Ref No. IEU/AE120301

AKIMist® ”E” Dry Fog Humidifier
General Installation Manual

Issued on: March 1, 2012

“The Fog Engineers”
IKEUCHI EUROPE B.V.

Asterweg 17 A6, 1031HL Amsterdam, The Netherlands
Tel: +31-(0)20-820-2175 Fax:+31-(0)20-820-2176

Table of Contents

1. Pre-Installation Recommendations

Thank you for your purchase of AKIMist® “E” Dry Fog Humidifiers.

After proper installation, this product efficiently increases the relative humidity of the enclosed space by directly spraying an ultra-fine, non-wetting mist into the air.

It is recommended that all installers and contractors read this manual, along with the individual instruction manuals of each system component, prior to beginning work.

Please fill in the contact information of each supplier in the list below.

Contact List

	Company Name	Contact Person	Phone #
Client			
Humidification System	IKEUCHI Europe BV		31-20-820-2175
Compressor			
Water Treatment System			
Electrical Work			
Plumbing Work			

Precautions:

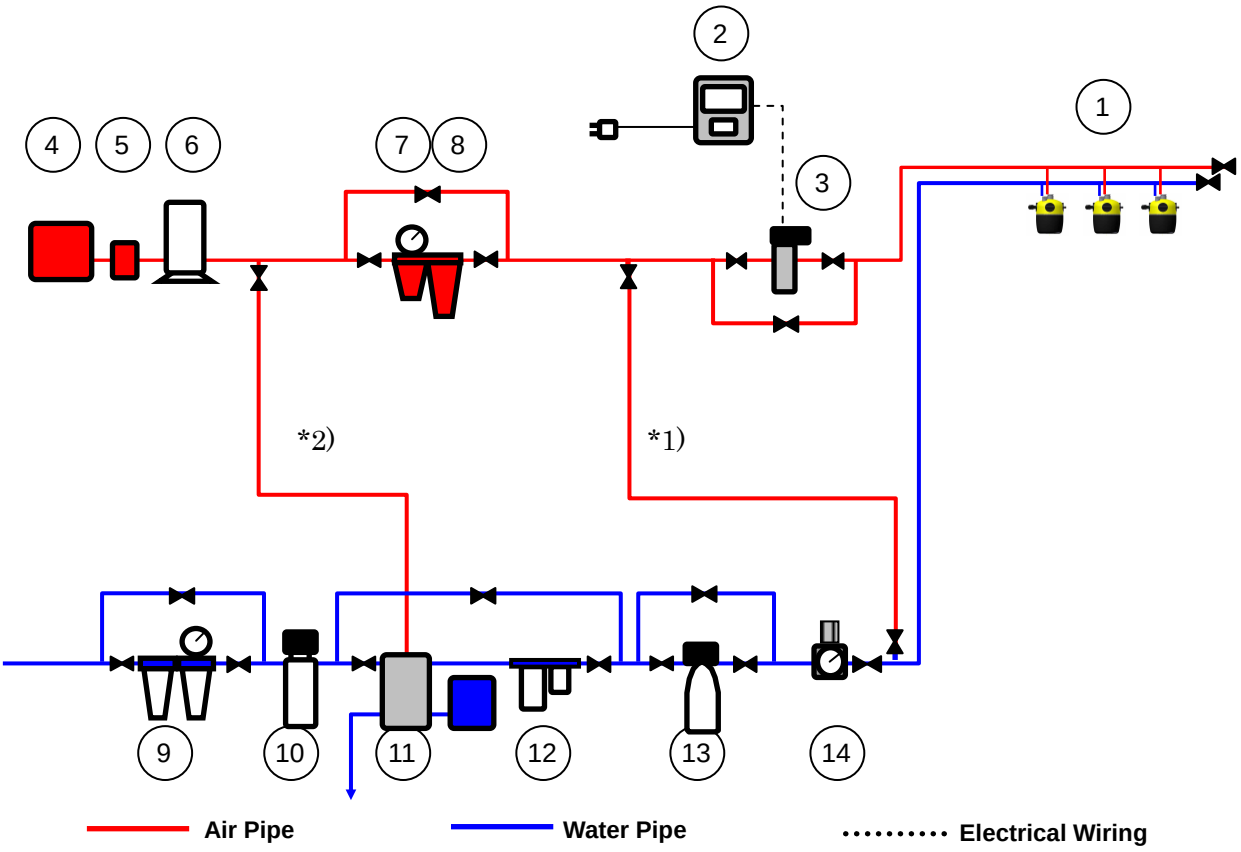
Always ensure that air pressure never exceeds 5bar during operation of AKIMist® “E” humidification system. Higher air pressure may cause damage or failure of the AKIMist® “E” system.

