TE
SERIES

OPERATION AND MAINTENANCE MANUAL

Ceiling Mounted Evaporative Humidifier
Condair **TE** Series

≋condair

Humidification and Evaporative Cooling

Thank you for choosing Condair

Contents

1   Introduction

Thank you for purchasing the Condair Ceiling Mounted Evaporative Humidifier.

The Condair Ceiling Mounted Evaporative Humidifier incorporates the latest technical advances and meets recognized safety standards.

Improper use of the humidifier may result in danger to the user or third parties, and/or damage to property.

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

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

1.1   General

Limitations of the Manual

The subject of this manual is the Condair Ceiling Mounted Evaporative Humidifier in its different versions. The various options and accessories that are described in this manual pertain to the proper installation/operation of the equipment.

This manual is restricted to the operation and maintenance of the Condair Ceiling Mounted Evaporative Humidifier. This manual is intended for competent personnel suitably qualified for their respective tasks. The specifications are supplemented by various separate items of documentation (such as the parts list). Where necessary, appropriate cross-references are made to these publications in the specification.

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 word "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, please ensure that it remains with the equipment.

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

2 For Your Safety

General

Every person who is tasked with the installation of the Condair Ceiling Mounted Evaporative Humidifier must read and understand this manual before performing any work. Knowing and understanding the contents of the installation manual and the operation and maintenance 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 Ceiling Mounted Evaporative Humidifier 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 Condair.

All personnel working with the Condair Ceiling Mounted Evaporative Humidifier must be familiar with, and comply with the appropriate regulations on workplace safety and prevention of accidents.

Intended Use

The Condair Ceiling Mounted Evaporative Humidifier is intended exclusively for air humidification within specified operating conditions (refer to the Operation and Maintenance Manual for details). Any other type of application, without the express written consent of Condair, is considered to be not conforming to its intended purpose, and may lead to dangerous operation and will void the warranty.

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.

Safety Precautions that Must Be Observed

> ⚠ **WARNING!**
> **Risk of electric shock, fire, and/or other problems!**

The Condair Ceiling Mounted Evaporative Humidifier is should be connected to a dedicated electrical circuit.

Be aware that using an electrical circuit with insufficient capacity or performing incorrect installation and wiring of the unit may lead to electrical shock, fire, and/or other problems.

When carrying out electrical work, ensure a qualified electrician performs the installation and wiring in accordance to all applicable local electrical codes and regulations.

> ⚠ **WARNING!**
> **Risk of electric shock!**

Failure to install a leakage current circuit breaker may lead to electric shock.

Install a dedicated leakage current circuit breaker for the humidifier.

> ⚠ **WARNING!**
> **Risk of electric shock!**

Fuses with incorrect capacity may lead to failure, damage, or fire.

Only use fuses with the specified capacity rating.

> ⚠️ **WARNING!**
> **Risk of overheating and fire!**

Use only the specified type(s) of cable for the electrical wiring and ensure cables are secured to the terminals.

Excessive force may disconnect or loosen electrical connections in the humidifier. Insufficiently secured cables may lead to overheating and fire.

> ❗ **CAUTION!**
> **Risk of overhead injury!**

The humidifier is mounted to the ceiling. If it is not properly mounted, the humidifier may fall or tip over and may cause injury, damage, or even death.

Ensure that the humidifier is secured properly. Request assistance to raise the humidifier into position.

> ❗ **CAUTION!**
> **Risk to hygiene and health!**

Improper and infrequent maintenance of the unit presents the risk of spreading pathogens (such as bacteria, viruses, and parasites) originating from contaminated water, air, and equipment. Failure to reduce the risks increases the likelihood of causing injuries (requiring medical care), infection, and death.

Use, regularly clean, and replace any installed air and water inlet filters. Regularly flush and disinfect the humidifier, components. Use water specified in this manual (or refer to local water regulation and code).

> ❗ **CAUTION!**
> **Risk to hygiene and health!**

This evaporative humidifier may not be usable in the following types of locations. Please contact Condair when using the humidifier in such a location.

- Any location where corrosive gas is expected to be present in the surrounding air
- Kitchens, food plants and other locations where salt content, oil mists and/or other such content may be present in the air
- Machine shops/factories and other locations where metallic dust may be present in the air
- Hospitals and other locations requiring special air conditioning systems

> ❗ **CAUTION!**
> **Risk to hygiene and health!**

Insufficient water quality may lead to contamination of indoor air.

Use potable water that conforms with water quality standards specified in your local codes and regulations.

> ❗ **CAUTION!**
> **Dripping and wet surfaces!**

The humidifier may drip and cause damage to equipment below. Wet surfaces may cause persons to slip and may cause injury.

Avoid placing anything underneath the humidifier that cannot be moved when necessary, or that will be adversely affected by getting wet.

Ensure that the humidifier is mounted high enough, or adjust humidification.

Preventing Unsafe Operation

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

If it is suspected that the unit cannot be operated safely for any of the reasons listed below, shut it down immediately.

Modifications to the Unit Prohibited

Modifications are not permitted on the Condair Ceiling Mounted Evaporative Humidifier without the express written consent of Condair.

3   Product Overview

The Condair Ceiling Mounted Evaporative Humidifier is a ceiling-embedded cassette humidifier that directly humidifies the room. Each unit is installed inside the ceiling (or in an open ceiling) with a decorative cover that can be opened and closed easily for maintenance. Each unit operates independently and provides reliable performance that is not affected by the system settings of the air conditioner (temperature, air flow, etc.).
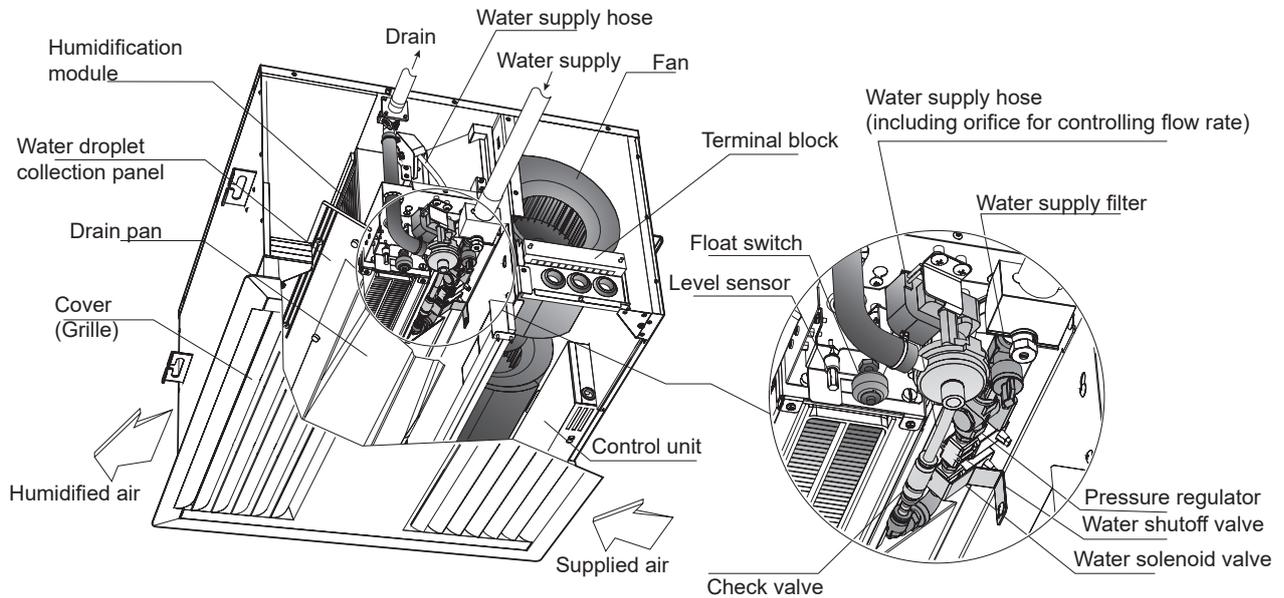
Figure 1: Components

3.1   Functional Description

Supply water passes through the supply header and is dripped evenly across the Humidification module. Water drips downward through the media. Supplied air passes through the cassette where it evaporates water on the surface of the media to create humidified air. Water that has not evaporated continues to flow down the media where it picks up any dust and other debris, and drips onto the drain pan.
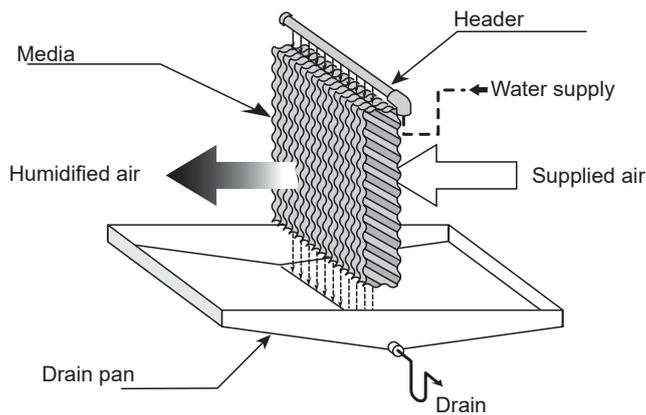
Figure 2: Functional Description

When operation is initiated via pressing of the operation button or an external command signal input, when the humidistat is turned ON, and in other such situations, the fan will remain OFF at the start of humidification operations and water will be continuously supplied to wet the humidification module which washes away odour-causing elements and similar brought in via the supply water. This initial supply water intake process lasts for 10 minutes.

After initial supply water intake, the unit will switch to intermittent water supply (time sharing system, or TSS), the fan will begin operating and humidification will start.

When operation is ceased via pressing of the operation button, an OFF external command signal input, or similar, water supply will be stopped and only the fan will continue operating. After the humidification module has been dried by the fan in this manner, the unit will automatically shut off.

Drying operation of the humidification module takes approximately 2 hours. Generally, the drying process activates for 2 hours after the unit stops humidifying. However; if the humidifier operates continuously for 24 hours without a 2-hour drying period, the drying process will activate automatically.

3.1.1   Remote Controller

The humidifier must be used with the remote controller. The remote controller contains a humidistat, and is used to control up to ten units at once. For more information on the remote controller and how to use it to humidify the space, refer to *"Operator Interface" on page 10*.
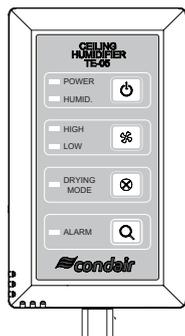
Figure 3: Remote Controller

4 Operator Interface

The Condair Ceiling Mounted Evaporative Humidifier is controlled through the remote controller. The remote controller contains a humidistat and is capable of controlling up to ten (10) humidifiers in a group.

This chapter describes the remote controller and the various settings that can be configured for the humidifier.

