



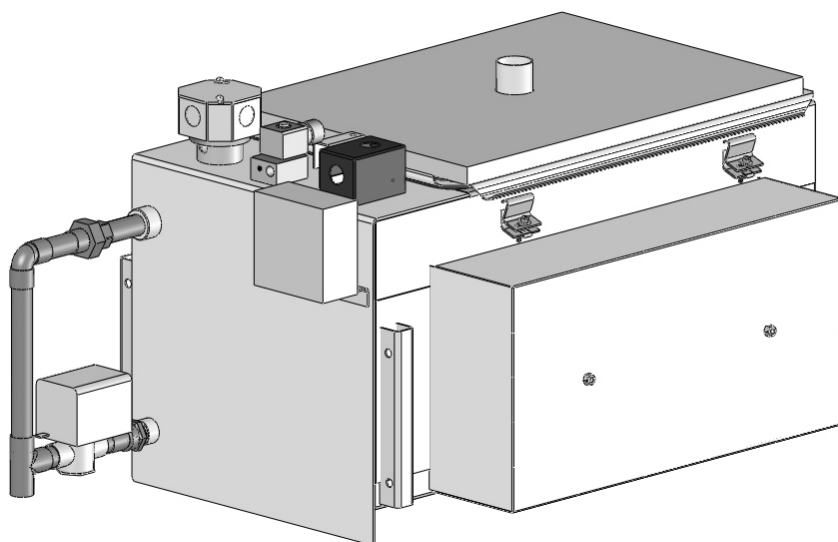
Read and Save These Instructions

Standard Water

“ES” Series Electric Humidifier

Installation Instructions

Operation and Maintenance Manual



ETL LISTED HUMIDIFIER

Our results are comforting

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Co. Form No: ESOM-11-21



Introduction

To the user of PURE Humidifier Co.'s Electric Humidifiers

We at PURE Humidifier Co. thank you for choosing one of our quality products. PURE Humidifier Co.'s "ES" Series humidifiers are models of simplicity to install, operate and maintain. However, they must be maintained to provide maximum operating efficiency.

PLEASE READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY. PROPER OPERATION AND HUMIDITY CONTROL IS POSSIBLE ONLY WITH PROPER INSTALLATION AND MAINTENANCE.

The "ES" Series Humidifier utilizes a Tri-Probe conductive type water control system, which is designed for use with standard (hard or soft) tap water. Use of demineralized, deionized or reverse osmosis water will cause a failure of the water level control system and void the warranty.

High chloride content in feed water can cause chloride stress cracking and chloride pitting in stainless components. Chloride stress corrosion cracking (CSCC) and chloride pitting of stainless steel components is not covered by warranty. Do not use hydrochloric acid descalers or bleach to clean the tank. Consult the factory if you are unsure about which chemical descaler to use.

PURE Humidifier Co.'s "ESDDR" Series should be installed on applications that require demineralized, deionized or reverse osmosis water.

To ensure proper installation of this product, it must be installed by qualified HVAC and electrical contractors, and must be in compliance with local, state, federal, and governing codes. If installed improperly this product may cause damage to property, severe personal injury, or death as a result of electric shock, burns, and/or fire.

Do not adjust any components inside humidifier control box without consulting the factory

For indoor installation only unless supplied with an outdoor enclosure.

Table of Contents

Introduction	1
Capacity & Weights	2
Layout and Dimensions	3
Electrical Specifications	4
Mounting/Location	5-6
Hose Kit Installation	7
Steam Piping Examples	8
Water Supply Piping	9
Prestart-Up Procedure	10
Start-Up Procedure	11
Maintenance Instructions	12
Troubleshooting	13
Tool Requirements	14
Exploded Parts Drawing	15
Parts List	16
Maintenance Notes	17
Maintenance Notes	18

The PURE Humidifier Co. Warranty

PURE Humidifier Co. guarantees its products to be free from defects in material and workmanship for a period of one year from the date of shipment; provided the product is properly installed, serviced, and put into the service for which it was intended.

PURE Humidifier Co. is obligated under the terms of this warranty to the repair or replacement of the defective part(s), excluding any labor charges, or to refund the purchase price at our option. PURE Humidifier Co. assumes no obligation for incidental or consequential damages. The above provisions are in lieu of all other guarantees, obligations, liabilities or warranties, expressed or implied.



Capacities & Weights

Standard Water Unit Model No.	Steam Output Capacity †		KW	Humidifier Reservoir Weight*				Control Cabinet Weight Δ	
	lbs/hr	kg/hr		Empty		Full		lbs	kg
ES-3	9.0	4.1	3	50.5	22.9	130.5	59.2	32.0	14.5
ES-4.5	13.5	6.1	4.5	50.5	22.9	130.5	59.2	32.0	14.5
ES-5.5	18.0	8.1	6	50.5	22.9	130.5	59.2	32.0	14.5
ES-7.5	22.5	10.2	7.5	50.5	22.9	130.5	59.2	32.0	14.5
ES-11	31.5	14.2	10.5	50.5	22.9	130.5	59.2	32.0	14.5
ES-14	40.5	18.4	13.5	50.5	22.9	130.5	59.2	32.0	14.5
ES-15	45.0	20.4	15	50.5	22.9	130.5	59.2	32.0	14.5
ES-16.5	49.5	22.5	16.5	50.5	22.9	130.5	59.2	32.0	14.5
ES-19.5	58.5	26.5	19.5	50.5	22.9	130.5	59.2	32.0	14.5
ES-22	63.0	28.6	21	61.0	27.7	177.0	80.3	55.0	25.0
ES-28	81.0	36.7	27	61.0	27.7	177.0	80.3	55.0	25.0
ES-30	90.0	40.8	30	61.0	27.7	177.0	80.3	55.0	25.0
ES-33	99.0	45.0	33	61.0	27.7	177.0	80.3	55.0	25.0
ES-39	117.0	53.1	39	61.0	27.7	177.0	80.3	55.0	25.0
ES-42	126.0	57.2	42	61.0	27.7	177.0	80.3	55.0	25.0
ES-45	135.0	61.2	45	65.5	29.7	181.5	82.3	72.0	32.7
ES-49.5	148.5	67.4	49.5	65.5	29.7	181.5	82.3	72.0	32.7
ES-58.5	175.5	80.0	58.5	65.5	29.7	181.5	82.3	72.0	32.7
ES-63	189.0	85.7	63	65.5	29.7	181.5	82.3	72.0	32.7
ES-66	198.0	89.8	66	88.0	39.9	243.0	110.2	72.0	32.7
ES-78	234.0	106.1	78	88.0	39.9	243.0	110.2	72.0	32.7
ES-84	252.0	114.3	84	88.0	39.9	243.0	110.2	72.0	32.7
ES-102	306.0	138.8	102	88.0	39.9	243.0	110.2	72.0	32.7

* When calculating the total dry weight of the humidifier, the control cabinet weight must be added to the reservoir weight.

