

READ AND SAVE THESE INSTRUCTIONS

INSTALLATION AND OPERATION MANUAL

JetSpray Atomizing Nozzle Unit
Condair JS60C

Thank you for choosing Condair

Installation date (DD/MM/YYYY):

Commissioning date (DD/MM/YYYY):

Location ref.:

Model:

Serial number:

Fill in data at the commissioning!

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1 Introduction

1.1 To the very beginning

We thank you for having purchased a **JetSpray Atomizing Nozzle Unit Condair JS60C** (Condair JS60C for short).

The Condair JS60C incorporates the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair JS60C may result in danger to the user or third parties and/or impairment of material assets.

To ensure a safe, proper, and economical operation of the Condair JS60C, please observe and comply with all information and safety instructions contained in the present installation and operation manual as well as in the separate documentations of the components installed in the humidification system.

If you have questions after reading this documentation, please contact your Condair representative. They will be glad to assist you.

1.2 Notes on the installation and operating instructions

Limitation

The subject of this installation and operation manual is the JetSpray Atomizing Nozzle Unit Condair JS60C. Accessories are only described insofar as this is necessary for proper installation and operation of the equipment. Further information on accessories can be obtained in the respective instructions.

This installation and operation manual is restricted to the **installation, commissioning, operation, servicing, and trouble-shooting** of the Condair JS60C and is meant for **well trained personnel being sufficiently qualified for their respective work.**

Symbols used in this manual



CAUTION!

The catchword "CAUTION" used in conjunction with the general caution symbol designates notes in this installation and operation manual that, if neglected, may cause **damage and/or malfunction of the unit or other material assets.**



WARNING!

The catchword "WARNING" used in conjunction with the general caution symbol designates safety and danger notes in this installation and operation manual that, if neglected, may cause to **injury to persons.**



DANGER!

The catchword "DANGER" used in conjunction with the general caution symbol designates safety and danger notes in this installation and operation manual that, if neglected, may lead to **severe injury or even death of persons.**

Safekeeping

Please keep this installation and operation manual in a safe place, where it can be immediately accessed. If the equipment changes hands, the documentation must be passed on to the new operator. If the documentation gets mislaid, please contact your Condair supplier.

Language versions

These installation and operating instructions are available in various languages. Please contact your Condair supplier for information.

2 For your safety

2.1 General

Every person working with the Condair JS60C must have read and understood this installation and operation manual before carrying out any work.

Knowing and understanding the contents of the installation and operation manual is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty installation, and to operate the unit safely and correctly.

All ideograms, signs and markings applied to the unit must be observed and kept in readable state.

2.2 Qualification of personnel

The Condair JS60C must be installed, operated, serviced and repaired only by properly trained technical personnel familiar with the equipment.

For safety and warranty reasons any action beyond the scope of this manual must be carried out only by qualified personnel authorized by Condair.

It is assumed that all persons working with the Condair JS60C are familiar and comply with the appropriate regulations on work safety and the prevention of accidents.

2.3 Intended and non intended use

– Intended use

The Condair JS60C is **exclusively** intended for direct room humidification under strict adherence to the information and notes given in this manual. Any use beyond this scope is considered to be a violation of the intended purpose and may endanger your safety or possibly cause the product to be damaged. Any use other than the intended purpose of the Condair JS60C is **at customer's own risk and for no means the manufacturer or supplier will be liable for possible damage**.

Operation of the Condair JS60C in the intended manner requires that all the information contained in this installation and operation manual is observed (in particular the safety and hygiene instructions).

Special care must be observed to properly install, maintain, clean, and disinfect the Condair JS60C to preserve acceptable levels of hygiene.

– Non intended use

The Condair JS60C is not suitable for humidification in health-care premises. Due to the nature of aerosol generating humidification units, it is **not** recommended to use these in environments where the occupants or materials in the space are adversely sensitive to airborne bacteria, viruses, dust, and debris.

The Condair JS60C must **not be used in hazardous** locations.

2.4 General health and safety notes

- One may get in touch with live parts when the Condair JS60C unit is open. Touching live parts may cause severe injury or danger to life.

Prevention: before carrying out any work set the Condair JS60C out of operation (switch off the unit, disconnect it from the mains and stop the water and compressed air supply) and secure the unit against inadvertent power-up.

- The customer is responsible for ensuring that the installation of the equipment complies with all local regulations. Any risks or hazards relating to the unit, including during installation and maintenance, should be identified by a competent Health & Safety representative who shall be responsible for introducing effective control measures as necessary.
- **DANGER! Due to health risks, the silicate content in the supply water – in any form – must not exceed 12 mg/l.**

If the silicate content of the supply water is higher a silicate filter must mandatory be installed in the water supply line before the humidifier by the customer.

For product specific limitations for silicate please observe the required preconditions for the water supply.

- Observe and comply with all local regulations on the Control of Substances Hazardous to Health and recommendations with regard to Personal Protective Equipment including Respiratory Protective Equipment.
- Observe and comply with local regulations on the control of Legionellosis in water units. If inadequately maintained, cold water units, of which any humidifier is a part, can support the growth of micro-organisms, including the bacterium that causes Legionnaires' disease.

To prevent the growth of Legionella, users are required to:

- Carry out a risk assessment of the water unit using a competent person and implement an appropriate monitoring and control regime.
- Avoid water temperatures which favor the growth of Legionella. Recommended water supply temperature is between 5 to a maximum of 15 °C.
- Avoid water stagnation.
- Clean and disinfect the unit in accordance with the Health & Safety Executives technical guidance and instructions in this manual.
- The Condair JS60C **MUST** be used only with cold and untreated potable drinking water according to the locally valid regulations or RO water. It is the responsibility of the operator to ensure that the potable drinking water system to which the Condair JS60C is connected complies with the locally valid regulations and ordinances and that the listed guide values for the supply water are observed, especially those for the control of Legionella. The use of water from tanks and vessels fed with potable drinking water is only permitted if they are part of a controlled water treatment system.

For users in the UK, an additional document entitled "Cold Water Humidifier Hygiene Guidance" is available to assist you in complying with UK legislation.

2.5 Preventing unsafe operation

If it is suspected that **safe operation is no longer possible**, then the Condair JS60C should immediately **be shut down and secured against accidental power-up**. This can be the case under the following circumstances:

- if the Condair JS60C is damaged
- if the water system of the Condair JS60C is contaminated
- if the Condair JS60C is no longer operating correctly
- if connections and/or piping are not sealed
- if electrical cables are defective

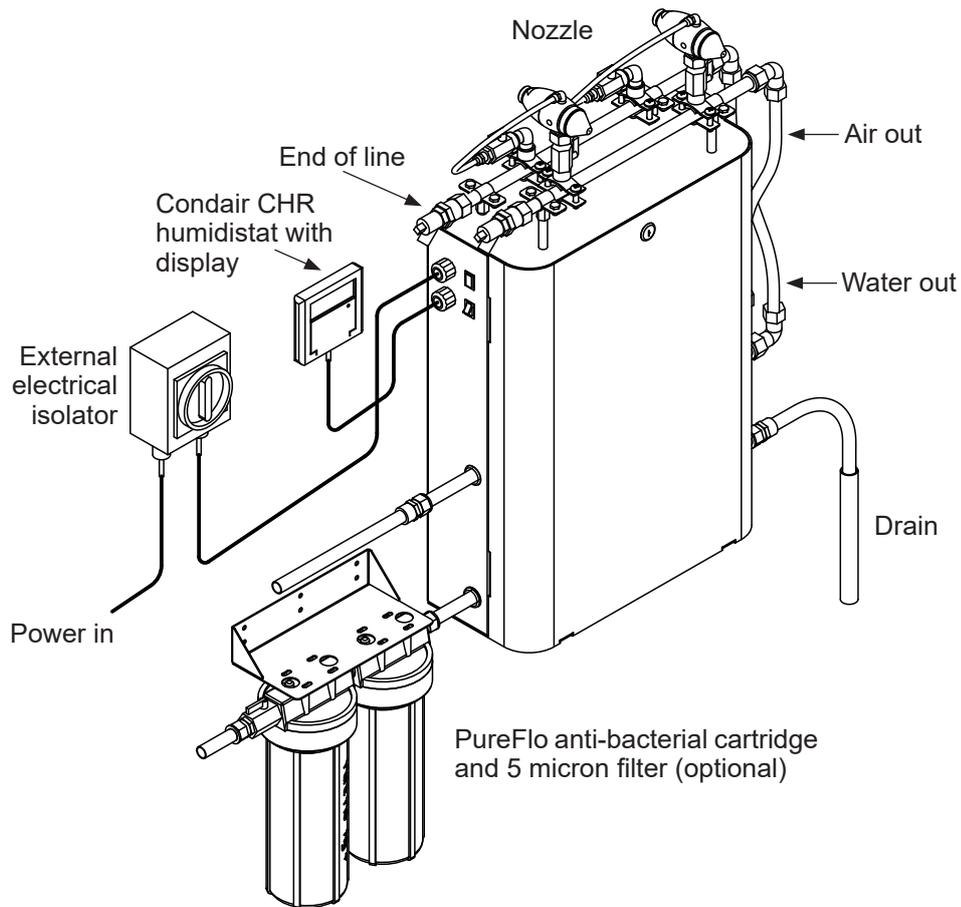
All persons working with the Condair JS60C must report any alterations to the unit that may affect safety to the owner without delay.

2.6 Prohibited modifications to the unit

No modifications must be undertaken on the Condair JS60C without the express written consent of the manufacturer.

For the replacement of defective components use exclusively **original accessories and spare parts** available from your Condair supplier.

3 Unit overview



3.1 Specification

	JS60C-5	JS60C-7	JS60C-9	JS60C-11	JS60C-13	JS60C-18	JS60C-24	JS60C-30
Output	5 l/h	7 l/h	9 l/h	11 l/h	13 l/h	18 l/h	24 l/h	30 l/h
NOZ**K	2.5	3.5	4.5	5.5	6.5	9	12	15
Quantity	2	2	2	2	2	2	2	2
Contr. Tolerance	±4 % rH							
Control	On/Off							
Dimensions	(Width x Height x Depth) = 380 mm x 740 mm x 167 mm							
Weight	18 kg							

Nozzle Output (l/h)	2.5	3.5	4.5	5.5	6.5	9.0	12.0	15.0
SCFM Air Consumption per nozzle @ 2.2 bar	0.38	0.53	0.68	0.83	0.98	1.35	1.8	2.25
CFM Air Consumption per nozzle Free Air Delivery (0.33 CFM/l)	0.83	1.16	1.49	1.82	2.15	2.97	3.96	4.95
m³/h Air Consumption per nozzle Free Air Delivery (0.56 m³/h/l)	1.40	1.96	2.52	3.08	3.65	5.05	6.73	8.41

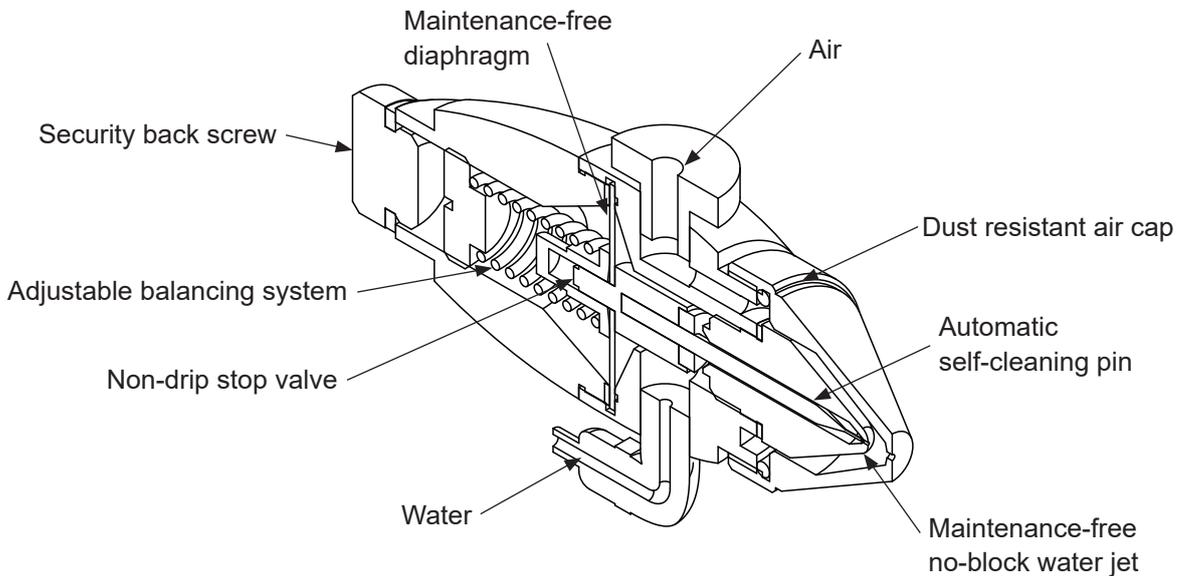
The Condair JS60C control panel is rated to IP54. For outdoor use, an appropriate weatherproof rated enclosure is required. Contact the distributor for details.
Humidity tolerance is subject to temperature control.
The PureFlo anti-bacterial dosing unit is optional.

4 Principle of operation

The Condair JS60C humidifier unit consists of two JetSpray atomizing nozzles of appropriate output, combined with a control panel. This unit is designed for small direct air industrial applications; being installed by the manufacturer or distributor or supplied in a form suitable for installation by in-house technical staff or contractors. The unit is assembled and pre-commissioned at the factory and fully delivered on site. PureFlo for hygienic humidification is optional.

The Condair JS60C uses air and water under pressure to produce finely atomized sprays which rapidly evaporate to raise the relative humidity to the desired level. Pressure and flow regulation is established via the control panel which also incorporates fail safe devices. Operation is fully automatic and regulated by a humidistat or external controls.

The unit is designed for use with potable drinking water or treated water and is completely sealed and with no open tanks, ensuring freedom from contamination and a healthy working environment. Other water sources may be used, including a demineralized water supply. Reverse osmosis water or demineralized water quality should not exceed a purity of 5 $\mu\text{S}/\text{cm}$ or 0.2 $\text{M}\Omega$ resistivity.



The Jet Spray atomizing nozzles are fabricated in nickel plated brass, incorporating a stainless-steel cleaning pin and diaphragm, with water seal. Air and water under pressure do not mix until they reach the nozzle where they exit at the nozzle tip and atomize to produce a finely atomized spray.

When the relative humidity drops below the set level, the air solenoid valve within the control panel opens in response to a humidity demand. When air pressure is at a sufficient level to cause atomization, a pressure switch activates the water solenoid valve and drain solenoid, allowing water to flow to the nozzles. Water cannot flow, therefore, without adequate air pressure. Air and water valves close when the desired level of relative humidity has been achieved, preventing air and water flow to the nozzles. Whenever the unit switches off, pressure within the water line is immediately relieved via the drain line while compressed air continues to flow through the nozzle. This allows the water valves in the nozzles to shut off cleanly, preventing drips. After the air run-on period, a stainless steel cleaning pin is pushed through the orifice of the water jet, removing any mineral deposits.

During prolonged periods where humidity is not required the humidifier will use periodic purge and nozzle flush cycles to prevent water stagnation and inhibit any bacterial growth. The control panel **MUST** be left powered on at all times for these safety features to function.

The control panel is supplied with an optional PureFlo cartridge which must be installed in the water line prior to the control panel. PureFlo has been developed to inhibit the growth of bacteria, molds and fungi in concentrations normally found in potable drinking water supplies. PureFlo is not a disinfectant and will not kill all microbes in contaminated water. It is therefore important that the quality of the water supplying the humidifier is monitored and controlled regularly according to the risk assessment for your building.

The air run on cycle ensures the nozzles do not drip or expel water when the JS60C unit switches off. This is achieved by leaving the air on to the nozzles until the water line has been completely relieved of water pressure. The duration can be set on site by customer.

During periods of low humidity demand the Nozzle flush cycle will periodically initiate a humidity demand to bring the unit on to prevent water stagnation and keep the Condair JS60C clear. The default frequency is set at every 4 h the duration is set at 5 min. This frequency must not be changed without consultation with the distributor. During commissioning it must be checked that this is sufficient time to fill the unit pipe work and spray through the nozzle for 2 min. or more. If necessary increase this time accordingly as per the programming instructions in this manual.

Periodically the humidifier will purge water to drain to prevent water stagnation and ensure the feed water supply is kept fresh and clean. The duration of this purge should be set dependent upon the length of supply water pipe work as described in the commissioning chapter of the manual.

