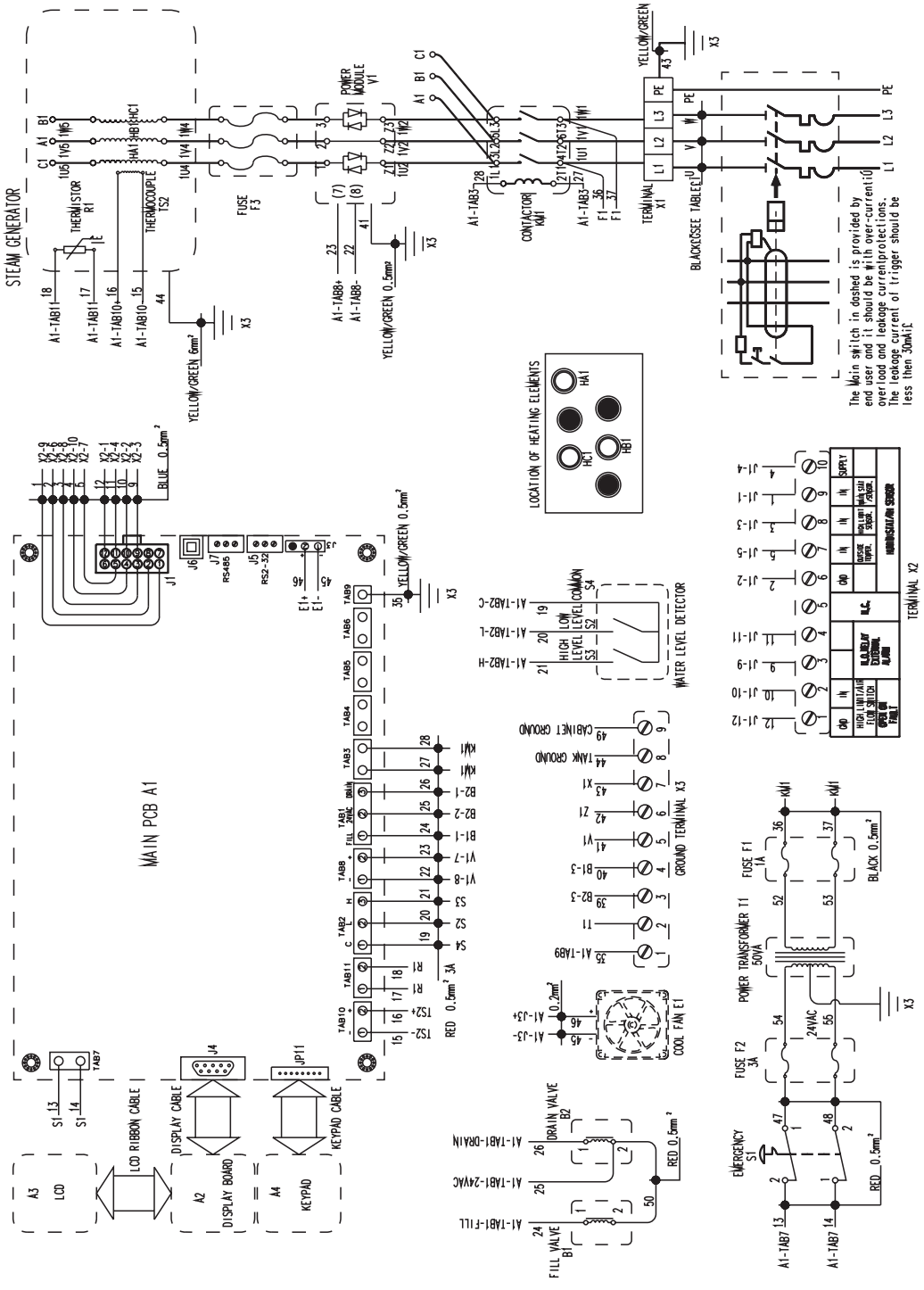
Clearing "ERROR" codes
After correcting the problem, the error state must be cleared by depressing the button "Error Clearing". Confirm the operation, the unit should resume normal operation (If the water level is above the low water, the unit will drain below the low water level and refill before energizing the contactor). Turning the power on and off will not clear the error condition.

Safety Switches
When the high limit or air proving (pressure) switch opens the state light will flash green and the message “High Humidity/Sail Switch Circuit is Open” will be shown on the front display. This is a soft error, it does not have to be reset. When the circuit closes the unit will go back to normal operation.

