

Humidifier De-scaling Solution and Neutralizer



Usage Instructions

Read and save these instructions

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ATTENTION INSTALLER

Read this manual before installing.
 Leave manual with product owner.

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Obtaining documents from our web site or from DriCalc is the quickest way to view our literature, or we will be happy to mail literature to you.

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Safety instructions

HUMIDIFIER DE-SCALING SOLUTION



CAUTION

Humidifier De-scaling Solution contains sulfamic acid and citric acid.

May be harmful if swallowed.

Avoid contact with skin and eyes. Avoid breathing mist.

Use with adequate ventilation.

Keep container closed.

FIRST AID

- **Eyes:** Flush immediately with cool water for 15 minutes. Contact physician immediately.
- **Skin:** Flush immediately with cool water for 15 minutes. Call physician immediately.
- **Inhalation:** Remove to fresh air. If any irritation persists, call physician immediately.
- **Ingestion:** DO NOT INDUCE VOMITING. If conscious, give large amounts of water. Call physician immediately.

STORAGE AND HANDLING INSTRUCTIONS

- Wear all protective equipment.
- Store away from and do not mix with strong bases.
- Use with adequate ventilation.
- Keep container closed when not in use.
- Wash thoroughly after handling product.
- Do not smoke near containers.
- Store away from food.
- Wash contaminated clothing before reuse.

KEEP FROM FREEZING

- If frozen, allow slow return to room temperature and mix thoroughly before using.

Refer to SDS for additional information.

For industrial use only.

Keep out of reach of children.

HUMIDIFIER DE-SCALING NEUTRALIZER

CAUTION

Humidifier De-scaling Neutralizer contains soda ash.

Irritates eyes.

Avoid eye or prolonged skin contact.

Avoid breathing dust.

Use with adequate ventilation.

May form caustic when combined with lime in presence of moisture.

May be harmful if ingested.

DriSteem is not responsible for improper handling, any health side effects, or humidifier damage due to use of the de-scaling agent or neutralizer. See the product label and safety data sheet (SDS) for specific directions related to handling, usage, and disposal. Follow all governing codes regarding discharging into drains.

FIRST AID

- **Skin:** Flush with water.
- **Eyes:** Flush with plenty of water for at least 15 minutes and get medical attention.
- **Ingestion:** Drink plenty of water to dilute; DO NOT induce vomiting and get medical attention
- **Inhalation:** Remove to fresh air and get medical attention.

STORAGE AND HANDLING INSTRUCTIONS

- Wear gloves, goggles, and dust mask when handling
- When dissolving, add to stirred water slowly to minimize heat evolution.
- Store in closed drum in dry area away from acid. May absorb moisture from air.

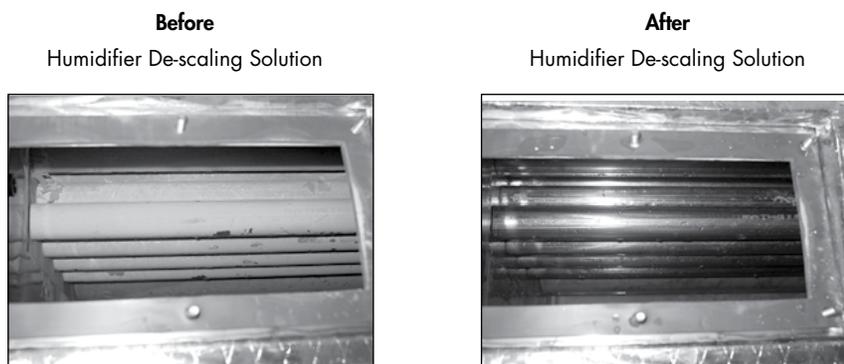
Refer to SDS for additional information.

For industrial use only.

Keep out of reach of children.

Usage instructions

FIGURE 4-1: DRISTEEM DE-SCALING SOLUTION RESULTS



The following are instructions for using DriSteem Humidifier De-scaling Solution and DriSteem Humidifier De-scaling Neutralizer to remove scale and other related deposits in industrial and commercial humidifiers.

SAFETY GEAR

Use proper safety gear including the following:

- Rubber or neoprene gloves
- Anti-splash goggles
- Rubber apron
- Rubber boots
- Dust mask when using Humidifier De-scaling Neutralizer

SUPPLIES REQUIRED

- Humidifier de-scaling solution
- Humidifier de-scaler neutralizer, if required by federal, state or local codes
- pH meter or indicator strips (pH test strips are included with the De-scaling Solution)
- DriSteem humidifier de-scaling solution pump kit
- Humidifier Installation, Operation, and Maintenance manuals (IOMs) for reference
- Tools for servicing
- Additional water source (e.g., plastic bucket or hose)

IMPORTANT

Scale buildup on humidifier heaters and heat exchangers acts as an insulator, reducing humidifier performance while increasing energy costs.