5 Installation

5.1 Condaire Services

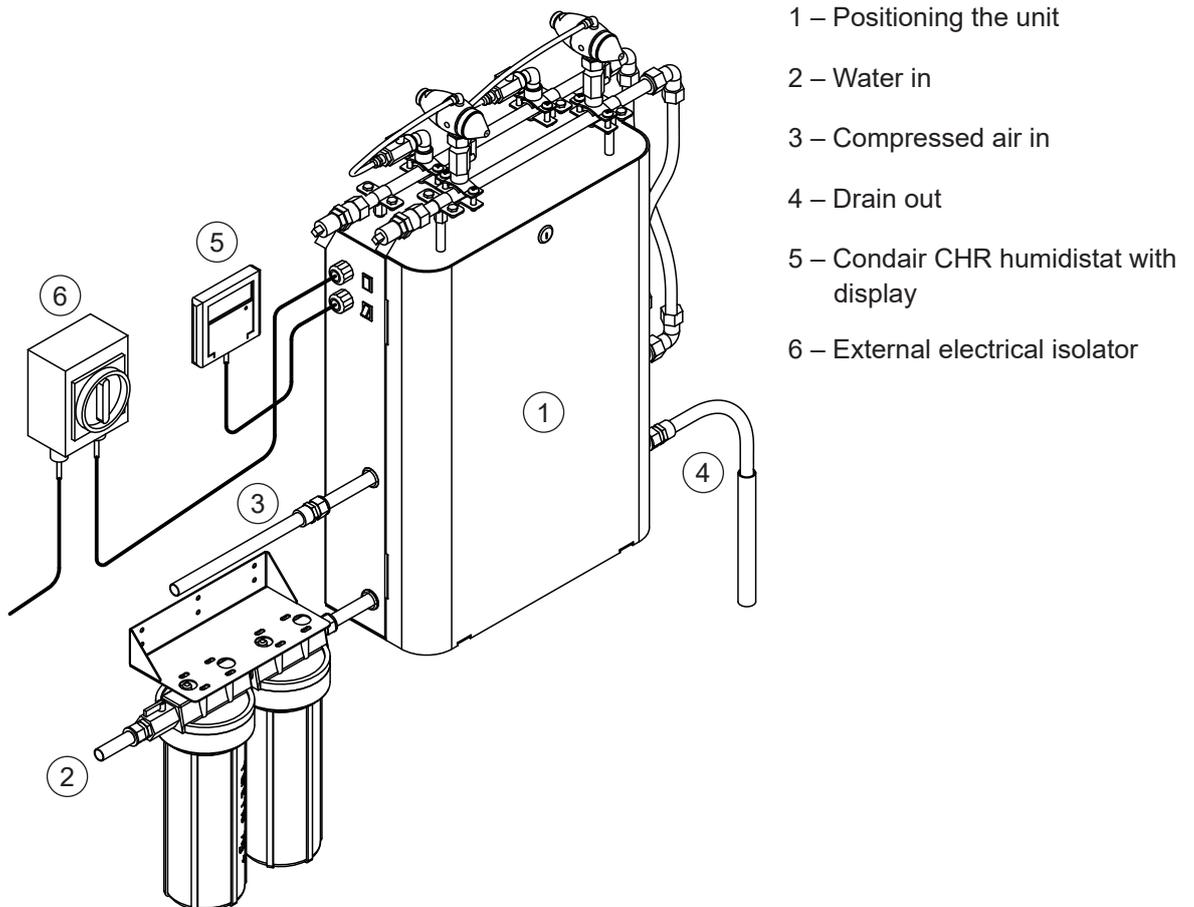
Condaire offers an installation and commissioning services. The services available include:

- Site surveys
- Turnkey packages
- Contract management
- Management of site health & safety
- Risk management
- Preparation of operation & maintenance documentation & drawings
- Client demonstration and hand over

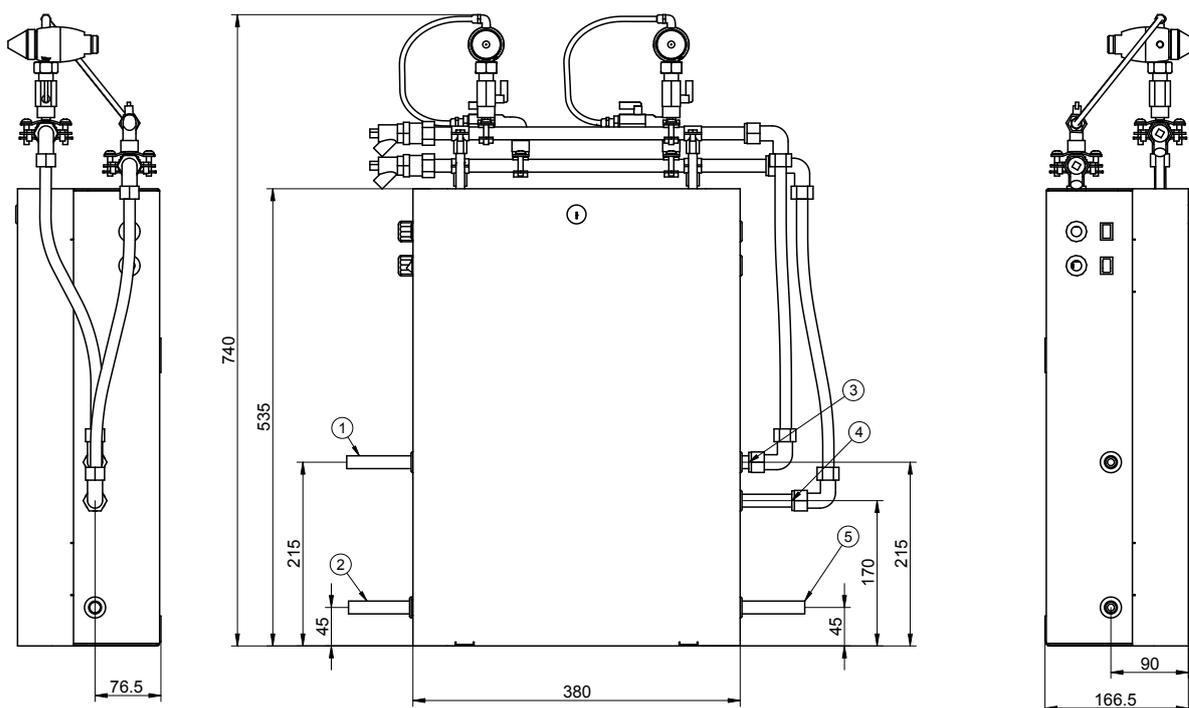
Condaire ensures with its contracts that only trained personnel meeting the local health and safety standards is used and that all local health and safety standards are upheld.

For further information, please contact your local distributor.

5.2 Installation overview



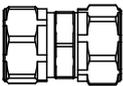
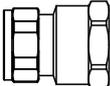
5.2.1 Dimensions and pipe positions



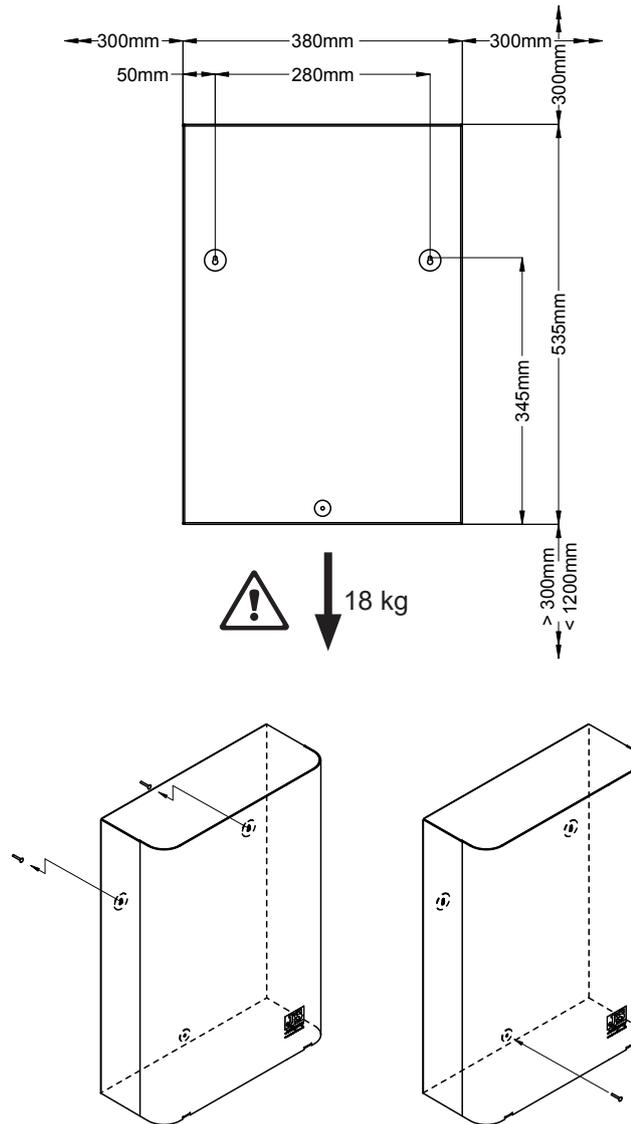
1	Air Inlet	15 mm
2	Water Inlet	15mm
3	Air line to the nozzle	
4	Water line to the nozzle	
5	Drain	15 mm

Image indicates recommended UK pipe sizes. EU and US pipe work adaptors (available from distributor) may be required if installing overseas. Please see table below.

5.2.2 Installation kits (option)

Kit Number	Image	Description	Quantity
1200061		15 mm - 16 mm Adaptor	3
1200062		15 mm - 1/2" BSP Adaptor	3

5.3 Positioning the unit



CAUTION!

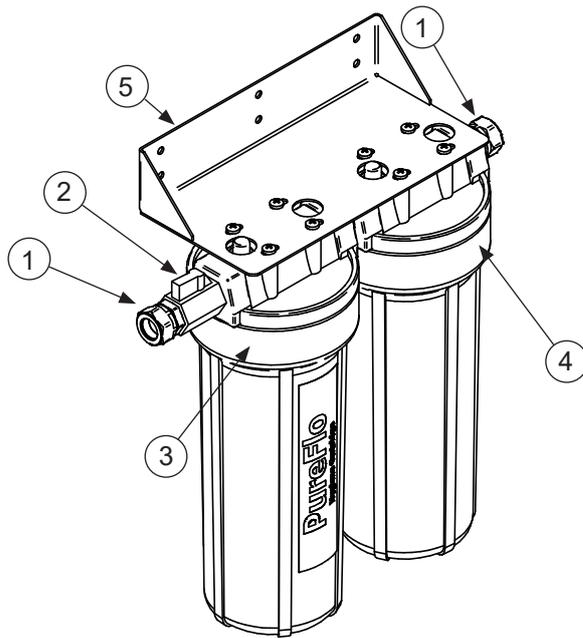
Ambient conditions:

Temperature:	5-45 °C
Humidity:	< 85 % rH
Recommended minimum:	1200 mm

Note: Ensure that the Condair JS60C is accessible for maintenance.

The Condair JS60C should not be installed where it will be subjected to continuous vibration. The installation height is not limited normally, since it is possible to adjust the nozzle spraying direction for different site structure.

5.4 Incoming water supply



- 1 – Compression fitting
- 2 – Ball valve
- 3 – PureFlo Anti-Bacterial Cartridge
- 4 – 5 Micron filter
- 5 – Support bracket

5.4.1 Connection size

Condair JS60C		
Standard	15 mm - 16 mm adapter for Europe (Accessory)	15 mm - 1/2" BSP adapter for North America (Accessory)
15 mm pipe socket	16 mm	1/2" BSP F

CAUTION!

- Before connecting the water line to the control panel flush the line to ensure any flux or foreign matter left over from the installation is removed. Failure to do so could cause component failure or result in water damage.
- The PureFlo is an anti-bacterial cartridge which inhibits bacterial growth. To ensure the hygiene of the Condair JS60C unit, the PureFlo must be fitted and maintained in accordance with this manual.

Note: PureFlo has been developed to inhibit the growth of bacteria, molds and fungi in concentrations normally found in potable drinking water supplies. PureFlo is not a disinfectant and will not kill all microbes in contaminated water. It is therefore important that the quality of the water supplying the humidifier is monitored and controlled regularly according to the risk assessment for your building.

It is recommended that an additional shut-off valve and tee point is fitted before the Condair JS60C unit to allow the water supply line to be flushed, or for routine water sampling and cleaning / disinfection.

5.4.2 Supply water requirements

For the supply of the Condair JS60C only cold and untreated potable drinking water according to the locally valid regulations or RO water **MUST** be used. It is the responsibility of the operator to ensure that the potable drinking water system to which the Condair JS60C is connected complies with the locally valid regulations and ordinances and that the listed guide values for the supply water are observed, especially those for the control of Legionella. The use of water from tanks and vessels fed with potable drinking water is only permissible if they are part of a controlled water treatment system.

Admissible pressure: 4-7 bar (58-102 psi) without significant fluctuation.

Guide values for the supply water:

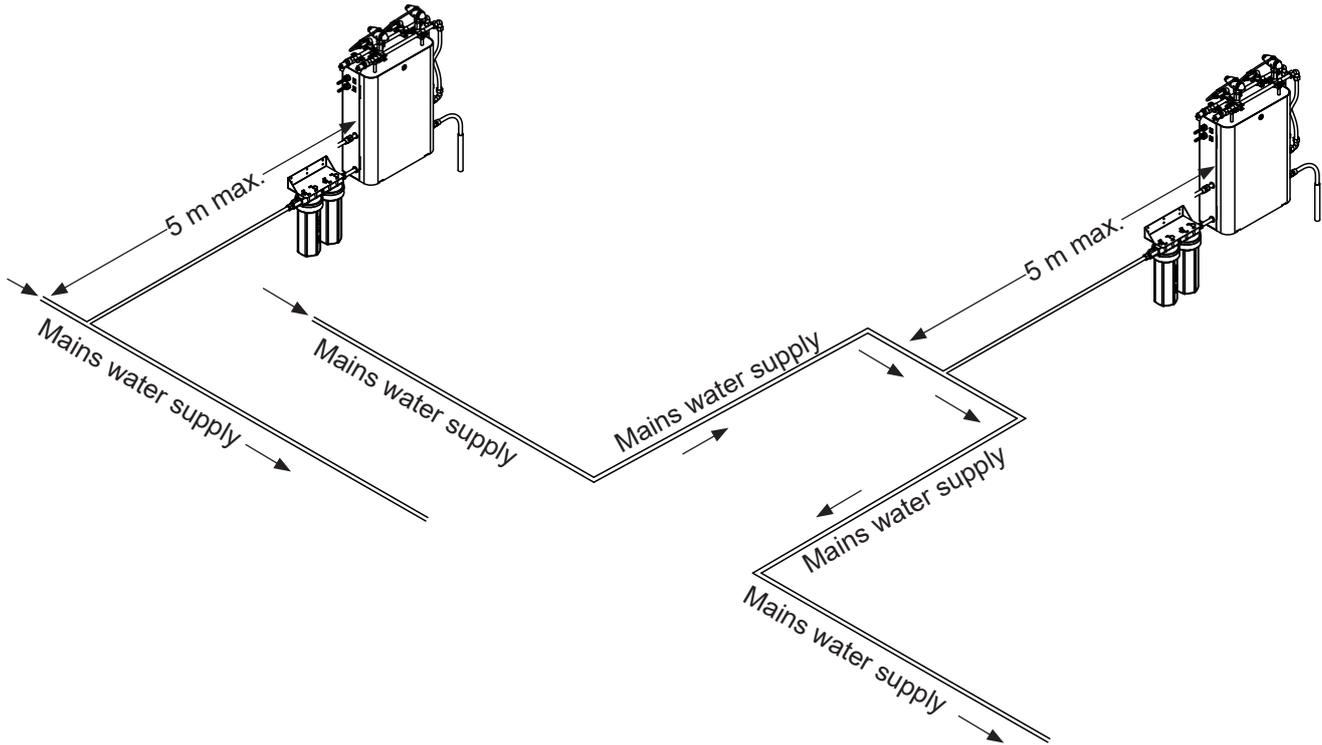
Water supply	Drinking water quality
Conductivity	250-1000 µS/cm
Silt Index	max. 3
Silicate content	max. 12 mg/l
KMnO4	max. 10 mg/l
NTU	max. 2 (If the turbidity exceeds this value, additional filtration is required.)
Temperature	5 up to 15 °C within 2 minutes after switching on the water supply.
Fe	max. 0.2 mg/l
Mn	max. 0.05 mg/l
Max. hardness	max. 20 ° dH
Free chlorine	max. 0.1 mg/l

Water supply	Reverse osmosis or demineralized water
Conductivity	> 5 µS/cm or not exceed a resistance of 0.2 MΩ
Silt Index	max. 3
Silicate content	max. 12 mg/l
KMnO4	max. 35 mg/l
NTU	max. 2 (If the turbidity exceeds this value, additional filtration is required.)
Temperature	5 up to max. 15 °C within 2 minutes after switching on the water supply.
Fe	max. 0.2 mg/l
Mn	max. 0.05 mg/l
Max. hardness	max. 1 ° dH
Free chlorine	max. 0.1 mg/l

Supply water limits:

Colony count at 20 °C	ideally < 100 cfu/ml mandatory < 1000 cfu/ml
Coliform Bacteria	< 1 cfu/100 ml
Legionella	not detectable (< 50 cfu/1000 ml)
Pseudomonas species	< 10 cfu/100 ml

5.4.3 Water supply layout



WARNING!

The supply pipe work layout should be considered to minimize dead legs, the humidifier water supply pipe should be arranged such that it is either

- As short as possible in length (ideally less than 5 m) from a flowing main
- Looped to minimize the length of potentially stagnant pipe.

