READ AND SAVE THESE INSTRUCTIONS

HUMIDI-TECH® and HUMIDI-TECH DI

ELECTRIC STEAM HUMIDIFIERS

HT models

Installation, Operation
and
Maintenance Manual

CE

DRISTEEM®

TABLE OF CONTENTS

To the purchaser and installer

Thank you for purchasing our HUMIDI-TECH® humidifier. We have designed and built this equipment to give you complete satisfaction and trouble-free service for many years. Familiarizing yourself with this manual will help ensure proper operation of the equipment for years to come.

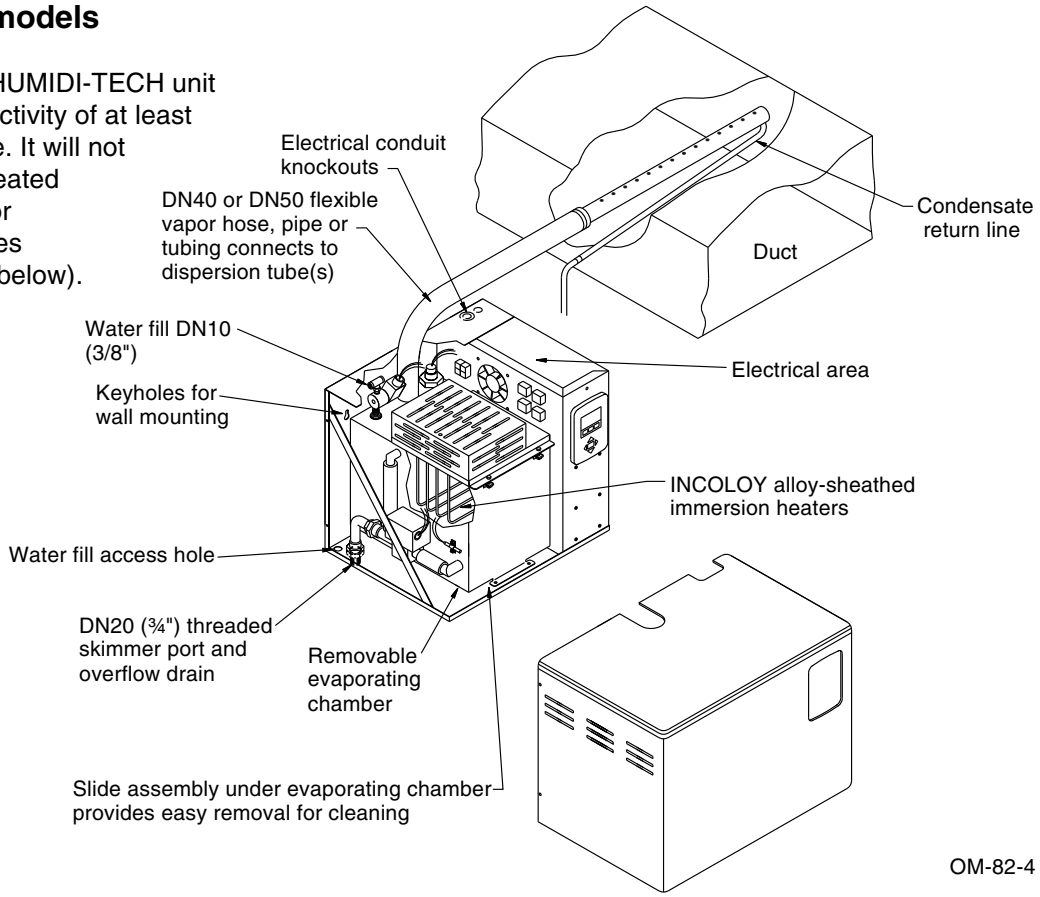
This manual covers the installation and maintenance procedures for both the HUMIDI-TECH and HUMIDI-TECH DI humidifiers.

DRI-STEEM Humidifier Company

HUMIDI-TECH® HUMIDIFIER OVERVIEW

Standard water models (HUMIDI-TECH)

The standard water HUMIDI-TECH unit requires water conductivity of at least 100 µS/cm to operate. It will not operate with water treated by reverse osmosis or deionization processes (see DI water model below).



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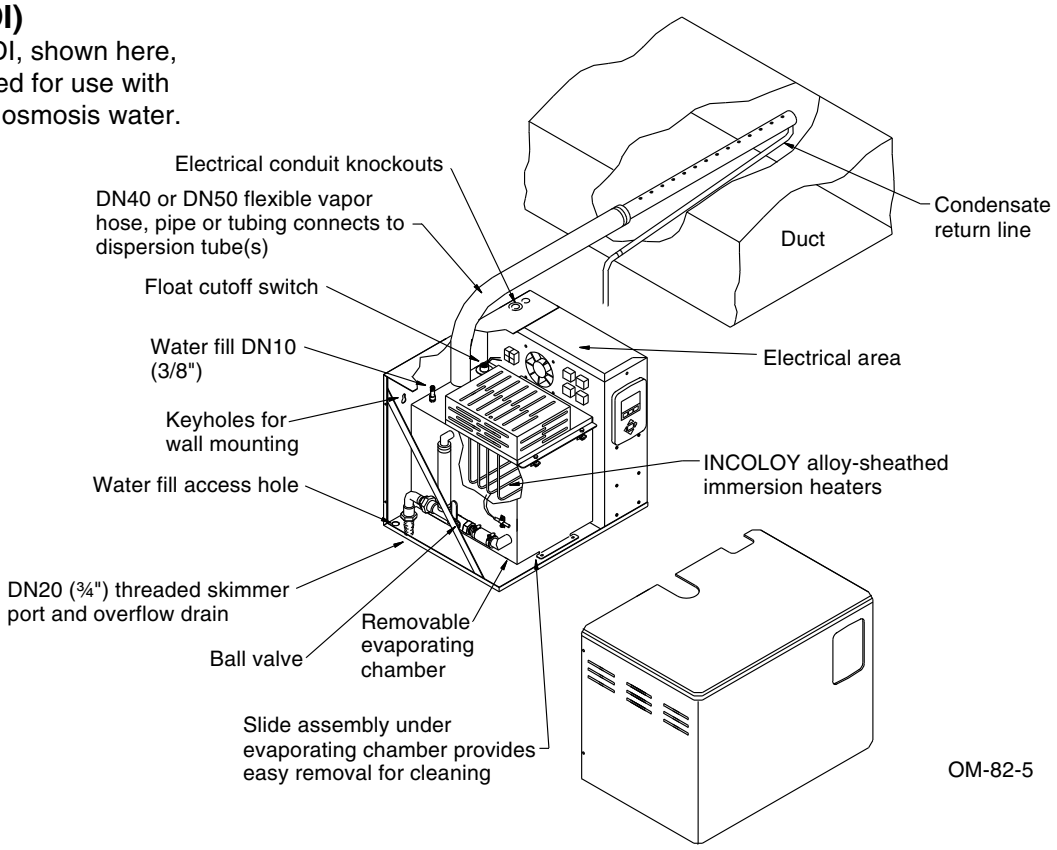
Deionized water models (HUMIDI-TECH DI)

The HUMIDI-TECH DI, shown here, is specifically designed for use with deionized or reverse osmosis water.



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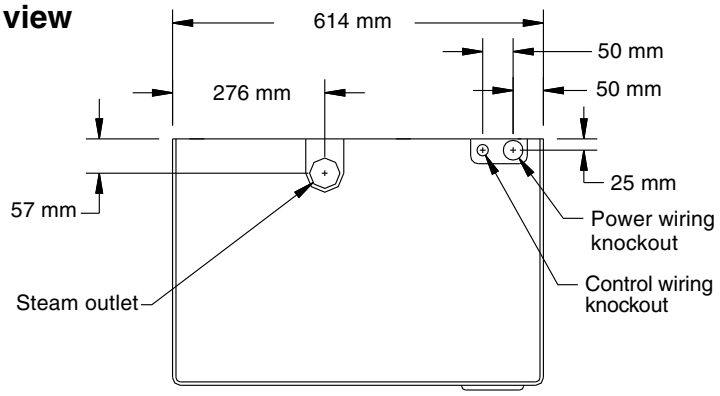
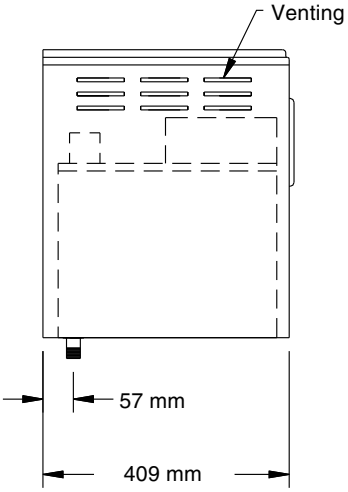
HUMIDI-TECH® DIMENSIONS