Inspect humidifier tanks regularly and perform humidifier de-scaling maintenance as needed to keep humidifiers operating at peak efficiency.

IMPORTANT

These products are not to be used for cleaning DriSteem XT humidifiers. XT humidifiers have disposable evaporative chambers that do not require cleaning.

IMPORTANT

If the humidifier has a normally open drain valve (typical on units installed in outdoor enclosures), the humidifier must remain powered to keep the drain valve closed. To remove from service a humidifier with a normally open drain valve, use the Vapor-logic keypad/display to change the control mode from Auto to Standby.

GTS04, STS, and Vaporstream humidifiers

DE-SCALING PROCESS FOR GTS, STS, VAPORSTREAM HUMIDIFIERS

See the section titled “De-scaling process for Vapormist, CRUV, Humidi-tech, and VT humidifiers” for instructions regarding these humidifiers.

1. Review SDS sheet for safe handling and proper use of Humidifier De-scaling Solution and Humidifier De-scaling Neutralizer, in addition to instructions provided in this document.
2. Remove the humidifier from service before beginning to clean the humidifier. This can be accomplished by turning off power to the humidifier.
3. Refer to your humidifier IOMs for specific information regarding how to prepare the humidifier for service.
4. Remove the humidifier tank cover. If you have a GTS humidifier, access the tank through the probe plate. Use provided L-bracket to secure pump kit hose when circulating solution.
5. Drain the humidifier and remove loose scale. Test for any draining issues prior to adding Humidifier De-scaling Solution. Use the manual override or ball valve for draining.
6. When draining is complete, close drain valve.
7. If the humidifier is in an air handler, shut down air handler prior to cleaning.

FIGURE 5-1: GTS04 HUMIDIFIER DE-SCALING PUMP ASSEMBLY

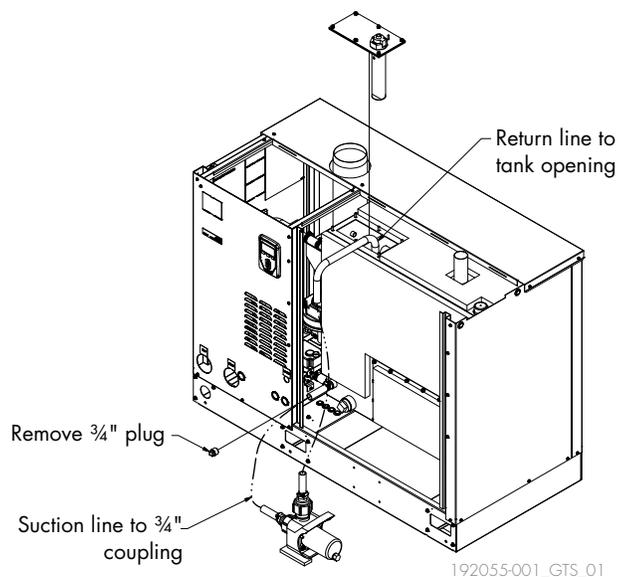
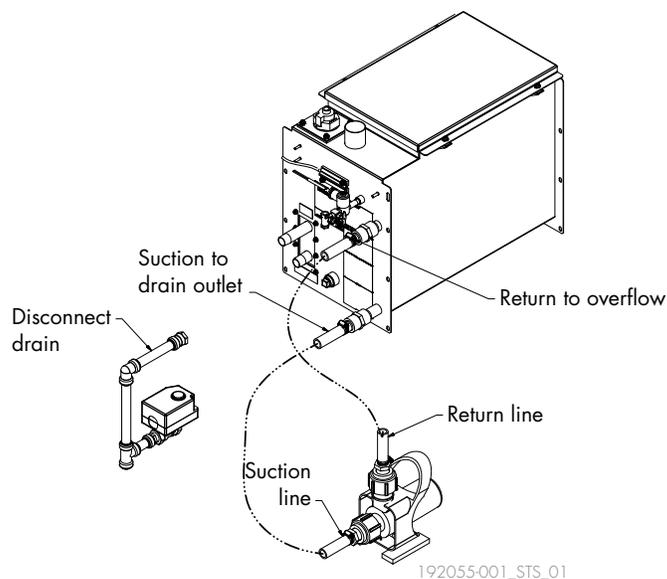