Stagnant water rapidly deteriorates in quality; it is therefore important that supply pipe work and uncommissioned units are not filled with water and then left to stand in a wet condition. Even when drained pockets of moisture tend to be left behind.

CAUTION!

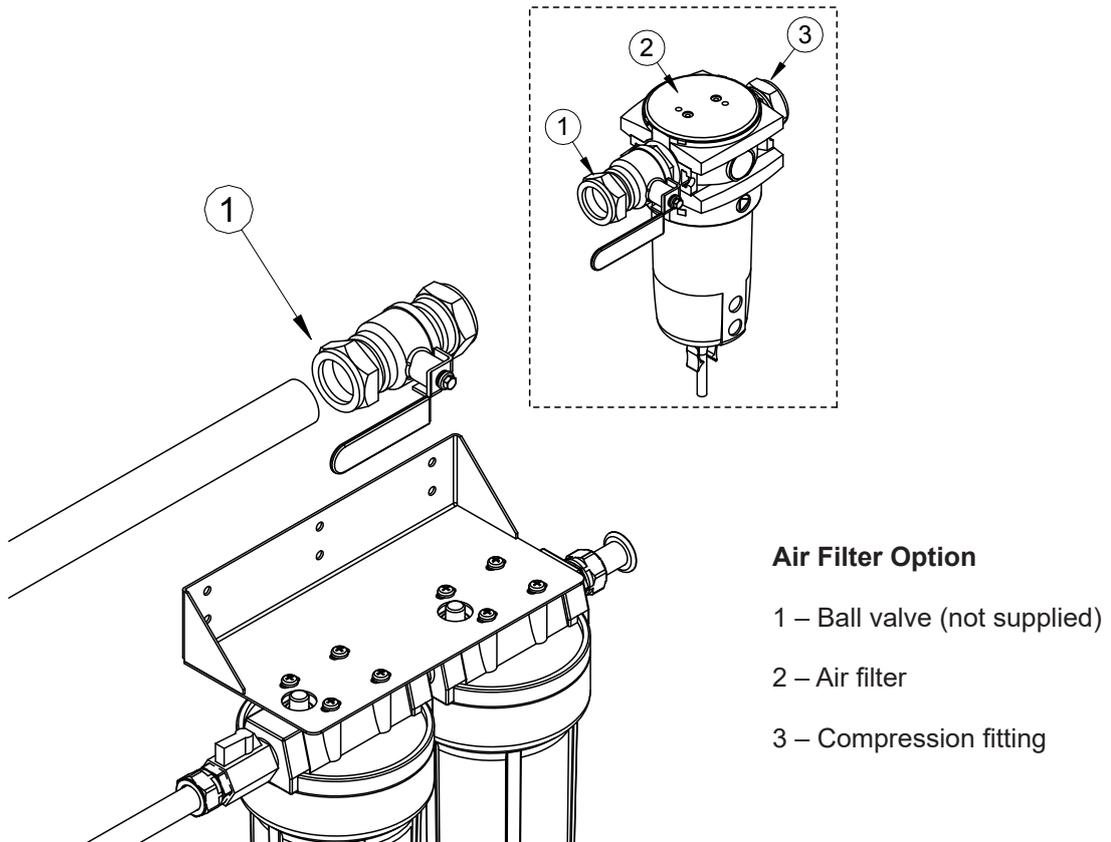
If the distance between the existing mains water supply and the Condair JS60C unit exceeds 5 m, additional pipe work should be installed to bring the supply closer to minimize the risk of a dead leg.

Installation material:

The connection material used must be pressure tested and approved for potable drinking water. Copper is the preferred material for the Condair JS60C-N. PVC-U plastic or stainless steel are suitable alternatives. Do not use iron, steel or galvanised pipes.

Note: Stainless steel pipes must be used when using reverse osmosis or demineralized water. **DO NOT USE IRON, STEEL OR GALVANIZED PIPES** as they are prone to scaling, spalling and corrosion. They also provide a habitat that is excellent for microbiological growth. Materials such as natural rubber, hemp, linseed oil based joint compounds, and fiber washers should not be used as they provide a nutrient source for microbes.

5.5 Incoming compressed air supply



! CAUTION!

Before connecting the airline to the control panel, purge the line to ensure any flux or foreign matter left over from the installation is removed. Failure to do so could cause component failure.

5.5.1 Connection size

JS60C		
Standard	15 mm - 16 mm adapter for Europe (Accessory)	15 mm - 1/2" BSP adapter for North America (Accessory)
15 mm pipe socket	16 mm	1/2" BSP F

5.5.2 Supply air requirements

Admissible air pressure:	4.5 to max. 10 bar (65 - 145 psi)
Purity:	Air supply should be clean, dry and free from oil. If this cannot be guaranteed an air filter and oil separator should be used. Where an air filter is fitted, the oil collector should be connected to an oil drain.
Pipe work materials:	To prevent bacterial growth, pipe work must be non-corrosive and any jointing material used must be free of nutrients that could cause microbial growth.
Air consumption:	0.15 scfm/liter 0.33 cfm/liter 0.068 scfm/lbs 0.255 m ³ /h/lbs ⁻¹

Nozzle Output (l/h)	2.5	3.5	4.5	5.5	6.5	9.0	12.0	15.0
SCFM Air Consumption per nozzle @ 2.2 bar	0.38	0.53	0.68	0.83	0.98	1.35	1.8	2.25
CFM Air Consumption per nozzle Free Air Delivery (0.33 CFM/liter)	0.83	1.16	1.49	1.82	2.15	2.97	3.96	4.95
m ³ /h Air Consumption per nozzle Free Air Delivery (0.56 m ³ /h/liter)	1.40	1.96	2.52	3.08	3.65	5.05	6.73	8.41
Air Compressor Sizing								
Minimum CFM Air Compressor Supply *per nozzle Free air delivery (0.36 CFM/liter)	0.90	1.26	1.62	1.98	2.34	3.24	4.32	5.40
Minimum m ³ /liter Air Compressor Supply *per nozzle Free Air Delivery (0.56 m ³ /liter)	1.53	2.14	2.75	3.37	3.98	5.51	7.34	9.18

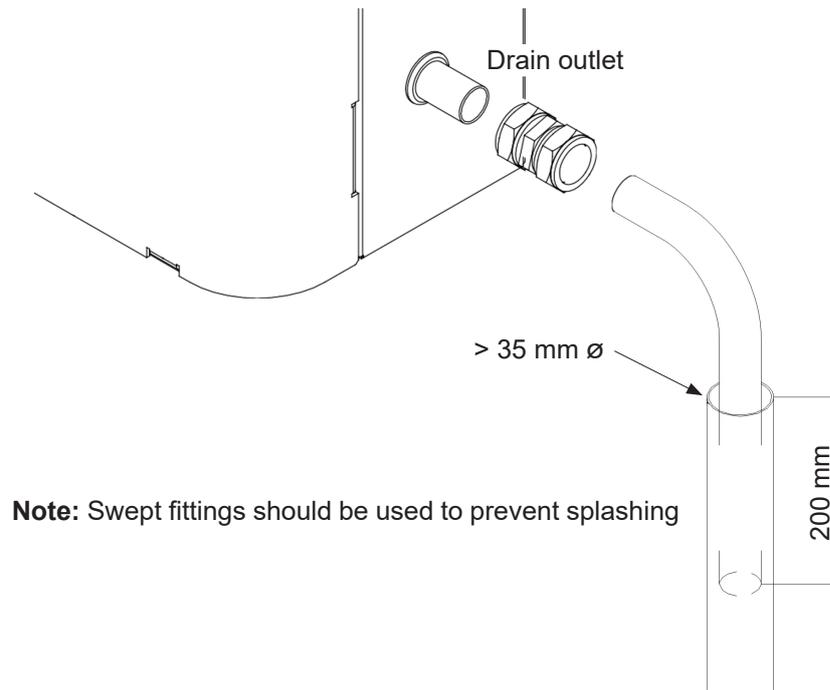
***Note:** Unit Compressor Air Supply is greater than nozzle consumption to allow for variation of output from compressors, ACFM varies due to changes in site ambient conditions.

Particular attention should be paid to compressor location, air intake location, noise considerations, and discharge considerations. Notice should be taken of condensate piping requirements and discharge considerations to ground or sewers

1. It is important that the air supply to the control panel is clean and dry. Oil must also be removed from the compressed air through the use of oil removal filters.
2. All air compressors will produce moisture. Excessive amounts of water in the air lines will reduce nozzle performance, and in extreme cases will prevent the nozzle from producing any mist. A receiver is recommended which must be drained daily to ensure moist air does not enter the humidification unit. As this condensate may be dirty or even oily, it is important to consider its effect on the environment, including Legionnaires' disease.
3. Current legislation places responsibility on the user to ensure that condensate passing into the drainage unit is as clean as possible. Suitable treatment equipment is available from the distributor. The distributor recommends the use of filters both after the receiver and before the humidifier (OPTION).
4. When sizing a screw compressor it is recommended that a maximum safety margin of 20 % is added.

5. Most good quality screw compressors incorporate an after-cooler. If not fitted, however, one should be used when the air consumption exceeds 85 m³/h (50 cfm), or if it is recommended by the air compressor manufacturer. All air consumption figures quoted relate to ISO1217, the free air delivery.
6. A dryer is not usually necessary. However, where there is a high risk that condensation might form in the pipe work, (for example, in an uninsulated pipe run outside a building or in low temperature environments), a dryer may be needed. If a desiccant dryer is used, this can reduce effective air supply by up to 20 % (Check with your supplier).
7. Air pressure loss can be managed by reduction in the air pipe length, elimination of unnecessary elbows, valves and any flow restrictions, increasing the diameter of the primary delivery pipe to the zones and elimination of leaks.

5.6 Drain water outlet



WARNING!

An air gap must be incorporated to prevent any back contamination of the Condair JS60C.

CAUTION!

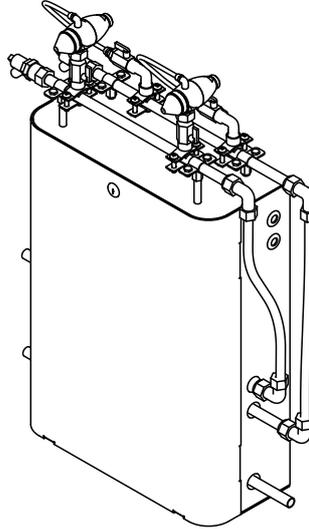
- Observe and comply with local water regulations
- A minimum of 200 mm up-stand is recommended to prevent any splashing when draining.

5.6.1 Connection size

JS60C		
Standard	15 mm - 16 mm adapter for Europe (Accessory)	15 mm - 1/2" BSP adapter for North America (Accessory)
15 mm pipe socket	16 mm	1/2" BSP F

5.7 Nozzles and pipes assembly

The Condair JS60C is supplied with two nozzles as standard. The unit is pre-assembled and ready for use. According to the requirement of the room, it can be equipped with two nozzles ranging from 2.5 to 15 kg/h to achieve a capacity up to 30 kg/h maximum.



CAUTION!

Observe spacing recommendations. Ensure the fog spray length. Adjust the nozzles spray direction in any direction to assure enough absorption distance. Please contact the local distributor to assist in any doubt.

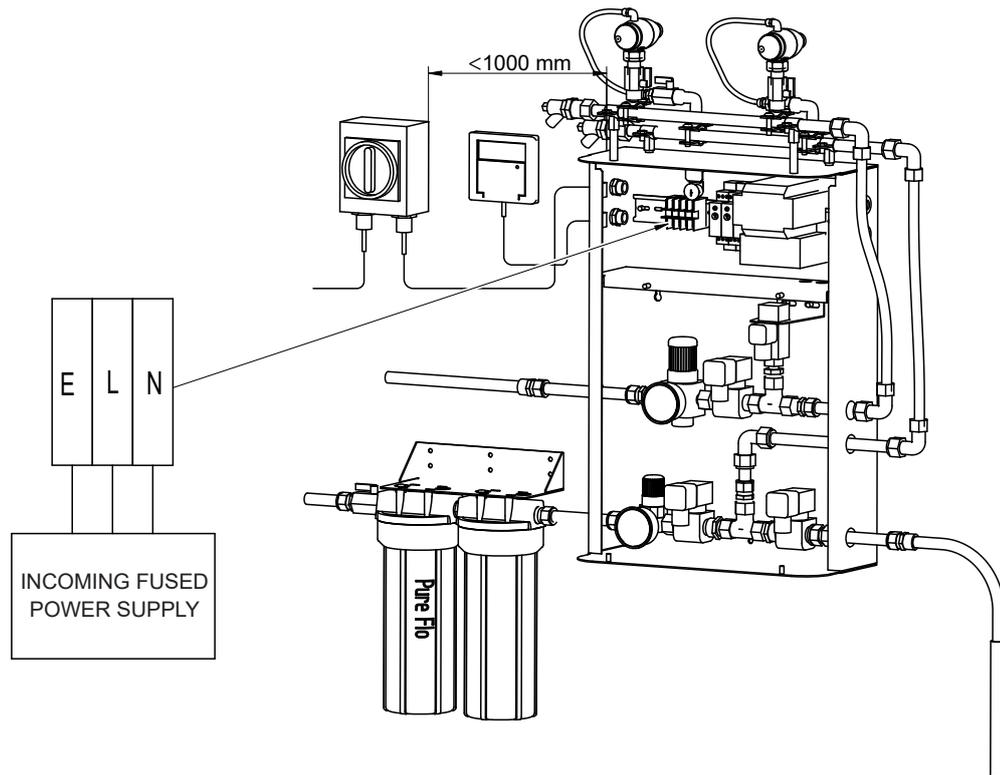
Refer to the table below to adjust the nozzle direction.

Nozzle size	2.5	3.5	4.5	5.5	6.5	9	12	15
Recommended installation height (m), minimum	3.1	3.6	4.2	4.8	5.4	6.8	8.6	10.3
Maximum spray diameter (m)	2.5	3.5	4.5	5.5	6.5	9	12	15
Typical spray length (20-24 °C @ <45 % rH) (m)	2.8	3	3.3	3.6	3.9	4.6	5.5	6.4
Typical spray length (20-24 °C @ 45-60 % rH) (m)	3.5	3.9	4.3	4.6	5.0	6.0	7.1	8.3
Typical spray length (20-24 °C @ >60 % rH) (m)	4.2	4.7	5.2	5.7	6.2	7.3	8.8	10.2

5.7.1 Installation of nozzles and pipes

1. Materials such as natural rubber, hemp, linseed oil based jointing compounds and fibre washers **MUST** not be used. Materials and fittings acceptable for use in water units are listed in the directory published by the water research advisory scheme.
2. The braid hoses should be rechecked if tighten to prevent leakage.
3. The two nozzle spraying direction can be adjusted in all directions, according to the space to adjust it to make the fog as uniform as possible.
4. End of line valves can be connected down to floor drain for purging during commissioning.

5.8 Electrical installation



230 V version

Power supply:	230 V / 50/60 Hz
Power consumption:	0.17 kW
Fuse rating:	2 A
Recommended conductor size:	> 0.75 mm

110 V version

Power supply:	110 V / 60 Hz
Power consumption:	0.17 kW
Fuse rating:	4 A
Recommended conductor size:	> 0.75 mm

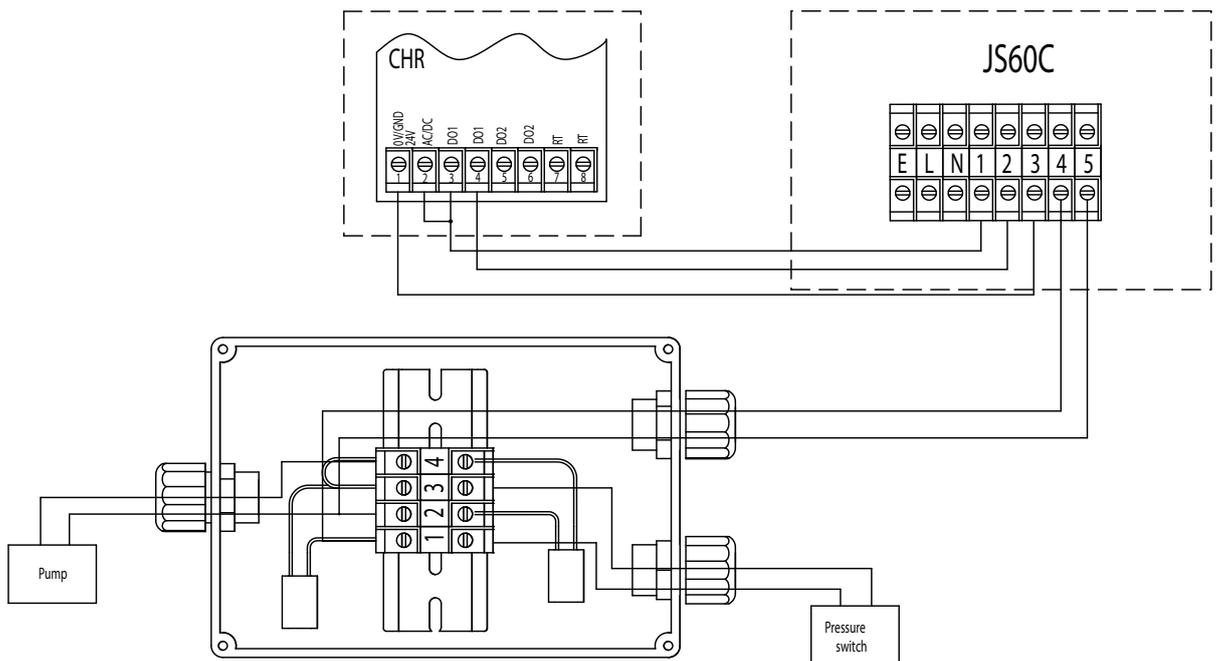
WARNING!