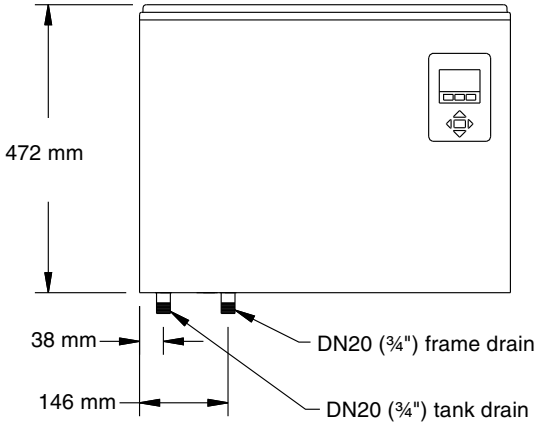
Top view



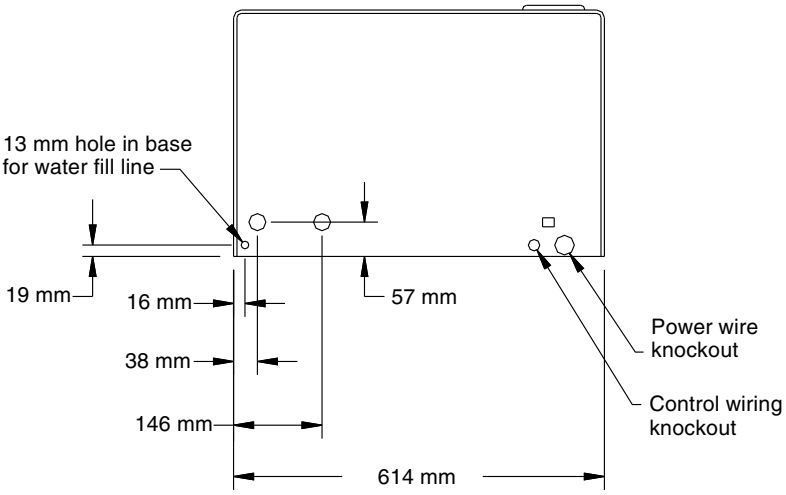
Left side view



Front view



Bottom view



DC-1167

Electrical specifications, capacities and weights

Model number	kW	Three-phase 400 V		Shipping weight kg	Operating weight kg
		Steam capacity kg/h	I max. A		
HT-4	4	5.4	8.7*	36	44
HT-6	6	8.2	13.0*	40	56
HT-8	8	10.9	17.3*	40	56
HT-12	12	16.3	17.3	42	64
HT-16	16	21.8	23.1	42	64
HT-21	21	28.6	30.3	43	70
HT-25	25	34.0	36.1	43	70
HT-30	30	40.8	43.3	46	72
HT-34	34	46.3	49.1	46	72

Table notes:

All HUMIDI-TECHs operate at 50/60 Hz.

* For wire sizing, the highest leg draw is shown due to current imbalance.

Locating and mounting the humidifier

The HUMIDI-TECH humidifier is designed to attach to the wall with coach screws, and it should be installed in a space located near an air duct system.

Consider the following when selecting the location of the humidifier:

- Convenient access to duct
- Electrical and plumbing connections
- Required clearances
- External water seal requirements

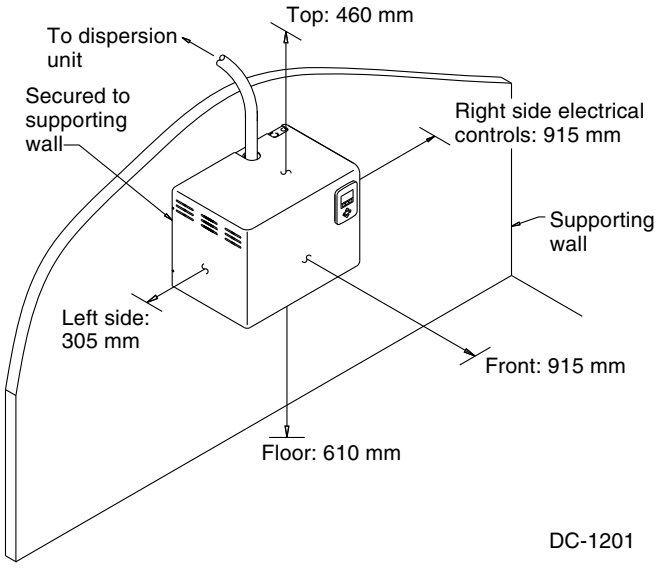
Electrical power supply, water makeup piping and drain piping must also be considered. Electrical power supply connections are made at the lower or upper right rear corner of the unit. Water makeup and drain piping connections are made at the lower left rear corner.

When mounting on a stud wall (studs with 406 mm centers), locate studs and position coach screws in place so that each of the screws (406 mm apart) will center on a stud. Mark hole locations and predrill 6 mm diameter pilot holes using mounting template on the HUMIDI-TECH box. Secure frame to wall with coach screws provided.

For hollow block or poured concrete wall mounting, position template in place and mark the holes. Drill appropriate pilot hole for two 10 mm toggle bolts or two 10 mm machine bolt lead anchors. Secure frame in place.

Clearance recommendations

For recommended service and maintenance purposes, maintain the following clearances:



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HUMIDI-TECH piping

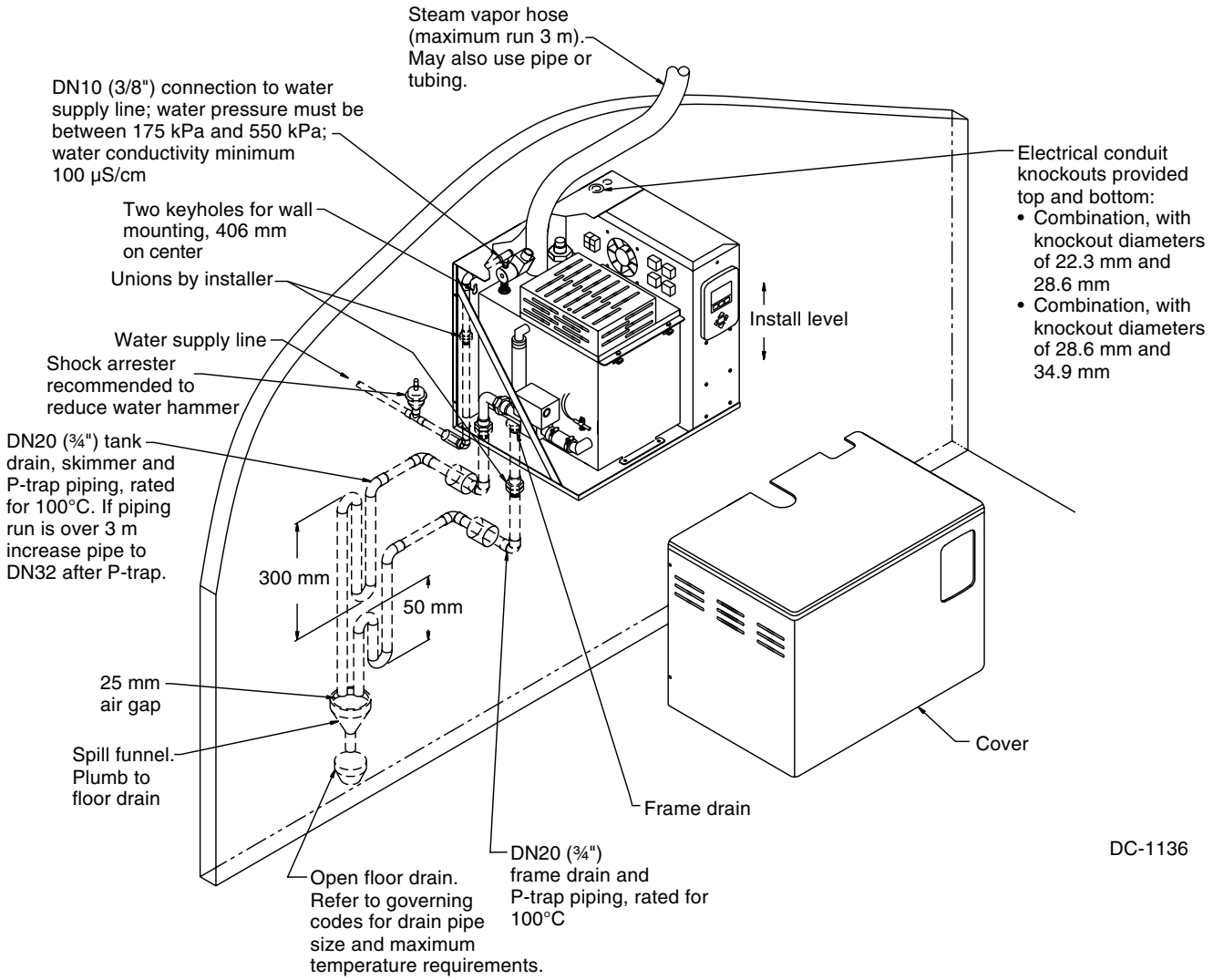
Water makeup piping may be of any code-approved material (copper, steel, or plastic). The final connection size is DN10 (3/8"). In cases where water hammer may be a possibility, a shock arrestor should be considered. Water pressure must be between 175 kPa and 550 kPa.

Drain piping may be of any code-approved material (copper, steel, or plastic rated for 100°C minimum). If drainage by gravity is not possible, use a small lift pump (DRI-STEEM Part No. 400281).