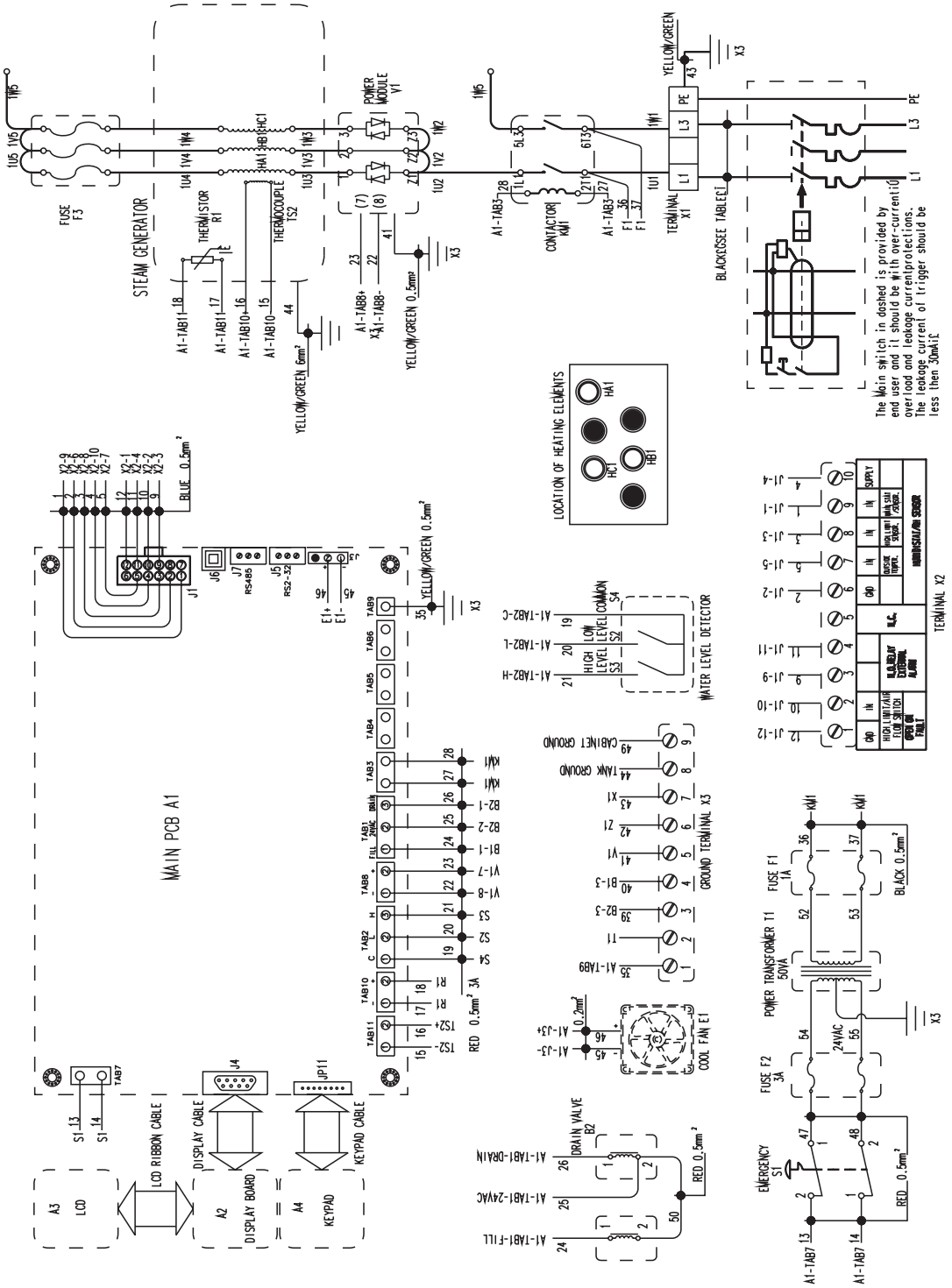
HC6100-Wye Wiring layout



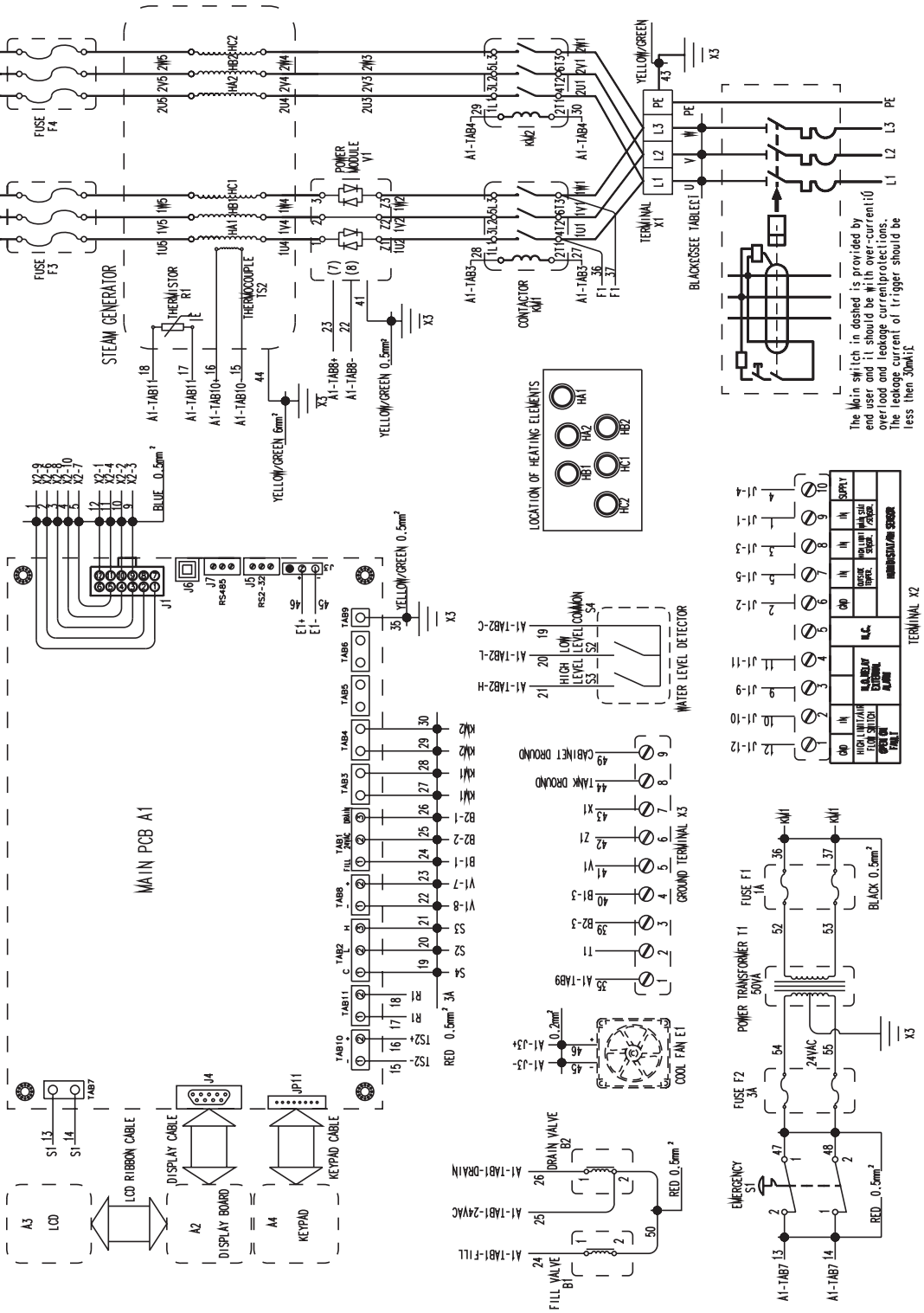
HC6100-Delta Wiring layout



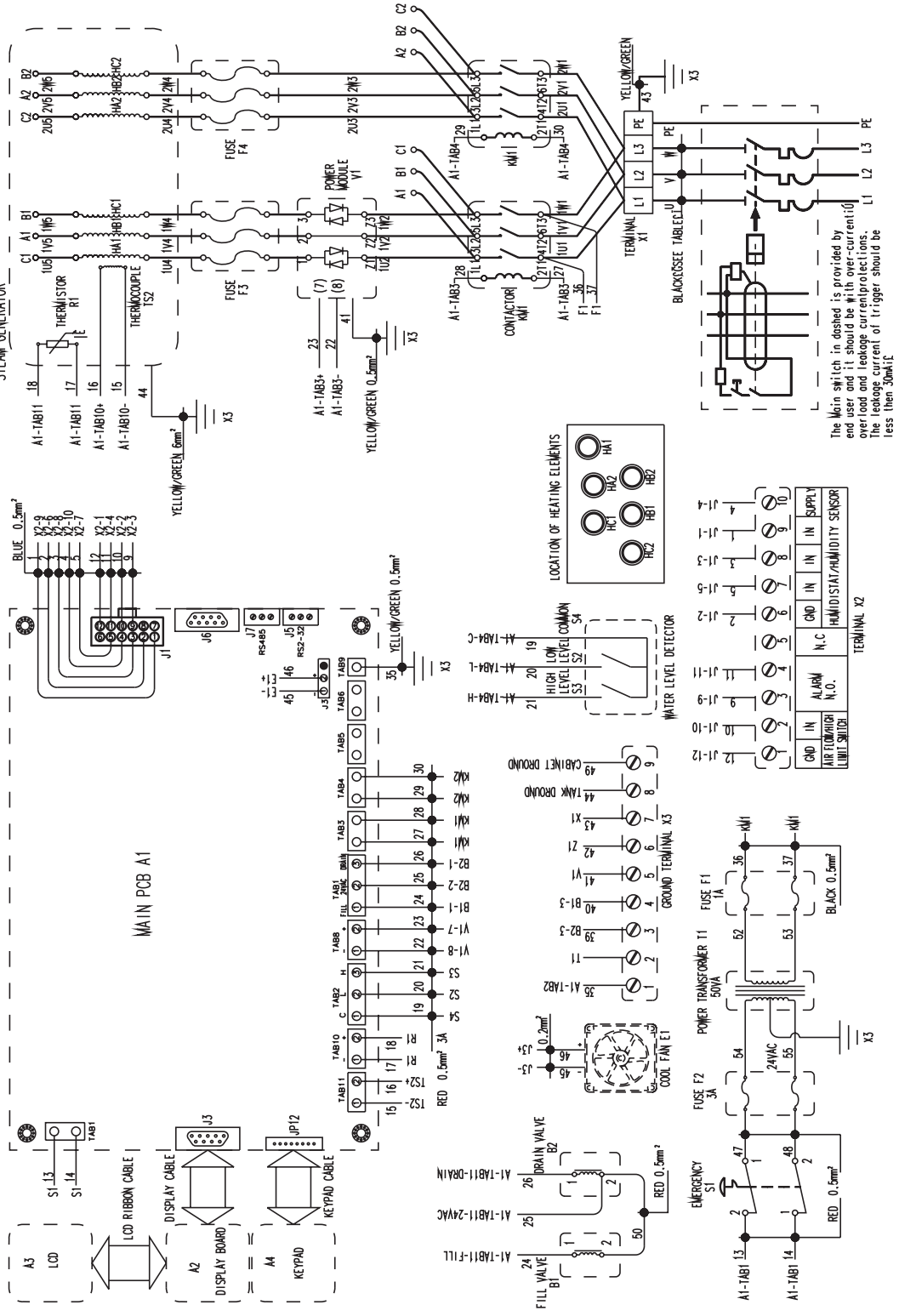
HC6100-PAR Single Phase Wiring Layout



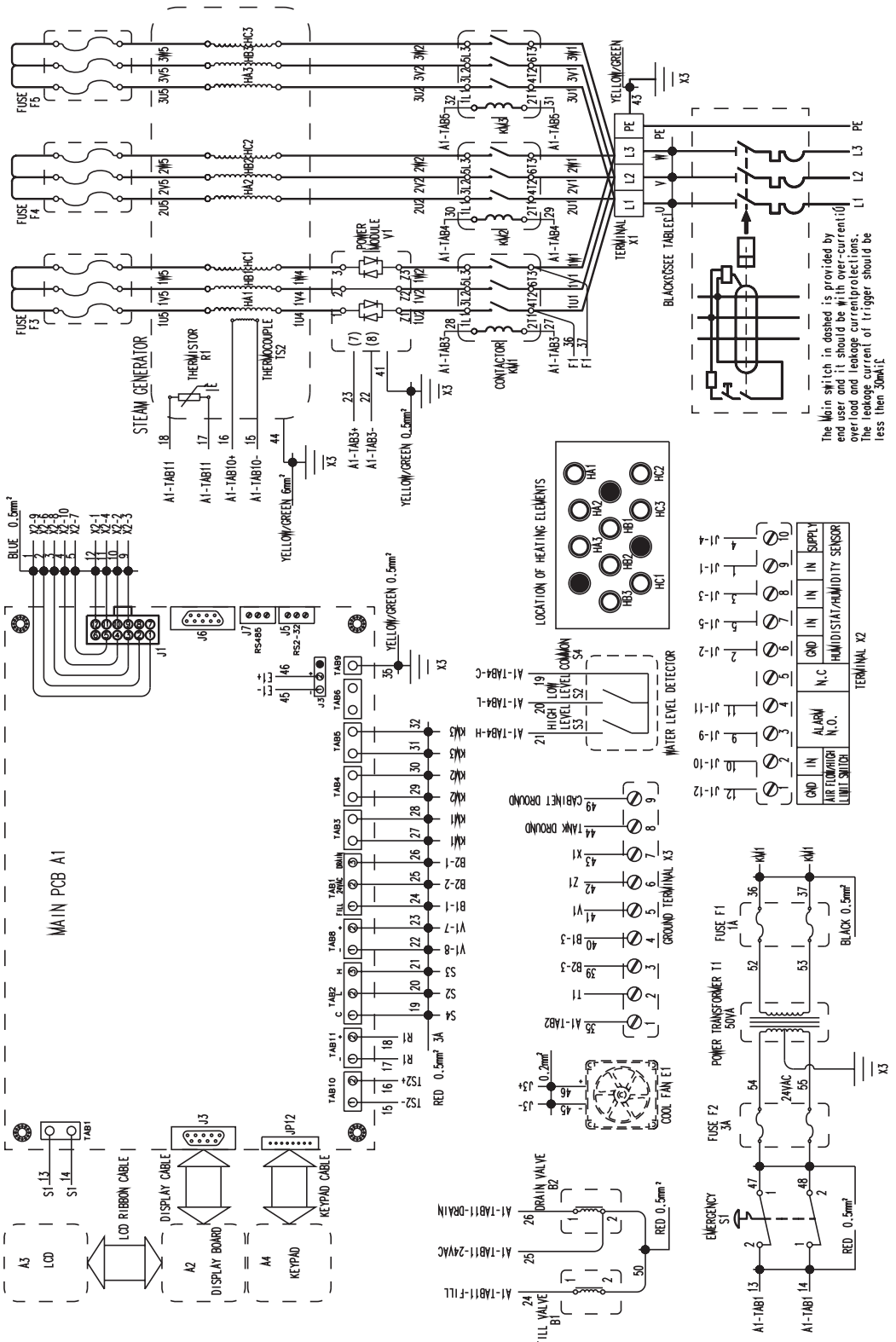
HC6300-Wye Wiring layout



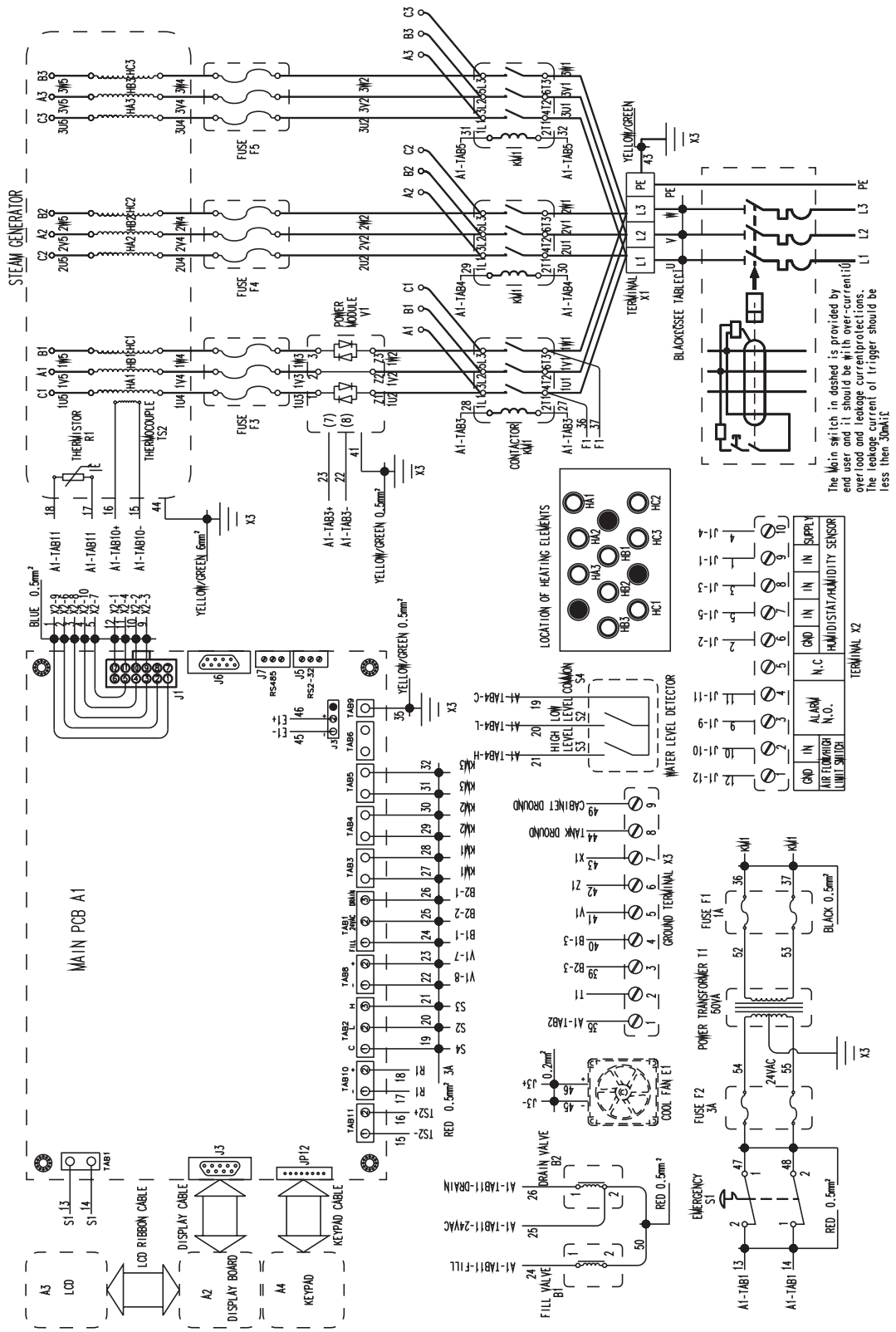
HC6300-Delta Wiring layout



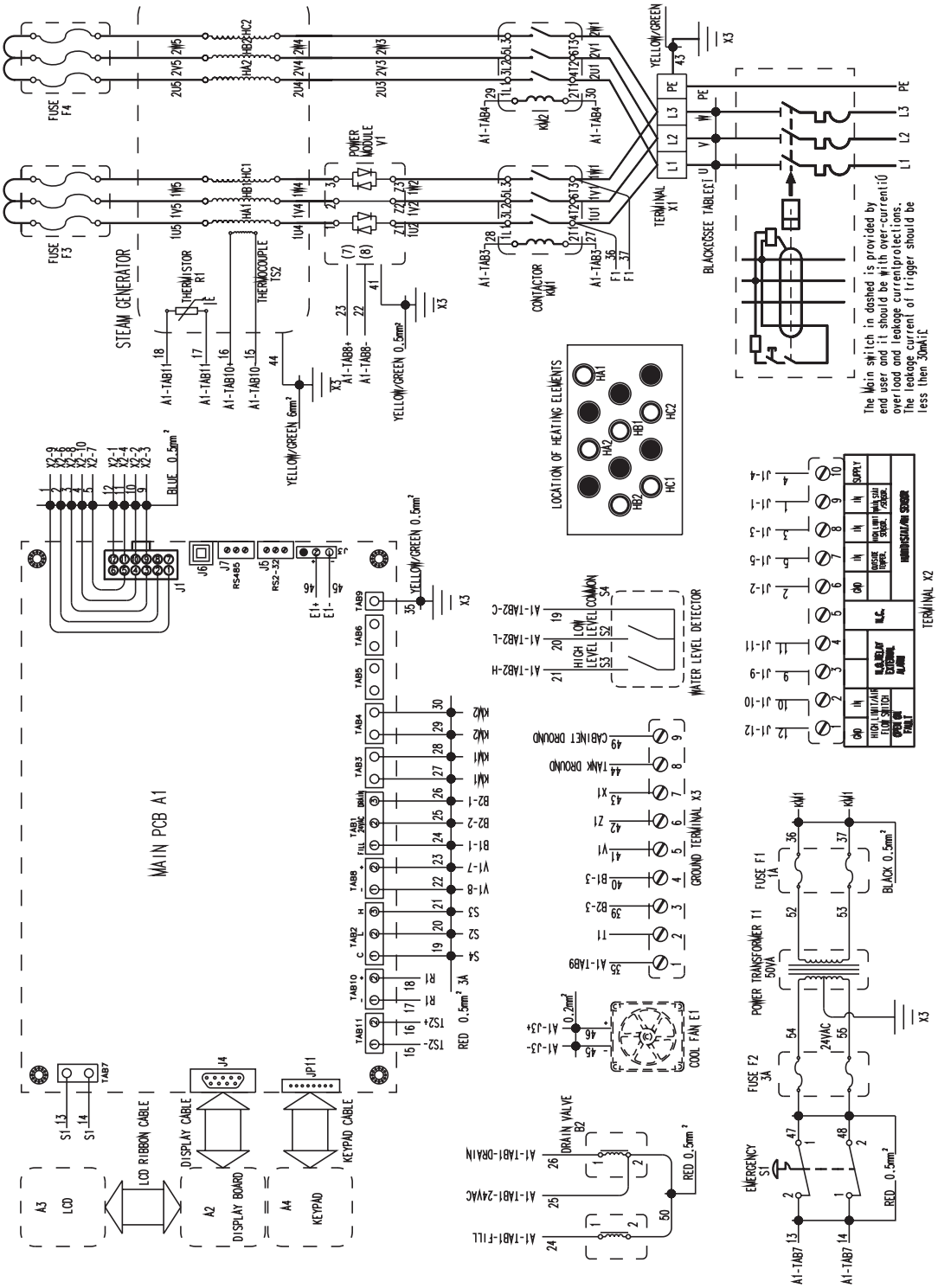
HC6500-Wye Wiring layout



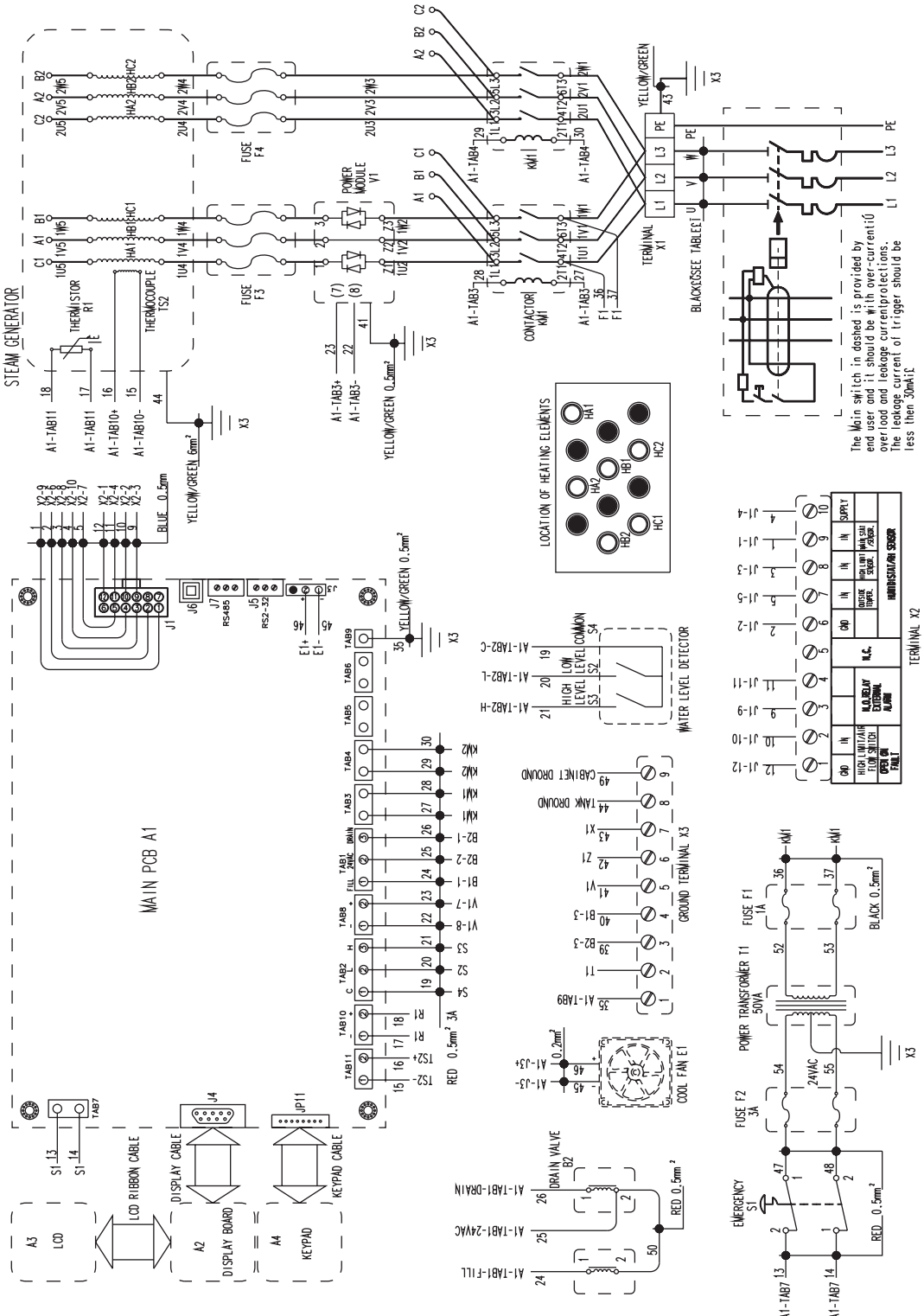
HC6500-Delta Wiring layout



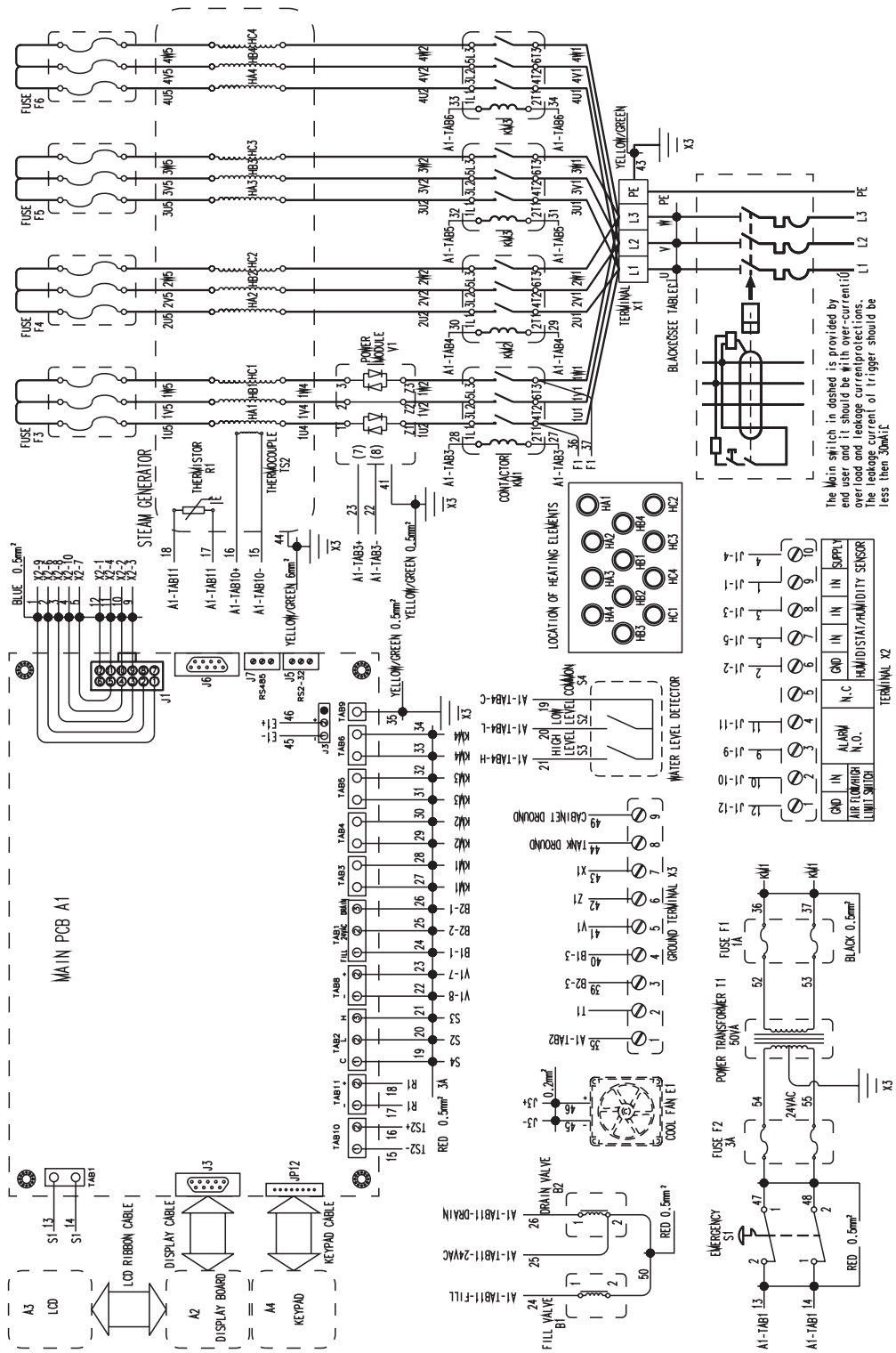
HC6500-WYE (2 contactors) Wiring Layout



HC6500-Delta (2 contactors) Wiring Layout



HC6700-Wye Wiring layout

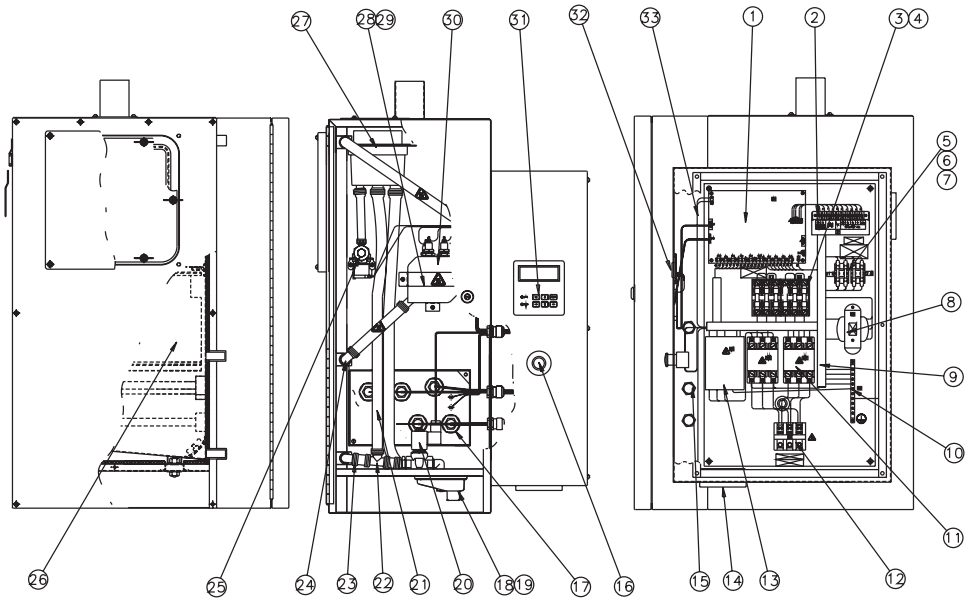


HC-6000 Repair Parts

Item No.	Electrical Compartment and Front Panel	Part No.
31	Label Front Panel With Keypad	RDHC6000-014
16	Emergency Stop Button (2 N.O.)	RDEHU700-065
1	Main PCB For HC-6000	D5814
—	Wire Harness For HC-6100	RDHC6000-013-1
—	Wire Harness For HC-6300	RDHC6000-013-2
32	LCD & Display Board For HC-6000	RDHC6000-012
14	Fan DC24 (Sanyo 9A0924H4D03) With 2 Cover	RDHC6000-004
12	Terminal Block #000 Wire	B5607
11	Definite-Purpose Contactor 50AMP	B2721
6	Fuse 3AMP	A10718
7	Fuse 1A	RDEHU700-073
5	Fuse Block 3AMP	A8649
13	Module Power Din 9KW HC-6000	B5091
13	Module Power Din 15KW HC-6000	B5092
13	Module Power Din 9/15KW HC-6000	B5093
13	Module Power Din 15KW HC-6000	B5151
8	Trans Power 120/240-24V	C1833
8	Trans Power 600-24V	C1833A
8	Trans Power 480-24V	C1833B
8	Trans Power 208-24V	C1833F
