

E-TES SD LOW-PROFILE

240 Volt
Electric Thermal
Energy System



Operator's Manual

“E-TES - World's Fastest Drying System”™

TES Drying Systems
4282 South 590 West
Salt Lake City, UT 84123
800-948-1754
www.tesdryingsystems.com

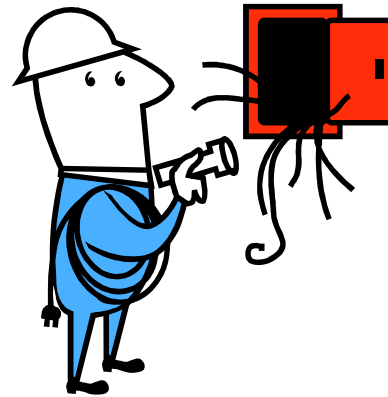
LMANMB240LP
REVISED: 01/29/2015

Table of Contents

Introduction	3
General Information	4
Warranty	6

SECTION 1

Heater Operation Safety	7
-------------------------	---



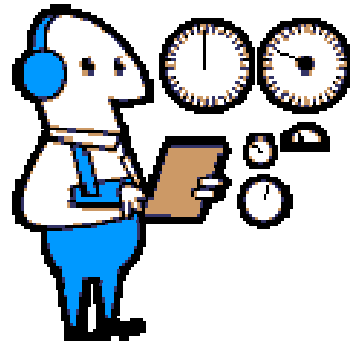
SECTION 2

Menu Navigation	9
Remote Probe Set-up	13
Remote Exhaust Fan Control	16
Software Updates	17
Data Charting	18



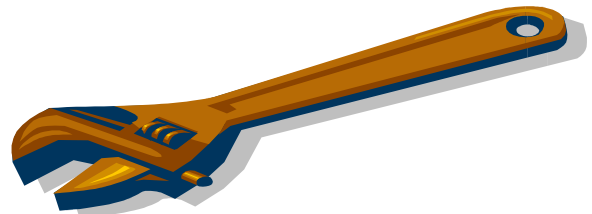
SECTION 3

Heater Operation	21
Troubleshooting	26
Re-initializing the Memory	31
Resetting the Processor	33
Wiring Diagrams	34



SECTION 4

Maintenance	38
Parts	39



SECTION 5

Drying Carpet	48
Drying Wood Floors	50
Drying Walls	52



Introduction

Congratulations on your purchase of the Tes Drying Systems E-TES SD 240 Volt Low Profile Electric Thermal Energy System. This manual is a guide for safe operation and maintenance of this unit.

WARNING

Read and understand this manual completely before operating this unit.

The temperature controls of the E-TES SD 240 Volt Low Profile Electric Thermal Exchange unit are designed for safe operation in a variety of drying operations. If setup improperly the E-TES SD can raise the room temperature to 140°F with an output temperature up to 210°F before it shuts off. Proper setup and use of the temperature controls is required to protect the structure and contents.

DANGER

Improper operation, alteration, service or maintenance can cause property damage, personal injury or loss of life.

Service must be performed by a qualified technician, service agency or electrician. Tes Drying Systems is in no way responsible and is excluded from liability in respect to any loss or damage which may arise due to improper operation, maintenance or repair.

This manual should be maintained in legible condition adjacent to the unit or in a secure location for future reference.

Any questions pertaining to the operating or servicing of this unit should be directed to your nearest Tes Drying Systems distributor.

This manual is written specifically for the E-TES SD 240 Volt Low Profile Electric Thermal Exchange units manufactured by:

Tes Drying Systems

4282 S 590 W

Salt Lake City, UT 84123

801-261-1282

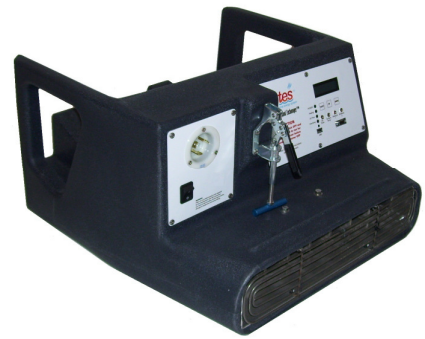
Information in this manual is subject to change without notice and does not represent a commitment on the part of Tes Drying Systems.

General Information

E-TES SD 240 Volt Low Profile ELECTRIC THERMAL ENERGY SYSTEM

20,000 Btu 240vac Electric Model

Height: 13.5"
 Length: 26.5"
 Width: 22.75"
 Weight: 30 lbs.
 Heater watt rating: 5760 watts
 Rated Amp Draw: 24 amps



NM4402



NM4422

E-TES SD 240 Volt Standard Equipment ELECTRIC THERMAL EXCHANGE UNIT

NM4402 50' - 10/3 GFCI Power Cord w/ 10-30P & L6-30R ends

NM4422 4-Prong 30amp Dryer Plug 14-30P/ 10-30R Adapter Cord

SMART E-TES SD 240 Volt Optional Sensors & Controls

E-TES Charter Software (Free download online at tesdryingsystem.com)

AT210 E-TES SD Smart Package

Smart Package includes:

(1) AT200, (1) AT202, (1) PGE5060, (2) AT204, (1) AT206 & (1) AT208

AT200 Surface Temperature Sensor w/ 10ft cord

AT202 Air Temperature Sensor w/ 10ft cord

PGE5060 Moisture Level Sensor w/ 4ft cord

AT204 10 ft sensor extension cord

AT206 Remote Exhaust Controller

AT208 Travel Bag for Sensor Storage

AC102 Hammer Probe w/ 4ft cord



AT206



AT204



AT202



AT200



AC102



PGE5060



AT208

Additional / Optional Equipment

- NM4420 3-Prong 50amp Range Plug 10-50P/ 10-30R Adapter Cord
- NM4424 4-Prong 30amp Range Plug 14-50P/ 10-30R Adapter Cord
- NM4426 3-Prong 30amp Twist Lock Plug L6-30P / 10-30R Adapter Cord
- NM4403 50' - 10/3 Extension Cord w/ 3-Prong 30amp
Twist Lock Ends L6-30P & L6-30R
- AC262A Lay Flat Ducting 14" Dia. (22.5" flat) x 500'
- AT56 Duct Ring 14"
- AC246 OmniDry Focal Point Axial Air Mover
- AC25A Omni Dry 2.9 Centrifugal Air Mover
- MB230 Single Stage Exhaust Controller
- AC514 Flexi-Dry Wall Drying System
- MI22 Injectidry HP60FDP Floor Drying Package



NM4403



AC25A

MB230



AC514



NM4424



AC246



NM4420



AT56



MI22



NM4426

Warranty

Your E-TES SD 240 Volt Low Profile Electric Thermal Exchanger is designed to give you years of reliable service. If a problem should arise use the troubleshooting section in the operation manual to diagnose and correct the problem if possible. If you are unable to determine the cause or solution to the problem contact your distributor or Tes Drying Systems for assistance.