The final connection size is DN20 (3/4") for tank and frame drains. This connection size should not be reduced. (See figures on the following pages for proper drain piping configurations.) The tank drain should be piped separately from the frame drain, as shown, to prevent backflow of drain water into the humidifier cabinet.

Install a union in the water supply line as shown in the drawings on the next two pages to allow tank removal.

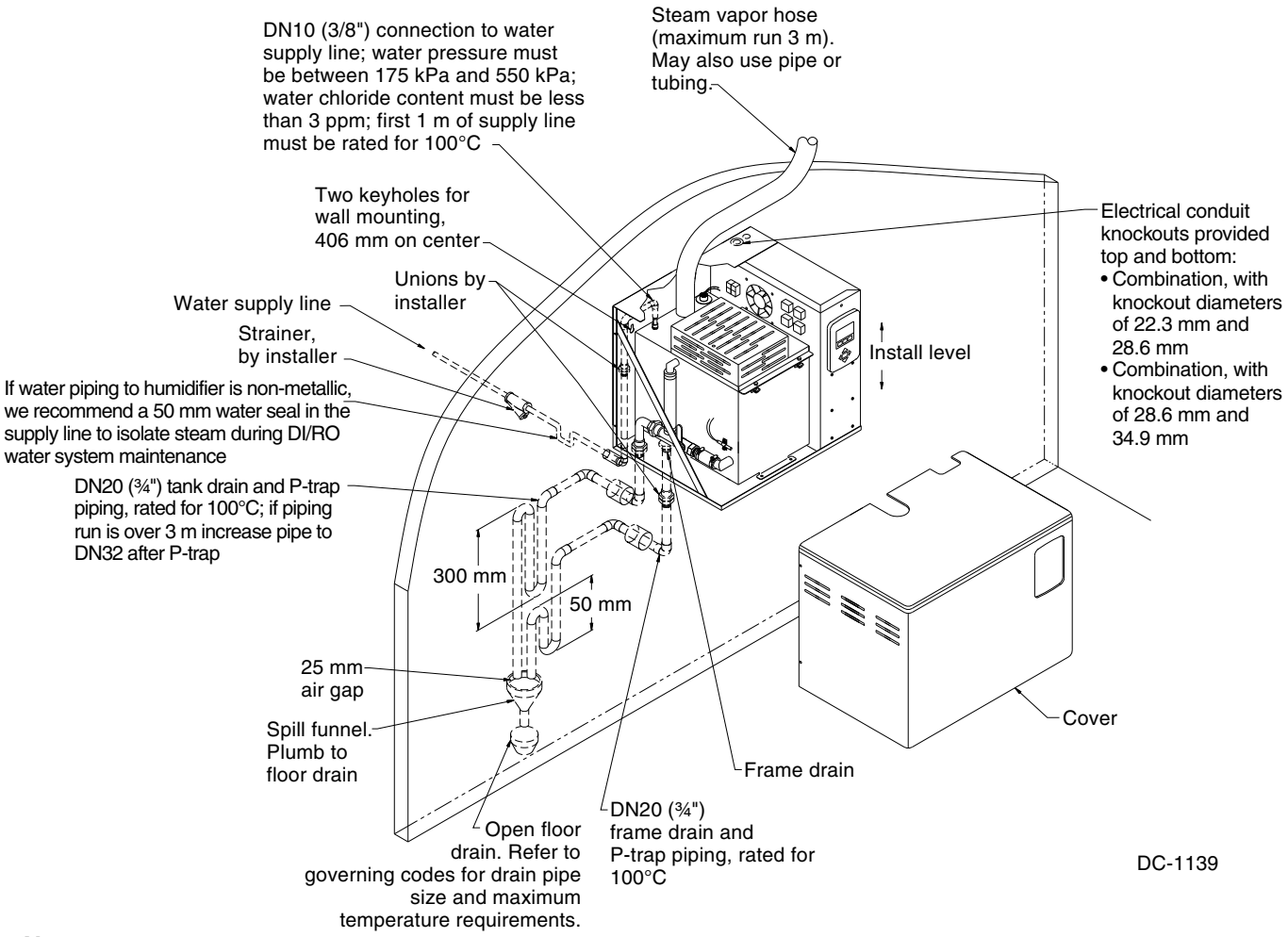
HUMIDI-TECH (standard water) field piping overview



Notes:

- Offset humidifier from spill funnel or floor drain to prevent flash steam from rising into the cabinet.
- Dashed lines indicate provided by installer.
- The water supply inlet is more than 25 mm above the skim/overflow port, eliminating the possibility of backflow or siphoning from the tank. No additional backflow prevention is required, however, governing codes prevail.
- Install a union in the water supply line as shown to allow tank removal.

HUMIDI-TECH DI (deionized/reverse osmosis water) field piping overview



Notes:

- Offset humidifier from spill funnel or floor drain to prevent flash steam from rising into the cabinet.
- Dashed lines indicate provided by installer.
- The water supply inlet is more than 25 mm above the overflow port, eliminating the possibility of backflow or siphoning from the tank. No additional backflow prevention is required, however, governing codes prevail.
- Install a union in the water supply line as shown to allow tank removal.

HUMIDI-TECH® WIRING

HUMIDI-TECH wiring

All wiring must be in accordance with all governing codes, and with the HUMIDI-TECH® or HUMIDI-TECH DI wiring diagrams. The diagrams are located inside the removable subpanel cover on the right-hand side of the humidifier cabinet. Power supply wiring must be rated for 105°C.

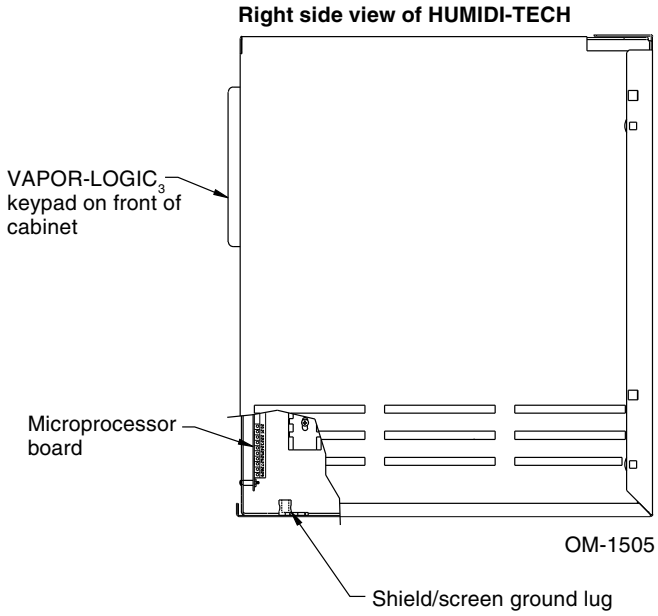
Refer to the maximum load (I max. A) on the rating plate, and use the tables on the following page to determine the appropriate wire, conduit and fused disconnect requirements.

When selecting a location for installing the HUMIDI-TECH, avoid areas close to sources of electromagnetic emissions such as power distribution transformers.

Grounding requirements

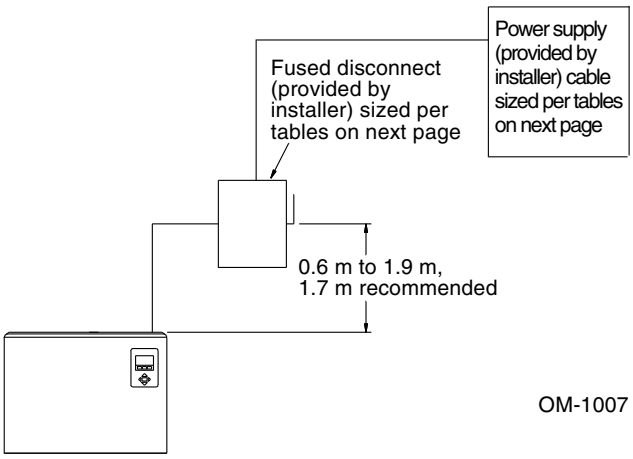
The earth must be made by solid metal to metal connections. The ground must be a good radio frequency earth. Ground wire should be same size as power wiring.

Shielded/screened cable drain wire connection to lug



Note: For maximum E.M.C. effectiveness, all humidity, temperature, and airflow controls should be wired using multicolored shielded/screened plenum-rated cable with a drain wire for the shield/screen. The drain wire should be connected to the shield/screen ground terminal with its length kept to less than 50 mm.

Field wiring requirements



Note: Control wiring and power wiring must be run in dedicated or separate earthed metal conduit, cable trays or trunking.

