

MT500A SERIES DEHYDRATOR

USER MANUAL

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MT500A SERIES DEHYDRATOR USER MANUAL

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General Information Section 1

1.1 Introduction

This manual contains the information you need to install, operate and maintain your MT500A Series DryLine® dehydrator. Please take the time to read this manual before attempting to operate or service the unit.



1.2 Description

MT500A Series dehydrators provide dry air for pressurizing medium (up to 120 cubic feet, or 2830 liters, in volume) antenna and transmission line systems. The dehydrators produce -50°F (-45°C) dew point dry air at nominal rate of 0.5 standard cubic feet (14 liters) per minute (SCFM).

Each dehydrator consists of an electrically driven air compressor, a membrane dryer assembly, an automatic transmission line pressure sensing system, and alarm outputs housed in a rigid metal chassis. It is designed to mount directly to the rack, directly on a wall, or as a free-standing unit. The front panel features a control interface with display for alarms and pressure. For easy serviceability, power connections, alarm output connections, and all filter elements are accessible from the outside or through easy-to-access service panels.

The MT500A maintains transmission line pressures from 2.0 to 5.0 psig (14-34 kPa). It is intended for standard microwave antenna applications and any other transmission line pressurization requirement that supports a medium pressure limit.

1.3 Theory of operation

The MT500A series of DryLine® dehydrators, while similar in moisture removal technology, operates differently than some of the DryLine® series of dehydrators. In order to maintain a positive constant level of pressure to medium air volume systems, and to maintain an acceptable dryness level in the product air stream, a downstream pressure sensor is utilized for controlling the operation of the unit. This feedback controlled sensor prompts the unit to engage at 2.0 psig and shut down at 5.0 psig. In addition to monitoring the downstream flow, the system is also set up to utilize the downstream flow to provide the dry air for the feedback loop. The feedback loop is necessary to maintain the dryness of the membrane cartridge and will consume a small percentage of the air supplied by the dehydrator.

During normal operation, the bleed air in the feedback loop will cause the pressure to slowly drop in the downstream air flow, and the MT500A compressor will cycle automatically. These cycles will take place regardless of the system volume or condition of the transmission line the dehydrator is connected to. The rate of these cycles, however, will vary.

When connected to a normal system, the dehydrator's duty cycle should not exceed 10% and will maintain the system pressure between 2.0 psig and 5 psig. If the duty cycle significantly exceeds 10%, check the system for leaks. When open to atmosphere, the dehydrator will run continuously and provide approximately 0.5 SCFM.

The display will also reflect a pressure between 0 and 5.0 psig while the output flow is between 0 and 0.5 SCFM. The pressure sensor measures pressure beyond the flow control orifice and will show the actual pressure in the transmission lines (or to the distribution manifold).

1.4 Alarms

The MT500A offers Low Pressure, Compressor Pressure and Power Fail alarms as a standard feature. Alarm conditions are indicated on the display. Alarms are output as alarm conditions are indicated on the display. Alarms are output as a common summary alarm, with a form C dry contact. The alarm is set for continuity on alarm.

1.4.1 Multiple Alarm Option

This optional assembly is designed to provide the additional High Humidity alarm to Andrew Dehydrators. All alarms are Form C dry contacts and are factory set for continuity at alarm (mains power fail alarm opens at alarm).

This optional assembly will also indicate discrete alarms on the display, and provide individual contacts and connections for discrete alarms.

The external alarm monitoring system (supplied by others) is connected to the terminal strip located on the rear of the cabinet. A small slotted screwdriver is necessary to make the connections.

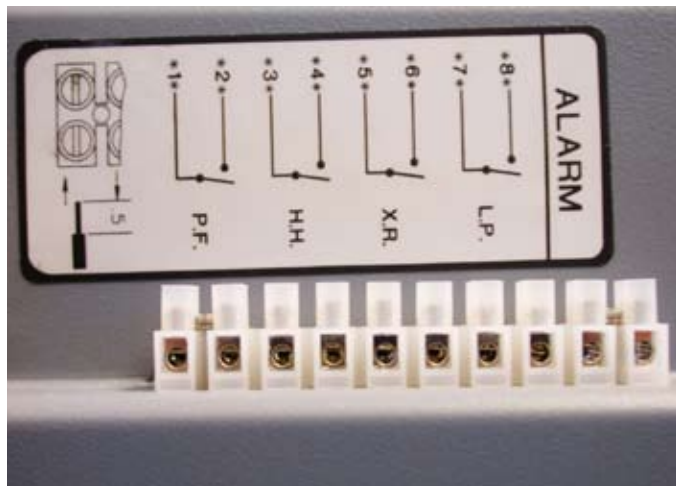


Figure 1

<u>Term.</u>	<u>Function</u>	<u>Wire Color</u>
1	Power Fail Com	Black
2	Power Fail Alarm	Red
3	Humidity Com	Green
4	Humidity Alarm	Brown
5	Dryer Press Com	Blue
6	Dryer Press Alarm	White
7	Low Press. Com.	Gray
8	Low Press. Alarm	Orange

Alarm Definitions:

Power Fail:

Activates open when power is removed from the dehydrator. This includes turning the power off at the switch.