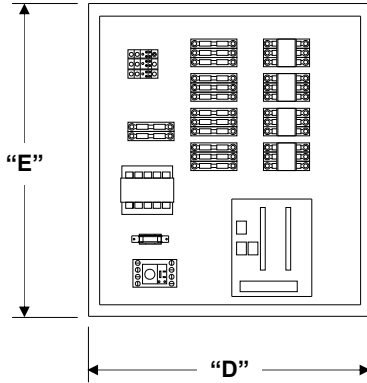
Δ The control cabinet is shipped loose unless optional factory mounting is specified. Reference the "Dimension Sheet" for control cabinet dimensions.

† The above capacities are based on 100% efficiency. Actual humidifier capacity may vary due to the heat loss from the humidifier reservoir. The ambient air temperature, air velocity, and injection tube system will affect the rate of heat loss from the humidifier reservoir.

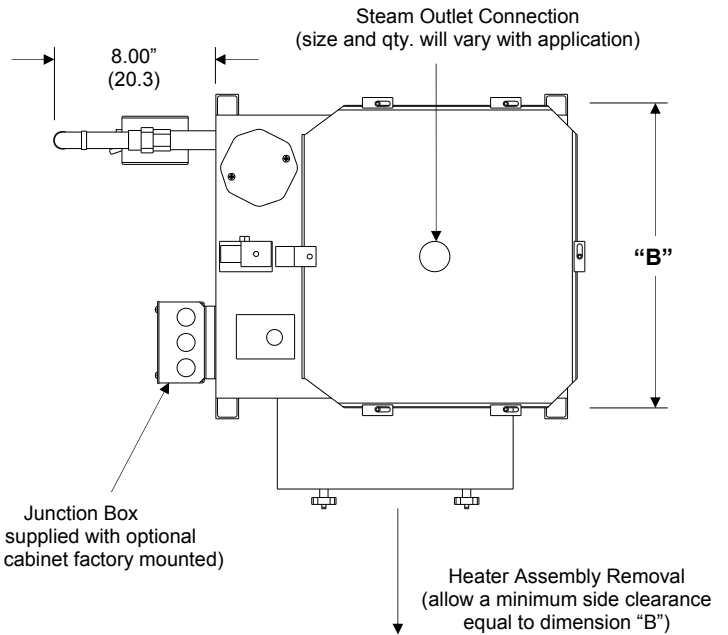


Dimensions & Layout

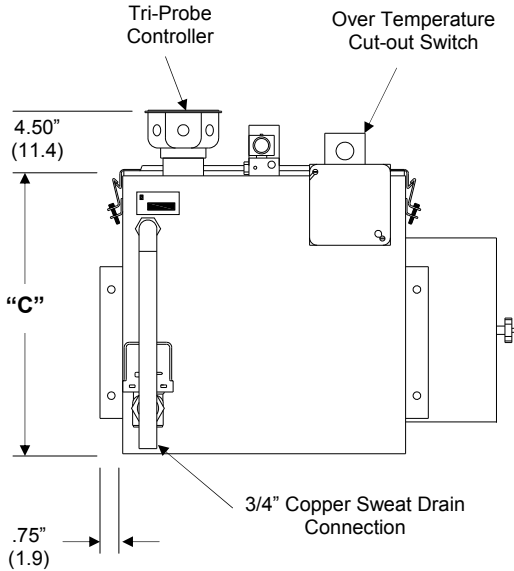
NEMA- 12 Humidifier Control Cabinet (reference control cabinet notes)



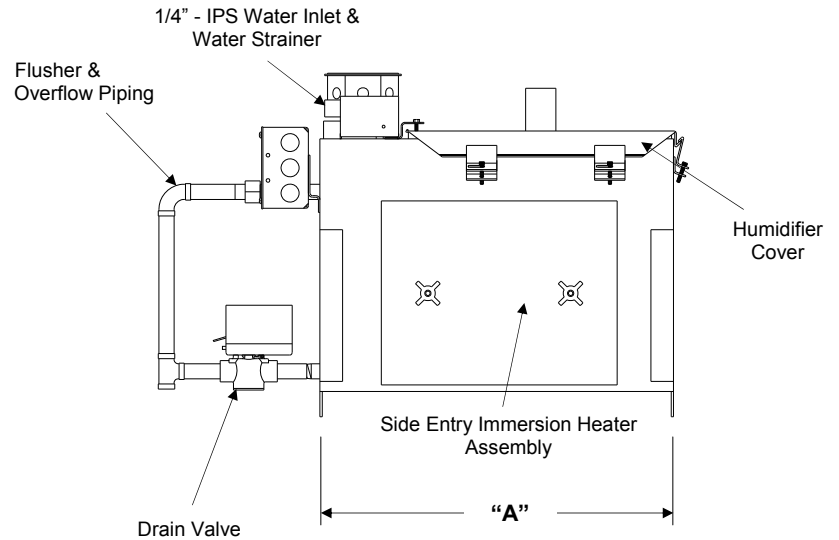
1. Door has been removed from the drawing for clarity.
2. Control cabinet is shipped loose for field mounting unless optional factory mounting is specified.
3. Dimension "F" = Control cabinet depth.



Top View



Front View



Right Side View

Unit Dimensions in inches (cm)

Model Number	Dim. "A"	Dim. "B"	Dim. "C"
ES-3 thru ES-19.5	17.50" (44.5)	14.00" (35.6)	13.75" (34.9)
ES-22 thru ES-63	25.50" (64.8)	14.00" (35.6)	13.75" (34.9)
ES-66 thru ES-102	34.00" (86.4)	18.25" (46.4)	13.75" (34.9)

Control Cabinet Dimensions in inches (cm)

Model Number	Dim. "D"	Dim. "E"	Dim. "F"
ES-3 thru ES-19.5	14.00" (35.6)	16.00" (40.6)	6.00" (15.2)
ES-22 thru ES-63	20.00" (50.8)	20.00" (50.8)	7.00" (17.8)
ES-66 thru ES-102	20.00" (50.8)	24.00" (61.0)	7.00" (17.8)
ES-*	24.00" (61.0)	30.00" (76.2)	7.00" (17.8)