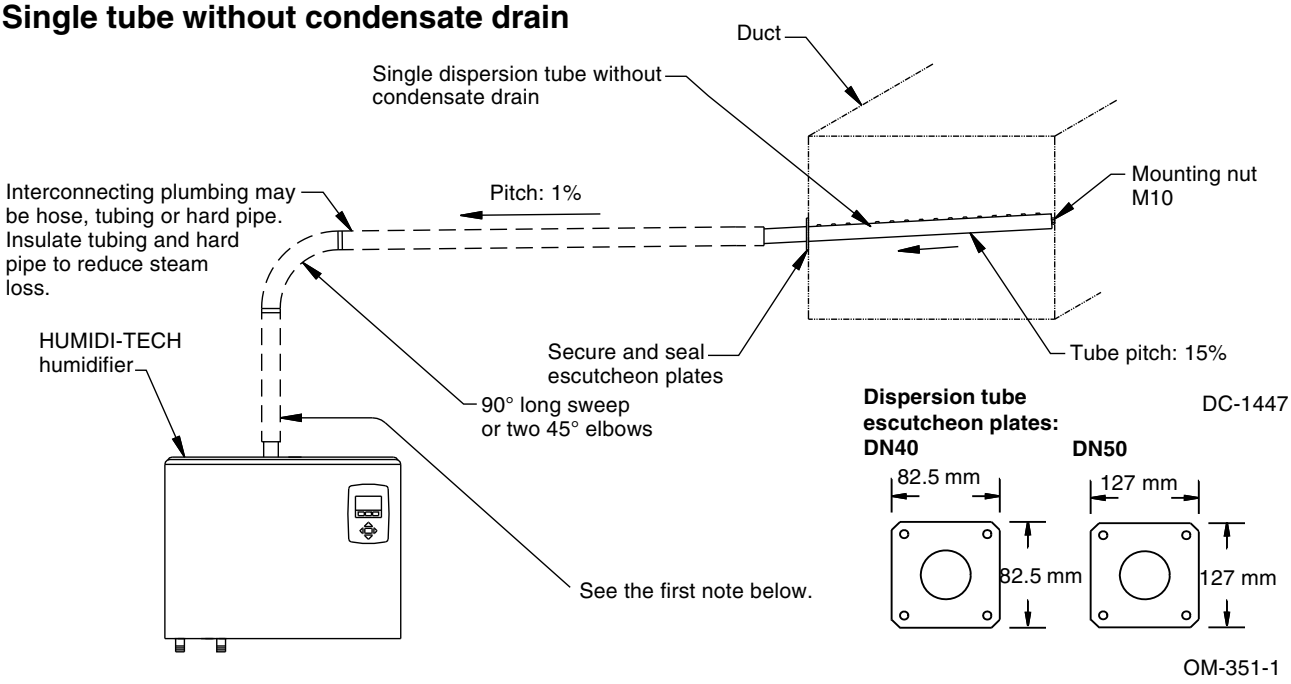
400 Volt three phase

A	Wire size mm²	Ground wire size mm²
0 - 15.7	2.5	2.5
15.8 - 21	4	4
21.1 - 27	6	6
27.1 - 37.5	10	10
37.6 - 51	16	16

Fuse/breaker requirements

I max. A	Breaker size
8.1 - 12.8	16
12.9 - 16	20
16.1 - 20	25
20.1 - 25.6	32
25.7 - 32	40
32.1 - 40	50
40.1 - 50.4	63

Single tube without condensate drain



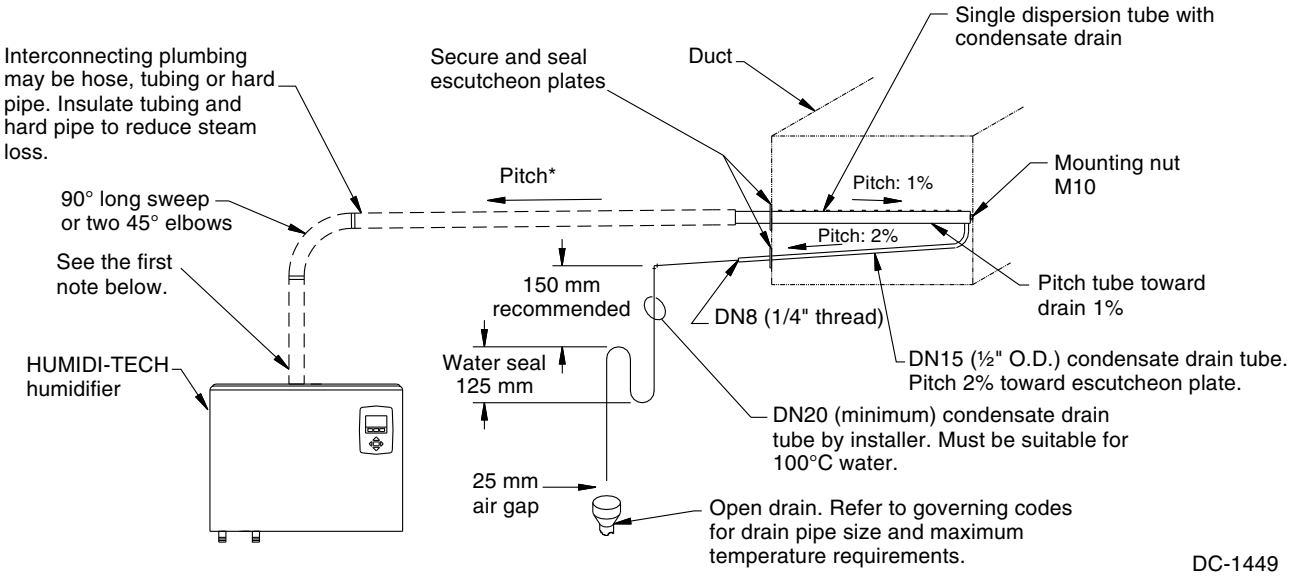
Notes:

- Use DRI-STEEM's hard pipe adapter kit to connect the steam outlet to hard pipe. Use a hose clamp to connect the steam outlet to vapor hose. Use a hose cuff and clamps to connect the steam outlet to tubing.
- Thin-walled tubing heats up faster than heavy-walled pipe causing less steam loss at start-up.
- Hard pipe or tubing diameter must match HUMIDI-TECH steam outlet size (DN40 or DN50).
- See the Maximum Steam Carrying Capacity and Steam Loss tables on Page 13.
- Maximum capacity of dispersion tube (without condensate drain):
  – DN40: 13 kg/h
  – DN50: 25.8 kg/h
- Orient dispersion tube so that tubelets (steam orifices) point up.
- When mounting the humidifier above the level of dispersion tube, see the drawing on Page 13.
- Failure to follow the recommendations on this page may result in excessive back pressures on the humidifier. This may lead to dispersion tube(s) spitting, steam blowing through water seals, or leaking gaskets.
- The table at right shows hose kit sizes by humidifier model. A hose kit includes vapor hose, a dispersion tube and hardware. Note that the capacities of models HT-30 and HT-34 require multiple tube assemblies and therefore cannot use a hose kit. For multiple tube assemblies, see information on RAPID-SORB on Page 12.

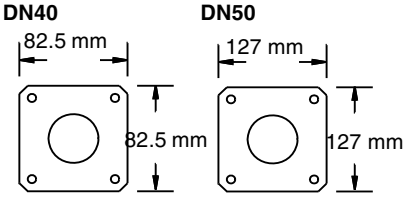
Hose kit sizing by model

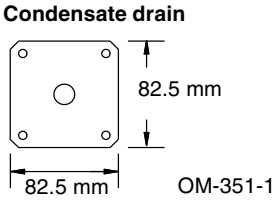
Humdifier models	**Hose kit** (vapor hose, dispersion tube and hardware)	**Maximum capacity of dispersion tube** (kg/hr)
HT 4-8	1½" (DN40) hose kit without drain	13
HT 12-16	1½" (DN40) hose kit with drain	25.8
	2" (DN50) hose kit without drain	25.8
HT 21-25	2" (DN50) hose kit with drain	38.6
HT 30-34	These models require multiple tube assemblies and cannot use a hose kit.	

Single tube with condensate drain



Dispersion tube escutcheon plates:



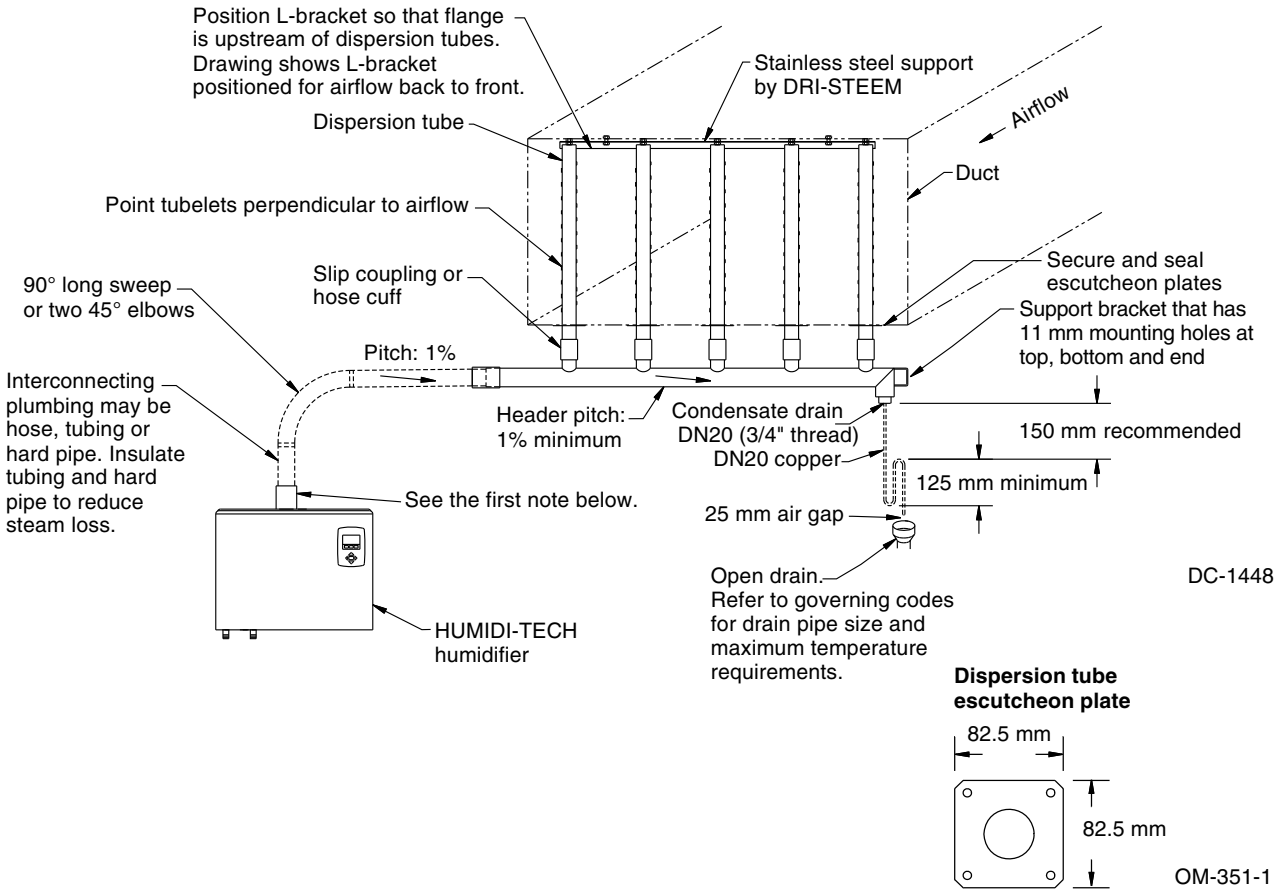


* Pitch vapor hose, tubing or pipe towards humidifier:
- 15% when using vapor hose
- 5% when using 1½" tubing or pipe
- 2% when using 2" tubing or pipe

Notes:

- Use DRI-STEEM's hard pipe adapter kit to connect the steam outlet to hard pipe. Use a hose clamp to connect the steam outlet to vapor hose. Use a hose cuff and clamps to connect the steam outlet to tubing.
- Thin-walled tubing heats up faster than heavy-walled pipe causing less steam loss at start-up.
- Hard pipe or tubing diameter must match HUMIDI-TECH steam outlet size (DN40 or DN50).
- See the Maximum Steam Carrying Capacity and Steam Loss tables on Page 13.
- Maximum capacity of dispersion tube with condensate drain:
  – DN40: 25.8 kg/h
  – DN50: 38.6 kg/h
- Orient dispersion tube so that tubelets (steam orifices) point up.
- The dispersion tube must be pitched a minimum of 1% toward the drain when using a condensate drain. Condensate drain tubing must be pitched a minimum of 2% toward the escutcheon plate. Condensate drain is not provided when steam flow is 15 kg/h or less.
- When mounting the humidifier above the level of dispersion tube, see the drawing on Page 13.
- Failure to follow the recommendations on this page may result in excessive back pressures on the humidifier. This may lead to dispersion tube(s) spitting, steam blowing through water seals, or leaking gaskets.
- See the Hose Kit Sizing table on the previous page.

RAPID-SORB dispersion assembly

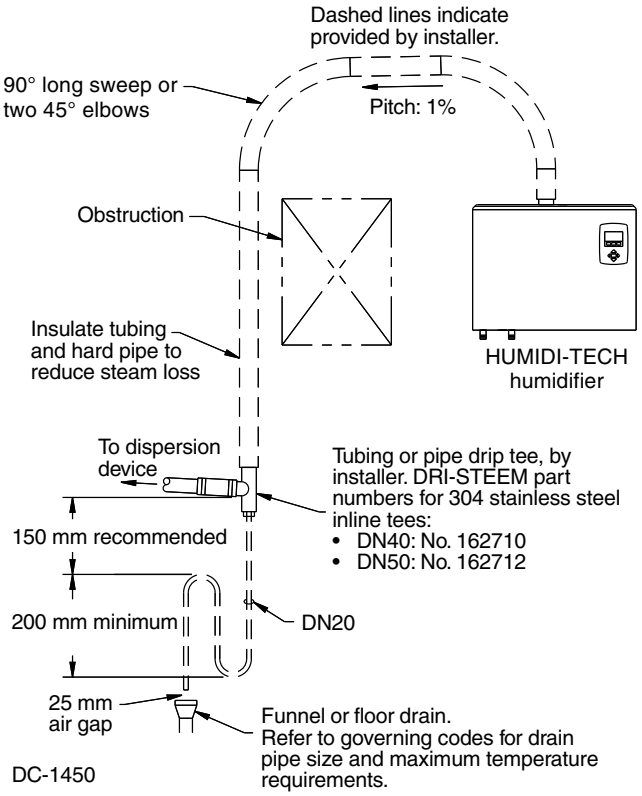


Notes:

- Use DRI-STEEM's hard pipe adapter kit to connect the steam outlet to hard pipe. Use a hose clamp to connect the steam outlet to vapor hose. Use a hose cuff and clamps to connect the steam outlet to tubing.
- Thin-walled tubing heats up faster than heavy-walled pipe causing less steam loss at start-up.
- Hard pipe or tubing diameter must match HUMIDI-TECH steam outlet size (DN40 or DN50).
- See the Maximum Steam Carrying Capacity and Steam Loss tables on Page 13.
- Position dispersion tubes perpendicular to horizontal airflow.
- Pitch header toward condensate drain.
- Make sure header and tubes are square in the duct, slanting only to allow the pitch of the header.
- Secure header at both ends.
- Dashed lines indicate provided by installer.
- Dispersion tube sizes:
  - DN40
  - DN50
- When mounting the humidifier above the level of the RAPID-SORB, see the drawing on Page 13.
- Failure to follow the recommendations on this page may result in excessive back pressures on the humidifier. This may lead to dispersion tube(s) spitting, steam blowing through water seals, or leaking gaskets.

Drip tee installation

Install a drip tee as shown below when the humidifier is mounted higher than the dispersion device, when interconnecting hose or piping needs to go over an obstruction, or when interconnecting piping runs are long. **IMPORTANT:** Vapor hose must be supported to prevent sagging or low spots.



Maximum steam carrying capacity and length of interconnecting vapor hose, tubing and pipe*

Vapor hose			Copper or stainless steel tubing and Schedule 40 steel pipe		
Hose I.D. (DN)	Maximum capacity (kg/h)	Maximum length** (m)	Tube or pipe size*** (DN)	Maximum capacity (kg/h)	Maximum developed length† (m)
40	68	3	40	68	6.1
50	113	3	50	100	9.2

Notes:

* Based on total maximum pressure drop in hose, tubing or piping of 1250 Pa

** Maximum recommended length for vapor hose is 3 m. Longer distances may cause kinking or low spots.

*** To minimize loss of capacity and efficiency, insulate tubing and piping.

† Developed length equals measured length plus 50% of measured length, to account for pipe fittings.

Steam loss of interconnecting vapor hose, tubing and pipe

Description	Nominal hose, tubing or pipe size	Steam loss		Insulation thickness
		Noninsulated	Insulated	
	DN	kg/h/m	kg/h/m	mm
Hose	40	0.220	N/A	N/A
	50	0.300	N/A	N/A
Tubing	40	0.164	0.030	50
	50	0.210	0.037	50
Pipe	40	0.330	0.030	50
	50	0.380	0.037	50

Note:
This data is based on an ambient air temperature of 27 °C, fiberglass insulation, copper tubing and schedule 40 pipe.

HUMIDI-TECH® START-UP AND OPERATION

Introduction
After the system has been properly installed and connected to both electrical and water supplies, it may be started.

Start-up and checkout procedures
Mounting
Check mounting to verify that the unit is level and securely supported before filling with water.

Piping
Verify that all piping connections have been completed as recommended and that water pressure is available.

- **Standard makeup water piping (HUMIDI-TECH models)**
  Use cold or hot makeup water. If the water pressure is above 415 kPa and/or water hammer would be objectionable, install a pressure-reducing valve or shock arrester. Even though the HUMIDI-TECH has an internal 25 mm air gap, governing codes may require backflow prevention.

  Important: Minimum water supply pressure is 175 kPa.

- **DI makeup water piping (HUMIDI-TECH DI models)**
  In this unit the electronic probe control is replaced by float valve control. A float switch provides heater protection in the event of a low-water condition and is common to all DI humidifiers. The wiring diagram is located inside the electrical panel cover.