FIGURE 5-2: STS HUMIDIFIER DE-SCALING PUMP ASSEMBLY



GTS04, STS, and Vaporstream humidifiers

8. Disconnect overflow and drain outlet piping. (For STS and Vaporstream humidifiers only).
9. Assemble fittings and bell couplers to the pump kit. Cut the hose to desired length and use hose clamps to connect the pump hoses to the overflow port and drain outlet. (See Figure 6-1). (For STS and Vaporstream humidifiers only).
10. See the table on the last page of this document for recommended amount of Humidifier De-scaling Solution.
11. Fill the humidifier with cold water halfway to the overflow port.
12. Turn power off to the humidifier if not already done, or place in Standby Mode for humidifiers with a normally-open drain valve.
13. Remove probe assembly from humidifier before adding Humidifier De-scaling Solution to prevent damaging probe.
14. Add the amount of Humidifier De-scaling Solution to the half-full tank per the table on the back cover of this document.
15. After the Humidifier De-scaling Solution is added, finish filling the humidifier with water manually (e.g., using a bucket) to 1" (25 mm) above the overflow port.
16. Place the cover on the humidifier slightly ajar to allow the gases to be vented.
17. Turn on the DriSteem Humidifier De-scaling Solution Pump or similar device to circulate and mix the solution.
18. Maintain a solution pH between 2 and 4 by adding additional De-Scaling Solution as needed. Use proper safety gear.
19. De-scaling duration depends on several factors including: quantity of scale, type of scale, and the pH of the solution. The de-scaling process can last up to 24 hours.
20. Allow the solution to dissolve scale while checking on the progress every 2 hours up to a maximum of 24 hours. For increased performance, continue agitation throughout the de-scaling process and maintain a pH close to 2.
21. De-scaling is complete when the majority of scale has been dissolved or after 24 hours has passed.
22. After de-scaling is complete, dilute the solution to a pH between 6 and 8. This can be accomplished by either manually filling the humidifier while allowing diluted solution through the overflow port, or by adding

IMPORTANT

If the humidifier has a normally open drain valve, change the control mode using the Vapor-logic keypad/display from Manual Drain to Standby.

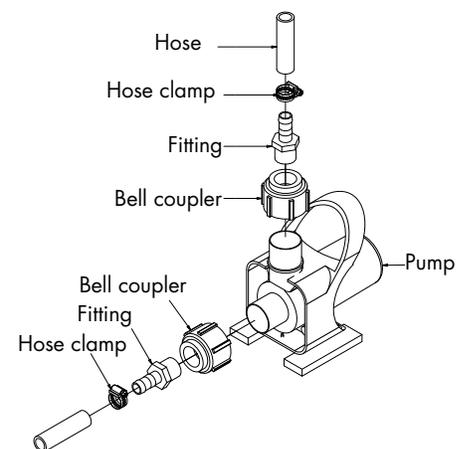
CAUTION

Using the Humidifier De-scaling Solution can result in off-gassing of carbon dioxide and/or non-hazardous fumes.

CAUTION

Be careful to avoid splashing solution on skin or in eyes while adding the remaining water. Use proper safety gear.

FIGURE 6-1: DRISTEEM HUMIDIFIER DE-SCALING SOLUTION PUMP KIT



IMPORTANT

Use Teflon tape on all threaded connections.

GTS04, STS, and Vaporstream humidifiers

Humidifier De-scaling Neutralizer.

23. For neutralization use the following steps:
 - a. Measure the pH of the solution in the humidifier tank.
 - b. Measure out 1 lb of Humidifier De-scaling Neutralizer per 1 gallon of Humidifier De-scaling Solution used (see the table on the last page of this document for reference).
 - c. **SLOWLY**, add the Humidifier De-scaling Neutralizer to the humidifier while monitoring the level of solution in the humidifier.
 - d. Alternately, agitate the solution to ensure proper mixing.
 - e. Once the neutralizer has been added and bubbling has stopped, measure the pH. Neutralized pH should be between 6 and 8.
 - f. If pH is not between 6 and 8, add acid (De-Scaling Solution) to lower pH, or add base (De-Scaling Neutralizer) to raise pH until pH is in the range of 6 to 8.
24. After dilution has been completed, drain the humidifier while abiding by federal, state, and local codes.
25. Rinse the humidifier thoroughly by refilling and draining until humidifier water pH matches pH of incoming water (typically pH 6-8).
26. If significant scale remains, remove manually or repeat the cleaning process. Note that some residual scale may remain.
27. After cleaning is complete and humidifier properly rinsed, re-install probe assembly and return humidifier to service.

