

READ AND SAVE THESE INSTRUCTIONS

HUMIDI-TECH[®] and HUMIDI-TECH[®] DI ELECTRIC STEAM HUMIDIFIERS

Installation Instructions
and
Maintenance Operations
Manual



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DRI STEEM[®]
HUMIDIFIER COMPANY

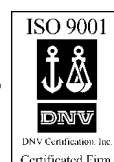


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TO THE PURCHASER AND INSTALLER

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.

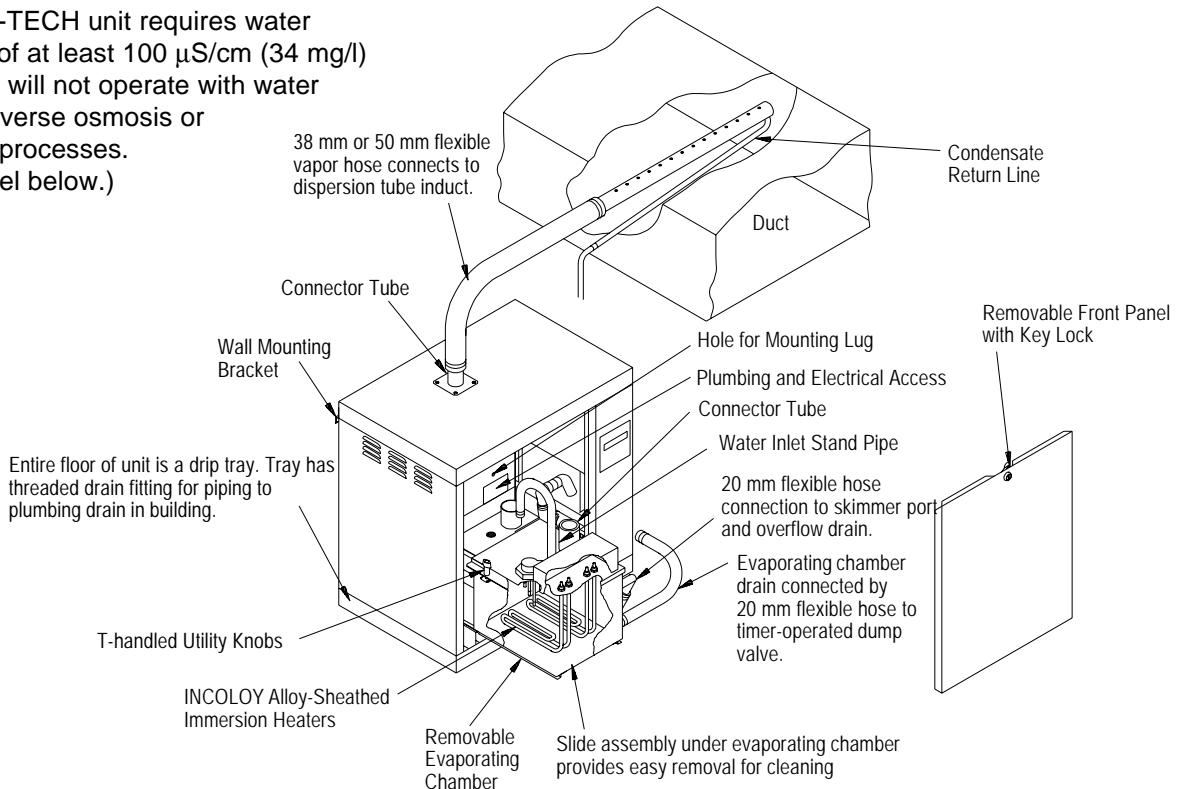
DRI-STEEM Humidifier Company

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HUMIDI-TECH® DIAGRAMS

Figure 3-1: HUMIDI-TECH Humidifier

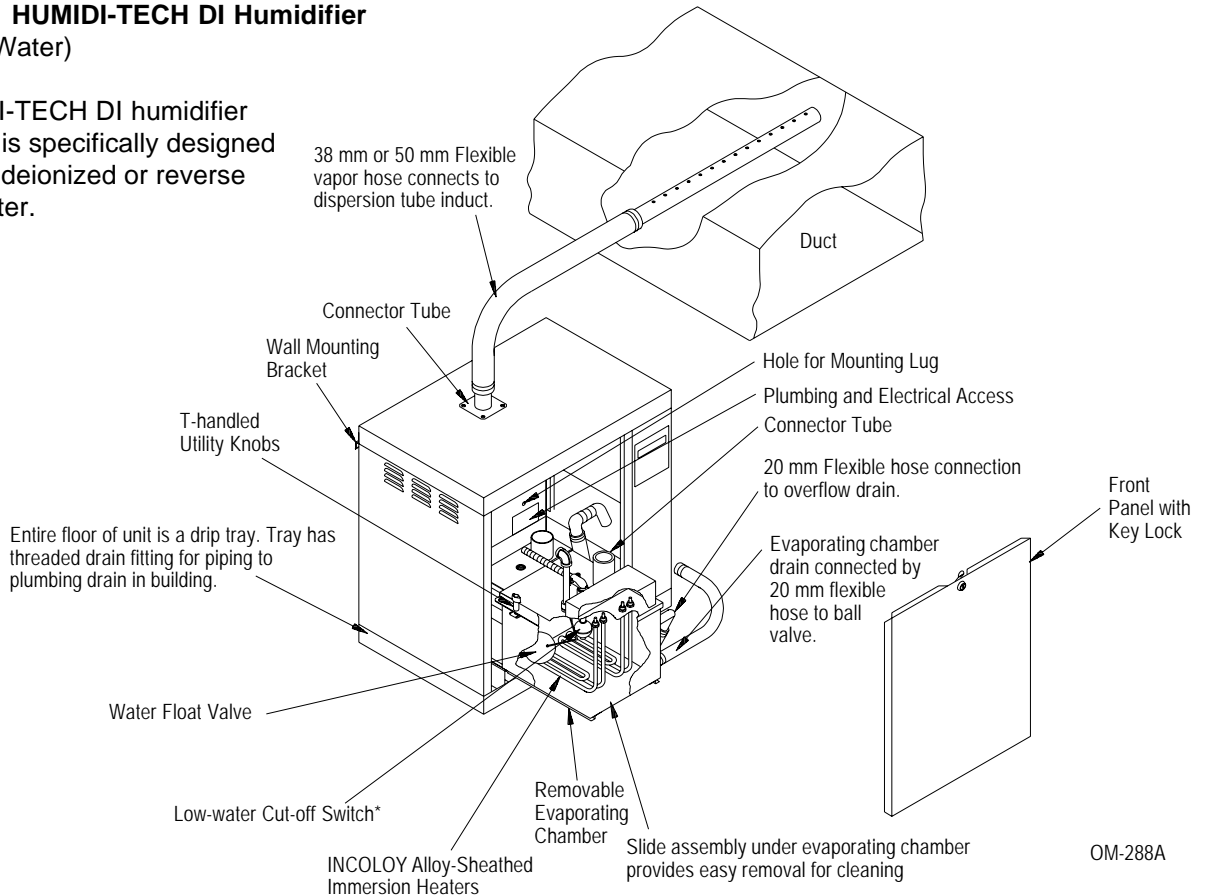
The HUMIDI-TECH unit requires water conductivity of at least 100 $\mu\text{S}/\text{cm}$ (34 mg/l) to operate. It will not operate with water treated by reverse osmosis or deionization processes. (See DI model below.)



OM-287A

Figure 3-2: HUMIDI-TECH DI Humidifier (Deionized Water)

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



OM-288A

*Caution: Low-Water Cut-Off Switch contact is normally open when float is in its lowest position.

Note: All removable doors, panels and covers are grounded to the earth bar. Care must be taken to connect these grounds back on to parts removed during service.

INSTALLATION

Locating and Mounting the HUMIDI-TECH® Humidifier

The HUMIDI-TECH humidifier is designed to hang on a wall, and 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

The mounting location should provide a minimum clearance of 90 cm to the front and 60 cm to the right side of the unit. This clearance is required for removing the evaporating chamber and accessing electrical compartment.

Electrical power supply, water make-up piping and drain piping must also be considered. These service

connections are made at the lower right rear corner of the unit.