* Control panel for use with units having 123 amps or higher

Single Phase Amperage†

Standard Water Unit Model No.	Unit KW	120V	208V	240V	480V	600V	No. of Heaters	Heater KW	Control Circuit Voltage
ES-3	3	25.0	14.4	12.5	6.3	5.0	3	1.0	24 vac
ES-4.5	4.5	37.5	21.6	18.8	9.4	7.5	3	1.5	24 vac
ES-5.5	6.0		28.8	25.0	12.5	10.0	3	2.0	24 vac
ES-7.5	7.5		36.1	31.3	15.6	12.5	3	2.5	24 vac
ES-11	10.5				21.9	17.5	3	3.5	24 vac
ES-14	13.5				28.1	22.5	3	1.5	24 vac
ES-15	15				31.3	25.0	3	5.0	24 vac
ES-16.5	16.5				34.4	27.5	3	5.5	24 vac
ES-19.5	19.5				40.6	32.5	3	6.5	24 vac
ES-22	21				43.8	35.0	6	3.5	24 vac
ES-28	27				56.3	45.0	6	4.5	24 vac
ES-30	30				62.5	50.0	6	5.0	24 vac
ES-33	33				68.8	55.0	6	5.5	24 vac
ES-39	39				81.3	65.0	6	6.5	24 vac
ES-42	42				87.5	70.0	6	7.0	24 vac
ES-45	45				93.8	75.0	9	5.0	24 vac
ES-49.5	49.5				103.1	82.5	9	5.5	24 vac
ES-58.5	58.5				121.9	97.5	9	6.5	24 vac
ES-63	63				131.3	105.0	9	7.0	24 vac
ES-66	66				137.5	110.0	12	5.5	24 vac
ES-78	78				162.5	130.0	12	6.5	24 vac
ES-84	84				175.0	140.0	12	7.0	24 vac
ES-102	102				170.0		12	8.5	24 vac

Three Phase Amperage†

Standard Water Unit Model No.	Unit KW	208V	240V	480V	600V	No. of Heaters	Heater KW	Control Circuit Voltage
ES-3	3	8.3	7.2	3.6	2.9	3	1.0	24 vac
ES-4.5	4.5	12.5	10.8	5.4	4.3	3	1.5	24 vac
ES-5.5	6.0	16.6	14.4	7.2	5.8	3	2.0	24 vac
ES-7.5	7.5	20.8	18.0	9.0	7.2	3	2.5	24 vac
ES-11	10.5	29.1	25.3	12.6	10.1	3	3.5	24 vac
ES-14	13.5	37.5	32.4	16.2	13.0	3	4.5	24 vac
ES-15	15	41.6	36.1	18.0	14.4	3	5.0	24 vac
ES-16.5	16.5	45.8	39.7	19.8	15.9	3	5.5	24 vac
ES-19.5	19.5			23.5	18.8	3	6.5	24 vac
ES-22	21	58.3	50.5	25.3	20.2	6	3.5	24 vac
ES-28	27	75.0	64.9	32.5	26.0	6	4.5	24 vac
ES-30	30	83.3	72.2	36.1	28.9	6	5.0	24 vac
ES-33	33	91.6	79.4	39.7	31.8	6	5.5	24 vac
ES-39	39			46.9	37.5	6	6.5	24 vac
ES-42	42			50.5	40.4	6	7.0	24 vac
ES-45	45	124.9	108.3	54.1	43.3	9	5.0	24 vac
ES-49.5	49.5	137.4	119.1	59.5	47.6	9	5.5	24 vac
ES-58.5	58.5			70.4	56.3	9	6.5	24 vac
ES-63	63			75.8	60.6	9	7.0	24 vac
ES-66	66			79.4	63.5	12	5.5	24 vac
ES-78	78			93.8	75.1	12	6.5	24 vac
ES-84	84			101.0	80.8	12	7.0	24 vac
ES-102	102			122.7	98.2	12	8.5	24 vac

† Other voltages available upon request. Please consult factory for specific availability.



Location & Mounting

Location

The location selected must provide for electrical service, cold or hot water supply, and sanitary drain.

When selecting a location, try to keep the humidifier within 10 feet (305 cm) of the duct to avoid unnecessary heat losses and condensation within the steam supply line.

Visible “fog” will saturate and condense when it contacts objects such as turning vanes, filters, fans, elbows or take-offs. The warmer the air, the more easily it will dissipate the visible steam. The most active and warmest portion of the duct will provide better mixing of the steam and air. The injection tube should be mounted a minimum of 2 feet (61 cm) downstream from an elbow or other turbulent air flow area.

Avoid mounting single style injection tube(s) closer than 8-10 feet (244-305 cm) upstream of objects that could become saturated and condense the steam (reference the paragraph above). If the duct layout does not provide a straight unobstructed run of 8-10 feet (244-305 cm), a multiple injection tube system should be considered to reduce the visible steam travel distance.

For Fast-Pac and Insty-Pac multiple tube assemblies please consult factory for job specific non-wetting distances.

Reference Fast-Pac or Insty-Pac O&M's for full installation details.

CAUTION: Do not humidify upstream of filters. Consult factory.

CAUTION: Smoke alarms should not be located downstream of injection tube assemblies.

Location of Controls

It is important to avoid mounting any controls within the visible steam. The controls should be mounted a minimum of 8-10 feet (244-305 cm) downstream from the humidifier injection tube. Due to the temperature rise that exists within the visible steam dissipation area, thermostats should not be mounted near the injection tube.

High-limit humidistats should be installed before any duct obstruction to make sure the humidifier is interrupted before saturation can occur on the object. The high-limit should be mounted a minimum of 8-10 feet (244-305 cm) downstream from the injection tube. Installing the high-limit closer than 8 feet (244 cm) from the humidifier may cause erratic control.

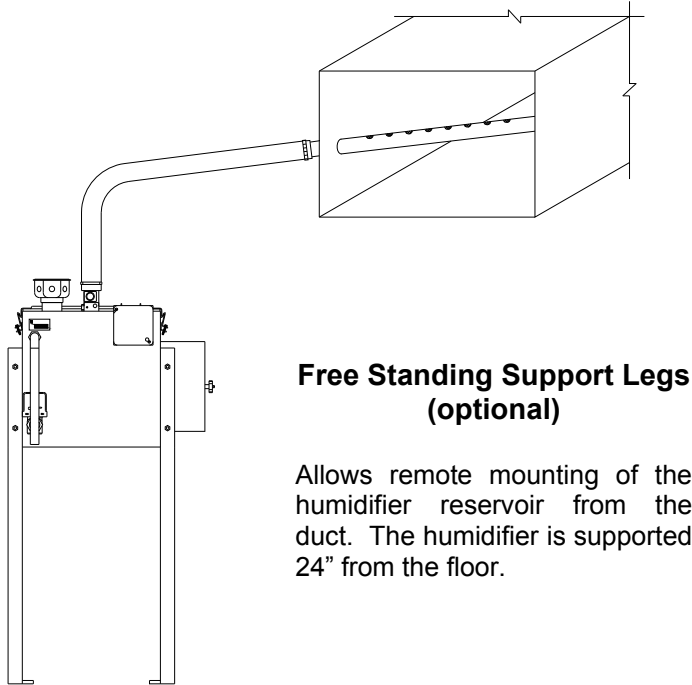
Mounting

The humidifier should be mounted dead level in both directions. PURE Humidifier Co. recommends that the humidifier be mounted using one of the following two methods (ref. page 10):

1. Mounted on the wall. PURE Humidifier Co. offers wall-mounting brackets as an option. The wall bracket installation sheet should be followed when installing the brackets. *Not recommended for SX-4R, 8R, or 12R humidifiers.*
2. Mounted off the floor with floor legs. PURE Humidifier Co. offers floor support legs as an option. The humidifier is mounted 24" (61 cm) up from the floor. Simple floor legs can be constructed from 1-1/4" x 1-1/4" x 1/4" angle iron. The support legs should be secured to the humidifier side mounting holes.

