



SGH Steam  
Generating Humidifier

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# Installation and Operation Guide

**IMPORTANT:** Read and save this guide for future reference. This guide to be left with equipment owner.

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# INSTALLATION

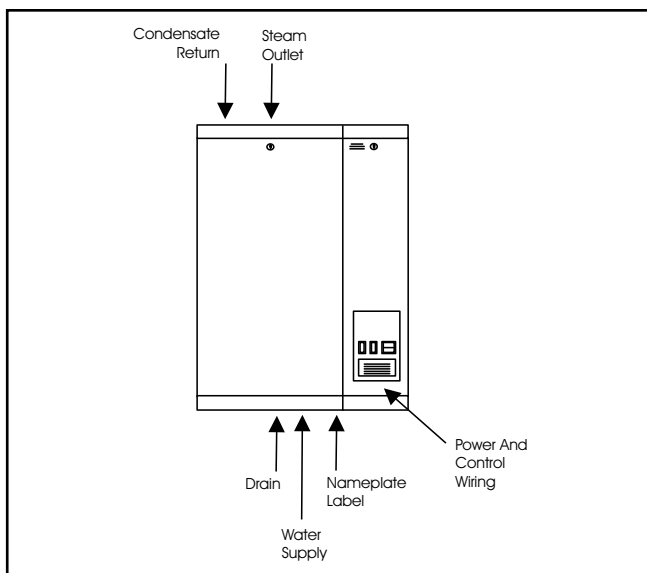
## RECEIVING & UNPACKING EQUIPMENT

1. Check packing slip to ensure ALL material has been delivered.
2. All material shortages are to be reported to Liebert within 48 hours from receipt of goods. Liebert assumes no responsibility for any material shortages beyond this period.
3. Inspect shipping boxes for damage and note on shipping waybill accordingly.
4. After unpacking, inspect equipment for damage and if damage is found, notify the shipper promptly.
5. All Liebert products are shipped on an F.O.B. factory basis. Any and all damage, breakage or loss claims are to be made directly to the shipping company.

## PRE-INSTALLATION CHECKPOINT

1. Ensure that available voltage and phase corresponds with humidifier voltage and phase as indicated on humidifier's nameplate label (see Figure #1).

**Figure #1**  
**SGH Series Humidifier**



2. Ensure that the dedicated external disconnect is of sufficient size to handle the rated amps as indicated on the nameplate label. Refer to local codes.

3. Report any discrepancy immediately.

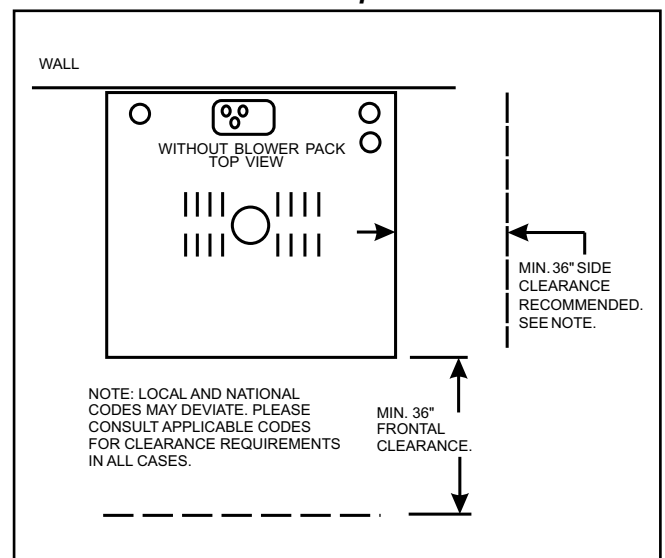
## BASIC HUMIDIFIER CONFIGURATION

Liebert humidifier model SGH has a right side electrical compartment. Each electrical compartment has a hinge-down front door which is removable from any partially or fully opened position. Each electrical compartment has a screw-mounted right side cover which can also be removed for ease of electrical connection. For safety, the door when closed keeps the side cover from being removed.

Single units have a plumbing compartment attached to the left side of the electrical. Double units have a second plumbing compartment. Each plumbing compartment has a hinge-down front door which is not intended to be removed. For safety, the door must be closed in order to engage the lock. To avoid any danger, never operate the humidifier with a door off. For safety, each door when closed engages its own safety interlock switch. All switches must be engaged before the unit will operate.

To open the doors, unlock key, lift door up slightly and pull top of door forward. Door will hinge 180 degrees and hang straight down. To remove door, swing door parallel to floor. Then lift up slightly and out. To reinstall door, hold parallel to floor and insert hinge pins at bottom. The door can then be closed.

**Figure #2**  
**Clearance Requirements**



## LOCATION & MOUNTING

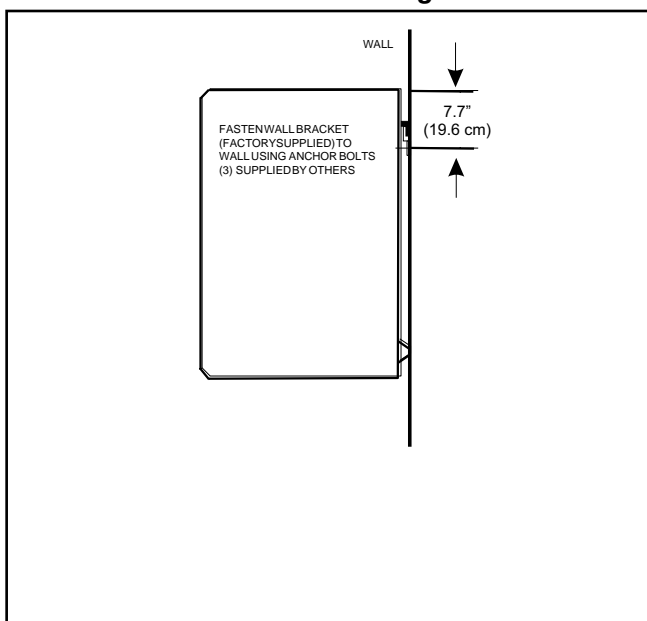
### HUMIDIFIERS

SGH humidifiers are designed to mount on a suitable wall or vertical surface. Do not sit on floor due

to clearances required for plumbing, electrical, and control entrances. The clearance dimensions shown in this manual are for reference only and are the minimum required for maintenance of the humidifier. Local and National Codes should be consulted prior to final location and installation of the humidifier. Liebert can not accept responsibility for installation code violations.

1. Location of the humidifier should be below and as close as possible to the steam distributor location as possible.
2. For front and side clearance requirements (for access during installation, maintenance and troubleshooting), see Figure #2.
3. If possible, DO NOT locate humidifier any further than absolutely necessary from steam distributor location, as net output will be reduced as a result of heat loss through steam hose. Also, increased static pressure may cause operational problems and necessitate use of the fill cup extension kit and other components.
4. Where possible, mount humidifier at a height convenient for servicing.
5. Wall mounting bracket provided should be securely attached horizontally and open edge upwards, using field-supplied fasteners. Use a minimum of 3 - #12 x 3" long wood screws, or better, into a vertical structural surface. If any spacer material is used between the bracket and the structural material such as drywall, increase fastener length accordingly.