8	Trans Power 380-24V	C1833D
3	Fuse Holder 30AMP HC-6000	B4039
3	Fuse Holder 30AMP 250V HC-6000	B7494
4	Fuse 30AMP HC-6000	B4040
4	Fuse 30AMP HC-6000 250V	B7495

Item No.	Water Compartment	Part No.
—	PVC Tubing 5/8"	A7618A
—	Clamp Hose Flat .63 Olive	B2716-11
—	Hose Clamp, Minerature, Worm	B2911-8
25	Kit Fill Valve Assy HC-6100 and HC-6300 Tap Water	A23520
21	Tubing Rd 5/8" I.D. Silicon	A19699
22	Tee Barbed HDPE 5/8	A23237
24	Elbow Barbed 5/8	A10579
27	Fill Cup for Series HC-6000	RDHC6000-038
27	Bracket For Fill Cup	B2929
28	Bracket for Liquid Level	B5135
28	Brkt HC-6000 Liquid Level	A22010
20	Drain Valve	B2004C
18	Drain Cup	RDEHU305-2021
17	Reducing Bushing Brass 1"-1/2"	RDHC6000-041
30	Probe Level Assy Tap	C4561
29	Container For Probe Level	C4559
—	Long Probe For Water Level (Low and Common)	B5268
—	Short Probe For Water Level (High)	B5269
—	Reducing Bushing For Water Level	A21391
—	Float Level Assy DI/RO	C4560
—	Float Switch DI/Ro	B5139

Item No.	Steam Generator	Part No.
1	SS Tank For HC-6100/6300	RDHC6000-009-1
—	Thermistor 5 KOHM With Wire (Aquastat)	RDHC6000-006
25	S-assy Ionic Bed HC-6000 (six required for HC-6100 and HC-6300)	B5213
—	Tank (HC6100/6300)	D6476
—	Black Knob (6) Used with tank cover	D6478
—	Tank Cover	D6477
—	Tank Gasket	B7872
—	Ionic Bed	B5213
—	Lock and two keys for cabinet	A10789
—	2-3/8" IDx12" EPDM hose cuff	B2851A
—	2" IDx12" EPDM hose cuff	B2851
—	1-1/2" IDx9-5/8" EPDM hose cuff	B2250
—	1" IDx18" EPDM hose cuff	A9620-1
—	Hardware Assembly	B5287