Drain Pan Mounting

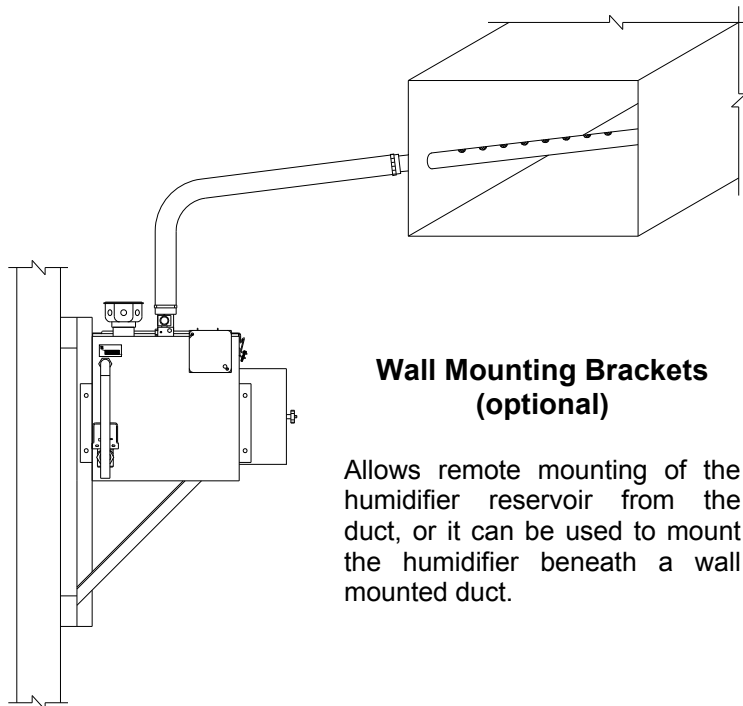
A drain pan is an additional safety feature which may be required to be supplied in the field. In a proper humidifier installation, a drain pan is not required. However, if the humidifier and injection tube are located in an area that contains valuable equipment or is a water sensitive area, PURE Humidifier Co. recommends the addition of a drain pan under the humidifier and under the injection tube. The drain pan should extend past all edges of the humidifier and if installed in the duct, it should extend a minimum of 3 feet (91 cm) downstream from the injection tube. The pan should be of a size which is sufficient to retain sudden drainage of the humidifier's contents. The pan should be drained to a sanitary drain.



Free Standing Support Legs (optional)

Allows remote mounting of the humidifier reservoir from the duct. The humidifier is supported 24" from the floor.

The "ES" Series Electric Humidifier offers a wide variety of mounting applications. If the duct is remote from the humidifier reservoir, free-standing floor support legs or wall brackets (both optional) are available. The humidifier can even be mounted directly within an air handling unit (local codes may require moisture proof construction of certain components). Single or multiple injection tubes can be used to custom fit any duct or air handler size.



Wall Mounting Brackets (optional)

Allows remote mounting of the humidifier reservoir from the duct, or it can be used to mount the humidifier beneath a wall mounted duct.



Hose Kit Installation

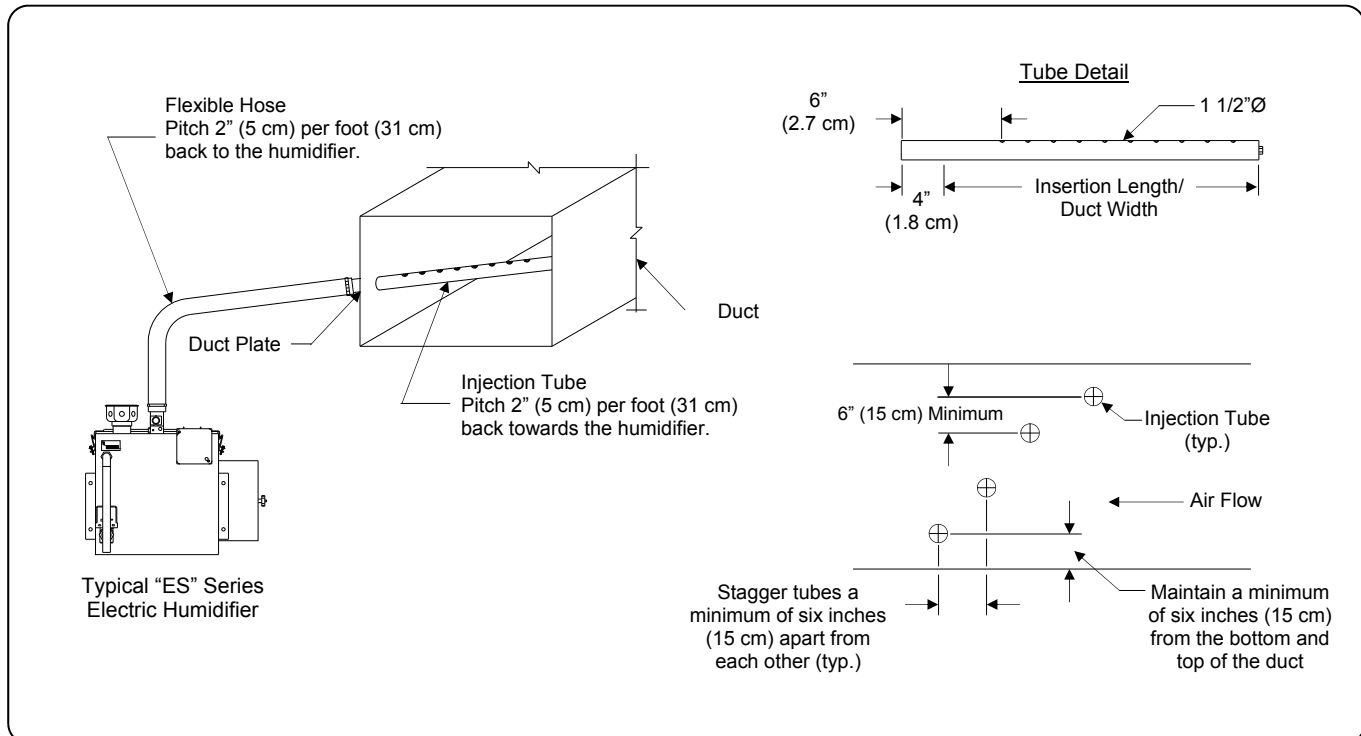
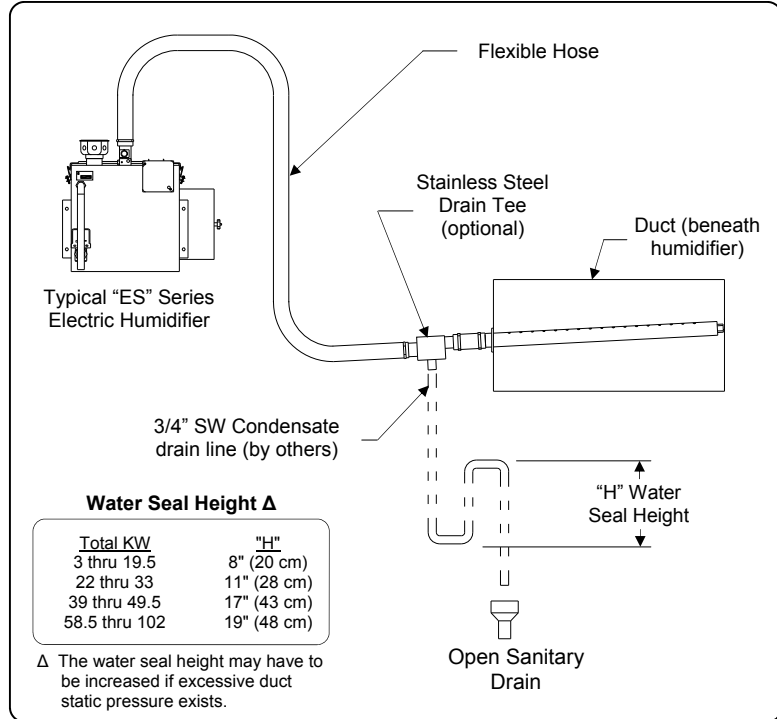
Flexible Hose Kit Installation

