



RESDELUX
Steam Humidifiers

Installation, Operation, Maintenance and Troubleshooting Guide

IMPORTANT: READ AND SAVE THESE INSTRUCTIONS. This
guide to be left with equipment owner.

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INSTALLATION

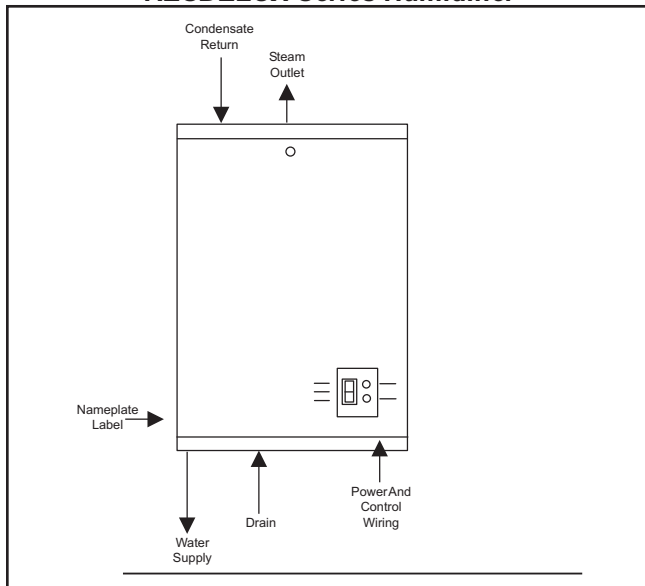
RECEIVING & UNPACKING EQUIPMENT

1. Check packing slip to ensure ALL material has been delivered.
2. All material shortages are to be reported to NORTEC within 48 hours from receipt of goods. NORTEC 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 NORTEC 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.
2. Ensure that the dedicated external disconnect switch is of sufficient size to handle the rated amps as indicated on the nameplate label. Refer to local codes.
3. Report any discrepancy immediately.

Figure #1
RESDELUX Series Humidifier



HUMIDIFIER CONFIGURATION

To avoid any danger, never operate the humidifier with a door off.

To open the door, use the key to unlock, lift door up slightly and pull door forward.

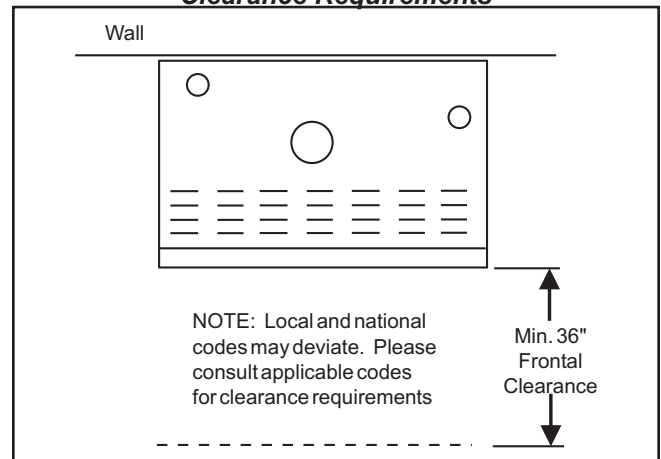
LOCATION & MOUNTING

HUMIDIFIERS

RESDELUX Series humidifiers are designed to mount on a suitable wall or vertical surface. Do not sit on the floor due to additional clearances required for plumbing, electrical, and control access holes. 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. NORTEC does not accept responsibility for installation code violations.

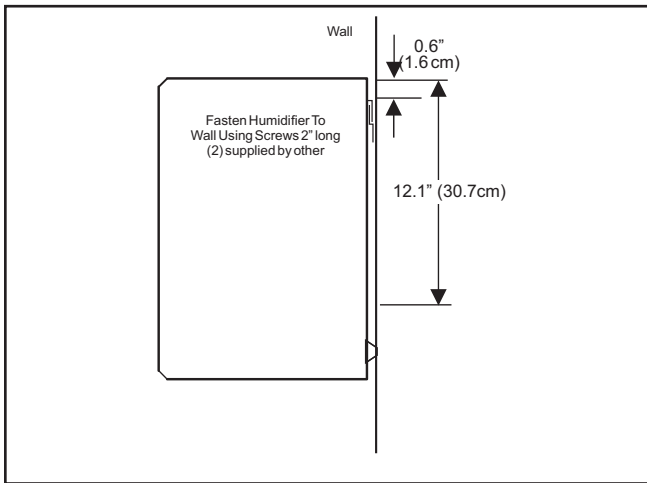
1. Location of the humidifier should be below and as close as possible to the steam distributor location or blower pack. Net output will be reduced as a result of heat loss through long steam hose.
2. See Figure #2 for front clearance requirements for access during installation, maintenance and troubleshooting.

Figure #2
Clearance Requirements



3. Where possible, mount humidifier at a height convenient for servicing.
4. To mount the humidifier use two #8 screws, 2" long, and secure into a standard 2"X4" wood stud or equivalent structure.
5. Make sure humidifier is level.

Figure #3
Wall Mounting Detail

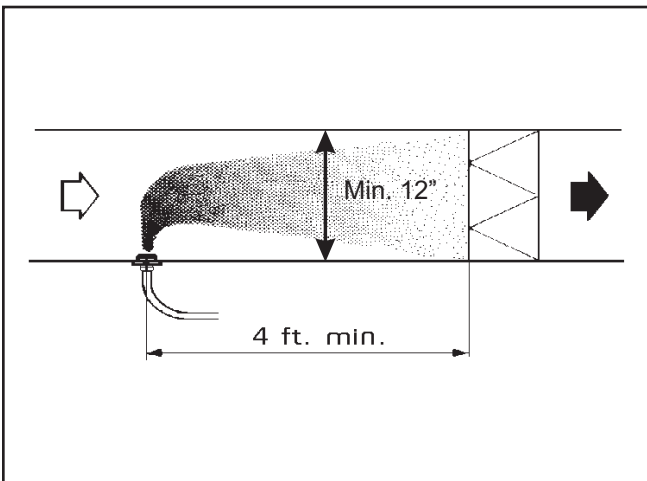


6. DO NOT mount humidifier on hot surfaces.
7. DO NOT mount humidifiers in an area where freezing may occur.
8. DO NOT mount humidifiers on a vibrating surface.
10. DO NOT mount the humidifier to a duct or plenum.

STEAM DISTRIBUTOR NOZZLE (in duct location)

1. When installing the steam distribution nozzle of the RESDELUX humidifier it must be located in the supply duct at least 4 feet from any obstructions such as bends, fans, filters, etc. to prevent wetting (see figure #4).