—	Passivated Tank	D2171



HC-6100				
Voltage	3kW		3kW DI	
	Without TC 2PCS/Unit	With TC 1PCS/Unit	Without TC 2PCS/Unit	With TC 1PCS/Unit
208	B5808-1	B5809-1	B5810-1	B5811-1
240	B5808-2	B5809-2	B5810-2	B5811-2
380	B5808-1	B5809-1	B5810-1	B5811-1
480	B5808-3	B5809-3	B5810-3	B5811-3
600	B5808-4	B5809-4	B5810-4	B5811-4

HC-6100				
Voltage	9kW		15kW	
	Without TC 2PCS/Unit	With TC 1PCS/Unit	Without TC 2PCS/Unit	With TC 1PCS/Unit
208	B5047-1	B5048-1	B5043-1	B5044-1
240	B5047-2	B5048-2	B5043-2	B5044-2
380	B5047-1	B5048-1	B5043-1	B5044-1
480	B5047-3	B5048-3	B5043-3	B5044-3
600	B5047-4	B5048-4	B5043-4	B5044-4

HC-6100 DI				
Voltage	9kW		15kW	
	Without TC 2PCS/Unit	With TC 1PCS/Unit	Without TC 2PCS/Unit	With TC 1PCS/Unit
208	B5049-1	B5050-1	B5045-1	B5046-1
240	B5049-2	B5050-2	B5045-2	B5046-2
380	B5049-1	B5050-1	B5045-1	B5046-1
480	B5049-3	B5050-3	B5045-3	B5046-3
600	B5049-4	B5050-4	B5045-4	B5046-4

HC-6300				
Voltage	18kW		30kW	
	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 5PCS/Unit	With TC 1PCS/Unit
208	B5047-1	B5048-1	B5043-1	B5044-1
240	B5047-2	B5048-2	B5043-2	B5044-2
380	B5047-1	B5048-1	B5043-1	B5044-1
480	B5047-3	B5048-3	B5043-3	B5044-3
600	B5047-4	B5048-4	B5043-4	B5044-4

HC-6300 DI				
Voltage	18kW		30kW	
	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 5PCS/Unit	With TC 1PCS/Unit
208	B5049-1	B5050-1	B5045-1	B5046-1
240	B5049-2	B5050-2	B5045-2	B5046-2
380	B5049-1	B5050-1	B5045-1	B5046-1
480	B5049-3	B5050-3	B5045-3	B5046-3
600	B5049-4	B5050-4	B5045-4	B5046-4