All work concerned with electrical installation must only be performed by skilled and qualified technical personnel (e.g. electrician or technicians with appropriate training). The customer must be responsible for ensuring their suitability. The local regulations concerning the provision of electrical installations must be observed and complied with.

CAUTION!

It is recommended that a high-limit humidistat is installed to prevent water damage in the event of hygrostat failure.

5.8.1 Option – Humidistat and pump



The following positioning instructions apply to humidistat:

1. Mount the humidistat where there is free air circulation preferably in the centre of the controlled area but out of the direct path of the nozzle spray.
2. Do not mount the humidistat in a position where it is exposed to direct sunlight.
3. Do not mount the humidistat in a position where it is exposed to heat from radiators, motor cooling fans, spotlights etc.
4. Do not mount humidistats directly to a wall surface or building support column as this will cause an error in readings due to temperature effects of the wall structure.
5. Do not mount the humidistat in a position where it is exposed to draughts.
6. Wire the humidistats with multi-core screened cable, with the screen wire grounded at one end only. This will minimise any induced voltages in the signal wires.
7. **DO NOT** run humidistat cable adjacent to any 3 phase or high voltage cables.

6 Commissioning

The Condair JS60C **MUST** be used only with cold and untreated potable drinking water according to the locally valid regulations or RO water. It is the responsibility of the operator to ensure that the potable drinking water system to which the Condair JS60C is connected complies with the locally valid regulations and ordinances and that the listed guide values for the supply water are observed, especially those for the control of Legionella. The use of water from tanks and vessels fed with potable drinking water is only permitted if they are part of a controlled water treatment system.

For users in the UK, an additional document entitled "Cold Water Humidifier Hygiene Guidance" is available to assist you in complying with UK legislation.

6.1 Pre-Commissioning checks

1. Ensure the water unit in the building has been subject to a Risk Assessment. The Condair JS60C must be connected to a clean, potable drinking water supply. Ideally water should be taken straight from the incoming mains at a minimum pressure of 4.5 bar (max 7.5 bar / a separate booster pump is available if the site water pressure is not suitable) without creating dedicated long supply pipe runs to the Humidifier. It is the responsibility of the user to ensure that the water supplied to the Condair JS60C complies with local regulations and bylaws, particularly those for the control of Legionella. The use of storage cisterns and reservoirs is only permitted where the cistern and services are compliant with the applicable water regulations guidance and are not dedicated to supplying just the humidifier.
2. Ensure the water supply has been completely flushed prior to connection to the control panel as per the installation instructions. The water supply must be flushed to prevent water stagnation and to clear any flux or foreign matter. This must be done carefully without creating splashing or aerosols.
3. Ensure the air supply has been completely flushed of any flux or foreign matter before connection to the humidifier as per the installation instructions.
4. Ensure that the power supply is compatible with local regulations and is fused and isolated within 1 meter of the control panel. Check wiring connections are secure.
5. Check the water pressure is between 4.0-7.0 bar (58-102 psi), without significant fluctuation.
6. Check the air pressure is between 4.5-10 bar (65-145 psi), without significant fluctuation.
7. Check that the relevant controls connections have been made.
8. Ensure safe access is available to the nozzle line.
9. Before putting the unit into operation, disinfection must be carried out. Ensure that the relevant chemicals, equipment and Personal Protective Equipment are available to carry out disinfection as per the method statement in the cleaning and disinfection chapter of this manual.

6.2 Commissioning work

The commissioning of the Condair JS60C humidifier requires appropriately trained technical personnel. Please pay attention to local regulations regarding working at heights and electrical work. Part of this commissioning process is a full disinfection of the control panel and nozzle line. Please refer to the commissioning chapter of the manual in full before commencing any work.

1. Isolate the air supply to the control panel. Isolate the water supply to the control panel.
2. Each nozzle has its own individual isolation valve for air and for water. All the nozzle isolation valves must be closed.
3. Switch on the power to the humidifier.
4. Create a demand for humidity by either adjusting the set-point or overriding the humidity controls.
5. Flush the air line by opening the end of line air isolation valve. Temporarily connect this to a drain point. Open the air supply isolation valve to the control panel. Adjust the air regulation valve to sufficiently flush the entire air line of any foreign matter.
6. Pressure test the air line by closing the end of line air valve and adjust the air regulator to pressure test the air line up to 4.5 bar (65 psi). Pressure test for 5 min. Check for air leaks and repair if necessary. When complete, set the air pressure to 2.2 bar (32.5 psi), by adjusting the air regulator in the control panel.
7. Flush the water line by opening the end of line water valve and connect a temporary hose to drain. Open the water supply isolation valve to the control panel. Adjust the water regulator to sufficiently flush the entire water line of any foreign matter.
8. Pressure test the water line by closing the end of line water valve and adjust the water regulator to pressure test the water line at 4 bar (60 psi). Pressure test for 15 min. Check for water leaks and repair if necessary.
9. **IMPORTANT:** Carry out a full disinfection of the Condair JS60C unit as laid out in the cleaning and disinfection method statement in this manual.
10. Once the disinfection process is complete, switch on the unit. Adjust angle of spray if necessary. As each nozzle is switched on the pressures at the control panel may vary. The air regulator should be adjusted if necessary to give a pressure of 2.2 bar (32.4 psi). The water pressure should be adjusted to achieve a satisfactory spray using the nozzle pressures as a guide.

Nozzle output (l/h)	2.5	3.5	4.5	5.5	6.5	9.0	12.0	15.0
Target value air pressure (bar)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Target value water pressure (bar)	2.40	2.55	2.65	2.75	2.90	2.00	2.10	2.30

11. Make final adjustments. Spray length varies with nozzle capacity, ambient temperature and relative humidity. Visible spray is also affected by background color and lighting. If it is difficult to regulate spray visually, water pressure should be increased up to the point where fine droplets are noticed, and then reduced until no more fall. As a general principle, nozzle spray can be increased by increasing water pressure or decreasing air pressure. The spray can be reduced by reducing water pressure or increasing air pressure.
12. If the spray pattern of a particular nozzle is either particularly heavy or light it may be necessary to adjust the balancing screw at the back of the nozzle. This can be done by removing the back nut and turning the screw clockwise to decrease the spray or by turning the screw anti-clockwise to increase the spray. As a default, the back screw will be set at 9 mm from the back edge of the nozzle body. It should not be necessary to adjust the back screw by more than one or two turns in either direction.
13. Adjust the two nozzles spray direction according to the room's construction, room height or the equipment layout in the room. The spray direction can be adjusted to any direction. To avoid the risk of condensation on items within the room.

14. The Condair JS60C humidifier should be switched on and off a minimum of 10 times using the humidity set point or humidity controls. This is to check and adjust if necessary the consistency of the nozzle spray pattern.
Note: A new unit may require some re-adjustment of both the air and water regulators during the running-in period until all parts are properly seated. This period may last about two weeks, but after those further adjustments should not be required. Typically, a quarter turn should be sufficient.
15. Set humidity set point at the required level. Reconnect any humidity controls that have disconnected during commissioning. If a humidistat is used, then check the calibration of this humidistat.
16. Set up the “Air Run On” duration as per the table. Refer to the relevant timer adjustment instructions for the JS60C in this manual.
17. Check the purge to drain time 120 s. These may be increased during periods of low use or if the temperature of the supply water has a tendency to rise above 15 °C.

**WARNING!**

The purge to drain is an essential function to prevent stagnation of the water in the lines. **NEVER completely disable the purge function** as this could result in contamination that might lead to Legionnaire’s disease, which can be fatal.

18. Check, and adjust, if necessary, the duration of the “Nozzle Flush Cycle”. The Nozzle Flush Cycle duration must be long enough for all the nozzles to spray. The default nozzle flush duration is 5 min. at 4 h intervals (i.e. 6 flushes per 24 h period of inactivity). Do this as follows:
 - a. Adjust the humidity set point to a low setting and wait for the humidifier to drain fully. This ensures that the panel starts from a fully empty condition.
 - b. Adjust the humidity set point to create a humidity demand. Time how long is needed from the moment the control panel switches on until all the nozzles are spraying. This is the minimum duration that will be required to ensure that water flows through all the nozzles, to prevent stagnation of any residual water in the pipe work. It is recommended that the duration is set 2 min. higher than the time witnessed to ensure that all nozzles are flushed.
 - c. Repeat this procedure several times to ensure that the duration is sufficient for all nozzles to spray. Adjust the Nozzle Flush Cycle duration if necessary, by referring to relevant programming instructions in this manual.

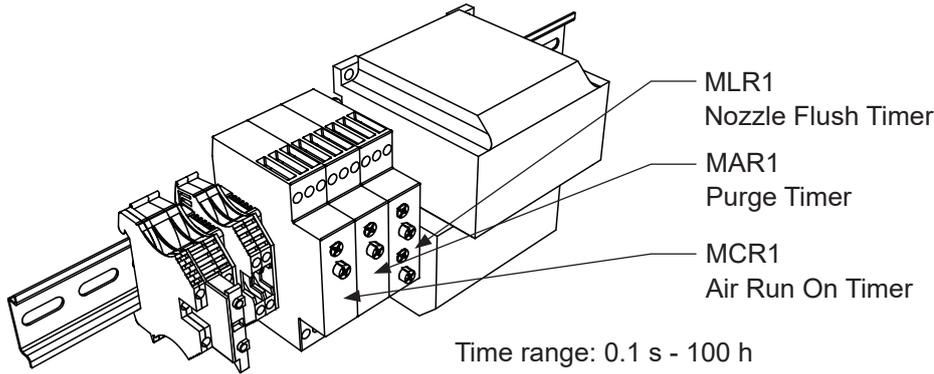
**WARNING!**

The nozzle flush cycle is an essential function and should not be adjusted by anyone other than a fully trained technician. Always consult with the distributor if unsure.

1 month and 6 monthly commissioning review

It is strongly recommended that 1 month after commissioning, and 6 months after commissioning, an inspection and review of the unit is made by a suitably qualified engineer. This is necessary to check that the unit is functioning correctly and to make any minor adjustments that maybe required. These checks will also enable you to work out how often servicing will be required.

6.3 Timer settings



Air Run On Timer

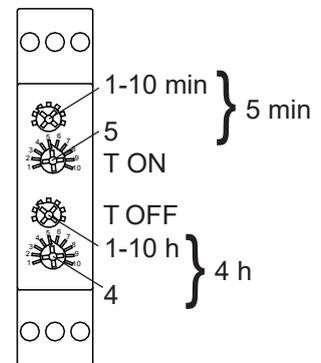
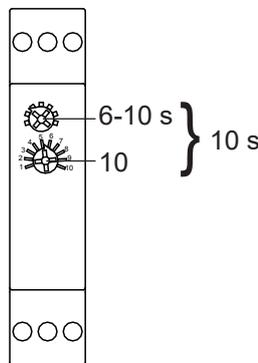
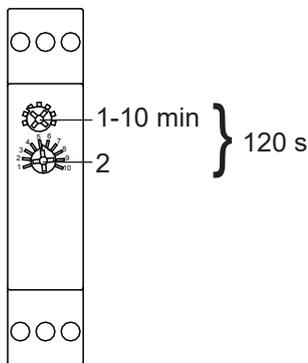
When the humidifier switches off the air will remain on for a period of time to ensure the water pressure is relieved and the nozzles do not drip. This period of time is factory set at 120 seconds. This can be adjusted if necessary on the timer marked MCR1.

Purge Timer

When the humidifier switches on it will purge water to drain for a period of time. This is to send any possible stagnant water to drain before starting humidification. This period is factory set at 10 seconds. This can be adjusted if necessary on the timer MAR1.

Nozzle Flush Timer

During periods of low humidity demand the humidifier will automatically switch on irrespective of humidity demand to ensure the unit is kept clean and free of any water stagnation. The frequency of this nozzle flush is factory set at 4 h (T-off). The duration of the nozzle flush is factory set at 5 min. (T-on). This can be adjusted if necessary on the timer MLR1.



CAUTION!

Only adjust these timers if you have had training on the operation of the Condair JS60C unit. If in doubt, always contact the distributor for advice on adjustment.



WARNING!

The flush and purge cycles are essential functions to prevent stagnation of the water in the lines occurring. NEVER completely disable the purge function as this could result in contamination that might lead to Legionnaire's disease, which can be fatal.

7 Maintenance



This humidifier must be installed, operated, and maintained in accordance with this manual. Failure to do so could result in contamination that might cause Legionnaires' disease which can be fatal.

Although the Condair JS60C requires very little maintenance, it does require servicing. The procedure for this is outlined in this maintenance chapter and service schedule tables. Maintenance of the compressed air and water treatment units should be carried out as per the instructions supplied with that equipment.

Comprehensive maintenance contracts are available from Condair. Services include:

- Planned maintenance contracts
- Breakdown response
- Technical advice and back up
- Product training
- Spares on demand

7.1 Service schedule

The service schedule should be determined at commissioning. This will depend on the application, the water quality and the unit usage. The default is 200 h operation.

For the detailed routine maintenance content, please refer to [section 7.3](#).



The Condair JS60C unit should not be electrically isolated for periods exceeding 24 h as automatic flush and purge cycles will be disabled.

If the Condair JS60C unit is turned off for prolonged periods, water stagnation might occur and bacterial contamination result, so the unit, including any storage tanks or vessels should be drained and left dry. Before putting the unit back into service, a full risk assessment should be undertaken to ensure safe operation, with particular attention paid to water supply quality.

The water pipe work supplying the Condair JS60C should be purged carefully, avoiding the creation of aerosols by splashing, and a water sample should be taken to ensure cleanliness. If the humidifier contains any residual water or has remained damp, and the temperature exceeded 15 °C, the Condair JS60C should be cleaned and disinfected. Refer to the cleaning, disinfection, and descaling instructions in this manual.

Always call the distributor for advice on water sampling and analysis, disinfection of units, service, and maintenance contracts.

7.2 Automatic flushing

Condair cold water units are supplied with automatic flushing programs, therefore the control units should be left powered on continuously to ensure regular flushes occur at the designed intervals and water does not stagnate.

Ideally cold-water humidifiers and evaporative coolers should not be electrically isolated for periods exceeding 24 h as the automatic flush and purge cycles will be disabled.

If the unit is isolated or powered off for up to 2 days the water supply pipe work should be flushed (minimizing splashing to avoid aerosols). All parts of the humidifier should then be flushed to ensure fresh water is in use, before returning the unit to service.

If the unit is switched off for a period between 7 and 30 days the unit should be risk assessed to determine if the unit can be switched back on after flushing (as above) or if a full disinfection is required. Possible considerations that may support a simple flush:

- Good performance prior to isolation
- No known issues with supply water quality (no storage vessels)
- Low ambient temperatures
- Empty reservoirs & dry evaporative media (evaporative units)
- Low exposure potential.

If the unit is isolated or powered off for prolonged periods (i.e. 30 days or more) the unit and supply water cleanliness should be assessed prior to putting the unit back into operation. Re-commissioning will be required including cleaning and disinfection.

Call the distributor for advice on water sampling and analysis, disinfection of units, service, and maintenance contracts.

7.3 Routine maintenance

Please note that the information given below is only to act as a guide and the frequency of maintenance may depend upon the unit's age, usage, and water quality. Correct maintenance is vital to ensure optimum output and reliability.

All humidifiers will form part of your hot and cold-water system and cold water humidifiers must be regularly disinfected. Your water sampling/ testing and disinfection regime must be based on details in this manual and from results of a site-specific risk assessment.

For this type of atomizing humidifier, Condair recommends that routine disinfection should take place in the following situations:

- a) At initial commissioning.
- b) Where routine sampling, the monitoring & control regime or risk assessment shows it to be necessary.
- c) At regular intervals - every 6 months is the minimum recommendation.
- d) If the unit or part of it has been shut down (isolated for periods outlined in [section 7.2](#)) and/or substantially altered creating a risk of contamination.

Cleaning and disinfection is a specialist operation and should not be conducted by staff without evidence of a suitable written risk assessment, method statement and staff competence.

If any further assistance is required or you are interested in a planned maintenance quote, please contact your Condair representative.

Notes on cleaning and disinfection agents:

- Citric acid is available at pharmacies.
Condair also offers a descaling agent based on citric acid. It can be ordered under the number 2590545.



WARNING!

Citric acid can cause skin and serious eye irritation and can attack the mucous membranes. Therefore wear protective gloves and eye protection and work in a well-ventilated room or outdoors.
Observe manufacturer's safety instructions.