Tes Drying Systems warrants the roto-molded body of the E-TES SD 240 Volt Low Profile Electric Thermal Exchanger to be free from defects in material or workmanship for five years from the date of purchase.

Warranty coverage does not include damage to body due to overheating after the first year.

All other components of the E-TES SD 240 Volt Low Profile Electric Thermal Exchanger are warranted to be free of defects in material and workmanship for one year from the date of purchase.

During the warranty period, Tes Drying Systems will, at its option repair or replace components which prove to be defective.

- This warranty does not provide for replacement of complete units due to defective components.
- Service Labor is only covered for the first 90 days after the date of purchase.
- Any costs for transportation are not covered in this warranty.
- Replacement parts are warranted only for the remainder of the original warranty period.

This warranty **shall not** apply to defects resulting from improper operation, lack of maintenance, condensation, chemical corrosion, unauthorized modification, misuse or abuse.

This warranty **does not** cover normal wear to items such power cords, plug adapters or other items which require replacement as a result of ordinary usage.

To obtain warranty service for the E-TES SD 240 Volt Low Profile Electric Thermal Exchanger, contact your distributor or Tes Drying Systems. If the unit must be returned to Tes Drying Systems or an authorized service center, the purchaser shall prepay shipping charges for products returned for warranty service.

- No returned items will be accepted by Tes Drying Systems without prior authorization. All returns must have a return authorization number, issued by Tes Drying Systems, clearly marked on the exterior of the package.

Tes Drying Systems makes no other warranty either expressed or implied with respect to this product. The remedies provided herein are the purchaser's sole and exclusive remedies.

In no event shall Tes Drying Systems be liable for any direct, indirect, special, incidental or consequential damages.

This warranty gives you specific legal rights. You may also have other rights which vary from jurisdiction to jurisdiction.

WARNING

When using electrical appliances, basic precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons, including the following:

- Always use the Ground Fault Circuit Interrupting (GFCI) cords to reduce the risk of electrical shock.
- **DO NOT** use E-TES SD in standing water. Keep cord connections off wet floors. Protect cord connections from damp surfaces and water sources. Wear rubber boots and rubber gloves when handling heater and cords in damp conditions.
- Examine the electric outlet before connecting your E-TES SD. A Loose fitting or damaged outlet can cause the power cord to overheat. Do not use a loose fitting or damaged outlet. If necessary, have an electrician repair the outlet before connecting your E-TES to prevent cord damage.
- Never operate this heater with a damaged power cord. Do not permit cord to contact carpet tacks or other sharp objects or to become damaged by closed doors or otherwise abused. If the power cord is damaged it must be replaced.
- The 240volt power source must be wired and have circuit breaker sized to safely handle the rated amperage of the unit.
- Connect GFCI E-TES power cord to the power source, using adapter as needed. One additional 10/3 x 50 foot extension cord may be placed between GFCI cord and E-TES SD unit. No more than two cords (100ft. total cord length) may be used. Use only 10 gauge cords.
- Turn E-TES unit heater switch OFF before connecting or disconnecting cord to unit. Unplug machine power cord from outlet before performing any repair on the heater.
- To reduce the risk of property damage or injury, repairs to electrical systems should only be performed by experienced technicians. Contact your nearest service center for assistance.
- Do not operate this heater unless all panels and guards are in place and properly secured. Remove Feet or carpet clamps from snout of air mover before placing air mover into E-TES SD Electric Thermal Exchanger to prevent damage to air seal gasket.
- Adequate air flow must be maintained across heating elements for proper, safe operation. Do not disable air pressure sensor or other safety switches, doing so may result in damage to heater and will void warranty.
- **Always turn Heater OFF and keep air mover running for 5 minutes to cool heater before turning air mover OFF.** If air flow is turned off and the unit is not cooled properly the heater box and front grill may get very hot, creating a burn hazard or damaging the unit.

NOTICE

Always use Remote Temperature Sensors, Remote Power Controllers or other form of temperature control to keep room temperature below 105°F during the drying process.

WARNING LABELS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
NO USER-SERVICEABLE PARTS
INSIDE

AVERTISSEMENT
RISQUE DE CHOC ÉLECTRIQUE
NE PAS OUVRIR
AUCUNE PIÈCE À L'INTÉRIEUR



CAUTION – High temperature, Keep electrical cords, drapery, and other furnishings at least 3 feet (0.9 m) from the front of the heater and away from the side and rear.

AVERTISSEMENT - haute température, garder les cordons électriques, des rideaux, et d'autres furnishings au moins 3 pieds (0,9 m) du devant de l'appareil et à partir du côté et à l'arrière.

Use only NRTL listed power cords with GFCI protection connected to properly grounded electrical outlets.


Utilisez uniquement des cordons d'alimentation listés NRTL avec protection GFCI relié à des prises de terre.

Do not operate in standing water.

Ne pas utiliser dans l'eau stagnante.

Do not block air exhaust.

Ne bloquez pas l'air d'échappement.

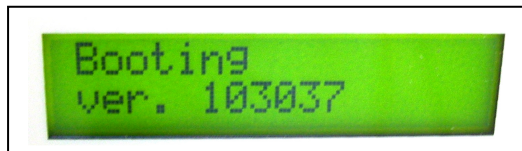


Navigation – Remote Sensor Set-up & Data Charting

E-TES SD MENU NAVIGATION:

With the GFCI reset and the power cord connected to the E-TES SD, turn power switch to the ON position. Display will quickly scroll through the first six screens, before stopping at the Main Screen.

First screen:



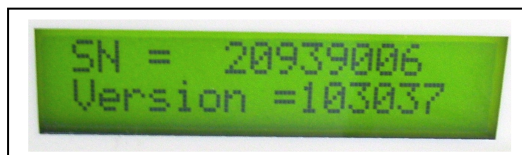
Booting Screen
Software version booting up

Second screen:



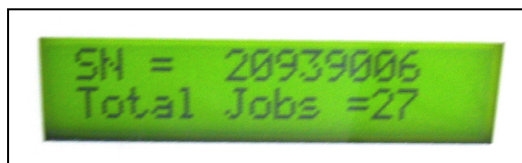
Welcome Screen

Third screen:



Unit serial number and software version

Fourth screen:



Unit serial number and number of jobs logged

Fifth screen:



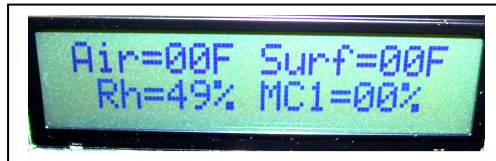
Directions for how to view menus

Sixth screen:



Directions for how to enter menus to change settings

MAIN SCREEN:



Main screen will display current probe temperatures or default settings if no probes are connected.

