



INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Blower Pack
Condair BP

Thank you for choosing Condair

Installation date (DD/MM/YYYY):

Commissioning date (DD/MM/YYYY):

Site:

Model:

Serial number:

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1 Introduction

1.1 Before You Start!

Thank you for purchasing the Condair Blower Pack.

Condair humidifiers and blower packs incorporate the latest technical advances and meet all recognized safety standards. Never-the-less, improper use of the Condair equipment may result in danger to the user or third parties, and/or damage to property.

To ensure a safe, proper and economical operation of the Condair humidifier and blower pack, please observe and comply with all information and safety instructions contained in this manual as well as all the relevant documentation of the installed humidification system.

If you have additional questions, please contact your Condair representative. They will be glad to assist you.

1.2 General

Limitations

The subject of this manual is the Condair Blower Pack. The various options and accessories may only be described in-so-far as is necessary for proper installation, operation and maintenance of the equipment. Additional information on available options and accessories can be obtained in the respective instructions that are supplied with them.

This manual is restricted to the installation, operation and maintenance of the Condair Blower Pack, and is intended for well trained personnel who are suitably qualified for their respective jobs.

Symbols used in this manual



CAUTION!

The word "CAUTION" in conjunction with the general caution symbol is used to provide safety instructions that, if neglected, may cause damage and/or malfunction of the unit or damage to property.



WARNING!

The word "WARNING" in conjunction with the general warning symbol is used to provide safety instructions that, if neglected, may cause injury to personnel. Other specific warning symbols may also be used in place of the general symbol.



DANGER!

The catchword "DANGER" in conjunction with the general danger symbol is used to provide safety instructions that, if neglected, may cause severe injury to personnel or even death. Other specific danger symbols may also be used in place of the general symbol.

Storage of Manual

Keep this manual in a place where it is safe and readily accessible. If the equipment is moved to another location, ensure that the manual is passed on to the new user/operator.

If the manual is lost or misplaced, please contact your Condair representative for a replacement copy.

Language Versions

This manual is also available in other languages. Please contact your Condair representative for more information.

2 For Your Safety

General

Every person who is tasked with the installation, maintenance or operation of the Condair humidifier and blower pack must read and understand this manual and the Condair humidifier manuals before performing any work.

Knowing and understanding the contents of this manual is a basic requirement for protecting personnel against any kind of danger, preventing faulty operation, and operating the unit safely and correctly.

All labels, signs and marking applied to the Condair humidifier and blower pack must be observed and kept in a readable state.

Personnel Qualifications

All procedures described in this manual must only be performed by personnel who are adequately qualified, well trained and are authorized by the customer.

For safety and warranty reasons, any activity beyond the scope of this manual must only be performed by qualified personnel authorized by the manufacturer.

All personnel working with the Condair humidifier and blower pack must be familiar with and comply with the appropriate regulations on workplace safety and prevention of accidents.

Intended Use

The Condair Blower Pack is intended exclusively for air humidification within the specified operating conditions (refer to "[Operating Data](#)" on page 51). Any other type of application, without the express written consent of the manufacturer, is considered to be NOT conforming to its intended purpose, and may lead to dangerous operation of the unit.

In order to operate the equipment in the intended manner all information contained in this manual, in particular the safety instructions, must be observed closely.

Dangers that may arise from the Condair humidifier and blower pack:



DANGER!
Risk of electric shock!

The Condair humidifier and blower pack are mains powered. Live parts may be exposed when the door panels/covers are removed. Touching live parts may cause severe injury or even death.

Prevention: The Condair humidifier and blower pack must be connected to the mains only after all installation work has been completed, checked for correct workmanship, and the door panels/covers are installed and fastened properly. The units must also be disconnected from the mains whenever work must be performed on them.

**WARNING!****Risk of severe burns from contact with hot steam vapours!**

The Condair humidifier and blower pack use hot steam vapours for humidification. Bare skin exposed to hot steam vapours can result in severe burns.

Prevention: Wear appropriate personal protective equipment when working near steam vapours.

**WARNING!****Risk of severe burns from contact with hot surfaces!**

Components of the steam system (including the steam cylinder, steam distributors, etc.) get up to 100 °C during operation. Contact with the hot surfaces can result in severe burns.

Prevention: Shut down the humidifier and allow it to cool down before performing any work on the steam system.

Preventing Unsafe Operation

All personnel working with the Condair humidifier and blower pack must immediately report to the customer any alterations to the unit that may affect safety, and **secure the Condair units against accidental power-up.**

Modifications to the Unit Prohibited

Modifications are NOT permitted on the Condair humidifier and blower pack without the express written consent of Condair.

3 Receiving and Storage

3.1 Inspection

After receiving the shipment, inspect the goods as follows:

- Inspect the shipping boxes for damage.
Report any shipping box damages to the shipping company without delay.
- Check the goods against the packing slip to ensure that all items have been delivered.
Report any shortages to your Condaire representative within 48 hours of receipt of the goods. Condaire does not assume responsibilities for any shortages beyond this period.
- Unpack the parts/components and check for any damage.
If parts/components are damaged, notify the shipping company immediately.
- Verify the model type on the specification label to ensure that it is suitable for your installation. Refer to [Figure 2 on page 11](#).

3.2 Storage and Transportation

Storage

Store the Condaire Blower Pack in its original packaging inside a protected area that meets the following requirements until it is installed, or if it needs to be stored for an extended period of time:

- Room temperature: 5 to 40°C
- Room humidity: 10 to 75% RH

Transportation

For optimum protection always transport the unit and components in their original packaging, and use appropriate lifting/transporting devices.

Packaging

Keep the original packaging of the unit/components for later use.

If the packaging needs to be disposed of observe local regulations on waste disposal. Please recycle packaging where possible.

4 Product Overview

4.1 General Description

The Condair Blower Pack is used along with an atmospheric steam generating humidifier to distribute steam directly into local areas or into structures that do not have a built-in air distribution system.

The blower pack can be direct-mounted on the Condair EL series or RS series humidifiers, or mounted remotely with the Condair EL series, RS series or the GS series humidifiers. Multiple blower packs can also be installed remotely with large humidifiers. Refer to [Figure 1](#).

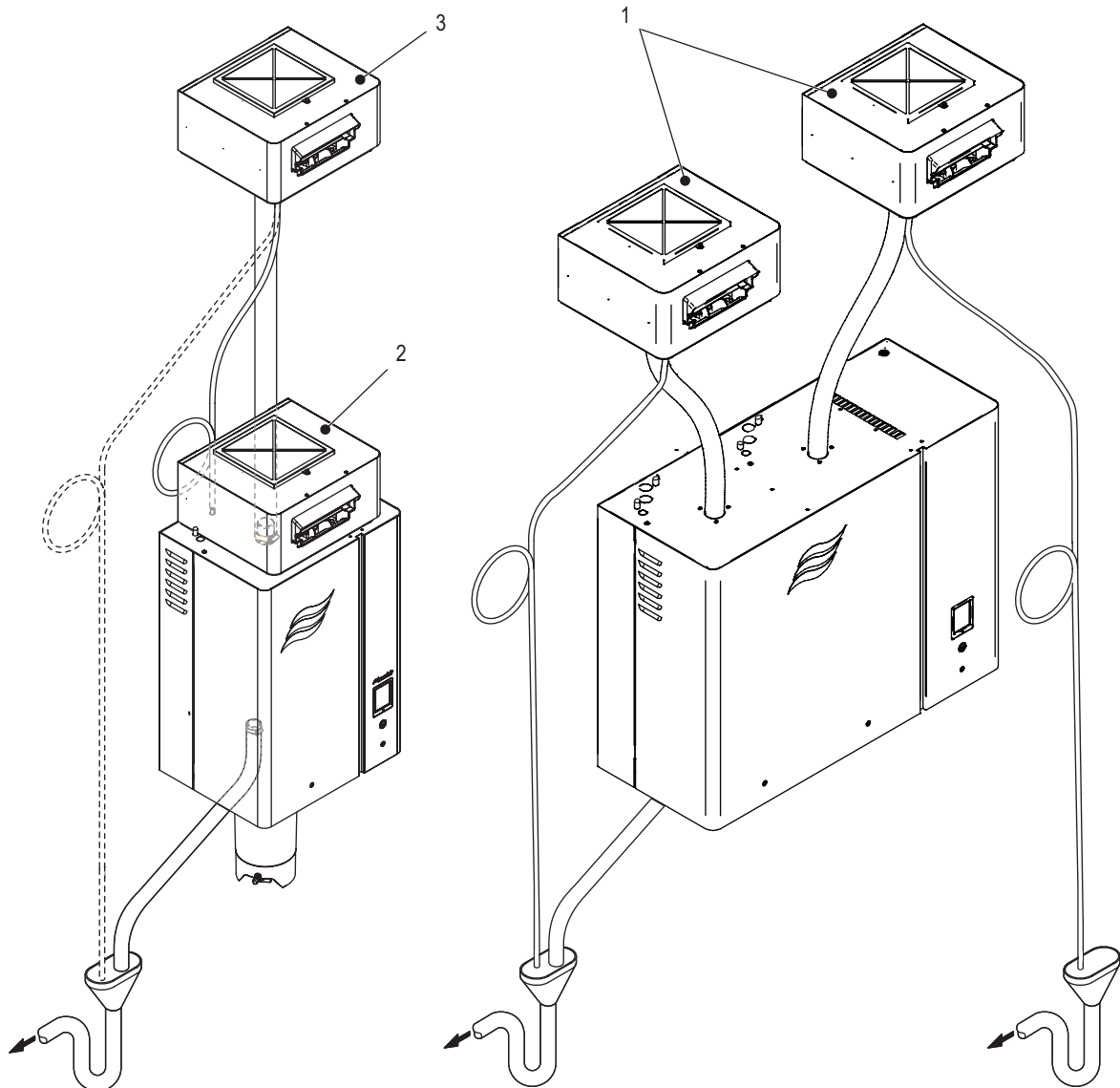


Figure 1: Condair Blower Pack Mounting Configurations

- 1 Remote-mounted multiple blower packs (on large humidifiers)
- 2 Direct-mounted blower pack
- 3 Remote-mounted blower pack

4.2 Identification of the Unit

The specification label on the side of the blower pack shows its model type, serial number and other rating details. Refer to [Figure 2](#).

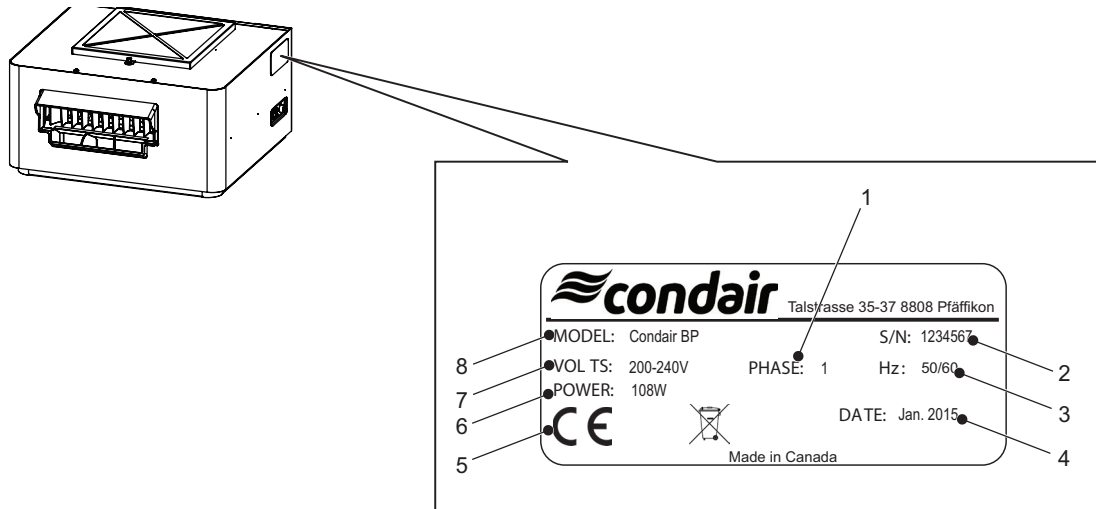


Figure 2: Condair Blower Pack Specification label

- 1 Current phase
- 2 Serial number (7-digit)
- 3 Frequency rating
- 4 Year/month of manufacture
- 5 Certification symbols
- 6 Power consumption
- 7 Voltage rating
- 8 Model type

4.3 Options and Accessories

There are no options or accessories for the Condair Blower Pack.

4.4 Functional Description

The blower pack consists of an electrically-driven fan, an air filter assembly, a distributor assembly, a steam inlet, a thermostat assembly, a safety relay, fuse and a high/low speed switch. The fan is controlled by the thermostat assembly and the high/low speed switch. Refer to [Figure 3 on page 13](#).

When the blower pack is powered on, the safety relay closes and permits the humidifier to generate steam when it receives a demand signal. The generated steam enters the blower pack through the steam adapter into the distributor assembly. A normally-open contact in the thermostat assembly closes when the temperature reaches approximately 60°C, at which time the fan starts. Air drawn through the air filter then mixes with the steam and is dispersed into the room/facility through the distributor assembly.

The high/low speed switch controls the speed of the fan, which is set to the specific humidification requirements of the room/facility. Once set, the switch setting should not be altered.

When the steam supply stops, the fan continues to run until the contact in the thermostat assembly opens as its temperature drops down to approximately 50°C.

A security loop cable attached to the back of the blower pack prevents the humidifier from starting if the safety interlock is disabled. A warning message "Blower pack not connected" is displayed on the humidifier.