– **Accepted disinfectants:**

- 3 % Hydrogen Peroxide solution (available at pharmacies)
- 0.1 % Sanosil S003 solution (available from Condair, order no. 2590544)
Active ingredients: 1.5 % hydrogen peroxide, 0.003 g/100 g silver
(Not registered in all countries. Please contact Condair if Sanosil is not registered in your country.
Alternative disinfectants are available.)

After disinfection the components must be thoroughly rinsed with fresh cold tap water.

- **Do not use solvents or other aggressive liquids for cleaning.**
- **Do not use** scouring equipment (wire brush, scouring cloth, etc.) for cleaning because they leave scratches that encourage the growth of microorganisms.

Component		Operations	1 Month	3 Month	6 Month	1 Year	2 Yearly
SAP	Iscale						
AIRLINE							
1201131	303492	Visually inspect and clean air pressure regulator Minimum pressure: 4.5 bar (65 psi) Maximum pressure: 10.0 bar (145 psi)				✓	
1201131	303492	Replace air pressure regulator					✓
1200073	303491	Visually inspect and clean air solenoid valve				✓	
1200073	303491	Visually inspect and clean air solenoid valve coil				✓	✓
1200075	303500	Visually inspect air pressure switch			✓	✓	✓
1200072	303507	Visually inspect air outlet pressure gauge	✓	✓	✓	✓	✓
WATERLINE							
1200014	303946	Visually inspect and clean water pressure regulator Minimum pressure: 4.0 bar (58 psi) Maximum pressure: 7.0 bar (102 psi)			✓		
1200014	303946	Replace water pressure regulator kit				✓	✓
1200073	303491	Visually inspect and clean water solenoid valve			✓		
1200073	303491	Visually inspect and clean water solenoid valve coil				✓	✓
1200072	303507	Visually inspect water outlet pressure gauge	✓	✓	✓	✓	✓
1200074	303493	Visually inspect and clean water solenoid valve			✓		
NOZZLELINE							
-	X.X	Clean nozzle air cap(s)			✓	✓	✓
1201129	303770	Flush end of line valves				✓	✓
-		Visually inspect spray pattern	✓	✓	✓	✓	✓
-		Balance nozzle spray (if required)			✓	✓	✓
-		Visually inspect installation for leaks and damage	✓	✓	✓	✓	✓
-		Visually inspect and clean control stat/sensor			✓	✓	✓
-		Check air run on duration			✓	✓	✓
-		Check nozzle flush duration	✓	✓	✓	✓	✓
-		Check water flow rates			✓	✓	✓
-		Visually inspect electrical connections		✓	✓	✓	✓
-		If necessary, calibration of the state/sensor			✓	✓	✓
-		Check rH set point	✓	✓	✓	✓	✓
-		Record air and water pressure gauge readings		✓	✓	✓	✓
-		Update Service Logbook	✓	✓	✓	✓	✓
HYGIENE							
-		Collect and test water sample at nozzle line for bacteria levels Note: Frequency may vary according to individual site water maintenance program		✓	✓	✓	✓
-		Clean and Disinfect the unit inc. nozzle line			✓	✓	✓
2566450	-	Replace PureFlo cartridge		✓*	✓*	✓*	✓*
1201080	-	Replace particle filter 10" 5 micron		✓**	✓	✓	✓
AIR FILTER							
-		Clean air filter housing		✓	✓	✓	✓
-		Clean air filter element		✓			
-		Replace air filter element (recommended 6 months)			✓	✓	✓
-		Clean filter condensate drain		✓	✓	✓	✓

* PureFlo replacement Intervals: <100 l/h = 2 yrs, 100-300 l/h = 1 yr, >300 l/h = 6 months

** Sediment filter needs changing EVERY 3 months.

7.4 Recommended spare parts list

Please note that the information provided should be used as a guide. Additional parts may be required periodically subject to equipment age, patterns of use and water quality.

Failure to correctly maintain equipment, including the replacement of consumable spares, could result in contamination that might cause Legionnaires Disease, which can be fatal.

Failure to correctly maintain equipment, including the replacement of consumable spares, may reduce reliability and performance and invalidate product warranty.

To ensure the correct spare parts are supplied, please provide the model and serial number of your product.

SAP no.	Iscale no.	Description	Qty required
1200072	303507	0-4 bar pressure gauge	1
1200073	303491	JS60C solenoid valve (N/C)	1
1200074	303493	JS60C solenoid valve (N/O)	1
1200075	303500	Air pressure switch	1
1200078	303639	Transformer 105 VA	1
1200079	304040	Purge timer	1
1200080	304041	Air run on timer	1
1200081	304042	Nozzle flush timer	1
1200014	303946	1/4" water regulator	1
1201131	303492	1/4" air regulator	1
2566450	303545	PureFlo Filter	1
1201080	303549	Particle Filter 10" 5 Micron	1
1201129	303770	Drain cock	2

7.5 Frequently asked questions

Installation, maintenance, commissioning, repair work and de-commissioning should only be carried out by appropriately qualified and properly trained technical personnel. It is important that the person following these guidelines has a good understanding of the humidifier, this can be found in [chapter 4](#).



WARNING!

This humidifier must be installed, operated, and maintained in accordance with the current manual to prevent damage or injury. For more information or any spares or replacements, please contact your local distributor.

7.5.1 Basic problems

1. What should I do when there are no lights and no display?

This could mean that you do not have a power supply or have the incorrect voltage. The corrective action for this is as follows:

- Check that the green light is lit on the side of the control panel. This indicates that there is a power supply connected.
- Check the power supply for correct electrical voltages including Neutral and Earth. Refer to CE label for correct voltage.
- Check that the electrical power isolator is switched on.
- Check that the Condair JS60C control panel on/off switch is enabled.
- Check the internal cables are fixed correctly and the power supply fuse.

2. My unit is on, but it's not operating, what should I check?

Check:

- The panel enable switch on top left hand side. Make sure it's on.
- The interlock on terminals 1 and 2. Use a wire link to short out terminals. If the panel starts, fault is external to the panel.

This may be because the Condair JS60C has an incorrect humidity demand. Make sure that:

- The panel enable switch on top left hand side. Make sure it's on.
- The interlock on terminals 1 and 2. Use a wire link to short out terminals. If the panel starts, fault is external to the panel.

Or the Condair JS60C is disabled by an external interlock:

- Checking terminals 1 & 2 for closed circuit in the Condair JS60C control panel.
- Check humidity is not greater than high level set point.
- Temporarily place hard wire links across terminals 1 & 2 to enable unit.

7.5.2 Detailed problems

1. Why is the panel of my humidifier not operating?

- Check that the mains supply is available at terminals L and N, 230 V 50 Hz or 110 V 60 Hz must be supplied.
- Check the fuse in the live terminal, replace if blown. It should be a 20 mm fuse at 2 amps or 110 V fuse at 4 amp.
- Check the output from the transformer, 24 VAC. Also check at terminals of the transformer.

2. What should I do when the panel is on but the humidifier still won't operate?

- Check supply voltage to air solenoid. Are the LEDs on? If LEDs are not lit, open plug connector on solenoid and check wiring.
- Voltage present but solenoid will not operate. Check coil of solenoid. Service solenoid with service kit.
- Check and adjust air pressure on gauge. Pressure must be above 2 bar. Adjust as necessary.
- Adjustment of air regulator does not change pressure. Service air regulator with service Kit.
- Check wiring and setting pressure of pressure switch. Adjust pressure switch setting to 1.9 bar. If adjustment is necessary, after adjustment raise and lower air pressure with air regulator to ensure switch activates above 2 bar and deactivates below 2 bar. Set air pressure to 2.2 bar on each of line gauges.

3. The air has been set up correctly but there is no water spray, what does this mean?

- Check the inlet water pressure. The water pressure must be between 4-7 bar on the inlet gauge.
Note: Adjust water regulator to correct nozzle operating pressure. See [chapter 6.2](#).

4. The inlet water pressure is below 4 bar or keeps becoming unstable, how can this be fixed?

The supply pump needs to be checked. This can be done by:

- Increase setting to a minimum of 5 bar output pressure on the pump.
- Check inlet water filter and replace filter cartridge. Call distributor.
- Press air release on top of filter housing to release air lock in filter.

5. The supply water pressure is above 4 bar but there is still no spray?

- Check the setting of the water regulator.
- Increase the water pressure by adjusting water regulator. The discharge pressure should increase to 2.4 bar or above. Nozzles spraying, adjust to correct pressure setting as explained in the current technical manual.

6. Why is the water regulator not adjusting the discharge pressure?

- Check LEDs lit on water inlet solenoid.
- Check wiring of solenoid plug connector.
- Check coil of solenoid valve.
- Service solenoid with service kit.

7. Why is the inlet solenoid open but there is no discharge pressure?

You will need to check the water regulator.

- Increase the water pressure by adjusting water regulator. The discharge pressure should increase to 2.4 bar or above. Nozzles spraying, adjust to correct pressure setting as explained in the current technical manual.

- Check that the piston in the lower half of the regulator is not stuck. Clean and grease with a small amount of silicon grease* and reassemble. Service water regulator with service kit R06.
- * Do NOT use silicon grease if the unit is being used on a painting, pharmaceutical or medical device.

8. The regulator and inlet solenoid have both been serviced but there is still no spray. What can I do?

You need to check the drain solenoid. Is the drain solenoid stuck open or is the debris stuck in the valve preventing it from shutting?

- Check LEDs lit on water inlet solenoid.
- Check wiring of solenoid plug connector.
- Check coil of solenoid valve.
- Service solenoid with service kit.
- Disconnect drain connection and check there is no drain bypass.

9. The nozzle spray is so heavy it's forming droplet formation. How can this be solved?

You'll need to:

- Check line pressures. The minimum supply pressure should be 4.5 bar and the maximum should be 7.5. Reset air and water regulators to give correct operating pressures on end of line valves.
- Check and clean air caps. Scale or dust formation blocking air cap or reducing hole size. Clean as necessary.
- Check that the isolation valve on each nozzle is not partly shut. Open isolation valve fully.

10. The nozzle spray is very light, why?

- Check the line pressure (min. 4.5 bar, max. 7.5 bar). Reset air and water regulators to give correct operating pressures on end of line valves.

11. Only some of the nozzles are spraying, why?

- Check the back nut adjustment. The back nut should be set 8-10 mm in from the edge of the nozzle.

12. Why are some of the nozzles over spraying on shut down?

- Check air run on setting. Increase the air run on time. Refer to [chapter 6.2](#) JS60C setting in this manual.
- Check drain solenoid operation. Drain solenoid not operating, check and service. Drain pipe work too long or blocked, check that drain is pressure-less and clear.

13. There is water dripping from the nozzle top when the unit is shut down, why?

- Water is not draining from line. Check drain. Check drain solenoid valve.
- Damage to the cleaning pin seal. Replace cleaning pin seal.

14. How come there is water dripping from the center joint of the nozzle?

- Leakage is due to poor sealing, damage to the diaphragm, sealing washer damaged or missing. Return to the manufacturer for repair ONLY.

7.6 Disinfection and descaling introduction

7.6.1 Before beginning disinfection and descaling

1. Risk assess the situation. This should include but is not limited to observance of the control of substances hazardous to health, applicable local hygiene regulations and the use of personal protective equipment (PPE), working from heights and ensuring a full understanding of the Condair JS60C unit.
2. Coordinate with relevant responsible persons.
3. Check records (i.e. sample results of microbiological control) for unit history.
4. If possible, disinfection should be carried out when the building is unoccupied.

7.6.2 Disinfection

Atomizing humidifiers must be regularly cleaned and maintained, to prevent contamination especially in industrial environments.

All surfaces requiring disinfection or cleaning must be in contact with the appropriate concentration of disinfection solution for at least one hour. This method statement for disinfection is specifically for the Condair JS60C series only and should not be used on any other Condair Jetspray units.

Additional procedures will be required for supply water unit pipe work or water treatment units prior to the humidifier.

Condair recommends that routine disinfection should take place in the following situations:

- At initial commissioning.
- Where routine monitoring and control regime or risk assessment shows it to be necessary.
- At six monthly intervals.
- If the unit or part of it has been shut down for more than 48 hours and/or substantially altered creating a risk of contamination.
- During or following an outbreak or suspected outbreak of Legionellosis.

Ideally the routine disinfection should be carried out using a disinfection pump set with a reservoir, connected in-line before the control panel.

Droplets are prevented from being sprayed from the nozzles by increasing the air pressure to a minimum of 4 bar, thereby causing a back pressure within the nozzles and preventing chemicals from being sprayed.

Recommended disinfection equipment:

- Disinfection solution in accordance with manufacturers guidelines
- Disinfection neutralizer (only if necessary)
- Disinfection solution test kit (to measure strength)
- Dosing pump set
- Bucket of fresh water
- Braided hose (for flushing at end of line)
- Measuring container / Syringe
- Clean cloths
- Mixing vessel
- Risk assessment / test record sheets
- Standard tools

7.6.3 Descaling

Atomizing humidifiers may use water where a high level of mineral content causes deposits to form on the nozzle air cap. Unless they are regularly cleaned and maintained, deposits of scale and other airborne particles may result, especially in industrial environments.

The nozzle air cap has a non-stick surface coating NIFLOR. Care must be taken to ensure this coating is not scratched. It is therefore recommended that the nozzle air caps are unscrewed, removed, descaled and rinsed with clean water.

Do not use metal objects to clean the air cap.

Condair recommends this should be done 3 months after commissioning and then annually thereafter.

Recommended descaling equipment:

- Suitable descaler (mild formic acid solution / domestic kettle descaler)
- Descaler neutralizer
- Mixing vessel

Suitable descaling solutions:

- Commercially available kettle descaler based on citric acid
- Descaler is available from your Condair agent: Descaling powder 100 g (SAP no. 2590545)

7.7 Disinfection method statement

Combined instruction for Condair service and for private end users:

Condair Group AG recommends that these work steps are only carried out by well-trained personnel.
Protective clothing: Plastic gloves and goggles

Warning notice: Disinfectants can cause serious skin and eye damage. Always wear protective gloves and eye protection when working with disinfectants. Read the safety data sheet for complete safety instructions.

Disinfectants:

Sanosil S015 Ag 1 l / 7.5 % (SAP no. 2595043)* – dilute to 3 % (Condair Service only)

Sanosil S003 Ag 1 l / 1.5 % (SAP no. 2590544)* – (for private end user)

Halomist HM10Ag 5 % solution – dilute to 1.5 % (for private end user),
– dilute to 3 % (Condair Service only)

Further material: Bucket, 10 l / absorbent cloth

*If these disinfection liquids are not available in your country, please contact your Condair supplier for an alternative, approved disinfection liquid.

The following time should be scheduled for the entire procedure:

1. Active work on the system 30-45 min
2. Exposure time of the chemical 30 min (with Sanosil S015) – 120 min (with Sanosil S003)

Step 1 – Refer to the risk assessment

- Refer to the manufacturer's instructions and safety advice.
- Ensure the area is well ventilated.
- Ensure the Condair JS60C unit is OFF and isolated from external controls.

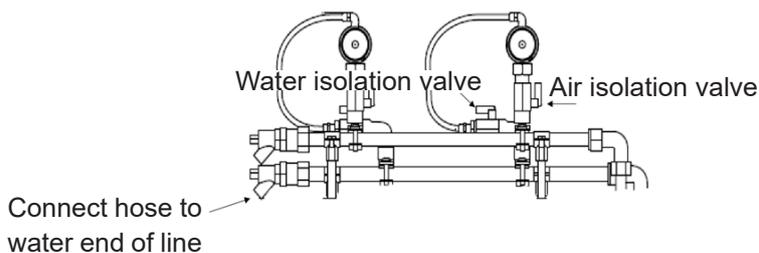
Step 2 – Mix disinfection solution

- Disinfection solution following the manufacturers instructions.
- Required volume of solution: 3 liters allowing for addition water purged from the end of line.

Note: Solution loses strength over time.

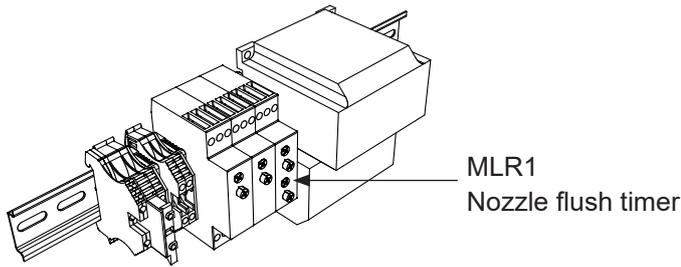
Step 3 – Pipe work adaptations

- Flush water to drain.
- Isolate the water supply to the control panel.
- Ensure all nozzle lines are fully drained.
- Turn off the isolating valves on the air and water connections on the individual nozzle mounting fittings.