- Air Default Setting: 00F
- Surface Default Setting: 00F
- Moisture 1 Default Setting: 00%
- Rh (Relative Humidity): Current value

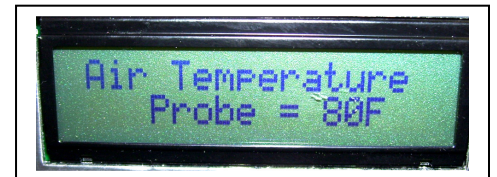
Press **UP** / **DOWN** to move from Main Screen and scroll through Menu

From the Main Screen

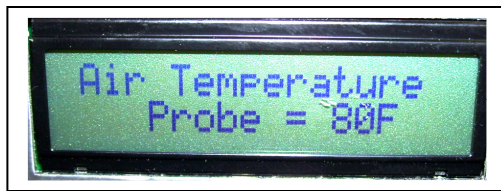
PRESS DOWN: TO ACCESS AIR TEMPERATURE SCREEN

OR

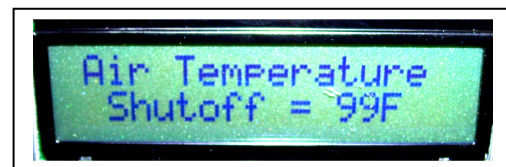
PRESS UP: TO CURRENT DATE & TIME SCREEN



Air Temperature Screen: This tells you the current reading of the Air Temperature Sensor probe if it is connected to the E-TES SD or the default value of 00F if the probe is not connected.

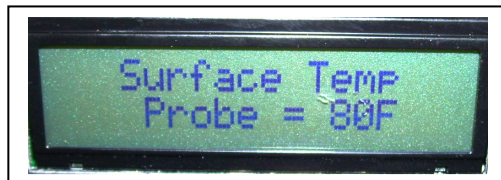


Press **SELECT** to set Air Temperature Probe shutdown temperature. Use **UP/DOWN** to change Air Temperature shutoff setting.

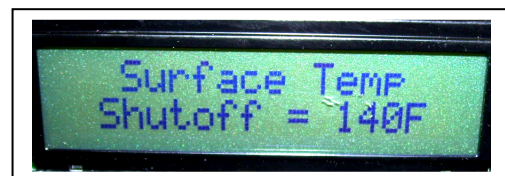


- Press **DOWN** to move to Surface Temp Screen
- Press **UP** to return to Main Screen

Surface Temperature Screen: This tells you the current reading of the Surface Temperature Sensor probe if it is connected to the E-TES SD or the default value of 00F if the probe is not connected.

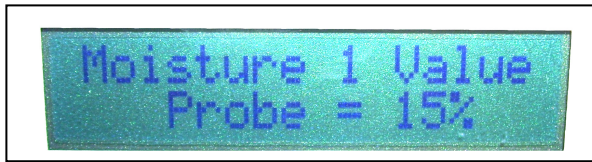


Press **SELECT** to set Surface Temperature Probe shutdown temperature. Use **UP/DOWN** to change Surface Temperature shutoff setting.



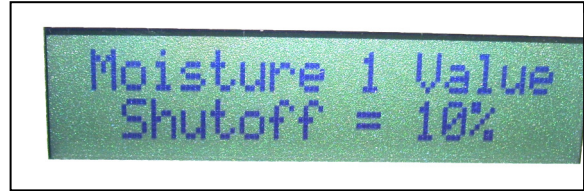
- Press **DOWN** to move to Moisture 1 Value Screen
- Press **UP** to return to Air Temperature Screen

Moisture 1 Value Screen: This tells you the current reading of the Moisture probe if it is connected to the E-TES SD or the default value of 00% if the probe is not connected.



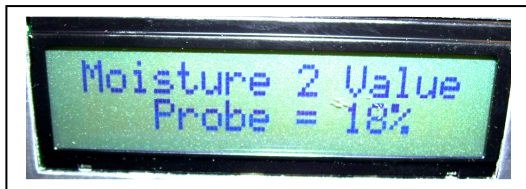
Press **SELECT** to set Moisture Probe shutdown percentage. Use **UP/DOWN** to change moisture percentage level set point.

- Press **DOWN** to move to Moisture 2 Value Screen
- Press **UP** to return to Surface Temp Screen



NOTICE UNIT WILL NOT SHUTOFF IF SET BELOW 10%

Moisture 2 Value Screen: This tells you the current reading of the Moisture probe if it is connected to the E-TES SD or the default value of 00% if the probe is not connected.



Press **SELECT** to set Moisture Probe shutdown percentage. Use **UP/DOWN** to change moisture percentage level set point.

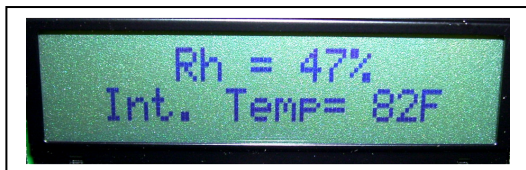
- Press **UP** to return to Moisture 1 Value Screen



NOTICE UNIT WILL NOT SHUTOFF IF SET BELOW 10%

- Press **DOWN** to move to Humidity / Internal Temperature Screen

Humidity / Internal Temperature Screen: This tells you the relative humidity percentage and temperature inside the E-TES SD box.



- Press **DOWN** to move to Remote Setup screen
- Press **UP** to return to Moisture 2 Value screen

Remote Setup Screen: This allows you to set temperature at which the E-TES SD will turn on Remote Exhaust Fan Control. (Remote Air Temperature Sensor to operate remote control.)

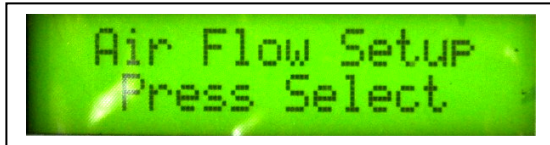


Press **SELECT** to set the E-TES Remote Exhaust Fan Control turn on temperature. Use **UP/DOWN** to change

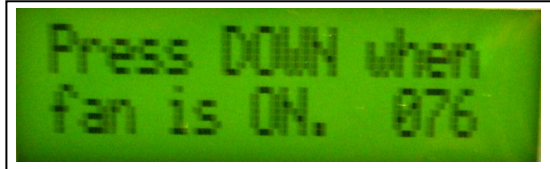
- Press **DOWN** to move to Air Flow Setup Screen
- Press **UP** to return to Humidity Internal Temperature Screen



Air Flow Setup Screen: This allows you to recalibrate the Air Flow switch to maintain proper air flow switch function for reliable heater operation.

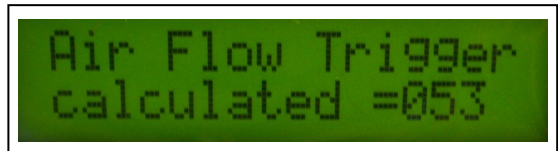


Press **SELECT** to set the Air Flow switch trigger point. Follow the screen directions using the **DOWN** button to set the levels with the air mover OFF & ON.