**Figure #3**  
**Wall Bracket Mounting Detail**



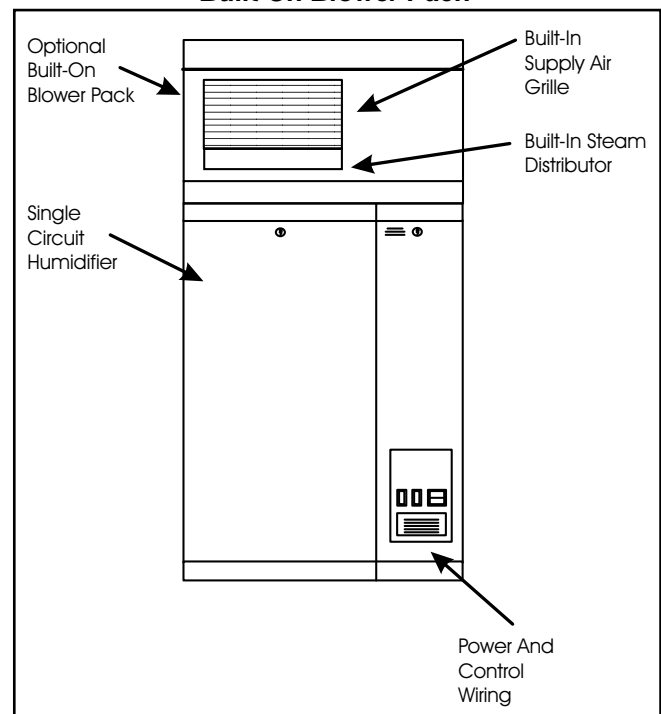
In addition, install a minimum of 2 field supplied fasteners in the holes provided in the back of the unit to prevent the unit from being bumped off the wall bracket.

6. Make sure humidifier is level.
7. DO NOT mount humidifier on hot surfaces.
8. If humidifiers are mounted on roof, a thermostatically ventilated weatherproof cabinet by others should be used. Consult factory.
9. DO NOT mount humidifiers in an area where freezing may occur.
10. DO NOT mount humidifiers on vibrating surface.

**BLOWER PACKS**

1. Blower packs are an optional accessory used to directly distribute steam to localized areas (such as computer rooms) or in structures that do not have a built-in air distribution system.

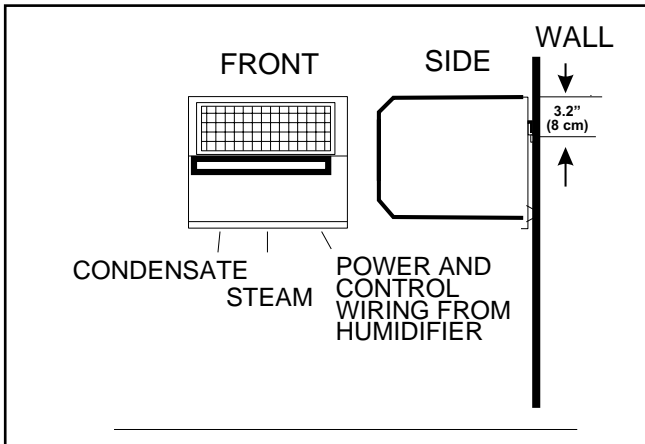
**Figure #4**  
**Built On Blower Pack**



**See Figure #6 for mounting clearances.**

2. Blower packs are available integrally-mounted on humidifier (built-on blower pack, BOBP, see Figure #4) or detached and field-piped and wired to humidifier (remote mounted blower pack RMBP, see Figure #5).

**Figure #5**  
**Remote Mounted Blower Packs (SGBP)**



See Figure #6 for mounting clearances.

3. All SGH blower packs consist of a steel cabinet containing: blower/motor powered by voltage directly from the humidifier, fuse, relay, speed select switch, stainless steel steam distributor, supply air grille with adjustable louvers, and built-in manual reset safety thermostat to turn off the humidifier if the blower pack gets overheated. Control thermostat, mounted on the steam distributor, starts the fan when steam is generated. When supply voltage differs from voltage required to run blower motor, blower pack will contain a proper transformer. All blower packs provide intake air filters.
4. Refer to Figure #6 for overhead and frontal clearances required for blower packs. Minimum clearance for the sides of the Blower Pack unit is 12 inches. Dimensions apply to both built-on and remote-mounted versions of blower packs.
5. Mount remote blower pack(s) using factory supplied wall mounting bracket, see Figure #5, with clearance as recommended in Figure #6.
6. Steam distributor on the built-on and remote blower packs have a hot surface that could result in burns if touched. If space allows, we recommend mounting at least 8 feet above the floor.
7. Do not use blower packs as ducted blowers. The air volume from a blower pack is not sufficient to absorb the steam generated.
8. Pipe the steam line as stated in the STEAM LINE section on page 6.

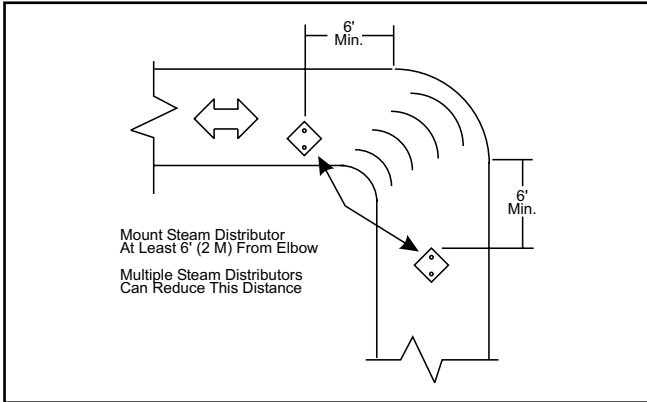
**Figure #6**  
**Overhead and Frontal Clearances for Blower Packs**

SGH Model	Min. Number of Blower Packs	Min. Overhead Clearance inches (cm)	Min. Front Clearance inches (cm)
010	1	18 (45)	30 (76)
020	1	18 (45)	36 (91)
050	1	36 (91)	84 (213)
100	1	48 (122)	156 (396)
200	2	42 (122)	156 (396)
*Remote mounted only. Four remote mounted blower packs are recommended on the 200 model.			
Nominal conditions 72°F, 35% RH.			