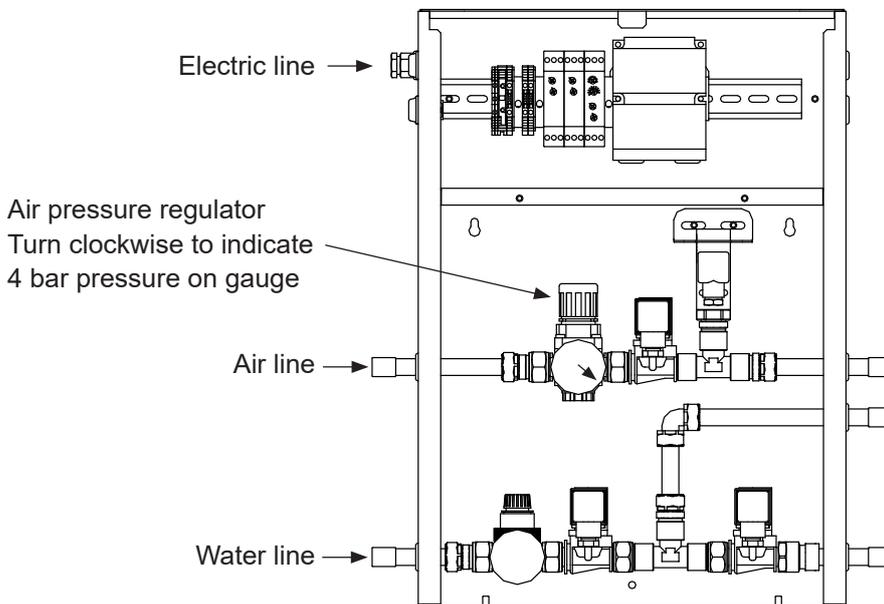


Step 4 – Panel adjustment

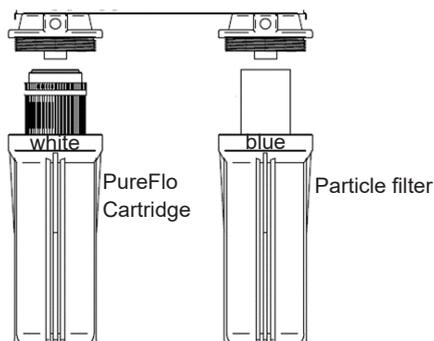
- Increase nozzle flush timer by 5 h.



- Note the humidification sensor set-point setting and set the humidification sensor set-point to maximum value to keep the unit operating and avoid automatic drain down.
- **Important!** Set air pressure to maximum by turning air regulator adjustment handle fully clockwise. Air pressure should be greater than 4 bar/ 58 psi to prevent chlorinated water from spraying through the nozzles through air back pressure.



- Ensure the water supply to the JS60C is isolated.
- Open the filter housings and remove the PureFlo cartridge and the particle filter 10" 5 micron.
- Rinse both filter housings.
- Fill both filter housings with the diluted disinfection solution and reinstall.
- Close the isolation valves on the air and water lines on the nozzle fittings.
- Connect a short length of 15 mm hose to the water line end of line valve.



Step 5 – Panel enable

- Switch on control panel to open the air solenoid ensuring that the air pressure is 4 bar minimum in pipe work.
- Open the air isolating valves only on each nozzle and adjust air pressure as necessary to ensure a minimum indicated pressure of 4 bar / 58 psi.
- Wait 60 seconds so the purge cycle does not send disinfection solution to waste. Turn on mains water supply to the system.
- Open the end of line drain valve on the water line slightly and allow about 0.5 l of water to flow to waste. Close the end of line valve.
- Place an absorbent cloth over the front of each nozzle in turn and then open the nozzle water isolation valve. Nozzle should not spray. If it does close the nozzle isolation valve, reduce the system water pressure down to 2 bar and repeat.

Step 6 – Add disinfection solution

- Pump disinfection solution into the Condair JS60C unit water line ensuring that no water is sprayed from the nozzle, then carefully bleed from the end line water valve until air is fully purged.
- Measure the strength of the disinfection solution at each end of line valve and check it is the correct strength in accordance with manufacturers guidelines.
- Every 5 minutes allow a small amount of fresh solution to come into the system by opening the end of line valve slightly.
- Note the strengths of the disinfection solution at 15-minute intervals and record on a *Record of cleaning & disinfection* sheet for future reference. Adjust solution strength as required and refill filter housings with fresh disinfection solution if necessary.

Step 7 – Pressurize disinfection solution within unit

- Allow to remain at pressure for a period of time in accordance with the manufacturer's guidelines. Humidifier power and air supply must remain on and stable.

Step 8 – Drain unit

- After the time period has elapsed, drain unit fully, into appropriate container and neutralize/dilute 10 times if necessary, before disposing into appropriate drain.
- Calculate the required strength of neutralizer/dilution required from the manufacturer's information sheet.
- To drain the unit turn off the system with the ON/OFF switch on the left hand side of the panel.

Step 9 – Flush pipe work

- Flush pipe work with fresh cold water as per commissioning procedure without producing a spray, and test until hydrogen peroxide is completely flushed.

Step 10 – On completion of the work

- Maintain unit if required.
- Reinsert the PureFlo cartridge and replace the particle filter 10" 5 micron.
- Reset panel as per normal operation specification including all drain nozzle flush, clean and bleed cycles system pressure settings.
- Return control to automatic condition.
- Test spray to ensure that there are no traces of disinfection solution.
- Always leave work area clean, dry, and tidy.

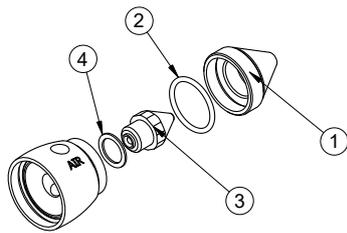
7.8 Descaling method statement

Step 1 – Refer to the risk assessment

- Refer the manufacturer's instructions and safety advice for the descaling solution to be used.
- Ensure the Condair JS60C unit is OFF and the area well ventilated.

Step 2 – Mix descaling solution

- Fill work container with fresh water to the required depth.
- Calculate the required descaling strength. Use 20 g of Condair descaling powder (Citric Acid) per liter of water.
- Use warm water for an improved result if possible.
- From the manufacturer's information sheet calculate the required strength of descaling solution.



1. Air cap
2. Air cap O-ring
3. Water jet
4. Water jet seal

Step 3 – Submerge components

- Remove air caps [1] from nozzles. Without scratching the air cap, try to remove as much scale as possible before submerging components using a soft clean cloth.
- Repeat the process for the water jet [3] if required. Pay attention not to damage the cleaning pin.
- Remove the air cap O-ring [2] and the water jet seal [4]. The water jet seal cannot be reused.
- Submerge components in the descaling solution.
- Keep components submerged for a minimum of 1 hour with regular checks.
- If many components are required to be cleaned over a period of time, additional descaling chemicals may need to be added as the strength deteriorates over time.

Step 4 – Remove components

- When scale build up is removed, extract components from the solution.
- Soak the nozzles or flush clean with fresh water.

Step 5 – Neutralize the descaling solution

- The descaling solution may require neutralizing before disposal.
- Calculate the required strength of neutralizer required from the manufacturer's information sheet.

Step 6 – Dispose of neutralized solution

- Dispose of neutralized solution into appropriate drain.
- Put unit back into operation if required.

Step 7 – On completion of the work

- Maintain unit if required.
- Reset all drain, flush, clean & bleed cycles.
- Return control to automatic condition.
- Always leave work area clean, dry, and tidy.

8 Hygiene

8.1 Important notes on hygiene

Observe the local health and safety executive's technical guidance on the control of Legionella in water systems.

The user is responsible for ensure that the water system complies with local regulations, bylaws, and guidelines (such as the HSE ACoP L8, ASHRAE 188, VDI 6022, ISO 22000, HACCP, or equivalent). If inadequately maintained, water systems, of which any humidifier is a part, can support the growth of microorganisms, including the bacterium responsible for Legionnaires' disease.

Any risks or hazards relating to the system, including during installation and maintenance, should be identified by a competent health and safety representative who is responsible for introducing effective control measures.

8.2 Hygiene risk management

If cold water humidification systems are not maintained according to this manual, they present the risk of spreading pathogenic microorganisms into the air. The Humidifier distribute tiny water droplets (mist) that are blown into the space before being absorbed into the air. If the mist was contaminated before leaving the unit and then evaporates, these contaminants are deposited onto surfaces in the space, or can be inhaled by occupants in the room.

Pathogens include, but not limited to, Legionella, E. coli, and viruses, may originate from contaminated water or the equipment.

Therefore regular cleaning and disinfecting is required to reduce health risks. Refer to [chapter 7](#) in this manual. Do not miss or ignore the warnings in this manual.

Follow all safety precautions and local regulations.

Supply Water

Pathogens can originate from the water supply, such as a tank or water line. It is important that standing water in a tank or in the water line is flushed frequently to prevent the buildup of contaminants, and the water is filtered and treated.

Pathogens may also enter the humidification system from the air. A fan blows air over the water reservoir and is mixed with aerosols when blown into the room.

Inside the Humidifier

A small risk of contamination may occur during manufacture, testing, delivery, and commissioning. Any water that was present during these processes is considered stagnant. Ensure that all applicable components (i.e. wet surfaces, such as mist pipes, reservoirs, and hoses) of the humidification system has been cleaned and disinfected before installation. Refer to the maintenance routines as described in [chapter 7](#).

Note: Stagnant water may also be formed after shutting down the humidifier (and after inactivity). Ensure that the humidifier is air dried for inactivity, and cleaned before restarting.

8.2.1 Guidelines to keep a clean system and prevent legionella growth

- Perform a risk assessment of the water system using a competent person, and implement an appropriate monitoring and control program.
- Connect a RO system to a clean, potable main water supply.
- Enter a service contract that suits the needs of the company.
- Stop the system if polluted drinking water is found in the area.
- Avoid water temperatures in excess of 15 °C that favor the growth of Legionella.
- If the system was stopped for more than 48 hours, complete a total system cleaning and disinfection.
- Disinfect at least once per month- and/or after every maintenance or repair.
- Analyze the water and test for harmful bacteria at least once per year.
- Conduct follow-up measurements until the system is clean if bacteria has been detected in the system.

The Condair service team can help with expert technicians who can provide:

- Bacteriological troubleshooting on-site. ¹⁾
- Cleaning and disinfecting.
- Preventative maintenance.
- Repair and fault finding.
- Training and guidance.

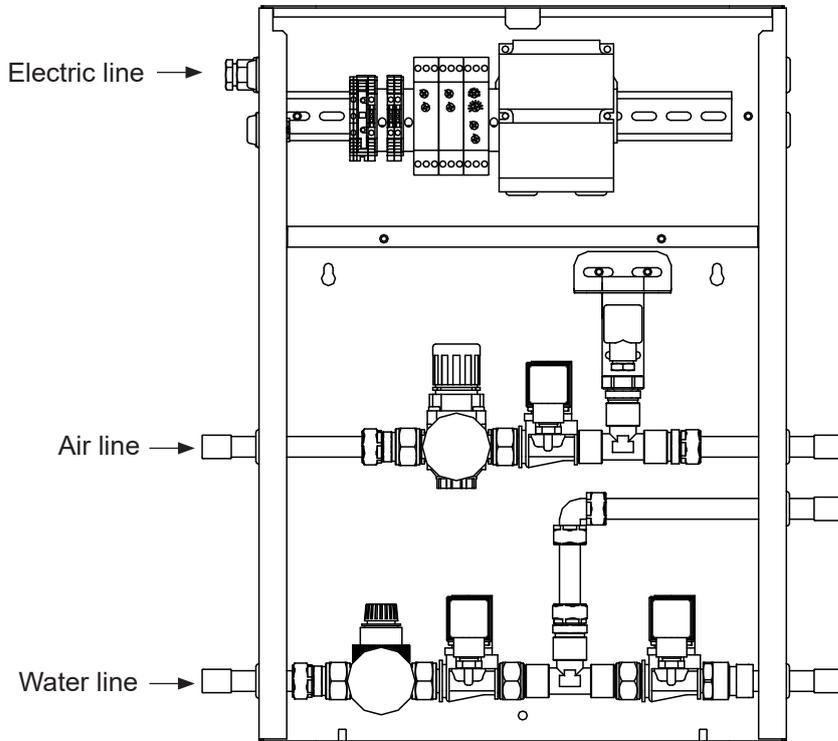
¹⁾ **Note:** Condair uses a quick method for measuring bacterial activity in the water with the use of BactiQuant. Once the water sample has been taken, the bacteriological quality of the water is read within 30 minutes, and the Condair service team will disinfect the system if necessary

Condair follows the guidelines in VDI 6022 for CFU counts in humidifiers. The CFU count in the humidification water must not exceed 150 CFU/ml, corresponding to a maximum BQ value of 40.

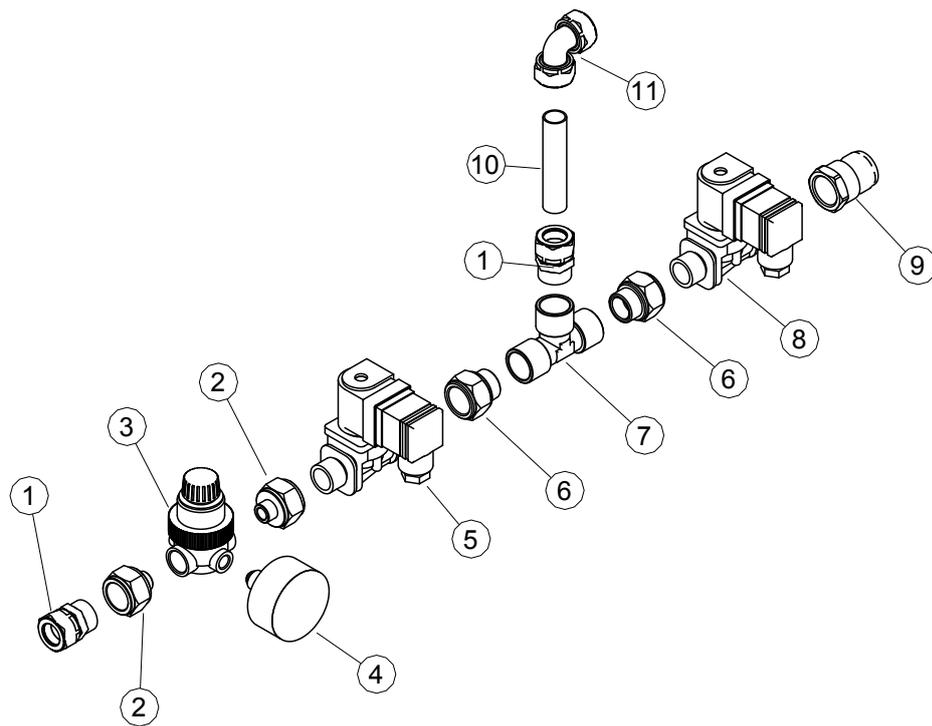
Please contact your local Condair representative for further information about our services.

