

# **PENDRED** Humidification and Water Systems

## Planned maintenance, cleaning & servicing of:-

PENDRED Crop Hydration & Humidification Systems.

Pendred crop hydration and humidification systems come under the UK-HSE classification of 'cold water humidification systems' and are covered by the Health and Safety Executive Code of Practice Ref L8 entitled 'Legionnaire's Disease – the control of legionella bacteria in water systems', this is an approved code of practice and guidance for users of cold water humidification systems.

Legionnaire's disease is a severe type of pneumonia that can be contracted by the inhalation of small droplets of water contaminated by the bacteria legionella pneumonia. Small droplets of water can be produced in many ways i.e. by cooling towers, showers, air conditioning systems, spa baths, hot and cold water systems, car washes, horticultural sprays but most importantly for users of our systems they can be produced by humidification and ultra sonic fogging equipment.

As a company responsible for the supply, installation and servicing of this type of equipment, we have a legal obligation under the UK-HSE Code of Conduct to ensure, as far as is reasonably practicable, the minimisation of the risk of Legionnaire's disease. Because the widespread presence of legionella bacteria in nature, it will rarely be possible to completely and permanently prevent the contamination of water systems by legionella. It is, however, possible to control conditions by ensuring suitable design, maintenance and treatment of systems so as to control the growth of bacteria.

Preventative action:- Infection can be caused by a combination of the following.

1. The presence of legionella in water
2. Conditions that allow growth
3. Means of disseminating contaminated droplets
4. Inhalation by susceptible persons

Control of the organism and prevention of infection can be achieved by adopting measures to break this chain.

Preventative action:-

1. Ensure the water supply is clean
2. Prevent areas within the system that allow stagnation
3. Maintain, purge and disinfect the system at regular intervals.
4. Install and maintain water treatment equipment eg reverse osmosis/ultra violet radiation treatment
5. Avoid operating temperatures above 20°C
6. Minimise the release of sprays/droplets
7. Water sampling at least every 6 months

## **Risk Assessment**

In order to determine hazardous situations and to ensure preventative action be taken, it is necessary to carry out a risk assessment.

Where there is a failure in the requirements, specified action will be needed to prevent problems arising. The action needed may be the responsibility of the client or user of the equipment and information must be passed on where necessary.

## **Installation**

When installing equipment, consideration should be given to the following points:-

1. There should be easy access for maintenance and water sampling
2. Dead legs and other static areas should be avoided
3. Water treatment equipment should be fail-safe in operation
4. Operational advice and instructions should be provided for the client in a written format including a risk assessment.

## **Maintenance**

A regular system of maintenance should be agreed with the client in writing.

The frequency and extent of the maintenance program will be determined by the type of equipment and the recommendations of the manufacturer.

1. Check the effectiveness of the ultra violet lights
2. Water filters should be cleaned or changed as necessary
3. The cold water humidification and/or fogging system should be purged and disinfected at regular intervals of not more than 12 months
4. Water sampling for legionella should be carried out at least every 6 months. Other hygiene tests should also be conducted to determine the level of general cleanliness such as for listeria and coliforms.

## **Water sampling**

Sampling water for legionella must be carried out in accordance with the instructions of the sampling laboratory. The laboratory used by Norman Pendred & Company Ltd is accredited under the P.H.L.S. Accreditation Scheme.

The results of analysis will determine the need or otherwise for remedial action.

Less than 100 bacteria/cfu/litre require no further action.  
Between 100-1000 bacteria/cfu/litre either:

- a) If only one or two positive samples, re-sampling should take place. If a similar result prevails, review control measures and check risk assessment.
- b) If the majority of samples are positive, disinfection of the system should be carried out and a review of control measure and a risk assessment made.

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More than 1000 bacteria/cfu/litre. Resample and immediately review control measures and the risk assessment to identify remedial action. Disinfect the system.

## **Records**

It is a requirement of the UK-HSE Code of Conduct that accurate and results of maintenance carried out, inspection visits, water tests, checks and water sampling dates and results are kept up to date and retained in company files at Norman Pendred & Company Ltd for at least 5 years.

All records should be signed by the operative responsible for carrying out each specific area of work.

Norman Pendred & Company – Pendred humidification is a founder member of the Hevac - Humidity Group.

## **HEVAC LOGO**

The Heating, Ventilation and Air Conditioning Association is part of FETA – Federation of Environmental Trade Associations.

The Humidity Group meets at regular intervals throughout the year and discusses all aspects of the use of humidification systems. Safety is of paramount importance to the group who have produced a 'Code of Best Practice' to which all members agree to adhere to. Copies are available upon request (contact Pendred/Administration on +44 208 461 9382).

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## Maintenance of Humidifier/Foggers

Depending on the water and air quality the humidifier has to be maintained every 12 months minimum. When the humidifier is used continuously, the transducers that generate the fog by ultrasonic vibration will wear out after 10.000 running hours (approx 13 months) and will need to be replaced.