4.1 Remote Controller (with Humidistat)

1	Power button	5	Power indicator light	9	Drying mode indicator light
2	Fan button	6	Humidifying indicator light	10	Alarm indicator light
3	Stop button	7	High fan operation light	11	Side button (inside the small hole)
4	Find button	8	Low fan operation light		
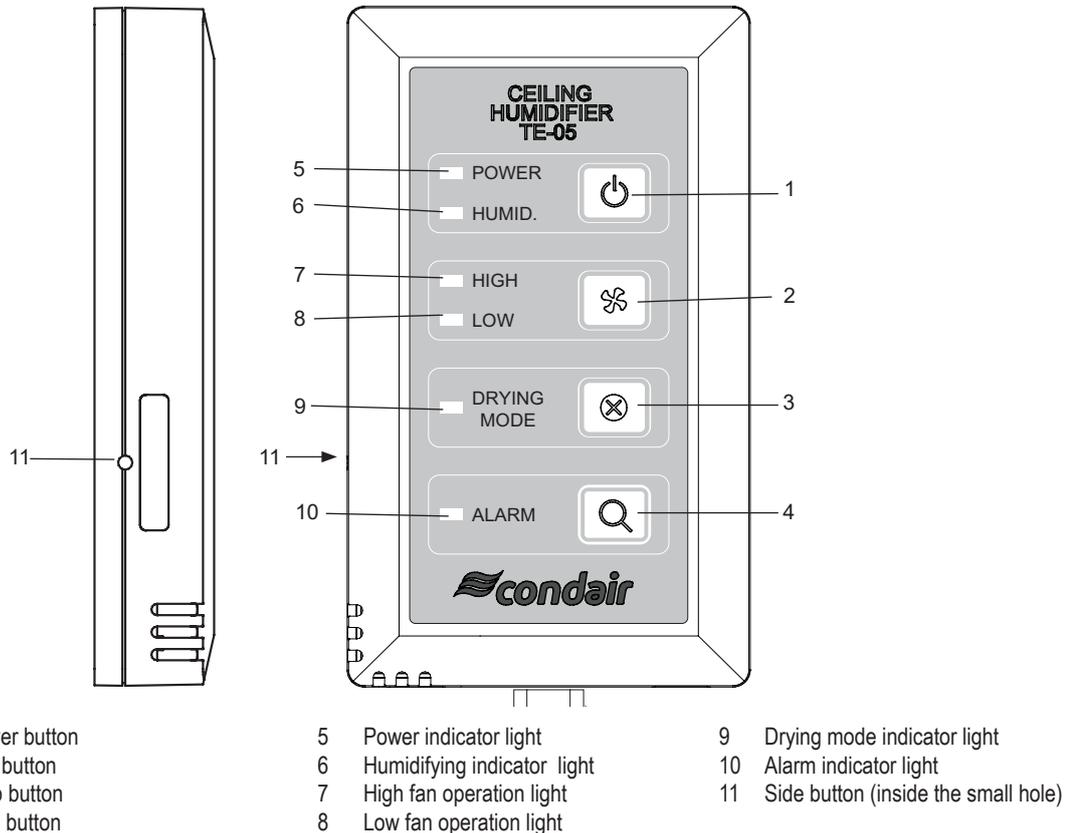
Figure 4: Remote Controller with Humidistat

Table 1: Buttons on the remote controller (refer to the legend of the figure above)

	Description
Power button (1)	Turns the humidifier ON and OFF.
Fan button (2)	Toggles fan operation between high and low.
Stop button (3)	Forcibly stops drying operation. **Use this function only when absolutely necessary.**
Alarm button (4)	Identify the humidifier with an alarm. The alarm indicator light (10) will turn on when there is an alarm present on one of the Condair Ceiling Mounted Evaporative Humidifier units. When pressed (while the alarm light is on), the humidifier with the alarm will beep for 30 seconds. Press the button again to stop the beeping.
Side button (11)	Changes the settings on the remote controller (with humidistat). The button is located in the small hole on the side of the remote controller. Push the button with a pin, pen tip, or other small object.

Table 2: Light indication on the remote controller (normal operation)

						- light off	○ light on
Operational State		B Humidifying (humidistat on)		C Humidifying (humidistat off)		D Drying	E Not Humidifying
Humidistat		Present				Same for humidistat present / not present	
Fan High/Low		High	Low	High	Low	Common to high or low	Common to high or low
Indicator light	(5) Power light	○	○	○	○	-	-
	(6) Humid. light	○	○	-	-	-	-
	(7) High fan light	○	-	○	-	-	-
	(8) Low fan light	-	○	-	○	-	-
	(9) Drying mode light	-	-	-	-	○	-
	(10) Alarm light	-	-	-	-	-	-

B: If there is a humidistat and humidistat contact is ON, the unit uses humidification operation type B.
C: If the humidistat is turned OFF during type B operation, the unit enters standby mode (C). If the humidistat is then turned ON, the unit returns to humidification operation type B.
D: If the operation button is pressed during humidification operation type B or during standby mode (C), regular operation stops and the unit enters drying operation (D).
E: After regular operation has stopped and drying operation (D) has been completed, the unit automatically stops all operation (E).

After powering off of the humidifier unit (via pressing of the remote controller's power button, or an external command signal input), and then powering on the unit again, the fan will restart at the speed it was on just before powering off.

4.2 Control Unit
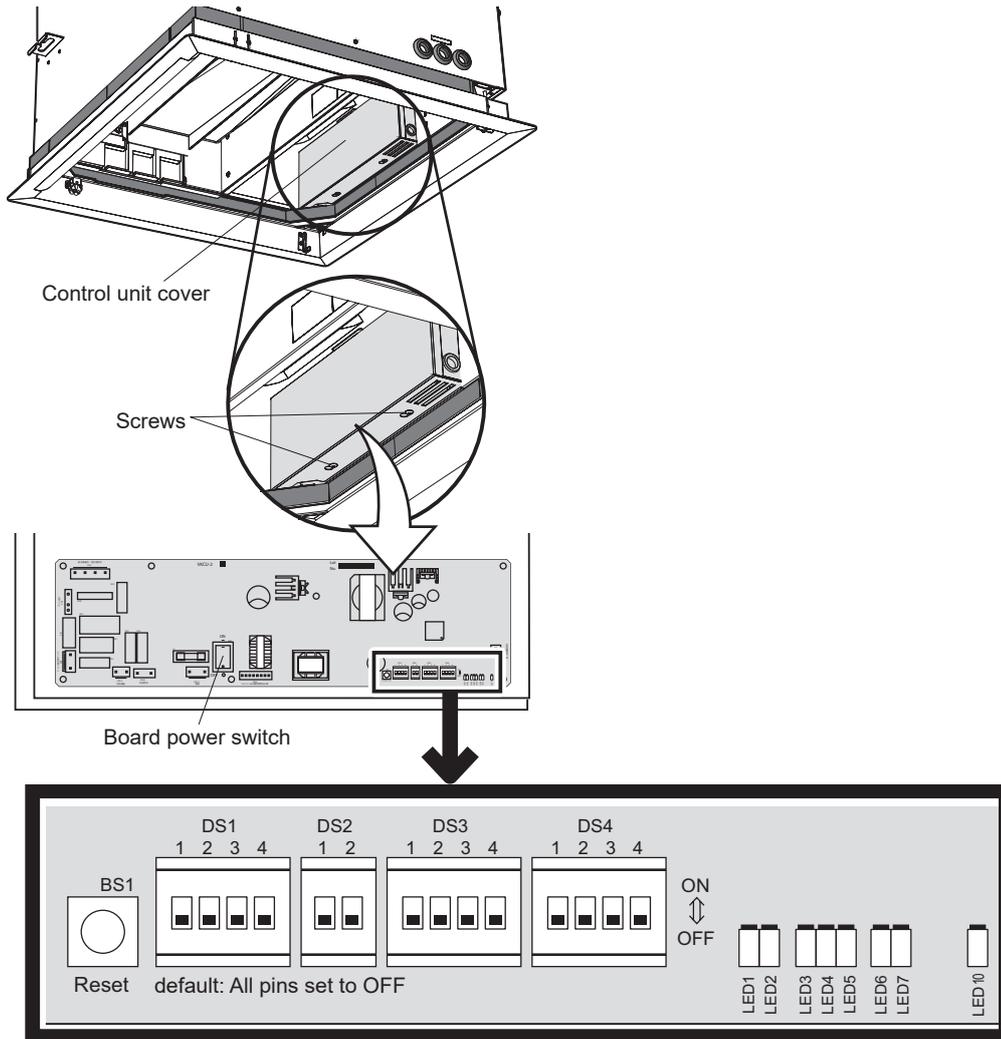
Figure 5: DIP switch location (cover removed)

Before operating the DIP switch, ensure the humidifier power source's leakage current circuit breaker is turned to the OFF position, and power supply has been completely stopped. Changing any DIP switch pin while power is still being supplied to the unit may result in settings not being properly implemented.

LED lights on the control unit indicate the status of the humidifier, including faults. Refer to the table below for their definitions.

Table 3: LED pattern

LED No. (Colour)	LED Illumination Pattern
LED 1 (green)	Blinks slowly (0.5-second intervals) when communicating with remote controller, and blinks quickly (0.1-second intervals) when a communication error has occurred.
LED 2 (yellow)	Blinks or solidly illuminates in accordance with water supply unit operation count: 0.5-interval blinking to indicate 500,000 times or more, 0.1-second interval blinking to indicate 950,000 times or more, and solid illumination to indicate 1 million times (approx. 5 years, at 5000 annual hours of operation per year).
LED 3 (red)	Illuminates to indicate detection of high water level in drain pan (press reset button BS1 to cancel illumination).
LED 4 (green)	Illuminates to indicate detection of water leakage (press reset button BS1 to cancel illumination).
LED 5 (yellow)	Illuminates to indicate detection of water supply solenoid valve leakage or drain error in waste water drainage pump (press reset switch BS1 to cancel illumination).
LED 6 (red)	Reserved.
LED 7 (green)	Illuminates to indicate detection of drain error in drain pump (press reset button BS1 to cancel illumination).
LED 10 (green)	Illuminates when drain pump is in operation.

5   Operation

Personnel Qualifications

The humidifier must only be operated by personnel who are adequately qualified, well trained and are authorized by the customer.

Safety

Certain operations of the unit may require the user to access the control cabinet or plumbing cabinet, which may expose the user and equipment to the hazards described in chapter *2 on page 5*.

5.1   Turning ON the Humidifier

Important! Following the start of humidifier operation, continuous water supply with no fan operation is carried out for 10 minutes to wet and clean the humidification module, after which intermittent water supply and fan operation begins.

When restarting the humidifier after a long-term shut-down, carry out the maintenance procedures and checks described in *"Maintenance" on page 21*.

To turn ON the humidifier:

1. Press the Power button on the remote controller. The water supply will turn on for 10 minutes while the fan will remain off. After 10 minutes, fans will activate.

5.2   Turning OFF the Humidifier

Upon stopping operation (via remote controller), the Humidifier will turn on the fan to dry the media inside the unit. Note that turning off the humidifier does not stop power from flowing through it. Remove the power source before performing any maintenance.

For long term shut down, refer to *"Decommissioning" on page 34*.

To turn OFF the humidifier:

1. Press the Power button on the remote controller. The unit will stop humidifying (solenoid valve closed) and after a brief delay (standby), the fans will activate for 2 hours before deactivating.

5.3   Finding the Humidifier that Activated an Alarm

Any alarms present in the humidifier group will be indicated on the remote controller. Humidifiers with an alarm will make beeping noises (via instructions below) to indicate that it is the unit with the problem.