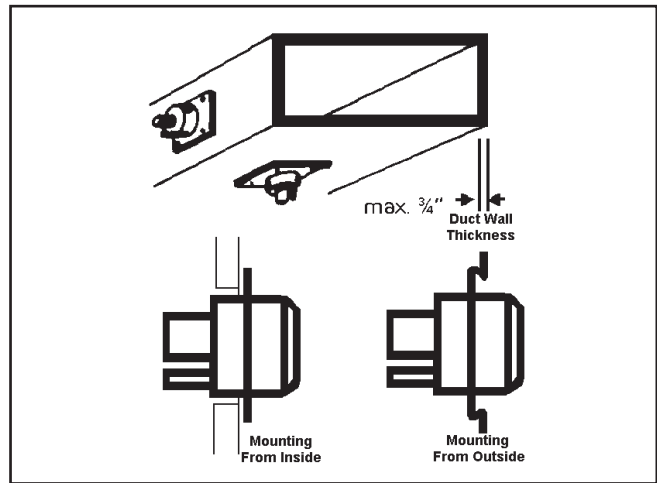
Figure #4
Steam Distributor Nozzle in Duct Location



2. The steam distribution nozzle can be mounted in the bottom wall or on the vertical walls of the duct. If the duct wall is more than 3/4" (20 mm) thick, the nozzle will have to be mounted from the inside of

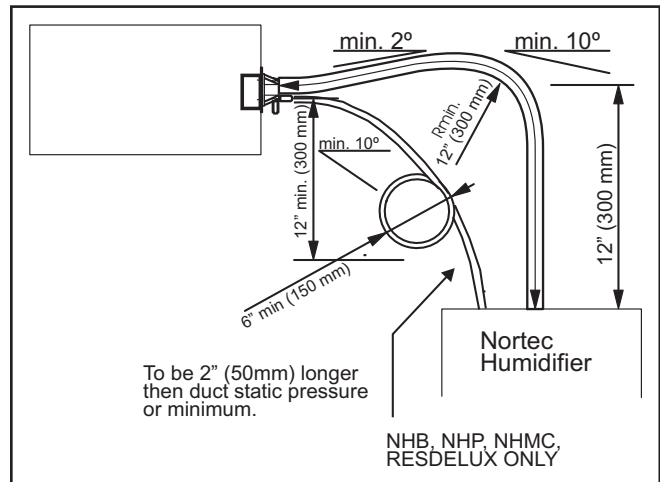
the duct. Remove internal insulation material if necessary. (See Figure #5).

Figure #5
Steam Distribution Nozzle Mounting Arrangement



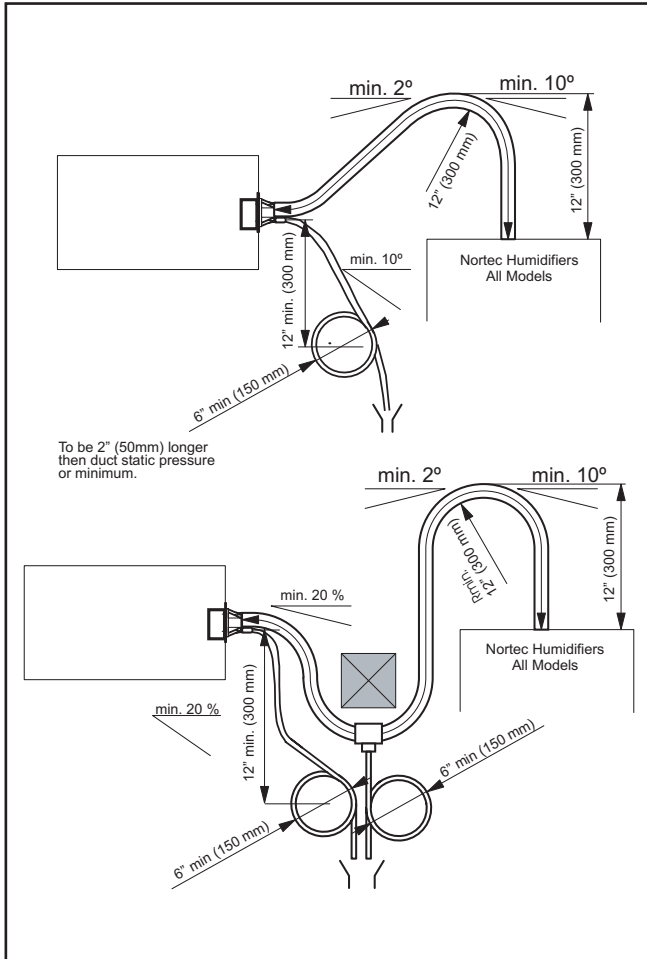
3. When the steam distribution nozzle is located above the top surface of the humidifier: The nozzle must be at least 1 ft (305 mm) above the top surface of the humidifier. Locate the steam hose so that it slopes at an angle of at least 20° (Figure #6).

Figure #6
Steam Plumbing Arrangement Above Humidifier



4. Steam distribution nozzle below top surface of humidifier: The steam hose must first rise to the minimum height of 1 ft (305 mm) above the top surface of the humidifier and thereafter slope a minimum 5° in a uniform manner toward the nozzle. A separate drain line must be provided for condensate that collects at the steam distribution nozzle (Figure #7).

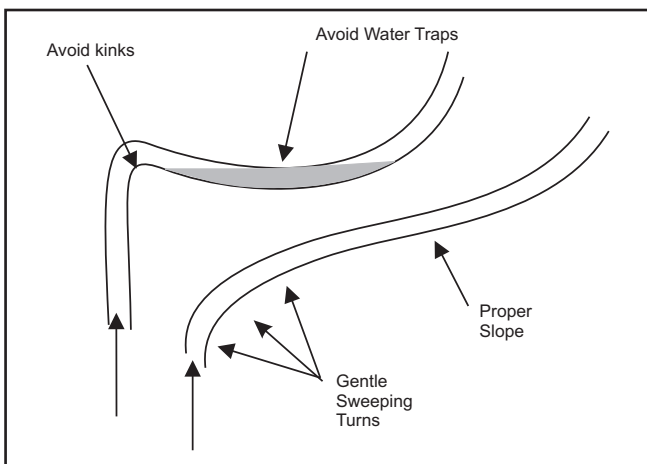
Figure #7
Steam Plumbing Arrangement Below Humidifier



STEAM HOSE INSTALLATION

1. The length of the steam hose must not exceed 4' (1.2m).
2. It must not be restricted in any way (i.e. - a kink resulting from a short radius bend).

Figure #8
Steam Hose Routing



3. Avoid condensate traps in the hose, see Figure #8.
4. Use wall clips (p/n 158-5001) to support the steam and condensate hoses and maintain 1" clearance from the wall. The connection can also be made with 3/4" copper pipe with 1" thermal insulation rated for 215°F (101°C).

CONDENSATE HOSE (supplied)

Under normal circumstances, when the steam distribution nozzle is above the top surface of the humidifier, the condensate hose is routed back to the top of the humidifier and fed through the opening provided to the fill cup. Cut the ends diagonally and simply insert 1/2" in the appropriate hole in the top of the humidifier. Install a 3/8" copper tubing trap at the lowest point in the condensate system. Connect to the hose with a clamp Figure #6.

BLOWER PACK CONNECTION

The RESDELUX humidifier can be purchased with an optional blower pack for direct room humidification. The blower pack is field installed on the RESDELUX humidifier cabinet or located remote from the RESDELUX humidifier.

The blower pack is powered directly from the RESDELUX control board. It cannot be powered separately.

On a call for humidity, blower fans are powered and remain powered for about two minutes after steam production is interrupted.

Cabinet Mounting of the Blower Pack

The RESDELUX blower pack comes with a basic hardware kit. The kit contains all the hardware required to cabinet mount the blower pack.