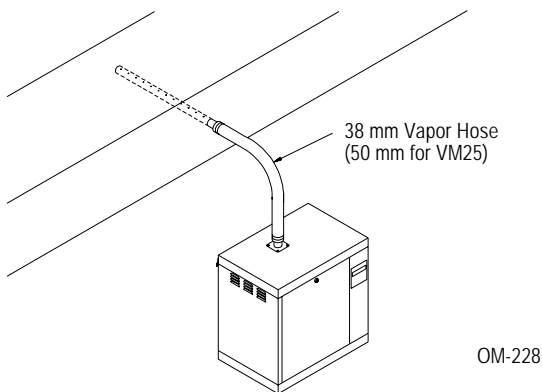
When mounting on a stud wall, locate studs and position mounting bracket in place so that each of the two holes will center on a stud. Mark hole locations and pre-drill 6 mm diameter pilot holes. Secure bracket to wall with lag bolts provided. The hole in the back of the cabinet above the plumbing opening is for a lag bolt into the wall to secure the cabinet on the hanging bracket.

For hollow block or poured concrete wall mounting, position mounting bracket in place and mark the second hole from each end. Drill appropriate pilot hole for two 10 mm toggle bolts or two 10 mm machine bolt lead anchors. Secure bracket in place.

When the HUMIDI-TECH humidifier is in final operation, the panel access keys should be removed and secured in a different place.

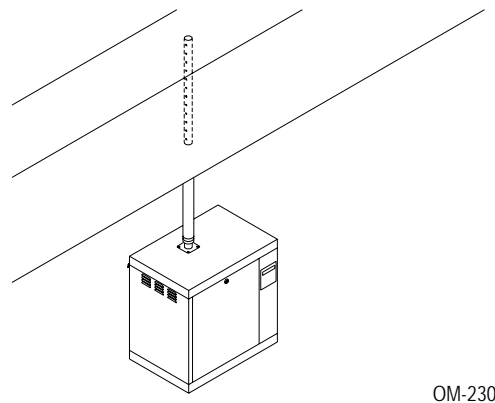
Examples of Mounting the Dispersion Tube

Figure 4-1: Mounted Horizontally in Duct



Vapor hose and dispersion tube should be pitched back to the humidifier with a gradual slope of 165 mm/m (minimum). VM34 must use a multiple tube steam dispersion system.

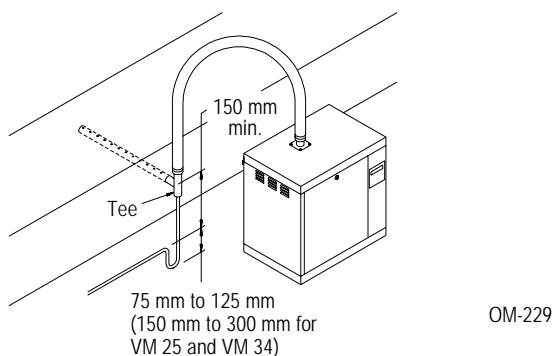
Figure 4-3: Mounted Vertically (Optional)



This is not recommended on VM10, VM12, VM16, VM25, and VM34.

IMPORTANT NOTES: When duct is located more than 3 metres away from unit, vapor hose is not recommended; 40 mm minimum I.D. hard pipe should be used instead. VM34 must use a multiple tube steam dispersion system.

Figure 4-2: Mounted Horizontally in Duct and Lower Than HUMIDI-TECH Unit



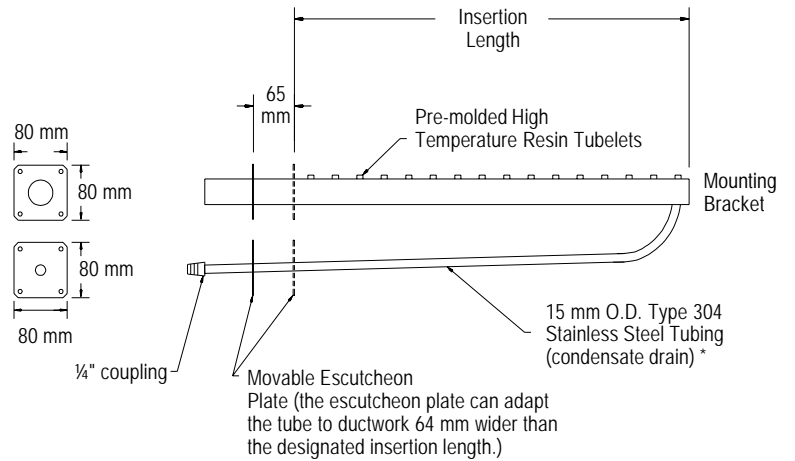
A water seal must be located in drain line as shown to maintain steam pressure. VM34 must use a multiple tube steam dispersion system.

INSTALLATION

HUMIDI-TECH® Mounting Tube with Condensate Drain Line

- Mount dispersion tube level.
- Orient dispersion tube so that tubelets are pointed straight up.

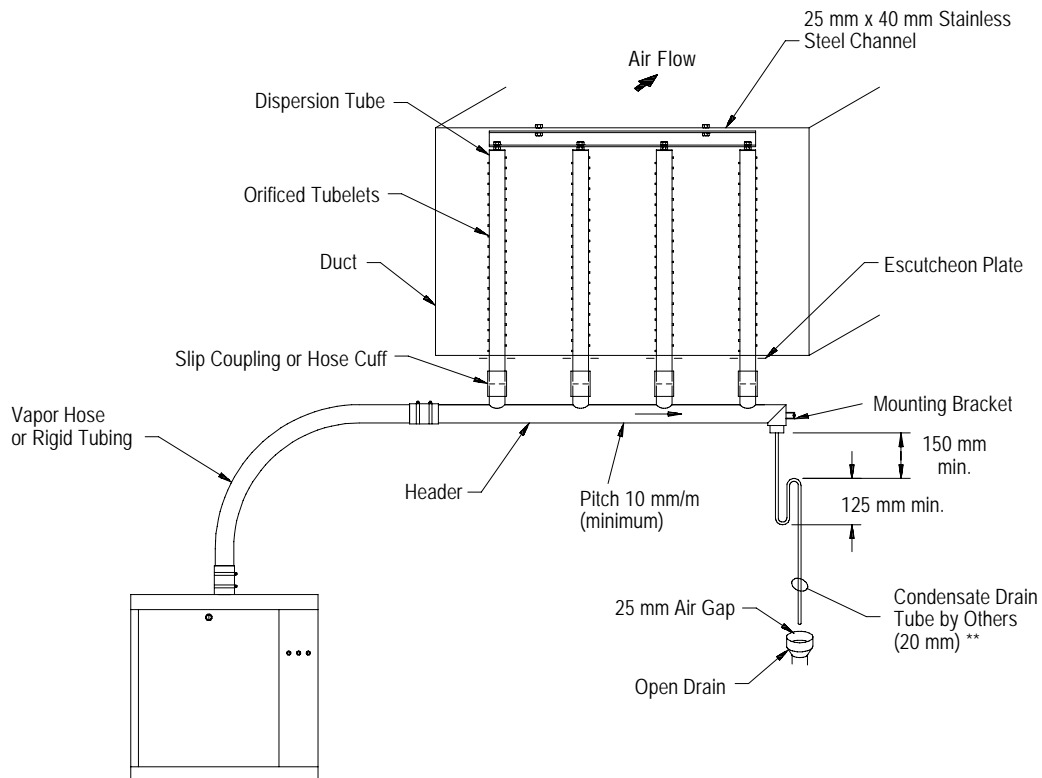
Figure 5-1: Single Tube



OM-351

* 15 mm diameter condensate tubing is not needed nor provided when steam flow is 15 kg/h or less per dispersion tube. A minimum pitch of 64 mm per meter back to the humidifier should be maintained.

Figure 5-2: RAPID-SORB™ with Condensate Wasted to Floor Drain



OM-224-r

** Condensate drain tubing material must be suitable for 100°C water.

Minimum condensate return line sizing:

- One or two tubes - 15 mm I.D.
- Three or more tubes - 20 mm I.D.

INSTALLATION

Connecting Dispersion Tube to Humidifier

- Connection can be made with vapor hose or rigid tubing.
- Vapor piping should have a minimum I.D. of 40 mm.
- A minimum pitch of 15 cm/m back to the humidifier should be maintained.
- Short sweep 90° elbows are not recommended; use two 45° elbows 300 mm apart or long sweep 90° elbows instead.
- Thin-walled tubing will heat up faster than heavy-walled pipe, causing less steam loss at start-up.
- Insulating rigid tubing will reduce the steam output loss caused by condensation.
- When mounting the humidifier above the level of dispersion tube, see figure 4-2 on page 4.

Failing to follow these recommendations may result in excessive back pressures being imposed on the humidifier. This may lead to dispersion tube(s) spitting, steam blowing through water seals, or leaking gaskets. When the distance between humidifier and the dispersion tube(s) exceeds 6 metres, consult factory for recommendations.