1. First turn the air mover OFF. When the fan is off and the number stops changing, press **DOWN**. This is the Off Set Point. (Shown as 033 in this example)
2. Then turn the air mover ON at low speed. Press **DOWN** as soon as the fan on number is about 40-50 points higher than the Off Set Point. This is the ON Set Point. (Shown as 076 in this example)
3. The Air Flow Trigger point is now set. The Air Flow Trigger is approximately half way between the Off Set Point and the On Set Point. (Shown as 053 in this example)

- Press **DOWN** to move to the Current Job Time Screen.
- Press **UP** to return to the Remote Setup Screen



Current Job Time Screen: This shows the time the system has run since the switch was last turned on.



- Press **DOWN** to move to Total System Time Screen
- Press **UP** to return to Air Flow Setup Screen

Total System Time Screen: This shows the total time the system has been run on all jobs.



- Press **DOWN** to move to Date & Time Screen
- Press **UP** to return to Current Job Time Screen

Current Date and Time Screen



Press **SELECT** to set the E-TES SD Date & Time Clock. HOUR will flash first. Use the **UP/DOWN** buttons to change the HOUR setting. When correct, press **SELECT** to move to MINUTES, then SECONDS, MONTH, DAY NUMBER & finally YEAR. Use **UP/DOWN** to change each setting and **SELECT** to move to next option. When correct, press **SELECT** to save setting

- Press **DOWN** to return to Main Screen
- Press **UP** to return to Total System Time Screen

(The DAY will change as you change MONTH, DAY NUMBER or YEAR.)

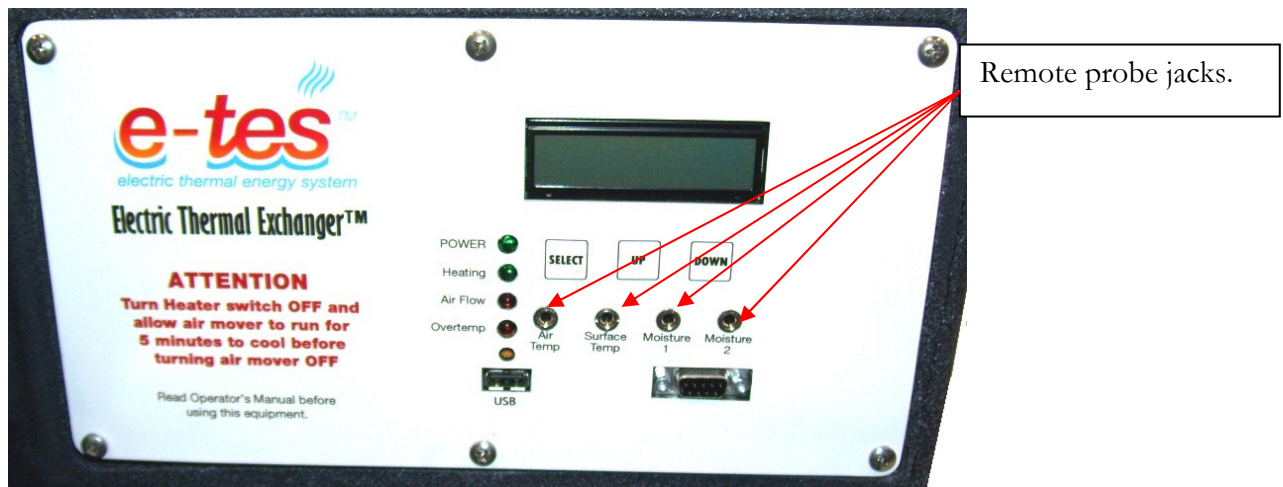
E-TES SD REMOTE SENSOR - PROBE CONNECTION:

E-TES SD can be operated without using the optional remote sensors. Overheating the structure may cause damage to structure or contents. Controlling the temperature is important to prevent damage. If the external probes and remote exhaust controller are not used, some other type of temperature control must be used to keep the room temperature below 105°F to prevent overheating of the structure.

The Main Screen will display current probe temperatures or default settings if no probes are connected. The shutdowns controlled by the probes will not turn off the power to the heating elements if the probes are not connected.

- Air Temperature Probe Default Setting: 00F
- Surface Temperature Probe Default Setting: 00F
- Moisture 1 Value Default Setting: 00%
- Moisture 2 Value Default Setting: 00%

To use the remote temperature or moisture probes to control the E-TES SD, simply plug the desired remote sensor in the corresponding port on the front panel of the E-TES SD. Return to the MENU NAVIGATION section to set the shutdown points for each probe.



Moisture Probe with 4' cord
PGE5060



Surface Temperature Probe
with 10' cord – AT200



Air Temperature Probe with
10' cord – AT202



Moisture Hammer Probe with
4' cord – AC102



10' extension cord – AT204
Can be used with any of the E-TES probes

REMOTE PROBE SHUTDOWN:

If the measured readings of any of the remote probes exceed the set points, the green HEATING light will turn off, indicating the unit is no longer heating.

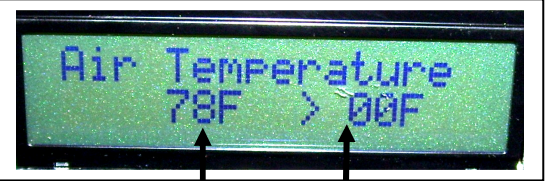
AIR TEMPERATURE SHUTOFF

When the AIR TEMPERATURE measured by the probe exceeds the set point the green HEATING light will turn off indicating unit has shutoff the power to the heating elements.

The AIR TEMPERATURE screen will be displayed, flashing the current temperature and the shutoff temperature set point.

When the temperature cools sufficiently the green HEATING light will turn back on and the unit will again heat up.

The AIR TEMPERATURE SHUTOFF will not shutoff the power to the heating elements if the AIR TEMPERATURE probe is not connected.



Current Air Temperature

Air Temperature Set Point

SURFACE TEMPERATURE SHUTOFF

When the SURFACE TEMPERATURE measured by the probe exceeds the set point the green HEATING light will turn off indicating unit has shutoff the power to the heating elements.

The SURFACE TEMPERATURE screen will be displayed, flashing the current temperature and the shutoff temperature set point.

When the temperature cools sufficiently the green HEATING light will turn back on and the unit will again heat up.

The SURFACE TEMPERATURE SHUTOFF will not shutoff the power to the heating elements if the SURFACE TEMPERATURE probe is not connected.



Current Surface Temperature

Surface Temperature Set Point

MOISTURE 1 VALUE SHUTOFF

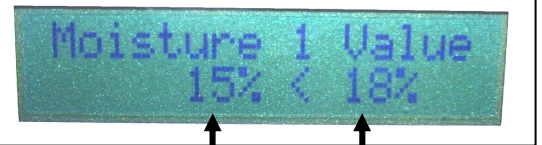
When the MOISTURE 1 VALUE measured by the probe drops below the set point the green HEATING light will turn off indicating unit has shutoff the power to the heating elements. The MOISTURE 1 VALUE screen will be displayed, flashing the current moisture percentage and the shutoff moisture value percentage set point.

If the moisture level rises sufficiently the green HEATING light will turn back on and the unit will again heat up.