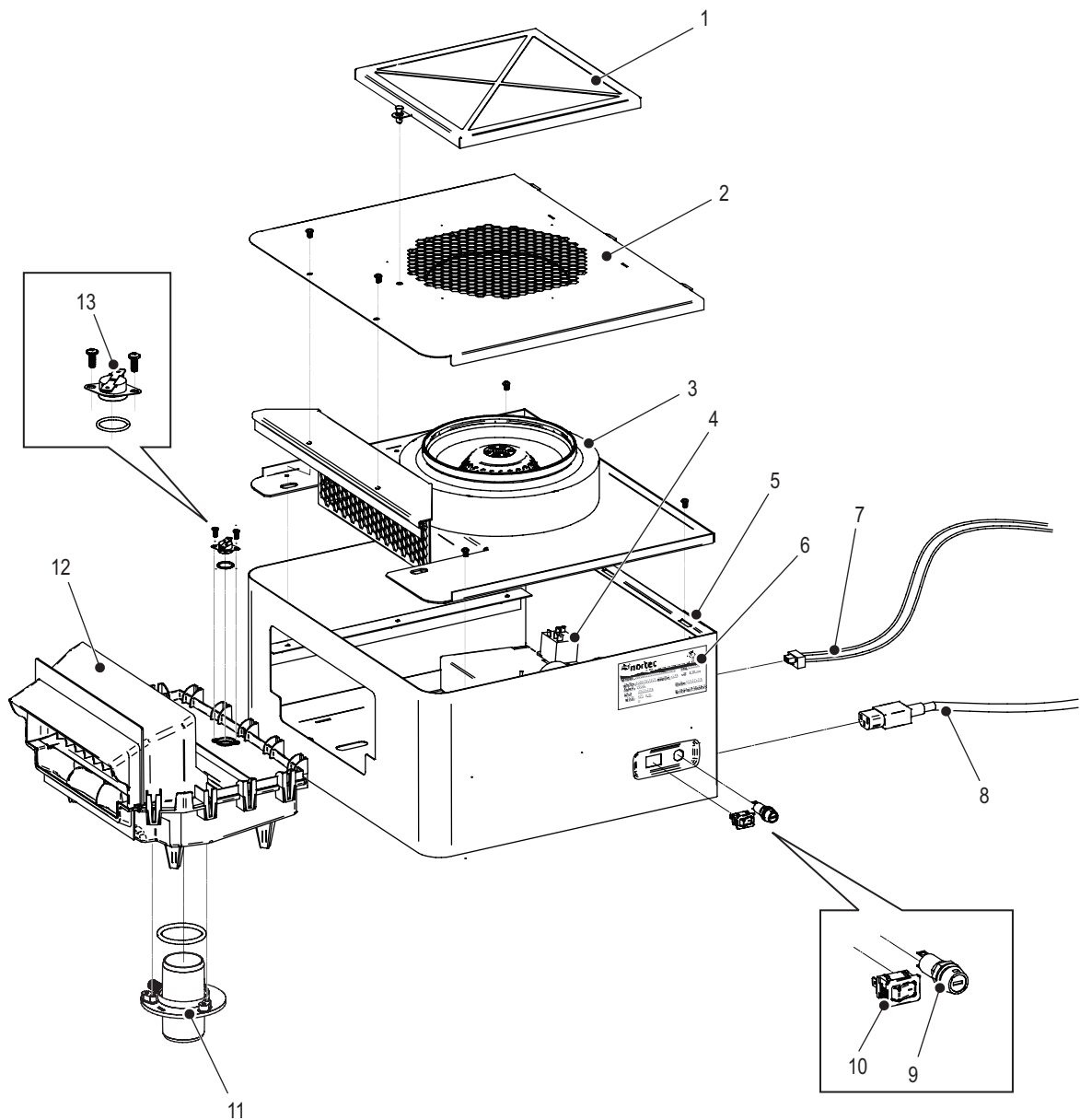


Figure 3: Condair Blower Pack Components

- 1 Air filter assembly
- 2 Cover assembly
- 3 Fan assembly
- 4 Safety relay
- 5 Housing
- 6 Specification label
- 7 Security loop cable
- 8 Power cable
- 9 Fuse
- 10 High/low speed switch
- 11 Steam adapter
- 12 Distributor assembly
- 13 Thermostat assembly

5 Installation

5.1 General

Strictly observe and perform all installation tasks including the mounting of the unit and connection of the water, steam and power supplies as described in this manual.

Observe and comply with all local regulations dealing with water, steam and electrical installations.

Condair does not accept any liability for installation of humidification equipment by unqualified personnel, or the use of equipment/parts that are not authorized by Condair.

Personnel Qualifications

All installation work must be performed only by well qualified personnel authorized by the customer. It is the customer's responsibility to verify qualifications of the personnel.

Safety

Some installation work requires removal of the door panels/covers on the blower pack and humidifier. Please note the following:



DANGER!
Risk of electric shock!

The Condair humidifier and blower pack are mains powered. Live parts may be exposed when the door panels/covers are removed. Touching live parts may cause severe injury or even death.

Prevention: The Condair humidifier and blower pack must be connected to the mains only after all installation work has been completed, checked for correct workmanship, and the door panels/covers are installed and fastened securely.



CAUTION!
Electrostatic discharge (ESD)!

The electronic components inside the humidifier are sensitive to electrostatic discharge (ESD).

Prevention: Take appropriate measures to protect the electronic components inside the units against damage caused by electrostatic discharge (ESD). Refer to IEC 61340.

5.2 Installation Overview

The multi-platform Condair blower pack can be installed remotely with any Condair EL or RS humidifier, or mounted directly onto the Condair EL (5-45 kg/h) or the Condair RS (5-40 kg/h) humidifiers. Multiple blower packs can also be used remotely with large humidifiers equipped with two steam cylinders. [Figure 4](#) shows typical mounting configurations of the blower pack(s) and humidifier.

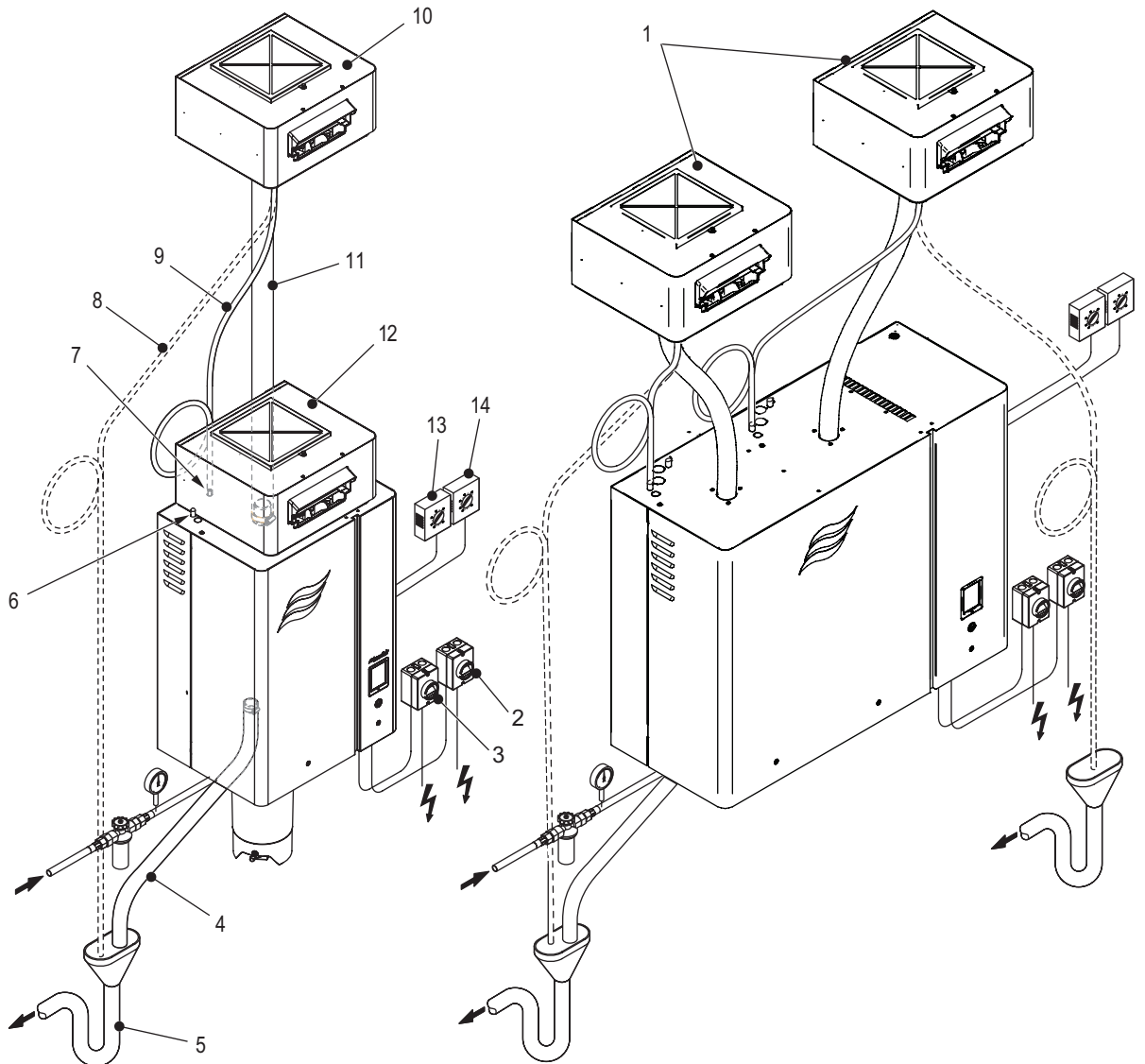


Figure 4: Typical Installation of Blower Pack with Condair EL/RS Humidifier

- | | |
|---|--|
| 1 Blower packs (multiple, remote-mounted with large humidifier) | 7 Condensate drain connection to drain (for remote unit) |
| 2 Electrical disconnect switch - control voltage supply | 8 Condensate drain line (alternate, to floor drain) |
| 3 Electrical disconnect switch - heating voltage supply | 9 Condensate drain line (see Note 3 below) |
| 4 Drain line (see Note 1 below) | 10 Blower pack (single, remote-mounted) |
| 5 Air gap funnel and trap (see Note 2 below) | 11 Steam line (see Note 4 below) |
| 6 Condensate drain connection to cylinder (for remote unit) | 12 Blower pack (single, direct-mounted) |
| | 13 High limit humidistat (external security loop) |
| | 14 Humidity sensor or controller |

Note 1: The drain line should have a minimum internal diameter of 30 mm, with a constant downslope (minimum 15% or 8.5°) to the air gap funnel, and must not touch the sides or bottom of the funnel. Use stainless steel or plastic pipe if using DI or RO water.

Note 2: The air gap funnel and trap should be located away from the control cabinet in the humidifier to prevent any rising steam from damaging the electrical components in the cabinet.

Note 3: Condensate drain line should have a constant downslope (minimum 15% or 8.5°), with no restrictions and a trap diameter of 150 mm. The trap should be located a minimum of 300 mm below the blower pack/steam line. Also see note below.

Note 4: The steam line should be as short as possible, to a maximum of 4 m long, with constant up-slope/downslope (minimum 15% or 8.5°), and without any restrictions in the line. Steam lines must not merge except at the blower pack (and only through a Condair adapter). A condensate line must also be installed just before the restriction. Condensate line must be installed at the lowest point in the steam line, and must connect into a full-size "Tee" connector.

In addition, multiple blower packs can also be used remotely with Condair GS 195/260 humidifiers with the aid of an adapter. Refer to [Figure 5](#). Contact your Condair representative for additional details.

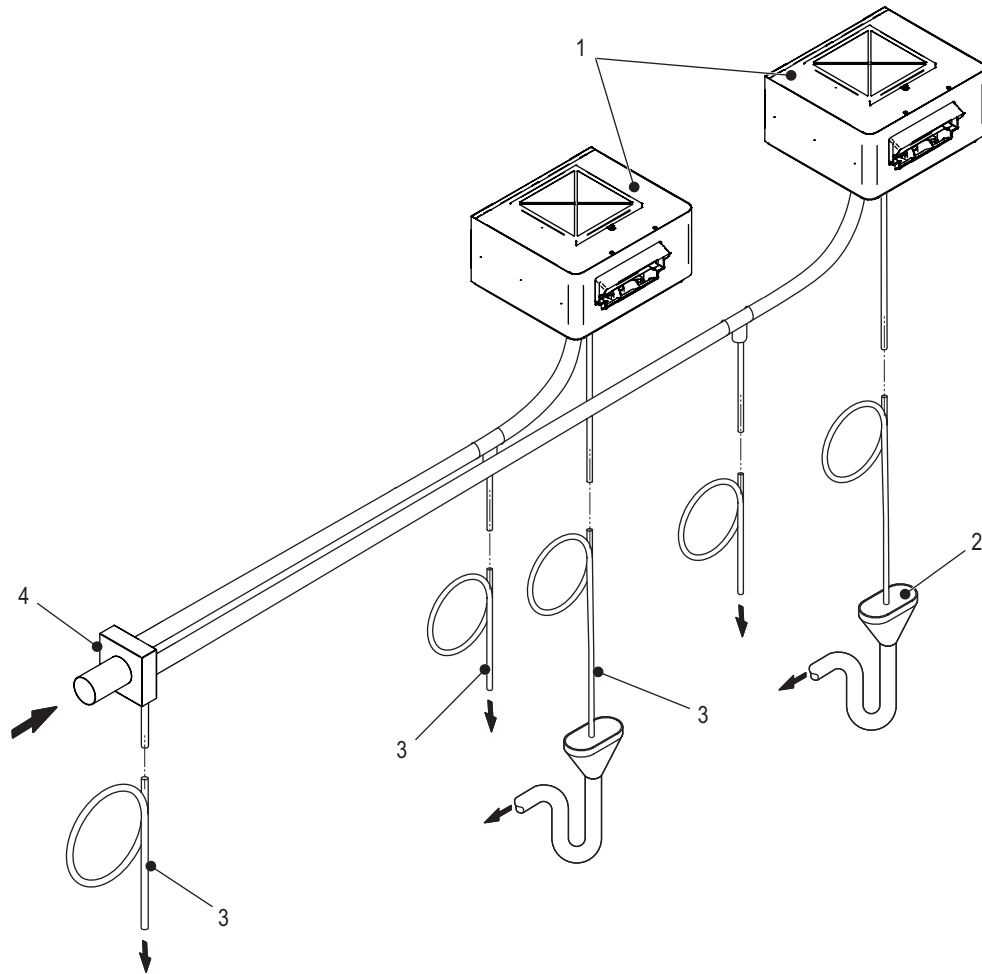


Figure 5: Typical Installation of Multiple Blower Packs with Condair GS Humidifier

- 1 Blower packs (multiple, remote-mounted)
- 2 Floor drain (see Note 1 above)
- 3 Condensate drain line (see Note 3 above)
- 4 Adapter

To mount the blower pack remotely refer to ["Remote-Mounted Blower Pack Installation" on page 26](#).
For humidifier-mounted blower pack refer to ["Direct-Mounted Blower Pack Installation" on page 33](#).