High Humidity:

Activates when system or dehydrator output humidity rise above 7.5% relative humidity. At initial installation, this alarm will continue to alarm until the system has been properly purged.

Compressor Pressure (X.R.):

If upstream pressure drops below 35 psig during operation of the compressor, the system will display a Dryer Pressure low message. If this condition lasts for longer than 30 seconds, the alarm contact is triggered, alerting the alarm relay of the issue. This alarm can be reset by resetting the power of the unit.

Low Pressure:

If system pressure falls below the low-pressure trigger point, the low-pressure alarm sensor will activate an alarm contact. This alarm is an indication of a significant system leak or a dehydrator failure.

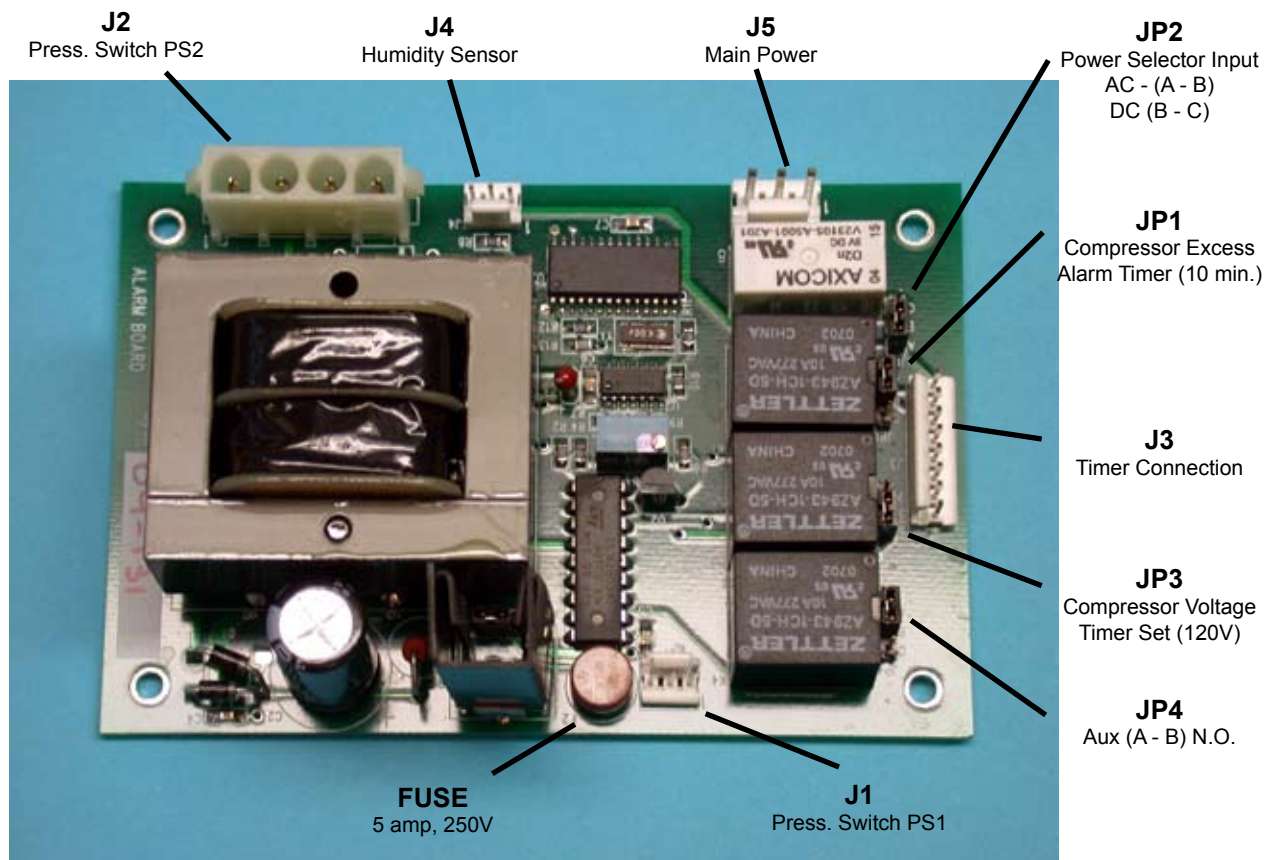
Changing Alarm Outputs:

<u>Alarm</u>	<u>Factory setting</u>	<u>Where To Reset</u>
Summary Alarm	Normally Open (N.O.)	TB3 on Control Board