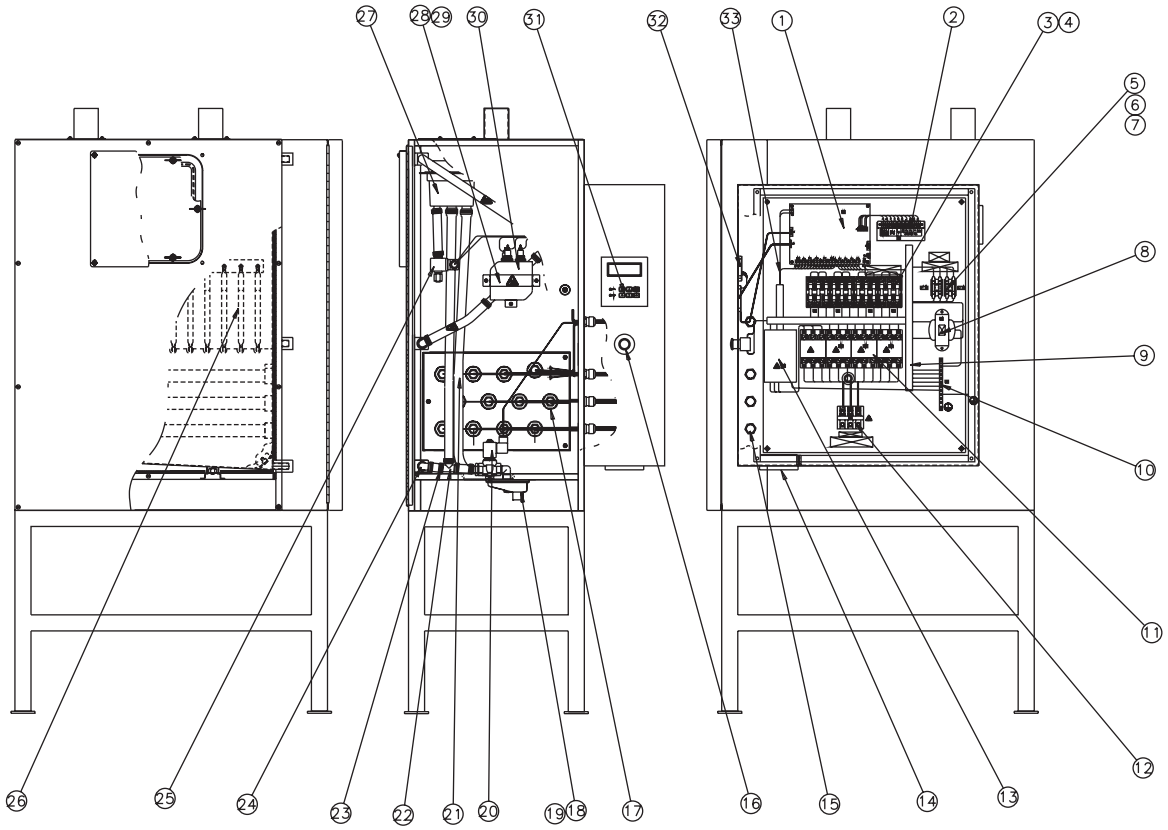
Heating Elements

TC= Thermocouple

Item No.	Electrical Compartment and Front Panel	Part No.
31	Label Front Panel With Keypad	RDHC6000-014
16	Emergency Stop Button	RDEHU700-065
1	Main PCB For HC-6000	D5814
—	Wire Harness For HC-6500	RDHC6013-3
—	Wire Harness For HC-6700	RDHC6000-013-4
32	LCD & Display Board For HC-6000	RDHC6000-012
14	Fan DC24 with 2 Cover	RDHC6000-004
12	Terminal Block #000 Wire	B5607
11	Definite-Purpose Contactor 50AMP	B2721
6	Fuse 3AMP	A10718
7	Fuse 1A	RDEHU700-073
5	Fuse Block 3AMP	A8649
13	Module Power Din 15KW HC-6000	B5092
13	Module Power Din 15KW HC-6000	B5151
8	Trans 208/240/380/480/600-24V	B5605
3	Fuse Holder 30 AMP HC-6000	B4039
3	Fuse Holder 30 AMP HC-6000	A21882
4	Fuse 30 AMP HC-6000	B4040
4	Fuse 40 AMP HC-6000	A21883
4	Fuse 50 AMP HC-6000	A21884

Item No.	Water Compartment	Part No.
—	PVC Tubing 5/8"	A7618A
—	Clamp Hose Flat .63 Olive	B2716-11
—	Hose Clamp, Minerature, Worm	B2911-8
25	Fill Valve	RDHC6000-001
21	Tubing Rd 7/8 Od Silicon	A19699
23	Clamp Hose Flat .88	B2716-18
22	Tee Barbed HDPE 5/8	A23237
24	Elbow Barbed 5/8	A10579
27	Fill Cup for Series HC-6000	RDHC6000-038
27	Bracket For Fill Cup	B2929
28	Bracket Liquid Level	B5135
28	Brkt HC-6000 Liquid Level	A22010
20	Drain Valve	RDHC6000-002
18	Drain Cup	RDEHU305-2021
17	Reducing Bushing Brass 1"-1/2"	RDHC6000-041
30	Probe Level Assy Tap	C4561
29	Container For Probe Level	C4559
—	Long Probe For Water Level (Low and Common)	B5268
—	Short Probe For Water Level (High)	B5269
—	Reducing Bushing For Water Level	A21391
—	Float Level Assy DI/RO	C4560
—	Float Switch DI/Ro	B5139

Item No.	Water Compartment	Part No.
26	S-assy Ionic Bed HC-6000 (14 required for Model HC-6500 and HC-6700)	B5213
—	Thermistor 5 KOHM With Wire (Aquastat)	RDHC6000-006



HC-6000 Repair Parts

Resistance Value of 6100/6300 Components		
Component	**Voltage**	**Resistance**
Fill Valve	24Vac	18Ω
Drain Valve	24Vac	10Ω
Contractor	24Vac	7-9Ω
Thermocouple in Heating Elements	-	0.51Ω
Heating Elements		
208Vac and 380Vac 3kW	220 Vac	46.0-48.6Ω
240Vac and 380Vac 3kW	240 Vac	55-58Ω
480Vac and 380Vac 3kW	277 Vac	72-78.2Ω
600Vac and 380Vac 3kW	346 Vac	112.4-122.4Ω
208Vac and 380Vac15/30kW	220Vac	9.2-10.7Ω
240Vac 15/30kW	240Vac	10.9-12.6Ω
480Vac 15/30kW	277Vac	14.5-16.8Ω
600Vac 15/30kW	346Vac	22.7-26.3Ω
208Vac and 380Vac9/18kW	220Vac	15.3-17.7Ω
240Vac 9/18kW	240Vac	18.2-21.1Ω
480Vac 9/18kW	277Vac	24.3-28.2Ω
600Vac 9/18kW	346Vac	37.9-43.9Ω
Power Transformer	120Vac	13.6Ω across H1-H2 15.1Ω across H3-H4
	208Vac	22Ω across H1-H2
	240Vac	29Ω across H1-H2
	380Vac	77Ω across H1-H2
	480Vac	125Ω across H1-H2
	600Vac	194Ω across H1-H2
Power Transformer (secondary)	All Voltage	0.6Ω across X1-X2 0.4Ω across X1-X2

Resistance Value of 6500-6700 Comoponents		
Component	**Voltage**	**Resistance**
Fill Valve	24Vac	8.8Ω
Drain Valve	24Vac	4.1Ω
Thermocouple in Heating Elements	-	0.51Ω
Heating Elements		
208, 240, 380V, 30/33, 5/40/45/50,3/60kW	240Vac	7.4-9.1Ω
380V 48/72kW	220Vac	5.2-6.3Ω
480V 48/72kW	277Vac	8.1-10.0Ω
600V 48/72kW	346Vac	12.8-15.7Ω
Power Transformer		
Primary Loop	208Vac	18Ω across H1-H2
	240Vac	21Ω across H1-H3
	277Vac	24Ω across H1-H4
	380Vac	40Ω across H1-H5
	480Vac	53Ω across H1H6
	600Vac	97Ω across H1-H2
Secondary Loop	208Vac	1Ω across X1-X2
	240Vac	1Ω across X1-X2
	277Vac	1Ω across X1-X2
	380Vac	1Ω across X1-X2
	480Vac	1Ω across X1-X2
	600Vac	1Ω across X1-X4

Note: All measurements should be made with the main power off and the wires to the component being tested disconnected.

HC-6000 Repair Parts

HC6500/HC6700										
Voltage	30kW		33.5kW		40kW		45kW	
	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 8PCS/Unit	With TC 1PCS/Unit
208	B5433-1	B5434-1	-	-	-	-	B5433-1	B5434-1
204	-	-	-	-	B5433-1	B5434-1	-	-
380	-	-	B5433-1	B5434-1	-	-	-	-
480	-	-	-	-	-	-	-	-
600	-	-	-	-	-	-	-	-

HC6500/HC6700										
Voltage	48kW		50.3kW		60kW		72kW		96kW	
	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 8PCS/Unit	With TC 1PCS/Unit	Without TC 8PCS/Unit	With TC 1PCS/Unit	Without TC 8PCS/Unit	With TC 1PCS/Unit	Without TC 11PCS/Unit	With TC 1PCS/Unit
208	-	-	-	-	-	-	-	-	-	-
204	-	-	-	-	B5438-1	B5438-1	-	-	-	-
380	B5437-1	B5438-1	B5438-1	B5438-1	-	-	B5437-1	B5438-1	B5437-1	B5438-1
480	B5437-2	B5438-2	-	-	-	-	B5437-2	B5438-2	B5437-2	B5438-2
600	B5437-3	B5438-3	-	-	-	-	B5437-3	B5438-3	B5437-3	B5438-3

HC6500/HC6700 DI								
Voltage	30kW		33.5kW		40kW		45kW	
	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 8PCS/Unit	With TC 1PCS/Unit
208	B5435-1	B5436-1	-	-	-	-	B5435-1	B5436-1
204	-	-	-	-	B5435-1	B5436-1	-	-
380	-	-	B5435-1	B5436-1	-	-	-	-
480	-	-	-	-	-	-	-	-
600	-	-	-	-	-	-	-	-

HC6500/HC6700 DI										
Voltage	48kW		50.3kW		60kW		72kW		96kW	
	Without TC 5PCS/Unit	With TC 1PCS/Unit	Without TC 8PCS/Unit	With TC 1PCS/Unit	Without TC 8PCS/Unit	With TC 1PCS/Unit	Without TC 8PCS/Unit	With TC 1PCS/Unit	Without TC 11PCS/Unit	With TC 1PCS/Unit
208	-	-	-	-	-	-	-	-	-	-
204	-	-	-	-	B5440-1	B5440-1	-	-	-	-
380	B5439-1	B5440-1	B5440-1	B5440-1	-	-	B5439-1	B5440-1	B5439-1	B5440-1
480	B5439-2	B5440-2	-	-	-	-	B5439-2	B5440-2	B5439-2	B5440-2
600	B5439-3	B5440-3	-	-	-	-	B5439-3	B5440-3	B5439-3	B5440-3

Procedure of HC6000 Version 7 Soft Refresh

This section is used for HC6000 software reprogramming only. Please follow the instructions carefully, or pc board could become un-functional.

1. Install the driver program for Atmel MCU, SAM-BA on your computer first. The link for the Atmel program AT91-ISP.exe and the latest version of can be found at the following location: **www.armstronginternational.com/hc6000refresh**

2. Before refreshing the code, the old code in CPU must be erased:
   a. Turn off the power supply from the breaker, and push the emergency stop button in.
   b. Put Dip Switch S4-3 in the on position (Test Mode Select), turn on the breaker and pull out emergency button. The indicator LED D47 on main board will remain ON. Keep the power supply on for at least 8 seconds.

      (This is the step to erase the old code.)

   c. Turn off the power supply and put dip switch S4-3 to the off position.
   d. Turn on the power supply, the indicator LED D47 will remain ON.