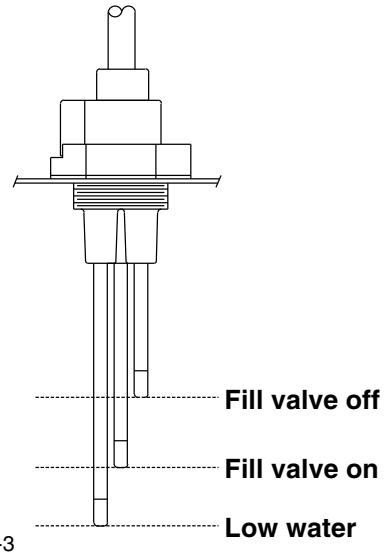
Electrical
Verify electrical connections before start-up.

Do not remove the electrical panel cover or heater terminal cover until electrical power is disconnected. Safety first.

- Verify that all wiring connections have been made in accordance with all governing codes and the HUMIDI-TECH wiring diagram. The external connections diagram will be found in the packet with this manual.
- Verify that all DIN rail-mounted components are securely fastened to DIN rail.
- Verify that all power terminal screws and lugs are tight from power block to heaters. See the table on Page 17 for torque specifications.
- Verify that all plugs located under the humidifier cover are completely plugged in.

CAUTION: Only qualified electrical personnel should perform start-up procedure.

Electronic probe control
(standard water HUMIDI-TECH models only)
A three-probe conductivity sensor cycles a solenoid-operated water fill valve to maintain proper water levels.



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VAPOR-LOGIC® control

VAPOR-LOGIC$_3$ is the standard controller for the HUMIDI-TECH. For more information regarding the operation of the VAPOR-LOGIC$_3$ microprocessor, see the VAPOR-LOGIC$_3$ Installation, Operation and Maintenance Manual.

Control system start-up/checkout

1. Confirm that proper grounding and an approved earth ground are provided.

2. Confirm that the control signal connected to the VAPOR-LOGIC$_3$® system is compatible with the VAPOR-LOGIC$_3$ program. Identify the VAPOR-LOGIC$_3$ program code on the wiring diagram. Refer to the VAPOR-LOGIC$_3$ manual to decipher the code using the nomenclature description.

3. Confirm all wiring is correct per wiring diagram.

4. Confirm J17, J18 and J19 shunt connectors on VAPOR-LOGIC$_3$ board are in their correct position per wiring diagram. See the VAPOR-LOGIC$_3$ manual for the physical locations.

5. Confirm that the keypad is mounted on the HUMIDI-TECH with modular cable routed away from high voltage circuits and connected to the J2 female connector on the control board.

6. Turn on water supply. Confirm drain valve is closed.

7. Turn on power. The keypad will display the introduction of VAPOR-LOGIC$_3$ and will then enter AUTO mode.

8. The system will initiate filling of the tank with water. The keypad will display "Filling" as part of the idle screen information.

9. Airflow switch input must be closed.

10. High limit humidistat input must be closed or variable air volume (VAV) control system high limit transmitter must be connected.

11. Sufficient water in the tank, airflow switch closed, high limit humidistat closed, and a call for humidity will activate the heat output. **If the tank does not contain water and the heat output is activated by the VAPOR-LOGIC$_3$ control system, a serious failure will result. Immediately remove power from the system and verify that all wiring has been completed per the wiring instructions in the manual and the unit wiring diagram.**

12. During normal operation, the keypad will display humidifier operating status. See the VAPOR-LOGIC$_3$ manual for descriptions to change any of the operating parameters.

The best way to determine how often your particular system will need maintenance is to remove the cover and inspect it after its first three months of duty. Potable water carries a variety of minerals and other materials in a mix that varies from location to location. This variation in water quality, combined with the hours of operation and duty cycle, will determine your own unique maintenance schedule.

Water quality makes a difference

1. Light to moderately hard water (35 mg/l to 170 mg/l) requires:
   - Annual cleaning
   - Regular skimming

2. High mineral content water (more than 170 mg/l) requires:
   - Cleaning frequency determined by use and water quality
   - Regular skimming
   - Periodic drain and flush cycles

3. DI/RO water (HUMIDI-TECH DI models) requires:
   - No regular cleaning (regular inspections are advised)
   - No regular skimming or drain and flush cycles
   - Regular verification that water processing equipment is operating correctly. The presence of chlorides in improperly processed DI water will eventually cause pitting and failure of the tank and its components.

4. To dramatically reduce mineral accumulation inside the standard water models, use softened water. (Solids, like silica, are not removed in the softening process.)

Standard water models (HUMIDI-TECH)

Proper skimming, draining and flushing

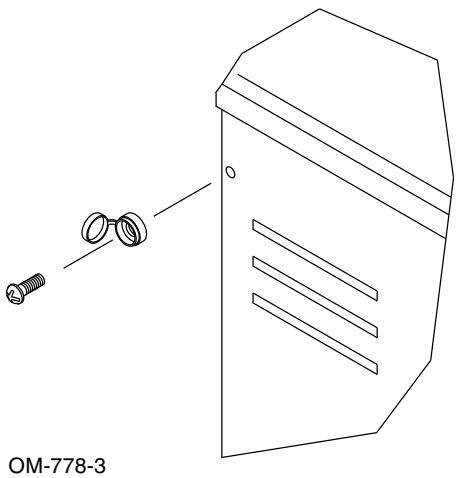
1. Skimming will remove most water impurities at the surface, ensuring proper surface tension and
   an even boil. Skimming will remove most entrained contaminants that have not yet precipitated as scale.

2. Draining and flushing will remove entrained contaminants and assist in removing precipitated contaminants like scale and silica.

To inspect and service standard water models

1. Remove the evaporating chamber
   - Remove the two fasteners on each side of the cover enclosure (see figure below)
   - Remove the enclosure.
   - **Do not remove the electrical panel cover or heater terminal cover until electrical power is disconnected. Safety first.**
   - If the tank is hot, cool it down by moving the valve lever located on the back of the drain valve to the manual open position – the fill valve will eventually open allowing cool water to run through the tank until it is cool enough to handle.
   - Shut off the water supply.
   - Shut off the electrical supply.
   - Allow the tank to completely drain.
   - Disconnect the fill line at the supply side of the fill valve.
   - Disconnect the electrical plugs between the tank components and the back of the electrical panel (includes: power plug, fill plug, drain plug, water level control plug, tank temperature sensor plug and thermal trip plug). **DISCONNECT BY PULLING ON PLUG HOUSING. DO NOT DISCONNECT BY PULLING ON CORD OR WIRES.**
   - Disconnect the drain union on the back left corner of the frame.
   - Disconnect the steam supply hose from the top of the tank.
   - Lift the tank foot above the frame flange and slide the tank assembly forward to remove.

Screw cap detail



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Standard water models (HUMIDI-TECH®, continued)

2. Loosen the four cover bolts and remove the cover assembly from the tank.

3. Clean the tank interior using a putty knife or similar flat instrument.

4. Unplug probe plug assembly. Leave ground wire connected to tank. Unscrew the probe rod assembly and clean the plastic probe housing, ensuring that all passageways are clear. Clean the probe rods using steel wool or a similar mild abrasive material. Inspect the composite plastic probe housing for any signs of cracking, roughness, or deterioration. If found, replace.

5. Install the probe and probe plug assembly. Verify ground wire is solidly connected to tank.

6. Secure the chamber cover, making sure the cover gasket is seated and the chamber is sealed.

7. Re-install the evaporating chamber.
   - Reconnect the fill line.
   - Reconnect the electrical plugs (plugs are color coded).
   - Reconnect the drain union.
   - Reconnect the vapor hose.

8. Verify electrical connections.
   - Verify that all DIN rail-mounted components are securely fastened to DIN rail.
   - Verify that all power terminal screws and lugs are tight from power block to heaters. See the table on this page for torque specifications.
   - Verify that all plugs located under the humidifier cover are completely plugged in.