Multiple Alarms

<u>Alarm</u>	<u>Factory setting</u>	<u>Where To Reset</u>
Low Pressure	Normally Open (N.O.) A-B	Low Pressure jumper JP4 on alarm PCB
Mains (Power)	Normally Closed (N.C.) B-C	Power Fail Jumper JP3 on Alarm PCB
Dryer Press	Normally Open (N.O.) A-B	Jumper JP1 on Run Alarm PCB
High Humidity	Normally Open (N.O.) A-B	Jumper JP2 on Alarm PCB

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1.5 Specifications MT500A Dehydrator

Output Pressure	0 - 35 kPa (2.0 - 5.0 psig)
Output capacity	14.0 SLPM (0.5 SCFM) (total, approx.)
Output Dew Point,	-45°C (-50°F) or better
Operating Temperature Range	1° to 40° C (33° to +104° F)
Low Pressure Alarm	6.9 kPa (1.0 psig)
Electrical Input	115/230 VAC, 50/60 Hz (auto detecting)
Output Connector	3/8" polytube compression
Dimensions	43.2 cm H x 26.4 cm W 32 cm D) (17" W x 10.4" H x 12.6" D)
Weight	16.55 kg (36 1/2 lbs)

Optional Alarms

High Humidity Alarm Set Point	7.5% RH, factory set
Power Fail Alarm	loss of input power

Installation Section 2

2.1 Unpacking and Inspection

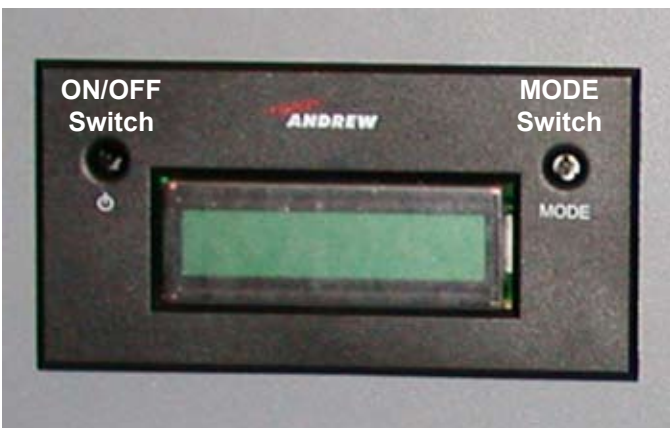
Open carton.



Remove the top piece of closed-cell foam packaging. Carefully remove the installation accessories and manual and dehydrator. Check the dehydrator for shipping damage such as dents or loose parts.

2.2 Controls and Displays

Familiarize yourself with the controls and displays prior to installing or testing the dehydrator.



ON/OFF Switch Toggles unit condition ON and OFF.

Mode Switch Toggles between display modes.



Mode 1: Displays pressure and total run hours.



Mode 2: Displays pressure and total run hours, flashes current condition.



Mode 3: Displays last ON and last OFF times.



2.3 Installing the Dehydrator

2.3.1 19" Rack Mounting/wall mounting or set on shelf

2.4 Power Connections

Confirm your dehydrator electrical input matches the available power.

115 VAC/230 VAC, 50/60 Hz
(auto detecting)
MT500A-81015
MT500A-81315

2.4.1 AC Power

AC units can be connected into a standard 15 Amp power receptacle of the proper voltage. Make sure the power circuit is properly grounded.

Two power cords are supplied, one 115 VAC American and one 230 VAC International (with striped leads).



CAUTION:

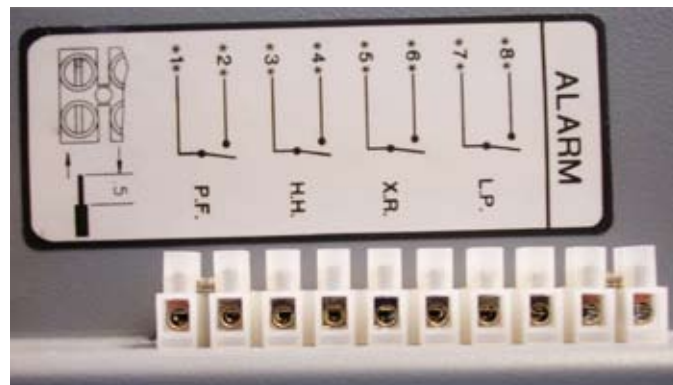
Proper electrical connection is required. It is suggested a licensed electrician be contracted to connect the AC wiring to the unit, if it is connected directly to the mains. Failure to properly connect the power wires could result in a dangerous electrical shock hazard.

Test the Dehydrator

Turn the dehydrator ON and check the output port on the rear of the unit to make sure air is flowing.

2.5 Connecting the Alarm Outputs

To connect the alarms, locate the terminal block (TB-1) on the rear of the unit.



Place alarm connection wires in proper terminals and tighten the screw on the terminal block.