5.3 Site Requirements

In preparation for installation of the Condair Blower Pack, the following site requirements must be satisfied. Report any discrepancies to the site engineer.

Steam and Condensate Lines

- The selected location for installation of the blower pack should allow proper routing of the steam and condensate lines as described in ["Best Practices for Steam and Condensate Lines Installation" on page 20](#).
- The length of the steam line is kept as short as possible (to a maximum of 4 m) to minimize heat loss through the steam line.

Mounting

- The selected location for the humidifier and blower pack should meet the requirements described in ["Location and Clearances" on page 19](#).
- The blower pack is designed for wall-mounting in protected interiors. The surface (wall, pillar, etc.) to which the blower pack and humidifier are to be mounted must offer a sufficiently high load-bearing capacity, and be suitable for the installation. Refer to ["Size and Weight" on page 51](#).
- The blower pack has an ingress protection rating of IP21. As a safeguard, the unit should be installed and operated in a drip-proof location within buildings where the permissible ambient temperature and humidity conditions are maintained. Refer to ["Operating Data" on page 51](#) for details.
- The blower pack should not be mounted on hot or very cold surfaces, or near vibrating components, or on the floor.
- The blower pack should not be used as a ducted blower. The air volume from the blower pack is not sufficient for proper operation in a ducted system.

Power Supply

- The available voltage and phase of the power supply should match the requirements for the blower pack, as indicated on the specification label. Refer to [Figure 2 on page 11](#).

5.3.1 Location and Clearances

The installation of the blower pack depends largely on the location of the humidifier as well as clearances required to ensure steam does not come in contact with any surfaces before it is absorbed into the air. Refer to [Figure 6](#) and [Table 1](#) for blower pack minimum clearance requirements.

The clearance dimensions shown are for reference only, and are the minimums required for the proper functioning of the equipment. Consult local and national installation codes. Condaair does not accept responsibility for violations of installation codes.

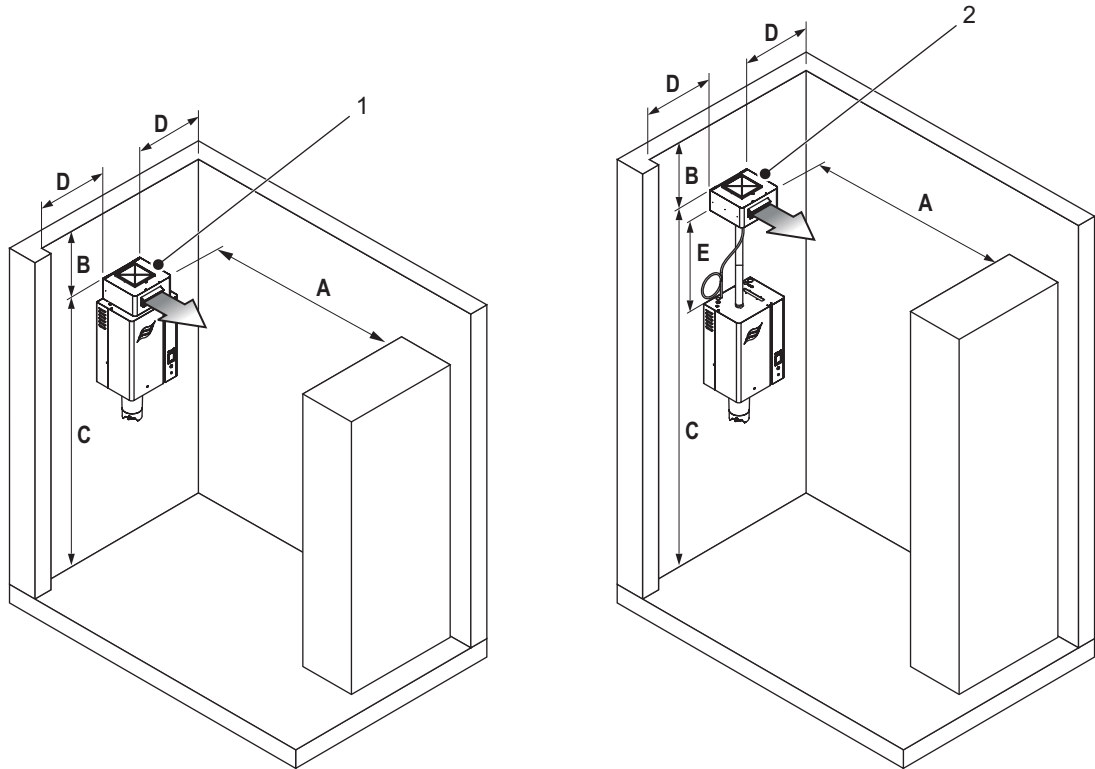


Figure 6: Blower Pack Clearance Requirements

- 1 Direct-mounted blower pack
- 2 Remote-mounted blower pack

Table 1: Minimum Clearances

Humidifier steam capacity	kg/h	Fan speed: Low				Fan speed: High			
		5...10	>10...20	>20...30	>30...45	5...10	>10...20	>20...30	>30...45
A (minimum)	m	2.5	5.5	8.0	9.5	2.0	3.0	4.5	6.5
B (minimum)	m	0.5	0.5	0.5	1.5	0.5	0.5	0.5	1.0
C (minimum)	m	2.2							
D (minimum)	m	0.5							
E (minimum)	m	1.0							
E (maximum)	m	4.0 (recommended: 2.0)							

Note:

The values shown are based on nominal conditions: 15 °C, 60% RH

Blower pack should not be installed near cold surfaces or where dew point may be reached.

Higher humidity or lower room temperature may require increased clearances.

5.4 Best Practices for Steam and Condensate Lines Installation

Before proceeding with installation, Condair recommends that you familiarize yourself with the best practices for installing atmospheric steam lines and condensate lines described below. Refer to [Figure 7 on page 23](#).

Steam Lines

- Use rigid steam pipes made of copper or stainless steel (minimum DIN 1.4301) exclusively, and use steam hoses for short distances only. Use original steam and condensate hoses from your Condair representative. Steam and condensate lines made of any other materials may adversely affect the operation of the unit.



WARNING!

Excessive backpressure can result in serious injury or damage to equipment!

Excessive backpressure in the steam line may affect the proper functioning of the humidifier, and may also cause unexpected release of hot steam vapours. Bare skin exposed to the hot steam vapours can result in severe burns.

Prevention: Minimize the length of the steam line and the number of bends, as the backpressure can rise approximately 100 Pa for every meter of steam line, and every 90° elbow.

- The length of the steam line should be kept as short as possible – maximum 4 m. Exceeding the maximum length can affect performance of the unit.

IMPORTANT! When determining the length and routing of steam lines, allowances must be made for thermal expansion. If a steam hose is used, allowances must be made for shrinkage in the length of the hose due to aging.

- The inside diameter of the steam line must match the diameter of the steam adapter on the humidifier.
- Use long radius elbows for steam lines – the minimum bend is 5× the internal diameter. Steam hoses should have a minimum bend radius of radius of 300 mm.
- Do not decrease the diameter of the steam line, as it increases the backpressure in the line and condensation of the steam. If necessary, increase the diameter of the steam line on the downslope, and install a condensate line at the lowest point. Once expanded, a reduction in diameter is not permitted except at the blower pack. Install a Condair steam line reducer at the connection to the blower pack, and install a condensate line just before the restriction. Contact your Condair representative for details of the reducer.
- If using blower packs with large humidifiers (with dual steam cylinders), do not connect the output from both steam cylinder to a single blower pack. Each blower pack has a maximum capacity of 45 kg/h.
- For Condair GS humidifiers use an adapter to distribute the steam to more than one blower pack – refer to [Figure 5 on page 17](#). For details of steam lines for Condair GS humidifiers contact your Condair representative.
- The steam line from the humidifier must lead straight upwards for a minimum of 300 mm before continuing to the blower pack. The steam line must have a constant slope – minimum upslope/downslope of 15% (8.5°), and have no restrictions in the line.

- Rigid steam pipes can be connected to the blower pack and the humidifier by means of short lengths of steam hoses and secured with hose clamps. If using a steam hose, it must be secured to the blower pack and the humidifier steam outlet with hose clamps.



CAUTION!

Do not over-tighten the hose clamp. The maximum torque for 45 mm gear clamps is 180 N·cm.

- To minimize formation of condensation and maximize efficiency, steam lines made of rigid pipes (copper or stainless steel) must be insulated with a minimum of 25 mm of pipe insulation over its entire length.
- The weight of the steam line must be supported so there is no load on the humidifier.



WARNING!

Risk of severe burns from contact with hot steam vapours!

Restrictions in the cross-section of the steam line will cause excessive backpressure in the steam cylinder when the unit is operating, which may cause unexpected release of hot steam vapours. Bare skin exposed to the hot steam vapours can result in severe burns.

Prevention: Observe the following:

- Upon completion of the installation, purge the steam line to remove any contaminants and installation materials.
- If using a steam hose make sure there are no kinks in the hose. A heated hose is more likely to kink.
- To prevent condensate pockets the steam line must not sag. If necessary, support the steam line with pipe clamps, trough, or wall brackets, and install a condensate drain at the lowest point in the steam line.
- Do not install a shutoff valve (e.g. a manually operated shutoff valve, solenoid valve, etc.) in the steam line.

Condensate Lines

- Use Condair condensate hose, or 10 mm stainless steel pipe or 7 mm copper pipe for condensate lines and traps.



WARNING!

Risk of severe burns from contact with hot fluids or steam!

The condensate lines may be filled with hot fluids or steam. Bare skin in contact with hot fluids or steam can result in severe burns.

Prevention: Never plumb the condensate lines to empty into a sink used by personnel. Always connect the lines to a drain according to applicable national and local plumbing codes.

- The condensate drain line from the blower pack must have a constant minimum downslope of 15% (8.5°), with a condensate trap (diameter of 150 mm). It may be connected to the fill cup port on the top of the humidifier or to the building floor drain with condensate cooler, as required. The condensate trap must be at least 300 mm below the condensate port on the blower pack.
- Condensate lines must also be installed at all low points, and at horizontal-to-vertical transitions in the steam line. The condensate drain lines should always connect to full-size "Tee" connectors in the steam line and have a minimum downslope of 15% (8.5°). Install full-size "Tee" connectors for condensate drain lines at all horizontal-to-vertical transitions. The condensate trap must be at least 300 mm below the "Tee" connectors.
- Make sure that the condensate lines allow proper flow.

IMPORTANT! Before starting up the humidifier, prime the condensate traps with water.

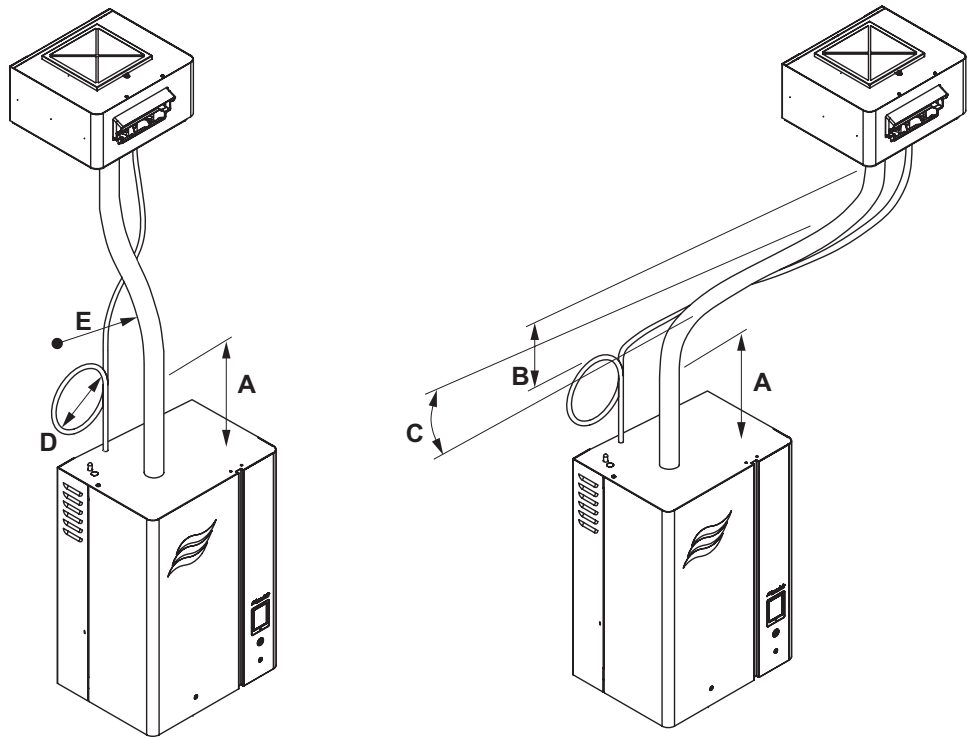


Figure 7: Permissible Minimums for Steam and Condensate Lines

- A Steam line must run minimum 300 mm vertically before continuing to the blower pack.
- B The condensate trap must be minimum 300 mm below the condensate port on the blower pack. The condensate line must have a constant minimum downslope of 15% (8.5°).
- C The steam line must have a constant slope – minimum upslope/downslope of 15% (8.5°).
- D All condensate traps must have a diameter of 150 mm.
- E If using a steam hose, the minimum bend radius is 300 mm. For rigid steam pipes use long radius elbows – minimum bend radius is 5× the internal diameter. The steam line/hose must not exceed the maximum length of 4 m.