FIGURE 7-2: VAPORSTREAM HUMIDIFIER DRISTEEM DE-SCALING PUMP ASSEMBLY

Vaporstream humidifier

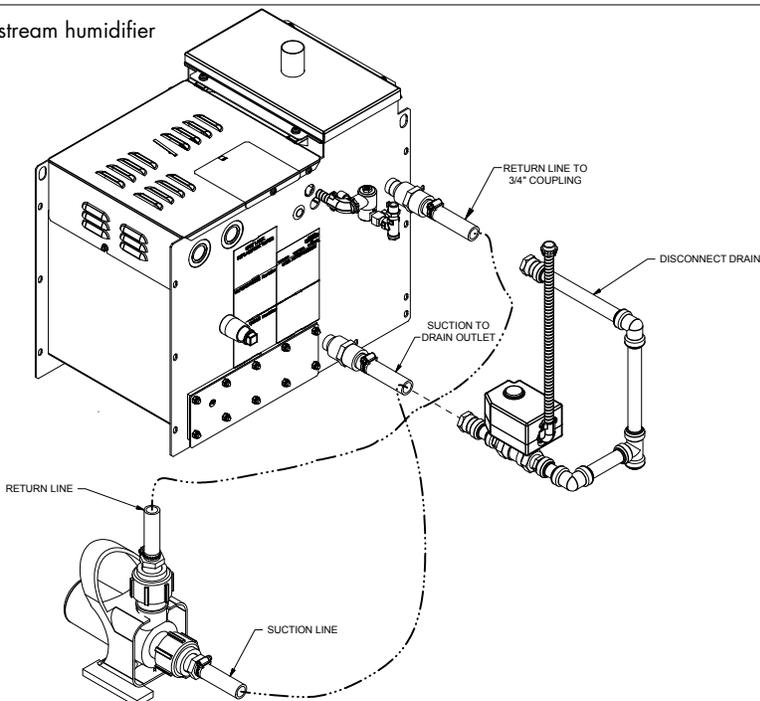
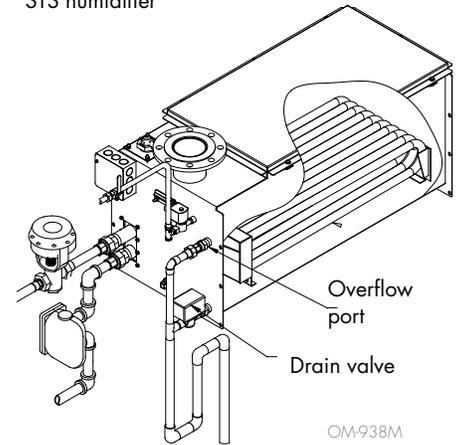


FIGURE 7-1: TYPICAL OVERFLOW PORT, DRAIN LOCATIONS

STS humidifier



Measuring pH

Measure pH by using a pH meter and probe, or by using pH paper strips with a color key (provided with De-scaling Solution).

If using a pH meter, follow the instructions that came with your pH meter.

If using pH paper strips, insert a strip into the tank water and remove. Compare the color of the strip to the color key to determine pH.

CAUTION

Do not leave humidifier unattended while diluting or neutralizing to avoid spills or overflowing.

CAUTION

The combination of the De-scaling Solution and De-scaling Neutralizer will cause bubbling and release of carbon dioxide. If the neutralizer is added too quickly, the humidifier can overflow.