The relay contacts are rated at 2 A (non-inductive), 30 VDC.

Optional alarms (if purchased) will also be located on this terminal (see section 1.4 for terminal numbers).

2.6 Connecting Dehydrator to the Transmission Line

CAUTION:

Check the antenna and transmission line system pressure rating before connecting the dehydrator to the system.

Using included Teflon tape pneumatic thread sealant, screw one of the included 3/8" compression fittings into the output bulkhead. There is an elbow and a straight compression fitting included with the unit.

Insert one end of the 3/8" poly tube feed line tubing into the compression fitting on the dehydrator output port. Tighten securely with a 9/16" wrench. Be careful not to over tighten. Connect the other end of the poly tube to the transmission line.

Note:

If the transmission lines have not been purged, continue with section 2.7. Otherwise proceed to section 3.

2.7 Purging the Transmission Line

Air in the transmission line system must be replaced with dry air to ensure satisfactory operation of the transmitted signal.

1. Determine the total system volume.
2. Divide the system volume by the flow rate of the dehydrator (30 SCFH) to determine the number of hours needed for one purge cycle.
3. Open the far end of the transmission line.
4. Operate the dehydrator for no less than three purge cycles.

If it is not possible to open the far end of the transmission line, follow these steps:

1. Connect the dehydrator to the transmission line and pressurize the system. The system pressure should reach 5.0 Psig.
2. Wait 15 minutes while the air absorbs moisture in the system, then disconnect the dehydrator from the transmission line and allow the air to vent.
3. Repeat steps 1 and 2 twelve times to purge the system.

Maintenance Section 3

3.0 Maintenance

The MT500A Dehydrator requires relatively little maintenance to ensure satisfactory operation over long periods of time. This section outlines the recommended annual preventive maintenance for the unit and the suggested overhaul for every 6000 hours of compressor operation.

3.1 Preventive Maintenance

The annual maintenance of a MT500A consists of a preventative maintenance inspection of the dehydrator and replacement of the foam air intake filter. These tasks can easily be performed in the field with the unit connected to the transmission line system and with only the front and side access doors opened for maintenance. In addition to the annual inspection, a complete overhaul is recommended every 6000 hours or sooner if local conditions warrant.



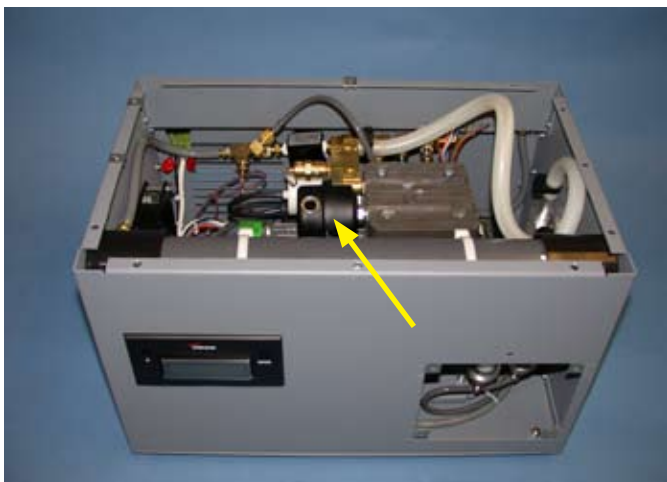
CAUTION:
Do not apply oil or other chemicals to the filter element.

Make sure the element is seated completely in the housing and then replace the cover. Discard the old element.

3.3 Annual Inspection

Warning:
Electrical Hazard! Unplug power cord before servicing unit.

Inspection includes checking for loose or damaged hoses, fittings and electrical connections. Open the top cover and front door and verify that there is no water build-up in the two filter bowls located inside the front cover of the dehydrator. There may be some droplets of water in the filter bowels (the lower portion of each bowl), but there should be only a small amount of liquid in either bowl.



3.2 Dehydrator Filter Element Replacement

Replace the air intake filter

The air intake filter protects the compressor from contamination and dust. Periodic replacement extends the life of the compressor. To gain access to the element, push in on the cover and rotate the house approximately 1/4 turn CCW. The filter is made of a fibrous material. It should be replaced once a year (or more frequently, if the operating environment is very dusty.)



If there is excessive water, refer to the troubleshooting section. Replacement of the filter elements in the water filter and coalescing filter is covered in the overhaul section of this manual.

Check the electrical connections.

Check the screw at the power input connector to ensure that the AC power cord is securely terminated. Check the screw-in alarm terminals to ensure that all wire connections are tight.

A loose or damaged connection may result in erratic operation and unnecessary downtime. Refer to the troubleshooting section if an electrical problem is encountered.

Check the ground wire.

Check that an electrical safety ground is installed on the stud on the rear of the dehydrator. This connection point is adjacent to the power input connector. (It is intended to be customer installed in the field.)



