



INSTALLATION and OPERATION MANUAL

SILVERMIST

HUMIDIFICATION SYSTEM



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SECTION...I

IMPORTANT

When installing any AMCO pneumatically operated humidity system, it is of utmost importance that the air-line source feeding the system should be of clean, dry, filtered air. Oil deposits, condensation and carbon deposits from air-compressors will clog the air screens and passageways of the pressure regulators, solenoid valves and the Silvermist atomizers.

Water supplying the system's water reservoir must also be kept clean and free from slime, algae, rust deposits and any other foreign matter.

Always "blow-out" or drain/flush any air or water supply line before connecting it to the AMCO atomizer system.

Nozzles, valves, regulators and other parts that are damaged or fouled due to unsatisfactory air or water sources will not be covered under warranty.

INSTALLATION OF SILVERMIST HUMIDIFICATION SYSTEM

Refer to schematic drawings of atomizer and line layouts. *Refer to brochure.

1. This is a siphon fed water supply system.
2. With the aid of a lift or a ladder, look at the room where the system will be installed. Look at it from the same height as the system will be installed.
3. Determine the height of the system from the floor. Measure the distance from the floor to the bottom of the water line. The bottom of the air line is 3 1/2" higher.
4. Since both, the air and water lines, are level, be sure to locate the spot where the tank will be installed. Leave enough clearance above the tank for cleaning and inspection.
5. Determine how the system will be suspended from the ceiling.
6. If using threaded rod and beam clamps, be sure both are the same size.
7. Determine the length of the rod to be used with the double ring pipe hanger (*6). Determine the pitch of the roof. All rods may not be the same length due to the roof pitch. Measure down from the bottom of the beam to the height of the water line (bottom of line) and subtract 6" to obtain rod length.



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8. Mount the water supply tank (*8) first. Check all clearances to be sure the system will not hit a pipe, beam, column or other obstruction. If a detailed layout can be furnished showing the water and compressed air outlets, we will supply a suggested system layout.

9. After the tank is mounted, double-check the measurements for the rod used with the double ring pipe hanger (*6). Measure from the beam down to the bottom of the water line coming from the supply tank and subtract 6". This will give the rod length.
10. Install the air control unit (*7) close to the water supply tank (*8). The bottom of the air line is 3 1/2" higher than the bottom of the water line. The air control unit must be supplied by at least a 1" air supply line.
11. Position water and air lines so that a straight and level run can be maintained. The air line on top and the water line on bottom.
12. If the line is over 150 feet long, add a vent pipe on the water line about halfway between the tank and the vent pipe at the end of the water line. The vent pipes should be no less than 20" high. This will allow air to escape from the water supplying the atomizers. The vent pipe at the end should be installed after flushing the system. Place filter media over the open pipe to prevent contaminants from falling into the vent pipe.
13. Space the hangers no further apart than 6 feet when using Sch. 80 plastic pipe; (4 or 5 feet is ideal).
14. Place a stay clamp (*6) about every 10 feet along the line.
15. When mounting atomizers (*4), when possible place them close to the hangers (*6). This will help keep the 1" PVC pipe from sagging.



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16. Use a 9/32" drill bit for drilling holes in the pipe to mount the clamp tees (*5) to the air and

- water line. Remove the spacer tube from inside the clamp tee (*5). Be sure the neoprene washer is in place.
17. On the air line, drill a 9/32" hole straight down from the top. Mount the clamp tee (*5) with the air connection valve (*2). On the water line, drill a 9/32" hole about 35° from the top on the back side. This hole is drilled opposite the way the atomizer (*4) will spray. The hole for the water connection is about 4" to the left of the air connection.
 18. On the end of the air line, install the air relief valve (*1). The air relief valve will turn down by using a 90° elbow fitting and a 3/8" pipe nipple about 4" long. Be sure this valve is located above an area that no damage will occur if water or oil drips out. Install the air relief valve after flushing out the air line.
 19. Both air and water lines should be flushed of all foreign matter prior to making final connections at each end.
 20. The overflow drain in the water supply tank (*8) should be extended by 1" pipe to the waste drain. The tap water supply to the tank should be at least 1/2". This line is to be connected to the 1/2" valve in the tank.
 21. The humidity sensor (*9) should be mounted as close to the center of the room/zone as possible. Mount the sensor from 6 to 8 feet off the floor. Mount the zone control panel on a wall or column where desired. Use 18 gauge shielded cable to connect the sensor to the zone control panel. Plug the control cabinet into a 120-volt receptacle that has some form

of circuit breaker protection at the receptacle or at the breaker box. (Consult your local, county or state building codes for proper electrical connection requirements.) Output from the control panel to the air control unit is 24 VAC.