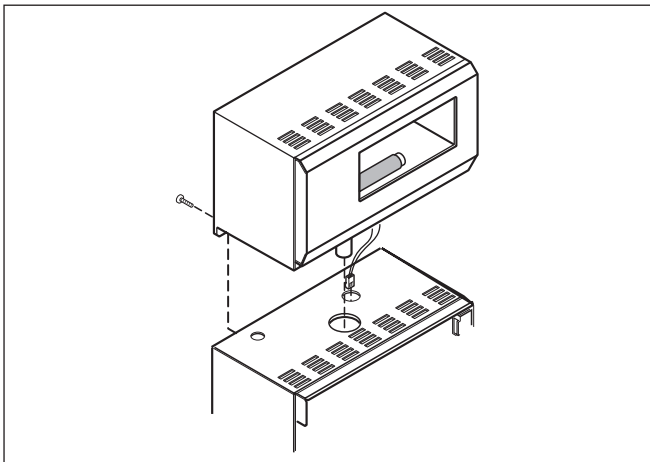
NOTE: Mounting of the blower pack must be performed before the RESDELUX humidifier is installed and wired.

1. Remove the RESDELUX humidifier and blower pack from their shipping boxes.
2. Place the RESDELUX humidifier upright on a flat surface.
3. Remove the 7/8" knockout on the top of the RESDELUX humidifier. There are two knockouts, select the one closest to the large opening.

4. Put the power leads from the blower pack through this opening as you position the blower pack on top of the RESDELUX humidifier
5. Push the blower pack forward until the locating tabs on the bottom of the blower pack with slots in the top of the RESDELUX push forward to engage.
6. Use two Phillips screws with star washers in the Blower Pack screw support tabs to secure to the RESDELUX unit.
7. Remove the front door and service cover from the RESDELUX humidifier.
8. Connect the power leads for the blower pack to terminal P7 on the RESDELUX control board located next to the capacity adjustment potentiometer.
9. Use the short piece of steam hose and hose clamps supplied with the basic hardware kit to connect the steam cylinder to the blower pack steam distributor.

Installation of the blower pack is now complete. For instructions on mounting the RESDELUX humidifier please see the location and mounting section.

**Figure #9
Blower Pack Cabinet Assembly**



Remote Mounting of the Blower Pack

1. The remote mounted blower pack should be located at least 7' off the floor to prevent the discharged steam from coming in contact with pedestrian traffic or any obstruction.
2. When installing the remote blower pack, ensure the primary voltage to the RESDELUX has been

switched off at the electrical panel, or that it is unplugged (RESDELUX/C).

3. Find a suitable location for mounting the remote blower pack. The surface should be flat with adequate clearances for the top, side, and front:

**Table #1
Clearances of Remote Mounted Blower Pack**

Minimum Ceiling Clearance inches (cm)	Minimum Side Clearance inches (cm)	Minimum frontal Clearance inches (cm)
18" (45)	18" (45)	60" (150)

4. Minimum slope of steam hose is 20°. Steam lines longer than 5 ft require condensate trap installation (see Figure #6).
5. RESDELUX blower pack has two teardrop (or keyhole) openings on the back of the cabinet for mounting purposes. They are located 8 ¼" apart, and 1" from the top of the blower pack cabinet.
6. Measure the screw locations and use two #8 screws, 2" long. The screws should be anchored in a standard 2" x 4" wood stud or equivalent to ensure adequate support of the blower pack and connecting steam hose.
7. Remove the 7/8" knockout on the top of the RESDELUX humidifier and insert the closed finger grommet into the opening.
8. Put the power leads from the blower pack through this opening. If the wire leads are not long enough field splice the additional requirement, or get a wire extension kit (P/N 1502326) available from NORTEC.

**Figure #10
Steam Absorption Distances**

Steam absorption space size in inches for ambient humidity 30% RH, room temperature and selected steam outputs of RESDELUX humidifier.

Steam Output	F	W	H
4 lbs/hr	36"	12"	12"
6 lbs/hr	42"	16"	18"
8 lbs/hr	48"	18"	18"

NOTE: Improper wiring could damage the blower pack or RESDELUX PCB.

9. Remove the front door and service cover from the RESDELUX humidifier.
10. Connect the power leads for the blower pack to terminal P7 on the RESDELUX control board located next to the capacity adjustment potentiometer.
11. Replace the electrical service cover and front door.

Once the power is restored the RESDELUX humidifier is ready for service.

PLUMBING

For humidifiers installed in some cities including the City of Los Angeles:

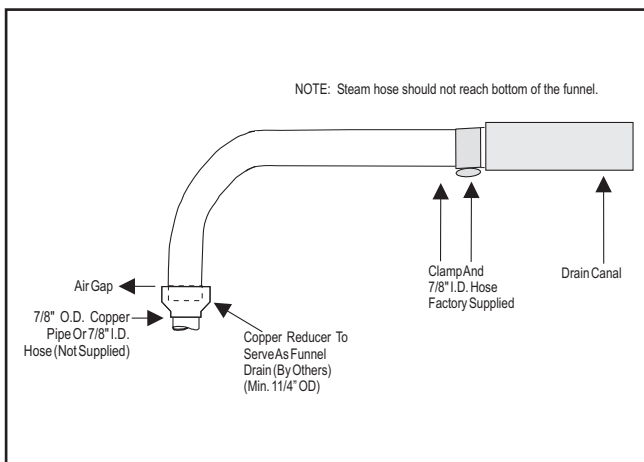
A city-approved spring-loaded double ball CHECK VALVE must be supplied and installed by contractor on each of the potable water inlets to each humidifier. Recommended valve manufacturer: Watts Regulator phone number 508-688-1811. Size: Depending on supply line 1/4", 3/8" or 1/2" NPT inlet and outlet. Model: #7.

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

WATER SUPPLY LINE

1. The Humidifier is intended to operate on potable (cold) tap water.
2. If the raw water is very hard, NORTEC can provide longer cylinder life on softened water; however, softened water is more conductive and

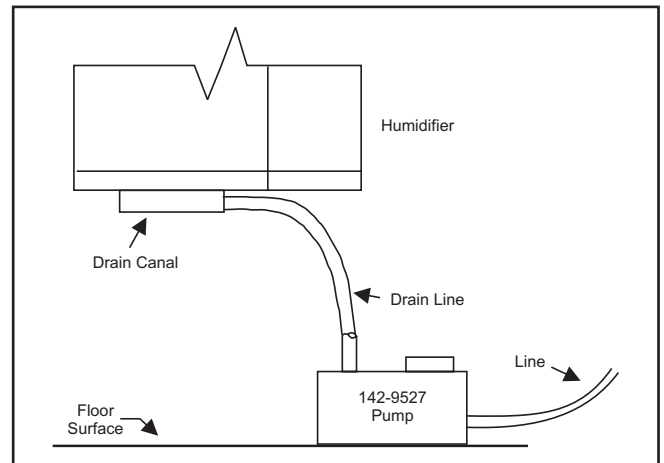
Figure #11
Drain Connection



more corrosive. Some hardware changes may be required, at the time of order or in the field.

3. DO NOT supply hot water to the humidifier. Minerals will adhere more easily to surfaces and the fill valve's small flow regulating orifice could become plugged.
4. ALWAYS supply and install a shut off valve in the water supply line dedicated to the humidifier to facilitate servicing. Use 1/2" O.D. copper to within 4 feet of the humidifier. Reduce copper to 1/4" O.D. and connect to the factory-supplied 1/4" olive compression fitting under the humidifier.