To find the problematic humidifier:

1. Press the FIND button on the remote control. The humidifier (that is sending the alarm signal) will beep for 30 seconds.
2. Once the humidifier is found, press the FIND button again to stop the beeping.

5.4 Turn the Fan High/Low

The fan in the humidifier runs on two speeds, high and low.

To toggle the fan speed between high and low:

1. Press the Fan button on the remote controller. Toggle this as necessary while the product is operating.

5.5 Turning OFF the Fan

The fan activates periodically during 24 hour operation of the humidifier, as well as after humidifier shut down, to dry the media in the humidifier. Drying improves hygienic operating conditions, so it is strongly advised to AVOID SHUTTING OFF THE FAN prematurely and allow the humidifier to dry properly.

To turn off the fan:

1. Press the Stop button on the remote controller.

5.6 Configuring the Humidifier

5.6.1 Increasing/Decreasing the Water Supply Volume (DIP Switch Settings)

The solenoid valve opens and closes to allow water to periodically enter the humidification module. The ratio between ON and OFF will depend on the water quality and the DIP switch setting DS1.

Your water supply may contain minerals, such as calcium and magnesium, and the air may contain dust and other debris. If there is a large quantity of contaminants in the air and water, it is important that they are washed away more frequently. Thus, the Condair Ceiling Mounted Evaporative Humidifier will require extra supply water volumes to do this.

Another reason one would want to increase the water supply volume would be because the air intake is dry, such as during the heating season. With an increase in dry air, the formation of scale is increased, so increasing the water supply volume can help alleviate this.

To change the water supply volume:

1. Remove power to the humidifier. Failure to do so will prevent the settings from saving on the unit.
2. Adjust the DIP Switch DS1 settings on the humidifier. Refer to *Table 4 on page 14*. The DIP switch can be found on the control unit (refer to *Figure 5 on page 12*).
   After changing the water volume settings, water supply should remain open for 10 minutes before entering normal operation.

Table 4: Supply water volume rate and DIP Switch settings

DIP Switch Setting	DS1 pin 4 OFF	DS 1 pin 4 ON	DS1 pin 3 ON DS1 pin 4 ON
Supply volume	(default) 0.025 gpm (0.094 L/min) ± 20%	0.033 gpm (0.125 L/min) ± 20%	0.050 gpm (0.188 L/min) ± 20%
Notes	45 seconds on, 45 seconds off	60 seconds on, 30 seconds off	90 seconds on, 0 seconds off

5.6.2 Enabling Interlocking Operation with External Equipment

This setting allows operation with external equipment, such as an air conditioner. Ensure that the humidifier has been set up for use with the remote controller with built-in humidistat. By default, interlocking operation (external equipment) is NOT enabled.

Interlocking operation is possible by connecting the remote controller to the humidifier main unit's L1 and L2 terminals. Refer to the installation manual for wiring details.

To enable interlocking operation:

1. Toggle the external equipment contact to OFF.
2. Turn off the humidifier and ensure the power indicator lights are off.
3. Press and hold the side button on the remote controller for 3 seconds. The power light will illuminate green.
4. Press the STOP button on the remote controller. This will turn dryer mode indicator light ON or OFF.
   • Turn ON the drying mode indicator light to enable interlocking operation with external equipment.
   • Turn OFF the drying mode indicator light to disable interlocking operation with external equipment.
5. Press the side button 2 times to save the setting. The high indicator light will illuminate orange for 3 seconds. When the remote controller powers off, the process is complete.

Note:

Interlock operation, under normal circumstances, will allow you to operate the humidifier with external equipment with commands issued via external control signal input.

When the external equipment is OFF, the unit operation with the remote controller and the external control signal input are invalidated. In such circumstances, the power and humidifier lights on the remote controller will blink for 3 seconds upon pressing the power button.

5.6.3 Enabling External Signal Outputs (DIP Switch Settings)

External operation signals come from terminals 1 and 2 of the main unit. For a remote controller, this means the power LED, and the humid. LED (if this setting is enabled).

This setting will allow you to output the operation signal to the humid. LED on the remote controller when the unit is humidifying (humidifier is ON and the humistat is also ON). This setting is useful for status monitoring to check whether humidification is actually active, as opposed to simply being powered on.

Under default settings, only the operation signal is output (power LED) when the humidifier is operating and humidifying (i.e. the humid. light remains off). The default setting is useful for remote monitoring, to prevent accidental forgetting of pin toggling.

To enable this setting, you must change the DIP switch settings on the main humidifier's control unit. Remove power to the unit before making the change. Failure to do so will prevent the unit from saving your changes.

Refer to the table below to see the DIP switch setting.

Interlocked with power light (default) DS3 pin 2 OFF	Output signal when power button toggled to ON, or external control signal input set to ON.
Interlocked with humid. light DS3 pin 2 ON	Output signal when operation button toggled to ON, or external control signal input set to ON and humidistat input set to ON

5.6.4 Remote Starting and Stopping via External Signal Input (DIP Switch Settings)

Remote starting and stopping via external control signal input (external command control) is possible. However, even with this type of operation, remote controller installation is still required.

When using both a remote controller and external control signal inputs to start and stop the humidifier, the system utilizes second-Input priority. External control signal input types include steady-state input and instantaneous input, with steady-state input signals used as default.

To enable external control signal input (remote starting and stopping):

1. Remove power to the humidifier. Failure to do so may prevent changes from saving.
2. Connect control wires from the external controller to terminals 4, 5, and 6 on the main humidifier terminal block.
3. Set DIP switch 3 pin 1 ON or OFF for your configuration.

Table 5: DIP switch settings for remote starting and stopping with external control signal

Humidifier Wiring	DIP Switch Setting	Notes:
Steady-state input signal (default setting) 	DS3 pin 1 OFF	Working voltage 12 VDC 10 mA. Input an ON contact signal when operating and an OFF signal when stopping. Pressing the remote controller's power button when the humidifier operation is stopped will start operation, and pressing it when the humidifier is already operating will stop operation. Due to the use of second-input priority, contact must be switched from ON to OFF in order to enable forced operation stoppage via ext. control signal input. Similarly, the contact must be switched form OFF to ON in order to enable forced operation start.
Instantaneous input signal 	DS3 pin 1 ON	Working voltage 12 VDC 10 mA. Input a contact signal with duration at least 0.1 seconds. Pressing the remote controller's power button when the humidifier operation is stopped will start operation, and pressing it when the humidifier is already operating will stop operation.
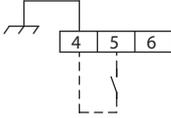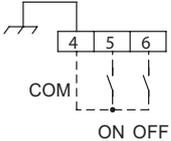
5.7 Configuring the Remote Controller

5.7.1 Address Setting

Address setting is required when connecting the humidifier main unit(s) and remote controller.

The remote controller's automatic address setting function detects the number of connected humidifier units (to the remote controller) and completes initial settings. The remote controller has been pre-configured with address settings for a single humidifier.

To perform address setting:

1. Supply power to all humidifier units. All lights on the remote controller will blink for ~5 seconds. After 5 seconds, the lights will shut off EXCEPT the alarm light. The alarm light will remain on.

2. On the remote controller, press the and hold the FAN button **and** the STOP button for at least 3 seconds. Address setting will begin. This process may take up to 2-3 minutes.

   During address setting:

   - The high fan and low fan light will blink at 2 Hz (2 times per second) for one minute. After one minute, the lights will turn off.

   - The humidification light will blink at half-second intervals for a total equal to the number of units connected (ex. Unit will blink 3 times if there are 2 units connected to the main humidifier - 3 units total). This process repeats three times. After completion, the humidification light will turn off.

   After address setting, all lights will turn off, including the alarm light.

3. Press the power button to turn on the humidifier(s). The power and humidification light will turn on, and the fans in the humidifier will activate (after a 10 minute delay). The default setpoint is 40% RH.

   After address setting, you may check the number of units connected to a single remote controller. This will allow you to determine if there is a disconnected humidifier.

5.7.2 Alarm Settings (for multiple units)

When using a single remote controller to control multiple humidifier units, alarm signals will be output individually from each humidifier unit via terminals 1 and 3.

Alarm signals are output when a unit's safety protection function activates. Refer to chapter *7.2 on page 29* for more details about troubleshooting alarms.

Refer to the installation manual for details on installing external alarm outputs.

5.7.3 Selecting a Humidistat to Use

By default, humidity level detection is carried out by the humidistat built into the remote controller. Settings must be changed to enable humidity level detection using an unsupplied humidistat.

To enable/disable an external humidistat:

1. Ensure that all lights on the controller are off.

2. Press and hold the side button on the remote controller for 3 seconds. The power light illuminates green.

3. Press the fan button to toggle between the high and low fan light.

   - The low fan light will enable an external humidistat.

   - If the low fan light is off, the humidistat in the remote controller will be used.

4. Save the setting by pressing the side button 2 times. The high fan light will illuminate orange for 3 seconds. The remote controller powers off once this process is completed.

5.7.4 Changing the Humidity Setpoint with the Remote Controller

The set humidity level can be adjusted in 5% increments between 35% and 70% RH.

The default setting is 40% RH. To check the current setpoint, refer to section *5.8 on page 18*.

To change the humidity setpoint:

1. Turn off the humidifier and ensure that the power light is off on the remote controller.
2. Press and hold the side button on the remote controller for 3 seconds. The power light will illuminate green.
3. Press the side button 1 time. The power light turns off. The humidification light will illuminate green.
4. Press the FAN, STOP, or FIND button on the remote controller to toggle the lights on the remote controller. The humidity setpoint corresponds to the light combinations in *Table 6 on page 18*.
5. Once the humidity level is set, save the setting by pressing the side button 1 time. The high fan light will illuminate orange. The remote controller powers off when the process completes.

Table 6: Setting the humidity setpoint with the remote controller

| Light Combination | Push to toggle light ON or OFF | Humidity Setpoint RH | | | | | | - light off | ○ light on |
		35 %	40 %	45 %	50 %	55 %	60 %	65 %	70 %
High	FAN	-	-	-	-	-	-	-	-
Low		-	-	-	-	○	○	○	○
Drying mode	STOP	-	-	○	○	-	-	○	○
Error	FIND	-	○	-	○	-	○	-	○

5.7.5 Changing the Humidity Detection Sensitivity

Humidity detection sensitivity can be toggled between two levels: high and low. The default detection sensitivity is high; this detection sensitivity level can be used without changing any settings.

To change the humidity detection sensitivity:

1. Turn the humidifier off and ensure that the power lights on the remote controller are OFF.
2. Press and hold the side button on the remote controller for 3 seconds. The power light turns green.
3. Press the FIND button to toggle between low and high sensitivity.
   - An illuminated alarm light indicates low sensitivity.
   - An absent alarm light indicates high sensitivity (default).
4. Press the side button 2 times to save your setting. The high indicator light illuminates orange for 3 seconds. The remote controller powers off once the process is complete.

5.8 Checking the Current Settings on the Remote Controller

Specific combinations of lights on the remote controller indicate the settings on it. The check begins with the setup of the humidifier, then the humidity setpoint.

To check the settings:

1. Turn off the humidifier and ensure that the power light is off on the remote controller.
2. Press the side button. The check will complete in 20 seconds, then the remote controller will power off.
   a. The power light will illuminate green for 10 seconds. During this time, other lights on the remote controller will illuminate. Refer to the combinations in the table below.