#### **STEAM DISTRIBUTORS**

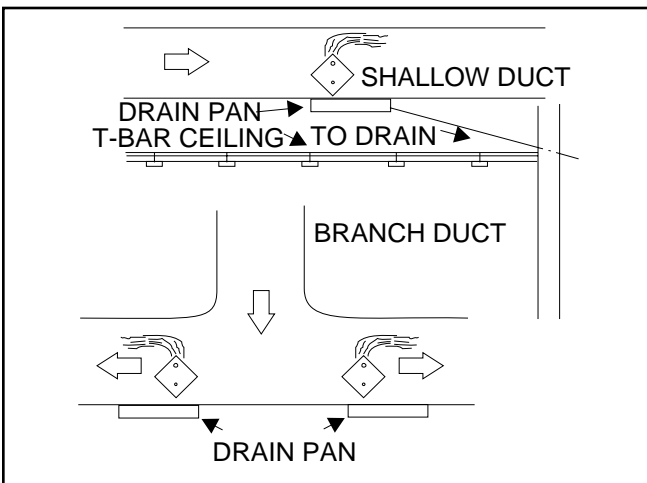
1. **Each cylinder requires its own steam line and at least one distributor (do not join two or more cylinders to one larger steam line).** Any cylinder's steam line may be divided into multiple branches to feed more than one distributor. Steam supply line "tees" are common copper fittings that are available for this purpose.
2. Steam distributor locations are typically as follows: supply air duct, return air duct, air handling unit. Proper location should consider: air temperature, relative humidity before the distributor, air velocity, dimensions of the location, amount of steam being introduced into the duct, downstream obstructions, and surfaces vulnerable to wetting.
3. When steam distributors are located in a duct, they should be in a straight section of duct at least 6 feet (2 meters) from any elbow or obstruction. If the duct or plenum conditions result in poor absorption distance characteristics, please consult your local representative or the factory. See Figure #7.
4. Steam distributors should always span the width of the air stream. **Multiple steam distributors, arranged in a bank, can minimize absorption distance.**

**Figure #7**  
**Steam Distributor Location**



5. Exercise extreme caution when installing in fiber glass or internally lined ducts.
6. High positive or negative static pressure ducts or plenums have special requirements. High positive static pressure ducts may require the unit to be fitted with a fill cup extension kit. High negative static pressure ducts will likely require the drain rate of the humidifier to be increased to compensate for the reduced drainage caused by the suction.
7. Vertical downflow ducts may induce an artificial static pressure necessitating a fill cup extension kit.
8. Low temperature ducts below 60 F (15 C), shallow ducts, or branch ducts might require the use of a field supplied condensate drain pan below the steam distributor. See Figure #8.

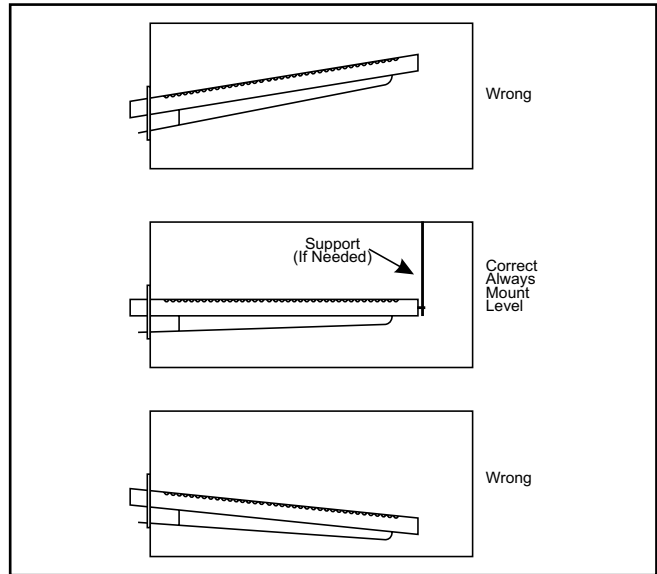
**Figure #8**  
**Condensate Drain Pan**



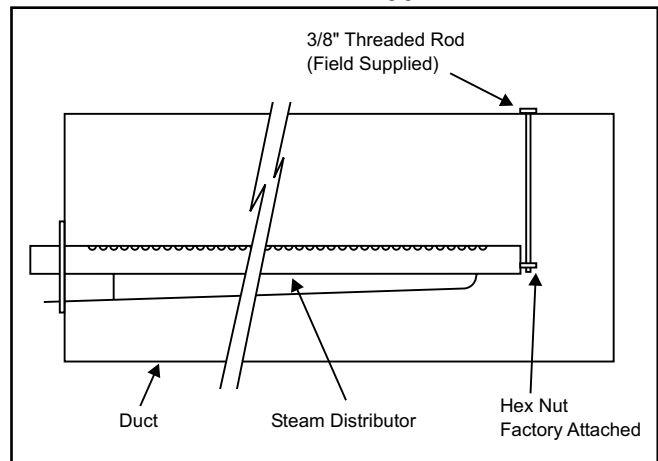
9. The steam distributor mounting plate is perpendicular to the steam distributor. When the mounting plate is attached to the side of the duct, the distributor is level. An upward or

downward slope to the distributor will result in poor condensate drainage and "spitting" of condensate in duct. See Figure #9.

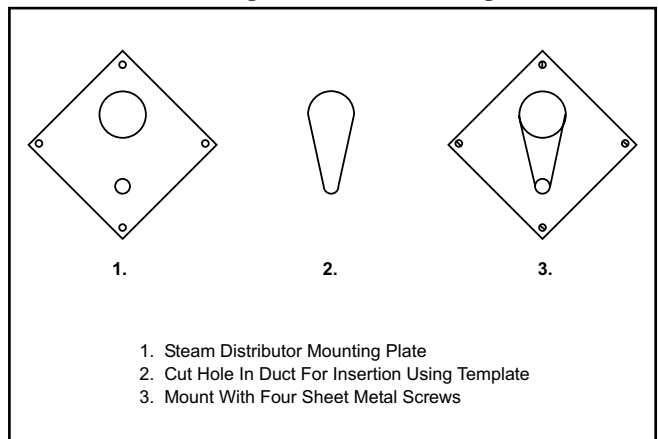
**Figure #9**  
**Leveling Distributor**