Vapormist[®], CRUV, and VT humidifiers

DE-SCALING PROCESS FOR VAPORMIST, CRUV, AND VT HUMIDIFIERS

1. Review the SDS sheet for safe handling and proper use of Humidifier De-scaling Solution and Humidifier De-scaling Neutralizer, in addition to instructions provided in this document.
2. Turn off power to the humidifier at the main disconnect.
3. Remove the shroud from the humidifier (VT and Vapormist only).
4. Allow the humidifier to cool to room temperature.
5. Drain the humidifier using either manual override switch on drain valve or ball valve.
6. After the humidifier has drained, remove the tank from the humidifier. Refer to the humidifier IOM for questions.
7. Place the tank on a level surface and in an isolated location (preferably near a drain).
8. Disconnect overflow and drain outlet piping.
9. Assemble fittings and bell couplers to the pump kit. Cut the hose to desired length and use hose clamps to connect the pump hoses to the overflow port and drain outlet. (See Figure 5-1).
10. Remove probe assembly from humidifier before adding Humidifier De-scaling Solution to avoid potential damage.
11. Determine the amount of De-Scaling Solution to be used. See the table on the last page of this document for amount.
12. Fill the humidifier with water halfway to the overflow port.
13. Add the pre-determined amount of Humidifier De-scaling Solution to the half-full tank.
14. After the Humidifier De-Scaling Solution is added, finish filling the humidifier with water manually (e.g., using a bucket) to 1" (25 mm) above the overflow port.
15. Place the cover on the humidifier slightly ajar to allow the gases to be vented.
16. Turn on the DriSteem Humidifier De-scaling Solution Pump or similar device to circulate and mix the solution.
17. Maintain a solution pH between 2 and 4 by adding additional De-Scaling Solution as needed. Use proper safety gear.
18. De-scaling duration will depend on several factors including: quantity of scale, type of scale, and the pH of the solution. The de-scaling process can last up to 24 hours.
19. Allow the solution to dissolve scale while checking on the progress every 2 hours up to a maximum of 24 hours. For increased performance, continue agitation throughout the de-scaling process and maintain a pH close to 2.

CAUTION

Be careful to avoid splashing solution on skin or in eyes while adding the remaining water. Use proper safety gear.

Vapormist, CRUV, and VT humidifiers

20. De-scaling is complete when the majority of scale has been dissolved or after 24 hours has passed.
21. After de-scaling is complete, dilute the solution to a pH between 6 and 8. This can be accomplished by either manually filling the humidifier while allowing diluted solution through the overflow port, or by adding Humidifier De-scaling Neutralizer (see instructions below).
22. For neutralization use the following steps:
 - a. Measure the pH of the solution in the humidifier tank.
 - b. Measure out 1 lb of Humidifier De-scaling Neutralizer per 1 gallon of Humidifier De-scaling Solution used (see the table on the last page of this document for reference).
 - c. SLOWLY, add the Humidifier De-scaling Neutralizer to the humidifier while monitoring the level of solution in the humidifier.
 - d. Alternately, agitate the solution to ensure proper mixing.
 - e. Once the neutralizer has been added and bubbling has stopped, measure the pH. Neutralized pH should be between 6 and 8.
 - f. If pH is not between 6 and 8, add acid (De-Scaling Solution) to lower pH, or add base (De-Scaling Neutralizer) to raise pH until pH is in the range of 6 to 8.
23. After dilution has been completed, drain the humidifier while abiding by federal, state, and local codes.
24. Rinse the humidifier thoroughly by refilling and draining until humidifier water pH returns to incoming water pH (typically pH 6-8).
25. If significant scale remains, remove manually or repeat the cleaning process. Note that some residual scale may remain.
26. After cleaning is complete and humidifier properly rinsed, reinstall probe assembly, reinstall humidifier tank, make all connections, and return humidifier to service.

Vapormist, CRUV, and VT humidifiers

FIGURE 10-1: VAPORMIST HUMIDIFIER DRISTEEM DE-SCALING PUMP ASSEMBLY

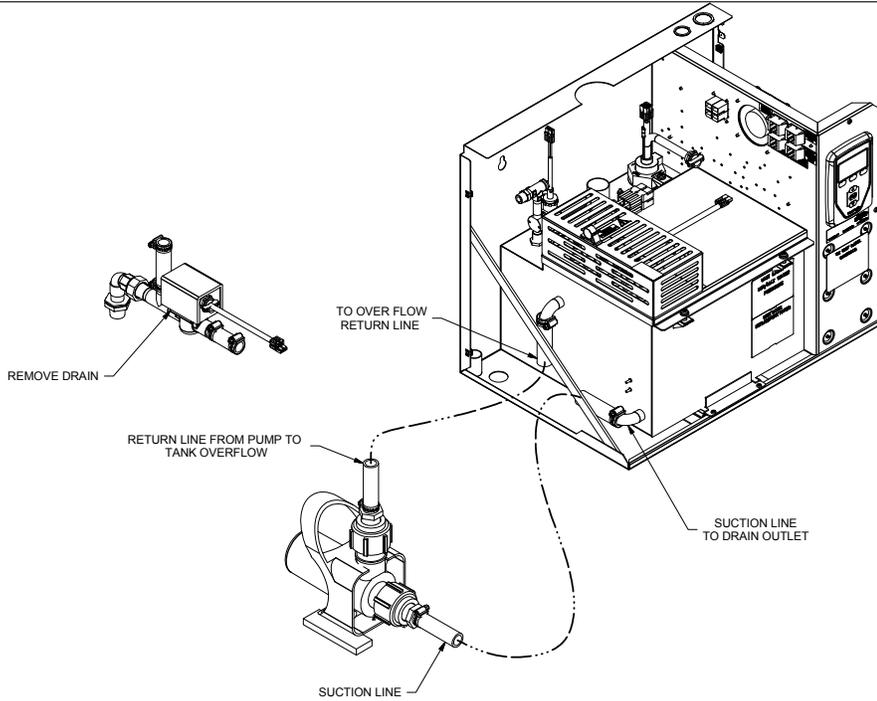
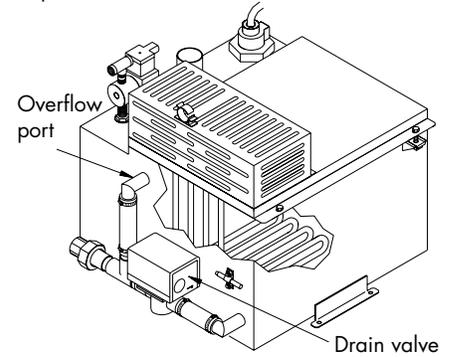