Table 7: Checking the setup with the remote controller

Light Combination	Setup
Power [ON] & Low fan [ON]	Humidity level detection using an external humidistat (not in the remote controller).
Power [ON] & Low fan [OFF]	Humidity level detection using the humidistat built into the remote controller.
Power [ON] & Dryer [ON]	Interlocking operation with external equipment.
Power [ON] & Dryer [OFF]	No interlocking operation with external equipment.
Power [ON] & Alarm [ON]	Humidity detection sensitivity set to low.
Power [ON] & Alarm [OFF]	Humidity detection sensitivity set to high.

    b. After 10 seconds, the power light will turn off and the humidification light will illuminate for 10 seconds. During this time, other lights on the remote controller will illuminate. Refer to the combinations in *Table 8 on page 19*.

Table 8: Checking the humidity setpoint with the remote controller

Light Combination	Humidity Setpoint						- light off	○ light on
	35 % RH	40 % RH	45 % RH	50 % RH	55 % RH	60 % RH	65 % RH	70 % RH
Power	-	-	-	-	-	-	-	-
Humid.	○	○	○	○	○	○	○	○
High	-	-	-	-	-	-	-	-
Low	-	-	-	-	○	○	○	○
Drying	-	-	○	○	-	-	○	○
Alarm	-	○	-	○	-	○	-	○

5.9 Checking the Units Connected to the Controller

To check the number of units connected to a controller:

1. Ensure that all lights on the controller are off.
2. On the remote controller, press and hold the STOP button **and** the FIND button for 3 seconds.

   The humidification light will blink the same number of times there are units connected to the controller. This process will repeat 3 times before the lights turn off. For example, 5 blinks for 5 units, repeated three times for a total of 15 blinks during the check.

5.10 Factory Reset the Remote controller (to default)

Reset the remote controller to its default settings.

To reset the remote controller:

1. Turn off the humidifier and confirm that the power light is off on the remote controller.
2. Press and hold the side button on the remote controller for 10 seconds.

    The power light (green), humidification light (green), and high fan light (orange) will illuminate simultaneously for 3 seconds, then the remote controller will power off.

Default settings for the humidifier cannot be reset automatically, as they would be set physically with wires or DIP switches. To restore the humidifier to it's default settings, turn all of the DIP switch pins to the OFF position. Refer to the installation manual to reconfigure the initial signal input/outputs.

5.10.1 Default Settings (Remote Controller)

Table 9: Default settings

Light		Setup
Power	○	
Humid.	-	
High	-	
Low	-	Humidity level detection using the humidistat built into the remote controller.
Drying mode	-	No interlocking operation with external equipment.
Error	-	Humidity detection sensitivity set to high.
		Humidity setpoint 40% RH

6 Maintenance

Regular maintenance of the humidifier is a requirement for maintaining the safety and operational efficiency of the humidifier. Perform only those maintenance procedures described in this manual, and follow all instructions closely. Use only original Condair replacement parts.

Personnel Qualifications

The Condair Ceiling Mounted Evaporative Humidifier must only be operated by personnel who are adequately qualified, well trained and are authorized by the customer.

Safety

Certain operations of the Condair Ceiling Mounted Evaporative Humidifier may require the user to access the control cabinet or plumbing cabinet, which may expose the user and equipment to the hazards described in chapter *2 on page 5*.

6.1 Inspecting the Humidifier

Ensure the humidifier is inspected before and after maintenance. Refer to the checklist below as a starting point for your inspection.

☐ Is the humidifier main unit level?

☐ Is there any water leakage from the supply water piping?

☐ Is the water supply service valve closed?

☐ Is there any water leakage from the drain piping?

☐ Does the drain piping have a sufficient downward gradient?

☐ Is there any water leaks from inside the unit? (Open the cover to make an internal inspection.)

☐ Is all electrical wiring correctly installed and secured?

☐ Have all pins on the remote controller upper casing unit's DIP switch been switched OFF?

☐ Has the remote controller casing been replaced and closed again?

☐ Is the humidifier power source's leakage current circuit breaker turned to the OFF position?

☐ Has the humidistat setting been returned to the preferred humidity level?

6.2 Maintenance List

Regularly monitor contaminant levels, as amounts may vary based on the quality of the water used, operating environment conditions and a variety of other factors. Establish cleaning methods and a regular cleaning cycle based on observed contaminant types and amounts. Factors such as total hardness and high amounts of silica in the water may result in increased amounts of contaminants, lime scale, etc.

Note: Refrain from using softened water, or softened water mixed with groundwater or well water from a dedicated (private) or industrial water supply, as water softness may lead to the formation and spread of scale.

Table 10: Standard Maintenance Tasks

Task	Frequency
Flushing the water supply piping.	After first use, and start of every humidification season.
Cleaning the water supply filter.	After the first 1-2 days of use, and at the start of every humidification season.
Replacing the supply hose built-in check valve.	Replace every 5 years.
Cleaning the humidifier filter.	After first use, and once every month. May depend on dirt and debris on the filter.
Cleaning the humidification module.	Clean at the start of every humidification season.
Replacing the humidification module.	Operation only during humidification season (1000 annual operating hours): every 5 to 10 years. Operation Year-round (5000 annual operating hours): every 1 to 2 years, depending on operating conditions.
Cleaning the drain pan.	At the start of every humidification season.
Checking the electrical connections.	At the start of every humidification season.
Cleaning the internal plumbing components, such as the supply header nozzles, drain pump, level sensor, and float switch.	At the start of every humidification season.
Replacing the (internal) water supply hose with built-in check valve.	Every 5 years.

Several maintenance procedures require the removal of the humidifier cover, draining and removing the drain pan, etc.

6.2.1 Tools and Supplies

- Oxygen-based bleaching agent for cleaning. Never use chlorine bleach for cleaning.

  Before using any bleaching agent, make sure to read all warnings and precautions on the packaging.

  Prepare a solution with sufficient strength to remove spots and stains, with enough total water to fully immerse the humidification module.

- Large container or tank that will fit each individual humidification module. The media will be submerged in cleaning solution.

  WxHxD of humidification module: 17.3 x 9.8 x 4.3 in (440 x 250 x 110 mm)

- Flat-head screwdriver.

- Bucket (to collect excess water).

- Soft-bristled brush, or cloth for wiping away dirt and scale.

6.3   Removing the Humidifier Cover
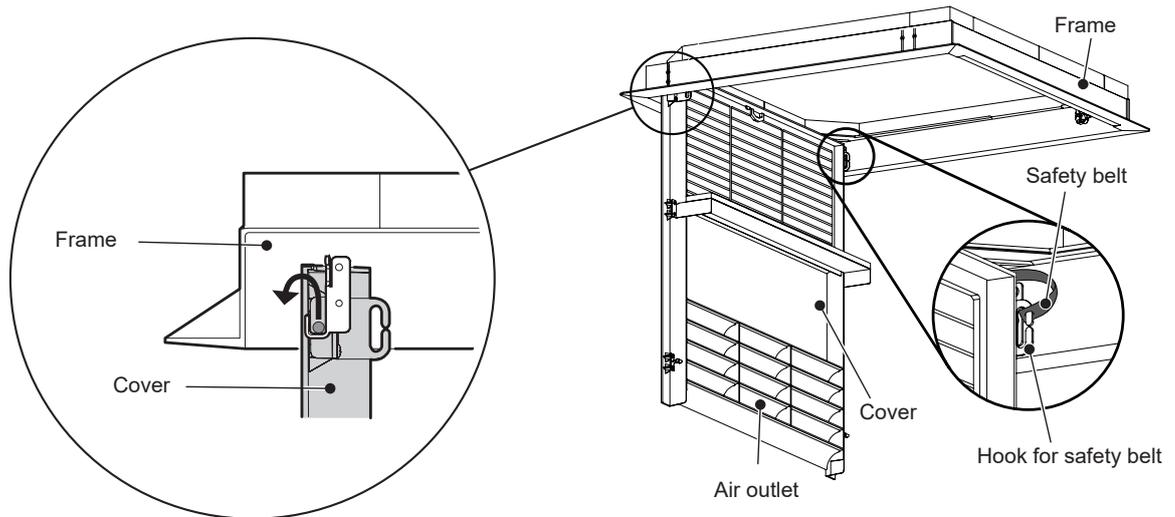
Figure 6: Example illustration of flushing the water supply

To remove the humidifier cover:

1. Press up on the cover. Allow the cover to swing downwards. The cover will open at the air outlet side.
2. Remove the safety catch loops attaching the cover to the frame on the humidifier.
3. Remove the humidifier cover.
4. Replace the cover by following these instructions in reverse order.

6.4   Removing the Drain Pan Water Release Cap and Water Leakage Sensor
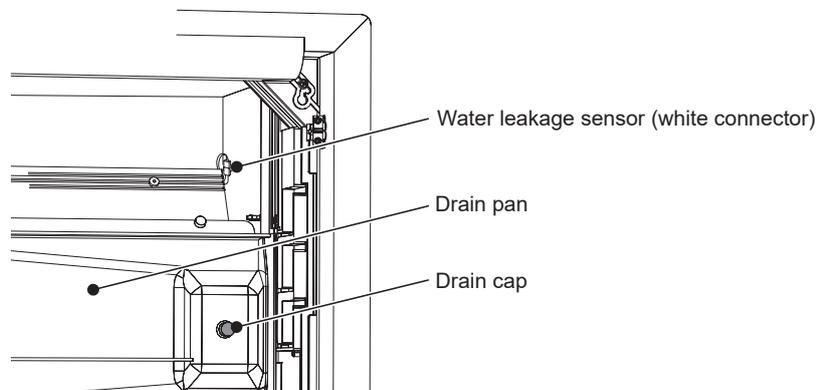
Figure 7: Removing the drain pan water release cap and water leakage sensor (white connector)

To remove the drain pan water release cap:

1. Remove the humidifier cover. Refer to section *6.3 on page 23*.
2. Place a bucket (or other acceptable container to catch any leaks), under the humidifier.
3. Pull out the drain cap from the drain pan.
4. Remove the water leakage sensor's white connector (2P yellow lead wires).
5. Replace the equipment by following these instructions in reverse order.