**Figure #10**  
**Distributor Support**

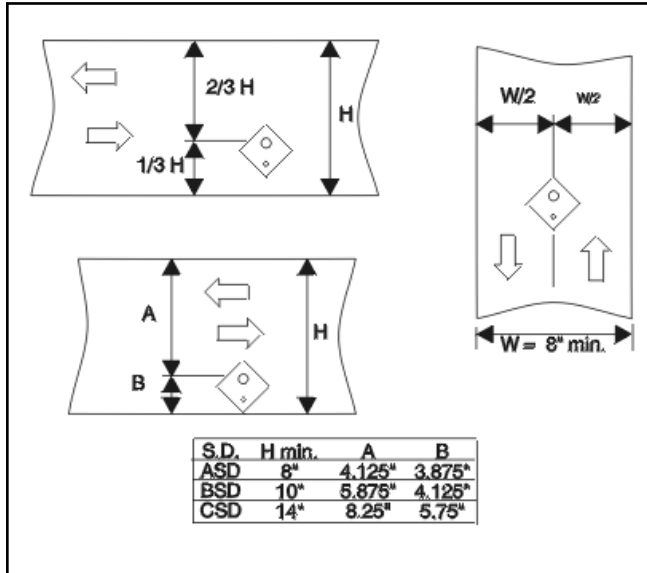


**Figure #11**  
**Cutting Duct for Mounting**



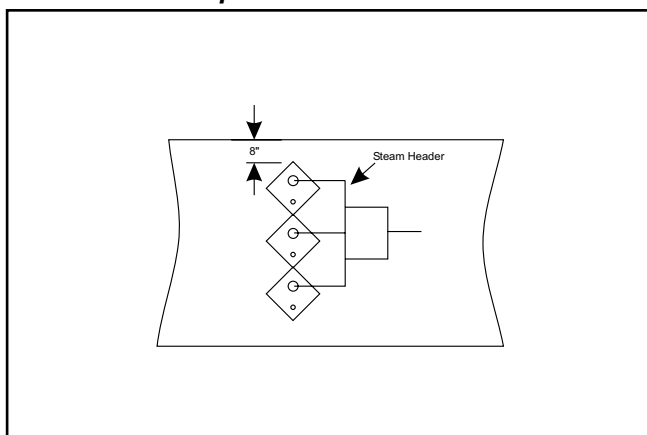
- Any distributor longer than 3 feet (1 meter) should be supported at its end with a threaded rod through top or bottom of duct. See Figure #10.
- It is recommended that single distributors are mounted near the bottom of the duct to ensure the steam is dispersed into the majority of the air flow. See Figure #12.

**Figure #12**  
**Single Steam Distributor Installation**



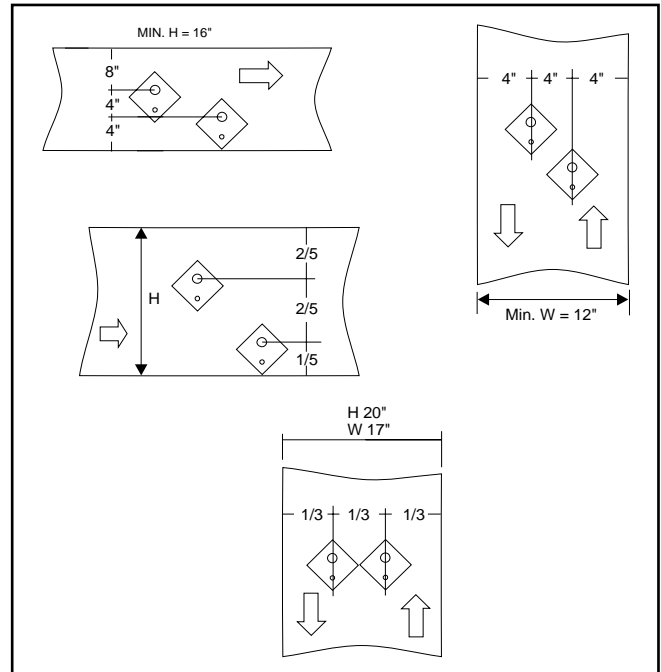
- Using duct mounting template provided, cut a hole in side of duct just large enough to admit steam manifold and condensate drain pipe assembly. Use four sheet metal screws to attach mounting plate to side of duct. See Figure #11 and #12.
- With multiple steam distributors, the top steam distributor should be at least 8" below top of duct to avoid possible condensation on surface of duct. The remainder of space

**Figure #13**  
**Multiple Steam Distributors**



below is proportioned accordingly. See Figure #14. For short steam absorption systems see Figure #13.

**Figure #14**  
**Multiple Steam Distributors for Better Mixing**



## PLUMBING

**All water supply and drain line connections should be installed in accordance with local plumbing codes.**

### WATER SUPPLY LINE

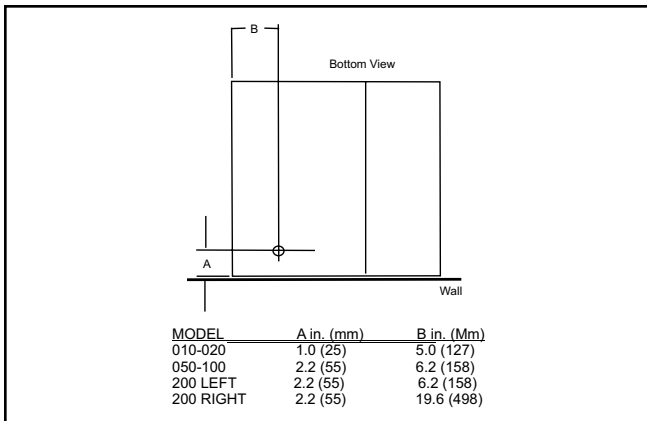
- Humidifier is intended to operate on potable (cold) tap water.
- If the raw water is very hard, Liebert can provide longer cylinder life on softened water. However, softened water is more conductive and more corrosive. Some hardware and/or software changes may be required, at time of order or in the field. Consult local representative.
- DO NOT** use a hot water supply to humidifier. Minerals will adhere more easily to surfaces and the fill valve's small flow regulating orifice could become plugged.
- Standard fill valves are sized for water pressure ranging from 30 to 150 psig. For other pressures, consult local representative. This pressure should be measured at the humidifier if the water pressure is suspect.

- ALWAYS supply and install a shut off valve in the water supply line dedicated to the humidifier to facilitate servicing. Use 1/2" OD copper to within 4 feet of the humidifier. Reduce copper to 3/8" OD and connect to the factory-supplied 3/8" olive compression fitting under the humidifier.

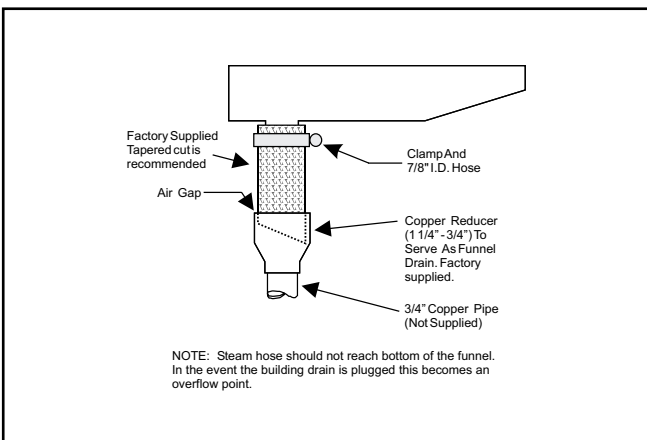
## DRAIN LINE

- Humidifier is equipped with a 7/8" O.D. unthreaded drain outlet on underside of drain canal on bottom of the humidifier (see Figure #15). A supplied reducer (see Figure #16) or equivalent shall be installed on the drain line. It will prevent backup in the drain pan and in the cylinder due to partially blocked or badly installed drain lines. This prevents rusting of the drain pan and arcing due to over-concentration. The drain canal has been improved to prevent backup despite long or gently sloped drain lines but it can not compensate for flat or uphill runs.