Check the hour meter on the front panel to determine the duty cycle of the dehydrator.

- I f the dehydrator has been running for more than 10% of its installed time, check the systems for leaks. Also check the time on the meter to determine if it is time to perform the 6000-hour overhaul.

3.4 Parts Replacement and Dehydrator Overhaul

Andrew MT500A Dehydrators are designed to give many years of trouble-free service and require very minimal maintenance. The dehydrator contains, as a standard feature, an hour meter that records compressor run hours. To ensure continuous and reliable operation, the dehydrator must be overhauled every 6000 hours of compressor operation. The kits, shown in Section 5, contain all of the necessary parts to perform this overhaul. The dehydrator overhaul kit includes parts to overhaul the compressor and critical components in the dehydrator that often become worn over time.

- I **N CASE OF DIFFICULTY:** If the dehydrator is not operating, refer to Section 2 on Installation and Section 4 on troubleshooting the unit.

Tools

The following tools are used in the maintenance and overhaul procedures.

Adjustable open-end wrench
Allen wrench 5/32
#2 Phillips screwdrivers
Small flat-blade screw-driver

Overhaul Procedure

When the MT500A compressor run time reaches 6000 hours (or a multiple of 6000 hours) it is time to replace certain items in the compressor and the air path of the dehydrator. These include the piston cups, piston seals and head gaskets of the compressor, the filter elements in the water and coalescing filters, and the tube section connecting the compressor output to the heat exchanger.

In addition, if the unit gives the dryer pressure alarm, the compressor may be in need of an overhaul. This does not always coincide with the 6000 hour time frame. If the dryer pressure alarm is triggered, check the system for leaks. If no leaks are detected, the compressor will need to be overhauled.

Unit Shutdown and Removal

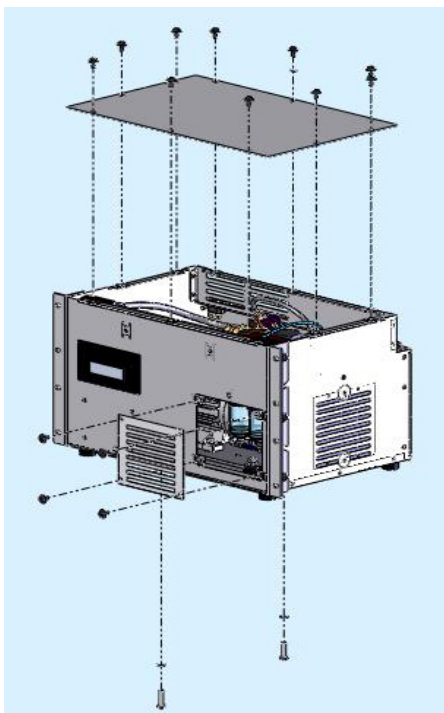
In order to perform an overhaul on the MT500A, the unit must be turned off and removed from service. As this is being done, the low pressure alarm may activate through a reporting alarm system. Personnel monitoring such an alarm should be notified in advance so that they are aware of the fact that service is being performed. It is also necessary to disconnect the dehydrator dry air output from the waveguide system during the overhaul.

Unplug the unit from the power supply.

Follow the instructions included in the compressor overhaul kit. When the overhaul is complete, reinstall. Complete overhaul can be done without removing the compressor from the chassis. The compressor head, air filter, output port and relief valve can all be removed through top panel. When the overhaul is complete, reinstall.

3.5 Service Restoration RECOMMENDATION:

If the dehydrator overhaul process has taken more than a few hours, it is recommended that the unit be run for one hour into the room, to purge the membrane dryer of any acquired moisture, before reconnecting to the transmission line system.