Never disassemble an AKIMist® “E” unit while air or water valve is open. Release of compressed air poses a danger to the immediate area and an open water valve will cause water leakage.

Always use appropriate tools for plumbing and installation to avoid hazards to a human body and possible damage to the hardware.

2. AKIMist® “E" Typical Configuration of Flow and Function of Each Component

< Typical Configuration of Flow >



*1) for flushing water pipe

*2) for pneumatic pump of RO water purifier

Humidifier and control unit

No.	Components
1	AKIMist® "E"
2	Hygrometer
3	Solenoid valve

Compressed air unit

No.	Components
4	Air compressor
5	Air dryer
6	Receiver tank
7	Air filter
8	Oil filter

Water treatment unit

No.	Components
9	Water filter
10	Water softner
11	RO water purifier
12	UV lamp + Ultra filter
13	Ion exchange water purifier
14	Water pressure regulator

- **It is recommended to place air and water pipes at a 1/100 slope towards their ends to aid in proper drainage.**

< Function of Each Component >

No	Component	Function	Remarks
Humidifier and Humidity Control Unit			
1	AKIMist® "E"	Dry Fog Humidifier	
2	Hygrometer	Keep target humidity in the room by on-off control of humidifier.	
3	Solenoid Valve Unit	On-off control of airflow to the humidifier.	
Compressor Air Unit (Air)			
4	Air compressor	Supply compressed air to the system. Oil-free type is recommended to supply clean air to humidifier.	
5	Air Dryer	Remove moisture from compressed air.	
6	Receiver Tank	Storage of compressed air.	
7	Air Filter	Remove dust and moisture from compressed air.	
8	Oil Filter	Remove oil mist, dust and moisture from compressed air.	
Water Treatment Unit (Water)			
9	Water filter	Remove particles from water.	
10	Water softener	For softening raw water by removing calcium, magnesium, etc.	
11	RO water purifier	Remove minerals from water by reverse osmosis membrane and produce purified water.	
12	UV lamp + Ultra filter	Sterilizing water and block bacteria.	
13	Ion Exchange Water Purifier	Placed on after RO Water Purifier and produce higher grade purified water.	
14	Water Pressure Regulator	Reduce water pressure in case of excess supply pressure to humidifiers.	

3. Air and Water Quality suggestion for AKIMist® “E”

AKIJet® nozzle mounted on AKIMist® “E” needs to be supplied with fully purified air and water to prevent its high precision orifices from clogging.

Insufficient purification of the air and water may cause nozzle clogging and further lead to abnormal spraying, wet mist, or water leakage.

Depending on quality level of supply air and water, the nozzles would clog within a few weeks.