**Figure #15**  
**Drain Line Connection**



**Figure #16**



- The drain line should not end in a sink used frequently by personnel, or where plumbing

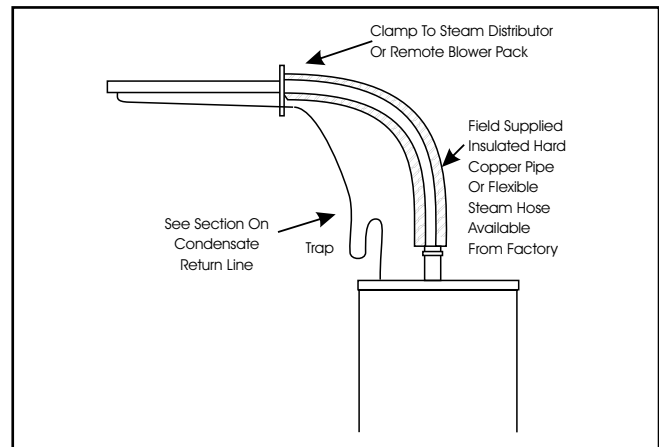
codes prohibit it. Route to a floor drain or equivalent for safety reasons, since drain water from humidifier can be very hot.

- Keep drain lines as short as possible. **Keep drain lines sloped down, not level and not up since low spots in drain lines will accumulate sediment and cause backup.** The drain line should be 1" O.D. copper pipe or larger. Do not use plastic pipe for drain lines.

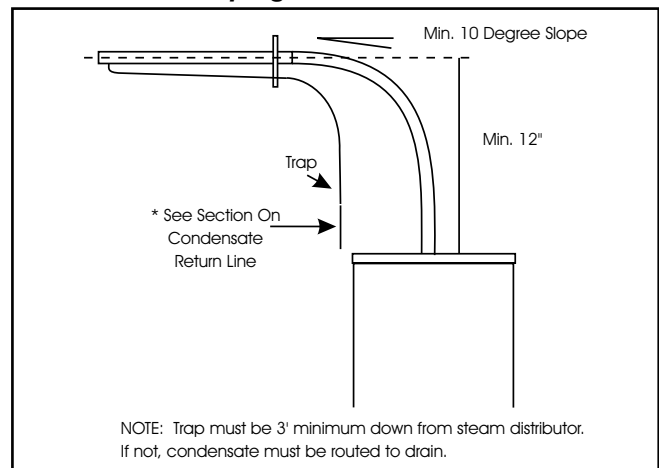
## STEAM LINE

- Steam lines for SGH models 010 through 020 require a minimum 7/8" O.D. (nominal 3/4") copper pipe. For steam runs longer than 20 ft use insulated nominal 1" copper to ensure the draining of condensate.
- Field-supplied hard copper with 1/2" thick snap-on insulation is recommended** for steam supply, with Liebert supplied steam hose coupling used to make connection to cylinder. See Figure #17.

**Figure #17**  
**Steam Line Connection**



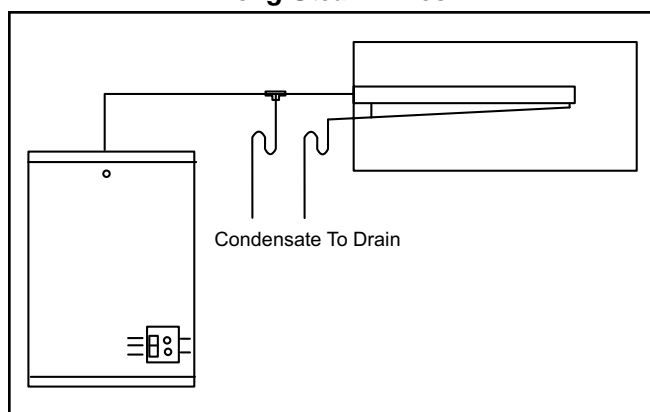
**Figure #18**  
**Sloping the Steam Line**





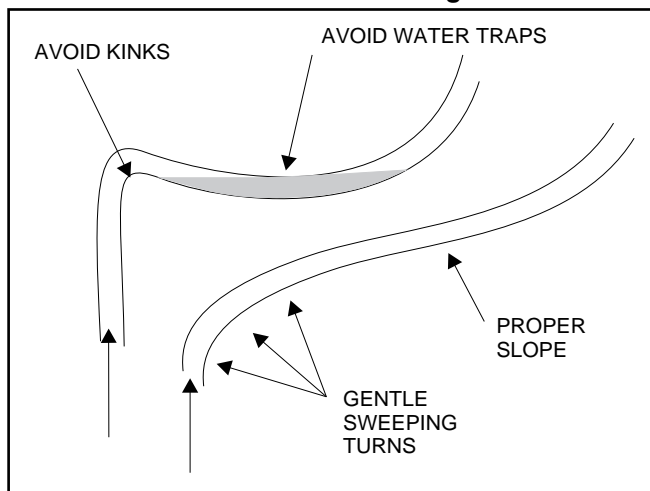
- Liebert steam supply hose or field-supplied piping should be sloped downwards from the steam distributors to the humidifier. **Slope should be at least 2" in 12" to promote condensate runback.** See Figure #18. If this slope is not possible, condensate must be removed before the distributor. See Figure #19.

**Figure #19**  
**Long Steam Lines**



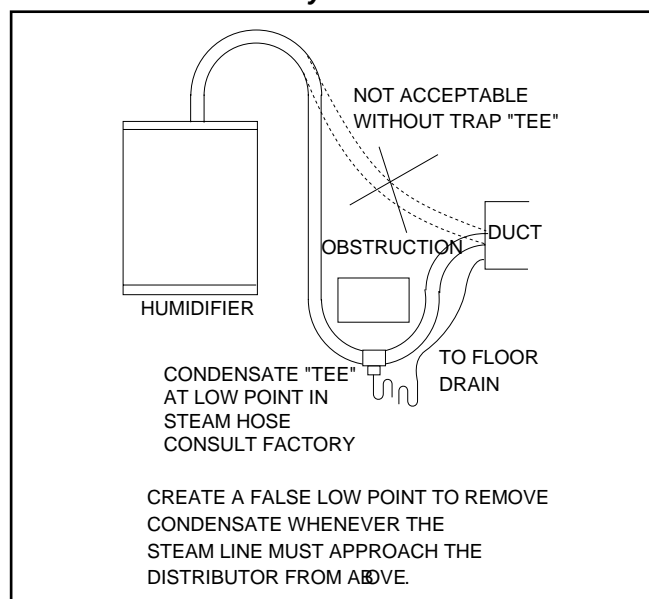
- Minimize the length** of steam line and keep it as straight as possible, **minimizing bends.** Also, avoid using 90 elbows. Wherever possible, use long radius turns (using tube bender on oversized copper or pairs of 45 elbows). This will reduce the condensate generated by heat loss. This will also reduce the back pressure and avoid the need to buy/install an accessory Fill Cup Extension Kit. See Figure #22.
- Ensure that the steam hose does not kink or sag. The steam hose becomes more flexible when hot. The hose should be supported to prevent water traps. Only use steam hose for connections or steam lined runs of 5 feet or less. See Figure #20.