6.5 Removing the Drain Pan and Humidification Module
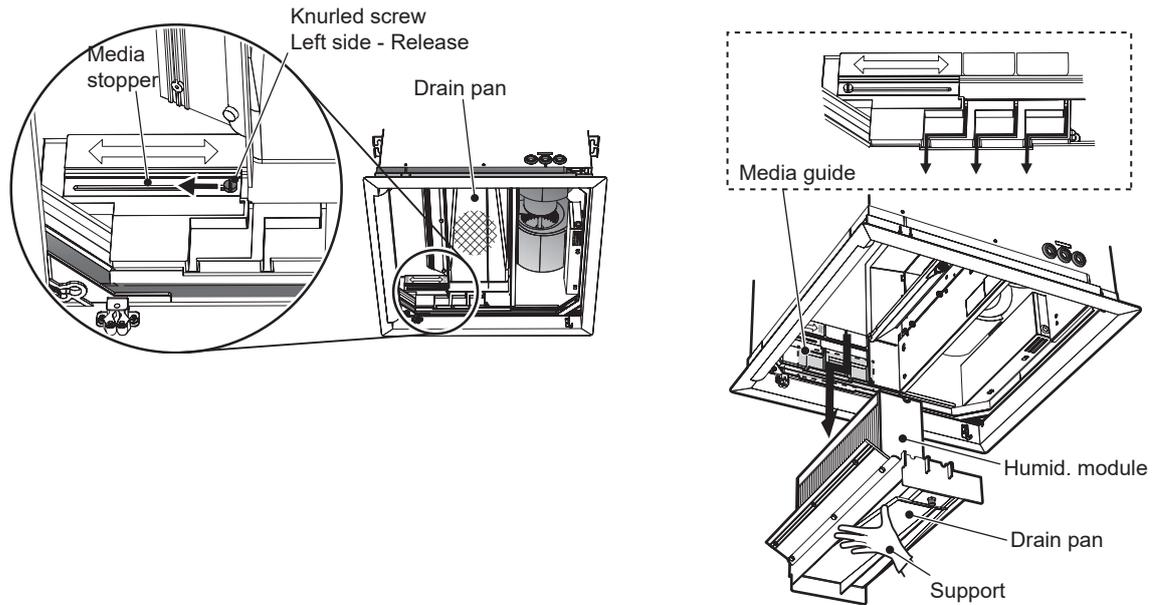
Figure 8: Removing the drain pan

To remove the drain pan and humidification module:

1. Remove the humidifier cover. Refer to chapter *6.3 on page 23*.

2. Remove the drain cap from the drain pan, and remove the white connector of the water leakage sensor. Refer to chapter *6.4 on page 23*.

3. Use one hand to support the drain pan (and attached humidification module) from below.

   Note: the humidification module, when dry, weighs 5.5 lb (2.5 kg). The weight will be heavier if wet.

   a. While supported, loosen the knurled screw on the media stopper with a flat-head screwdriver (or similar tool).

   b. Slide the knurled screw to the "release side".

   c. **Heavy!** Slide the drain pan and humidification module out of the humidifier.

   The drain pan and humidification module may now be cleaned (refer to chapter *6.9 on page 26*).

   The electrical components in the humidifier may now be inspected (refer to chapter *6.10 on page 28*).

   The internal plumbing components may now be cleaned (refer to chapter *6.11 on page 28*).

4. Replace the equipment by following these instructions in reverse order.

6.6   Removing the Water Supply Strainer
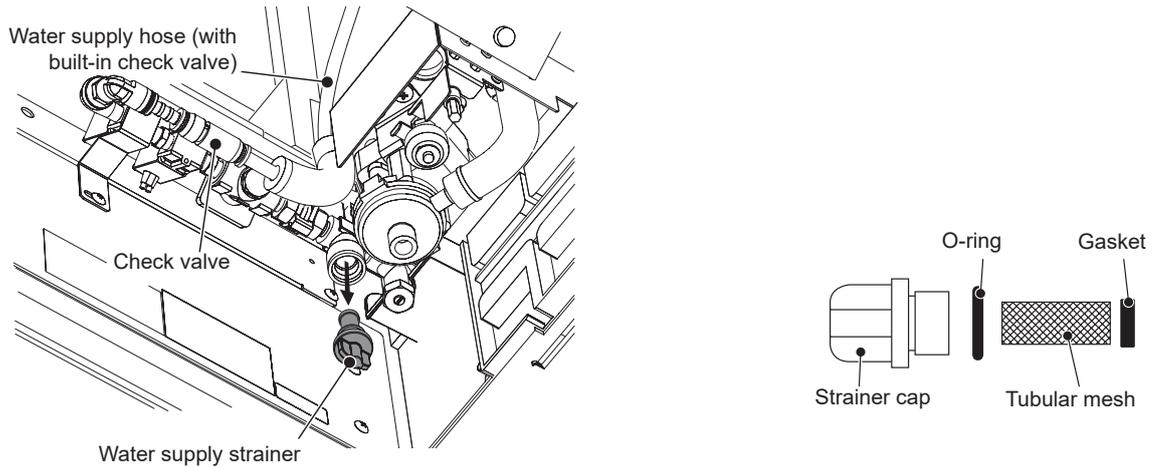
Figure 9: Water supply strainer

To remove the water supply strainer (and clean the tubular mesh):

1. Remove the humidifier cover. Refer to chapter *6.3 on page 23*.

2. Remove the drain cap from the drain pan, and remove the white connector of the water leakage sensor. Refer to chapter *6.4 on page 23*.

3. Remove the drain pan (and humidification module). Refer to chapter *6.5 on page 24*.

4. Remove the water supply strainer cap. The tubular mesh can now be removed and cleaned.

    •   Clean the tubular mesh with water.

5. Replace the equipment by following these instructions in reverse order.

6.7   Cleaning the Humidifier Filter
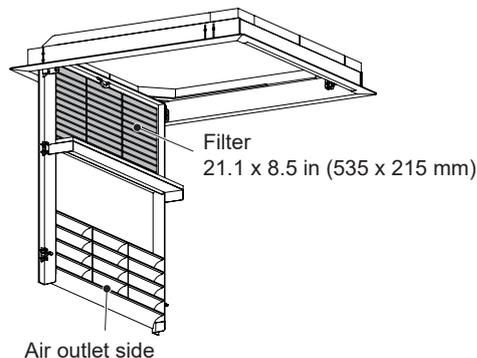
Figure 10: Cleaning the humidifier air filter

Turn off the humidifier and remove power from the unit.

1. Open the humidifier cover then remove the filter from it.

2. Wash the filter with water. A neutral detergent may be used to clean the filter if necessary.

3. Dry the filter in a shaded location.

4. After it has dried, reattach the filter to the cover.

5. You may then restore power to the humidifier.

6.8   Flushing the Water Supply Piping

When carrying out this task, do not remove any joint on the annealed copper tube used for supply water. Repeated removal and reattachment of joints may cause them to become deformed, causing leakage.

When opening any valve, ensure no water leakage occurs as you carry out maintenance, and carefully check for water leaks as you proceed with other maintenance task procedures. Failure to do this may result in an unexpected accident or other problem.

Water supply valve

Flushing valve

Bucket, or other receptacle
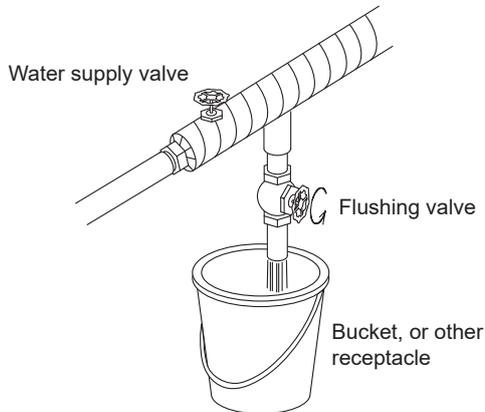
Figure 11: Example illustration of flushing the water supply pipe

Consider the following when flushing the water supply pipe:

- Carry out flushing appropriate for the layout and conditions of the installation.
- Follow any applicable local codes and regulations for flushing the water supply pipe.
- Flush thoroughly until sufficiently clear water is achieved.
- Ensure no water leakage occurs.
- Water expelled from the pipe may spray due to high supply water pressure, or trapped air.
- Avoid getting items placed underneath the pipe from getting wet. Move these items if possible, or cover with a sheet.
- Water on the ground may be slippery.

6.9   Cleaning the Humidification Module and Drain Pan

The humidification module gradually accumulates scale and becomes dirty over time. Suitable cleaning frequency will vary depending on the water supply quality and supply air conditions.

The media is enclosed in a casing block. The media and casing block will be submerged in cleaning solution.

Important! During maintenance of the media and drain pan, water may spill onto the water leakage sensor. To prevent malfunction, prioritize wiping the drain pan and droplet sensor first, before proceeding onto the next maintenance procedure.

To clean the drain pan and humidification module:

1. Turn off the humidifier and allow the drying process to finish, then remove power from the humidifier.
2. Close the water supply service valve.
3. Open the humidifier cover, remove the water leakage sensor's white connector (2P yellow lead wires), and remove the drain pan and humidification module.

   Place a bucket under the unit to collect any excess water when removing the drain pan's release cap.

4. Loosen the four screws securing the humidification module (and casing block) to the drain pan.

5. Carefully remove the humidification module (and case) from the drain pan. Avoid contact with the media itself.

6. Loosen and remove the three fixing screws on the water droplet collection panel. Avoid damaging the water leakage sensor. Remove the droplet collection panel.

7. Submerge the humidification module (and case) in the cleaning solution for 30-60 minutes.

   Do NOT scrub or pressure clean the media with water or air (or in another similar manner) to prevent damage to the media.

8. While the media is submerged, wipe the drain pan clean.

9. Wipe away any water or dirt on the water droplet collection panel (and water leakage sensor).

10. Remove the humidification module and rinse thoroughly with water. Leave the unit to dry fully.

11. Reattach the humidification module to the drain pan, and reattach the water droplet collection panel.

12. (Recommended) While the drain pan and humidification module are out of the humidifier, check the unit's electrical components. Refer to chapter *6.10 on page 28*.

13. (Recommended) While the drain pan and humidification module are out of the humidifier, clean the water supply headers, drain pump, level sensor, and float switch. Refer to chapter *6.11 on page 28*.

14. After completing all the above steps, return the equipment to its original position. Follow the steps described above in reverse. Ensure the following:

    • The water drip recovery plate has been returned to its original position.

    • The drain pan and attached humidification module was correctly inserted into the humidifier.

    • The knurled screws on the left and rights slides have been slid to the "Fix" side and tightened.

    • The water leakage sensor's white connector has been reconnected.

    • The safety catch belts have been reattached (two locations, on left and right sides).

15. Confirm the unit operates as normal. Allow the unit to humidify briefly (after 10 minutes) and turn it off to dry the media. Check for leaks.
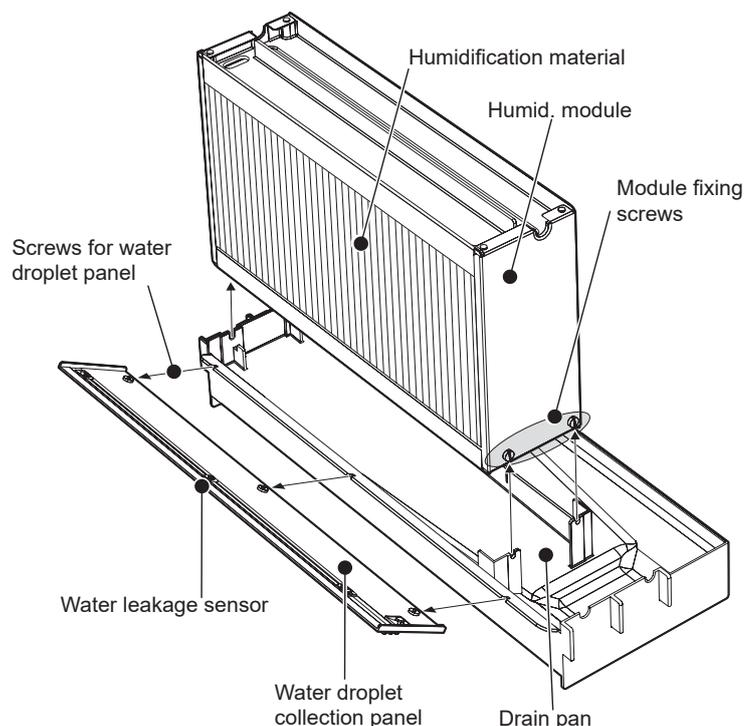
Figure 12: Drain pan, humidification module, and water droplet collection panel

6.10   Checking the Electrical Connections

Open the control box and terminal block cover in the humidifier. Refer to the wiring diagram in the installation manual for the proper wiring of the unit.