Figure #12
Drain Pump (if necessary)



DRAIN LINE

1. The humidifier is equipped with a 7/8" O.D. unthreaded horizontal drain outlet from the drain canal on the bottom of the humidifier. A field-supplied funnel or reducer (see Figure #11) is recommended. It will prevent backup in the drain pan and in the cylinder due to partially blocked or poorly installed drain lines.
2. The drain line should not drain into 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.
3. 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 7/8" O.D. copper pipe or larger. Do not use plastic pipe for drain lines.
4. Each drain line from these humidifiers must be routed without dips or sags to terminate above

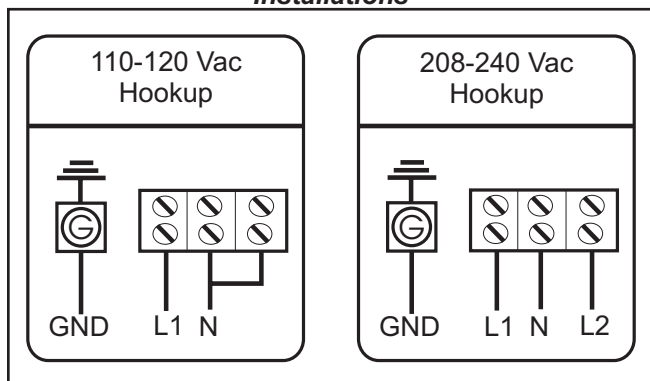
the flood level rim of a city-approved indirect waste receptor.

ELECTRICAL

ELECTRICAL REQUIREMENTS FOR PERMANENTLY CONNECTED RESEDELUX

1. Check and ensure that available voltage and phase corresponds with operating voltage and phase of the humidifier as indicated on the humidifier nameplate label (see Figure #12).
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.

Figure #13
Primary Voltage Supply Wiring for Hard Wired Installations



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 the neutral wire as a ground.
5. External wiring sizes must be in accordance with national and local electrical codes and by-laws.
6. Wiring is fed through holes in the bottom of the cabinet to terminal blocks respective to the supply voltage being used (see Figure #12).

ELECTRICAL REQUIREMENTS FOR THE CORD CONNECTED MODEL RESEDELUX/C

1. The external wiring must comply with local and national electrical codes and must be installed by a qualified electrician. If you have any questions regarding the following instructions, contact a qualified electrician.


2. Check available power supply and resolve any wiring problems BEFORE installing and operating the unit.
3. The 120 volt humidifier operates on 11.5 or less amps and may be used in any properly wired, general purpose household receptacle. See Table #2 for specifications for individual branch circuit requirements.

Table #2
Suggested Individual Branch Circuit

Nameplate Amps	11.5
AWG Wire Size*	14
AWG- American Wire Gauge	
* Based on copper wire at 60° C temperature rating	

4. For your safety and protection, this unit is grounded through the power cord plug when plugged into a matching wall outlet. If you are not sure whether your wall outlet is properly grounded, please consult a qualified electrician.
5. The wall outlet you use must match the plug on the units power cord and must be within reach of the installed unit. DO NOT use a plug adapter or extension cord with this product. See Table #3 for receptacle and breaker information.

Table #3
Receptacle and Fuse Types

Rated Volts	115
Amps	15
Wall Outlet	
Fuse Size	15
Time Delay Fuse (or circuit breaker)	Plug Type

LOW VOLTAGE CONTROL WIRING AND INSTALLATION

Control Wiring

Controls are available from NORTEC as accessories. If controls were not ordered with the humidifier, they must be supplied by others. The following information is relevant to all controls, factory supplied or otherwise.

A, B and C (see Figure #14) or any on / off controls are to be wired in series (only one path for

current) across terminals 1 and 2 on the low voltage control terminal.

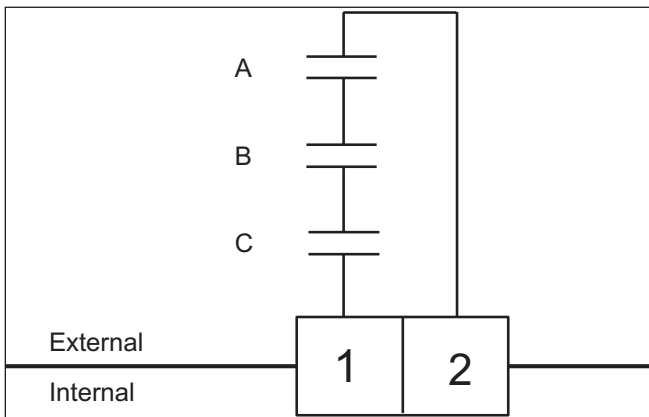
Caution: This is the “common” wire from the transformer that is connected to the ground. It will short on/off control loop if it touches a grounded metal surface.

A - Wall or Duct Mounted Control On/Off Humidistat: Wired to close when there is a drop in humidity and open when the setpoint is reached. Set to desired % RH.

B - Duct Mounted Safety High Limit On/Off Humidistat (if used): Wired to close when there is a drop in humidity and open when the safety setpoint is reached. Set to approximately 85% RH as a safety to help prevent saturation and wetting in the duct (not required when using blower pack kit).

C - Duct Mounted Safety Air-Proving On/Off Switch (if used): Wired to close when sensing air flow and open when no air flow is sensed. Used as a safety to prevent saturation of the duct when there is no air flow (not required when using blower pack kit).

Figure #14
External Wiring Of On/Off Controls



1. NORTEC offers various versions of A, B and C to suit each application. In general, A is essential for in space applications, C is essential for induct applications, whereas B is highly recommended in ducted applications.
2. Field wiring from the humidistat to the humidifier and between devices should be a minimum of 18 AWG 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 for field wiring. (See Figure #14).
4. Each humidifier is supplied with a wiring diagram inside.

Control Installation

1. Wall Humidistat: Mount any wall humidistat (control or high limit) over the standard electrical box at a height similar to a typical thermostat. Any wall humidistat should be in a location representative of overall space being humidified and not in the path of the blower pack or air supply grille. Do not mount on an outside wall where temperature fluctuation can affect the control response.
2. Duct Humidistat: Mount the duct humidistat in a location representative of overall air humidity, (usually the return duct). Do not mount it directly in front of the steam distributor or in a turbulent or mixing zone. Mount it where the air's humidity and temperature are uniform and representative of spaces being humidified.
3. High Limit Duct Stat: Mount the duct high limit humidistat downstream of the 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. Duct Air Proving Switch: Mount the duct air-proving switch so that it is able to sense air flow or lack of it. Wire it to close when air flow is sensed and open when air flow fails.
5. Check operation of all on/off controls before starting the humidifier.

Note: For wiring interface with a fan, see wiring diagram provided on page 13. Steam humidifier will turn on fan when increase in humidity is required.

OPERATION

INTRODUCTION

The NORTEC RESDELUX humidifier is designed to provide clean steam humidification at an economical price. It utilizes NORTEC's patented electronic Auto-Adaptive internal control system for high efficiency and low waste of water and electricity.

RESDELUX OPERATION

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, 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.

A flashing yellow light indicates a fault of the humidifier and the controller shuts off the humidifier. Please refer to troubleshooting section.

For periods of time with no call for humidity, longer than 2 days, the humidifier automatically drains water from cylinder.