9. Move the drain valve lever back to the auto position.

10. Turn on the water supply.

11. Turn on the electrical power.

Off-season shut-down procedure

1. Switch off electrical power.

2. Remove enclosure.

3. Shut off water supply to makeup valve.

4. Drain evaporating chamber, and clean if necessary (see “To inspect and service” on previous page).

5. Replace enclosure.

6. Leave chamber dry, power off and the water shut-off valve closed until the next humidification season.

HUMIDI-TECH torque specifications

Screw or lug location		Torque
Power block		1.8 Nm
Contactor		1.8 Nm
Heater nut	8.5 mm nut	2.2 Nm
	9.5 mm nut	2.8 Nm
Heater wire lug	10 mm^2 wire	4.0 Nm
	6 mm^2 wire	2.8 Nm
	< 6 mm^2 wire	2.2 Nm

DI water models (HUMIDI-TECH® DI)

The HUMIDI-TECH DI unit uses DI/RO water. Because these water types are mineral-free, cleaning the evaporating chamber should not be necessary. However, there are some maintenance steps that should be followed to ensure all parts of the unit are in working order

To inspect and service

1. Remove the evaporating chamber.
   - Remove the two fasteners on each side of the cover enclosure.
   - Remove the enclosure.
   - **Do not remove the electrical panel cover or heater terminal cover until electrical power is disconnected. Safety first.**
   - If the tank is hot, cool it down by opening the manual ball valve on the side of the tank. The float valve will open allowing cool water to run into the tank until it is cool enough to handle.
   - Shut off the water supply.
   - Shut off the electrical supply.
   - Allow the tank to drain completely.
   - Disconnect the fill line at the fill fitting.
   - Disconnect the electrical plugs between the tank components and the back of the electrical panel (includes: power plug, low water switch plug, tank temperature sensor plug and thermal trip plug).
     DISCONNECT BY PULLING ON PLUG HOUSING. DO NOT DISCONNECT BY PULLING ON CORD OR WIRES.
   - Disconnect the drain union on the back left corner of the frame.
   - Disconnect the steam supply hose from the top of the tank.
   - Lift the tank foot above the frame flange and slide the tank assembly forward to remove.
2. Loosen the four cover bolts and remove the cover assembly from the tank.
3. Inspect the tank interior for debris or pitting.
4. Inspect the valve inlet for debris.
5. Check the operation of the float valve and the condition of the float seat.
6. Check the low water switch to make sure the float slides freely on the stem.
7. Secure the chamber cover making sure the cover gasket is seated and the chamber is sealed.
8. Reinstall the evaporating chamber.
   - Reconnect the fill line.
   - Reconnect electrical plugs (plugs are color coded).
   - Reconnect drain union.
   - Reconnect vapor hose.
9. Verify electrical connections.
   - Verify that all DIN rail-mounted components are securely fastened to DIN rail.
   - Verify that all power terminal screws and lugs are tight from power block to heaters. See the table on Page 17 for torque specifications.
   - Verify that all plugs located under the humidifier cover are completely plugged in.
10. Close the drain valve.
11. Turn on the water supply.
12. Turn on the electrical power.

Off-season shut-down procedure

1. Switch off electric power.
2. Remove enclosure.
3. Shut off water supply to makeup valve.
4. Drain evaporating chamber by opening the drain valve.
5. Replace enclosure.
6. Leave chamber dry, power off, and water shut-off valve closed until the next humidification season.

HUMIDI-TECH® TROUBLESHOOTING GUIDE

Troubleshooting guide for standard water models

PROBLEM	POSSIBLE CAUSE	RECOMMENDED ACTION
Humidifier does not heat.	Incorrect or nonexistent supply voltage to unit	Check main line safety switch. Check internal breaker. Check for proper supply voltage.
	Incorrect or nonexistent control voltage	Reset control transformer circuit breaker. Check for 24 VAC control circuit voltage at T-1 and T-2 on the control board.
	Humidistat not calling	Set humidistat to call. Inspect for faulty humidistat.
	Safety controls open	Check safety controls, airflow switch, and high limit humidistat.
Humidifier will not fill.	No water pressure at valve	Check water supply/shut-off valves.
	Faulty water fill valve	Check for 24 volts at the fill valve.
	Plugged strainer	Check strainer.
	Plugged valve	Check valve.
	Faulty control board	Verify control voltage across the fill valve output terminals.
Humidifier does not stop filling.	Lack of tank to probe electrical continuity	Water conductivity must be 100 µS/cm or 34.2 mg2ↄ Add salt to the tank. If this does not solve the problem, consult factory for further advice.
	Fill valve stuck open	Check valve for foreign matter.
	Drain valve not closed	Verify that lever on drain valve is in closed position.
	Fill valve installed backward	Check for correct water flow through valve.
	Autodrain mode	Humidifier may be in periodic drain and flush. Check controller display.
Low output	Electric drain valve not seating	Correct the cause of leakage or replace valve.
	Fill valve stuck open	Check valve for foreign matter.
Unit short-cycles	Controller cycle rate set too low	Adjust heater cycle time using the VAPOR-LOGIC$_3$ keypad setup menu. See the VAPOR-LOGIC$_3$ manual if you need more information.
Reduced or no output even though water is at the proper level	Heater malfunctioning	Verify that proper voltage is being applied to heaters. Check heater amp draw and compare to wiring diagram ratings.
	Malfunctioning control system	Replace heater contactor if not functioning. Verify auxiliary limit controls (humidistat, airflow proving switch, etc.) and reset, replace or calibrate as needed.

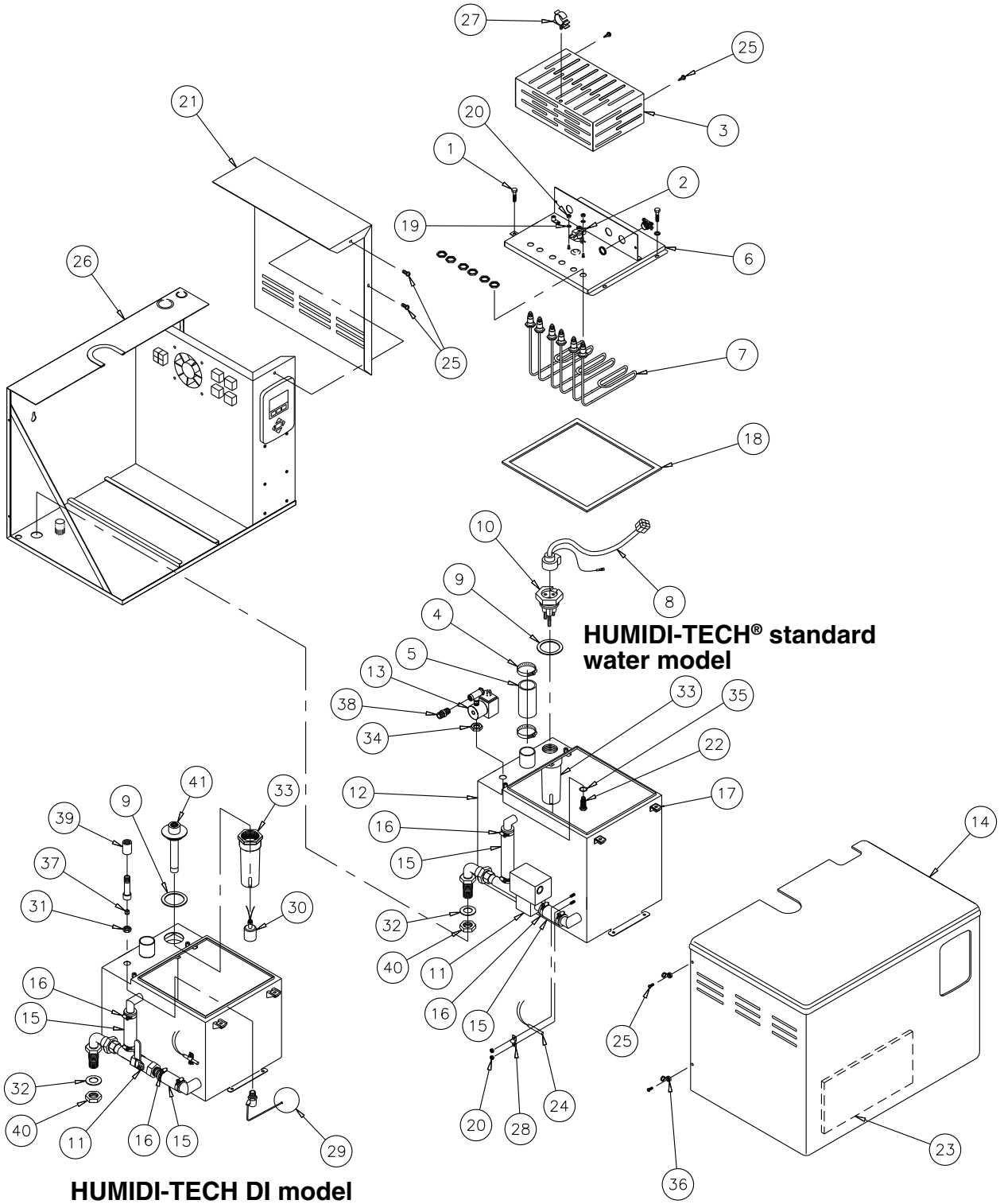
Note: Probe rod corrosion or aging probe head material may cause level control system failure. This generally does not occur in the first two years of operation.

HUMIDI-TECH® TROUBLESHOOTING GUIDE

Troubleshooting guide for DI water models

PROBLEM	POSSIBLE CAUSE	RECOMMENDED ACTION
Humidifier will not heat.	Control transformer	Reset control transformer circuit breaker.
	Humidistat is not calling	Set humidistat to call. Inspect for faulty humidistat.
	Safety controls open	Check safety controls, airflow switch, high limit humidistat, etc.
	Low water cutoff	Check at board 32 and 33. Measure 0 Volts for closed switch, approximately 2.5 Volts for AC open switch.
Humidifier will not fill.	No water pressure at valve	Check manual water supply valve for minimum 175 kPa water pressure.
	Plugged fill valve	Check fill valve inlet.
Humidifier does not stop filling.	Open drain valve	Obstruction in drain valve will not allow complete closure. Clean or replace valve.
	Manual drain valve not closed	Close drain valve.
	Fill valve stuck open	Check for foreign matter in valve, water-logged float, broken float arm, or worn valve stopper.
Reduced or no output even though water is at the proper level	Heater malfunctioning	Verify that proper voltage is being applied to heaters. Check heater amp draw and compare to wiring diagram ratings.
	Malfunctioning control system	Replace heater contactor if not functioning. Verify auxiliary limit controls (humidistat, airflow proving switch, etc.) and reset, replace or calibrate as needed.