5.5 Common Steam and Condensate Line Installation Mistakes

Some common steam and condensate line installation mistakes are shown in [Figure 8](#).

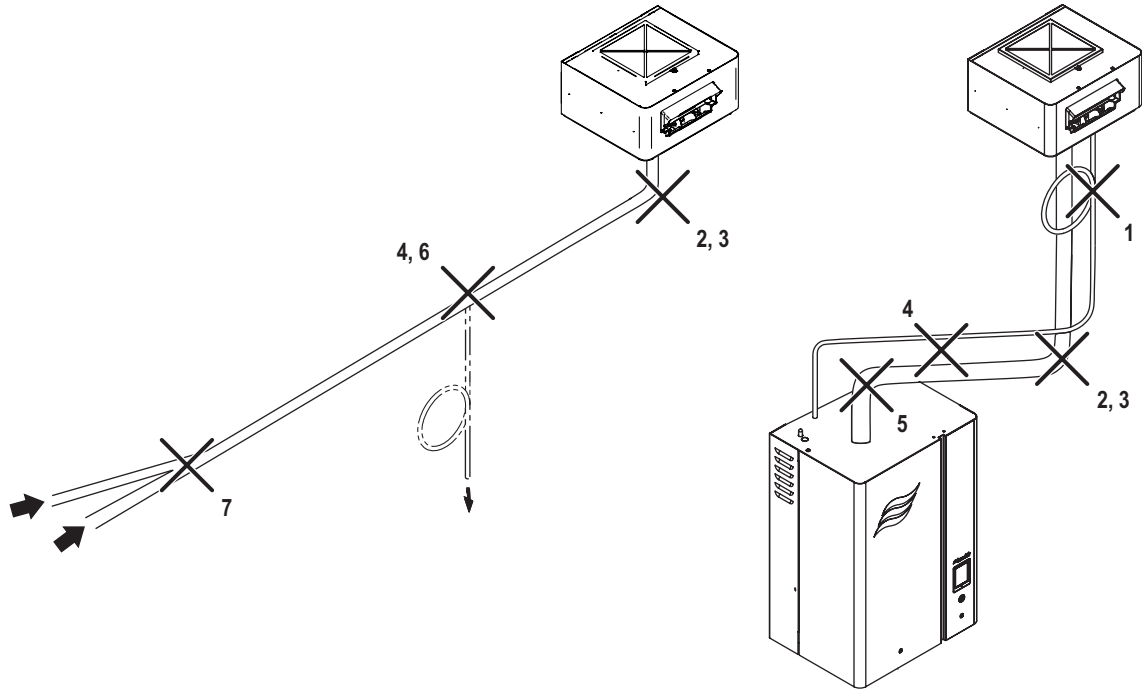


Figure 8: Common Steam and Condensate Line Installation Mistakes

- 1 The condensate trap is located less than the required minimum 300 mm below the blower pack condensate outlet.
- 2 The minimum bend radius of 300 mm for the steam hose (or 5× the internal diameter for rigid pipes) is not maintained.
- 3 No condensate trap is installed at the horizontal-to-vertical transition.
- 4 The required slope – constant minimum upslope/downslope of 15% (8.5°) for steam line, and constant minimum downslope of 15% (8.5°) for condensate line is not maintained.
- 5 The steam line does not run straight up for the required minimum 300 mm before continuing to the blower pack.
- 6 Condensate lines must connect into full-size "Tee" connectors in the steam line. The condensate trap must be installed a minimum of 300 mm below the steam line.
- 7 Steam lines are not permitted to merge except at the blower pack (and only through a Condair adapter), and must have a condensate line just before the restriction.

5.6 Installation Kit

The Condair Blower Pack is shipped with an installation kit. The contents of the installation kit are shown in [Table 2](#) below.

Note: The contents of the installation kit is site-specific, and may vary for your site.

Table 2: Installation Kit

Item	Description	Quantity	
1	Steam adapter, 45 mm	1	EA
2	Screw, M4x16 mm, machine, Philips	3	EA
3	End cap, Φ 10 mm for steam adapter pressure port	1	EA
4	Condensate hose, Φ 8/12 mm	1650	mm
6	Spring clamp, for Φ 8/12 mm condensate hose	3	EA
8	Hose clamp, Φ 45 mm steam hose	2	EA
9	Screw, M4x6 mm, machine, Philips	2	EA
10	Tie wrap	3	EA
11	Security loop cable	1	EA
12	Power cable	1	EA
13	Grommet, electrical wiring	2	EA
14	Mounting hardware (screws and plugs)	4	EA

5.7 Remote-Mounted Blower Pack Installation

Before proceeding with installation, familiarize yourself with the best practices for installing atmospheric steam lines and condensate drain hoses – refer to ["Best Practices for Steam and Condensate Lines Installation" on page 20](#).

1. **Installing the Steam Adapter.** Install the steam adapter in the blower pack as follows:
 - a. Install and secure the end cap (supplied) to the steam adapter pressure port with a spring clamp (supplied). Refer to [Figure 9](#).

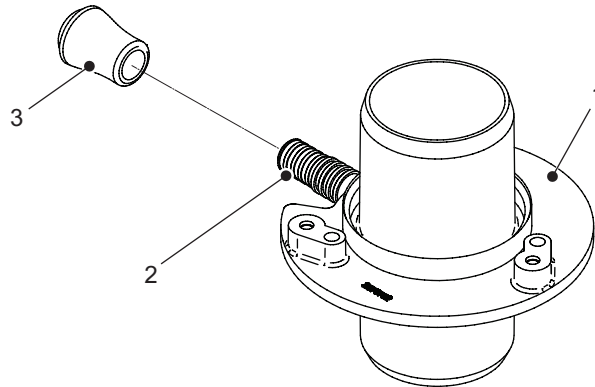


Figure 9: Steam Adapter

- 1 Steam adapter, inlet at the bottom
- 2 Pressure port (10 mm Φ)
- 3 End cap

- b. Orient the steam adapter with the blower pack steam inlet, as shown in [Figure 10](#), and push in. The adapter should fit snugly, and form a seal with the O-ring in the blower pack steam inlet.

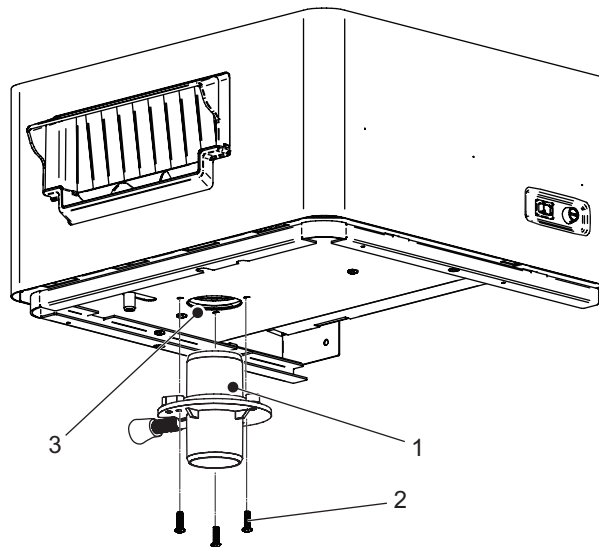


Figure 10: Steam Adapter Installation on Blower Pack

- 1 Steam adapter
- 2 Machine screw, M4×16 mm (×3)
- 3 Steam inlet

- c. Secure the steam adapter to the blower pack housing with three M4×16 mm machine screws (supplied).

2. **Mounting the Blower Pack.** Locate the blower pack according to *"Location and Clearances"* on [page 19](#) and install it on the mounting surface as follows:
- Locate suitable supports in the wall or mounting surface that are capable of supporting the full weight of the blower pack, and mark the attachment points "A" and "B" at the desired position with the help of a level – refer to *Figure 11*.
 - Drill 10 mm diameter holes to a depth of 50 mm at points "A" and "B".
 - Insert the plastic plugs (supplied) in the drilled holes, and install two mounting screws (supplied) into the plugs at attachment points "A" until the distance between the wall and the screw head is 5 mm.
 - Remove the two machine screws and the cover from the blower pack.
 - Install the unit onto the two installed mounting screws.
 - Align the unit with the help of a level, then tighten the two mounting screws.
 - Reinstall the cover and secure it with the two machine screws.
 - Install two more mounting screws (supplied) into the plugs at attachment points "B".

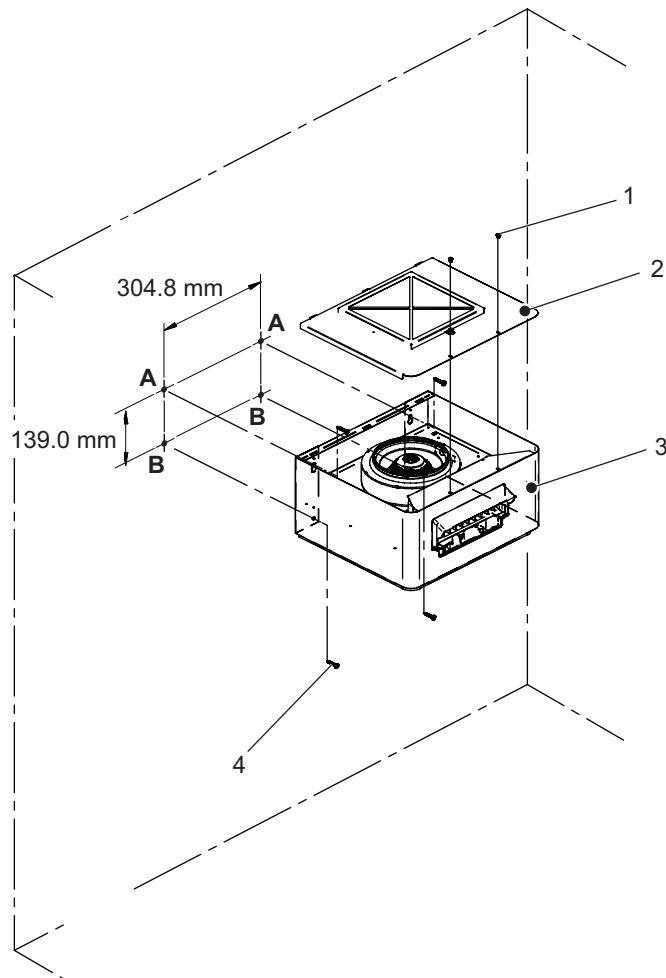


Figure 11: Wall-Mounted Blower Pack

- Machine screw (×2)
- Cover
- Blower pack
- Mounting screw (×4)

3. **Connecting Hoses to the Blower Pack.** Connect the steam hose and the condensate hose to the blower pack as follows:
- Secure the steam hose (supplied by others) to the steam adapter with a hose clamp (supplied). Do not over-tighten the hose clamp – maximum torque is 180 N·cm. Refer to [Figure 12](#).
 - Secure the 8/12 mm diameter condensate hose (supplied) to the blower pack condensate port with a spring clamp (supplied).

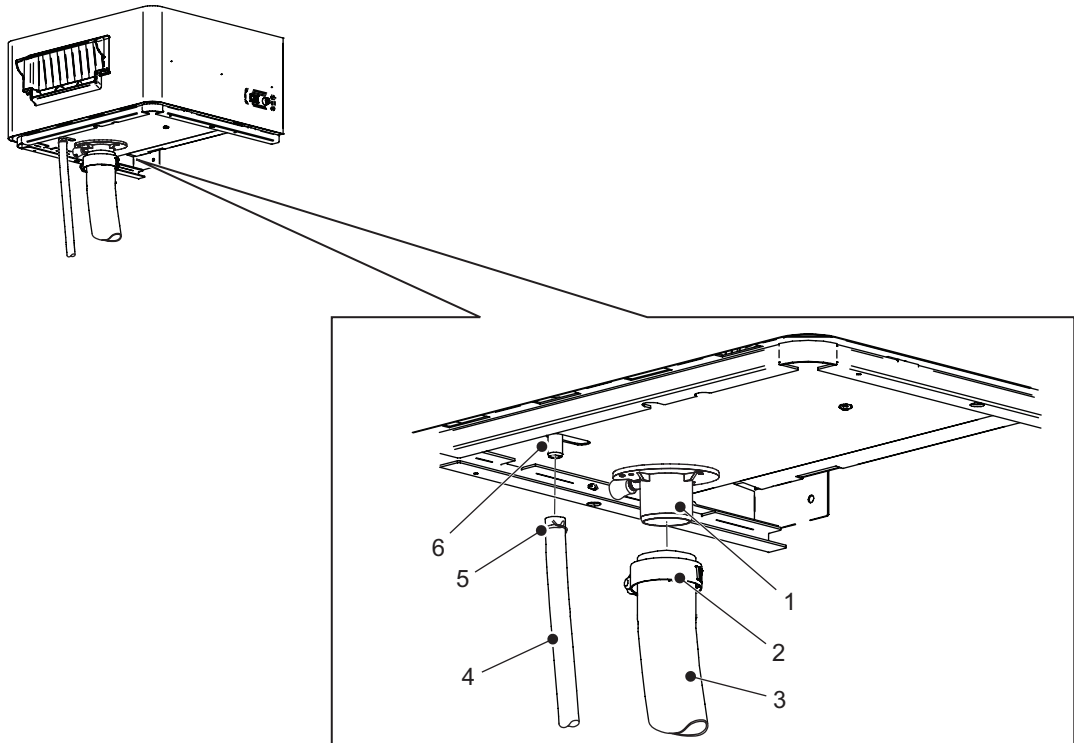


Figure 12: Hose Connections on Blower Pack

- 1 Steam adapter, 45 mm O.D.
- 2 Steam hose clamp
- 3 Steam hose (to match adapter O.D.)
- 4 Condensate hose, Φ 8/12 mm
- 5 Spring clamp
- 6 Blower pack condensate port

4. **Connecting Hoses to the Humidifier.** Connect the steam hose and the condensate hose to the humidifier as follows:

Condensate Drain Hose Connection

- a. Connect the condensate hose from the blower pack to any of the following drain connections. Refer to [Figure 13](#).
 - i. Humidifier cylinder port (if available)
 - ii. Humidifier drain port (if available)
 - iii. Building floor drain line (refer to [Figure 4 on page 15](#))
- b. Form a trap with a diameter of 150 mm in the condensate line, and locate the trap minimum 300 mm below the condensate outlet on the blower pack. Secure the hose with a spring clamp (supplied).
- c. Prime the condensate trap with water.