**Figure #20**  
**Steam Hose Routing**



- To ensure odor-free steam, always use Liebert steam hose. Check steam hose and hose couplings periodically for cracks, breaks, kinks. Replace as required. **DO NOT** substitute hose. Liebert is not responsible for health effects or damage from substitute hose.
- Steam lines for SGH 050 through 200 require 1-5/8" O.D. (nominal 1-1/2") copper pipe. For steam runs longer than 40 ft use insulated nominal 2" copper to ensure the draining of condensate.
- Do not use steel or plastic pipe for steam distribution, or hose other than Liebert supplied. Substitution will void warranty.
- If steam line is routed below steam distributor or if the steam distributor is lower than the humidifier, a condensate trap 'tee' will be required to remove water at this low point. Run condensate from trap to nearest drain lower than the distributor. See Figure #21.

**Figure #21**  
**Condensate Tee at any Low Point in Steam Line**



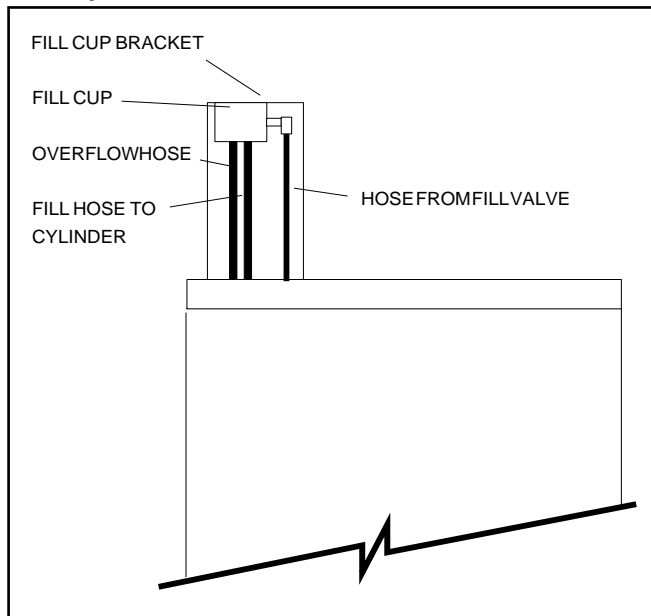
- All built-on blower packs are factory-fitted with all steam hose connections. No further work is required.
- Do not run steam line more than 1 foot per lb/hr output. Example, 10 lbs/hr should not have a steam run longer than 10 feet. If long runs are unavoidable, the humidifier should be sized larger to compensate for condensate losses and insulated copper should definitely be used.

## ACCESSORIES - FILL CUP EXTENSION KIT(S)

1. The SGH humidifier is an electrode humidifier. It produces steam at atmospheric pressure. Pressure head must develop to push steam through supply line and into air duct.
2. Combined resistance of duct positive static pressure and steam line resistance creates a small pressure head in steam cylinder. Total amount of positive static pressure head is reflected directly by water column differential that develops between water in the fill cup hose feeding cylinder and water level in cylinder.
3. Standard dimensions of humidifier limit static that can be tolerated before water will be pushed high enough to spill over into overflow tube in fill cup assembly.
4. To increase allowable water column (allowable positive static pressure) an accessory Fill Cup Extension Kit is available from Liebert. See Figure #22.

**Figure #22**

### Fill Cup Extension Kit to Overcome Static Pressure



## CONDENSATE RETURN LINE

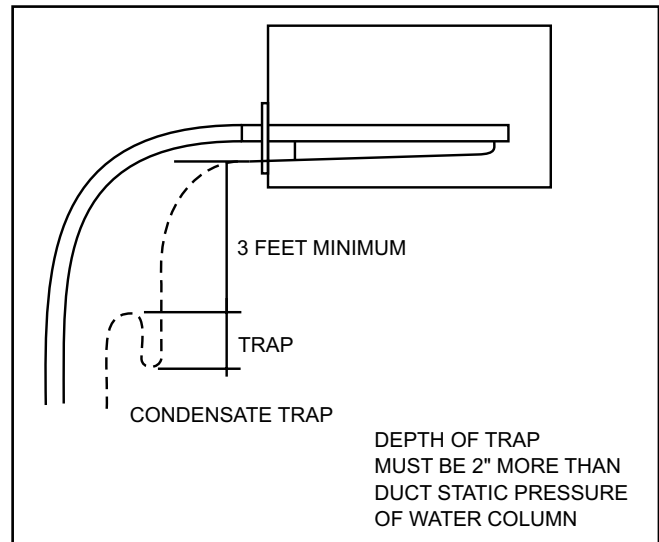
1. Each steam distributor has a built-in condensate return (3/8" O.D. copper tubing). Flexible condensate return hose (3/8" I.D.) available from Liebert, is recommended for routing condensate back into humidifier's fill cup. Note: A short length of 3/8" O.D. copper tubing is supplied by Liebert for use when routing condensate hose back to humidifier's fill cup. Similarly, a short length of 3/8" I.D.

condensate hose with clamps is supplied with Liebert's steam distributors to serve as a flexible coupling. DO NOT direct solder field copper condensate line to steam distributors.

2. Always incorporate a trap in routing of condensate return line. Condensate that accumulates in trap will prevent possibility of steam escaping. Depth of trap must exceed duct static pressure by 2 inches of water column. See Figure #23.

**Figure #23**

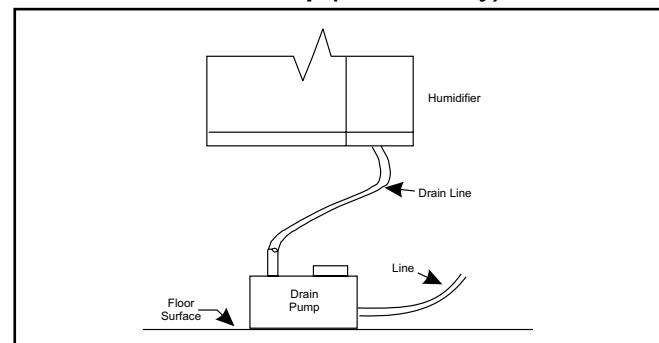
### Trap to Prevent Steam in Condensate Line



3. Condensate return line can not be run back to fill cup if humidifier is within 36" of being level with steam distributor. See Figure #18.
4. If steam distributor is mounted level with or below humidifier, condensate line must be routed to nearest floor drain or to a condensate pump (available from Liebert). See Figure #24.

**Figure #24**

### Drain Pump (if necessary)



5. Provide a "U" trap in condensate line even when distributor is located in return air plenum. It stops a suction action from

impeding condensate flow when duct pressures are below atmosphere.

6. The condensate line can go to either of two large holes in the fill cup cover on top of humidifier.
7. It is not necessary to return the condensate to the humidifier.
8. Long condensate runs (more than twenty feet) should be sloped well and be constructed out of ½" nominal copper pipe to ensure flow.