HUMIDI-TECH® REPLACEMENT PARTS



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Note: Refer to the tables on the next page for replacement part numbers.

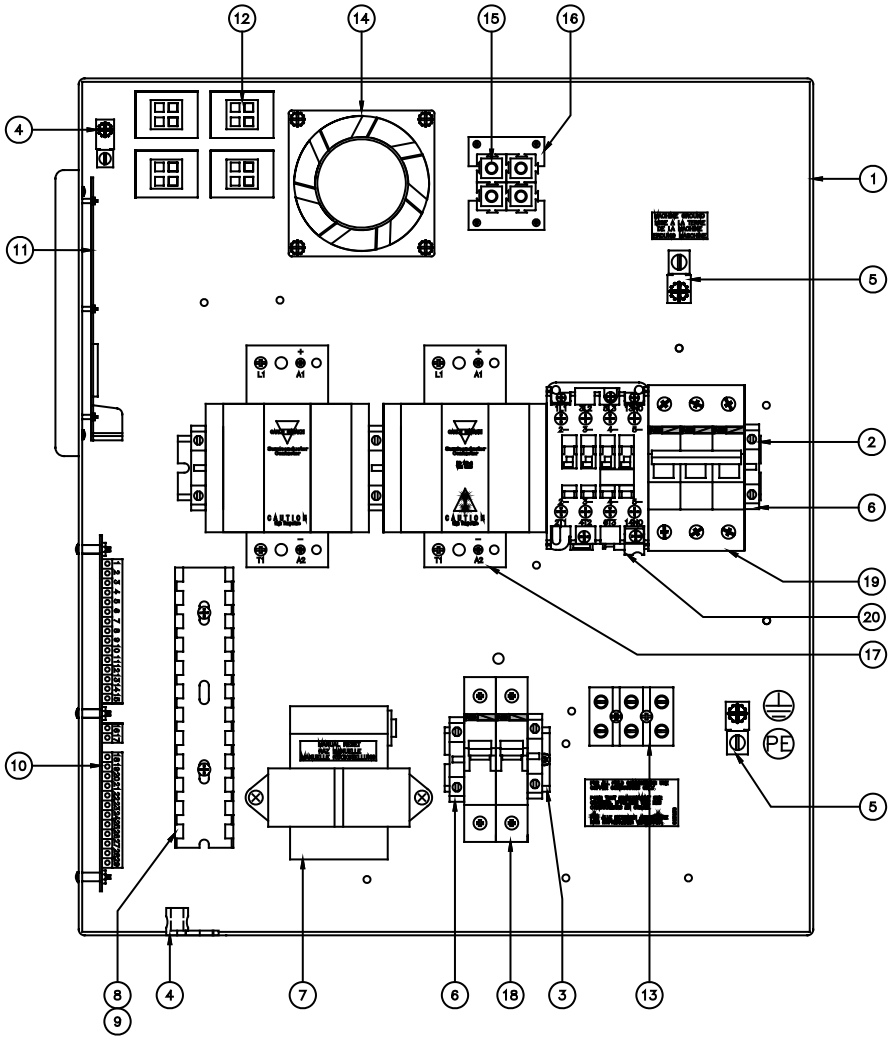
HUMIDI-TECH® replacement parts (refer to the drawing on previous page)

No.	Description	Qty.	Part No.
1	Head bolt, large Phillips, ¼ - 20 X 1"	4	700300-013
2	Thermo cut-out	1	409560-001
3	Cover, heater terminal	1	*
4	Hose clamp, 2"	2	700560-200
5	Hose cuff, 1½"	1	305390- *
	Hose cuff, 2"	1	305391- *
6	Cover, tank	1	*
7	Heater element	*	*
8	Probe assembly with cord and plug	1	406050-100
9	Gasket, 2.50" OD x 1.90" ID	1	309750-004
10	Probe assembly, HT-4	1	406270
	Probe assembly, HT 6-34	1	406275
11	Valve, ¾" electric, 24V	1	505400-001
	Valve, ½" SST ball	1	505000-003
12	Tank weldment	1	*
13	Valve, ¼" solenoid, 24V w/DIN plug	1	505084-001
14	Cabinet enclosure	1	330001-001
15	Hose, ¾" ID	2	307020-002
16	Hose clamp, ¾"	4	700560-075
17	Nut assembly, ¼-20, HT-4	4	700650
	Nut assembly, ¼-20, HT 6-34	2	700650
18	Cover, tank gasket	1	*

* Specify humidifier model and serial numbers when ordering.

No.	Description	Qty.	Part No.
19	Washer, No. 8 external tooth, pltd	2	700200-003
20	Nut, 8-32 hex, pltd	6	700200-002
21	Cover, subpanel	1	120277
22	Fill adapter, HT-4	1	160226-041
	Fill adapter, HT 6-16	1	160224-041
	Fill adapter, HT 21-34	1	160224-052
23	Panel, insulation	1	309845-003
24	Sensor, temperature	1	405760
25	Screw, Phillips head, 8-32 x ½"	8	700170-007
26	Frame assembly, chassis	1	165541
27	Clip, wire harness	1	405892-001
28	Clip, temperature sensor	1	408251
29	Valve assembly, float	1	505310
30	Switch, float, 1/8" NPT	1	408420-002
31	Ring, seal, ¼"-18 NPT	1	306365
32	Gasket, bulkhead, 1.60 OD X 1.15 ID	1	309750-005
33	Probe housing, nylon, HT	1	308500
34	Nut, HT heater .475	1	409601-001
35	O-ring, 5/8" EPDM No. 016	1	300400-009
36	Cap, black	4	409593-002
37	DI orifice, HT 4-16	1	160229-041
	DI orifice, HT 21-34	1	160229-052
38	Adapter, 1/4" to 3/8"	1	167121
39	Adapter, 1/4" to 3/8"	1	250405-004
40	Bulkhead nut	1	162721-002
41	Tube weld, low water, short, HT-4	1	167787
	Tube weld, low water, long, HT 6-34	1	167788

HUMIDI-TECH® subpanel with SSR



HT-OM-001

No.	Description	Qty.	Part. No.
1	Subpanel, VM99 barrier	1	120801
2	DIN rail, 12.5" long	1	167765-0125
3	DIN rail, 2.25" long	1	167765-0022
4	Lug, wire	2	409250-003
5	Ground lug, medium	2	408250-027
6	Block, DIN rail terminal end	5	408252-006
7	Transformer, 230/400 V	1	408985
8	Wire channel, 1" x 1"	6"	408999-001
9	Wire channel cover	6"	408999-002
10	Main board, VL-3	1	408490-001
11	Display board, VL-3	1	408490-002

No.	Description	Qty.	Part. No.
12	Housing, 15 amp, 4-pole contact	4	409585-008
13	Terminal block, 3-pole	1	408300-002
14	Fan, cooling	1	408677-001
15	Housing, 75 amp white connector	4	409585-001
16	Mounting clip, 2/4 pole contact	2	409585-009
17	SSR, 480V, 1-pole	*	408677-002
	SSR, 480V, 63 amp, 1-pole	*	408677-005
18	Circuit breaker, 1.6 amp, 1-pole	2	406775-001
19	Circuit breaker	1	408790-*
20	Contactor, 60 A	1	407001-021

* Refer to model for correct selection and quantity.

TWO-YEAR LIMITED WARRANTY

DRI-STEEM Humidifier Company ("DRI-STEEM") warrants to the original user that its products will be free from defects in materials and workmanship for a period of two (2) years after installation or twenty-seven (27) months from the date DRI-STEEM ships such product, whichever date is the earlier.

If any DRI-STEEM product is found to be defective in material or workmanship during the applicable warranty period, DRI-STEEM's entire liability, and the purchaser's sole and exclusive remedy, shall be the repair or replacement of the defective product, or the refund of the purchase price, at DRI-STEEM's election. DRI-STEEM shall not be liable for any costs or expenses, whether direct or indirect, associated with the installation, removal or re-installation of any defective product.

DRI-STEEM's limited warranty shall not be effective or actionable unless there is compliance with all installation and operating instructions furnished by DRI-STEEM, or if the products have been modified or altered without the written consent of DRI-STEEM, or if such products have been subject to accident, misuse, mishandling, tampering, negligence or improper maintenance. Any warranty claim must be submitted to DRI-STEEM in writing within the stated warranty period.

DRI-STEEM's limited warranty is made in lieu of, and DRI-STEEM disclaims all other warranties, whether express or implied, including but not limited to any IMPLIED WARRANTY OF MERCHANTABILITY, ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, any implied warranty arising out of a course of dealing or of performance, custom or usage of trade.

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By purchasing DRI-STEEM's products, the purchaser agrees to the terms and conditions of this limited warranty.

DRI-STEEM®

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