Steam Hose Connection

- a. Connect the steam hose to the steam adapter on the humidifier, and secure it with a hose clamp (supplied). Do not over-tighten the hose clamp – maximum torque is 180 N·cm. Refer to [Figure 13](#).

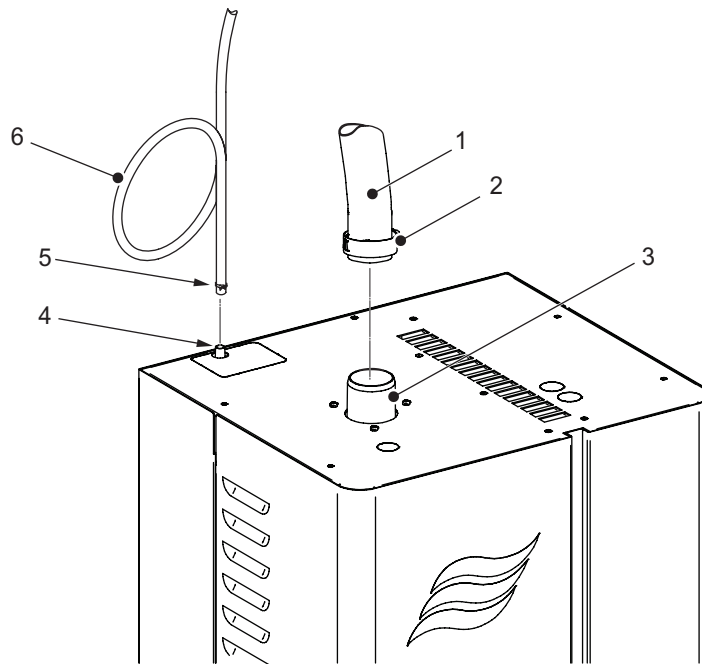


Figure 13: Hose Connections on Humidifier

- 1 Steam hose (see Note 1 below)
- 2 Steam hose clamp
- 3 Humidifier steam adapter
- 4 Humidifier drain port
- 5 Spring clamp
- 6 Condensate hose with trap (see Note 2 below)

Note 1: Steam hose maximum 4 m long, and must run minimum 300 mm vertically before continuing on to the blower pack. Steam hose must have constant slope – minimum upslope/ downslope of 15% (8.5°), and have no restrictions in the line.

Note 2: Condensate hose must have constant minimum downslope of 15% (8.5°), without restrictions. Trap must have a diameter of 150 mm, and must be located minimum 300 mm below the condensate port on the blower pack.

5. **Electrical Connections.** Connect the power supply and security loop cables as follows:

Safety

The electrical installation work requires removal of the covers on the blower pack and door panels in the humidifier. Please note the following:



DANGER!
Risk of electric shock!

The Condair humidifier and blower pack are mains powered. Live parts may be exposed when the door panels/covers are removed. Touching live parts may cause severe injury or even death.

Prevention: The Condair humidifier and blower pack must be connected to the mains only after all installation work has been completed, checked for correct workmanship, and the door panels/covers are installed and fastened securely.



CAUTION!
Electrostatic discharge (ESD)!

The electronic components inside the humidifier are sensitive to electrostatic discharge (ESD).

Prevention: Take appropriate measures to protect the electronic components inside the units against damage caused by electrostatic discharge (ESD). Refer to IEC 61340.

Please also observe the following:

- All electrical installation work must be performed only by skilled and qualified technical personnel (e.g. electrician with appropriate training) authorized by the customer. It is the customer's responsibility to verify qualification of the personnel.
- The electrical installation must be performed according to the wiring diagrams in the humidifier manual and this manual, the instructions in this section, as well as applicable local and national regulations.
- Make sure that the available voltage and phase of the power supply match the requirements for the blower pack, as indicated on the specification label. Refer to [Figure 2 on page 11](#).
- All cables must lead into the unit through appropriate cable feed-throughs and must be secured with clamp straps.
- Cables must be secured with tie wraps (supplied) to prevent rubbing on any components, or become a tripping hazard.
- Observe local and national codes for maximum cable length and required wire sizes for cables.

- a. Plug the power and security loop cables (supplied) into the back of the blower pack. Refer to [Figure 14](#).

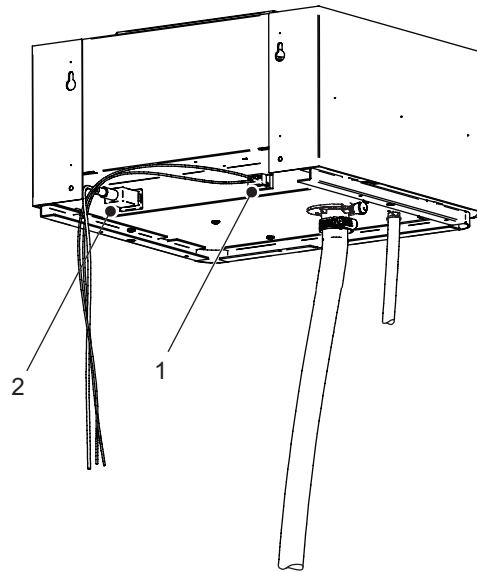


Figure 14: Blower Pack Electrical Connections

- 1 Security loop cable
2 Power cable

- b. Install the grommet (supplied) in the knockout hole that is located directly below the blower pack power connector, and route the cables through the grommet, as shown in [Figure 15](#).

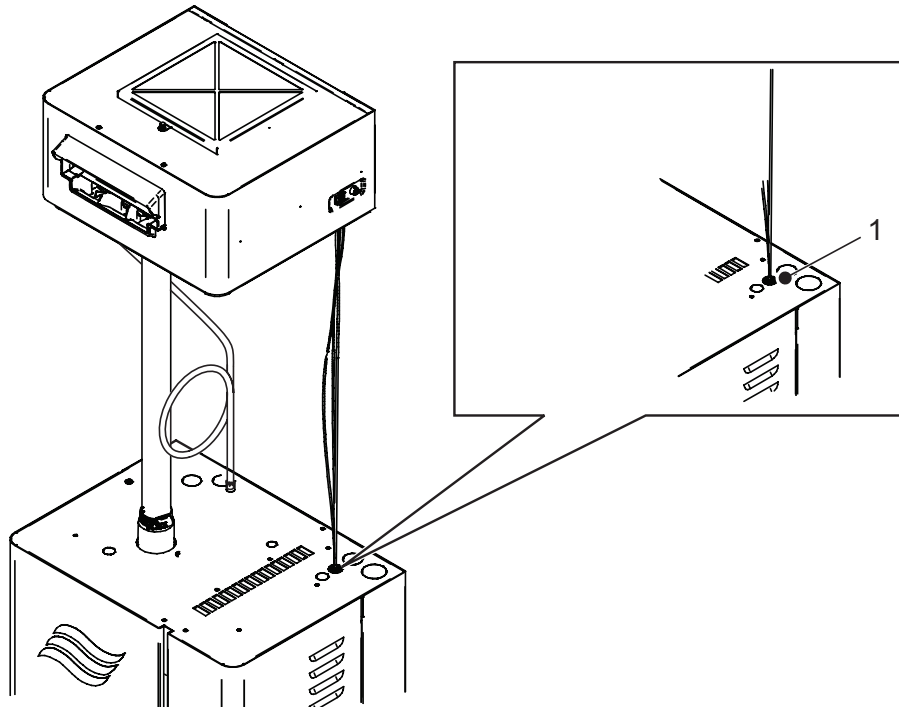


Figure 15: Cable Routing

- 1 Grommet

- c. Remove the door panel on the humidifier control cabinet.
- d. Wire and connect the leads to the driver board inside the humidifier, as shown in [Figure 16](#).
Note: The location of the termination point on the driver board depends on the humidifier type (refer to the humidifier manual for details).

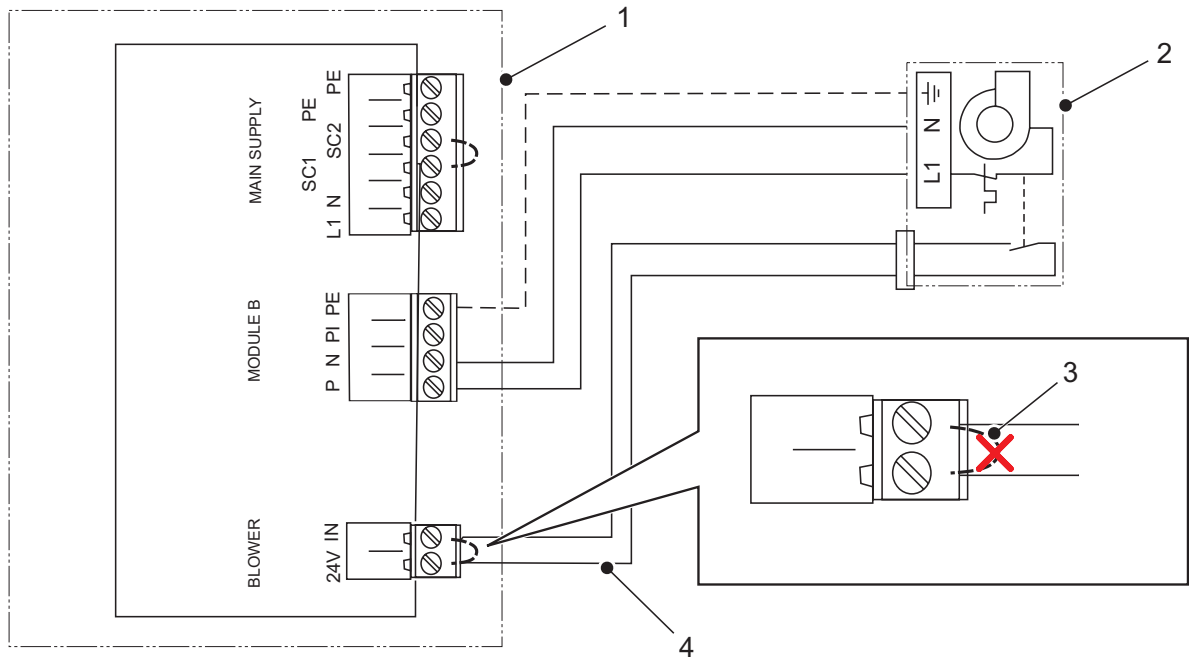


Figure 16: Driver Board Connections

- 1 Humidifier driver board
 - 2 Blower pack
 - 3 Jumper wire (to be removed)
 - 4 Security loop cable
- e. Make sure the security loop jumper wire is removed from the plug on the driver board.
 - f. Install the door panel on the humidifier control cabinet.
6. Perform the checks described in ["Post-Installation Checklist" on page 40](#).

5.8 Direct-Mounted Blower Pack Installation

Before proceeding with installation, familiarize yourself with the best practices for installing atmospheric pressure steam lines and condensate drain hoses – refer to ["Best Practices for Steam and Condensate Lines Installation"](#) on page 20.

1. **Punch Knockouts.** Punch the following knockouts in the top of the humidifier. Refer to [Figure 17](#). Locations vary depending on the humidifier type.

- ×2 for blower pack mounting
- ×1 for the condensate hose
- ×1 for electrical wiring

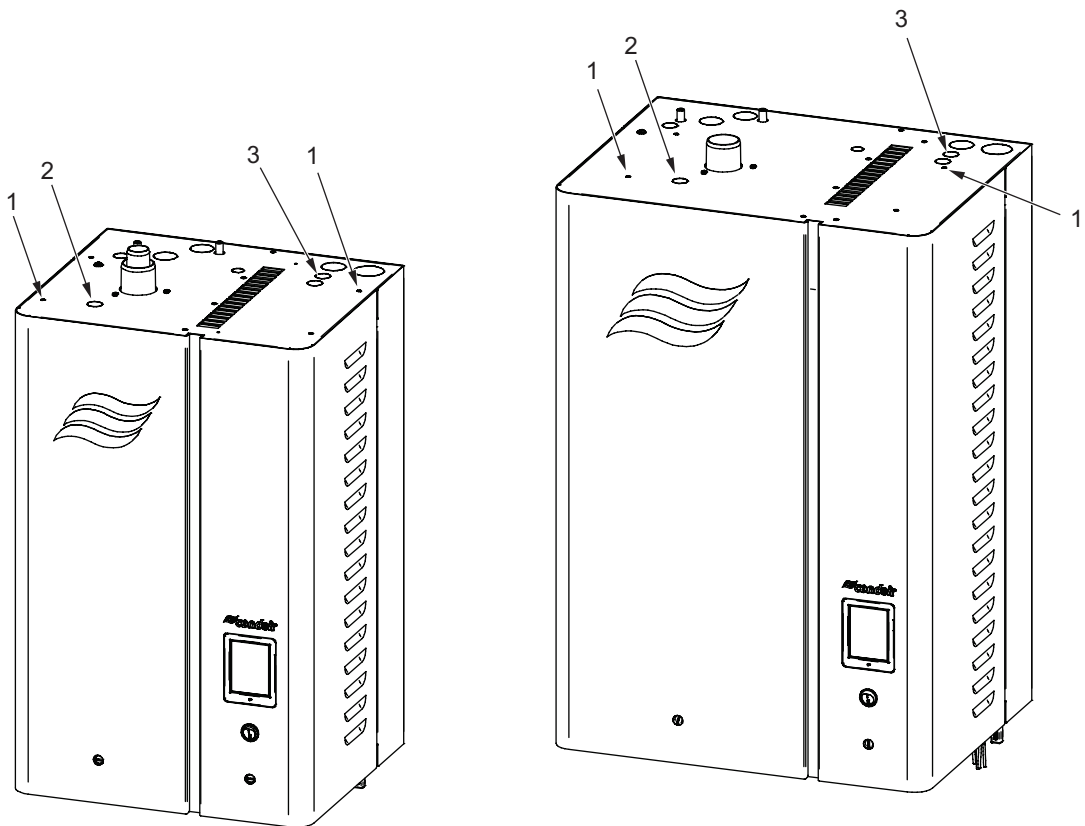


Figure 17: Knockout Holes in Top of Humidifier

- 1 Knockout for blower pack mounting (×2)
- 2 Knockout for condensate hose
- 3 Knockout for electrical wiring

2. **Electrical Connections.** Connect the power supply and security loop cables as follows:

Safety

The electrical installation work requires removal of the covers on the blower pack and door panels in the humidifier. Please note the following:



DANGER!
Risk of electric shock!