PIPING

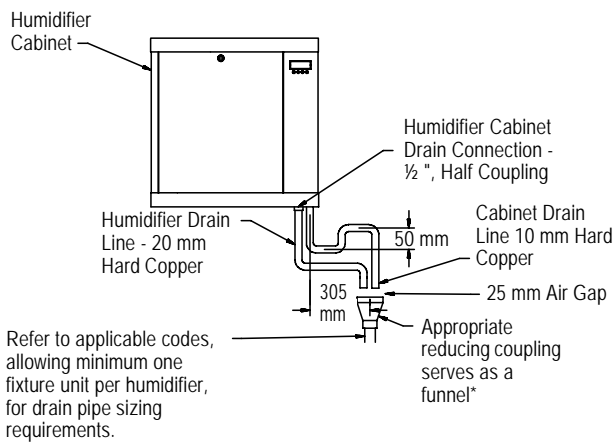
Water make-up piping may be of any code-approved material (copper, steel, or plastic). The final connection size is 1/4". In cases where water hammer may be a possibility, a shock arrestor should be considered (water pressure 170 kPa minimum to 520 kPa maximum).

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, a small lift pump should be used.

The final connection sizes are 20 mm O.D. for evaporator drain and 13 mm for cabinet drain. These connection sizes should not be reduced. (See figures 7-1 and 7-2 for proper drain piping configurations.) The evaporator drain and cabinet drain should be piped separately to and discharged into a floor drain. Combining the two drain pipes into a single drain line may result in the backflow of drain water into the humidifier cabinet, causing the unit to malfunction.

Drain Piping Configurations

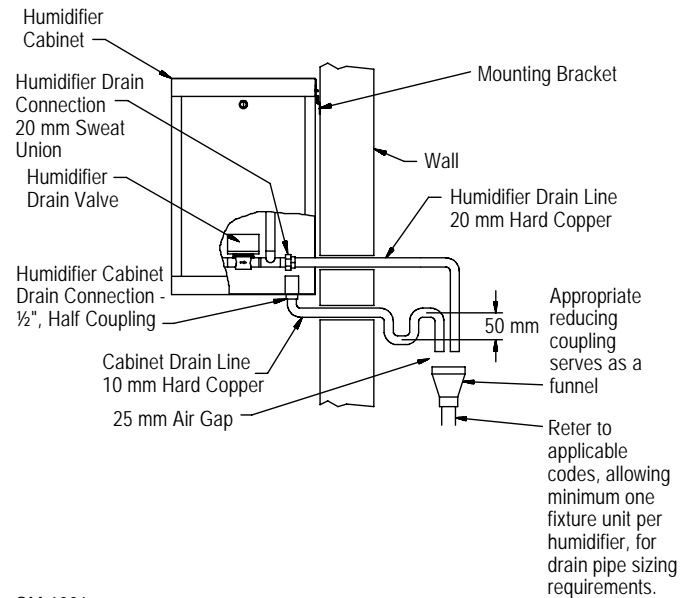
Figure 7-1: Drain Adjacent to Wall



*Locate the drain funnel to the side and not directly below the humidifier.

OM-1005

Figure 7-2: Drain Through or in Wall



OM-1006

Note: Locate the cabinet drain line exit away from the humidifier drain line exit, if possible. This will prevent water vapor from migrating up the cabinet drain line, causing the cabinet bottom to rust. Extending the cabinet drain line may also be effective.

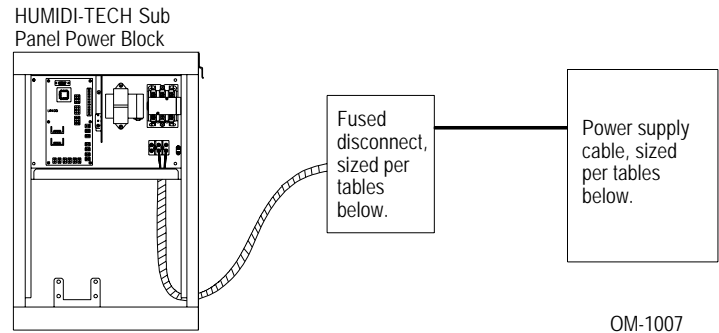
WIRING

All wiring must be in accordance with all governing codes, and with HUMIDI-TECH® or HUMIDI-TECH DI wiring diagram. The diagram is located inside the removable front panel on the right-hand side of the humidifier cabinet. Power supply wiring should be rated for 105° C temperature.

Refer to the amp draw on the rating plate, and use the following tables to determine the appropriate wire, conduit and fused disconnect requirements.

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

Figure 8-1: Field Wiring Requirements



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

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.

Table 8-1: Conduit and Wire Size

**Amp Draw	Conduit Size (Ø mm)			
	Incoming Wire Size		2 Conductor and Ground	3 Conductor and Ground
	AWG	KcMIL (mm ²)		
0-12.5	14	2.5	20	25
12.6-16.7	12	4.0	25	32
16.8-25.0	10	6.0	25	32
25.1-41.7	8	10.0	32	32
41.8-54.2	6	16.0	32	40

Table 8-2: Conduit and Wire Size

**Amp Draw	Conduit Size (Ø mm)		
	Incoming Wire Size		4 Conductor and Ground*
	AWG	KcMIL (mm ²)	
0-10.0	14	2.5	32
10.1-13.3	12	4.0	32
13.4-20.0	10	6.0	32
20.1-33.3	8	10.0	40
33.4-43.3	6	16.00	40
43.4-56.7	4	25.0	50

* For use with star wiring for 240V heaters used with 415V supply.

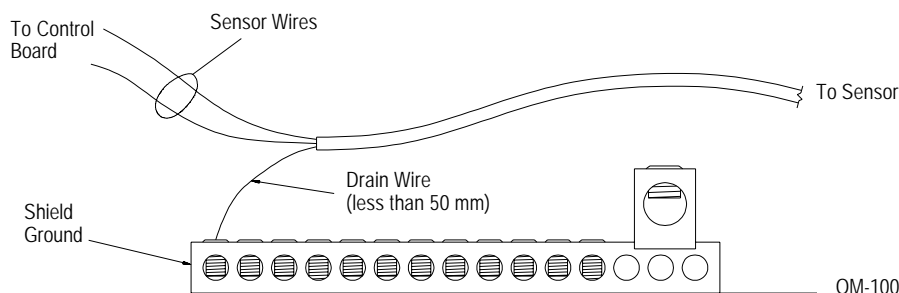
** Refer to Amp Draw on Rating Plate.

Table 8-3: Fuse/Breaker Requirements

**Amp Draw	Breaker Size
0-11.3	13
11.4-13.9	16
14.0-17.4	20
17.5-19.2	25
19.3-21.7	25
21.8-27.8	32
27.9-34.8	40
34.9-43.5	50
43.6-52.5	63

**Refer to Amp Draw on Rating Plate.

Figure 8-2: Shielded Cable Drain Wire Connection to Earth Bar



For maximum E.M.C. effectiveness, all humidity, temperature and air flow controls should be wired using multi-conductor shielded plenum-rated cable with a drain wire for the shield. The drain wire should be connected to the shield ground terminal with its length kept to less than 50 mm.