## ELECTRICAL

### PRIMARY VOLTAGE SUPPLY WIRING TO HUMIDIFIER

1. Check and ensure that available voltage and phase corresponds with operating voltage and phase of humidifier as indicated on the humidifier nameplate label (see Figure #1).
2. Ensure that an adequate power supply is available to carry full humidifier amperage drawn as specified by rated amps on the humidifier nameplate label refer to local codes.
3. A dedicated external disconnect must be installed. Do not exceed the maximum circuit protection amps as indicated on the nameplate label.
4. Connect ground wire to cabinet ground clamp. Do not use neutral wire of four wire supply as ground.
5. Single phase humidifiers may be run on three phase power, but load may unbalance power grid.
6. External wiring sizes must be in accordance with NEC and/or CEC and existing local electrical codes and by-laws.

### PRIMARY VOLTAGE SUPPLY WIRING FROM HUMIDIFIER(S) TO BLOWER PACKS

1. All blower packs are wired (by factory if built-on, by others if remote mounted) to be powered from the humidifier.
2. As a safety feature, blower packs come equipped with a manual reset safety thermostat and relay built into the blower pack cabinet. The manual reset thermostat turns off the humidifier if the blower pack gets overheated. The control thermostat, mounted

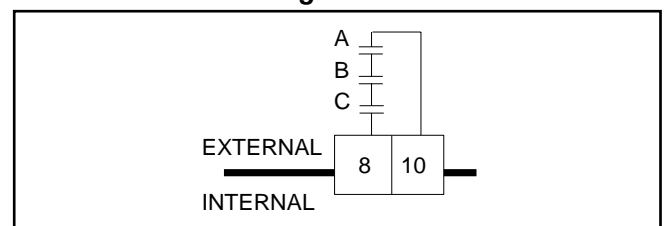
on the steam distributor, starts the fan when steam is generated.

3. All blower packs have high efficiency blowers to minimize the frontal and overhead clearance required to absorb the steam.
4. All built-on blower packs are factory wired to humidifier. Primary voltage wiring to humidifier, as described in electrical primary voltage supply wiring, is all that is required to power humidifier and blower packs.
5. Remote mounted blower packs require field wiring between two primary voltage terminal blocks and two low voltage control (class 1 circuit wiring required) terminal strips; one of each located in humidifier and remote blower pack cabinet. To properly access the primary block on the humidifier, it may be necessary to remove the side. To connect the primary and control (class 1 circuit wiring required) wiring, the wiring is fed through the knockouts provided in the bottom of the blower pack. The terminal block and strip are accessed by removing the blower pack cover.
6. Field wiring of remote blower packs must conform to national and local electrical codes. Refer to wiring diagram supplied inside the humidifier.
7. Use approved wire for power connection from two pole terminal block of remote blower pack to additional two pole terminal block inside electrical section of humidifier.
8. Use approved wire to connect from ground clamp of remote mounted blower pack to ground clamp provided in the electrical section of humidifier.

### LOW VOLTAGE CONTROL WIRING

#### On-Off Controls

**Figure #25**  
**External Wiring of On/Off Controls**



Controls are available from Liebert as accessories. If controls were not ordered with humidifier, they must be purchased supplied by others. The following

information is relevant to all controls, factory supplied or otherwise.

A, B and C (described below) are to be wired in series (only one path for current) across terminals 8 and 10 on the low voltage control terminal strip, or replaced with a jumper wire for constant operation (see Figure #27). Caution: If any control field wiring touches ground metal unit, safeties will be bypassed.

#### A - Wall or Duct Mounted Control On/Off

**Humidistat:** Wired to make on drop in humidity, break on rise to setpoint. Set to desired % RH. Can be a make/break set of contacts from a Building Automation System.

#### B - Duct Mounted Safety High Limit On/Off

**Humidistat (if used):** Wired to make on drop in humidity, break on rise to safety setpoint. Set to approximately 85% RH as a safety to help prevent saturation and wetting in the duct.

#### C - Duct Mounted Safety Air-Proving On/Off

**Switch (if used):** Wired to make when sensing air flow, break when no air flow. Used as a safety to prevent saturation when no air flow.

1. Liebert offers various versions of A, B and C to suit each application. In general, A is essential, whereas B and C are highly recommended in ducted applications.
2. Field wiring from humidistat to humidifier and between devices should be 18 AWG or heavier and kept as short as possible.
3. Low voltage control terminal strips are provided in the electrical compartment. Internal sides are factory wired. External sides are to be field wired.
4. Each humidifier is supplied with a wiring diagram inside.

### CONTROL INSTALLATION

1. Mount any **wall humidistat** (control or high limit) over standard electrical box at height similar to typical thermostat. Any **wall humidistat** should be in location representative of overall space being humidified and not in path of blower pack or air supply grille. Do not mount on a outside wall where temperature fluctuation can affect control response.
2. Mount **duct humidistat** in location representative of overall air humidity, usually return duct. Do not mount it directly in front of steam distributor or in turbulent or mixing zone

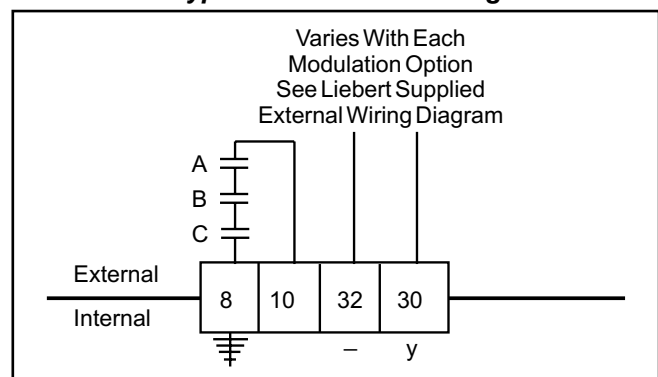
or down stream from distributor. Mount it where air's humidity and temperature are uniform and representative of spaces being humidified.

3. Mount **duct high limit humidistat** downstream of steam distributors far enough that, under normal humidity and air flow conditions, steam will have been fully absorbed (typically at least 10 feet). It must be located to sense high humidity only when uniform and representative air is over-humidified or approaching saturation.
4. Mount **duct air-proving switch** so that it is able to sense air flow or lack of it. Wire it to make when air flow is sensed and break when air flow fails. Mount prior to distributor.
5. Check operation of all on/off controls before starting humidifier.
6. Calibration of controls (on/off or modulation) in the field may be necessary due to shipping and handling. Verify humidistat accuracy before commissioning system.

### OPTIONAL MODULATION (CONTINUOUS CONTROLS) (see Figure #28)

1. Read **on/off controls** section first since it is necessary to all control systems.
2. Virtually any modulation (continuous control) external hardware by others (as long as it has %RH setpoint circuitry) may be interfaced with pre-specified factory-configured SGH pc board via the control terminal strip.
3. Modulation (continuous control) by others for use with SGH humidifiers involves one of several control wiring diagrams. In all cases, modulating signal interfaces through control terminal strip to main pc board inside humidifier.