The Condair humidifier and blower pack are mains powered. Live parts may be exposed when the door panels/covers are removed. Touching live parts may cause severe injury or even death.

Prevention: The Condair humidifier and blower pack must be connected to the mains only after all installation work has been completed, checked for correct workmanship, and the door panels/covers are installed and fastened securely.



CAUTION!
Electrostatic discharge (ESD)!

The electronic components inside the humidifier are sensitive to electrostatic discharge (ESD).

Prevention: Take appropriate measures to protect the electronic components inside the units against damage caused by electrostatic discharge (ESD). Refer to IEC 61340.

Please also observe the following:

- All electrical installation work must be performed only by skilled and qualified technical personnel (e.g. electrician with appropriate training) authorized by the customer. It is the customer's responsibility to verify qualification of the personnel.
- The electrical installation must be performed according to the wiring diagrams in the humidifier manual and this manual, the instructions in this section, as well as applicable local and national regulations.
- Make sure that the available voltage and phase of the power supply match the requirements for the blower pack, as indicated on the specification label. Refer to [Figure 2 on page 11](#).
- All cables must lead into the unit through appropriate cable feed-throughs and must be secured with clamp straps.
- Cables must be secured with tie wraps (supplied) to prevent rubbing on any components, or become a tripping hazard.
- Observe local and national codes for maximum cable length and required wire sizes for cables.

- a. Plug the power and security loop cables (supplied) into the back of the blower pack. Refer to [Figure 18](#).
- b. Install the grommet (supplied) in the knockout hole that is located directly below the blower pack power connector, and route the cables through the grommet. Refer to [Figure 19](#).

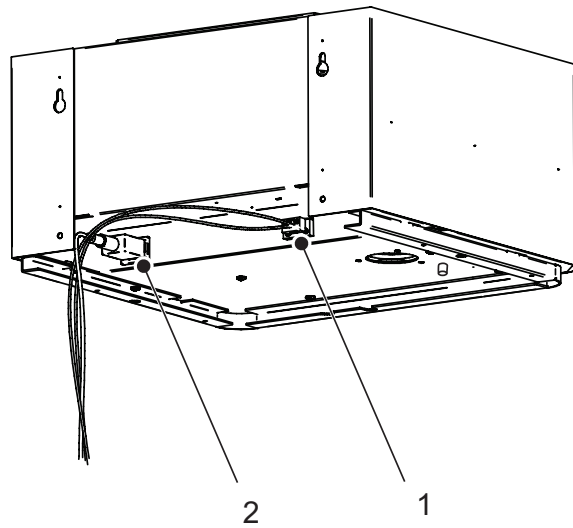


Figure 18: Blower Pack Electrical Connections

- 1 Security loop cable
- 2 Power cable

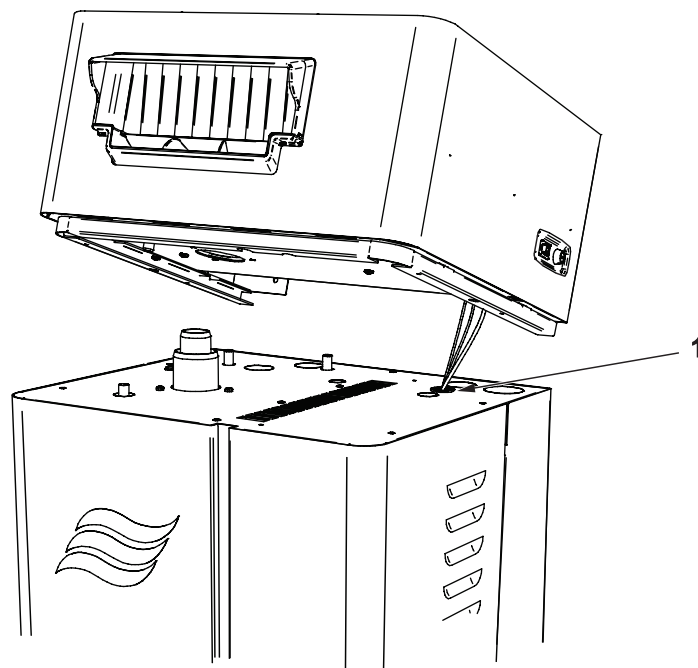


Figure 19: Routing Cables

- 1 Grommet

- c. Remove the door panels on the humidifier control cabinet and plumbing cabinet.
- d. Wire and connect the power supply and security loop cables to the driver board inside the humidifier, as shown in [Figure 20](#).
Note: The location of the termination point on the driver board depends on the humidifier type (refer to the humidifier manual for details).
- e. Make sure the security loop jumper wire is removed from the plug on the driver board.

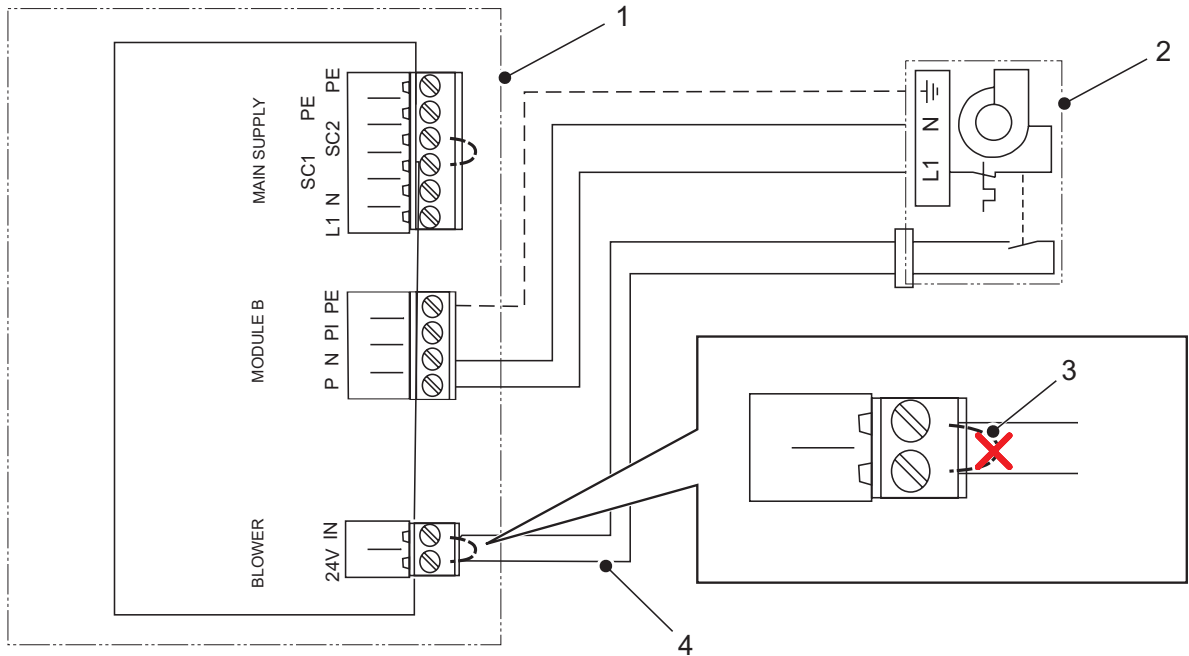


Figure 20: Driver Board Connections

- 1 Humidifier driver board
- 2 Blower pack
- 3 Jumper wire (must be removed)
- 4 Blower pack security loop cable

3. **Connect Condensate Hoses.** Install the condensate hoses as follows:
 - a. Connect the 8/12 mm diameter condensate hose (supplied) to the connection point provided in the humidifier drain cup. Secure the hose with a spring clamp (supplied). Refer to [Figure 21](#).
Note: If necessary, remove the steam cylinder to install the condensate hoses – refer to the humidifier manual.
 - b. Install a grommet (supplied) in the knockout hole for the condensate hose in the top of the humidifier.
 - c. Form a trap with a diameter of 150 mm in the 8/12 mm diameter condensate line, and prime it with water. Then route the other end of the condensate hose through the knockout hole in the top of the humidifier – refer to [Figure 22 on page 38](#). Connect the hose to the blower pack condensate port and secure it with a spring clamp (supplied). Make sure that the hose is not kinked.
 - d. Secure the condensate hose with tie wraps to the tie-downs in the humidifier (if available).
 - e. Make sure that the condensate hose has constant minimum downslope of 15% (8.5°), and empties into the drain cup.

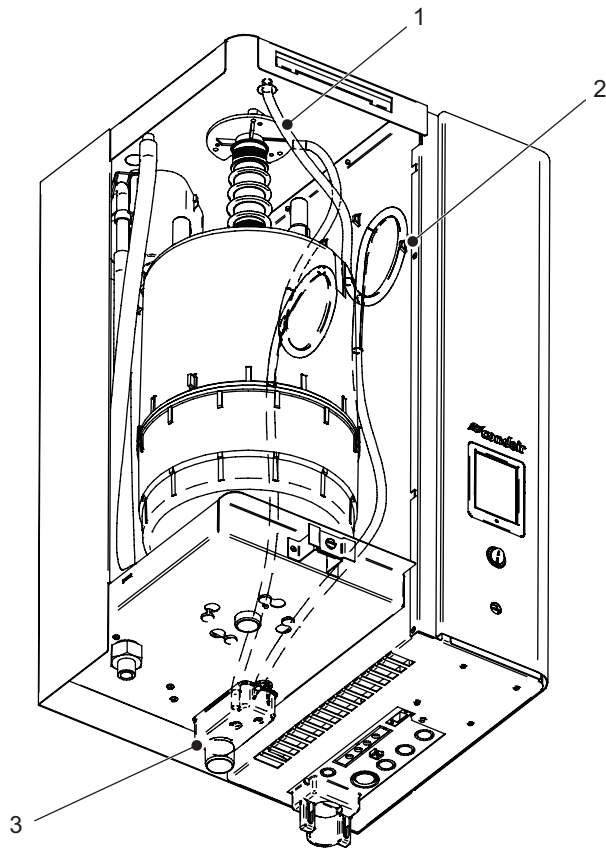


Figure 21: Condensate Hose Connections on Humidifier

- 1 Condensate hose, Φ 8/12 mm
- 2 Tie-down
- 3 Drain cup

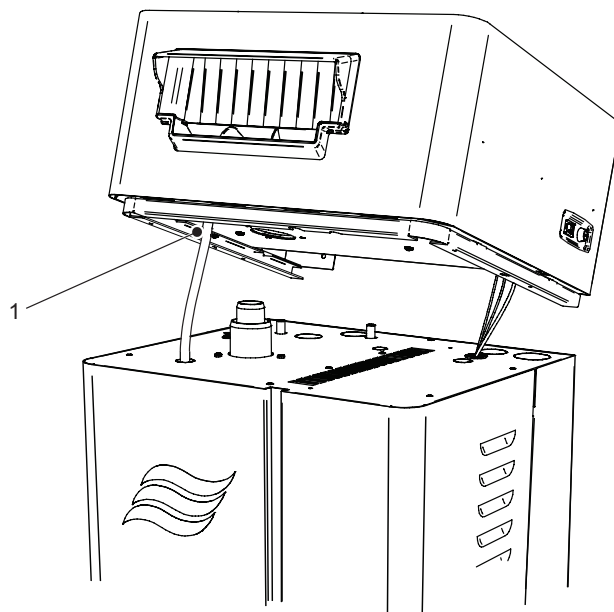


Figure 22: Condensate Hose Connection on Blower Pack

- 1 Blower pack condensate port

4. **Fasten Down Blower Pack.** Fasten the blower pack to the humidifier as follows:

- a. Align the blower pack steam inlet with the humidifier steam outlet and place the blower pack on the humidifier. Make sure that the condensate hose and wires are not pinched.
- b. Fasten the blower pack to the humidifier from the bottom with two M4×6 mm screws (supplied). Refer to [Figure 23 on page 39](#).
- c. Install the door panels on the humidifier plumbing cabinet and control cabinet.