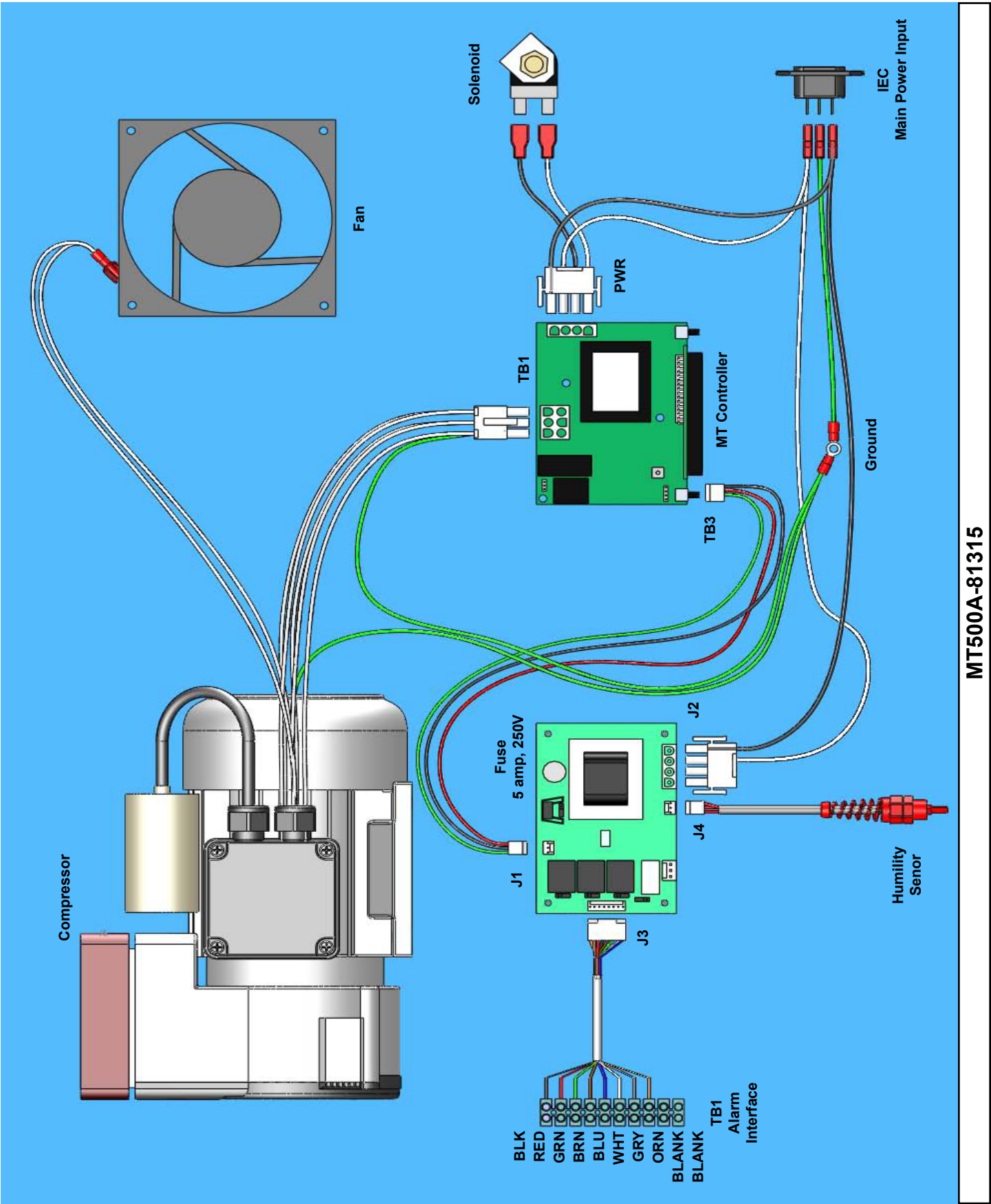
Notes

Troubleshooting Section 4

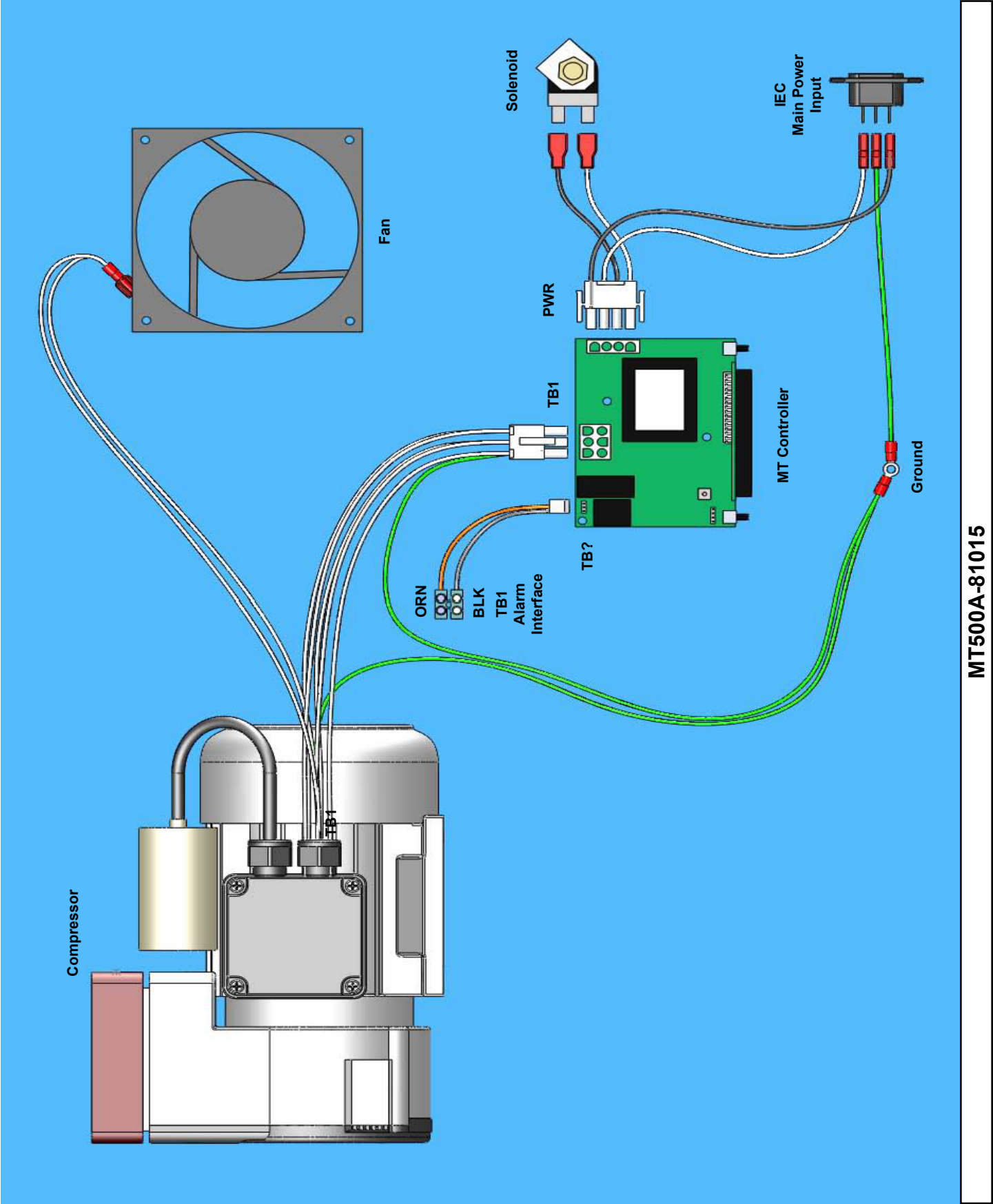
If you experience difficulty with your dehydrator, use the troubleshooting procedures described below.