ELECTRICAL SPECIFICATIONS AND CAPACITIES/DIMENSIONS

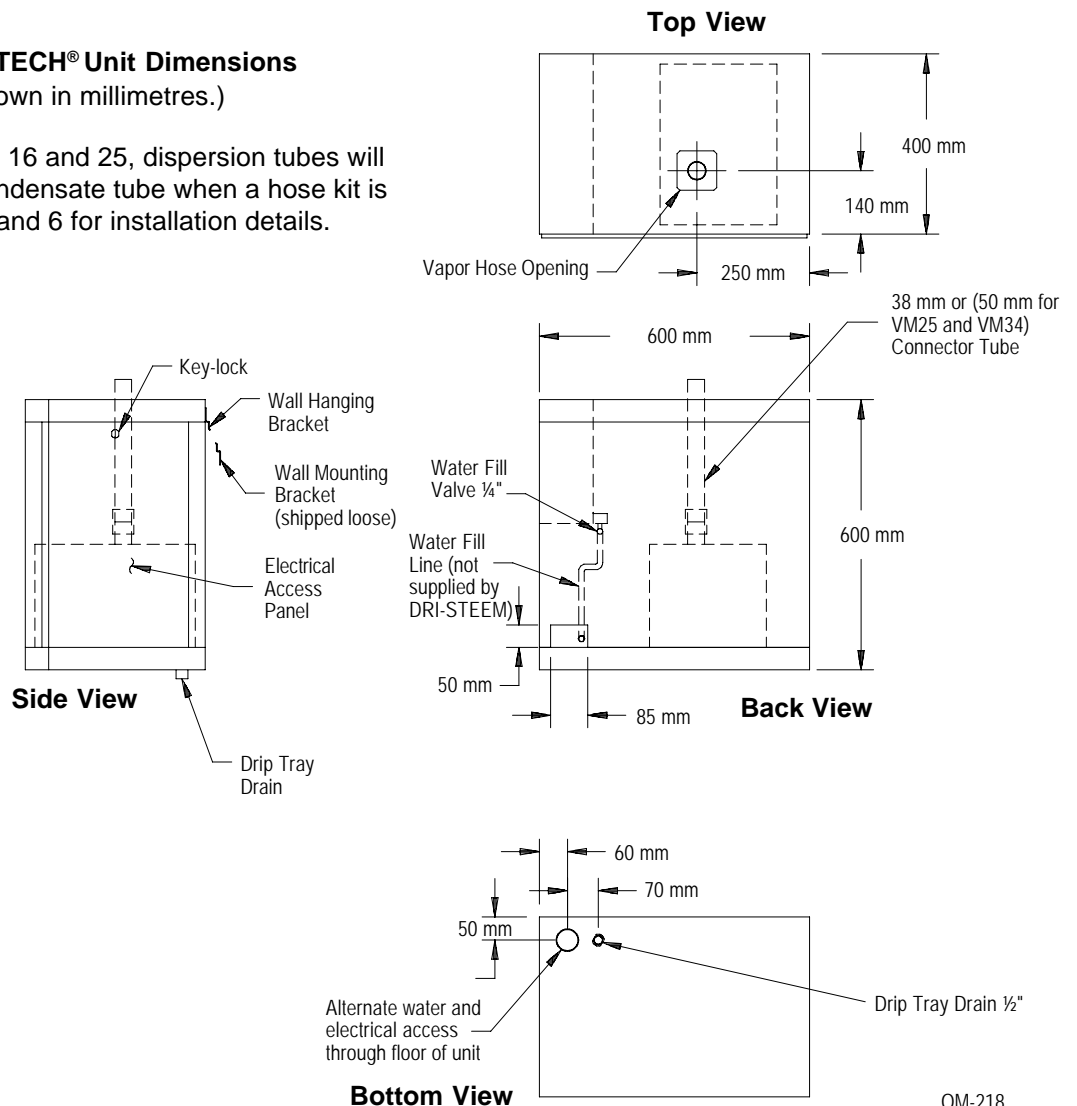
Table 9-1: Electrical Specifications and Capacities

	VM2	VM4	VM6	VM8	VM10	VM12	VM16	VM21	VM25	VM34
Operating Weight	58 kg	60 kg	70 kg	71 kg	71 kg	73 kg	73 kg	48	78 kg	82 kg
Shipping Weight	47 kg	50 kg	52 kg	53 kg	53 kg	54 kg	54 kg	26 kg	57 kg	61 kg
230V/1	8	16	24	31.9	39.9	47.9	--	--	--	--
kW	1.84	3.68	5.52	7.36	9.2	11.04	--	--	--	--
Output kg/h	2.5	5	7.5	10	12.5	15	--	--	--	--
400V/3	--	8.7	13	17.3	15.2	17.3	23.1	30.3	36.1	49.1
kW	2	4	6	8	10	12	16	21	25	34
Output kg/h	2.7	5.4	8.2	10.9	13.6	16.3	21.8	28.6	34	46.3

Figure 9-1: HUMIDI-TECH® Unit Dimensions

(All measurements shown in millimetres.)

Note: For models VM 16 and 25, dispersion tubes will be equipped with a condensate tube when a hose kit is used. See pages 4, 5 and 6 for installation details.



AREA-TYPE APPLICATION USING SPACE DISTRIBUTION UNIT (SDU)

The SDU converts a HUMIDI-TECH® duct humidifier into an area-type humidifier. Instead of the steam dispersion tube being located inside an air duct, the dispersion tube is built into the fan unit. A fan draws in room air and blows it across the dispersion tube, where it absorbs the moisture and disperses it into the room. The space distribution unit can be used on all models. A condensate drain from the dispersion tube is required on all applications (see figure 11-1 on page 11).

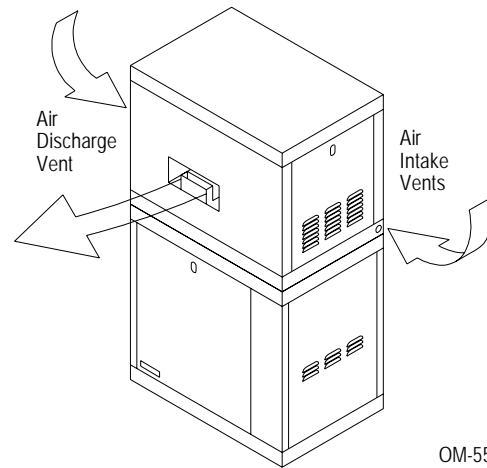
Mounting the SDU

The SDU may be placed directly on top of the HUMIDI-TECH cabinet or mounted on a wall. A wall mounting bracket and two 10 mm lag bolts are provided with each fan unit. (See page 4 for mounting instructions.)

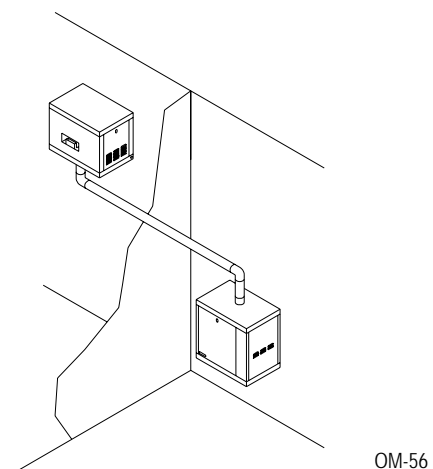
Rise and Carry

As steam is discharged from the humidifier, it quickly cools and turns to a visible fog that is lighter than air. As this fog is carried away from the humidifier by the airstream, it tends to rise toward the ceiling. If this fog contacts solid surfaces (columns, beams, ceiling, pipes, etc.) before it disappears, it could collect and drip as water. The greater the space relative humidity, the higher and farther the fog will carry and rise in the space before disappearing. The distance the fog travels before it disappears is given in table 11-1 on page 11.

This optional fan unit mounts on top of the HUMIDI-TECH cabinet.



If necessary, fan unit can be mounted on a wall, allowing the HUMIDI-TECH to be remotely located.



AREA-TYPE APPLICATION USING SDU

Table 11-1 lists the recommended minimum vertical (RISE) and horizontal (CARRY) clearances for area-type humidifiers at 50% and 60% RH of the space.

The SDU contains a 735 m³/h blower and a 300VA transformer to power the blower (230/1/50). A wiring diagram of the SDU is included with the unit.

On a call for humidity, the humidifier will begin producing steam and the start relay will energize the SDU blower. The humidifier will continue to produce steam until the humidistat is satisfied. The blower will continue to run until the time-delay switch shuts it off.

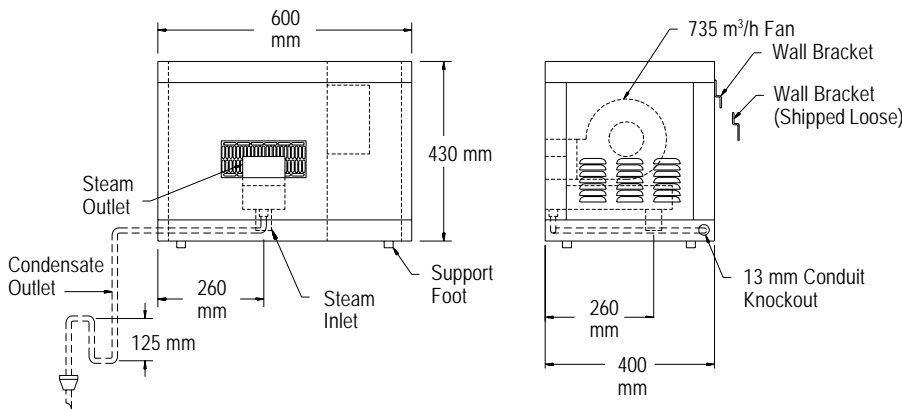
Once the SDU is mounted, panel access keys should be removed and secured elsewhere.