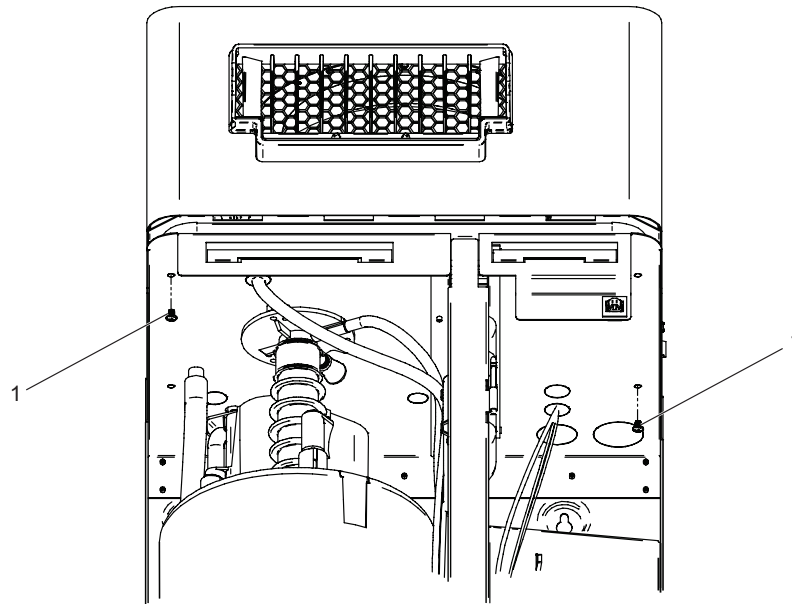


Figure 23: Blower Pack Fastened to Humidifier

1 Screw, M4×6 mm (×2)

5. Perform the checks described in ["Post-Installation Checklist" on page 40](#).

5.9 Post-Installation Checklist

Check the following to ensure that the blower pack has been installed correctly:

Mounting

- Unit installed according to *"Location and Clearances" on page 19?*
- Mounting surface stable?
- Unit aligned properly – vertically and horizontally?
- Unit fastened securely?

Steam Line

- Line does not exceed maximum length of 4 m?
- Use long radius elbows (minimum bend radius of 5× internal diameter)? Steam hose (if used) has minimum bend radius of 300 mm?
- On remote-mounted unit, does the steam line run minimum 300 mm vertically before continuing to the blower pack?
- Line have constant slope – minimum upslope/downslope of 15% (8.5°)?
- Observed best practices for steam and condensate lines?
- Steam line supported so it does not sag? Steam hose (if used) is not kinked?
- Hose attached securely with clamps? Clamps torqued to a maximum of 180 N·m?
- Allowances for thermal expansion of rigid steam pipe, and shortening of the steam hose (if used) taken into consideration?

Condensate Hoses

- Constant minimum downslope of at least 15%?
- Condensate trap have a loop diameter of 150 mm and installed at least 300 mm below the condensate port on the blower pack?
- Condensate lines installed at all low points and at horizontal-to-vertical transitions in the steam line?
- Condensate lines connect to full-size "Tee" connectors in steam line? Condensate traps at least 300 mm below the "Tee" connectors?
- Condensate hoses not kinked, and secured properly?
- Condensate traps primed with water?

Electrical

- Supply voltage meet the voltage requirements on the specification label?
- All wiring done according to the wiring diagram?
- Security loop jumper wire removed from the plug on the driver board?
- All cables fastened securely?
- All cables free of tension (pass through cable feed-throughs)?
- Electrical installation meet the applicable local regulations?
- All covers and door panels installed and fastened securely?

6 Commissioning

6.1 General

The Condair Blower Pack must be commissioned and operated only by personnel who are adequately qualified and familiar with the Condair humidifier and blower pack. It is the customer's responsibility to verify the qualifications of personnel.

6.2 First-time Commissioning

The unit must always be commissioned for the first time by a service technician of your Condair representative, or by personnel who are well trained and authorized by the customer. For this reason, this manual only provides an outline, and not the details of the commissioning protocol.

The steps are in the following order:

1. Inspect the mounting of the unit.
2. Inspect the steam line/hose installation.
3. Inspect the condensate drain line installation.
4. Inspect the electrical installation.
5. Configure the blower pack and humidifier.
6. Conduct performance tests, including controls.
7. Filling out the commissioning protocol documents.

7 Operation

7.1 Controls

There are no separate user controls on the Condair Blower Pack, except for the speed switch. The blower pack is interlocked with the Condair humidifier, which controls its operation. Refer to [Figure 24](#).

Note: The speed switch is set to the specific humidification requirements of the room/facility during installation, and should not be altered.

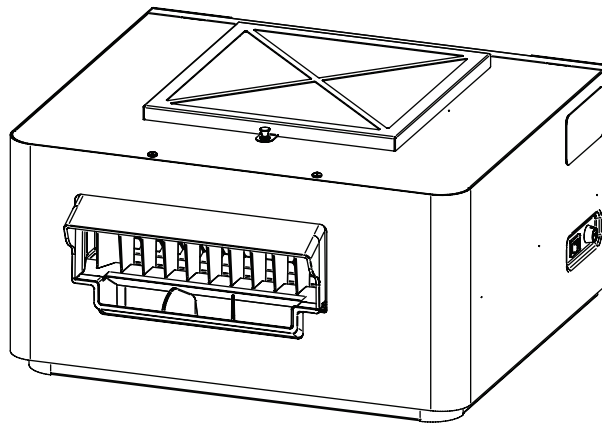


Figure 24: Condair Blower Pack

7.2 Starting and Stopping

When the Condair humidifier and blower pack are powered on, the contact in the blower pack safety relay closes, which allows the humidifier to produce steam when there is a demand for humidity.

Note: If the safety relay is open, or the security loop cable is disconnected the humidifier will not generate steam.

As steam enters the blower pack the contact in the thermostat assembly closes, at which time the fan starts.

When the demand for steam is satisfied, the humidifier stops producing steam. The fan continues to run until the thermostat assembly cools down, at which time the contact in the thermostat assembly opens and the fan stops.

8 Maintenance

8.1 General

Strictly observe all safety precautions, and perform only those maintenance tasks described in this manual. Use only original Condair replacement parts.

Personnel Qualifications

All maintenance work must be performed only by well qualified personnel authorized by the customer. It is the customer's responsibility to verify proper qualifications of the personnel.

Safety

The maintenance work may require removal of the cover on the blower pack. Please note the following:



DANGER!
Risk of electric shock!

The Condair blower pack is mains powered. Live parts may be exposed when the unit is open. Touching live parts may cause severe injury or even death.

Prevention: Disconnect the power supply cable from the back of the blower pack before performing any maintenance work inside the blower pack.



WARNING!
Risk of severe burns from contact with hot surfaces!

The internal parts in the Condair blower pack may be hot to the touch. Bare skin in contact with hot surfaces can result in severe burns.

Prevention: Wait for the unit to cool down before opening up the blower pack.

8.2 Maintenance List

Perform the following maintenance tasks at the intervals specified in [Table 3](#). For the components referenced in the table refer to [Figure 25 on page 46](#).

Table 3: Maintenance List

Task/component	Frequency	Description
Check for water leaks	Regular intervals	Check the humidifier and blower pack for water leaks, stains and calcium deposits. If present, identify the source of the leak and tighten or replace components, as required.
Vacuum dust	Regular intervals	Vacuum the dust from the top of the blower pack including the filter. Dust accumulation can affect performance of the unit.
Replace air filter element	Regular intervals	Replace the element if it is dirty.
Check for loose wiring	Regular intervals	Visually inspect external electrical wiring for loose connections or damage to the wiring. Repair as appropriate.
Clean the distributor assembly.	Regular intervals	Use a wet cloth to remove any scale, dust or debris that may have accumulated at the outlet of the distributor assembly. Remove any dust and debris from the perforated plates and louvers.
Replace steam inlet O-ring	Every two years	Replace the steam inlet O-ring every two years, or whenever the steam adapter is replaced.

9 Fault Isolation

9.1 General Troubleshooting

Symptom	Probable Cause	Corrective Actions
Blower pack fan not operating.	<ol style="list-style-type: none"> 1. Normal operation – the fan turns on only when humidifier is generating steam. 2. No power to blower pack. 	<ol style="list-style-type: none"> 1. Check power connection. 2. Check the fuse in the blower pack. 3. Make sure that the humidifier operates, and there is a demand for humidity.
Blower pack fan not operating, but humidifier is generating steam.	<ol style="list-style-type: none"> 1. Steam line installed improperly leading to insufficient steam to the blower pack. 2. Thermostat stuck in the open position. 3. Jumper on blower pack security loop, and no power to the blower pack. 4. Faulty 2μF capacitor. 	<ol style="list-style-type: none"> 1. Make sure that all installed steam hoses do not sag. 2. Make sure all condensate traps are correctly installed, primed properly and flowing. 3. Remove top panel, locate the thermostat assembly, and measure the continuity between terminals – must indicate a closed circuit. 4. Check that the security loop cable from the blower pack is connected to the humidifier. 5. Make sure that the security loop jumper wire is removed from the plug on the driver board. 6. Check the 2μF capacitor. 7. See also "Blower pack fan not operating".
Blower Pack fan running, but humidifier is not generating steam.	<ol style="list-style-type: none"> 1. Normal operation – it takes time for thermostat to cool down and open. 2. Very high ambient temperature. 3. Thermostat stuck in closed position. 	<ol style="list-style-type: none"> 1. Blower Pack will run until thermostat cools down to 50°C. 2. Reduce ambient temperature to below 50°C. 3. Check that the thermostat opens when the blower pack cools below 50°C.
Humidifier not running, and displaying the warning message: "Security Loop Open".	<ol style="list-style-type: none"> 1. Security loop cable missing between the blower pack and humidifier. 2. No power to the blower pack. 3. Blown internal fuse in the blower pack. 4. Faulty safety relay, or power failure. 	<ol style="list-style-type: none"> 1. Connect the security loop cable to the blower pack. 2. Check power connection to the blower pack. 3. Check the blower pack internal fuse. 4. Check safety relay contacts close. 5. See also "Blower pack fan not operating".
Blower Pack fan does not operate properly in the low speed setting.	<ol style="list-style-type: none"> 1. Faulty high/low speed switch, or the 5μF capacitor. 	<ol style="list-style-type: none"> 1. Check the high/low speed switch and the 5μF capacitor.

10 Replacement Parts

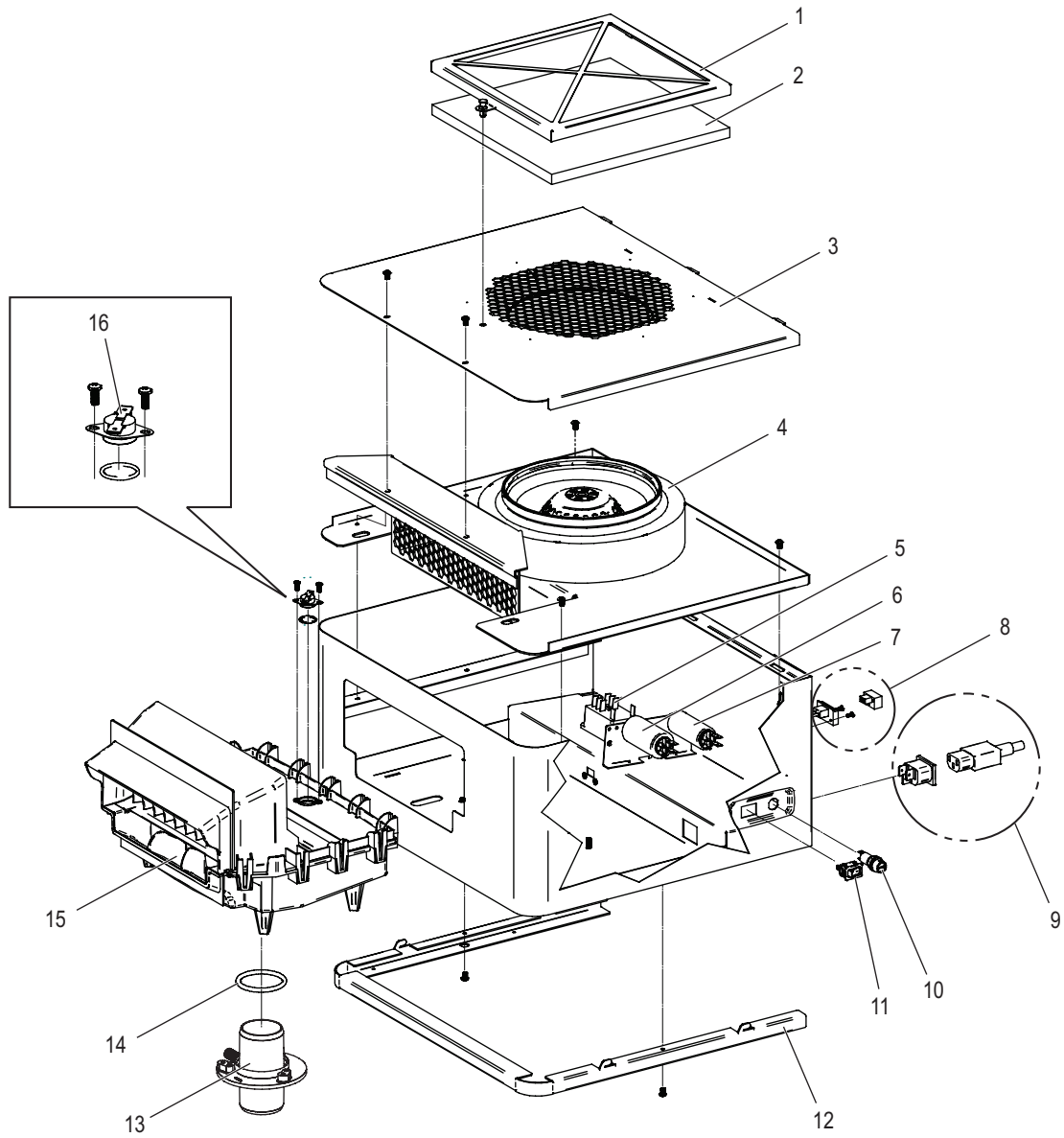


Figure 25: Condair Blower Pack Replacement Parts

Table 4: Condair Blower Pack Replacement Parts List

Item	Part Number	Description	Quantity
1	2579375	Filter kit, BP (includes filter element)	1
2	2579670	Filter Foam Only, Replacement, BP	5
3	2579532	Cover Assembly Spare Kit, BP	1
4	2579389	Fan Assembly 230V Spare Kit, BP	1
5	2579386	Relay 230V Spare Kit, BP	1
6	2579387	Capacitor 2uF Spare Kit, BP	1
7	2579388	Capacitor 5uF Spare Kit, BP	1
8	2579391	Spare Fastener and LV Connector, BP	1
9	2579667	Power Connector Kit, BP Condair	1
10	2579392	Fuse Holder and Fuse Spare Kit, BP	1
11	2579385	Speed Switch Spare Kit, BP	1
12	2579533	Spacer Assembly Spare Kit, BP	1
13	2581246	Steam Outlet Kit, 45mm, BP Condair	1
14	2579681	Steam Inlet O-Ring, Replacement, BP	3
15	2579384	Distributor Assembly Spare Kit, BP	1
16	2581244	Thermostat Spare Kit, BP Condair	1
N/S	2586477	Condensate Hose, 5mm ID, BP (includes hose, spring clamps and tie)	1
N/S	2586478	Condensate Hose, 8mm ID, BP (includes hose, spring clamps and tie)	1

N/S: Not shown

12 Decommissioning

12.1 General

If the Condair Blower Pack needs to be replaced or removed from service for disposal, strictly follow the instructions in this section.