9 Identification

9.1 Line identification



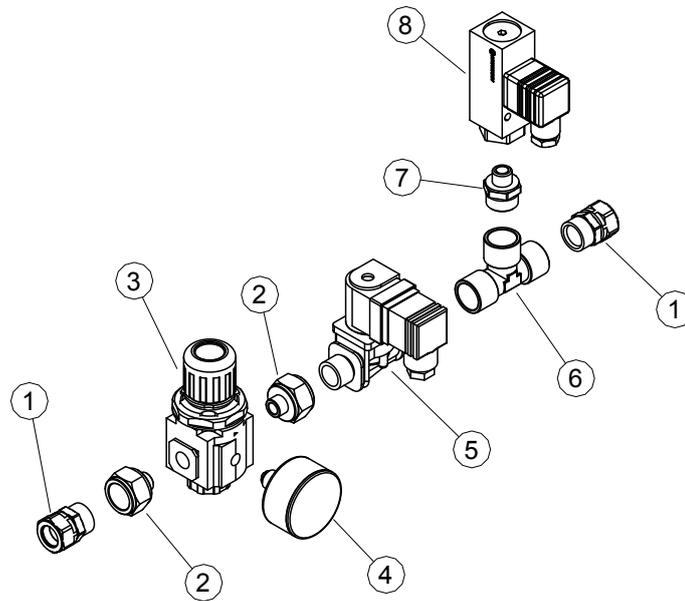
9.2 Water line



9.2.1 Standard parts list

Pos.	SAP no.	Iscala no.	Description
1	1201130	303520	1/2" Male - 15 mm compression fitting
2	1201154	303532	1/4" Male - 1/2" female adaptor
3	1200014	303946	1/4" water regulator
4	1200072	303507	0-4 bar glycerine gauge
5	1200073	303491	1/2" 2 way valve N/C
6	1201155	303533	1/2" M/F adaptor
7	1201156	304092	1/2" F/F/F Tee
8	1200074	303493	1/2" 2 way valve N/O
9	1201153	303522	1/2" Female - 15 mm compression fitting
10	-	-	15 mm stainless steel pipe (local purchase)
11	1201132	303521	15 mm compression elbow

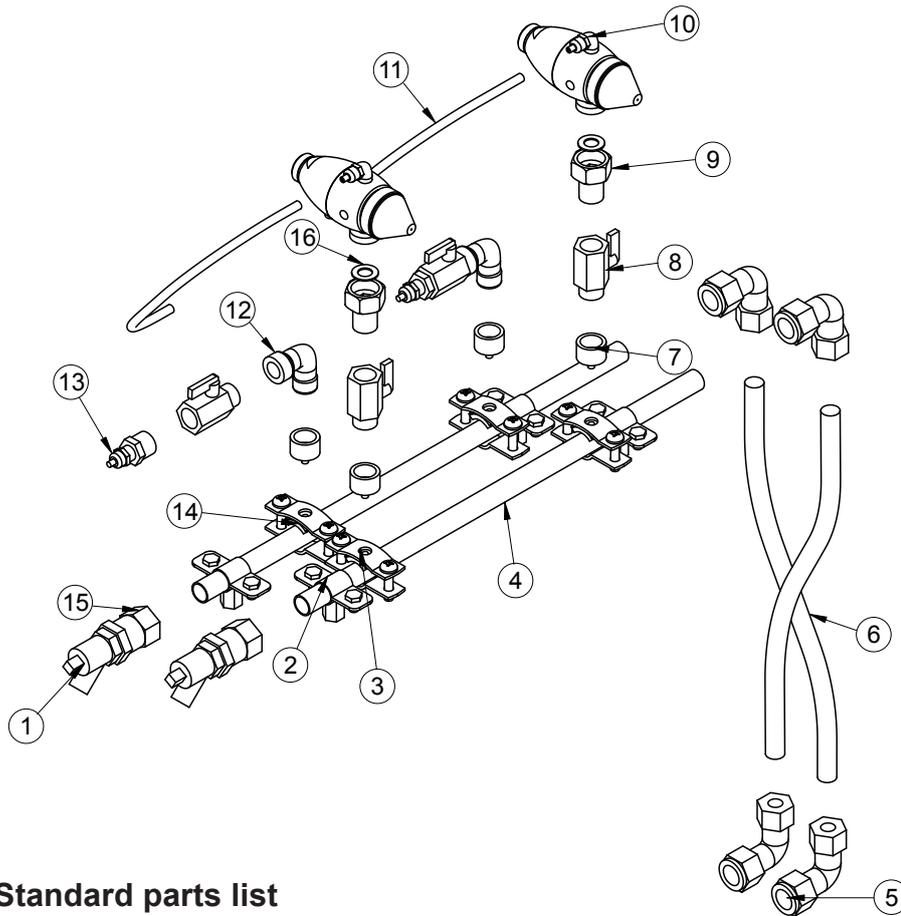
9.3 Air line



9.3.1 Standard parts list

Pos.	SAP no.	Iscale no.	Description
1	1201130	303520	1/2" Male - 15 mm compression fitting
2	1201154	303532	1/4" Male - 1/2" female adaptor
3	1201131	303492	1/4" air regulator
4	1200072	303507	0 - 4 bar pressure gauge
5	1200073	303491	1/2" 2 way valve N/C
6	1201156	304092	1/2" F/F/F Tee
7	1201157	303512	1/2" - 1/4" hex nipple
8	1200075	303500	Air pressure switch

9.4 Nozzles and pipes



9.4.1 Standard parts list

Pos.	SAP no.	Iscala no.	Description
1	1201129	303770	Drain cock 1/2 (plated)
2	1201158	303775	1/2 single boss clamp
3	1200583	303958	Saddle valve clip
4	1201159	303526	S/S 15 mm OD x 0.6 mm wall tube
5	1201118	304202	Compression elbow fitting
6	1201119	304203	Stainless steel braid hose
7	1200386	303581	Saddle valve adaptor
8	1201125	303582	3/8 M/F ball valve
9	1201126	303584	3/8 swivel union
10	NOZ**IDS	NOZ**IDS	Nozzles 2.5~15
11	1201160	300390	Super flexible 6x4 hose
12	1201128	303583	3/8 M/F elbow
13	1201120	304204	G3/8M-6X4 tube stud
14	1200596	303578	Seal for saddle valve
15	1201153	303522	15 mm-1/2 fem comp st
16	1201124	303585	Nozzle side washer

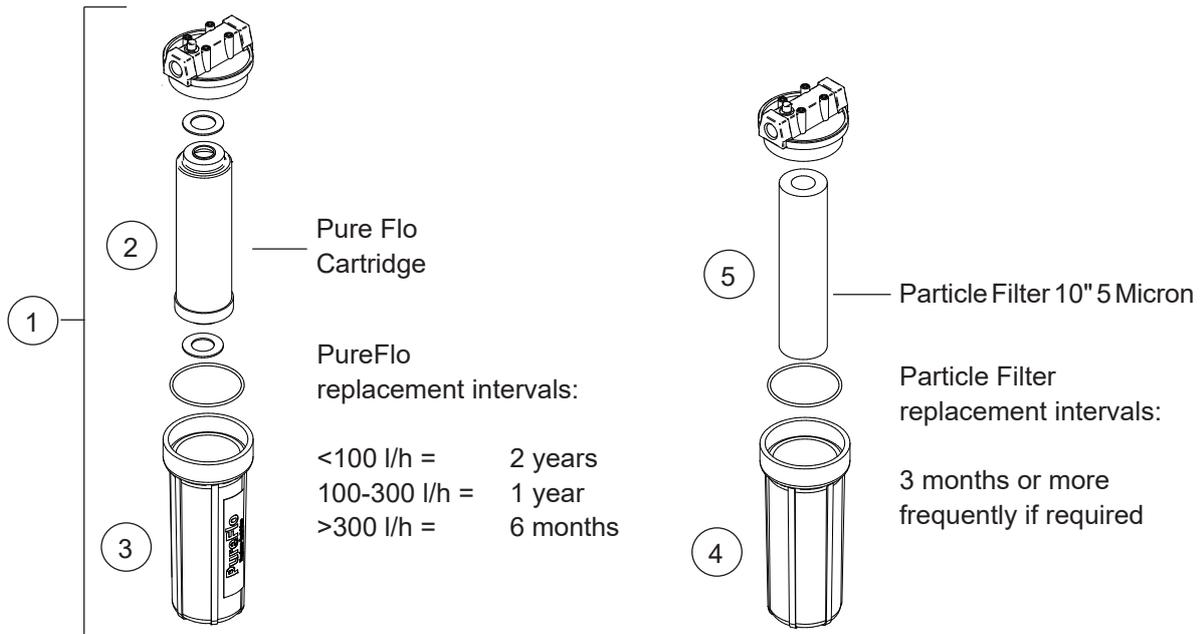
Nozzles (Pos. 10)

Nozzle type	SAP no.
Nozzle (2.5 l/h)	1200998
Nozzle (3.5 l/h)	1200999
Nozzle (4.5 l/h)	1201000
Nozzle (5.5 l/h)	1201001
Nozzle (6.5 l/h)	1201002
Nozzle (9.0 l/h)	1201003
Nozzle (12.0 l/h)	1201004
Nozzle (15.0 l/h)	1201005

10 Water / Air line components

10.1 PureFlo

PureFlo has been developed to inhibit the growth of bacteria, molds and fungi in concentrations normally found in potable drinking water supplies. PureFlo is not a disinfectant and will not kill all microbes in heavily contaminated water. It is therefore important that the quality of the water supplying the humidifier is monitored and controlled regularly according to the risk assessment for your building. Refer to instruction sheet supplied with replacement cartridge.

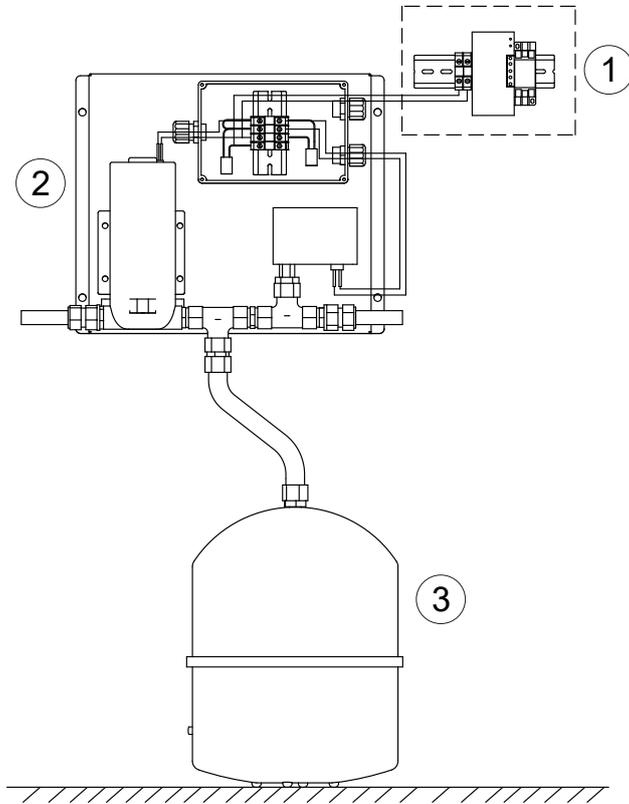


Pos.	SAP no.	Description
1	2573358	PureFlo Hygiene Assembly - Kit for 15mm connection (UK / NA)
1	1200899	PureFlo Hygiene Assembly - Kit for 16mm connection (EU)
2	2566450	PureFlo Replacement Filter
3	1200610	Filter housing - white
4	1201022	Filter housing - blue
5	1201080	Particle Filter 10" 5 Micron

10.2 Booster Pump

If option pump has been supplied as part of the delivery it consists of 3 parts:

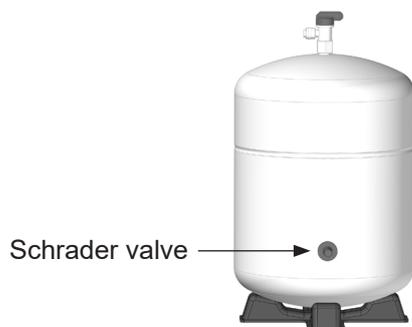
1. 24 VDC power supply, pre-installed inside the JS60C
2. The pump and pressure switch assembly
3. Pressurised buffer tank with stainless steel braided connection hose



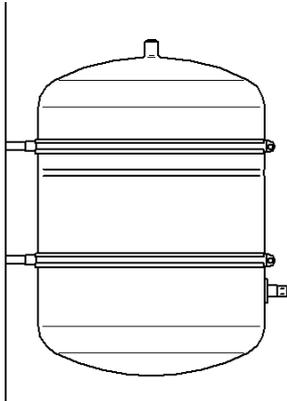
10.2.1 Installation

The pressurised buffer tank is supplied depressurised, so before installation it will be necessary to repressurise the tank. To do this you will require either a car tyre foot pump or access to a compressed air tyre inflation system.

To repressurise the tank locate the schrader valve and remove the plastic cover.

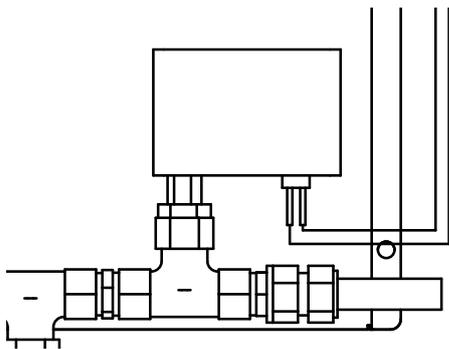


- Connect compressed air source and inflate to 3.8 bar / 57 psi.
- Disconnect compressed air source and replace plastic dust cap.
- Position the tank on its mounting feet.
- Mark on the wall 2 positions for attaching the tank to the wall using the supplied worm drive bands.



The worm drive kit consists of:

- 2x Worm drive bracket – C7W2 incl. weld-on nut and rubber insert
- 2x Hanger bolt M8 x 80 mm TX galvanised
- 2x Fischer dowel SX 10x50 mm wall plugs
 - Connect braided flexible hose to top of tank and to the pump panel.
 - Ensure the hose is as straight as possible.
 - Mark up the 4 fixing points for the back plate.
 - Attach the plate to the wall with a minimum of 50 mm (2") size 8 screws (not supplied).
 - Refit the braided hose and tighten fully.
 - Check the pressure settings on the pressure switch.



Range left hand scale should be set at 5 bar (75 psi) and differential at 1.5 bar (23 psi). Use adjuster screws on top of pressure gauge to adjust if required.

10.2.2 Water connection

The pump must be installed after the Pureflo filter set and before the JS60C control panel. Connection size 15 mm (1/2"). Connection can be made with 304 stainless steel, copper or braided stainless hose.

10.2.3 Electrical Connection

Connect the electrics box to the JS60C panel using minimum 0.75 mm² (20 AWG) 2 core cable:

- Terminal 4 in the JS60C to terminal 1 of the pump
- Terminal 5 in the JS60C to terminal 2 of the pump

Maximum recommended cable length 5 metres (15 ft).

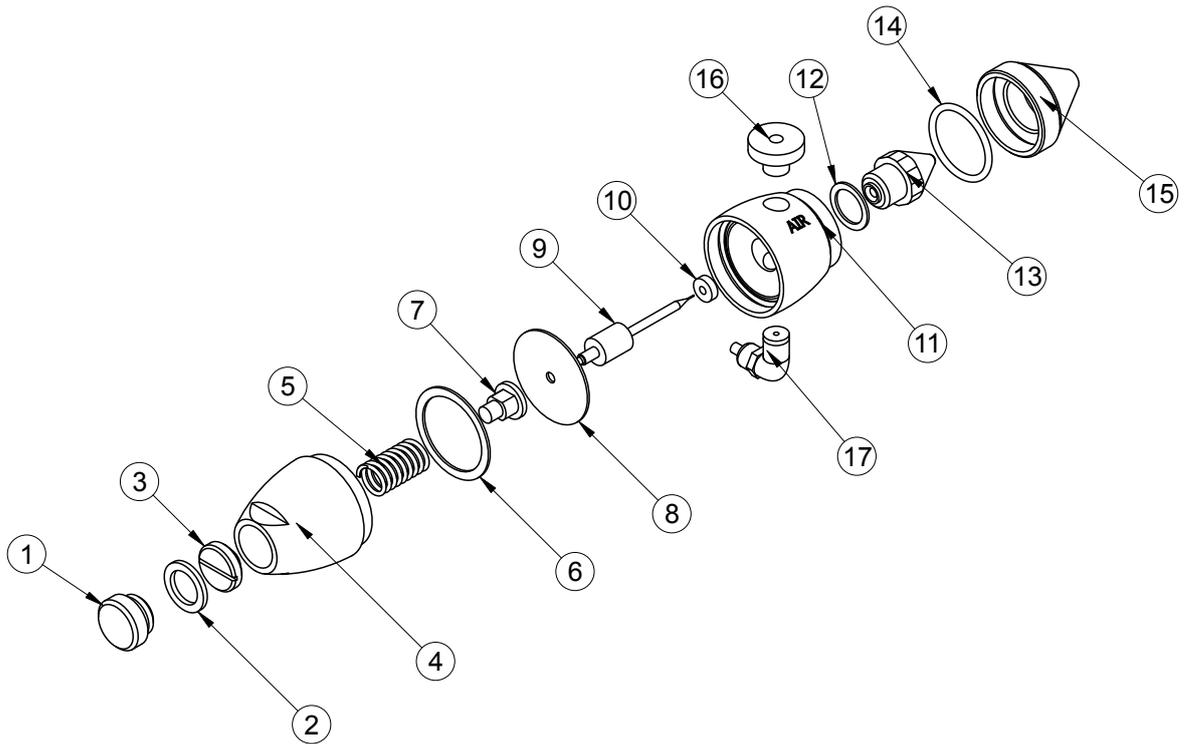
Power to the pump is 24 VDC. Do not run cable close to any high voltage power lines.

10.2.4 Commissioning

- Switch on compressed air supply to the JS60C.
- Switch on water supply to the PureFlo filter set.
- Switch on JS60C panel.
- Set humidity level to a value that enables the system to spray.
- When air pressure achieves 2 bar pressure inlet water solenoids in the panel will enable and pump should start.
- Pump is rated at 42 litres (92 lbs) per hour.
- Depending on the size of the system it will take time to fill the buffer tank, however nozzles should spray.
- Adjust operating pressure on the water pressure regulating valve to the correct pressure for the nozzle size installed.
- Reduce humidity set point to below current room humidity.
- Water solenoid should close, and pump should also stop running.
- Check installation for any signs of leakage.

Once the buffer tank is fully charged the pump will cut in and out automatically against the pressure switch setting. Pump on at nominally 3.5 bar (38 psi) and pump off at 5 bar (75 psi).