MANUAL CAPACITY ADJUSTMENT

The RESDELUX 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, it will then stop when the control circuit 1-2 is interrupted. See Figure #13.

If the humidifier is oversized, the humidistat will be quickly satisfied (less than 10 minutes) and stop the humidifier. As the humidity level drops the humidistat starts the humidifier again. It is quickly satisfied and stops again. The resultant short-cycling can be easily overcome. A manual capacity adjustment potentiometer is provided on the RESDELUX main PC board to increase the runtime to about 15 minutes. It is marked "CAPACITY ADJUSTMENT" and is adjustable from 25 to 100% of operating rating.

OTHER POTENTIOMETERS

Do not adjust any other potentiometers on the PC board. They are factory-set and not to be adjusted in the field.

MAINTENANCE

As with all automatic and mechanical devices, humidifiers require periodic maintenance and servicing either by the user or competent service personnel to provide continued customer satisfaction, longer equipment life and reduction in customer cost.

WARNING! DISCONNECT THE UNIT FROM THE POWER SUPPLY BEFORE SERVICING. The plumbing and electrical compartments contain high voltage components and wiring. The access door is equipped with a lock. Access should be limited to authorized personnel only.

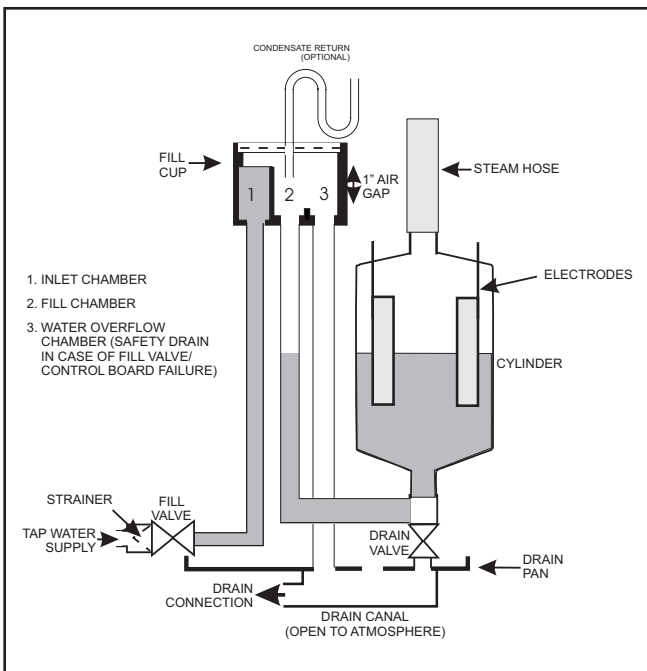
Note: Review periodic maintenance. Checklist on page 16.

STEAM CYLINDER

WHEN TO REPLACE THE STEAM CYLINDER

After a period of operation (not on initial startup), the water level will approach the top of the cylinder.

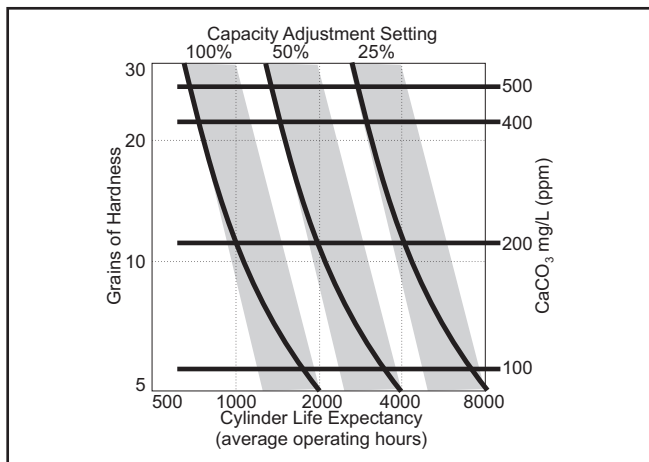
**Figure #15
Operation Schematic**



(Life varies from 500 to 2000 operating hours, as illustrated in Figure #16.)

The RESEDELUX control board constantly monitors unit performance and will shut down the humidifier and alert the customer to change the cylinder. The yellow light will flash 4 times in sequence.

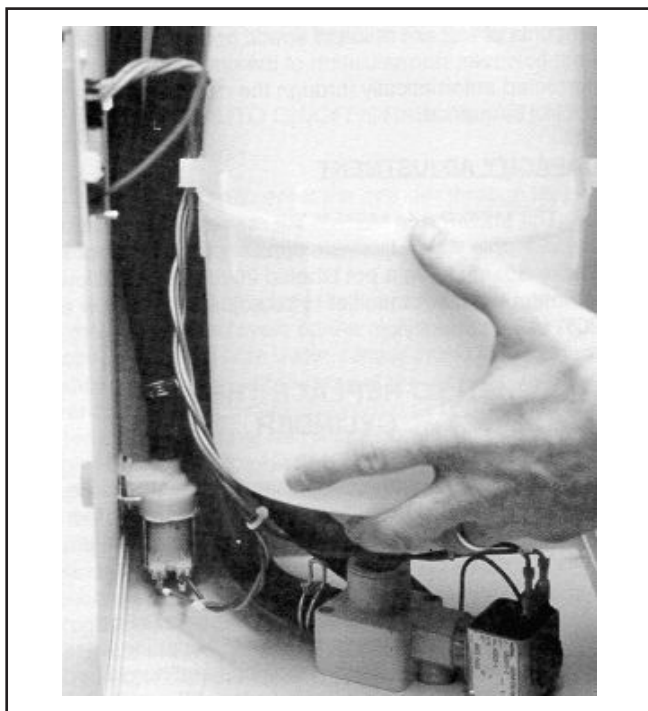
Figure #16
Water Conditions vs. Cylinder Life



HOW TO REMOVE THE STEAM CYLINDER

It is advisable to keep a spare cylinder in stock throughout the humidification season. When ordering a replacement steam cylinder, always quote the three or five digit model number on the label applied to the

Figure #17
Cylinder Replacement



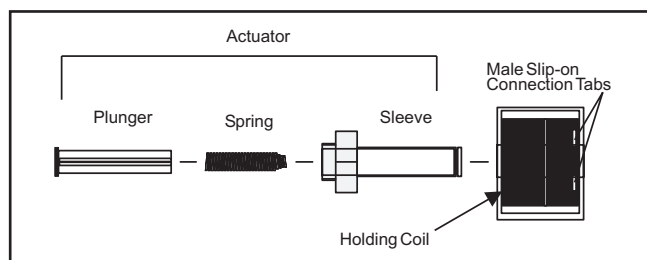
cylinder or quote the unit's serial number, model and voltage located on the spec label (nameplate).

1. Turn off the water supply to the unit.
2. The used cylinder must be drained completely before removal. If the water has just been boiling, allow it to cool before draining. Push the ON/OFF/DRAIN switch to the MANUAL DRAIN position. Leave it in this position just long enough to drain the cylinder (usually not longer than 3 minutes).
3. When completely drained, push the main ON/OFF/DRAIN switch back to the OFF position.
4. Once drained, disconnect all power supplies to the unit.
5. Open the front cover door.
6. Cylinder plugs are attached to the primary voltage cylinder wires. Remove cylinder plugs from cylinder pins by pulling vertically.
7. Using a slotted screwdriver, loosen the steam hose clamp(s) and pull the steam hose off the cylinder vertically.
8. The cylinder is now ready to be lifted out of the unit. CAUTION: Cylinder and any undrained water might still be HOT.
9. Remove the used cylinder as previously described. NORTEC does not recommend the use of any acid solutions to clean the used cylinder. Always replace a used cylinder.