Table 11-1: SDU Visible Fog Travel

Humidifier Size	50% RH		60% RH	
	Rise (m)*	Carry (m)**	Rise (m)*	Carry (m)**
VM4	0.30	0.90	0.30	1.10
VM6	0.30	1.10	0.45	1.10
VM8	0.45	1.50	0.60	1.50
VM10	0.45	1.85	0.60	1.85
VM12	0.60	2.15	0.60	2.45
VM16	0.60	2.45	0.60	2.60
VM25	1.55	4.60	1.55	4.90
VM34	1.85	6.10	2.15	6.70

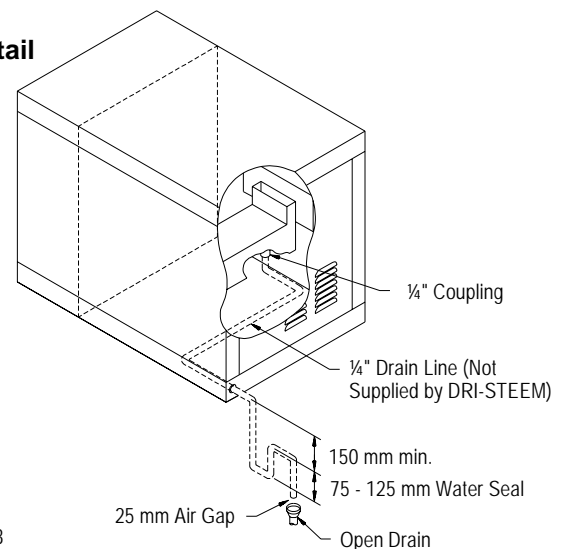
* Rise: Height visible fog rises above discharge grill of humidifier.
 ** Carry: Horizontal distance visible fog travels from humidifier.
 Surfaces cooler than ambient or objects directly in the path of visible fog discharge may cause condensation and dripping.

Figure 11-1: SDU Mechanical Detail



OM-54

Figure 11-2: SDU Drain Detail



OM-208

START-UP AND OPERATION

Introduction

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

Start-up and Checkout Procedures

Mounting

Check mounting to see that the unit is level and securely supported before filling with water.

Piping

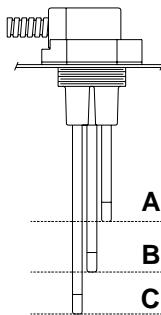
Verify that all piping connections have been completed as recommended and that water pressure is available.

Electrical

Verify that all wiring connections have been made in accordance with all governing codes and the enclosed HUMIDI-TECH® wiring diagram.

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

Figure 12-1: Electronic Probe Control for Maintaining Proper Water Level (HUMIDI-TECH Only)



OM-211

A simple three-probe conductivity sensor cycles a solenoid-operated water fill valve to maintain the proper water levels.

Liquid Level Controls

When the power is first turned on, the solenoid-operated water fill valve will open, filling the evaporating chamber. Filling will continue until water reaches level A, then after a two-second delay, the fill valve will close. To ensure that a water seal is created in the overflow hose, disconnect probe plug and cable from probe rod assembly (located on cover,) allowing the fill valve to re-energize and overflow humidifier tank. This process will take only seconds; probe plug and cable must then be reconnected. A call for humidity will then energize the heating element.

Water Refill

During operation, the water line will drop to level B. At this time the fill valve will open, and will remain open until the water line returns to level A.

Heater Protection

Should the water line ever drop to level C, the heaters will de-energize and remain OFF until the water level has been restored to level C. This feature provides heater protection in the event of a low-water condition.

Surface Skimmer

Each time the evaporating chamber refills, the upper 6 mm of water is immediately drained off through the skimmer. This carries away the mineral residue formed during the previous evaporating cycle. This skimming action effectively removes most of the mineral concentration in much the same way as the surface blowdown does in a steam boiler. This simple device greatly reduces the frequency of cleaning the evaporating chamber.

Drain/Flush Feature

This control module contains an integral electronic timer which tracks the humidifying time of the unit. When this accumulated time reaches what has been set in the timer, the drain/flush cycle is activated.

Upon activation, the following sequence occurs:

1. The drain valve opens and begins to drain surface water and minerals from the evaporating chamber.
2. When the height of the water drops to the "REFILL" level, the fill valve opens.
3. The drain and fill valves remain open for ten more minutes, thus flushing the chamber.
4. The drain valve then closes, the chamber refills, and the fill valve closes. The timer begins to track the time as the unit resumes normal operation.

Test Cycling the Drain/Flush System

The timer board contains four pairs of terminal pins which are marked 20, 40, 80 and "T" (TEST). To test:

1. Pull the pin block off the pair of pins in use, move it to the "T" pair, and push it on.
2. Set the humidistat high enough so that unit will remain "on call" for at least one hour.
3. After about 35 minutes of operation, a drain/flush cycle will take place.
4. Once the test cycle is completed, move the pin block back to the desired pair of pins. Failure to do so will result in a drain/flush cycle every 35 minutes.

START-UP AND OPERATION

VAPOR-LOGIC[®]₂

The VAPOR-LOGIC₂ key pad allows the adjustment of surface water bleed-off amount to accommodate the water condition. This adjustment varies the duration of the overfill with each water fill cycle.

The adjustable skim time allows for an extended period of time (2 to 40 seconds) to reduce surface mineral accumulation. In addition to controlling the water level, VAPOR-LOGIC₂ determines when the heaters are energized. If there is a call for humidification, even during the fill cycle, the heating elements will stay on to provide continuous output.

For more information regarding the operation of the VAPOR-LOGIC₂ microprocessor, see the VAPOR-LOGIC₂ *Installation Instructions and Maintenance Operations Manual*.

LW415

The electronic timer comes factory-set for drainage after 40 hours of operation time. Alternate settings of 20 hours and 80 hours can be made. See wiring diagram(s) attached to the unit for timer board location and instructions for changing the timer setting.

HUMIDI-TECH[®]

Make-up Water Piping

Use cold or hot make-up water. If the water pressure is above 410 kPa and/or water hammer would be objectionable, a pressure-reducing valve or shock arrester should be installed. Even though the HUMIDI-TECH has an internal 25 mm air gap, some local codes may require a vacuum breaker.

Important: Minimum water supply pressure is 170 kPa.

HUMIDI-TECH DI

Make-up Water Piping

In this unit the electronic probe control is replaced by a float valve and a float operated low water cut-off switch.

The basic water level system and circuit for heater protection in the event of a low-water condition is common to all DI humidifiers and can be found in the wiring diagram located inside the removable front panel on the right-hand side of the unit.

Control Circuit

- a) Adjust humidistat to "call" setting.
- b) Open shut-off valve on water supply line. Unit should begin filling with water through the fill valve.
- c) Shortly before the fill valve shuts off, the heater cut-off switch will "make". When this switch makes, the heating element contactor(s) will be actuated after a ten-second delay. A time delay relay prevents contactor chatter due to bouncing of heater cut-off float.
- d) Check heater cut-off circuit.
 1. Close manual top valve on water supply.
 2. Open ball valve and start draining unit.
 3. When water level drops past switching level on the heater cut-off float, the heating element contactor(s) will drop out.
 4. When step 3 has been satisfactorily completed, close drain valve.
- e) Check function of field-installed safety controls, such as the fan proving switch. Contactor(s) should drop out when any proving switch is "open".
- f) Check heater draw by testing and recording voltage and amperage in each phase. Readings should match name plate readings; name plate is located on the humidifier housing.
- g) Inspect installations for steam or air leaks while operating the HUMIDI-TECH. Any leaks should be sealed.

Caution: Allow unit to cool before performing any maintenance. Manually open the drain valve and the fill valve will be energized. Let the fill water run until the tank is cooled then shut off the contractor installed supply water valve.

HUMIDI-TECH[®]

Mineral Precipitate

As evaporation takes place in a standard HUMIDI-TECH unit, the minerals dissolved in the water

Caution: Overtightening cover will cause leaks.

All cover knobs are turned down at the factory until the bottom of the knob makes contact with the flange, then one half turn further. If more compression is required, turn all knobs a half turn more. Do not turn knobs more than a half turn before identifying that a leak still exists.

MAINTENANCE

come out of solution and a portion of these minerals float on the water surface. If not removed, these minerals will eventually form a sludge and settle to the bottom of the evaporating chamber.

Cleaning once or twice a season is usually adequate, assuming the water has a hardness of up to 250 mg/l.

To dramatically reduce mineral accumulation inside the evaporating chamber use softened water for make-up water source. Using softened water will reduce cleaning frequency to once every several years in most cases.