WARNING

22. If the system is not used for more than thirty (30) days, drain the system.

23. It is the customer's responsibility to provide some means of security or monitoring of the system and its controls to guard against water or air leaks and/or system or controls failure that would result in the loss of, or damage to, persons or property.

If a detailed plant layout can be furnished showing the water and compressed air outlets, we will supply a suggested system layout.



SECTION...II

USE AND CARE OF THE SILVERMIST ATOMIZERS

For getting the best from your SILVERMIST atomizers, we recommend the following:

The SILVERMIST is a gravity type atomizer, utilizing compressed air at 30 P.S.I. to aspirate water from 4 1/2" below the atomizer and deliver a very fine mist without spitting or dribbling, and keeping its superior performance longer, with less attention than any other type. A brief look at the assembly drawing and the following description of its operation reveal why.

Operating air pressure entering the air connection (*7) strokes the piston (*12) to the adjusting screw (*16), and also discharges through the air orifice in the front cap (*1). The motion of the piston simultaneously withdraws the cleaning wire (*14) from the water jet in the jet plate (*2), and opens the water valve seat (*4). When the piston is stopped by the adjusting screw, the tapered portion of the cleaning wire is positioned in the metering orifice (*6) at the correct point for the calibrated delivery. Air pressure against the piston rises to operating pressure and air flow toward the piston stops. All operating air then discharges through the air orifice. Therefore, the amount of air-carried contamination reaching the piston is greatly reduced, insuring long service without the piston seal (*13) fouling.

Air discharging from the air orifice creates a suction in the water jet. The amount of suction created here is one of two factors, which determine the moisture delivery capacity of the atomizer. The other factor is the position of the tapered section of the cleaning wire within the metering orifice, which is set with the adjusting screw during calibration. The amount of suction

is strongly influenced by the relative positions of the front of the water jet and the face of the air orifice. For this reason, very close manufacturing tolerances are maintained on machined dimensions which insure that maximum suction is developed. If an accumulation of oil, dust, lime, and other foreign matter builds up on the face of the atomizer, the effect is reduced suction, and therefore, lower delivery of moisture. The single most important consideration for good operation is therefore, to KEEP THE FACE CLEAN. This is simply and easily done with the SILVERMIST merely by wiping off any accumulation of dirt. This should be done as often as necessary, which varies greatly with the amount of oil deposit from the compressed air.

Only after a prolonged period of operation will any disassembly of the SILVERMIST be required, the time being determined by the amount of contaminants in the compressed air supply and by the quality of the water used. Only experience with a particular installation will reveal the rate of accumulation of air carried contaminants or water scale.

To disassemble the SILVERMIST, first remove the front cap using the SILVERMIST Grip Wrench or similar tool, and remove any oil, grease or dirt from the front cap, the jet plate assembly, and front interior of the body by wiping with wet cloth or cloth wet with an approved safety solvent. At this point, the SILVERMIST may be reassembled and returned to operation without affecting calibration. If removal of the cleaning wire and piston is required for inspection and cleaning, first remove the front cap, jet plate and front spring. Then unscrew and remove the rear cap with the SILVERMIST Grip Wrench, and then remove the rear spring. The piston and cleaning wire may be removed by applying air pressure to the unit with the front cap and jet plate loosely in place, or by gripping the inside bore of the piston with the opened tip of long-nose pliers inserted into the inside of the piston. The seal plug may be unscrewed and

removed with a 5/32" hex wrench. The lantern gland (*10) with wire seals (*9A and 9B) may then be removed. Clean any accumulation of oil and dirt with an approved safety solvent. Any accumulation of water scale may be removed by soaking the affected parts in an approved descaling solution. Wash thoroughly with water. Inspect the wire seals (*9A, 9B and 9C) and the piston seal (*13) for signs of age-hardening or cracking. Replace if necessary.

To reassemble the SILVERMIST, proceed as follows:

Apply a very light coating of silicone grease to the cylinder surface at the rear of the body. Apply a very light coating of the same grease to the wire seals (*9A and 9B), and to the threads of the seal plug (*11). Insert the rounded end of the seal guide pin through the rear of the seal plug, following in order with the wire seal (*9B), lantern gland (*10), and wire seal (*9A). Press the wire seals into the ends of the lantern gland. Now insert the guide pin with the parts so assembled into the rear of the body, and with the hex wrench, push the pin forward just enough to engage the wrench into the plug. Lightly tighten the plug, and withdraw the wrench while pushing the pin rearward about 1" and leave the pin in place. Make sure the piston seal is clean, properly in its groove, and lightly coated with silicone grease. Insert the piston into the rear of the body, being careful not to distort the piston seal, and push piston forward so that the guide pin projects rearward through the piston. Put wire seal (*9C) in place against the retainer at the back of the cleaning wire. Insert the tip of the cleaning wire into the hole in the rear of the guide pin, and move the two forward together, and remove the guide pin. Inspect the front of the cleaning wire to make sure that it has not picked up any grease or dirt from the hold in the guide pin, and that it has not been bent. Insert the rear spring in bore of piston and bottom on shoulder of retainer on rear end of cleaning wire. Place and tighten rear cap with adjusting screw on body, making sure that back end of spring centers in counter bore inside rear cap.