The MOISTURE 1 VALUE SHUTOFF **will not** shutoff the power to the heating elements if the MOISTURE 1 probe is not connected.

If the E-TES SD is ON when the Moisture 1 Probe is connected, the MOISTURE 1 VALUE SHUTOFF **will** shutoff the power to the heating elements even if the MOISTURE 1 VALUE is above the set point. The power switch must be turned OFF & back ON to reset E-TES SD to read the correct the moisture value and allow power to the heating elements.

Do not plug-in or unplug the Moisture Probes while the E-TES SD is ON. Turn E-TES SD OFF before plugging in or un-plugging Moisture Probes, then turn unit back ON.



Current Moisture Level

Moisture Value Set Point

To assure that the E-TES SD will shut off & stay off when the Moisture 1 Value drops below the shutoff value, the Moisture Value 1 Shutoff **MUST NOT** be set below 10%.

To chart the Moisture 1 Value without controlling the E-TES SD set the Moisture Value 1 Shutoff to 0%.

MOISTURE 2 VALUE SHUTOFF

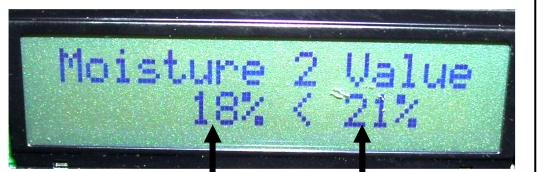
When the MOISTURE 2 VALUE measured by the probe drops below the set point the green HEATING light will turn off indicating unit has shutoff the power to the heating elements. The MOISTURE 2 VALUE screen will be displayed, flashing the current moisture percentage and the shutoff moisture value percentage set point.

If the moisture level rises sufficiently the green HEATING light will turn back on and the unit will again heat up.

The MOISTURE 2 VALUE SHUTOFF **will not** shutoff the power to the heating elements if the MOISTURE 2 probe is not connected.

If the E-TES SD is ON when the Moisture 2 Probe is connected, the MOISTURE 2 VALUE SHUTOFF **will** shutoff the power to the heating elements even if the MOISTURE 2 VALUE is above the set point. The power switch must be turned OFF & back ON to reset E-TES SD to read the correct the moisture value and allow power to the heating elements.

Do not plug-in or unplug the Moisture Probes while the E-TES SD is ON. Turn E-TES SD OFF before plugging in or un-plugging Moisture Probes, then turn unit back ON.



Current Moisture Level

Moisture Value Set Point

To assure that the E-TES SD will shut off & stay off when the Moisture 2 Value drops below the shutoff value, the Moisture Value 2 Shutoff **MUST NOT** be set below 10%.

To chart the Moisture 2 Value without controlling the E-TES SD set the Moisture Value 2 Shutoff to 0%.

REMOTE EXHAUST CONTROLLER:



This allows you to set the temperature at which the E-TES SD will send a signal to turn on a remote exhaust fan. The Remote Exhaust Controller can be located up to 100 yards away from the E-TES SD unit and control electrical devices with a total amp load up to 15amps.

NOTICE

The Remote Air Temperature Sensor must be connected to the E-TES SD to operate the Remote Exhaust Controller.

Overheating the structure may cause damage to structure or contents. Ambient room temperature should be maintained below 105°F during the drying process. Controlling the temperature is important to prevent damage. If the external probes and Remote Exhaust Controller are not used, some other type of temperature control must be used to prevent overheating the structure.

Plug the Remote Exhaust Controller into a 120VAC wall outlet and then plug your exhaust fan into the Remote Exhaust Fan Control. Turn the exhaust fan switch to the ON position. When the air temperature reaches the set point the E-TES SD will activate the Remote Exhaust Fan Control to send power to the exhaust fan to turn it on.

To adjust the set point use the **UP & DOWN** arrow keys to move to the REMOTE SETUP screen. Press - **SELECT** to enter the temperature setup screen and use the **UP & DOWN** arrows to set the Remote Exhaust Controller turn on temperature.



The Remote Exhaust Controller must be calibrated to work with the signal from a specific E-TES SD.

To calibrate the Remote Exhaust Controller:

1. Push the reset button on the Controller as you plug the Controller into the wall outlet. This will clear the memory of the control.
2. Turn the E-TES SD unit on and scroll to the REMOTE SETUP screen then press select.
3. Use the UP & DOWN arrows to set the Remote Exhaust Controller turn on temperature. This will send a signal to calibrate the Remote Exhaust Controller.

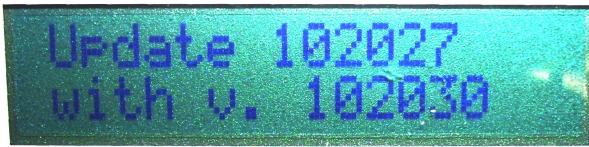


If you are using multiple E-TES SD units with multiple remotes, turn the other E-TES SD units OFF as you calibrate each remote to a specific E-TES SD to prevent signals from the other units from interrupting your calibration.

SOFTWARE UPDATES:

The E-TES SD software can be reprogrammed or updated using a removable data storage device such as an USB Flash Drive or Memory Stick. When software updates are available you will be contacted by your distributor. You will receive a Flash Drive or memory stick preloaded with the new software or the software can be e-mailed to you to be downloaded onto your own Flash Drive or Memory Stick.

To update the E-TES SD software, simply plug the memory device, with the E-TES SD software file, into USB port on front panel, turn switch ON and the software will automatically be updated. The display will read UPDATE along with the old version and new version numbers. The screen will not change until the update is complete. Then remove the memory device and turn the switch off.



SOFTWARE UPDATE SCREEN

Shows the old software version number and the version number of the new software which is replacing the old version



REMOVABLE USB
MEMORY DEVICE

Computer Serial Port for E-TES SD
manufacturer use only, used for testing
and formatting of microprocessor

If your USB Flash Drive is protected by a password, you will need to temporarily disable the password to connect it to the E-TES SD. This goes for installing updates and downloading the job data.

From our tests it was not necessary to disable the Flash Drive's auto run programs, such as the SanDisk U3 Launchpad to work with the E-TES SD.

DATA CHARTING:

The E-TES SD now has the ability to measure and store data regarding the operating status of the unit and the environmental conditions during the drying process. The E-TES SD will hold up to one month of continuous operational data. The Charter data is sorted by the serial number of each unit and each job is given a file number so one USB Flash Drive can be used for multiple E-TES SD units.

E-TES Charter Software is required to read and graph the data log information. The Charter software can be downloaded for free online at tesdryingssystem.com.

Data can be retrieved by inserting a removable data storage device such as a Flash Drive or Memory Stick into the USB port on front panel. After inserting the flash drive into the USB port, turn the E-TES SD power switch ON to log data from the E-TES SD unit. When Flash Drive stops flashing, and the **Updating USB - Do Not Remove** screen is no longer showing, turn switch off and remove the Flash Drive. Flash Drive can then be connected to the USB port on your computer to download the data.