HOW TO INSTALL THE REPLACEMENT CYLINDER

1. Reverse procedure should be followed to install a new cylinder. Main power supply to the unit must be disconnected until the cylinder is completely installed and reconnected.
2. The cylinder plug wires are color-coded in accordance with colored dots beside the electrode pins on the top of the cylinder.

Figure #18
Reassembly Of The Drain Valve And Fill Valve



3. This color-coding must be adhered to when replacing cylinder plugs on pins.
4. The electrode plug with the orange wire always goes on the single pin surrounded by a plastic shoulder.
5. Ensure that cylinder plugs fit snugly on the pins.
6. If a cylinder plug becomes loose the cylinder harness must be replaced (P/N 158-1305 see parts list).

MANDATORY CLEANING OF THE DRAIN VALVE

Always clean the drain valve before installing a new cylinder since the valve port may be as dirty as the used cylinder.

1. Note the ring terminal for drain valve green ground wire is sandwiched between the drain valve body and drain pan.
2. Remove the two screws securing drain valve body to the drain pan. Disconnect the two slip-on terminals from the two tabs on the (24 Vac) drain valve coil.
3. Remove the hose clip and hose connection from drain valve body.
4. The drain valve assembly is now free to be taken to a sink for disassembly and cleaning.
5. Remove the snap-fit red cap from the coil assembly and slide coil off the actuator.
6. Loosen the actuator with a wrench and unscrew from the plastic valve body.
7. Clean the exposed core, spring and plastic drain valve port.
8. The tapered end of the spring must be installed toward the solenoid. Reassemble and tighten the actuator 1/4 turn past hand-tight.
9. Clean out the end of the hose, then reconnect it to the drain valve body with the clamp.
10. Inspect the o-ring to make sure it is in good condition.
11. Fit mounting screws through the drain valve body, one through the ring terminal on green ground wire.

12. Push the two slip-on terminals back onto the two tabs on the coil. The terminals, although not identical, are reversible.

WARNING: To prevent the possibility of electrical shock the green ground wire must be reinstalled before power is restored.

EXTENDED SHUTDOWN

Before disconnecting power to the humidifier at the end of humidification season, ALWAYS DRAIN the cylinder first. Otherwise, the electrodes are subject to harmful corrosion which shortens cylinder life. Do NOT leave the switch in the DRAIN position indefinitely as the drain coil could burn out. Leave the switch in the OFF position and "open" the main external fused disconnect to stop power to the humidifier. Close the shut off valve in the water supply line feeding the humidifier. Lock the cabinet door(s) to prevent unauthorized tampering. All doors are factory supplied with keyed locks. DO NOT LEAVE THE KEY IN THE LOCK. ACCESS SHOULD BE LIMITED TO AUTHORIZED PERSONNEL ONLY.

TROUBLESHOOTING

PLEASE READ THIS SECTION BEFORE REFERENCING SPECIFIC DIAGNOSTIC MESSAGES.

1. Ensure the installation detail conforms with the recommendations contained in the Installation section of this manual.
2. Understanding the Principle of Operation is an asset when troubleshooting. A basic description

is provided in the section titled OPERATION. For a more detailed understanding please contact your NORTEC representative.

3. When contacting your local representative or NORTEC for troubleshooting assistance, please ensure the serial number has been obtained for reference purposes.
4. Whenever the troubleshooting steps indicate a problem with the main PCB, first check all connections at the main control board.

DIAGNOSTIC PROCEDURES - TROUBLESHOOTING

The RESDELUX controller provides a number of messages to simplify troubleshooting procedures. The following table presents fault messages displayed by the controller, their meaning and possible corrective actions. Refer to the following section for detailed information about terms used in the table.

Table #4 - Troubleshooting Guide

Unit Status Lamp		Symptom	Corrective actions
Yellow	Green		
On	On	Maximum water level inside cylinder.	This usually happens on initial start-up after replacing the cylinder (normal). Water is concentrated with minerals inside the cylinder. Let unit run, yellow light will disappear when the unit is at full output. This may take a day or two.
Off	Off	No power to the board.	Check for main power supply fault. Turn power switch to 'Drain' position. If drain valve is activated (sound of solenoid), check connection to the board or board itself. When no sound present, check fuse (replace with 1.5A if needed), transformer (voltage should be present between fuse holder and ground screw).
1 flash sequence	Off	Over current. Operating amperage exceeded 130% of rated amps. Water is drained from the cylinder (drain valve on for 10 min.).	Check drain valve operation, drain time, possible drain restrictions. Check if fill valve leaks (not holding supply water). Back pressure may also cause very conductive water conditions. Was the humidifier short cycling? Check for short cycling.
2 flashes in sequence	Off	No current detection for 30 minutes with continuous call for humidity.	Check water level in the cylinder - should be more than ¼ full. If not check fill rate, 24 VAC voltage on fill valve terminals (unit must be on with call for humidity - green light steady on). Verify fresh water supply to the humidifier. Leaking drain valve can be at fault (minerals blocking the plunger). If cylinder is more than ¼ full, check primary power, connections to the cylinder, continuity of wires to cylinder. Are power wires connected to proper terminals on the cylinder? (Color coding) Possibly wrong cylinder type. Low water conductivity.
4 flashes in sequence	Off	End of cylinder life - change cylinder.	Check water level in the cylinder, should be about ¾ full. Check for foaming if water level lower or cylinder life shorter than expected. Change cylinder, clean drain valve.

PROCEDURES AND TERMS USED IN DIAGNOSING

PRINCIPLE OF OPERATION

The conductivity of the water within the cylinder must be controlled in order for the humidifier to function properly. The fill and drain rates must be maintained. Filling too quickly can cause over-amping and automatic shutdown or blown fuses. Filling too slowly can cause insufficient steam output and foaming. Water supply pressure should be between 25 and 110 psig. Draining too slowly can cause over-concentration and malfunction due to foaming. These are just some examples of what can go wrong if the fill and drain rates are not maintained.

FILL RATE

Fill rates of suspect units should be checked. Fill rates should measure nominally at 1" to 1-1/2" of vertical rise in water level in the cylinder in one minute.

Clogged fill valve will cause lower fill rate. The fill valve strainer is removable and can be cleaned.

DRAIN TIME

Manual drain time of a half full cylinder takes approximately 25 seconds.

If time measurements are longer, repeat with the external drain disconnected (and draining into a pail) to verify that the external drain is impeding flow. If it still does not drain, check for a clogged strainer or drain.

A clogged strainer or drain valve will cause shortened cylinder life. Determine what caused the strainer or drain valve to clog in the first place.

Do not assume that if a strainer and/or drain valve is clogged that it is to blame. If the external drain has been impeding flow then waste accumulates resulting in a clogged strainer or clogged drain.

Clean the drain valve and install a fresh cylinder. Then measure the manual drain time with and without the external drain connected. Is the external drain impeding flow? NORTEC recommends an open external drain line. See the Installation section of this manual.

RATED AMPERS

This refers to amps listed on the humidifier specification label.