FIGURE 10-1: TYPICAL OVERFLOW PORT, DRAIN LOCATIONS

Vapormist humidifier



OM-2000M

CAUTION

Do not leave humidifier unattended while diluting or neutralizing to avoid spills or overflowing.

CAUTION

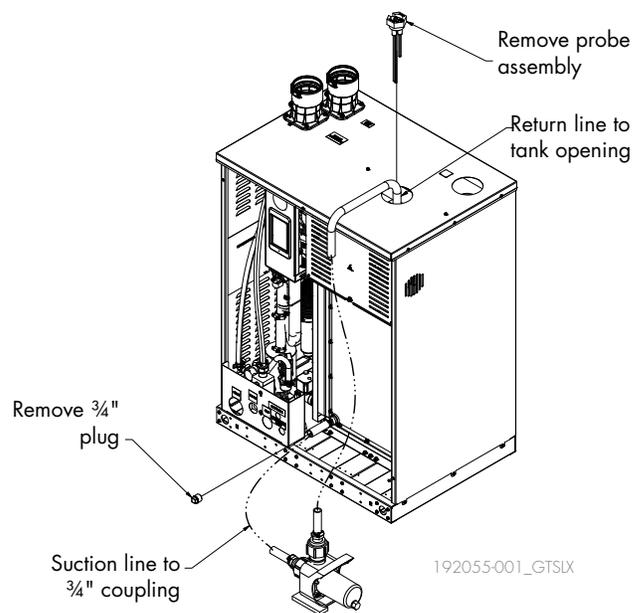
The combination of the De-scaling Solution and De-scaling Neutralizer will cause bubbling and release of carbon dioxide. If the neutralizer is added too quickly, the humidifier can overflow.

GTS LX series and RTS® RX series humidifiers

DE-SCALING PROCESS FOR RTS RX AND GTS LX HUMIDIFIERS

1. Review Safety Data Sheet (SDS) for safe handling and proper use of Humidifier De-scaling Solution and Humidifier De scaling Neutralizer, in addition to instructions provided in this document.
2. Remove the humidifier from service before beginning to clean the humidifier. This can be accomplished by turning off power to the humidifier.
3. Refer to humidifier IOM for specific information regarding how to prepare humidifier for service.
4. Remove access doors if humidifier is installed in an enclosure (indoor or outdoor).
5. Drain the humidifier and remove loose scale. Refer to humidifier IOM for standard maintenance procedures. Test for any draining issues prior to adding Humidifier De-scaling solution. Manual override on drain valve can be used for draining.
6. After initial tank cleaning, ensure drain valve is closed and heater/clean-out plate is sealed per humidifier IOM instructions.
7. If humidifier is in an air handler, shut down air handler prior to cleaning.
8. Remove 3/4" plug as shown in Figures 11-1, 12-1 and 13-1. RTS only – If condensate return line is installed at this port, disconnect for de-scaling service.
9. Install a 3/4" male NPT to hose barb adapter to tank coupling where the plug was removed. Connect hose for suction line and secure with a hose clamp.
10. Remove the probe assembly from the top of the tank.
11. Route hose for return line to tank opening where probe assembly was removed. Secure return line to prevent hose from falling out during de-scaling operation.