3. Loading the new code:
   a. Connect the main board to computer with an USB cable. The computer should find the new hardware, "ATMEL AT91xxxxx Test Board "and install driver for board automatically. If system can not find the board automatically, please install driver manual, the path of the install file .inf is: **c:/wingdows/info/atm6124.inf**

   b. Run program SAM-BA select the connection port as "\usb\ARM0", select board as AT91SAM7S256-EK", please see figure 1 below.

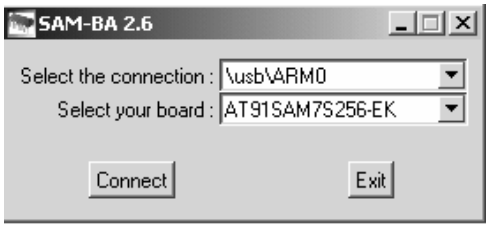


Fig.1 SAM-BA Start Up Window

   c. Click "Connect" button to enter the download window. Please see figure 2 on page 43.

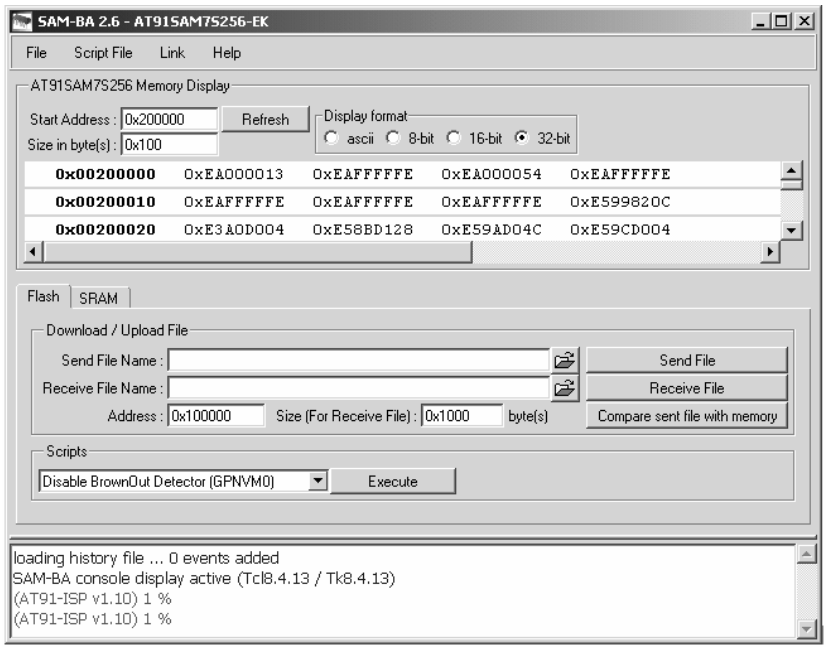


Fig.2 Code Download Window

d. Click the "open folder" button on the right of textbox "Send File Name" to open the latest code, please see figure 3 below. You will then have to locate the .bin file that you downloaded from the website and then hit open.

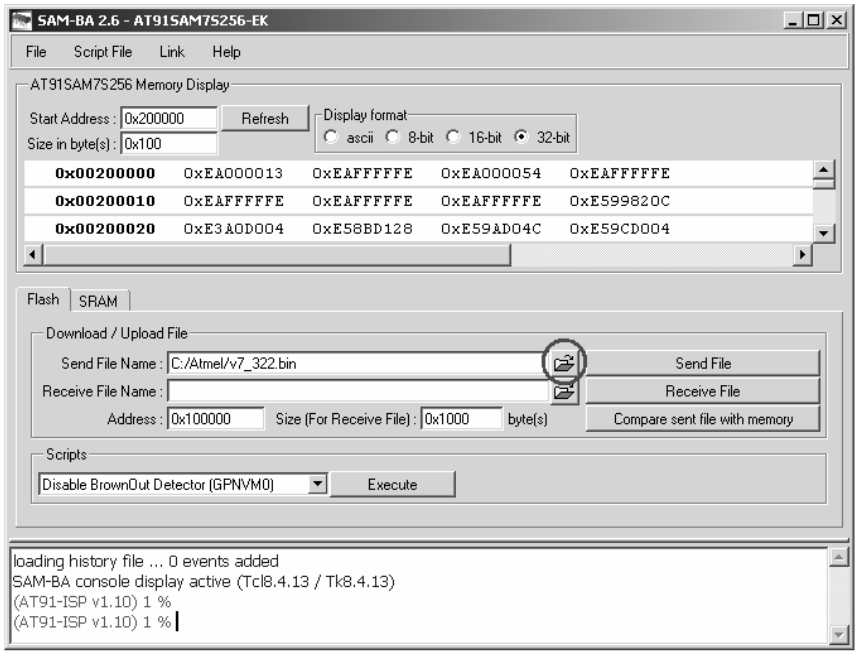


Fig. 3 Open the Latest Code Window

e. Click the button "Send File" to send the latest code into board. You will be asked to unlock the involved lock regions (0 to 7), click the button "Yes" to begin send code into board. Please see figure 4 below.

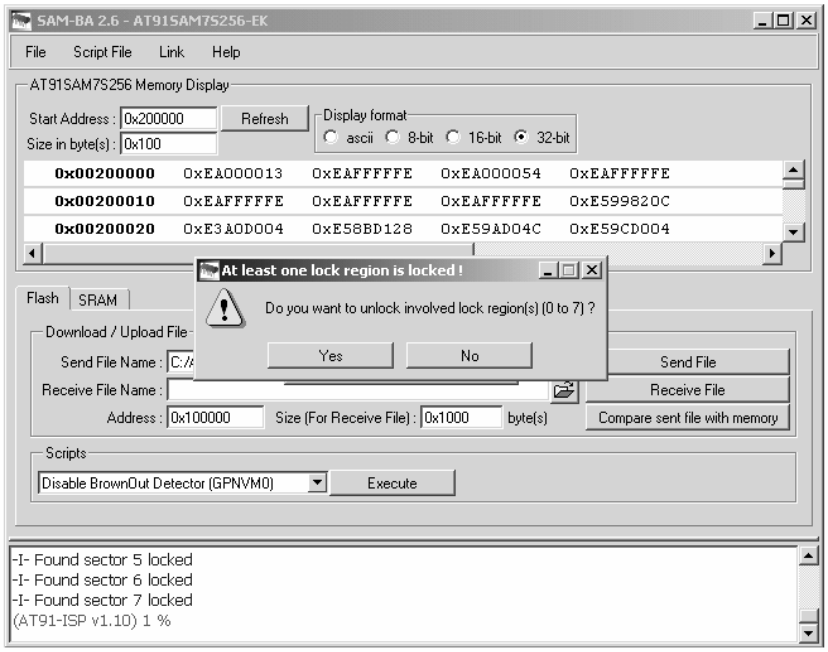


Fig.4 Message Unlock Involved Lock Regions Window

f. When sending was finished, you will be asked to lock all locks that you have opened just now, click the button "Yes" to lock these locks. You can verify that the code was send to the board by scrolling up in the message box. See Figure 5 below.

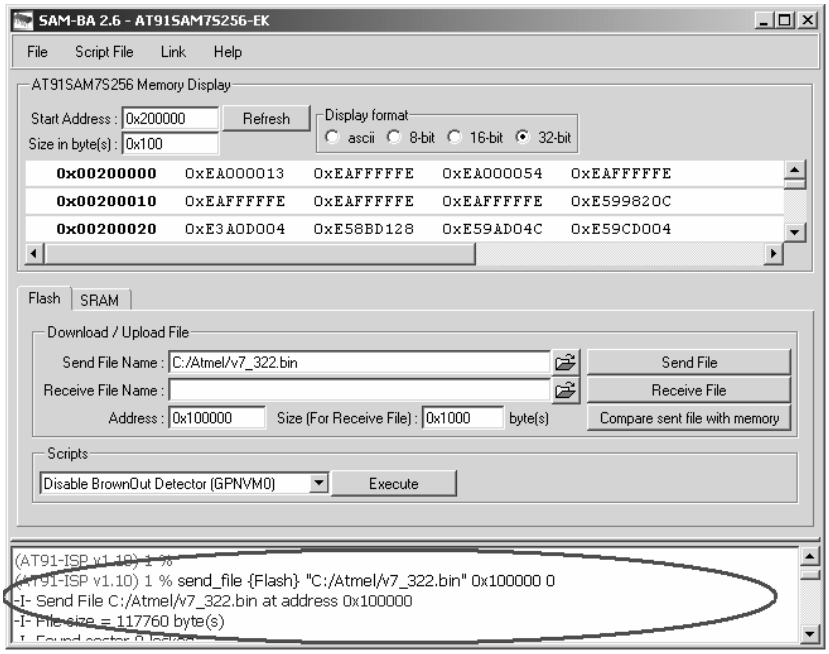


Fig. 5 Verifying Code was Sent

g. When operation has finished, close the "SAM-BA" window first, and then click the icon "remove the USB hardware" to disconnect the link between computer and board. After reminder by system, disconnect the power supply from breaker and pull out the USB cable.

h. The soft refresh of HC-6000 is complete restart the unit.

Introduction to Communications

HC6000 series provides two types of remote communication port: RS-485 and RS-232.

1) Run Modbus-RTU on RS-485 port
2) Run PSP on RS-232 port(the protocol was provided for ProtoCessor Module only, users can select different modules to connect different port)

Please see instruction details for Modbus_RTU used in HC6000:

When you want to use modules, please change the configuration from communication to "PSP" per menu (See section 3.2.3 communication setup).

When you need to use Modbus-485 in control board, please change the configuration from communication to "Modbus" per menu (See section 3.2.3 communication setup).

Modbus_RTU in HC6000, abiding by the order No. 02, 04 and 06 in Modbus, can read data in 10000 and 30000(address), and write data in 40000.