Be sure it seats cleanly against the bottom of the bore in the body, and then insert front spring. With jet seal (*3) and valve seat (*4) in place on the jet plate, insert the jet plate and attach and tighten front cap. Note that the front cap (*1) may be furnished with one of four air orifices, identified A, B, C, or D for 6, 9, 12 or 15 pound per hour moisture delivery respectively. The SILVERMIST with any front cap may be calibrated down from these deliveries to approximately 2 pounds per hour.

Using a flow meter, adjust the amount of water passing through the atomizer by turning the Adjusting Screw on the rear cap either clockwise or counterclockwise to increase or decrease the flow. Set it to the desired pound per hour setting. After calibration, the SILVERMIST may be returned to service.

One of the common problems with atomizers is lowering of delivery after a period of operation. This is most often due to the accumulation of dirt on the front face, which lowers suction. With the SILVERMIST, merely wipe it clean without removing it from service. Excess dirt on the front may also cause a coarse spray by lowering exit velocity or interfering with discharge.

A less frequent problem may be intermittent or rapidly interrupted delivery. This will result in a lowered delivery and frequently produce large droplets of water. This problem is almost entirely due to air entering the water before discharge from the atomizer, from any of several possible sources. Remember that the water section of the atomizer operates under negative pressure within the atomizer. Frequently, there may be a loose connection in the water head, on the clamp tee, or on the water tube connection, which is not enough to show up by water

dripping, but enough to permit air to enter under negative pressure. The use of clear plastic water tubes allows easy detection of air bubbles. If the wire seals have become hardened, cracked, or excessively worn with age, air may enter here, and the seals should be replaced.

Periodic inspection of the water level in the gravity water tank, and adjustment of the float if necessary, should be done. Air pressure measurement with a reliable pressure gauge should be part of the routine inspection. Pressure variation of plus or minus 5 P.S.I. from the normal operating pressure will make very little difference in the amount of moisture delivered. However, if the pressure is allowed to fall under about 22 P.S.I., spray quality will be affected.

Frequent purging of the compressed air lines, either manually or with the Model D Automatic Drain Valve, will minimize problems from condensation carried contaminants. Condensate discharge with the air through the air orifice will produce large droplets.

WARNING

If the system is not used for thirty (30) days, drain the system.

It is the customer's responsibility to provide some means of security or monitoring of the system and its controls to guard against water or air leaks and/or system or controls failure that would result in the loss of, or damage to, persons or property.

SILVERMIST ATOMIZER ASSEMBLY

PARTS IN BLUE ARE IN PARTS REBUILD KIT SMACC-24

No.	Part #	Description	
1	SMA-4	Front Cap A 6#	N/A
1	SMA-5	Front Cap B 9#	N/A
1	SMA-6	Front Cap C 12#	N/A
1	SMA-7	Front Cap D 15#	N/A
2	SMA-18	Jet Assembly	A/V
3	SMA-24	Jet Seal	A/V
4	SMA-8	Valve Seat	A/V
5	SMA-16	Front Spring	N/A
6	SMA-9	Metering Orifice	A/V
7	SMA-10	Air Screen	N/A
8	SMA-1	SILVERMIST Atomizer Body	N/A
8A	SMA-23	Plastic Ferrule; 1/4"	N/A
8B	SMA-22	Compression Nut; 1/4"	N/A
9	SMA-25	Cleaning Wire Seal	A/V
10	SMA-11	Lantern Gland	N/A
11	SMA-12	Seal Plug	N/A
12	SMA-13	Piston	N/A
13	SMA-26	Piston Seal	A/V
14	SMA-19	Cleaning Wire Assembly	N/A
15	SMA-17	Rear Spring	N/A
16	SMA-14	Adjusting Screw	N/A
17	SMA-15	Rear Cap	N/A
18	SMA-21	Lock Nut; 1/4-28	N/A
19	SMA-2	Elbow; 1/4 X 1/8	N/A
20	SMA-3	Air Boss	N/A
**	SMACC-91	Lubricant, Silicone; 5.3 oz	A/V



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