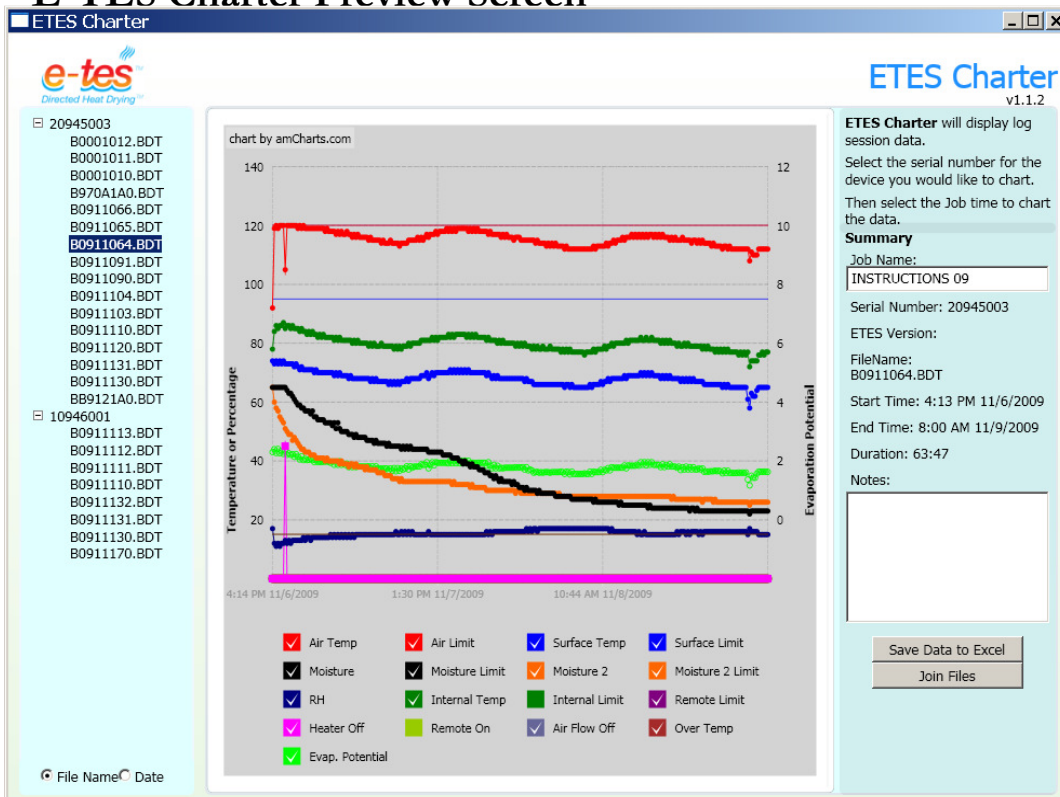
The E-TES Charter software will allow you to compile reports for insurance adjusters or homeowners to support your drying procedures and billing. On the E-TES Charter preview screen you can modify the graph by clicking on the keys at the bottom of the screen to add or delete different data you want displayed on your graph.

The job can be named and data is exported to Excel to create job files, graphs and reports. Multiple job files can be joined to create a single new job file for reports.