By using Modbus_RTU in HC6000, users can get PSP server end program and Modbus program. Part of the PSP program will be written according to "ProtoCessor Simple Protocol (PSP) Specification" provided by Protocessor. PSP Configuration from the Protocol module is as follows:

Table 46-1 Modbus Variable Lists

data type	attribute	data address	description	For modbus function number
bit	read only	10001	Fill valve status 0:off 1:on	function 2 , read only MODBUS POLL: READ DISCRETE INPUT
		10002	Drain valve status 0:off 1:on	
		10003	contactor 1 status 0:off 1:on	
		10004	contactor 2 status 0:off 1:on	
		10005	contactor 3 status 0:off 1:on	
		10006	contactor 4 status 0:off 1:on	
		10008	Network control 0:Local 1:Remote	
bit	read write	1	comm type 0:485 1:PSP	function 1,read only : function 5,15 write MODBUS POLL: READ COILS
		2	Sensor select 0:Humidistat 1:RH sensor	
		3	High limit sensor select 0:not use 1:use	
		4	Outside temperature 0:not use 1:use	
		5	Network enable 0:disable 1:enable	
		6	Modulating Fill enable 0:enable 1:disable	
16 bit	read only	30001	Desired RH	function4 , read only MODBUS POLL: READ INPUT REGISTERS
		30002	Output	
		30003	Water level 0:low 1:normal 2:high 3:exception	
		30004	Run status 0:Idle 1:Gen 10:frequent Draining 4:bed dring 5:Failure 6:Drain 7:heat 9:Fill	
		30005	Bed life (Hours)	
		30006	Bed life (Minutes)	
		30007	Run Time (Hours)	
		30008	Run Time (Minutes)	
		30009	Drain Freq (Hours)	
		30010	Drain Freq (Minutes)	
		30011	Idle Time (Hours)	
		30012	Idle Time (Minutes)	
		30013	RH value	
		30014	Duct value	
		30015	Outside temperature	
		30016	Water temperature	
		30017	Heat temperature	
		30018	Failure 1:Over temperature 2:High humidity/sail switch circuit is open 3:Illegal level switch state 4:Unit have reached 100% of bed life 5:Fill time out to low level 6:Water level dropped below level during normal run 7:Fill time out from low to high level 8:Water level above high level time out 9:Water level has not dropped below low level during an emptydrain 10:End of bed dring	
		30019	Contactor number	
		30020	Contactor Power 0:1000W 1:3000 2:5000W 3:6650W 4:8000W	
16bit	read write	40001	Language Select	function3 read only,function 6,16 write MODBUS POLL: READ HOLDING REGISTERS
		40002	Set RH(Set Desired RH)	
		40003	High set point	
		40004	Outside temperature high set point	
		40005	Outside temperature low set point	
		40006	Outside RH low set point	
		40007	Run mode 1:Steam Gen 2:Manual Fill 3:Manual Drain 4:Unit stop	
		40008	AQUASTAT	
		40009	Bed life 0:500Hours 1:750Hours 2:1000Hours 3:1250Hours 4:1500Hours 5:1750Hours 6:2000Hours 7:2250Hours 8:2500Hours 9:3000Hours 10:No bed	
		40010	Drain Freq 0:6Hours 1:12Hours 2:24Hours 3:48Hours 4:96Hours	
		40011	Drain time 0:1Minutes 1:5Minutes 2:10Minutes	
		40012	Signal type 0:0-10V 1:0-5V 2:1.9-3.9V 3:4-20mA	
		40013	PID_DIV	
		40014	PID_PB	
		40015	PID_SI	
		40016	PID_DG	
		40017	Modulating Fill Freq	
		40018	Modulating Fill time	
		40019	Water temperature compensate	
		40020	Heat temperature compensate	
		40021	First run	function 6 , for debug only
		40022	Idle time	
		40023	Drain time 0:1Minutes 1:5Minutes 2:10Minutes	
		40024	Bed life	

Table 47-1. BACnet Variable List

BACnet Data Type	Data Address	Description	Attribute
Binary Input	1	Fill valve status 0:off 1:on	Read Only
	2	Drain valve status 0:off 1:on	
	3	contactor 1 status 0:off 1:on	
	4	contactor 2 status 0:off 1:on	
	5	contactor 3 status 0:off 1:on	
	6	contactor 4 status 0:off 1:on	
	8	Network control 0:Local 1:Remote	
Binary Output	1	comm type 0:485 1:PSP	Read / Write
	2	Sensor select 0:Humidistat 1:RH sensor	
	3	High limit sensor select 0:not use 1:use	
	4	Outside temperature 0:not use 1:use	
	5	Network enable 0:disable 1:enable	
	6	Modulating Fill enable 0:enable 1:disable	
Analog Input	1	Desired RH	Read Only
	2	Output	
	3	Water level 0:low 1:normal 2:high 3:exception	
	4	Run status 0:Idle 1:Gen 10:frequent Draining 4:bed drying 5:Failure 6:Drain 7:heat 9:Fill	
	5	Bed life (Hours)	
	6	Bed life (Minutes)	
	7	Run Time (Hours)	
	8	Run Time (Minutes)	
	9	Drain Freq (Hours)	
	10	Drain Freq (Minutes)	
	11	Idle Time (Hours)	
	12	Idle Time (Minutes)	
	13	RH value	
	14	Duct value	
	15	Outside temperature	
	16	Water temperature	
	17	Heat temperature	
	18	Failure 1:Over temperature 2:High humidity/sail switch circuit is open 3:Illegal level switch state 4:Unit have reached 100% of bed life 5:Fill time out to low level 6:Water level dropped below level during normal run 7:Fill time out from low to high level 8:Water level above high level time out 9:Water level has not dropped below low level during an emptydrain 10:End of bed dring	
	19	Contactor number	
	20	Contactor Power 0:1000W 1:3000 2:5000W 3:6650W 4:8000W	
Analog Output	1	Language Select	Read / Write
	2	Set RH(Set Desired RH) or Desired % Output	
	3	High set point	
	4	Outside temperature high set point	
	5	Outside temperature low set point	
	6	Outside RH low set point	
	7	Run mode 1:Steam Gen 2:Manual Fill 3:Manual Drain 4:Unit stop	
	8	AQUASTAT	
	9	Bed life 0:500Hours 1:750Hours 2:1000Hours 3:1250Hours 4:1500Hours 5:1750Hours 6:2000Hours 7:2250Hours 8:2500Hours 9:3000Hours 10:No bed	
	10	Drain Freq 0:6Hours 1:12Hours 2:24Hours 3:48Hours 4:96Hours	
	11	Drain time 0:1Minutes 1:5Minutes 2:10Minutes	
	12	Signal type 0:0-10V 1:0-5V 2:1.9-3.9V 3:4-20mA	
	13	PID_DIV	
	14	PID_PB	
	15	PID_SI	
	16	PID_DG	
	17	Modulating Fill Freq	
	18	Modulating Fill time	
	19	Water temperature compensate	
	20	Heat temperature compensate	

Table 48-1. LonWorks Variable List

Map Descriptor Name	Data Array Name	Data Array Offset	Lon Function	Function	Node Name	SNVT Type	SNVT option
oFILLSTATUS	BITA	0	NVPO	Server	Lon_1	SNVT_switch	state
oDRAINSTATUS	BITA	1	NVPO	Server	Lon_1	SNVT_switch	state
oCON1	BITA	2	NVPO	Server	Lon_1	SNVT_switch	state
oCON2	BITA	3	NVPO	Server	Lon_1	SNVT_switch	state
oCON3	BITA	4	NVPO	Server	Lon_1	SNVT_switch	state
oCON4	BITA	5	NVPO	Server	Lon_1	SNVT_switch	state
oCOMTYPE	BITB	0	NVPO	Server	Lon_1	SNVT_switch	state
oRH_SELECT	BITB	1	NVPO	Server	Lon_1	SNVT_switch	state
oHL_SELECT	BITB	2	NVPO	Server	Lon_1	SNVT_switch	state
oOUTTEM_SELECT	BITB	3	NVPO	Server	Lon_1	SNVT_switch	state
oNETWORK_ENABLE	BITB	4	NVPO	Server	Lon_1	SNVT_switch	state
oMOD_FILL_ENABLE	BITB	5	NVPO	Server	Lon_1	SNVT_switch	state
oRH_REQUIRE	SINTA	0	NVPO	Server	Lon_1	SNVT_lev_percent	-
oOUTPUT	SINTA	1	NVPO	Server	Lon_1	SNVT_count_f	-
oWATER_LEVEL	SINTA	2	NVPO	Server	Lon_1	SNVT_count_f	-
oRUN_STATUS	SINTA	3	NVPO	Server	Lon_1	SNVT_count_f	-
oBEDLIFE_H	SINTA	4	NVPO	Server	Lon_1	SNVT_count_f	-
oBEDLIFE_M	SINTA	5	NVPO	Server	Lon_1	SNVT_count_f	-
oRUNTIME_H	SINTA	6	NVPO	Server	Lon_1	SNVT_count_f	-
oRUNTIME_M	SINTA	7	NVPO	Server	Lon_1	SNVT_count_f	-
oDRAINTIME_H	SINTA	8	NVPO	Server	Lon_1	SNVT_count_f	-
oDRAINTIME_M	SINTA	9	NVPO	Server	Lon_1	SNVT_count_f	-
oIDLETIME_H	SINTA	10	NVPO	Server	Lon_1	SNVT_count_f	-
oIDLETIME_M	SINTA	11	NVPO	Server	Lon_1	SNVT_count_f	-
oRH_VALUE	SINTA	12	NVPO	Server	Lon_1	SNVT_lev_percent	-
oDUCT_VALUE	SINTA	13	NVPO	Server	Lon_1	SNVT_lev_percent	-
oOUTSIDE_TEMP	SINTA	14	NVPO	Server	Lon_1	SNVT_temp_p	-
oWATER_TEMP	SINTA	15	NVPO	Server	Lon_1	SNVT_temp_p	-
oHEAT_TEMP	SINTA	16	NVPO	Server	Lon_1	SNVT_temp_p	-
oFAULT	SINTA	17	NVPO	Server	Lon_1	SNVT_count_f	-
oCON_NUMBER	SINTA	18	NVPO	Server	Lon_1	SNVT_count_f	-
oHEAT_POWER	SINTA	19	NVPO	Server	Lon_1	SNVT_count_f	-
oLANGUAGE	SINTB	0	NVPO	Server	Lon_1	SNVT_count_f	-
oRH_SET	SINTB	1	NVPO	Server	Lon_1	SNVT_lev_percent	-
oHL_POINT	SINTB	2	NVPO	Server	Lon_1	SNVT_lev_percent	-
oOUTTEMP_H	SINTB	3	NVPO	Server	Lon_1	SNVT_temp_p	-
oOUTTEMP_L	SINTB	4	NVPO	Server	Lon_1	SNVT_temp_p	-
oOUTRH_L	SINTB	5	NVPO	Server	Lon_1	SNVT_lev_percent	-
oRUN_MODE	SINTB	6	NVPO	Server	Lon_1	SNVT_count_f	-
oWATER_TEMP_SET	SINTB	7	NVPO	Server	Lon_1	SNVT_temp_p	-
oBED_LIFE	SINTB	8	NVPO	Server	Lon_1	SNVT_count_f	-
oDRAIN_FREQ	SINTB	9	NVPO	Server	Lon_1	SNVT_count_f	-
oDRAIN_TIME	SINTB	10	NVPO	Server	Lon_1	SNVT_count_f	-
oSENSER_TYPE	SINTB	11	NVPO	Server	Lon_1	SNVT_count_f	-
oPID_DIV	SINTB	12	NVPO	Server	Lon_1	SNVT_count_f	-
oPID_PB	SINTB	13	NVPO	Server	Lon_1	SNVT_count_f	-
oPID_SI	SINTB	14	NVPO	Server	Lon_1	SNVT_count_f	-
oPID_DG	SINTB	15	NVPO	Server	Lon_1	SNVT_count_f	-
oMOD_FILL_FREQ	SINTB	16	NVPO	Server	Lon_1	SNVT_count_f	-
oMOD_FILL_TIME	SINTB	17	NVPO	Server	Lon_1	SNVT_count_f	-
oWATER_TEMP_COMP	SINTB	18	NVPO	Server	Lon_1	SNVT_temp_p	-
oHEAT_TEMP_COMP	SINTB	19	NVPO	Server	Lon_1	SNVT_temp_p	-
iCOMTYPE	BITB_in	0	NVUI	Server	Lon_1	SNVT_switch	state
iRH_SELECT	BITB_in	1	NVUI	Server	Lon_1	SNVT_switch	state
iHL_SELECT	BITB_in	2	NVUI	Server	Lon_1	SNVT_switch	state
iOUTTEM_SELECT	BITB_in	3	NVUI	Server	Lon_1	SNVT_switch	state
iNETWORK_ENABLE	BITB_in	4	NVUI	Server	Lon_1	SNVT_switch	state
iMOD_FILL_ENABLE	BITB_in	5	NVUI	Server	Lon_1	SNVT_switch	state
iLANGUAGE	SINTB_in	0	NVUI	Server	Lon_1	SNVT_count_f	-
iRH_SET	SINTB_in	1	NVUI	Server	Lon_1	SNVT_lev_percent	-
iHL_POINT	SINTB_in	2	NVUI	Server	Lon_1	SNVT_lev_percent	-
iOUTTEMP_H	SINTB_in	3	NVUI	Server	Lon_1	SNVT_temp_p	-
iOUTTEMP_L	SINTB_in	4	NVUI	Server	Lon_1	SNVT_temp_p	-
iOUTRH_L	SINTB_in	5	NVUI	Server	Lon_1	SNVT_lev_percent	-
iRUN_MODE	SINTB_in	6	NVUI	Server	Lon_1	SNVT_count_f	-
iWATER_TEMP_SET	SINTB_in	7	NVUI	Server	Lon_1	SNVT_temp_p	-
iBED_LIFE	SINTB_in	8	NVUI	Server	Lon_1	SNVT_count_f	-
iDRAIN_FREQ	SINTB_in	9	NVUI	Server	Lon_1	SNVT_count_f	-
iDRAIN_TIME	SINTB_in	10	NVUI	Server	Lon_1	SNVT_count_f	-
iSENSER_TYPE	SINTB_in	11	NVUI	Server	Lon_1	SNVT_count_f	-
iPID_DIV	SINTB_in	12	NVUI	Server	Lon_1	SNVT_count_f	-
iPID_PB	SINTB_in	13	NVUI	Server	Lon_1	SNVT_count_f	-
iPID_SI	SINTB_in	14	NVUI	Server	Lon_1	SNVT_count_f	-
iPID_DG	SINTB_in	15	NVUI	Server	Lon_1	SNVT_count_f	-
iMOD_FILL_FREQ	SINTB_in	16	NVUI	Server	Lon_1	SNVT_count_f	-
iMOD_FILL_TIME	SINTB_in	17	NVUI	Server	Lon_1	SNVT_count_f	-
iWATER_TEMP_COMP	SINTB_in	18	NVUI	Server	Lon_1	SNVT_temp_p	-
iHEAT_TEMP_COMP	SINTB_in	19	NVUI	Server	Lon_1	SNVT_temp_p	-