Cleaning the Evaporating Chamber

The heating element itself is self cleaning. The mineral buildup on the element flakes off after reaching a thickness of about 2 mm, and settles to the bottom of the chamber.

Note: Before this scale accumulation builds up to the underside of the heating element, it must be removed. Failure to do so may result in premature heating element burn-out.

To Service:

1. Shut off electrical power to the unit. Using the key, unlock and remove the large front panel. Drain the evaporating chamber by manually opening the "DRAIN" valve. Open the lever on the valve to the "MANUAL" position and lock in place.
2. Disconnect the connector tube on top of the evaporating chamber, the flexible hose from the overflow pipe, and the flexible hose from the drain. Install a rubber plug into tank drain nipple. All connections should be removed on the evaporating chamber. **NOTE: DO NOT DISCONNECT THE FLEXIBLE POWER ELECTRICAL CONDUIT.**
3. Disconnect tank-grounding wire.
4. Slide the evaporating chamber out of the unit on the sliding track. Remove the cover of the chamber, raise, and slide into holding slots.
5. Remove the evaporating chamber, dump out mineral residue.
6. Unscrew the probe housing, and remove any mineral build-up accumulated in the housing.
7. Clean the probe-rod assembly. Scrape off build-up on rod tips and brush with sand paper or steel wool to remove mineral residue.
8. Replace chamber onto the sliding track.
9. Secure the chamber cover making sure the chamber is sealed. Push chamber back into the unit on the

slide track.

10. Reconnect the tube and slip coupling, the overflow hose, the drain hose, and connect tank-grounding wire.
11. Move drain valve lever back to "AUTO" .
12. Replace the front panel and lock. Turn on the electric power. HUMIDI-TECH is again ready to humidify.

Off Season Shut-Down

1. Switch off electrical power.
2. Shut off water supply to make-up valve.
3. Drain evaporation chamber, and clean if necessary (see "Cleaning the Evaporating Chamber" above).
4. Leave chamber dry, the power "OFF," and the water shut-off valve closed until the next humidification season.

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 simple maintenance steps that should be followed to ensure all parts of the unit are in good working order.

To Service:

1. Shut off electric power.
2. Shut off water supply to make-up valve.
3. Unlock and remove front panel.
4. Make sure the evaporating chamber is drained by manually opening the drain valve.
5. Check the condition of the overflow and drain hoses.
6. Remove the evaporating chamber as follows: Disconnect the flexible connector tube on top of the evaporating chamber, the flexible overflow hose, and the flexible drain hose. All connections should be removed at the evaporating chamber. **NOTE: DO NOT DISCONNECT ANY OF THE ELECTRICAL CONDUITS.**
7. Slide the evaporating chamber forward on the track. Remove the cover of the chamber, raise and slide into holding slots.

MAINTENANCE

8. Check operation of the float valve, inspect valve seat and heater cut-off.
 9. Inspect the heating elements. Replace if inoperative.
 10. Inspect the evaporating chamber. Clean if necessary.
 11. Replace the chamber cover and slide chamber back into unit.
 12. Reconnect connector tube and flexible hoses.
 13. Return drain valve handle to closed position.
 14. Replace front panel and turn on electric power.
 15. HUMIDI-TECH® DI is again ready to humidify.
2. Remove front panel.
 3. Shut off water supply to make-up valve.
 4. Drain evaporating chamber by manually opening the drain valve.
 5. Replace front panel.
 6. Leave chamber dry, the power "OFF", and water shut-off valve closed until the next humidification season.

Off-Season Shut-Down Procedure

1. Switch off electric power.

HUMIDI-TECH® TROUBLE-SHOOTING GUIDE

PROBLEM	CONTROL PANEL LIGHTS			POSSIBLE CAUSE	RECOMMENDED ACTION
	FILL	READY WATER	DRAIN		
Humidifier will not heat	Off	Off	Off	Control transformer	Verify control voltage across secondary leads of transformer. Reset transformer circuit breaker.
	Off	On	Off	Humidistat is not calling	Set humidistat to call. Inspect for faulty humidistat.
				Safety controls open	Check safety controls, air flow switch, high limit humidistat, etc.
				Faulty control board	Verify control voltage between terminals H & N.
			Probe head deterioration*	Replace probe head.	
Humidifier will not fill	On	Off	Off	No water pressure at valve	Check water supply/shut off valves.
				Faulty water fill valve	Verify action of fill water solenoid valve by turning control module switch from standby to normal op. Audible click should be heard as solenoid operates.
				Plugged strainer	Check strainer.
				Plugged valve	Check valve.
				Faulty control board	Verify control voltage across terminals H & N.
Humidifier does not stop filling	On	Off	Off	Lack of tank to probes electrical continuity. Water conductivity 100 μ S/cm (35 mg/l) min.	Jumper wires brown to yellow. If water stops, verify tank ground; check water supply conductivity; then consult factory.
				Fill valve is stuck open	Check valve for foreign matter.
	On	Off	On	Auto-drain mode	Check for correct water flow, through valve, note arrow. Wait for auto sequence to end.
Low output	Off	On	Off	Electric drain valve not seating	Correct cause of leakage or replace valve.
	Off	On	Off	Fill valve is stuck open	Check valve for foreign matter.
Unit short cycles	On & Off	On	Off	Probes may be incorrectly wired or need cleaning	Confirm that unit is wired per diagram. Clean probe rod tips with steel wool.
Reduced or no output even though water is at the proper level	Off	On	Off	Heater malfunctioning	Verify that proper voltage is being applied to heaters. Check heater (amp draw and compare to wiring diagram ratings).
				Malfunctioning control system	Heater contactor not functioning; replace. Service fuses blown. Auxiliary limit controls not allowing system to operate (duct humidistat, air flow proving switch, etc.). Reset, replace or calibrate as required. Faulty or inaccurate humidistat, replace or calibrate.

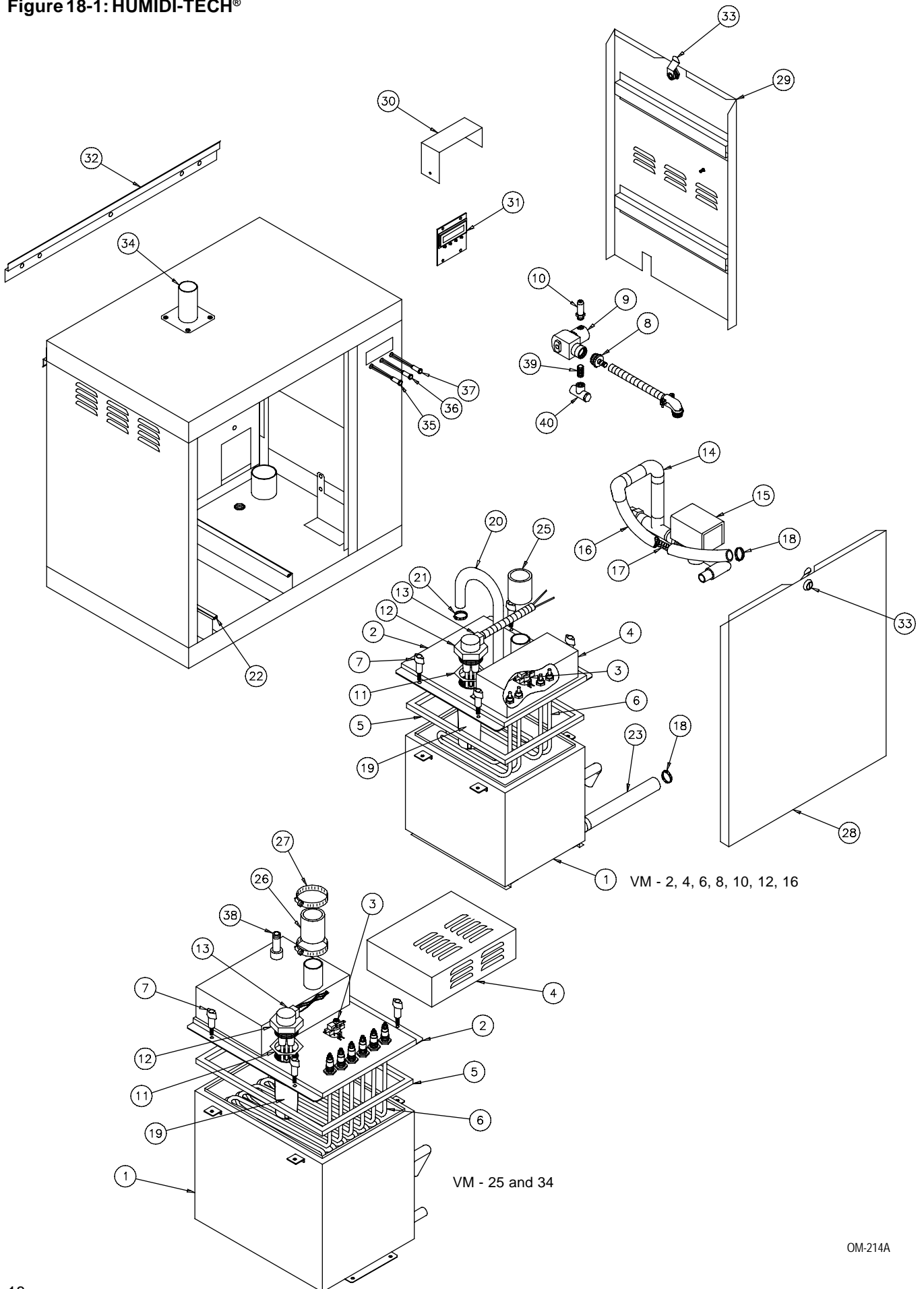
*Probe rod corrosion or probe head material aging may cause level control system failure. This generally does not occur in the first two years of operation.