Access to the control box and terminal cover may require the removal of the drain pan and removal of the humidification module.

Check the following:

• Loose connections with the terminal block.

• Loose connections with connectors and similar components.

• Severed or deteriorated wires.

• Discoloured or deformed relays (or similar).

6.11   Cleaning the Internal Plumbing Components

Access to the supply header nozzle, drain pump, level sensor, and float switch may require the removal of the drain pan and humidification module.
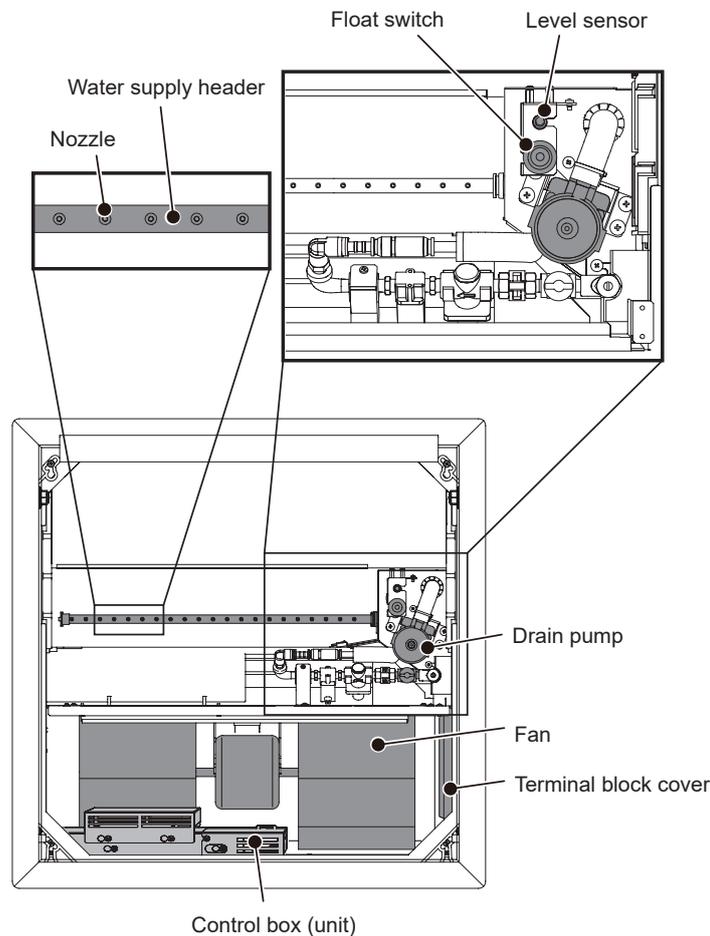
Figure 13: Internal components (plumbing)

To clean the plumbing components:

1. Carefully and thoroughly clean the water supply header nozzles (thin tubes) using a brush, cleaning cloth or similar to remove scale and other contaminants.

2. Inspect the drain pump, level sensor, and float switch. Clean with a wetted, soft cloth (or similar).

7   Fault Isolation

Troubleshooting of the humidifier must only be performed by well qualified and well trained personnel. Electrical repairs must only be performed by a licensed electrician authorized by the customer or by Condair service technicians.

Troubleshooting the humidifier may require the user to access the inside of the control and plumbing cabinets in the humidifier, which may expose the user and equipment to the hazards described in *"For Your Safety" on page 5*.

7.1   General

Most operational warning/fault conditions are caused by improper installation, or by not adhering to the suggested best practices for installation of the humidifier and system components. Hence, a full fault diagnosis always requires a thorough examination of the entire system (hose connections, control systems, etc.).

7.2   Fault Indication

When using a single remote controller to control multiple humidifier units, alarm signals will be output individually from each humidifier unit via terminals 1 and 3. Alarm signals are output to the remote controller when a unit's safety protection function activates.

As a safety precaution, the unit stops operation, the alarm light illuminates on the remote controller, and an alarm signal is generated (external signal output) when the following errors occur:

*   High water is detected in the drain pan
*   Water leak is detected in the humidifier.
*   Water solenoid valve is leaking.
*   Drain pump is not functioning properly.
*   Humidification module in the humidifier is expired.

Important! Operation will be stopped for the humidifier unit that triggered the alarm. The remote controller will display both a normal operating state and an alarm state simultaneously.

Alarms are indicated by the LEDs on the control unit, as shown *"Warnings and Faults" on page 30*. To find the humidifier in question, press the Find button on the remote controller (refer to *"Finding the Humidifier that Activated an Alarm" on page 13* for more details)

7.3   Resetting Faults and Warnings

The alarm is self holding, so the problem that triggered the alarm must be identified and resolved before the alarm can be reset.

To reset the alarm:

1. Press the reset button BS1 on the control unit. Inspect the humidifier for further issues.
2. Turn OFF the power source to the humidifier (ex. turn off leakage current circuit breaker, or unplug 120 VAC outlet, etc).
    Note: Pressing the power button on the remote controller will not cancel the self hold.
3. Turn on the unit.

7.4   Warnings and Faults

Warnings and faults for the humidifier are indicated by the alarm light on the remote controller and by LEDs on the humidifier control unit. When receiving an alarm, find the humidifier with the problem (using the Find button on the remote control), then inspect the LEDs on the control unit. Refer to the table below to understand the LEDs, and resolve the issue before resetting the alarm.

For more detailed descriptions on general issues, refer to *"Troubleshooting" on page 31*.

Table 11:   *LED Fault Patterns (refer to "Control Unit" on page 12)*

LED No.	LED Illumination Pattern	Description	Solution
LED 1	LED 1 Blinks quickly (0.1-second intervals).	Occurs when there is a communication error. This may be due to incorrect wiring, loose wires, damaged wires, or excessive wiring lengths.	Check the wires between the remote controller and the main humidifier, and check the wires between the humidifiers in the group. Reconnect and secure any loose wiring. Replace damaged wires. Ensure wire lengths are as short as possible.
LED 1 LED 2	LED1 blinks slowly (0.5-second intervals). LED 2 blinks quickly (0.1-second intervals).	Occurs after 950 000 counts of operation. The unit stops operating, but can be restarted.	Press and hold the power button for 10 seconds to restart the unit. Water supply unit to be replaced soon.
LED 1 LED 2	LED 1 blinks quickly LED 2 illuminates.	Occurs after 1 000 000 counts of operation (approx. 5 years, at 5000 hours per year). The unit stops operating and an alarm signal is created.	Replace the water supply unit.
LED 3	LED 3 illuminates	Occurs when the water level in the drain pan is too high. This may indicate an error with the drain pump, or a blockage at the drain pan.	Inspect the drain pain for blockages and clear them if present. Check the drain pump for damage or malfunction. Check DIP switch settings DS1 for correct water volume rate (refer to section *5.6.1 on page 14*)
LED 4	LED 4 Illuminates	Occurs when a water leakage is detected in the humidifier. The water droplet collection panel above the drain pan contains a water leakage sensor on its surface. This error may indicate an issue with foaming, water spraying or leaking out of the supply or drain line.	Check the supply headers feeding water to the humidification module. The headers may be blocked with sediment. Check the hoses/pipes inside the unit for holes or cracks. Check DIP switch settings DS1 for correct water volume rate (refer to section *5.6.1 on page 14*). Clean or rinse the humidification module. Replace parts as necessary.
LED 5	LED 5 Illuminates	Occurs when water supply solenoid valve leakage or drain error in drain pump.	Check the water supply solenoid valve or drain valve for damage or blockages. Check DIP switch settings DS1 for correct water volume rate (refer to section *5.6.1 on page 14*) Clear the blockage, or replace the part.
LED 7	LED 7 Illuminates	Occurs when drain error in drain pump.	Check the drain valve for damage or blockages. Check the drain hose/pipe installation (proper incline, proper heights and sizes, etc.). Check DIP switch settings DS1 for correct water volume rate (refer to section *5.6.1 on page 14*) Clear the blockage, reconfigure the installation, or replace the part.

7.5 Troubleshooting

7.5.1 Humidifier does not operate

Remote Controller Display	Possible Cause of Failure	Action
All indicator lights are not illuminated	The humidifier power source's leakage current circuit breaker is OFF or a power outage has occurred	Supply power from the power source
	The correct power source type (120 VAC) is not being used	Confirm and rectify
	The unit is toggled to OFF on the remote controller (operation button has not been pressed)	Press the operation button
	A fuse (in the control unit) has blown	Contact Condair
	Board power switch SW1 is toggle to OFF	Toggle board power switch SW1 to ON
Alarm indicator light blinks	Address setting has not been carried out	Carry out address setting (refer to the installation manual)
Normal indicator light displays	The fan does not operate during the initial water supply phase (10 min. duration)	This is normal; the fan will begin operating after the initial water supply phase is complete
Power indicator light blinks	The light is blinking slowly (0.5-sec. intervals) to indicate a water supply unit operation count of 950,000	Press and hold the operation button for 10 sec. or longer to cancel; Prepare a new a water supply unit
	The light is blinking quickly (0.1-sec. intervals) to indicate a water supply unit operation count of 1 million	Replace the water supply unit

7.5.2 Humidifier is operating but humidification is insufficient

Remote Controller Display	Possible Cause of Failure	Action
Normal indicator light displays	The fan speed is set to low	Switch to high fan speed
	The water supply service valve is closed	Open the water supply service valve
	Holes in the water supply strainer are clogged, which reduces supply water volumes	Clean the water supply strainer
	Supply water pressure is too low, resulting in insufficient supply water volumes	Confirm and rectify
	Water supply has been cut off	Confirm
	The humidistat setting is too low	Confirm settings
	The humidistat is malfunctioning (contact does not switch to ON)	Repair or replace
	Fan air output is low due to filter clogging	Clean the filter
	The humidification module has become dirtied, reducing its ability to absorb water and thus reducing humidification performance	Clean or replace the humidification module
	A water supply header nozzle(s) has become dirtied, preventing even dripping of supply water (inconsistent distribution)	Clean the water supply header nozzle(s)
	A water supply header nozzle(s) has become clogged, preventing supply water from being dripped from the affected nozzle(s)	If no improvement is seen after trying the above response measures: Contact Condair (for purposes of removing the header nozzle clog(s))
	No supply water is dripping down from any of the water supply header nozzles, or only a very small amount is dripping down	Clean the water supply header nozzle(s)
	Orifices within the supply water hose are clogged, resulting in no or very little supply water drip from the water supply header	If no improvement is seen after trying the above response measures: Contact Condair (for purposes of removing the clogging or replacing the supply water hose)
	A reason not listed above	Contact Condair