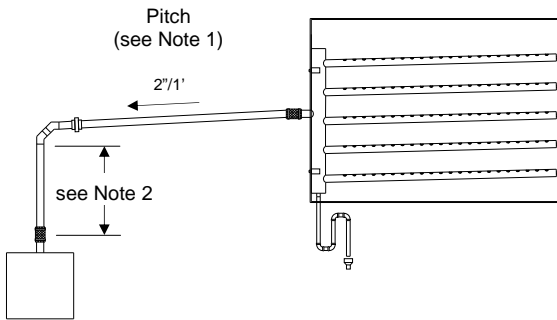
Hose kits should have the injection tube installed in the center of the duct. Hose and injection tube should be pitched back to the humidifier two inches (5 cm) per foot (31 cm). If proper pitch cannot be maintained, or the injection tube is mounted lower than the humidifier, a drain "tee" will be required (reference drain "tee" illustration).

Install the tube with the steam ports injecting steam up. NOTE: If narrow ducts (6"/15 cm or less, in height) are utilized, install the tube with the steam ports injecting slightly with the air flow (2 o'clock position)

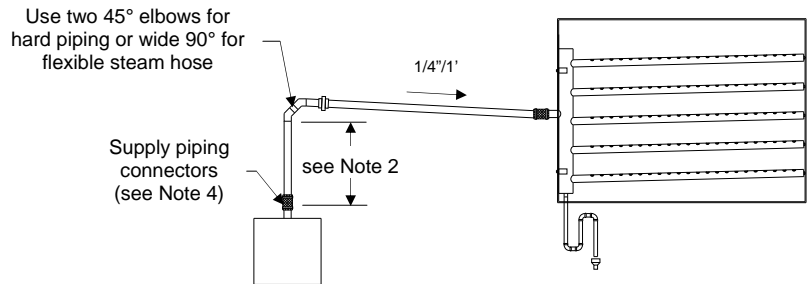
The hose connects to the injection tube and humidifier with stainless steel hose clamps (by PURE Humidifier Co.).

Galvanized steel duct plates are provided to seal the opening where the tube enters the duct.

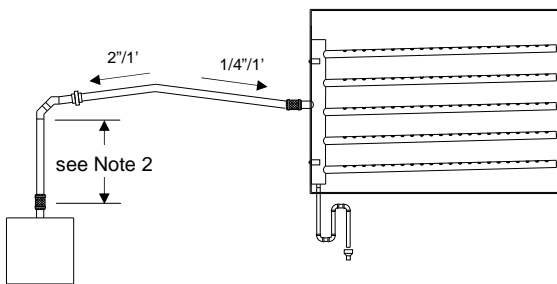




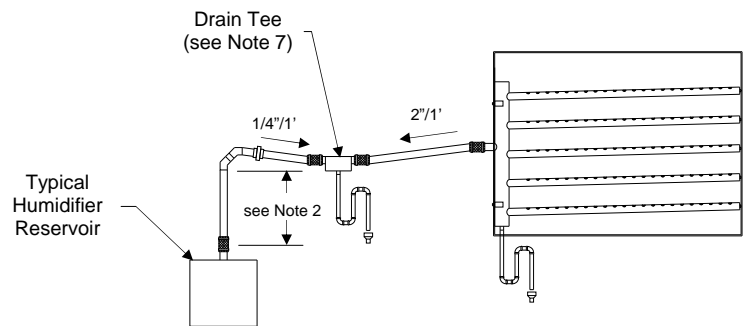
Pitched Towards Steam Generator



Pitched Towards Tube Assembly



Pitched Towards Steam Generator and Tube Assembly



Pitched Towards Drain Tee

Notes:

1. Pitch hard piping or flexible hose 2" per foot if steam is flowing uphill, 1/4" per foot if the steam is flowing downhill. Reference piping examples shown.
2. When feasible to do so, install a minimum one-foot riser from the top of the tank to reduce condensate carryover.
3. Use flex connectors or unions to allow for easy removal of cover.
4. Support flexible hose every 18" to avoid sagging.
5. Hard piping or flexible hose must match reservoir outlet size. Do not use supply piping with a smaller inside diameter than the reservoir outlet.
6. Failure to follow the piping recommendation on this page may result in blown water seals, leaking cover gasket, or dispersion tubes spitting.
7. Install a Drain Tee at any low spots in supply piping run where condensate will accumulate. **All horizontal to vertical up transitions require a water-sealed drip leg.**
8. Reference job specific tube assembly O&M included with your order for complete details.



Water Supply Piping

Water Supply Piping

This style humidifier utilizes a Tri-Probe conductive-type water control system that is designed for use with standard (hard or softened) tap water. Use of demineralized, deionized, or reverse osmosis water will cause failure of the water level control system and void the humidifier warranty.