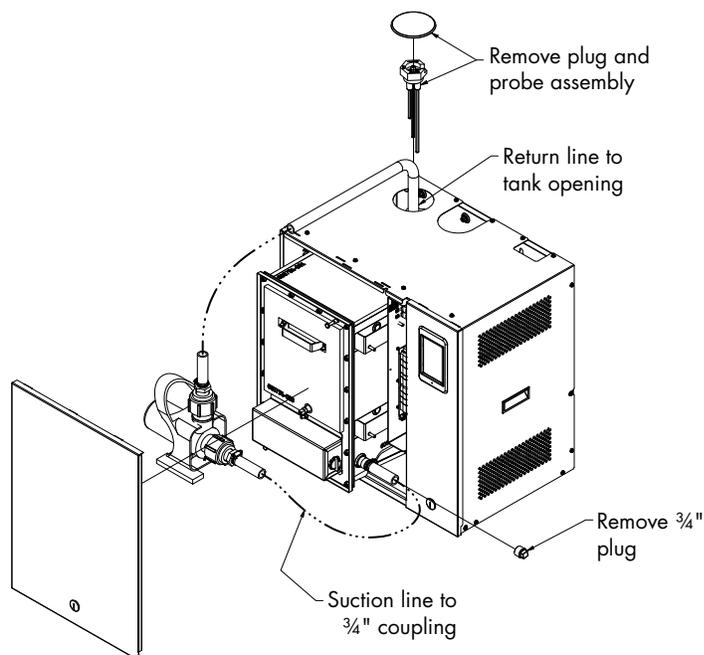
FIGURE 11-1: GTS HUMIDIFIER LX SERIES DE-SCALING PUMP ASSEMBLY



Usage instructions (GTS LX series and RTS RX series humidifiers)

12. Refer to SDS for proper personal protective equipment (PPE) that must be used when handling Humidifier De-scaling Solution.
13. Through the probe assembly port, fill the humidifier with cold water halfway to the overflow port. See Table 15-1 for volume recommendations.
14. Through the probe assembly port, add the Humidifier De-scaling Solution to the half-full tank per volume recommendation in Table 15-1.
15. After the Humidifier De-scaling solution is added, finish filling the humidifier with water manually (e.g., using a bucket) to 1" (25 mm) above the overflow port.
16. Turn on DriSteem Humidifier De-scaling Solution Pump or similar device to circulate solution in tank.
17. Maintain a solution pH between 2 and 4 by adding Humidifier De-scaling Solution or water as needed. De-scaling duration is dependent on several factors including quantity of scale, type of scale, and pH of solution. This process can take up to 24 hours.
18. Monitor the de-scaling process by periodically inspecting inside of tank through probe assembly port. Note, the probe assembly still well will prevent direct line of sight to bottom of tank and best judgement based on still well cleanliness may be required.
19. De-scaling process is complete when majority of scale has been dissolved or 24 hours has passed.
20. When de-scaling process is complete, solution must be diluted or neutralized to a pH between 6 and 8. This can be achieved by manually diluting with water and allowing diluted solution to drain via overflow port or by adding Humidifier De-scaling Neutralizer (see instructions below).

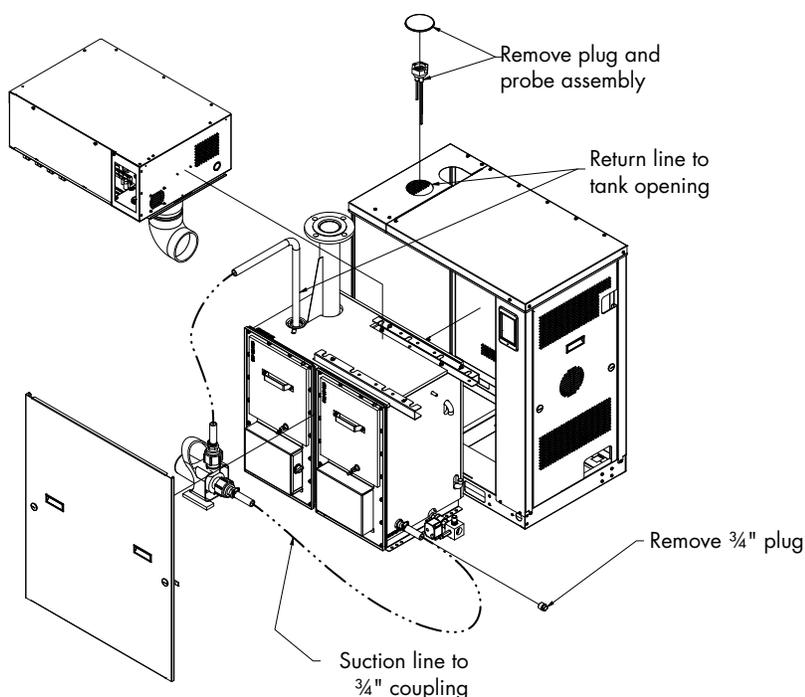
FIGURE 12-1: RTS HUMIDIFIER DRISTEEM DE-SCALING PUMP ASSEMBLY FOR RX-XX-1 AND RX-XX-2