The following table shows required quality specifications for the air and water supply. Your attention to these specifications is greatly recommended

Air	Pressure:	2-5bar (AKI03C) 3-3.5bar(AKI03B) at a point of use.
	Temperature:	5℃-Room temprerature
	Quality:	Air without moisture, oil mist and dust; Duw point 10℃
	Purifying devices:	Air dryer, Air filter, Oil filter
Water for AKIMist"E"	Pressure:	0.5-2bar at a point of use
	Temperature:	5℃-Room temprerature
	Quality:	No particles Electric conductivity 0.07-10μS/cm Resistance 14-0.1Mohm/cm Silica (SiO2) 5ppm or less Total Hardness + Bicarbonate 60ppm or less
	Puriying Devices:	Water filter, Water softner, Reverse osmosis water purifier, Ion exchange water purifier
Water for RO water purifier	Pressure:	2bar minimum.
	Temperature:	5℃-Room temprerature
	Quality:	No particles Drinking water quality Electric conductivity 1500μS/cm or less
	Quantity:	More then 3times of spray amount

4. Plumbing

1) Material

Use rustproof materials.

- Stainless steel pipe (SUS304, AISI 304, or 1.4301) is recommended.
- Stainless thin wall pipes joinable, with no thread-cutting necessary, enable easier assembly and reduce possible issues related to the humidifiers because of fewer chips and burr derived from thread cutting.
- Plastic pipe such as PVC, PP, PE, etc.
- Flex tube for a few units AKIMist"E" installation or flexible change of installation positions.

*Pipe color should not be transparent to prevent appearance of algae.

*Material of piping should be follow local regulation.

2) Appropriate pipe size (pipes to be connected to the humidifiers)

# of Nozzles (pieces)	Air Pipe Size (inch)	Water Pipe Size (inch)	Note
1 ~ 4	1 / 4	1 / 4	
5 ~ 9	3 / 8	3 / 8	
10 ~ 17	1 / 2	3 / 8	
18 ~ 22	1 / 2	1 / 2	
23 ~ 44	3 / 4	1 / 2	
45 ~ 70	1	1 / 2	

- For Air Pipe, the above recommendation includes pressure loss in the pipes with its total length less than 30m.
- For Water Pipe, the above recommendation includes pressure loss in the pipes with its total length of 10m.

3) Cleaning before assembly

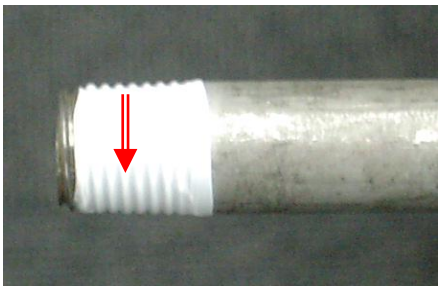
Chips, burr, and cutting oil residue in the pipes after pipe and thread cutting may cause clogging and water leakage on the humidifiers.

Make sure to clean the contamination and to air-blow off the particles in the pipes prior to assembly.

- If the customer chooses to perform a self-install of the AKIMist® “E” system, it is recommended to refer to these configuration standards to establish a consistent installation method.

4) Stainless steel pipe with thread connection

Apply sealant tape as per the indicated direction in the picture; otherwise the tape will be torn off when the pipe is screwed in, and pieces of the tape will flow down to cause clogging in the AKIMist ® “E”. Avoid applying sealant tape over the first thread of the end of a pipe.