Cold or hot standard tap water can be supplied to the humidifier. A minimum water pressure of 35 psi (2.4 Bar) should be maintained to provide the proper water level within the humidifier. If the water pressure is above 95 psi (6.6 Bar), water hammer could occur and a pressure reducing valve or shock arrester should be used. The humidifier has a factory built-in 1.5" (4 cm) air gap between the water inlet and the overflow. Local codes should be checked to see if the addition of the vacuum breaking device is required.

Drain Piping

The "ES" style humidifier requires one 3/4" SW copper drain piping connection. The drain line should be piped to a water seal as shown in the drain piping illustration.

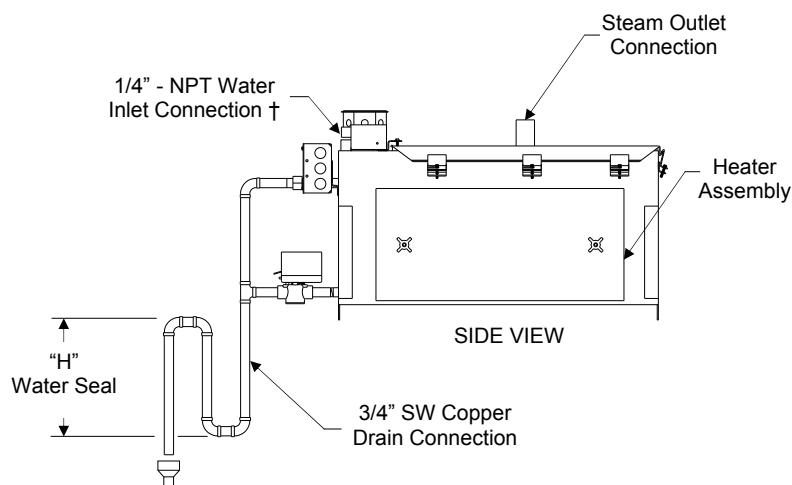
A water seal (as shown in the piping illustration) should be installed to prevent steam from escaping through the drain line. The water seal should be of sufficient height to overcome the pressure developed in the humidifier (reference water seal height table) and the duct static pressure.

The drain piping should be copper or stainless steel. The use of PVC piping is not recommended; the humidifier temperature may cause the PVC to soften and fail.

If gravity drain is not possible please use a condensate pump rated for 212°F water or contact a PURE Humidifier Co. representative to purchase one.

Tri-Probe Sensor Water Requirements

Resistivity (ohms)	Conductivity (G or 1/R)	Dissolved Solids (ppm)
<13K	>77 umhos (min)	approx. >40



Water Seal Height Δ

Total KW	"H"
3 thru 19.5	8" (20 cm)
22 thru 33	11" (28 cm)
39 thru 49.5	17" (43 cm)
58.5 thru 102	19" (48 cm)

Δ The water seal height may have to be increased if excessive duct static pressure exists.

NOTES

1. All drain piping is by others.
2. Drain and overflow piping are factory piped. One 3/4" SW copper drain connection is required.
3. Do NOT use PVC or other plastic piping that is not rated for 220°F or higher.

† The humidifier has a 1.5" (4 cm) air gap between the water inlet and humidifier water level. Consult the local code to determine if a vacuum breaking device is required.



Prestart-Up Procedure

Initials Pre-Startup Checklist

Before starting the "ES" PURE Humidifier Co. Electric Humidifier, check the following installation items:

- _____ 1. MOUNTING - Verify that the humidifier evaporating chamber is securely supported and that the evaporating chamber is level in both directions.
- _____ 2. INJECTION TUBE - Verify that the humidifier injection tube is mounted within the duct with the proper pitch back to the humidifier (2"/5 cm per foot / 31 cm). NOTE: If the humidifier evaporating chamber or the flexible hose (optional) is mounted higher than the injection tube, a drain "tee" is required to drain the condensate out of the injection tube steam line. If it is an Insty-Pac or Fast-Pac, refer to the respective O&M to determine if they are mounted properly and have the proper p-trap size.
- _____ 3. ELECTRICAL - Verify that all wiring connections have been connected in accordance with the wiring diagram. **CAUTION: Live power may exist in the control cabinet. Turn off the main power at the disconnect switch before verifying the electrical connections!**
- _____ 4. SAFETY CONTROLS – The supply air duct RH high-limit should be installed at least 10 feet downstream from the humidifier tube(s). Any other control sensors should be at least 10 feet downstream from the humidifier tube(s). Smoke detectors should not be installed downstream of the humidifier tube(s). If a smoke detector absolutely has to be installed downstream from the humidifier tubes then it should be installed as far from the tubes as possible.
- _____ 5. PIPING: Drain- Make sure a water seal of the proper height (reference page 9 for height) is provided in the drain line.
- _____ 6. PIPING: Water Supply - Verify that all piping connections have been completed as recommended and that water pressure is available to the humidifier. Verify that the supply water pressure is 35-60 psi. There should be at least 5 feet of metal pipe and check valve between the tank and any plastic pipe.
- _____ 7. PIPING: Steam Outlet - Refer to attachment for proper outlet steam piping from the generator to the tube(s). **Any horizontal to vertical up transition in the outlet steam pipe requires a water-sealed drip leg!** Improper outlet steam piping will cause steam to leak from the steam generator. Runs over 20 feet long may require upsizing of the steam pipe.

Signature: _____ Date: _____



Start-Up Procedure

Initials Introduction

Before starting the "ES" PURE Humidifier Co. Electric Humidifier, check the following installation procedures:

- _____ 1. MOUNTING – Verify that the humidifier evaporating chamber is securely supported and that the evaporating chamber is level in both directions.
- _____ 2. INJECTION TUBE - Verify that the humidifier injection tube is mounted within the duct with the proper pitch back to the humidifier (2"/5 cm per foot/31 cm). NOTE: If the humidifier evaporating chamber or the flexible hose (optional) is mounted higher than the injection tube, a drain "Tee" is required to drain the condensate out of the injection tube and steam line.
- _____ 3. ELECTRICAL - Verify that all wiring connections have been connected in accordance with the wiring diagram. **CAUTION: Live power may exist in the control cabinet. Turn off the main power at the disconnect switch before verifying the electrical connections!**
- _____ 4. PIPING - Verify that all piping connections have been completed as recommended and that water pressure is available to the humidifier.

Start Up Procedure

- _____ 1. Make sure the manual drain valve lever (located on the front of the drain valve) is in the automatic position.
- _____ 2. Turn the electric power "on" to the humidifier. The LCD display on the INTAC® controller should illuminate "Normal Operation".
- _____ 3. Set menu 101 "RH Setpoint" to the lowest setting (no call for humidity). If 100 menu shows "No Parameters Available" the procedure must be done through the Building Management System.