SHORT CYCLING

When the 'on time' of the humidifier is less than ten minutes upon a call for humidity. To correct short cycling, all humidifiers have a capacity adjustment which allows the output of the humidifier to be reduced as low as 25% of rated output, thus extending the 'on time' required to maintain output. Excessive short cycling may cause higher water conductivity (mineral content) than designed for the unit.

FOAMING

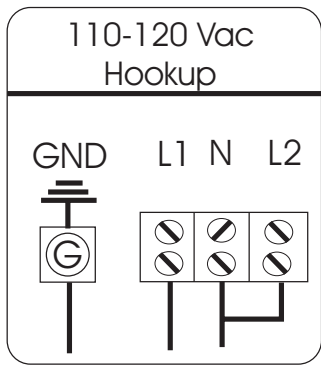
A phenomenon which can occur in water when impurities, already in the water, reach an excess concentration as result of boiling away pure water and the continued boiling action agitating the contained water. The humidifier electronics are designed to prevent this occurrence although in extreme cases water will foam with little concentration, making it necessary to have the drain time of the water, contained in the cylinder, increased. Foaming is normally caused by short cycling, a restricted drain, or back pressure. The foam, generated in these instances, is conductive and may lead to a false full cylinder indication if the level of the foam approaches the top of the cylinder.

BACKPRESSURE

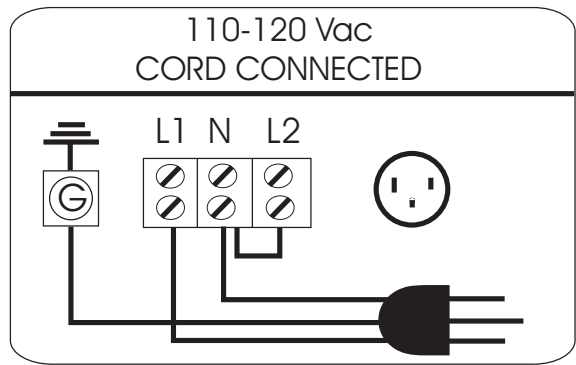
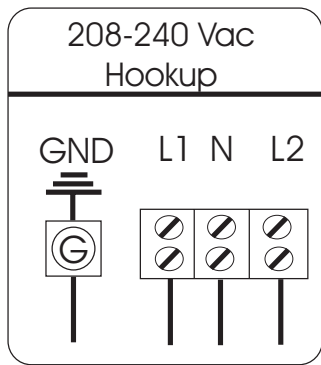
Restriction of steam flow caused by improperly sloped steam lines, elbows changing the direction of the steam flow from horizontal to vertical without a condensate drain leg, and any plumbing detail allowing the accumulation of condensate.

MONITORED LEG

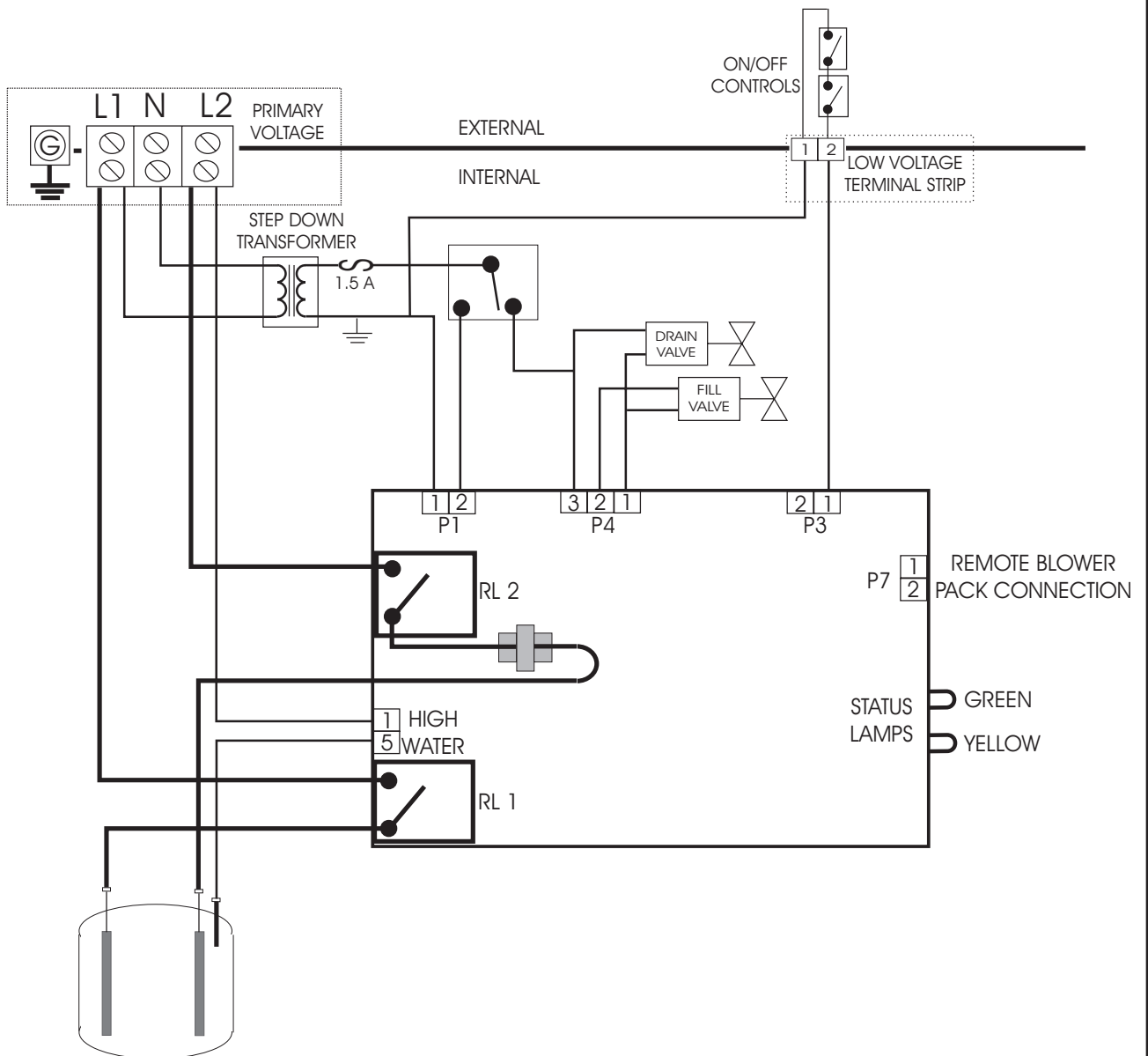
Refers to the primary wire, to the cylinder, which loops through the current sensing device on the main PCB. This wire is terminated at the red cylinder plug at the cylinder.