5) Stainless steel pipe with press connection

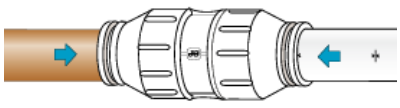
Cutting

Insert

Press and fix

6) Plastic pipe

Cutting



Inset and fix

7) Flexible tube

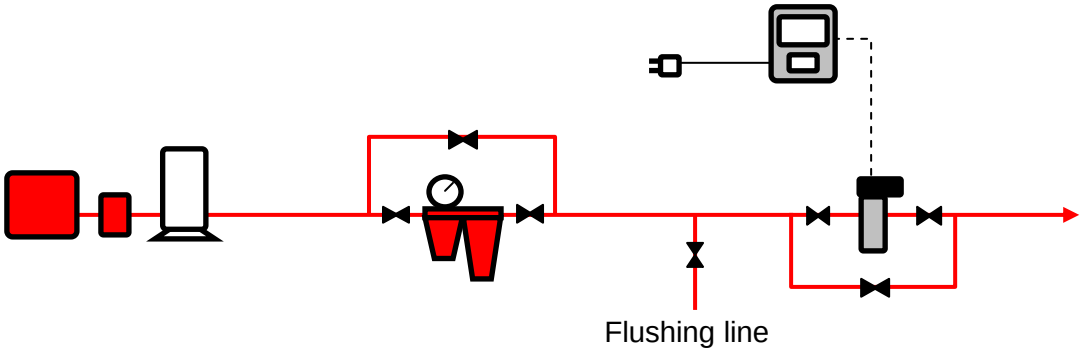
Cutting

Inset and fix

7) About support

Prepare supports that firmly sustain the weight of components and pipes. Please verify that the method and positions are similar to the following example of supporting.

5. Plumbing of Air Supply Line



1) Place each component in a position that allows for easier maintenance. We recommend putting bypass on equipments for safety.

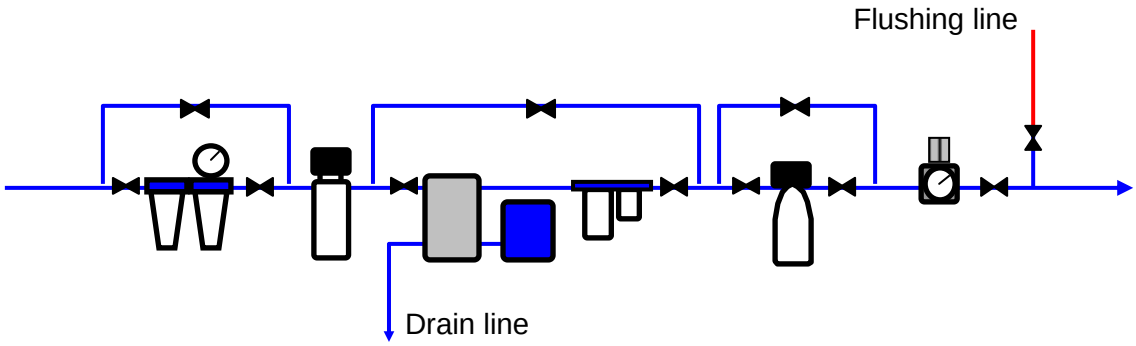
2) We recommend installing valves and union connections on both sides of each equipments for easier maintenance and replacement.

Valves and unions for air filters

Valves and unions for solenoid valves

3) We recommend preparing flushing line connected to the water supply line for easy flushing of the water supply line by air.

6. Plumbing of Water Supply Line



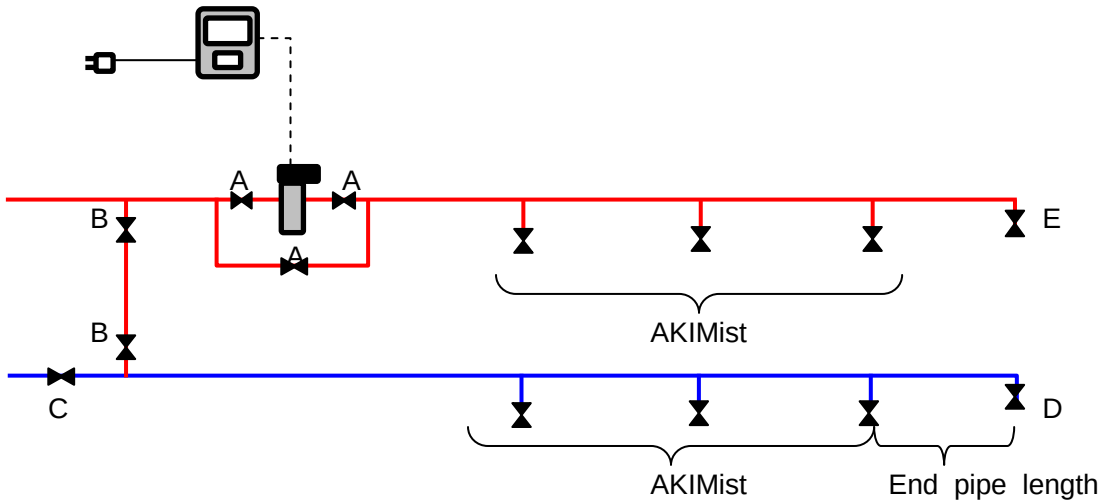
1) Place each component in a position that allows for easier maintenance. We recommend putting bypass on equipments for safety.
2) We recommend installing valves and union connections on both sides of each equipments for easier maintenance and replacement.
3) Prepare drain line for RO water purifier.
4) We recommend preparing flushing line connected to the air supply for easy flushing of the water supply line by air.
5) Water supply pressure for RO water purifier needs 2bar minimam.