Initials

- _____ 4. Open the water supply on/off control valve (by others) and allow the humidifier evaporating chamber to fill to the proper level.
- _____ 5. After the humidifier is full of water, menu 004 will read "FULL".
- _____ 6. Verify the low water safety circuit by opening the manual drain lever on the drain valve. As the humidifier tank is draining, the "Fill" LED should illuminate. The humidifier should drain to a level where menu 004 reads "LOW"; this indicates that the low water safety circuit is operational.
- _____ 7. Close the drain valve and allow the humidifier to fill to the proper level.
- _____ 8. Make sure all the optional safety switches are satisfied (airflow proving switch, high-limit humidistat, etc.).
- _____ 9. Turn menu 101 "RH Setpoint" up to a call for humidity.
- _____ 10. The heater(s) should energize on a call from the humidistat.
- _____ 11. Check operation of optional field-installed safety switches (airflow proving switch, high-limit humidistat, etc.) to make sure that they turn the power off to the control circuit power. The safety switches should shut-off the humidifier heaters whenever one or more of the optional safety switches create an "open circuit".
- _____ 12. Check heater amperage draw by testing and recording voltage and amperage in each phase. Readings should match the factory heater nameplate.
- _____ 13. Inspect installation for leaks by operating humidifier. Any leaks should be sealed.

Signature: _____ Date: _____



Maintenance Instructions

PURE Humidifier Co. “ES” Maintenance Instructions

The “ES” Series Humidifier is designed to provide the best possible operation with minimum maintenance. However, the humidifier should be inspected and placed on a dedicated maintenance schedule to ensure continued operation of the humidifier and it's accessories. **PURE Humidifier Co. recommends that the following items be inspected and/or cleaned on a minimum basis of twice a year.** If excessive mineral build-up occurs, the maintenance schedule should be increased.

Inspect / Maintenance Item

Procedure to Follow

Water Fill Valve

Check to make sure the fill valve is operating properly. If the valve appears to continually fill, check the valve seat and seal (see trouble shooting instructions).

Safety Interlocks
(air flow, high-limit)

Check to make sure the safety interlocks (air flow, high-limit, etc.) will shut down the humidifier.

Immersion Heaters

Verify the correct amperage is being drawn by the Immersion heaters. Reference the wiring diagram for correct amperage.

Humidifier Cover / Tank

Inspect for any leaks. Repair as required. Remove the mineral deposits from floor of the humidifier reservoir. If excessive build-up is found, the cover may need to be removed to facilitate complete cleaning of the humidifier.

Tri-Probe

Remove Tri-Probe assembly from humidifier (set-screw and o-ring seal) and inspect for excessive mineral build-up. Inspect plastic housing for cracks. Probe ends should be cleaned and the probe assembly re-installed.

Drain Valve & Drain Piping

The drain valve seat and seal should be inspected and cleaned as required. The drain line and water seal should be inspected and cleaned to ensure free flow of the over-flow and drain line.

Flexible Hose

Inspect for cracks or leaks. It is normal for the hose to become hard and develop a “set”.



Trouble Shooting

<u>Problem</u>	<u>Possible Cause</u>	<u>Recommended Action</u>
Humidifier will not heat	Blown heater fuse(s)	Check and replace.
	Control transformer not producing 24 vac control voltage	Check transformer output. Verify voltage across terminals #1 (hot) and #3 (comm).
	Safety controls open (air flow switch, high-limit, etc.)	Verify that all safety controls are completing the safety circuit.
	Faulty humidity sensor	Verify voltage to and from humidity sensor.
	Faulty immersion heater	Check and verify heater voltage and amperage. Compare to diagram or nameplate label ratings.
Humidifier will not fill	No water pressure	Check water supply.
	Drain valve open	Close drain ball valve. If auto drain system is utilized, verify that the manual drain lever on the front of the drain valve is closed.
	No power to the fill valve	Check for 24 vac across solenoid valve.
Humidifier will not stop filling or is short cycling	Fill valve stuck open	Check for 24 vac across solenoid valve. If no voltage, check for dirt under valve seat.
	Drain valve open	Close drain ball valve. If auto drain system is utilized, verify that the manual drain lever on the front of the drain valve is closed.
	Probes need cleaning	Remove Tri-Probe assembly and clean probe ends.
	Check probe wiring on terminals #5 thru #8	Make sure the Tri-Probe wiring is ran in separate conduit from power wiring.
	Incorrect panel to tank ground	Make sure terminal #8 (ground) is a dedicated ground wire (conduit is not sufficient).
	Line noise or radio frequency	Shielded cable may be necessary.