**Figure #26**  
**Typical Modulation Wiring**



4. The modulation signal must increase from minimum toward maximum as sensed RH (actual RH) drops below desired RH (%RH setpoint). In response, humidifier's steam output will increase from minimum toward maximum. When humidifier's steam output (lbs/hr) matches humidification load (lbs/hr), modulation signal will stabilize.
5. Field-wiring connections for modulation control are to be made to external side of terminals 30 and 32 on humidifier's control terminal strip. Always refer to the external control's wiring diagram factory supplied with each Liebert modulation control option.
6. **Varying dc Voltage Modulation Signal Powered by Others:** SGH humidifier can be factory configured to accept the following vdc signals: 0-10 vdc, or 2-10 vdc. Wire according to Liebert supplied external wiring diagram that comes with each modulation option. To share the signal with more than one humidifier, wire in parallel to each humidifier. If a different signal is desired consult factory.
7. **Varying dc milliAmp (mA) Modulation Signal Powered by Others:** SGH humidifier can be factory-configured to accept a standard dc mA signal, if pre-specified. Wire according to Liebert supplied external wiring diagram that comes with each modulation option. Choose from 0-20 dc mA or 4-20 dc mA. To share the signal with more than one humidifier consult factory.

#### **OPTIONAL MODULATION (CONTINUOUS CONTROL) PACKAGES BY LIEBERT**

Modulation (continuous control) "packages" are offered as accessories by Liebert.

## **OPERATION**

### **INTRODUCTION**

When the humidifier is first turned on, the controller starts with a self test procedure, which takes about 10 seconds. The test consists of activating for a short time the drain valve, fill valve, and power relays. The sound of the working solenoids is an indication of valves operation. Green and yellow lights flash during this time.

If there is no call for humidity, the humidifier is standing by and green light flashes. When control loop is closed ( Figure #13), the green light is steady on

and the humidifier starts its operation. The controller waits 10 seconds before energizing the on-board relays. When the relays energize, heating voltage is delivered to the cylinder. After a 30 second delay, the fill valve is activated (if the output from the cylinder is below 100 %). If controller detects increase of amperage above allowed range, the unit will activate drain valve for 2 seconds.

During operation, the controller measures the rate at which water is converted to steam and thus the mineral content of water inside the cylinder. When this rate exceeds the design optimum, a drain of the cylinder takes place. The amount of water drained is just enough to keep the contained water at design levels.

During start up, when mineral content in the water is low, water will reach the top of the cylinder at which point the yellow indicator light will come on. This is normal operation with a fresh cylinder. After a period of time the water level will drop and the yellow light will turn off.

High water level in the cylinder also indicates that the cylinder is near the end of its service life as electrodes become coated with minerals. The yellow light coming on more often would be the first indication of approaching the end of the cylinder life.

## **SGH OPERATION**

### **END OF CYLINDER LIFE**

When the cylinder is used up and water level can no longer stabilize below full cylinder (due to fully coated electrodes), the yellow light will flash in 4 pulse cycles. At this time the control board interrupts steam production and switches the green indicator lamp off. The disposable cylinder must be replaced.

It is wise to keep a new replacement cylinder on hand to avoid downtime when it becomes time to change the disposable cylinder.

### **MANUAL CAPACITY ADJUSTMENT**

#### **On/Off Controls**

The SGH humidifier is rated in lbs/hr of steam output capacity. Set to 100%, it will operate at full output until the humidistat has sensed that the humidity has reached setpoint. Then it will stop the humidifier by breaking control circuit 8-10.

If the humidifier is oversized, the humidistat will be quickly satisfied and stop the humidifier. As humidity level drops the humidistat calls again. It is quickly

satisfied and stops again. The resultant short-cycling is easily overcome.

A manual capacity adjustment potentiometer ("pot") is provided on the SGH main pc board for that purpose. It is marked "CAPACITY ADJUST" and is adjustable from 25 to 100% of rating.

### **Modulation Control**

The SGH humidifier, utilizing modulation control, does not have the same problems of over sizing. It reacts to the modulation signal and varies its capacity automatically. However, if you wish to turn down the capacity, use the manual capacity adjustment potentiometer ("pot").

### **OTHER POTENTIOMETERS**

Do not adjust any other potentiometers ("pots") on the pc board(s). They are factory-set and not meant to be user-set.

### **DETECTING WATER SUPPLY DEFICIENCY**

Knowing how long it normally takes to fill each size steam cylinder, each humidifier's pc board is factory configured to an acceptable maximum filling time. If it is filling too slowly, when the time expires the electronics stops the humidifier. To indicate this, the green light goes out and the yellow light goes on.

### **REMOTE INDICATION**

Every SGH comes factory wired as a set of dry contacts at 61-20 on the control terminal strip. The user can connect an indicator externally to 61-20. It will automatically be activated any time a fault is detected.

### **DOUBLE UNIT OPERATION**

Turn both switches on. If there is a demand for humidity, the green status lamp will indicate that the circuit is operating.

### **BLOWER PACK OPERATION**

Blower packs are equipped with a control thermostat mounted on the steam distributor. As soon as humidifier generates steam, the contact is closed and the fan is started. When steam is no longer being generated, the fan cuts out with a delay.

If blower packs get overheated (malfunction of the air circulation), the manual reset safety thermostat interrupts the steam generation. To reset, switch off the humidifier and wait until the steam distributor cools down. Then remove left-hand side intake air filter and,

using a screwdriver, press the reset button (marked with a red dot) inside the blower packs.

Units are also equipped with speed select switch. The switch is located on the right-hand side of the blower, inside the blower pack. To access the switch, remove right-hand side intake air filter.

To avoid condensation on the cabinet parts, run blower pack on high speed when humidifier delivers more than 50 lbs/hr of steam.

# LIMITED WARRANTY

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Liebert Corporation (hereinafter collectively referred to as THE COMPANY), warrant for a period of two years from date of shipment, that THE COMPANY's manufactured and assembled products, not otherwise expressly warranted (with the exception of the cylinder) are free from defects in material and workmanship. No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations.

THE COMPANY's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. THE COMPANY's factory, providing the defective part(s) is returned freight prepaid by the customer. Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.

The warranties set forth herein are in lieu of all other warranties expressed or implied by law. No liability whatsoever shall be attached to THE COMPANY until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty must be in writing, signed by an officer of THE COMPANY.

THE COMPANY's limited warranty on accessories, not of Liebert's manufacture, such as controls, humidistats, pumps, etc. is limited to the warranty of the original equipment manufacturer from date of original shipment of humidifier.

THE COMPANY makes no warranty and assumes no liability unless the equipment is installed in strict accordance with a copy of the catalog and installation manual in effect at the date of purchase and by a contractor approved by THE COMPANY to install such equipment.

THE COMPANY makes no warranty and assumes no liability whatsoever for consequential damage or damage resulting directly from misapplication, incorrect sizing or lack of proper maintenance of the equipment.

THE COMPANY retains the right to change the design, specification and performance criteria of its products without notice or obligation.



Model # : \_\_\_\_\_

Serial # : \_\_\_\_\_

Cylinder # : \_\_\_\_\_

**Cylinder Last Replaced:**

\_\_\_\_\_  
MTH/DAY/YR

\_\_\_\_\_  
MTH/DAY/YR

\_\_\_\_\_  
MTH/DAY/YR



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E65185

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