HUMIDI-TECH® DITROUBLE-SHOOTING GUIDE

PROBLEM	READY WATER	POSSIBLE CAUSE	RECOMMENDED ACTION
Humidifier will not heat	Off	Control transformer Humidistat is not calling Safety controls open Low water float switch	Verify control voltage across secondary leads of transformer. Reset transformer circuit breaker. Set humidistat to call. Inspect for faulty humidistat. Check safety control, air flow switch, high limit humidistat, etc. Verify control voltage from float switch and transformer secondary common.
Humidifier will not fill	Off	No water pressure at valve Malfunctioning water float valve Plugged float valve	Check manual water supply. Valve, minimum 200 kPa water pressure. Check to make sure that valve float & stem moves freely. Check float valve seat.
Water float valve does not close	On	Open drain valve Manual drain valve not closed Malfunctioning float valve Water passing into overflow stand pipe Float valve stuck	Obstruction in drain valve will not allow complete closure, clean or replace valve. Close drain valve. Float ball has water leak. Float valve seat defective, replace. Readjust float valve rod, so water level reaches 5-10 mm from over flow edge when water is at ambient or cold state. Excessive water pressure, 680 kPa maximum. Obstruction will not allow float valve to seat properly, clean or replace with new seat.
Reduced or no output even though water is at the proper	On	Heater malfunctioning Malfunctioning control system Time delay/interlock relays Low water cut-off switch	Verify that proper voltage is being applied to heaters. Check heaters (amp draw and compare to wiring diagram ratings) Heater contactor not functioning, replace. Service fuses blown. Auxiliary limit controls not allowing system to operate (duct humidistat, air flow proving switch, etc.). Reset, replace or calibrate as required. Faulty or inaccurate humidistat, replace or calibrate. Delay time is factory set at 10-15 seconds. Check delay setting. Check for proper operation.

REPLACEMENT PARTS

Figure 18-1: HUMIDI-TECH®



REPLACEMENT PARTS

Table 19-1: HUMIDI-TECH® (see figure 18-1)

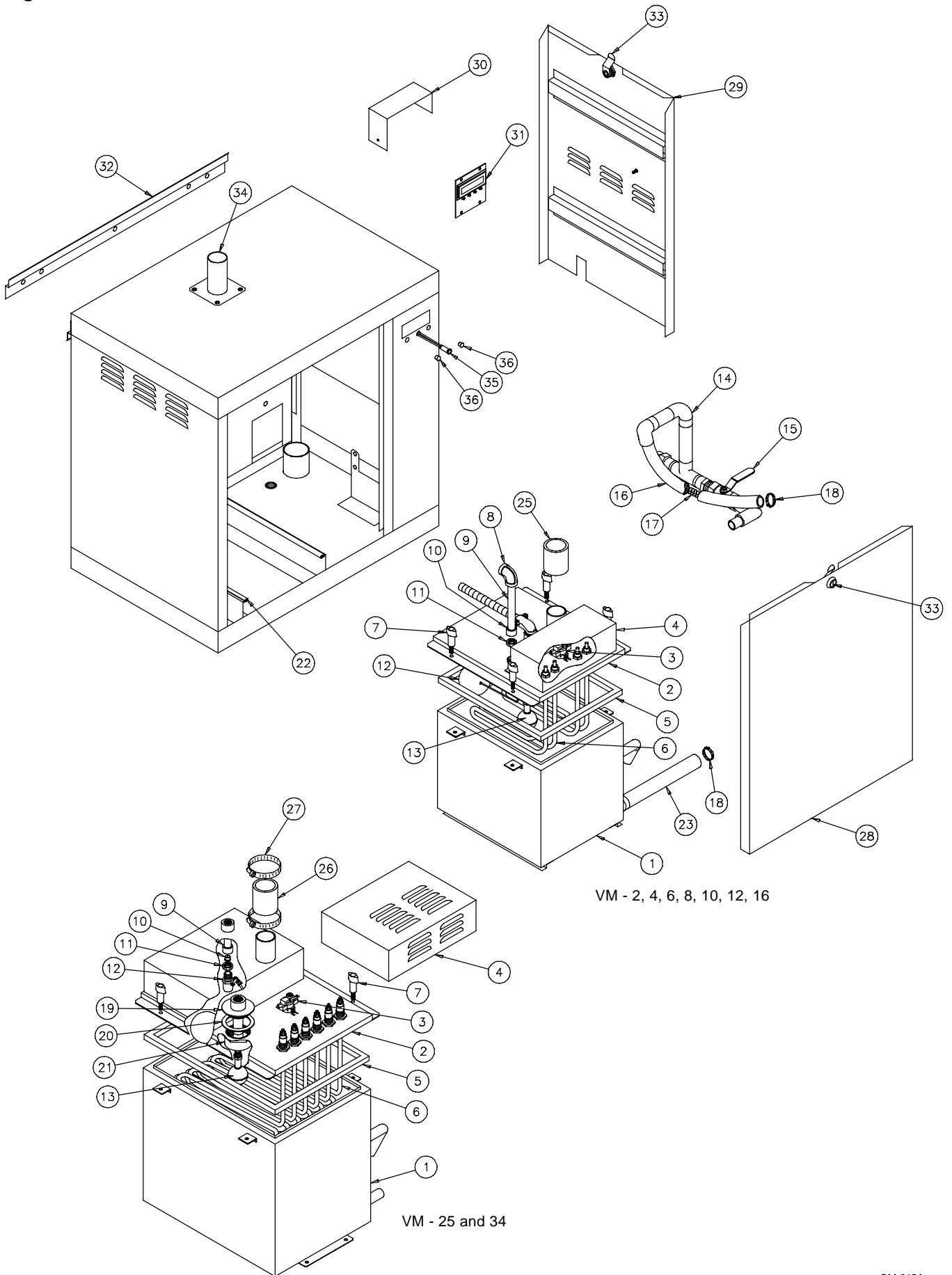
No.	Description	Qty.	Part No.
1	Tank	1	160012*
2	Cover	1	*
3	Thermo Cut-Out	1	409560-001
4	Cover, Heater Terminal	1	160750*
5	Gasket, Cover	1	160695*
6	Heater	*	409600*
7	Knob, T-Handled Utility	4	700725
8	Connector, 10mm flex.	1	407127-038
9	Valve, Solenoid Fill	1	505084
10	Orifice, Fill Valve	1	160225*
11	Gasket, Probe	1	309750-003
12	Probe Assembly	1	*
13	Probe Plug Wire Assembly, 610mm	1	406050*
14	Drain Assembly	1	180520*
15	Valve, Electric Drain	1	505400-001
16	Hose, Overflow	*	307020-002
17	Spring, Overflow Hose	1	307025
18	Hose Clamp, 19mm ID	4	700560-075
19	Probe Housing, Nylon	1	308500
20	Hose, 13mm Fill (533mm Long)	*	307020-001
21	Hose Clamp, 13mm ID	2	700560-001
22	Duro Strip, 279mm Nylon	2	309980
23	Hose, Drain	*	307020-002
24	Stopper, Rubber (not shown)	1	309960
25	Slip Coupling with O-Rings, 38mm (VM 2, 4, 6, 8, 10, 12, 16)	1	162726-001
26	Hose Cuff, 51mm ID x 76mm (VM 25, 34)	1	305391-0030
27	Hose Clamp, 51mm ID (VM 25, 34)	2	700560-200
28	Panel Weld, Front	1	160310-100
29	Cover Weld, Electrical	1	160320-100
30	Bracket, Electrical Cover Key Lock	1	120746
31	Display Board, JPC LW440	1	408651
32	Wall Bracket	1	160150-101
33	Lock, Key	2	700700
34	Connector Weld	1**	160350*
35	Light, Amber (FILL)	1	409520-003
36	Light, Green (READY WATER)	1	409520-002
37	Light, Red (DRAIN)	1	409520-001
38	Nipple, x 50 mm	1	250210-002
39	Nipple, Brass Close	1	250013
40	Strainer, ¼" Sediment	1	300050

* Specify humidifier model and serial numbers when ordering.