Caution: Electrical troubleshooting requires access to potentially dangerous voltages and should only be performed by a licensed electrician

Problem/Condition	Solution
Dehydrator display does not light, unit does not run.	<p>If the display light fails to light, make sure the unit is plugged in and power outlet is operating.</p> <p>If you still have no light, unplug the unit, remove the unit cover and check for loose connections. Refer to the wiring diagram for proper connections.</p> <p>Check to assure that the fuse is OK on the controller</p> <p>Check to assure that proper AC voltage is being supplied to the input.</p>
Low-pressure alarm activated.	<p>Plug the unit output with finger and observe pressure gauge. The pressure gauge line should read approximately 5.0 psig and the alarm should clear. If alarm does not clear, remove cover and verify tubing and wiring connections are secure.</p> <p>NOTE: Due to the feedback air on the membrane, the plugged output will bleed down and repressurize every few second, this is normal operation.</p> <p>With dehydrator isolated from transmission line, observe pressure in transmission line. If pressure drops, use a leak detector solution to locate leaks in the transmission line. Repair leaks if possible.</p> <p>If the problem persists contact Andrew Customer Service.</p>
Compressor does not turn OFF.	<p>Check the display on the controller. Toggle the ON/OFF switch (left of the display).</p> <p>Check input power polarity and voltage per wiring diagram.</p>
Filter bowls show excessive water.	<p>Ensure that the drain line tubing (exiting the bottom of the unit) is not clogged. When the compressor cycles off, air and moisture should flow out of the drain line (into drain pan).</p> <p>Verify solenoid opens for ~ 3 sec. when compressor turns and again after ~ 10 min. of operation.</p>



MT500A-81315



MT500A-81015

Notes

Replacement Parts Section 5

The following is a list of the replacement kits for the MT500A Series dehydrators:



Overhaul Kit MT500A-KIT-OVRHL



Filter Element Replacement Kit MT500A-KIT-ELMNT



Filter Bowl Assemble Replacement Kit MT500A-KIT-FLTRS



Filter Bowl Assemble and Dryer Tube Replacement Kit
MT500A-KIT-DRYER



Solenoid Replacement Kit MT500A-KIT-SOLND

Customer Service Section 6

6.0 Introduction

Andrew provides in-warranty and out-of-warranty repairs as well as dehydrator and compressor overhauls from several Repair Centers. Coordination of these services is provided through the nearest Sales Office or Customer Service Center. The Center is also prepared to help you with the following:

Technical Assistance Troubleshooting
Repairs
Loaner Units
Spare Parts
Installation Materials System Accessories.

6.1 In Case of Trouble

The first step you should take if trouble develops using a dehydrator is to read the operators manual and follow the trouble isolating procedures given in it.