MODEL RESEDELUX



MODEL RESEDELUX/C



RESEDELUX

WIRING DIAGRAM No. RSD0001 Rev. H November 15, 1999

DPDT AUX FAN RELAY, 24VAC
COIL WITH 2 NORMALLY OPEN CONTACTS

WALL
HUMIDISTAT
(PN 1329102)
OR DUCT
HUMIDISTAT
(PN 1329108),
MAKES ON
FALL IN
HUMIDITY

WIRED IN PARALLEL
WITH NORMAL
FAN RELAY

24VAC

TRANSFORMER
WITH BUILT-IN
CIRCUIT BREAKER
BY OTHERS

120/208/240 V
POWER SOURCE

HI-LIMIT
HUMIDISTAT
(PN 1329108)
MAKES ON FALL
IN HUMIDITY

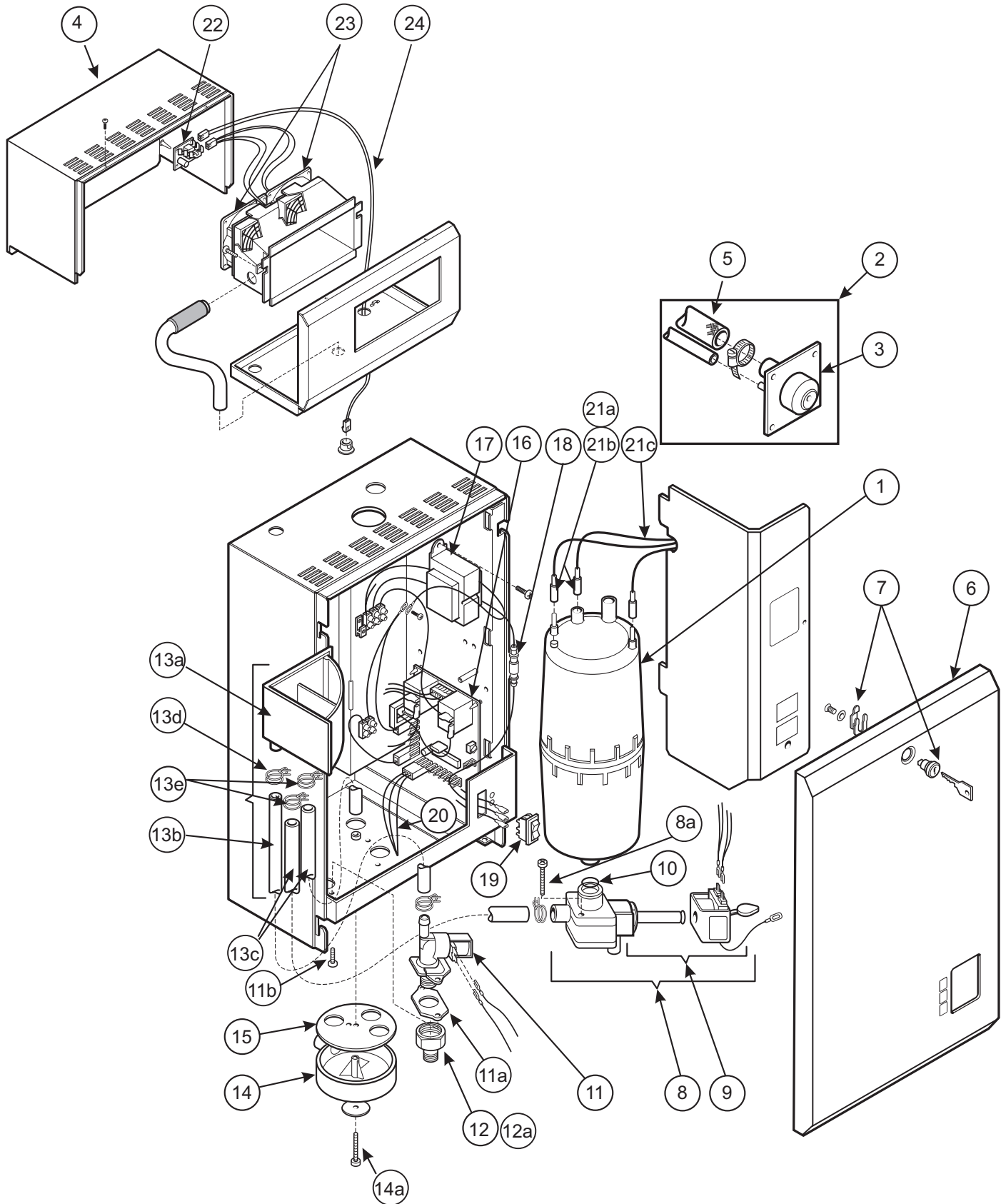
AIRFLOW
SWITCH,
MAKES WITH
AIRFLOW
(PN 1329203)

1 2

RESDELUX LOW VOLTAGE
TERMINAL STRIP

SPARE PARTS LIST AND EXPLODED VIEW - RESEDELUX

Item Number	Part Number	Description
1	151-9002	Cylinder type 202
2	158-1820	Steam distributor kit
3	153-5062	Steam distributor
4	158-1830	Steam blower pack
5	158-1821	Steam Hose 4' long
6	158-7104	Cabinet front door
7	185-3104	Lock assembly with keys
8	145-6000	Drain valve complete
8a	145-5002	Screw Drain Valve
9	132-6002	Drain valve coil assembly
10	132-6004	Drain valve o-ring
11	131-3244	Fill valve assembly
11a	145-5000	Fill valve gasket only
11b	145-5004	Fill valve screw
12	149-5072	Brass fitting with gasket
12a	132-6129	Elbow
13	158-1450	Fill cup assembly kit with hoses and clamps
13a	142-1050	Fill cup
13b	132-8850	Condensate hose (small dia.)
13c	132-8860	Condensate hose (medium dia.)
13d	132-5023	Clamp small house
13e	132-5035	Clamp medium hose
14	132-1216	Drain canal round
14a	132-5064	Screw drain canal
15	163-1026	Gasket for round drain canal
16	158-3511	Power control board (provide unit serial number when ordering).
17	150-1491	Transformer 120/24 Vac
18	158-3126	Fuse 1.5A
19	132-3097	On/Off/Drain switch
20	158-1309	Wire harness - drain & fill valves
21	158-1305	Wire harness - cylinder, complete
21a	135-4012R	Cylinder plug RED
21b	135-4012B	Cylinder plug BLACK
21c	132-4012W	High water sensor pin
22	158-1311	Power Supply
23	158-1312	Blower Fan Assembly
24	150-2326	Wire extension for blower pack
Not Shown	132-8810	Steam Hose (Specify Length)
Not Shown	158-5001	Steam and condensate hose support bracket (Specify Quantity)
Not Shown	132-8841	Condensate Line (Specify Length)



PERIODIC MAINTENANCE CHECKLIST

PREVENTIVE MAINTENANCE AND SERVICE CHECK LIST FOR NORTEC'S RESEDLUX

Customer _____

Address _____

Equipment Location _____ Serial # _____

Date Last Inspected _____ Date of this Inspection _____

Inspected By _____

Humidifier _____

Company Name _____

Model Number _____

Inspect, Check, Clean, and Adjust all items listed.

STEAM GENERATORS.....

Replace cylinder, check drain valve, and fill valve.

SUMP AND DRAIN LINES.....

Clean sump and drain lines and make sure drains and drain lines are free of restrictions. Check for leaks and proper water level.

STEAM DISTRIBUTION.....

Check steam line sloping, no leaks, no condensate around blower pack or distribution nozzle.

CONTROLS.....

Humidistat, check for proper operation. All electrical terminals for tightness. Disconnect switch, check operation.

KEY: - Okay

- Needs Additional Service

- Repair or Replace

Remarks: _____

LIMITED WARRANTY

NORTEC INDUSTRIES INCORPORATED and/or NORTEC AIR CONDITIONING INDUSTRIES LIMITED (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 NORTEC'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



E65185



LR-35859

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