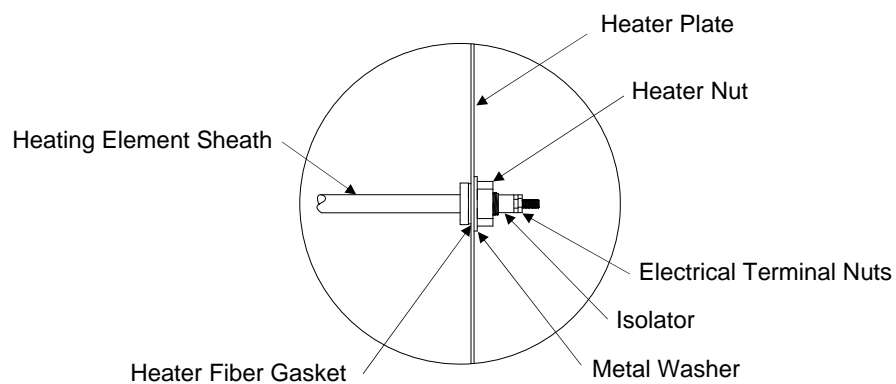


Tool Requirements

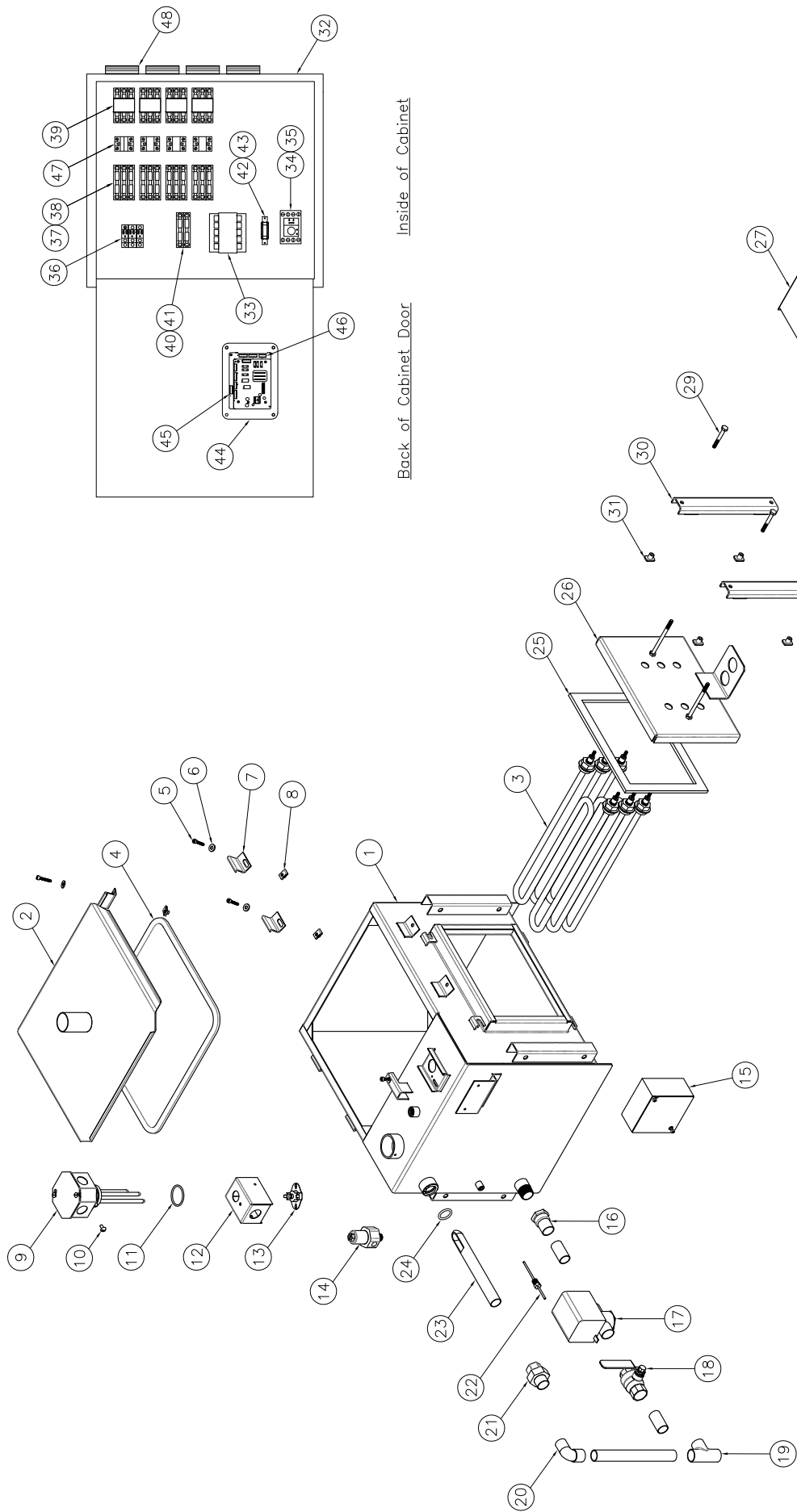
Recommended Maintenance Tool List
7/16" Wrench
3/4" Wrench
11/32" Nut Driver or Socket
3/8" Nut Driver or Socket
5/32" Allen head
Flat head screwdriver
Wire stripper
Wire crimper

Torque List	
Cover Bolts	18 inch/pounds MAX
Hose Cuff Screws	35-40 inch/pounds MAX when hot
Side Entry Exchanger Bolts	80 inch/pounds MAX
Heater Nut	18-20 foot/pounds*
Heater Electrical Terminal	35 inch/pounds
* Use a pliers to hold heater sheath from twisting.	

Heater Assembly Sectional Detail



NEMA-12 HUMIDIFIER CONTROL CABINET
WITH DOOR OPEN



Back of Cabinet Door

Inside of Cabinet



Title:

ES SERIES ASSEMBLY

Scale:

No Scale

Date:

Oct. 17, 2013

Drwn:

P.R.G.

Dwg No:

ES 1316

**PURE Humididfier Co. "ES" Series
Parts List & Two Year Recommended Spare Parts**

Item No.	Description	Part No.	Qty Per Unit	Rec. SpareQty
1	ES Reservoir Assembly	A	1	
2	ES Reservoir Cover Assembly	A	1	
3	Immersion Heating Element(s)	A	A	
4	Cover Gasket	15520	1	
5	Cover Clamp Screws	15522	A	
6	#12 SAE Zinc Washer	n/a	A	
7	Cover Clamp	15930	A	
8	10-24 U-Nut	15524	A	
9	ES Tri-Probe Assembly	05328	1	
10	10-24 x 3/4" Set Screw	15525	1	
11	Tri-Probe O-Ring	15166	1	
12	Overtemp Switch Housing	15072	1	
13	Overtemp Protection Switch	15047	1	
14	1/4" Stainless Steel Fill Valve with Strainer	09128	1	
15	Electrical Box	15076	1	
16	3/4" Sweat Adaptor	08012	A	
17	Motorized Drain Valve	09038	1	
18	3/4" Brass Ball Valve	09037	1*	
19	3/4" Copper Sweat Tee	08014	1	
20	3/4" 90 Degree Copper Elbow	08011	1	
21	Sweat Union	08015	1	
22	Type K Thermocouple	15853	1*	
23	Copper Flusher	01113	1	
24	Flusher O-Ring	15164	1	
25	Heater Plate Gasket	A	1	
26	Heater Plate	A	1	
27	Heater Cover	A	1	
28	Heater Cover Nut	15865	2	
29	U-Clamp Bolts	15841	A	
30	U-Clamp Bar Assembly	99136	A	
31	1/4"-20 Weld Nut	15702	A	
32	Control Enclosure	A	1	
33	Step-Down Transformers	A	1	
34	Low Voltage Plug-In Relay	12018	1	
35	Relay Base	12020	1	
36	Power Distribution Block	A	A	
37	Fuse Block	A	A	
38	Heater Fuses	A	A	
39	Heater Contactors	A	A	
40	Primary Fuse Holder	A	A	
41	Primary Fuse	A	A	
42	Secondary Fuse Holder	12085	1	
43	Secondary Fuse	A	A	
44	INTAC [®] Microprocessor	A	1	
45	7 Pin Terminal Connector	12310	A	
46	6 Pin Terminal Connector	12309	A	
47	SCR Relay	A	A*	
48	SCR Heat Sink	A	A*	

NOTES/CODES:

A = Part Number and quantity vary with model number.

* Optional feature that may not be on all equipment

When ordering replacement or spare parts please have Model and Serial numbers.

10/17/2013



Maintenance Notes

[illegible]



Maintenance Notes

By

[illegible]

DISCLAIMER

Product Changes: Changes in products may be required from time to time due to factors beyond the Seller's control, or the need for continuing improvement of products. The Seller reserves the right to make reasonable changes in products, specifications and performance of any kind without notice or liability. The Seller also reserves the right to deliver revised designs or models of products against any order, unless this right is specifically waived in writing by the Seller. The Seller shall have no responsibility whatsoever with respect to changes made by the manufacturer in products sold but not manufactured by the Seller.



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