10.3 Nozzle NOZ**K



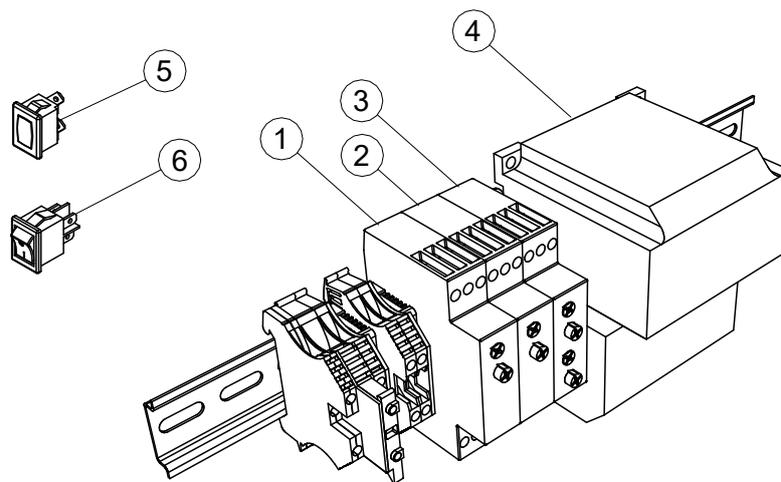
10.3.1 Standard parts list

Pos.	SAP no.	Iscala no.	Description
1	1201122	303574	Nozzle back nut
2	1201152	303575	Nozzle back nut washer
3	1201121	303572	Nozzle balancing screw
4	1200117	303565	Nozzle body rear
5	1200113	303573	Compression spring
6	1200112	303571	Nozzle diaphragm washer
7	1200109	303568	Nozzle cleaning pin nut
8	1200111	303570	Nozzle diaphragm
9	1200108	303567	Nozzle cleaning pin
10	1200110	303569	Nozzle cleaning pin seal
11	1200116	303564	Nozzle body front
12	1200101	303566	Nozzle water jet washer
13	1200100	303559	Nozzle water jet (2.5-6.5 l/h)
13	1200602	303637	Nozzle water jet (9.0-15.0 l/h)
14	1200107	303560	Nozzle air cap O-ring
15	See table	See Table	Nozzle air cap
16	1200115	303576	Air inlet side nipple
17	1201123	303716	1/8M - 6/4 tube elbow

Nozzle air cap sizes (Pos. 15)

Nozzle output	SAP no.
Air cap (2.5 l/h)	1200102
Air cap (3.5 l/h)	1200103
Air cap (4.5 l/h)	1200104
Air cap (5.5 l/h)	1200105
Air cap (6.5 l/h)	1200106
Air cap (9.0 l/h)	1200502
Air cap (12.0 l/h)	1200500
Air cap (15.0 l/h)	1200501

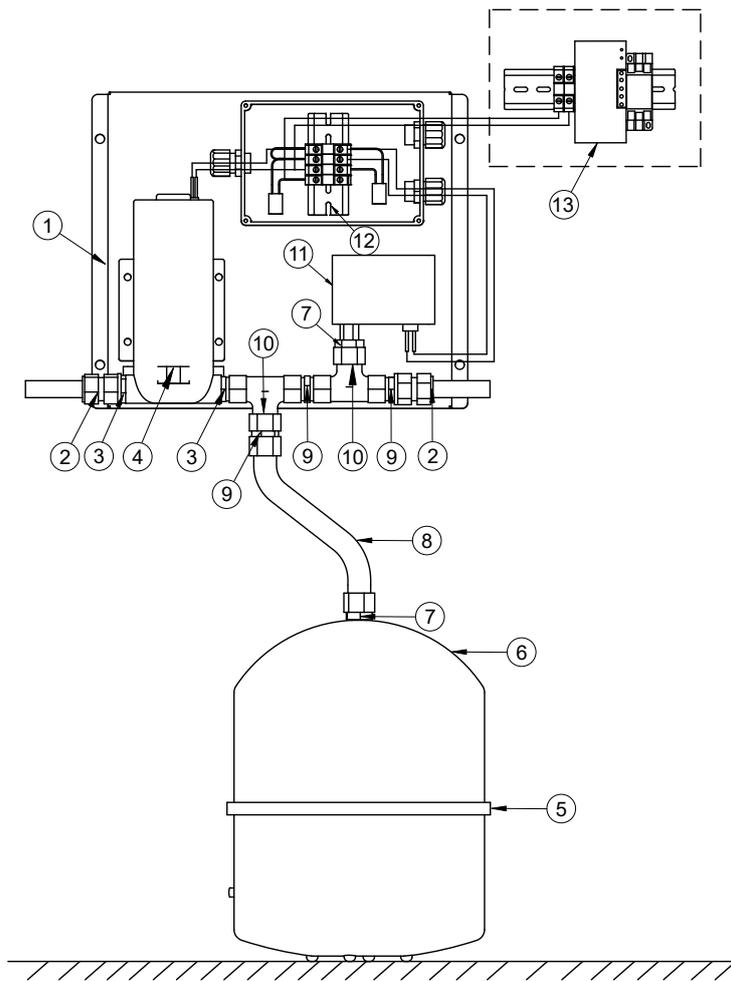
10.4 Timer loom



10.4.1 Standard parts list

Pos.	SAP no.	Iscale no.	Description
1	1200079	304040	Purge timer
2	1200080	304041	Air run on timer
3	1200081	304042	Nozzle flush timer
4	1200078	303639	Transformer 105 VA
5	1201134	303537	Power light
6	1201133	303536	Power switch

10.5 Option pump and power supply

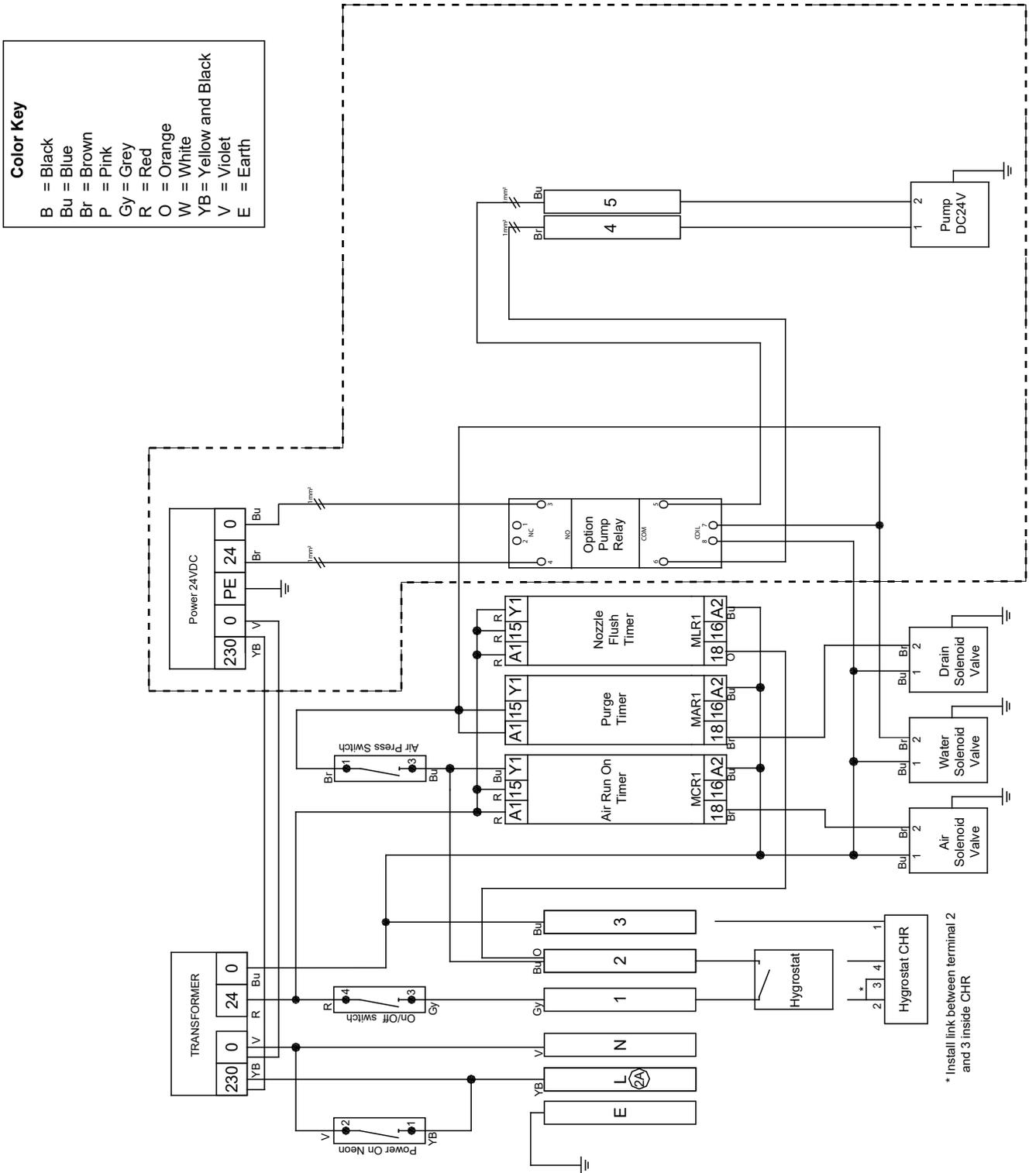


10.5.1 Standard parts list

Pos.	SAP no.	Iscala no.	Description
1	1201164	304206	Pump support
2	1201153	303522	Compression fitting 1/2"F-15 mm
3	1201161	301995	Nipple G3/8-G1/2
4	2599774	304200	Diaphragm pump
5	2599949	304239	Worm drive bracket 230-250
6	2599775	304237	Water tank
7	1201165	303950	G1/2-G1/4 bush
8	1201119	304203	Stainless steel Braid hose G1/2
9	1201166	303934	JS1/2" nipple
10	1201156	304092	1/2"FFF Tee
11	1201163	304238	Pump pressure switch
12	1201162	304236	Pump control box
13	1201117	304201	Pump power source

11 Wiring diagram Condair JS60C

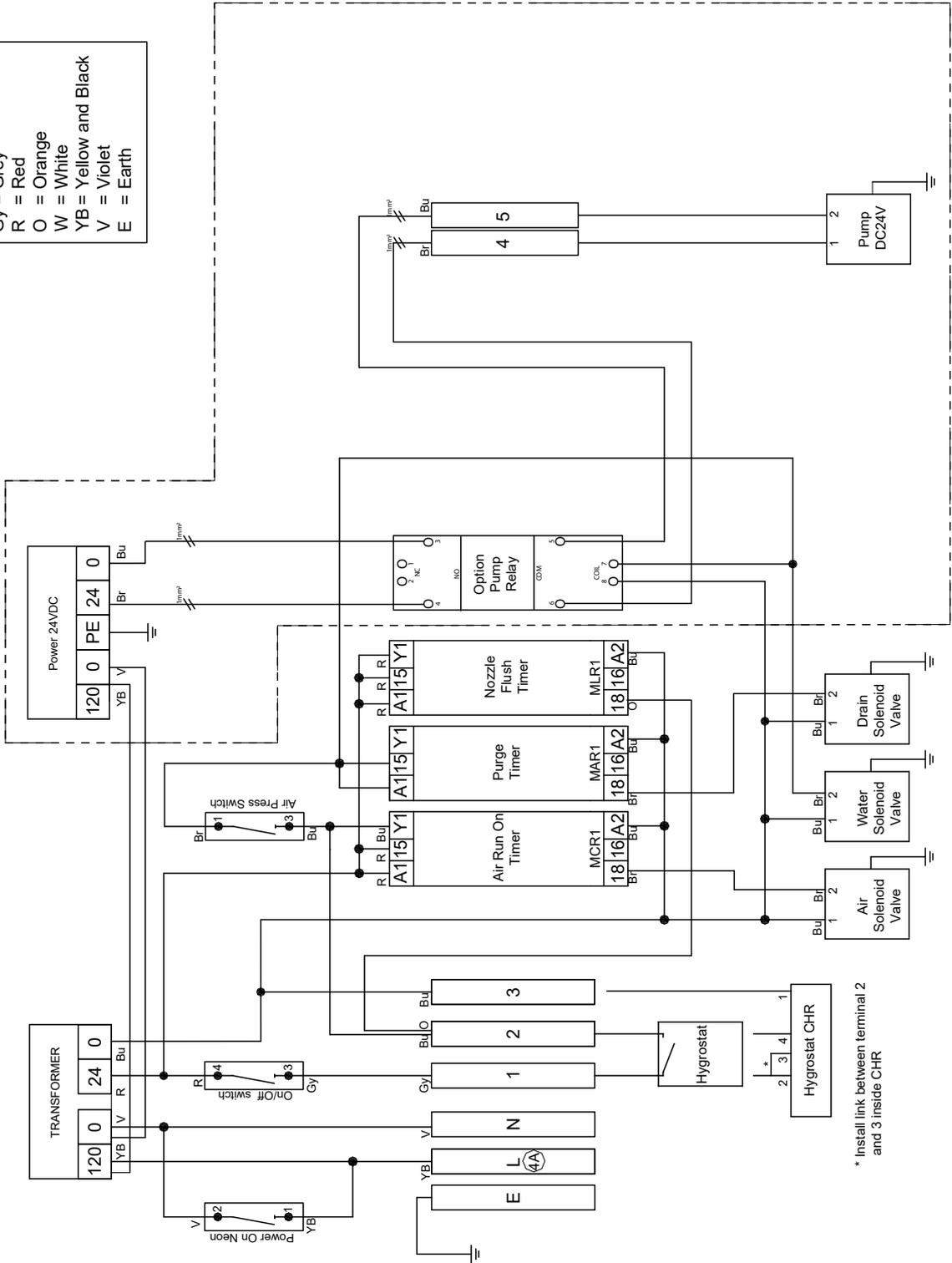
11.1 230 VAC model



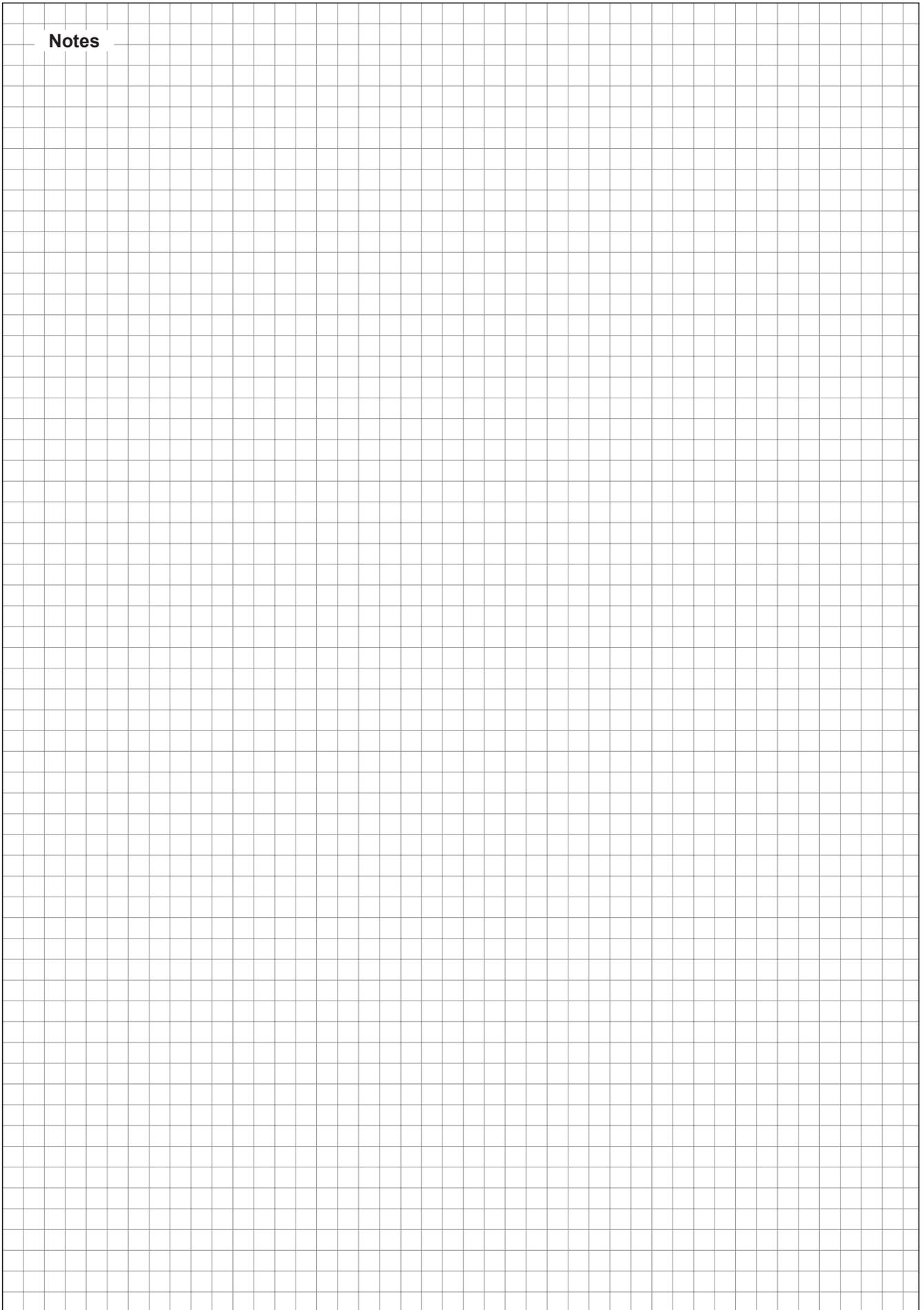
11.2 110 VAC model

Color Key

- B = Black
- Bu = Blue
- Br = Brown
- P = Pink
- Gy = Grey
- R = Red
- O = Orange
- W = White
- YB = Yellow and Black
- V = Violet
- E = Earth



Notes



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