** Shipped loose except with bonding bracket.

REPLACEMENT PARTS

Figure 20-1: HUMIDI-TECH® DI



REPLACEMENT PARTS

Table 21-1: HUMIDI-TECH® DI (see figure 20-1)

No.	Description	Qty.	Part No.
1	Tank	1	160012*
2	Cover	1	*
3	Thermo Cut-Out	1	409560-001
4	Cover, Heater Terminal	1	160750*
5	Gasket, Cover	1	160695*
6	Heater	*	409600*
7	Knob, T-Handled Utility	4	700725
8	Elbow, 6mm 90° (VMDI 2-16)	1	200580
9	Pipe Weld, Fill Valve	1	*
10	Orifice, Fill Valve	1	160225*
11	Seal Ring, ¼" 18	1	306365
12	Float Valve Assembly	1	*
13	Float Switch, Stainless Steel LWCO	1	408420
14	Drain Assembly	1	180450*
15	Valve, ¾" Stainless Steel Ball	1	505000-001
16	Hose, Overflow	*	307020-002
17	Spring, Overflow Hose	1	307025
18	Hose Clamp, 19mm ID	4	700560-075
19	DI Conversion Weld, (VMDI 25, 34)	1	167786
20	Gasket, (VMDI 25, 34) Conversion Weld	1	160698
21	DI Housing, Nylon	1	167780
22	Duro Strip, 279mm Nylon	2	309980
23	Hose, Drain	*	307020-002
24	Stopper, Rubber (not shown)	1	309960
25	Slip Coupling with O-Rings, 38mm (VMDI 2, 4, 6, 8, 10, 12, 16)	1	162726-001
26	Hose Cuff, 51mm ID x 26mm (VMDI 25, 34)	1	305391-0030
27	Hose Clamp, 51mm ID (VMDI 25,34)	2	700560-200
28	Panel, Front	1	160310-100
29	Cover, Electrical	1	160320-100
30	Bracket, Electrical Cover Key Lock	1	120746
31	Display Board, JPC LW440	1	408651
32	Wall Bracket	1	160150-001
33	Lock, Key	2	700700
34	Connector Weld	1**	160350*
35	Light, Green (READY WATER)	1	409520-002
36	Plug, VMDI Pilot Light Hole	2	409525

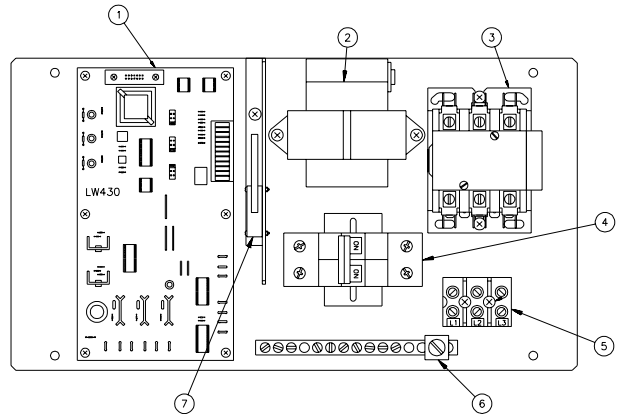
* Specify humidifier model and serial numbers when ordering.

** Shipped loose except with bonding bracket.

REPLACEMENT PARTS

Table 22-1: Subpanel for HUMIDI-TECH® and HUMIDI-TECH DI

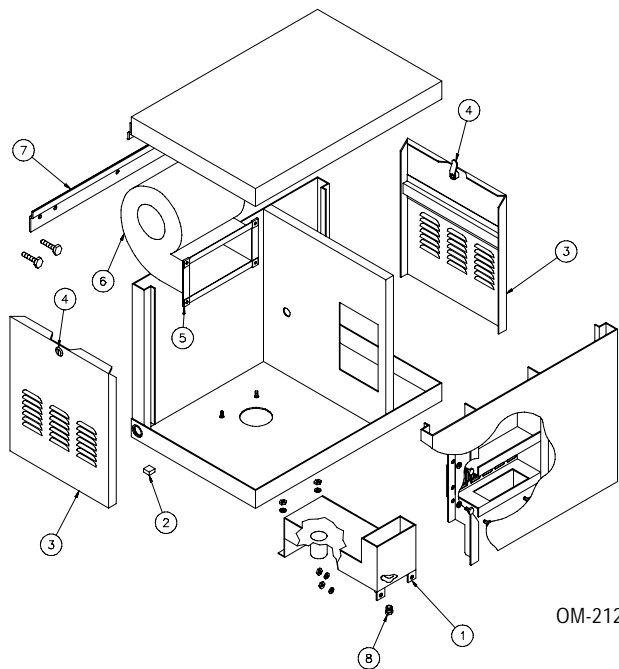
No.	Description	Qty.	Part No.
1	Microprocessor Board, LW430	1	408641
2	Transformer	1	
3	Contactor	1	407001-005
4	Circuit Breaker, 2-Pole 4 amp	1	406775-001
5	Terminal Block, 3-Pole contact	1	408300-002
6	Grounds Bar	1	408255
7	Switch, Door Interlock #2HBA-5	1	408475



OM-1032

Table 22-2: Space Distribution Unit (SDU)

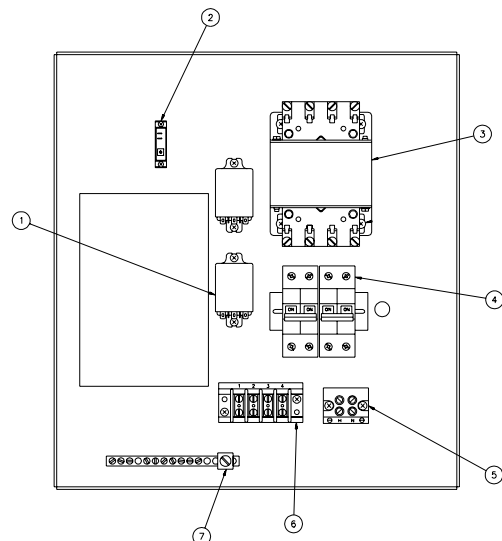
No.	Description	Qty.	Part No.
1	Dispersion Chamber Weld, 38mm	1	160441
1	Dispersion Chamber Weld, 51mm	1	160442
2	Protective Bumpers	4	310170
3	Door Weldment	2	160430-100
4	Lock, Cabinet Door	2	700700
5	Nut Retainer Assembly	4	700650
6	Blower, 296/435 CFM	1	409540-001
7	Wall Bracket	1	160150-101
8	Plug, ¼" Yellow Brass	1	203570



OM-212-1

Table 22-3: SDU Subpanel

No.	Description	Qty.	Part No.
1	Deltrol Relay, 2-Pole 24V	2	407900-001
2	Time delay 24V	1*	408440-001
3	Transformer	1**	
4	Circuit Breaker, 2-Pole, 4 amp	2	406775-004
5	Terminal Block, Pressure Contact, 2-Pole	1	408300-001
6	Terminal Block, 4 Position	1	408250-001
7	Grounding Bar	1	408255



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* For SDU without LW430

** Refer to individual order for correct selection

MAINTENANCE SERVICE RECORD

DATE INSPECTED	PERSONNEL	OBSERVATION	ACTION PERFORMED

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.

DRI-STEEM SHALL NOT, UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS, REVENUE OR BUSINESS) OR DAMAGE OR INJURY TO PERSONS OR PROPERTY IN ANY WAY RELATED TO THE MANUFACTURE OR THE USE OF ITS PRODUCTS. The exclusion applies regardless of whether such damages are sought based on breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory, even if DRI-STEEM has notice of the possibility of such damages.

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

Continuous product improvement is a policy of DRI-STEEM therefore, product features and specifications are subject to change without notice.

DRI-STEEM[®]
HUMIDIFIER COMPANY



14949 Technology Drive • Eden Prairie, MN 55344 USA
Telephone: +1 612 949 2415 Fax: +1 612 949 2933
E-Mail: sales@dristeem.com



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