RO water purifier and ion exchange water purifier

Water filter

7. Flushing

Flush both air and water pipes before operation of humidifiers.



< Flushing by Air >

1) Close valves A – E and of AKIMist.
2) Incase there is no valve A, switch off hygrometer and close solenoid valve.
3) Open both Flushing Valves B
4) Open valve D and flush the water line by air for 5-15 minutes.
   (Use bucket or towel to receive foreign particles.)
5) After flushing of the water line, close valve B and D.
6) Open valve A. In case there is no bypass for hygrometer, switch on hygrometer and open solenoid valve.
7) Open valve E, and flush the air supply line by air for 5-15 minutes.
   After the all pipes are flushed by air, close all the valves.

< Flushing by Water >

1) Close valves A – E and of AKIMist.
2) Confirm the water treatment system is ready to supply purified water and is connected to the water line.
3) Open valve C.
4) Open valve D and flush the water line 5-15 minutes.
   (Use bucket to receive foreign particles.)

8. Installation of AKIMist® “E”

1) Make sure that flushing procedures are completed for air and water line before operation of humidifiers.
2) Make sure to attach AKIMist upright.
3) Make sure no objects within 4m on the direction of spray to prevent condensation on objects. In case of difficulty, we recommend using ball adaptors to adjust spray direction.
4) Install AKIMIst minimum 50cm below ceiling to avoid the fog hit to ceiling.
5) Avoid AKIMist install above objects or production lines to prevent water drip on them during maintenance of AKIMist.
6) Air pressure must be adjusted 2~5bar (for AKIJet03C), 3~3.5bar (for AKIJet03B) at each AKIMist® “E”. Recommendable original air pressure for air line is 6~7bar.
7) Water pressure to AKIMist should be adjusted 0.5-2.0bar.

Refer to AKIMist® “E” Instruction Manual. Also make sure to comply with any individual national standards regarding safety.

< Example of Installation of AKIMist® “E”>

On the ceiling

On the wall

9. Position of Hygrometer

Hygrometer should be in the position where humidity is required or in the center of the target area. Pay attention to the following cautions:

1) Install Hygrometers in the position where operate easily.
2) Recommendable installation height is around 1.5m from floor.
3) Apply a sustainable holding fixture.
4) Avoid install hygrometer where the fog hit on humidity sensor directly.
5) Avoid install hygrometer where hot or cold air blow on sensor directly.
6) Keep the sensor a minimum 5m away from electrical noise sores.
7) Never change length of sensor cable.

Refer to the individual Instruction Manual of Humidity Sensor and Dry Fog Controller.

“The Fog Engineers”
IKEUCHI EUROPE B.V.

Asterweg 17 A6, 1031HL Amsterdam, The Netherlands
Tel: +31-(0)20-820-2175 Fax:+31-(0)20-820-2176