7.5.3 Detection of high water level in the drain pan, water leakage, water supply solenoid valve leakage, or irregular drain pump discharge

Remote Controller Display	Possible Cause of Failure	Action
Alarm indicator light illuminates	Humidifier unit is not level	Confirm and rectify
	The waste water drainage piping does not have a sufficient downward gradient	Confirm and rectify
	The drain pump piping or waste water drainage piping is clogged	Confirm and rectify
	There is a sharp bend/curve in the drainage piping, or an air pocket(s) has formed in the pipes	Confirm and rectify
	The humidification module has become dirtied, reducing its ability to absorb water and thus causing water drops to scatter	Clean or replace the humidification module
	The water supply unit is leaking	Close the master valve and replace the water supply unit

7.5.4 Water is leaking from the humidifier cover

Remote Controller Display	Possible Cause of Failure	Action
Normal indicator light displays	The water release cap on the bottom of the drain pan has been removed or loosened	Reattach and tighten the water release cap
	Heat-insulating material inside the main unit has come off and condensation has formed	Reattach the heat-insulating material
	A problem with the pressure reduction valve has resulted in excessive supply water, which has caused water drop splashing	Contact Condair
	Water is leaking from a connection(s) in the piping, annealed copper tube and/or the supply water hose	Repair the problem
	Dirtying of the drain pan has caused the waste water drainage pump to become blocked up, resulting in waste water drainage pipe clogging	Clean the drain pan or replace the pan
	The waste water drainage piping was not installed correctly	Confirm and rectify
	The float switch is malfunctioning	Clean or replace the float switch
	Limescale and/or dirtying of the humidification module has reduced its ability to absorb water, causing water drops to scatter	Clean or replace the humidification module
	Humidifier unit is not level	Confirm and rectify
	The temperature difference between the in-room intake air and air within the ceiling is 50 °F (10°C) or greater, resulting in condensation	Confirm and rectify
	Insufficient rinsing with water was carried out following cleaning of the humidification module with cleaning agent, resulting in scattering water drops	Rinse the humidification module with water
	A reason not listed above	Contact Condair

7.5.5 Abnormal sounds coming from the humidifier

Remote Controller Display	Possible Cause of Failure	Action
Normal indicator light displays	Supply water pressure is too high	Confirm and rectify
	Pressure reduction valve vibration is causing the noise	Vent air from the piping
	An air pocket has formed in the drain pump/drain pipe	Confirm and rectify
	Filter clogging has resulted in abnormal fan noise	Clean the filter
	A reason not listed above	Contact Condair

7.5.6 Abnormal smells coming from the humidifier

Remote Controller Display	Possible Cause of Failure	Action
Normal indicator light displays	Supply water quality is poor	Confirm and rectify Clean or replace the humidification module
	The humidifier unit is not level, so water has accumulated in the drain pan	Confirm and rectify Clean or replace the humidification module
	The odor is caused by air flow infiltration from the waste water drainage piping	Rectify the problem by separating drainage piping from other piping or taking similar measures
	The humidification module has become dirtied through use	Clean or replace the humidification module
	A reason not listed above	Contact Condair

7.5.7 White powder (lime scale) is dropping from the humid. module

Remote Controller Display	Possible Cause of Failure	Action
Normal indicator light displays	Water quality does not fulfill the requirements listed in the product specifications	Confirm and rectify; if necessary, clean or replace the humidification module
	Holes in the water supply strainer are clogged, which reduces supply water volumes	Clean the water supply strainer, clean or replace the humidification module
	Supply water pressure is too low, resulting in insufficient supply water volumes	Confirm and rectify; if necessary, clean or replace the humidification module
	The water supply header has become clogged, resulting in insufficient supply water volumes	Clean the water supply header nozzle(s)
	The air temperature of the humidifier unit's intake air is too high (current supply water volume is insufficient for the increased humidification demand)	Increase the supply water volume, clean or replace the humidification module
	A reason not listed above	Contact Condair

8 Decommissioning

Carry out the following procedures prior to any long-term suspension of humidifier operation (such as during a season when humidification is not necessary).

To suspend operation of the humidifier (long-term):

1. Turn off the humidifier. The humidifier fans will continue to operate to dry the unit.
2. After completion of the drying operation, turn the humidifier power source's leakage current circuit breaker to the OFF position.
3. Close the water supply service valve. (Make sure to close this valve whenever the power source is turned OFF.)

9   Product Specifications

Model/Type		Condair Ceiling Mounted Evaporative Humidifier
Model No. and product name		Condair TE-05
Standard humidification capacity	Fan-High (60 Hz)	4.85 lb/h (2.2 kg/h)
	Fan-Low (60 Hz)	2.43 lb/h (1.1kg/h)
	at 73.4°F (23°C) and 40% RH. Standard humidification capacity varies depending on intake air conditions.	
Rated Air Flow	Fan-High (60 Hz)	20 129 ft³ (570 m³), 350 cfm
	Fan-Low (60 Hz)	9 888 ft³ (280 m³), 175 cfm
Operating noise		40 dBA at high fan operation (60 Hz), and 21 dBA at low fan operation) (60 Hz)
Air flow switching		Two fan speed levels: high and low, toggled via remote controller (two-position humidistat installation supported)
Rated power source		120 VAC, 60 Hz
Rated power consumption		97 W (at high fan speed with waste water drainage pump operating 60 Hz)
Weight during operation		29 kg (63.9 lb)
Drain pump capacity		Max. 0.9 L/min. (0.24 gal/min), max. lift: 800 mm (31.5 in) when located 1200 mm (47.2 in) from ceiling surface
Max. instantaneous waste water discharge volume		Approx. 0.9 L/min. (0.24 gal/min), instantaneous volume when drain pump starts operation
Electrical characteristics	Voltage allowance range	Within ±10% range
	Insulation resistance	100 M Ω or greater
	Dielectric strength	1000 VAC for 1 min . with no abnormal voltage application
Safety protection functions	(1) Drain pan high water level detection (operation stopped, alarm indicator lamp illuminates)	
	(2) Detection of water leakage (operation stopped, alarm indicator lamp illuminates)	
	(3) Detection of water solenoid valve leakage (operation stopped, alarm indicator lamp illuminates)	
	(4) Drain error detection in waste water drainage pump (operation stopped, alarm indicator lamp illuminates)	
Health and sanitation measures	(1) Drying operation function: fan operated to dry humidification module, stops automatically after approx. 2 hours.	
	This product dries the media cassette following cessation of unit operation (stopped via the remote controller or external control signal input) in order to ensure hygienic air conditioning operations. The remote controller's drying operation indicator light illuminates during drying operation.	
	(2) Periodic drying function: automatically forces humidification module drying operations when necessary in accordance with operating conditions.	
	When the humidifier unit is operated 24 hours a day, forced humidification module drying will be carried out once every 24 hours (approx.) to prevent unpleasant odours and other problems. The drying operation indicator light does not illuminate during these operations.	
Starting/Stopping Operation	When using a humidistat, humidifier operation starts and stops automatically in response to humidity level signals.	
	When using external control, manual starting and stopping is carried out via the remote controller or external control signal input from a remote location (external command control), which are processed as second-Input priority.	
	External control signal inputs include steady-state input signals and instantaneous input signals.	
	Changing of the humidifier main unit's control unit DIP switch settings may be required depending on signal type used (set for steady-state input signals as default in newly shipped products).	
External signal output	(1) Operation signal output: no-voltage contact output (arbeit contact, 125 V / 3 A resistive load), output via power indicator light or humidification indicator light (set to power indicator light output as default in newly shipped products)	
	(2) Alarm signal output: no-voltage contact output (arbeit contact, 125 V / 3 A resistive load), self-holding	
During address setting	Address setting is required when connecting the humidifier main unit(s) and remote controller.	
	The remote controller's automatic address setting function detects the number of connected humidifier main units and completes settings.	
	(The number of connected units can be confirmed by operating the remote controller and checking the number of blinks which indicates the number of connected units.)	
Remote Controller (with Humidistat) Settings	Ambient temp. and humidity	5°C–40°C (no freezing), 30%–90% RH (no condensation) Indoor use only.
	Set humidity level range	35%–70% RH, 5% increments The humidistat level for newly shipped products is set at 40% RH.
	Hysteresis	-5% RH

Table 12: Product Specifications

9.1 Dimensions
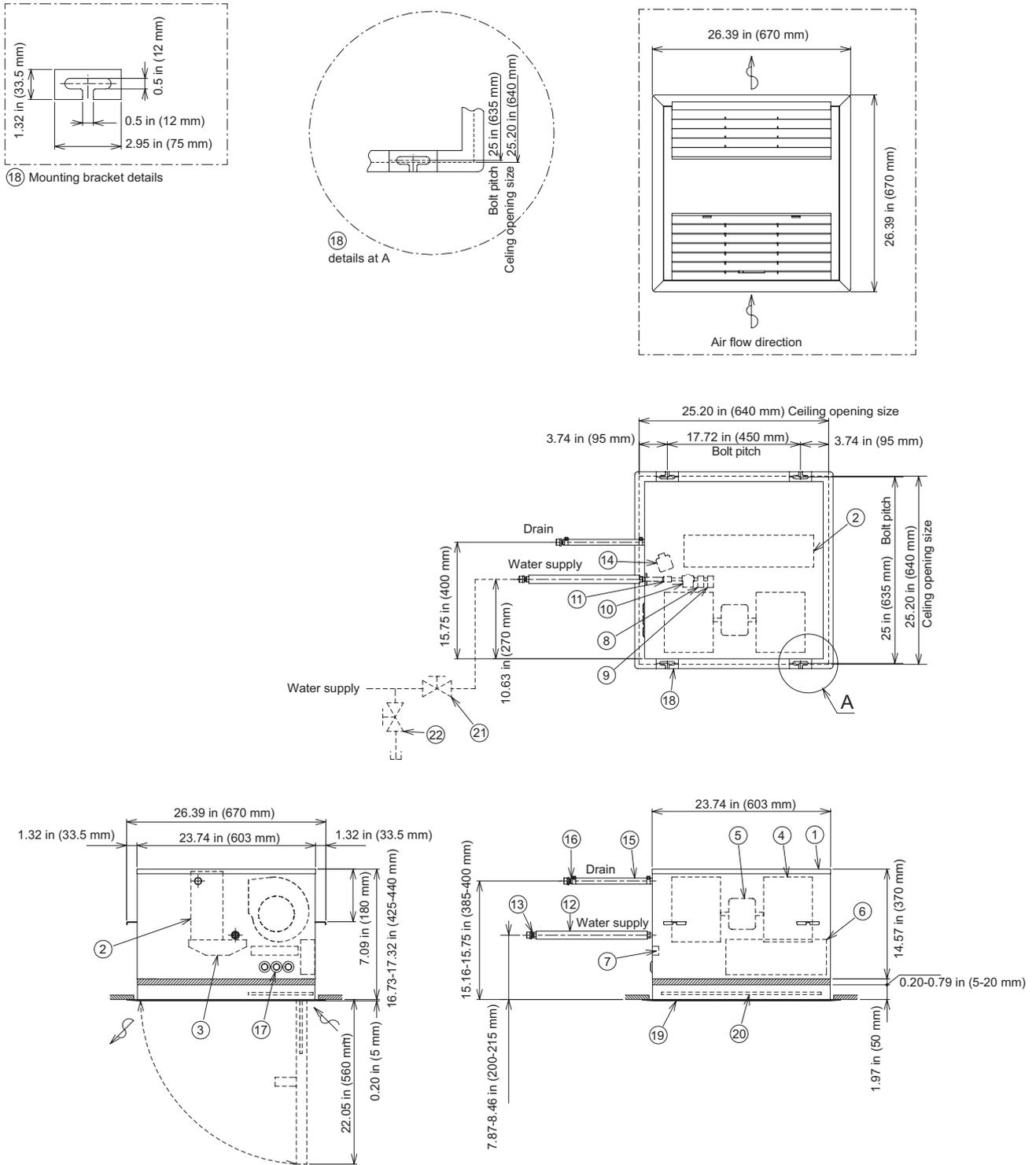
|		
1	Humidifier body	9	Water supply solenoid valve	17	Grommet (wiring)
2	Media cassette	10	Pressure relief valve	18	Mounting bracket
3	Drain pan	11	Water supply strainer	19	Grille (cover)
4	Fan	12	Water pipe insulated, 0.25 in (6.35 mm)	20	Filter
5	Fan motor	13	Water supply fitting R1/2	21	Water supply valve (not supplied)
6	Control unit	14	Drain pump	22	Flushing valve (not supplied)
7	Terminal block	15	Drain hose 0.59x0.79 in (15x20 mm)		
8	Water supply shut off valve	16	Drain fitting 0.63 in (16 mm) R1/2		