Personnel Qualifications

All decommissioning work must be performed only by a qualified service technician authorized by the customer. It is the customer's responsibility to verify proper qualifications of the personnel.

Safety

The decommissioning work will require removal of the covers/door panels on the blower pack and humidifier. Please note the following:



DANGER!
Risk of electric shock!

The Condair humidifier and blower pack are mains powered. Live parts may be exposed when the door panels/covers are removed. Touching live parts may cause severe injury or even death.

Prevention: The Condair humidifier and blower pack must be disconnected from the mains prior to disconnecting any components.



WARNING!
Risk of severe burns from contact with hot surfaces!

The internal parts in the Condair humidifier and blower pack may be hot to the touch. Bare skin in contact with hot surfaces can result in severe burns.

Prevention: Wait for the units to cool down before opening the covers.



WARNING!
Risk of severe burns from contact with hot fluids!

The steam and condensate lines may be filled with hot fluids. Bare skin in contact with hot fluids can result in severe burns.

Prevention: Wait for the units to cool down, and wear appropriate personal protective equipment if necessary.



CAUTION!
Electrostatic discharge (ESD)!

The electronic components inside the humidifier are sensitive to electrostatic discharge (ESD).

Prevention: Take appropriate measures to protect the electronic components inside the units against damage caused by electrostatic discharge (ESD). Refer to IEC 61340.

12.2 Removing Unit from Service for Disposal

Remove the blower pack from service for disposal as follows:

1. Shut down the humidifier and disconnect the Condair humidifier and blower pack from the mains.
2. If necessary, wait for the units to cool down to room temperature.
3. Disconnect the power and security loop connections from the driver board on the humidifier. Refer to [Figure 20 on page 36](#).
4. Disconnect the steam and condensate lines and empty out all fluids.
5. Remove the blower pack from its mounting surface.

12.3 Disposal/Recycling of the Unit

The blower pack and its components must not be disposed off in domestic waste, and should only be disposed off in accordance with local regulations at authorized collection facilities.

If you have any questions, please contact the appropriate local authorities or your local Condair representative.

13 Product Specifications

13.1 Technical Data

Table 5: Technical Data

Parameter	Value											
Maximum steam output (per blower pack)	45 kg/h											
Power supply	200...240 V / 50...60 Hz											
Power consumption	108 W											
Sound level	Fan High speed, no filter Fan Low speed, no filter Fan High speed, with filter Fan Low speed, with filter	<table border="1"> <thead> <tr> <th>Pressure Level db(A)</th> <th>Power Level dB(A)</th> </tr> </thead> <tbody> <tr> <td>62.7</td> <td>70.6</td> </tr> <tr> <td>53.5</td> <td>61.4</td> </tr> <tr> <td>61.4</td> <td>69.3</td> </tr> <tr> <td>51.7</td> <td>59.6</td> </tr> </tbody> </table>	Pressure Level db(A)	Power Level dB(A)	62.7	70.6	53.5	61.4	61.4	69.3	51.7	59.6
Pressure Level db(A)	Power Level dB(A)											
62.7	70.6											
53.5	61.4											
61.4	69.3											
51.7	59.6											
Air flow rate	Fan High speed, no filter Fan Low speed, no filter Fan High speed, with filter Fan Low speed, with filter	<table border="1"> <tbody> <tr> <td>621 m³/h</td> </tr> <tr> <td>433 m³/h</td> </tr> <tr> <td>562 m³/h</td> </tr> <tr> <td>392 m³/h</td> </tr> </tbody> </table>	621 m ³ /h	433 m ³ /h	562 m ³ /h	392 m ³ /h						
621 m ³ /h												
433 m ³ /h												
562 m ³ /h												
392 m ³ /h												
Ingress protection rating	IP21											

13.2 Operating Data

Table 6: Operating Data

Parameter	Value
Permissible ambient temperature	5...40 °C
Permissible ambient humidity	5...95% RH (non-condensing)
Condensate water temperature	60...100 °C

13.3 Size and Weight

Table 7: Size and Weight

Overall dimensions	400 mm × 421 mm × 258 mm
Weight	12.7 kg

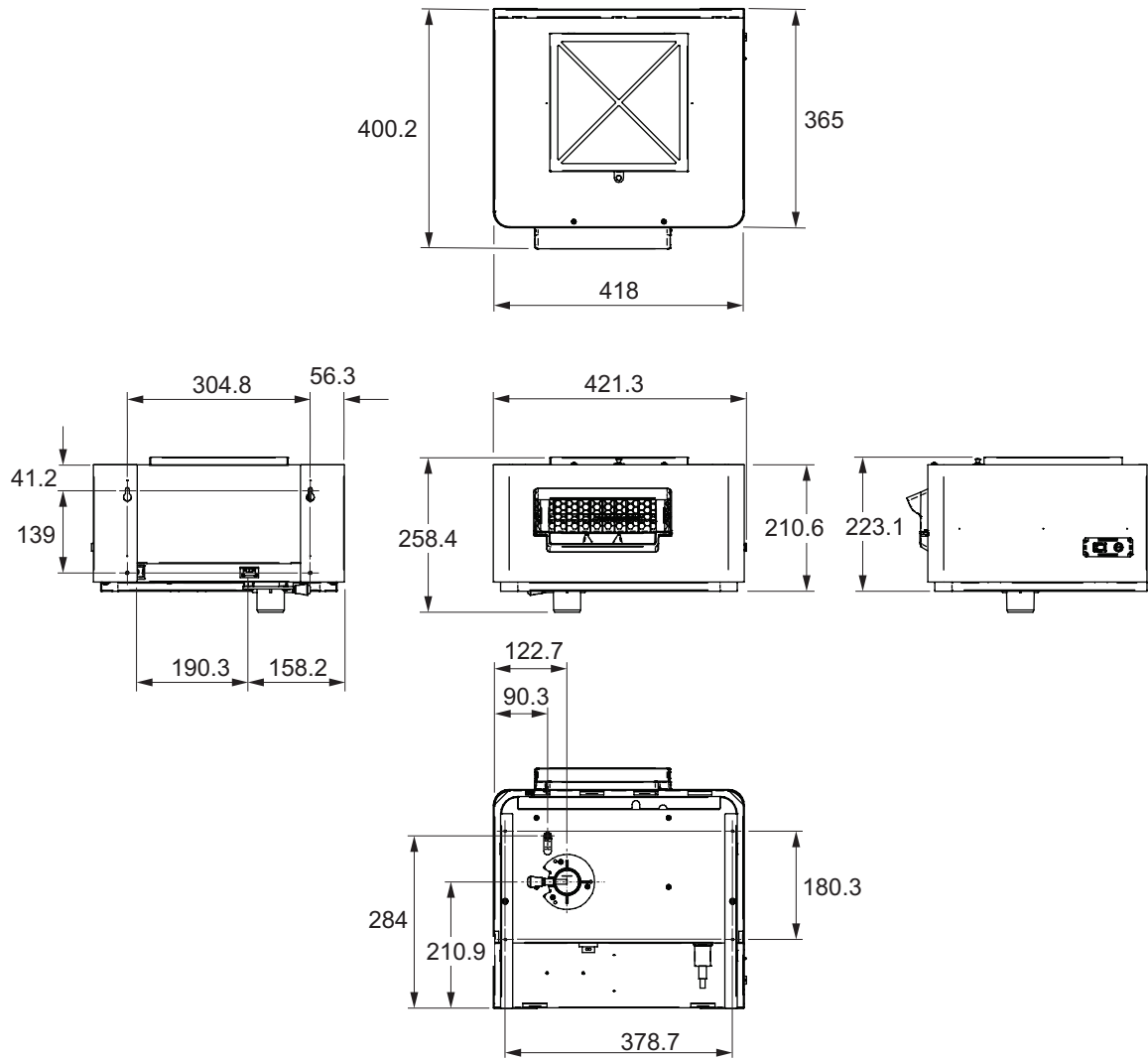


Figure 27: Overall Dimensions

All dimensions in millimeters.

13.4 EC Declaration of Conformity



EC

Konformitätserklärung

Declaration of conformity

Déclaration de conformité

Wir,
Condair AG
CH-8808 Pfäffikon SZ
erklären in alleiniger Verantwortung,
dass das Produkt

We,
Condair Ltd.
CH-8808 Pfäffikon SZ
declare under our sole responsibility, that
the product

Nous,
Condair SA
CH-8808 Pfäffikon SZ
déclarons sous notre seule
responsabilité, que le produit

Condair BP

auf das sich diese Erklärung bezieht,
mit den folgenden Normen oder
normativen Dokumenten
übereinstimmt

to which this declaration relates is in
conformity with the following standards or
other normative standards

auquel se réfère cette déclaration est
conforme aux normes ou autres
documents normatifs

EN 60335-1
EN 60335-2-98

und den Bestimmungen der folgenden
Richtlinien entspricht

and is corresponding to the following
provisions of directives

et est conforme aux dispositions des
directives suivantes

2014 / 35 / EC

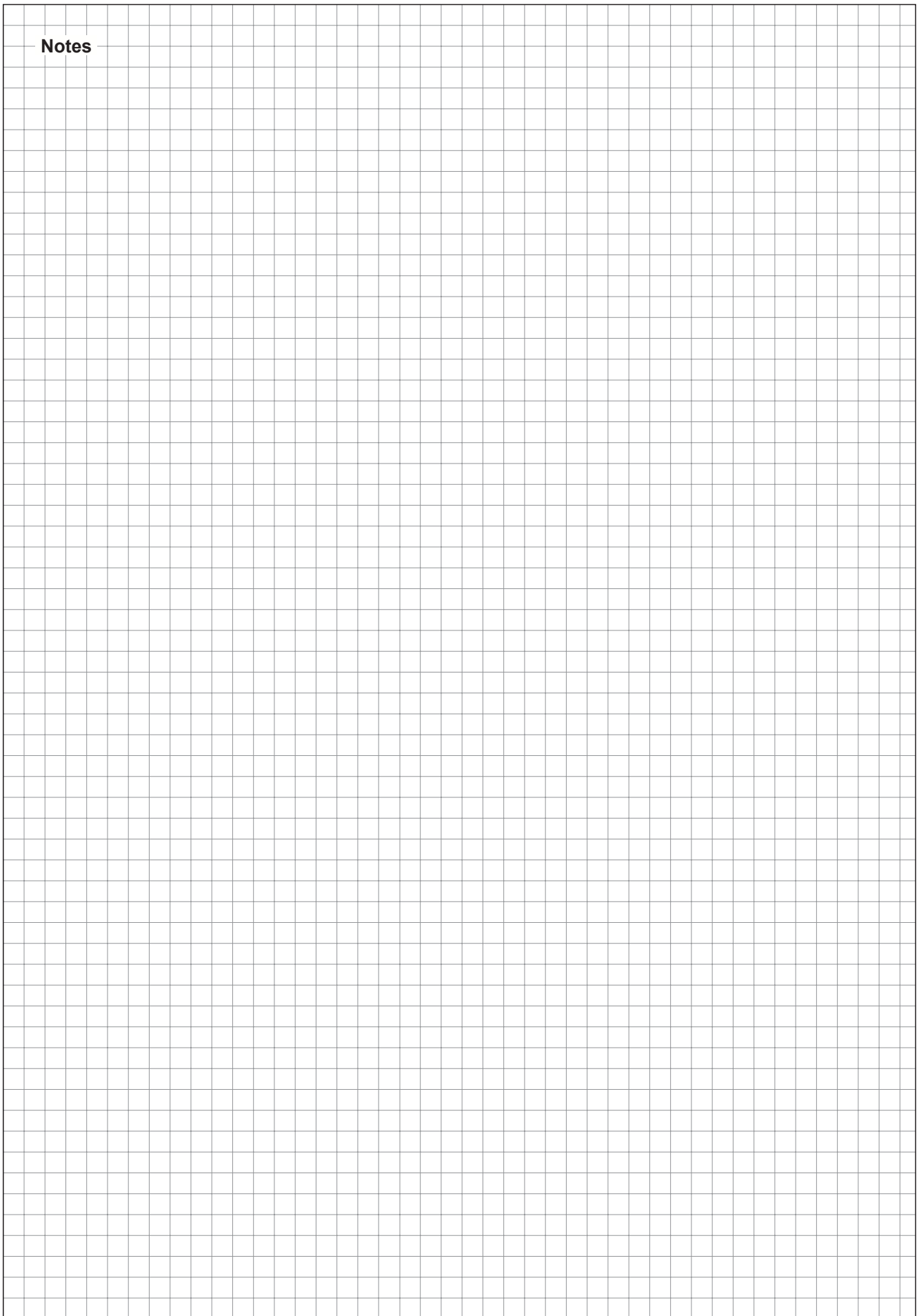
Ottawa, November, 15, 2016
Condair Ltd

Stan Sieklicki
VP Engineering & Operations

Stephen Luketich
Head of Operations

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Notes



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CH94/0002.00

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