Physical Data, Capacities and Dimensional Drawings

Figure 49-1. Models HC-6100 and HC-6300

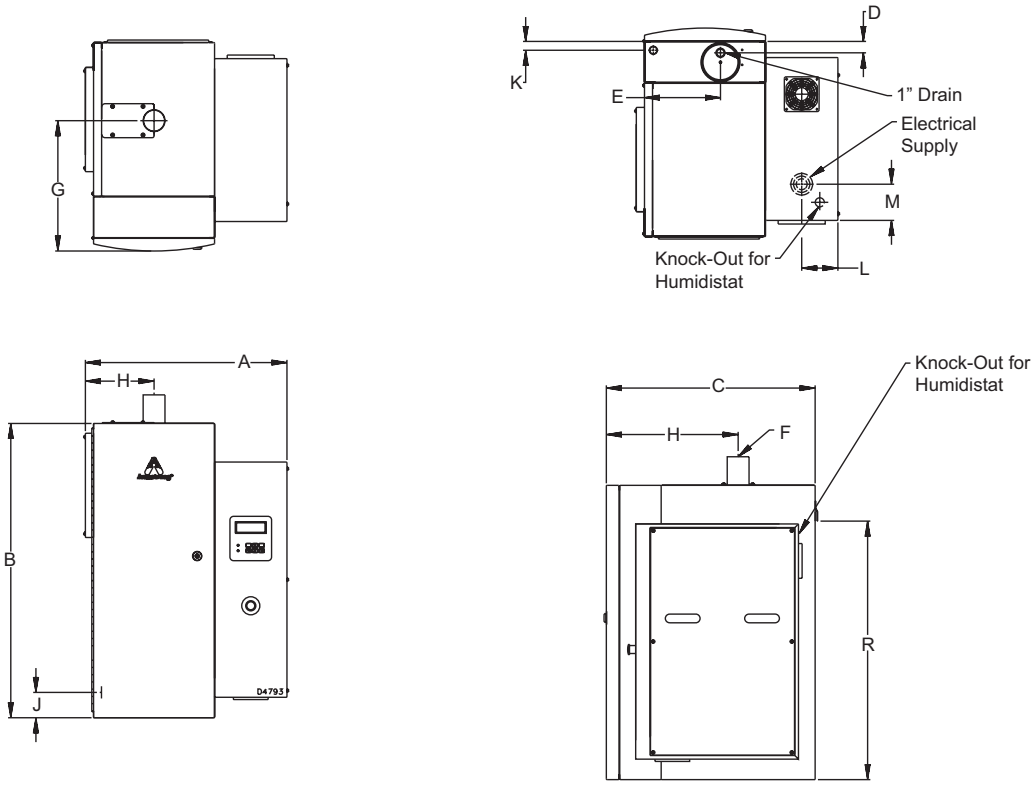
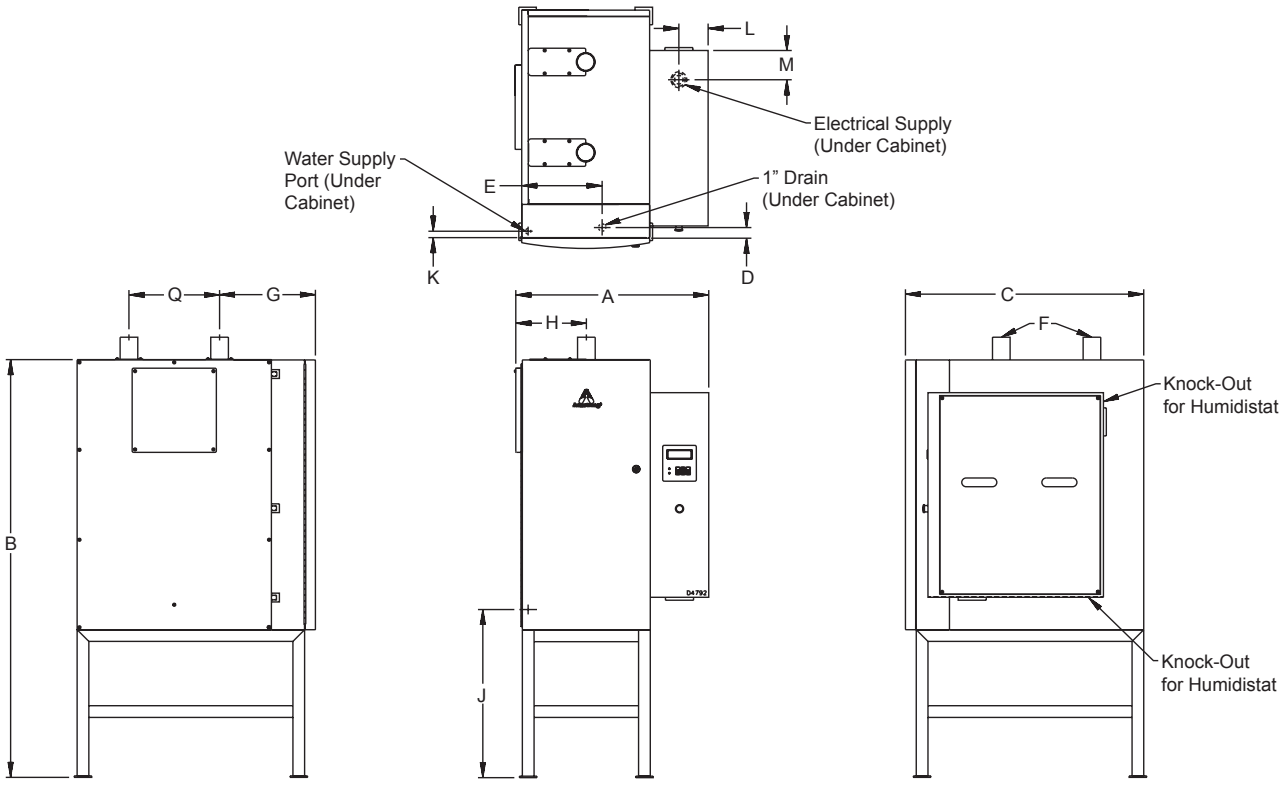


Table 134-1. Physical Data

	HC-6100 and HC-6300		HC-6500, HC-6700 and HC-6700DI	
	Inches	**mm**	**Inches**	**mm**
"A"-Width	21-15/16	557	26	660
"B"-Height	32-1/16	814	56-3/18	1428
"C"-Depth	22-1/3	576	32-3/32	815
"D"-Drain - Back	20	508	29-3/16	748
"E" Drain - Side	9-1/8	232	11-1/2	293
"F"-Steam Discharge Tube	2-3/8	60	2-3/8	60
"G"-Steam Outlet - Side	7-1/2	190	9-1/2	241
"H"-Steam Outlet - Front	14-1/3	364	12-7/8	328
"J"-Supply Water - Bottom	1-27/32	47	1-7/8	47
"K"-Water Supply - Front	2-13/32	61	2-3/8	60
"L"-Electrical Supply - Side	18	457	22-1/16	560
"M"-Electrical Supply - Back	10-3/16	254	16-1/4	413
"Q"-Steam Dispersion Outlets	—	—	12-3/16	310
Water Supply Connection	3/8 compression fitting	10	1/2 compression fitting	12

Figure 135-1. Models HC-6500 and HC-6700 — Front, Side, Top Views



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Armstrong International, Inc. ("Armstrong") warrants to the original user of those products supplied by it and used in the service and in the manner for which they are intended, that such products shall be free from defects in material and workmanship for a period of one (1) year from the date of installation, but not longer than 15 months from the date of shipment from the factory, [unless a Special Warranty Period applies, as listed below]. This warranty does not extend to any product that has been subject to misuse, neglect or alteration after shipment from the Armstrong factory. Except as may be expressly provided in a written agreement between Armstrong and the user, which is signed by both parties, Armstrong **DOES NOT MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

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Special Warranty Periods are as follows:

Series EHU-700 Electric Steam Humidifier, Series HC-6000 HumidiClean Humidifier and GFH Gas Fired Humidifier with Ionic Beds:
Two (2) years after installation, but not longer than 27 months after shipment from Armstrong's factory.