Figure 14: Dimensions and connections

Notes:

- The drain pump does not require on-site assembly or wiring (pre-assembled).
- The mounting of the cover (and grill) can be adjusted within a range of 0.59 in (15 mm) up and down (due to sponge layer).
- The broken line will be prepared by the customer.
- When starting up the drainage pipe, use a PVC pipe (nominal diameter 0.51 in (13 mm)) or a hose (inner diameter 0.59 in (15 mm)).
- The piping after start-up should be 3/4 in (19 mm) or more, and the slope of the drain line should be 1/100 or more

A   Appendix

A.1   Start-up Checklist

Refer to this checklist and the installation manual to ensure safe and proper use of the humidifier.

☐   The humidifier main unit is level (check using a level tool) and firmly fixed in place.

☐   Supply water piping ring joints are securely attached and annealed copper tube contains no kinks, breakages or similar.

☐   Hose bands are securely attached to the drain hose, the drain piping is installed with a downward gradient of 1:100 or greater, and no obstruction obscures the flow path.

☐   If using a raised-section drainage piping configuration, a vinyl chloride pipe or a hose is used, and the raised piping section does not exceed 31.5 in (800 mm) in height (max. 47.2 in (1200 mm) from the ceiling surface).

☐   All electrical wiring is correctly installed and secured.

☐   The control unit DIP switch is set in the correct positions.

☐   There is no gap or misalignment between the grille frame and ceiling panels.

☐   The ceiling inspection hatch is installed in the correct position (in a manner that does not hinder maintenance operations for piping and other components).

☐   Sufficient flushing has been carried out for the supply water piping.

☐   Open water supply service valve.

☐   Supply the humidifier with power.

A.2   Spare Parts
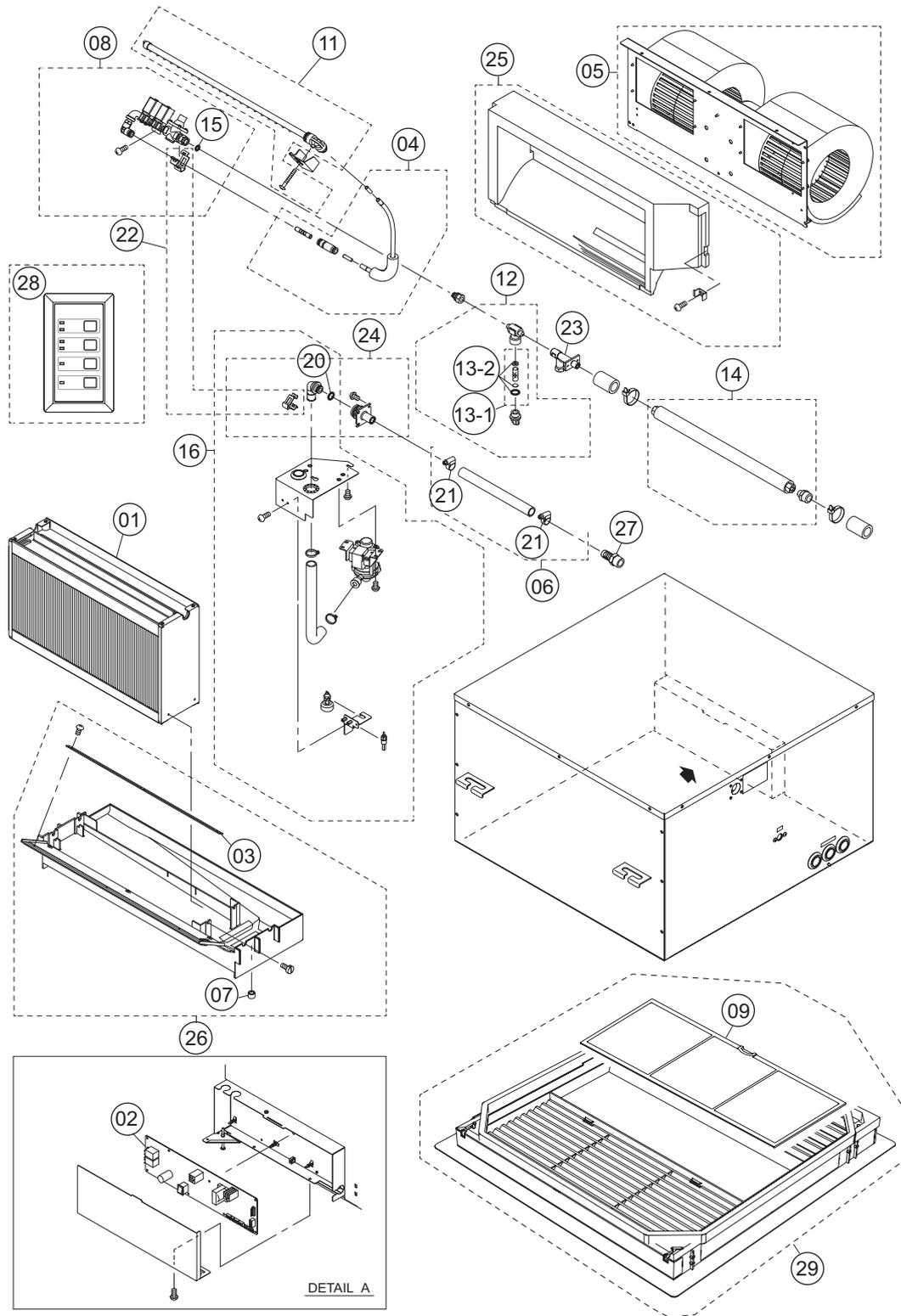
Figure 15: Spare Parts

A.2.1 Spare Parts List

no.	Spare Part Kit	Condair Part Number
1	SP, humidification module, TE-05	2600283
2	SP, control unit, TE-05	2600284
3	SP, leakage sensor, TE-05	2600285
4	SP, water supply hose set, TE-05	2600286
5	SP, fan, TE-05	2600287
6	SP, drainage hose set, TE-05	2600288
7	SP, drainage cap, TE-05	2600289
8	SP, water supply unit, TE-05	2600290
9	SP, air filter, TE-05	2600291
11	SP, header pipe set, TE-05	2600292
12	SP, strainer set, TE-05	2600293
13-1	SP, mesh&packing set for strainer, TE-05	2600294
13-2	SP, packing set for strainer, TE-05	2600295
14	SP, water supply piping set, TE-05	2600251
15	SP, o-ring for water supply unit, TE-05	2600485
16	SP, drainage pump unit, TE-05	2600487
20	SP, o-ring for drainage bulkhead, TE-05	2600488
21	SP, hose clamp, TE-05	2600489
22	SP, joint clipper set, TE-05	2600490
23	SP, bulkhead joint w wtr spply vlv,TE-05	2600491
24	SP, drainage joint set, TE-05	2600492
25	SP, fan guide, TE-05	2600493
26	SP, drainage pan set, TE-05	2600494
27	SP, drainage hose joint, TE-05	2600495
28	SP, remote cntrl (w humidistat), TE-05	2600496
29	SP, grille, TE-05 (cover)	2600497
n/s	SP, nozzle cleaning jig, TE-05	2600498
n/s	SP, transformer, TE-05	2600500
n/s	SP, fuse set, TE-05	2600501

n/s = not shown

A.3 Replacement Schedule

Approximate annual operating hours		
Standard usage	1,000 hours	8 hours/day × 25 days/month × 5 months/year = 1,000 hours
Year-round usage	5,000 hrs.	Winter: 20 hours/day × 30 days/month × 5 months/year = 3,000 hours
		Intermediary seasons: 12 hours/day × 30 days/month × 4 months/year = 1,440 hours
		Summer: 6 hours/day × 30 days/month × 3 months/year = 540 hours

Standard usage

Part name	Years since initial start of humidifier usage									
	1	2	3	4	5	6	7	8	9	10
Humidification module						●				
Fan										
Control unit										
Humidistat unit*										
Water supply header										
Waste water drainage pump (level sensor, float switch, waste water drainage hose)						●				
Water supply unit (pressure reduction valve, shutoff valve, water supply solenoid valve)						●				
Supply water hose with built-in check valve						●				
Water leakage sensor										
Water supply strainer gasket, mesh and O ring	Replace when breakage, deformation or other such problem observed during maintenance operations.									
Drain cap	Replace when breakage, deformation or other such problem observed during maintenance operations.									

Year-round usage

Part name	Years since initial start of humidifier usage									
	1	2	3	4	5	6	7	8	9	10
Humidification module		●	●	●	●	●	●	●	●	●
Fan						●				
Control unit						●				
Humidistat unit*						●				
Water supply header						●				
Waste water drainage pump (level sensor, float switch, waste water drainage hose)				●			●			●
Water supply unit (pressure reduction valve, shutoff valve, water supply solenoid valve)				●			●			●
Supply water hose with built-in check valve						●				
Water leakage sensor										
Water supply strainer gasket, mesh and O ring	Replace when breakage, deformation or other such problem observed during maintenance operations.									
Drain cap	Replace when breakage, deformation or other such problem observed during maintenance operations.									

Warranty

Condair Inc. and/or Condair Ltd. (hereinafter collectively referred to as THE COMPANY), warrant for a period of two years after installation or 30 months from manufacturer's ship date, whichever date is earlier, that THE COMPANY's manufactured and assembled products, not otherwise expressly warranted, 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 parts or materials that are considered consumables, including but not limited to: cylinders, filters, nozzles, membranes, media, gaskets, O-rings, etc. are NOT covered by the warranty.

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 makes no warranty and assumes no liability whatsoever for damage resulting from freezing of the humidifier, supply lines, drain lines, or quality of the water used.

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

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

Extended Warranty

Extended warranties are available to purchase under the conditions listed above.

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