Don't damage the transducers in the cleaning process

Before starting fogger maintenance or before shipping the fogger to our workshop for service check that:

- Mains power is disconnected and the air fan in the fogger has stopped rotating
- The water connection to the fogger has been emptied and is closed
- Water to the water filter system is closed and disconnected
- The humidity sensor plug is disconnected from the fogger
- The water reservoir has been emptied and the water flushing to drain hose is disconnected from the fogger

The humidifier remains horizontal during dismantling

## Cleaning the fogger.

- Remove the 4 M8 bolts of the top lid of the water reservoir
- Clean the water reservoir with a soft brush or cloth.

If necessary fill the reservoir with the household de-scaling acid and let it absorb for 4-12 hours.

The filter of the cooling fan at the back of the fogger can be cleaned with water and soap. Make sure that it is dry before putting it on again.

- Remove the water filter insert in the water inlet of the fogger. Clean and replace.
- Flush the internal drain with water or use a round brush.

## Cleaning the humidity sensor. (ref: HS90P)

Dismantle the sensor and flush it in clean water, let dry and remount in its original position. The sensor will recover between half an hour and 24 hours after cleaning. This depends on the Rh and the airflow around the sensor. During this time the humidifier will not operate unless the sensor plug is temporarily taken out of the humidifier.

## Maintenance of optional ozone generator.

The ceramic element that produces ozone should be cleaned once a year:

- Disconnect the mains to the fogger
- Unscrew the side panel with the timer (6 pieces)
- Take away the side panel and disconnect the wiring of the timer.
- Remove the upper and lower crosshead-screw of the stainless steel cover that is connected to the back aluminium sleeve.
- Take the ceramic element out of the holder.
- Clean it with alcohol.
- When the metal on the ceramic plate shows disruptions, replace the ceramic plate.
- Assemble again in the opposite way.

## Replacing the transducers.

The replacement of the transducers can only be done by Contronics or representatives specifically authorised by Contronics. Please contact our Service Manager for advice on +44 208 461 9385

A technician authorised by Contronics bv should only do this maintenance.  
Unless this is the case, the special 5-year warranty system will not apply.

# **PENDRED** Humidification and Water Systems

## Technical specifications HU-85 fogger

Transducer frequency	1.7 Mhz
Capacity at 25° water reservoir temperature	0-6 kg/hr (adjustable)
Lifetime transducers according to water hardness	10.000 hours (13 months continuously)
Measurement per water particle	1-3 micron
Diameter air outlet	2 x 80 mm
Diameter air inlet	80 mm
Airflow	Adjustable 0-60 m3/0Pa)
Maximum pipe length per outlet	6 meters
Mains water pressure	1-6 Bar
Water connection	3/4" external
Maximum water hardness	8° German hardness (demineralised is strongly recommended)
Flushing frequency	Once per hour adjustable
Water drainage	1/2" external
Contents water tank 1	500 cm3
Mains supply	230V ± 10% 50/60Hz
Maximum load	450W
Ambient temperature	0 to 35 °C
Water temperature	5 to 15 °C
Air temperature	-5 to 35 °C
Ambient temperature/air temperature	Max. + 15K (max 75% Rh)
Measurements (L x W x H)	450x265x290
Weight	18 kg

## **HU-85 and HU-245og (with built in ozone generator).**

Capacity Ozone	- 0-20 mg of ozone gas per hour (adjustable)
Switch Ozone	-Timer with daytime/nighttime setting + permanent ozonation

The filter of the cooling fan can be cleaned with water and soap. Make sure that it is dry before putting it on again.

Remove the filter cap in the water inlet of the humidifier. Clean and replace.

Flush the internal drain with water or use a round brush.

# **PENDRED** Humidification and Water Systems

## Technical specifications HU-245 fogger

Transducer frequency	1.7 Mhz
Capacity at 25° water reservoir temperature	0-18 kg/hr
Lifetime transducers according to water hardness	10.000 hours (13 months continuously)
Measurement per water particle	1-3 micron
Diameter air outlet	2 x 110 mm
Diameter air inlet	80 mm
Airflow	Adjustable 0-60 m <sup>3</sup> /0Pa)
Maximum pipe length per outlet	6 meters
Main water pressure	1-6 Bar
Water connection	3/4" external
Maximum water hardness	8° German hardness (demineralised is strongly recommended)
Flushing frequency	Once per hour adjustable
Water drainage	3/4" external
Contents water tank	4000 cm <sup>3</sup>
Mains supply	230V ± 10% 50/60Hz
Maximum load	1,3 KW
Ambient temperature	0 to 35 °C
Water temperature	5 to 15 °C
Air temperature	-5 to 35 °C
Ambient temperature/air temperature	Max. + 15K (max 75% Rh
Measurements (L x W x H)	660x425x290
Weight	43 kg

## **HU-85 and HU-245og (with built in ozone generator).**

Capacity Ozone	- 0-20 mg of ozone gas per hour (adjustable)
Switch Ozone	-Timer with daytime/nighttime setting + permanent ozonation

The filter of the cooling fan can be cleaned with water and soap. Make sure that it is dry before putting it on again.

Remove the filter cap in the water inlet of the humidifier. Clean and replace.

Flush the internal drain with water or use a round brush.