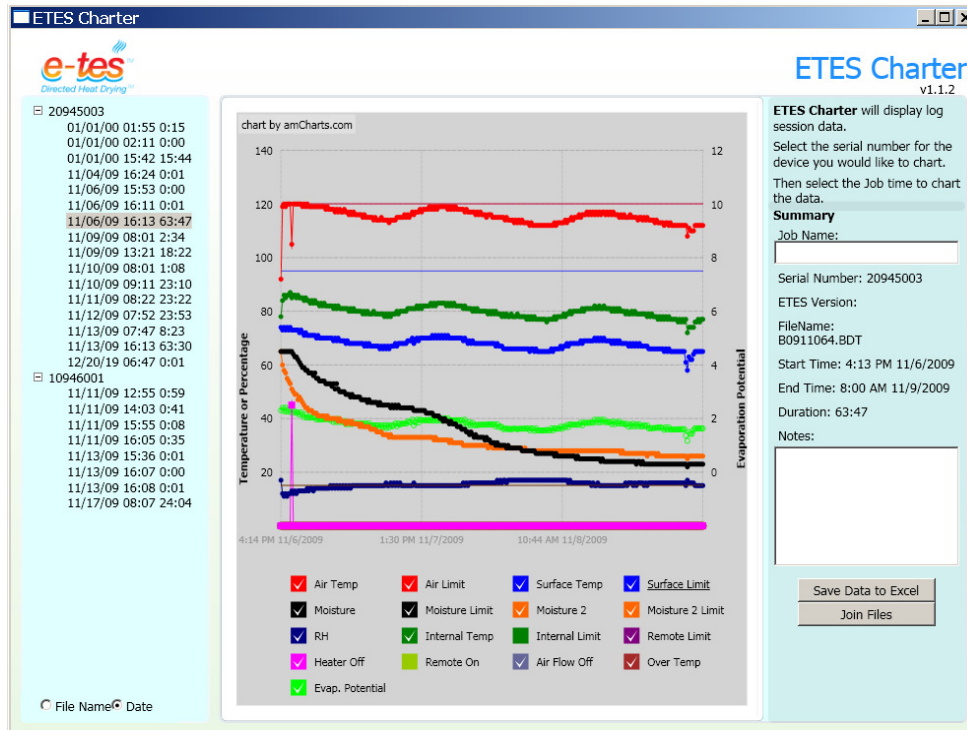
DATA RETREIVED USING A REMOVABLE USB MEMORY DEVICE



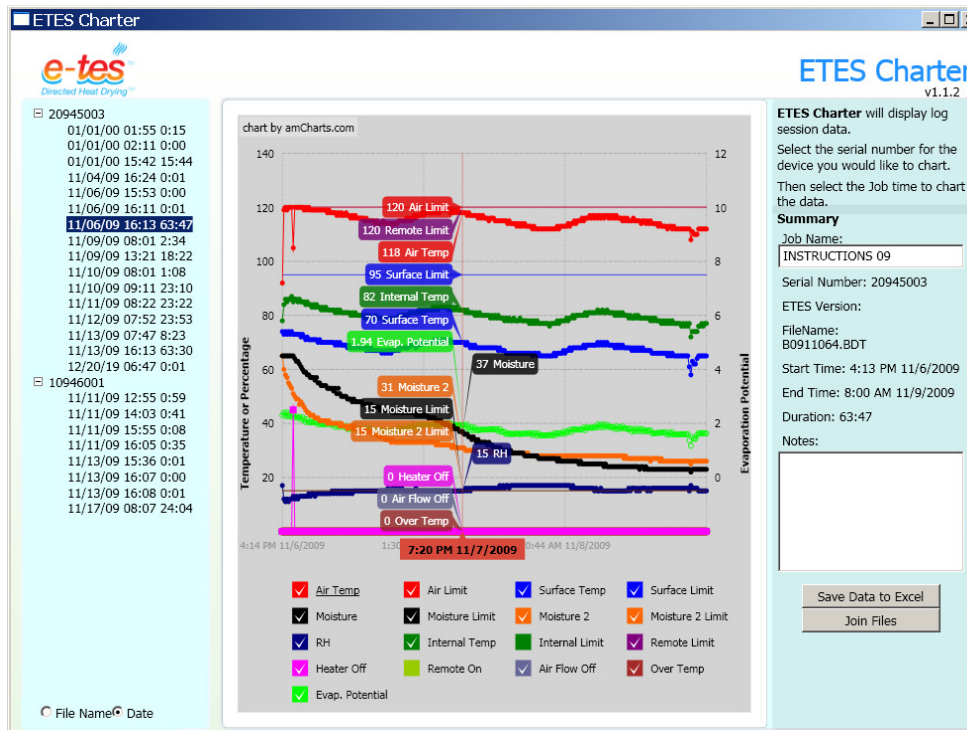
E-TES Charter Preview Screen



The jobs files are sorted by the serial number of the E-TES SD unit from which the data was retrieved. Serial numbers starting with “2” are 240 volt units and serial numbers starting with “1” are 120 volt units. The jobs are listed by either file name or date. Select File Name or Date at the bottom of the page to determine how the jobs will be displayed. When changing from File Name or Date an error message may be displayed on your computer. Just click continue and the Charter will re-open and display as you selected. In the example on the previous page the job file names are listed. The file names such as B0911064 consist of the year, month and day the job was started and a number to differentiate various jobs started on the same day. The example below shows the job files displayed by date.



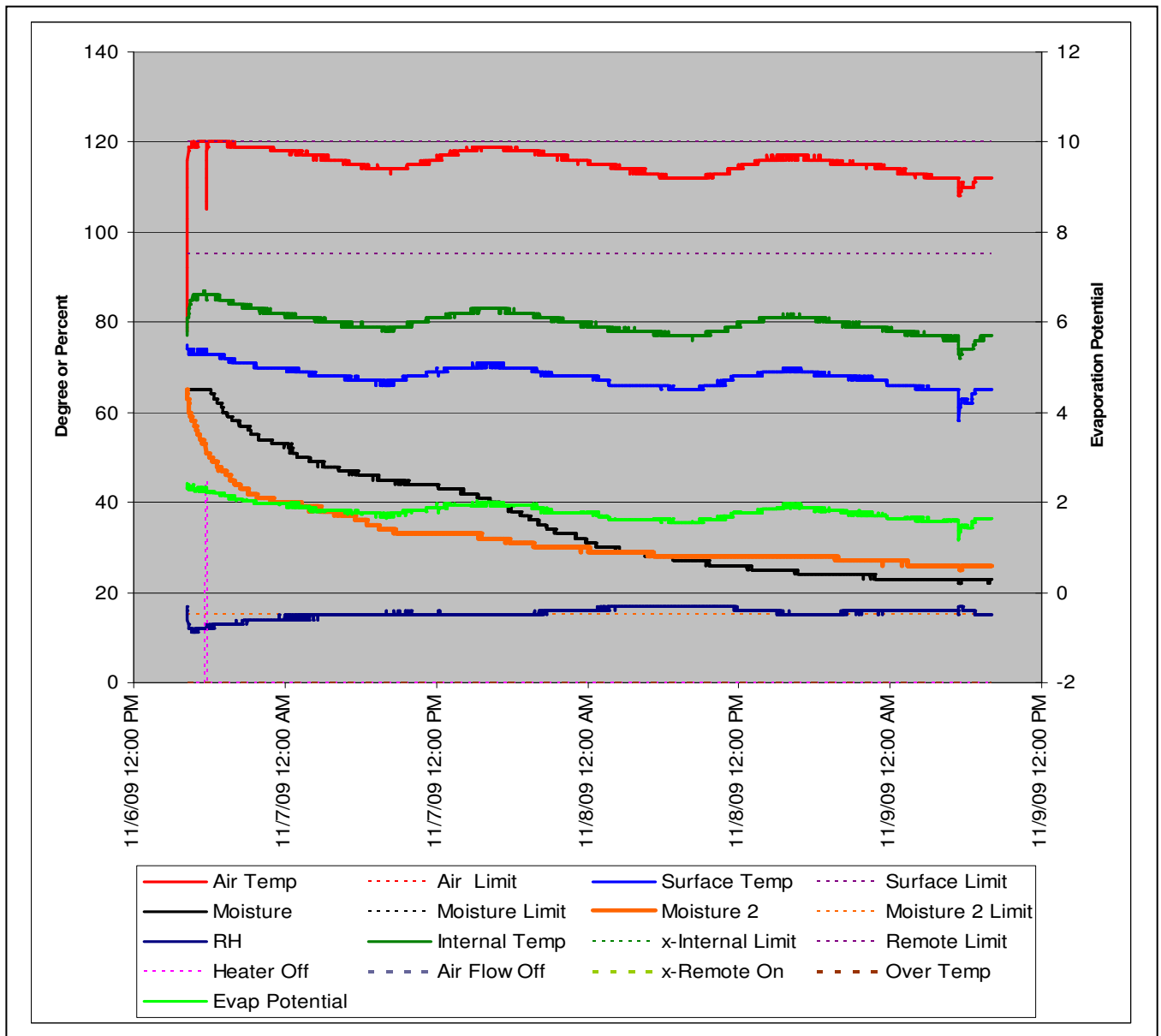
By moving your cursor over the graph it will display flags with the readings for individual points on the graph lines, as shown in the example below.



In this example of an Excel graph, you can see that the AIR TEMPERATURE LIMIT and REMOTE LIMIT were set at 120°F, the SURFACE TEMPERATURE LIMIT was set at 95°F, and the MOISTURE 1 LIMIT and MOISTURE 2 LIMIT were set at 15%. The RH or Relative humidity stayed around 15 to 20%. The INTERNAL TEMPERATURE stayed around 80-90°F. The E-TES unit never had the AIR FLOW turn off or an OVERTEMP condition.

The AIR TEMPERATURE PROBE reading exceeded the limit twice and turned the heater off for two short periods. When the air temperature cooled the heater turned back on both times.

The moisture content of the wood started over 60%. The MOISTURE 1 VALUE and MOISTURE 2 VALUE both dropped but stayed above the 15% limit and did not shut the heater off.