If the steps in the manual do not identify and remedy the problem, then contact an Andrew Customer Service Center for 24-hour telephone assistance. Record the Model Number (e.g. MT500A) and Serial Number from the product label, as you will be asked for these when you call. Two main locations are currently available to help:

in North America
1-800-255-1479

in Europe
+44 1592 782612

any Location (to USA)
(708) 349-3300

If you find it easier to describe your troubles by Fax, then the following numbers are also available:

in North America
1-800-349-5444 (Fax only)

in Europe
+44 1592 782380 (Fax only)

any Location (to USA)
(708) 349-5410 (Fax only)

- * mark the outside of the box with the RGN
- * return the box to the Repair Center address listed on the authorization sheet.

If you have saved the original packaging that came with the unit, use it to return the dehydrator for repair. If a loaner unit (of the same type) was supplied by Andrew, use the loaner unit box to return the original dehydrator.

6.2 Initial Steps by Andrew

When your call or fax communication is received, the Andrew staff will work with you to pinpoint the possible cause of trouble. If the pressurization equipment is suspect, they will.

- * ask for your unit Model Number and Serial Number
- check the warranty status of the unit
- advise the availability of a loaner unit provide of the cost for inspection and repairs, if the unit is out-of-warranty
- fax a Return Goods Authorization Sheet to you.

6.3 Return Goods Instructions

After you have contacted Andrew and received a Return Goods Authorization Number (RGN), you will need to take the following steps to send the faulty unit to a Repair Center:

- * make a copy of the Return Goods Authorization Sheet that was faxed to you
- * write a brief description of the trouble you are encountering and attach this to the copy of the sheet
- * pack the unit (with at least 4-inches of protective packaging on all sides)
- * enclose the authorization sheet and trouble description within the box
- * enclose a purchase order or other method of payment for non warranty repairs.

6.4 Repair Center Process

The Andrew Dehydrator Repair Center will receive your unit and inspect it for any transport damage. The unit will then be analyzed for troubles using the description you have supplied and the specialized experience the Repair Center staff have with dehydrators.

If the unit is in-warranty, repairs are made at no charge and the unit will be returned to you by the same mode of transport as it was received.

If the unit is in-warranty, but no problems are found, the unit will be thoroughly tested before being returned to you. A nominal inspection fee will be charged for this service.

If your unit is out-of-warranty, it will be inspected and repaired for the quoted fee.

6.5 Loaner Units

The Andrew dehydrator Repair Centers stock a limited number of "loaner" dehydrator units of both current and discontinued products. These units, while not new, are still in excellent working order.

Loaners are available on a first-come first-served basis. They are issued in conjunction with the original RGN and are invoiced at a nominal price. You will need to request a second RGN to return the loaner unit. A credit memo is issued by the Repair Center when a loaner is returned.



Andrew Corporation

Small and Medium Capacity Dehydrator and Line Monitor System Three Year Warranty

Seller warrants that any Andrew MT050, MT/XT300, MT/XT500, MR050, PMT200 and ODPMT200 series number type DryLine® Dehydrator is transferred rightfully and with good title; that it is free from any lawful security interest or other lien or encumbrance unknown to Buyer; and that for a period of thirty-six (36) months from the date of shipment or 3000 hours of actual run time, whichever shall occur first, such equipment will be free from defects in material and workmanship which arise under proper and normal use and service. Buyer's exclusive remedy hereunder is limited to Seller's correction (either at its plant or at such other place as may be agreed upon between Seller and Buyer) of any such defects by repair or replacement (with either a new unit or a factory reconditioned unit) at no cost to Buyer; provided that the cost of any transportation in connection with the return of the equipment for the purpose of repair or replacement shall be borne by Buyer. The provisions of this warranty shall be applicable with respect to any equipment which Seller repairs or replaces pursuant to it. Expressly excluded from the terms of this warranty are defects caused by: (i) faulty installation, (ii) lack of proper inspection or maintenance, (iii) and usage not in accordance with published ratings, specifications, or instructions. The provisions of this warranty shall be applicable with respect to any equipment Seller repairs or replaces pursuant to it.

SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN AS SPECIFICALLY STATED ABOVE. EXPRESSLY EXCLUDED ARE ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PURPOSE. THE FOREGOING SHALL CONSTITUTE ALL OF SELLER'S LIABILITY (EXCEPT AS TO PATENT INFRINGEMENT) WITH RESPECT TO THE EQUIPMENT. IN NO EVENT SHALL SELLER BE LIABLE FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INSTALLATION COSTS, LOST REVENUE OR PROFITS, OR ANY OTHER COSTS OF ANY NATURE AS A RESULT OF THE USE OF THE EQUIPMENT MANUFACTURED BY SELLER, WHETHER USED IN ACCORDANCE WITH INSTRUCTIONS OR NOT. UNDER NO CIRCUMSTANCES SHALL SELLER'S LIABILITY TO BUYER EXCEED THE ACTUAL SALES PRICE OF THE EQUIPMENT PROVIDED HEREUNDER. No representative is authorized to assume for Seller any other liability in connection with the equipment.

Rev 2
0706



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One Company. A World of Solutions.

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