Usage instructions (GTS LX series and RTS RX series humidifiers)

21. For solution neutralizing:
 - a. Refer to Table 15-1 for recommended weight of Humidifier De-scaling Neutralizer.
 - b. SLOWLY add Humidifier De-scaling Neutralizer to tank via probe assembly port while monitoring level of solution in tank.
 - c. Alternately agitate solution with circulation device to ensure proper mixing.
 - d. Measure pH of solution. It is safe to drain when solution pH is between 6 and 8. Drain valve can be manually opened via override knob on actuator.
 - e. If measured solution pH is less than 6, add Humidifier De-scaling Neutralizer to further neutralize. If measured solution pH is more than 8, add Humidifier De-scaling Solution to further neutralize.
22. After dilution process is complete, drain humidifier tank while abiding by federal, state, and local codes.
23. Rinse tank thoroughly by refilling and draining tank until incoming water pH level matches exiting water pH level.
24. If significant scale remains, manually remove scale or repeat de-scaling process. Some residual scale may remain.
25. After de-scaling process is complete and tank is properly rinsed, return humidifier to working order.
 - a. Install probe assembly with silicone and new gasket. Refer to humidifier IOM for replacement parts.
 - b. Install tank plug (or condensate return line) using thread sealant.

FIGURE 13-1: RTS HUMIDIFIER DRISTEEM DE-SCALING PUMP ASSEMBLY FOR RX-XX-3 AND RX-XX-4



Recommended quantity

Table 14-1:
Humidifier De-scaling Solution and Humidifier De-scaling Neutralizer recommended amounts

	Model	Humidifier De-Scaling Solution amount		Humidifier De-Scaling Neutralizer amount	
		gallons	liters	lbs	kg
Vaporstream humidifier	2-1, 3-1, 4-1, 5-1	1.5	5.68	5.7	2.59
	6-1, 9-1, 12-1, 16-1, 21-1, 25-1	2.5	9.46	2.5	1.13
	12-2, 18-2, 24-2, 32-2, 42-2, 50-2	4	15.14	4	1.81
	18-3, 27-3, 36-3, 48-3, 63-3, 75-3	5.5	20.82	5.5	2.49
	24-4, 36-4, 48-4, 64-4, 84-4, 100-4	7.25	27.44	7.25	3.29
STS humidifier	25	2.5	9.46	2.5	1.13
	50	3.75	14.20	3.75	1.70
	100	13.75	52.05	13.75	6.24
	200	25	94.64	25	11.34
	400	25	94.64	25	11.34
	800	35.75	135.33	35.75	16.22
GTS humidifier	100/200	12	45.42	12	5.44
	300/400	13	49.21	13	5.90
	500/600	19	71.92	19	8.62
	700/800	22	83.28	22	9.98
Vapormist humidifier or CRUV humidifier	2-4	0.75	2.84	0.75	0.34
	6-8	1.5	5.68	1.5	0.68
	10-16	1.75	6.62	1.75	0.79
	21-34	2.25	8.52	2.25	1.02

Recommended quantity

Table 15-1:
Humidifier De-scaling Solution and Humidifier De-scaling Neutralizer recommended amounts

	Model	Water		Humidifier De-Scaling Solution amount		Humidifier De-Scaling Neutralizer amount	
		gallons	liters	gallons	liters	lbs	kg
RTS humidifier RX series	RX-xx-1	2.7	10.2	1.3	4.9	1.3	0.6
	RX-xx-2	6.9	26.1	3.4	12.8	3.4	1.5
	RX-xx-3	15.4	58.3	7.4	28	7.4	3.5
	RX-xx-4	15.4	58.3	7.4	28	7.4	3.5
GTS humidifier LX series	50/75/100	7	26.5	3.5	13.2	3.5	1.6
	150	12.5	47.3	6.25	23.7	6.25	2.8
	200/250/300	21	79.5	10.5	39.7	10.5	4.8
	400/500/600	40	151	20	75.7	20	9.1

Expect quality from the industry leader

Since 1965, DriSteem has led the industry with innovative methods for humidifying and cooling air with precise control. Our focus on ease of ownership is evident in the design of our humidifiers. DriSteem also leads the industry with a Two-year Limited Warranty and optional extended warranty.

For more information

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For the most recent product information visit our Web site: www.dristeem.com

DRI-STEEM Corporation

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