You can modify the graph to chart the readings which you decide are the most relevant to each job. For this chart: the following changes were made in the graph:

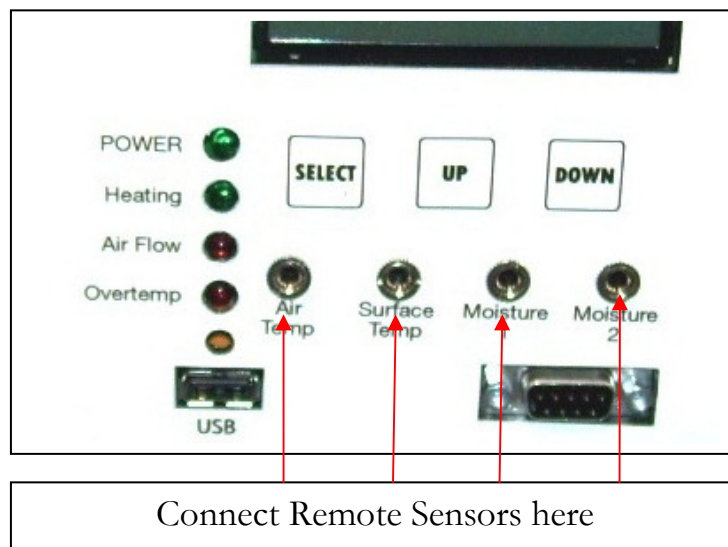
- The REMOTE ON was not charted.
- The INTERNAL LIMIT was not charted.

Heater Operation Procedure

⚠️ WARNING

Knowledge of the proper operation of the heater and heat exchange system is required for safe operation and to keep heater and components operating properly.

- 1) Read and understand the Remote Probe connection procedures and Menu Navigation in **SECTION #2** before proceeding with set-up and operation.
- 2) Place the E-TES SD unit as required for your drying situation. (**SEE SET-UP SECTION #5**)
- 3) Connect Remote sensors as needed, place sensors in desired locations.



- 4) Connect GFCI power cord to 30amp or 50amp 240vac outlet. Use appropriate adapter for cord to connect to outlet. Use a 50 foot extension cord if needed. No more than one GFCI power cord, one adapter and one extension cord can be used with the E-TES SD.



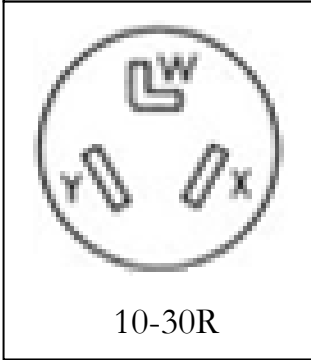
**Extension Cord 10ga x 50'
NM4403**

**GFCI Power Cord 10ga x 50'
NM4402**





10-30R



10-30R



NM4402

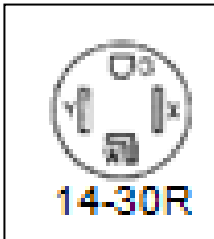
The GFCI power cord can be directly connected to 30amp 3-prong dryer outlets – NEMA 10-30R
Different outlets will require adapters to connect the GFCI power cord



NM4422

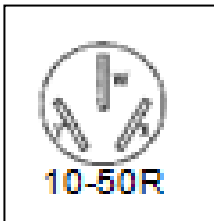


NM4420



14-30R

30 amp 4-Prong dryer outlets
NEMA 14-30R require
adapter NM4422
(Included with E-TES SD)

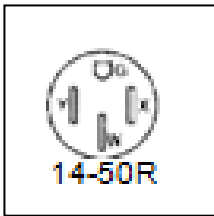


10-50R

50 amp 3-Prong range outlets
NEMA 10-50R require adapter
NM4420
(Purchased Separately)



NM4424

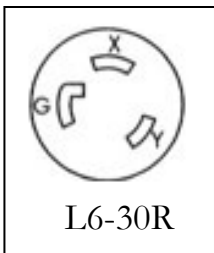


14-50R

50 amp 4-Prong range outlets
NEMA 14-50R require adapter
NM4424
(Purchased Separately)



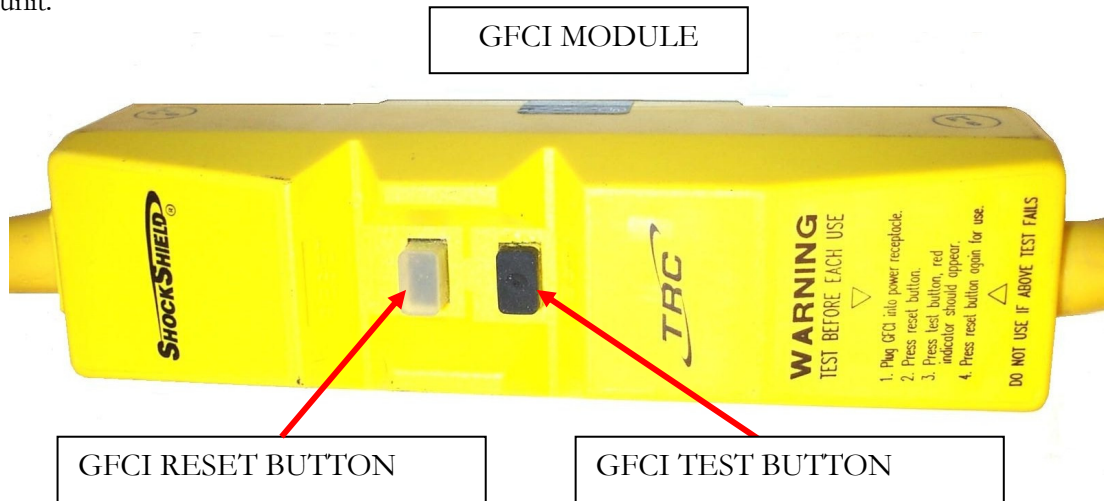
NM4426



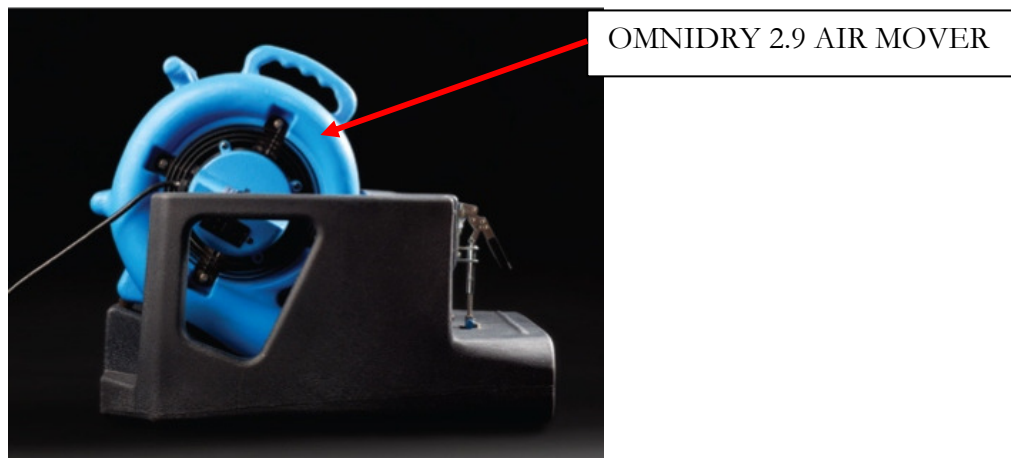
L6-30R

Temporary Power Box 30amp
outlets NEMA L6-30R require
adapter NM4426
(Purchased Separately)

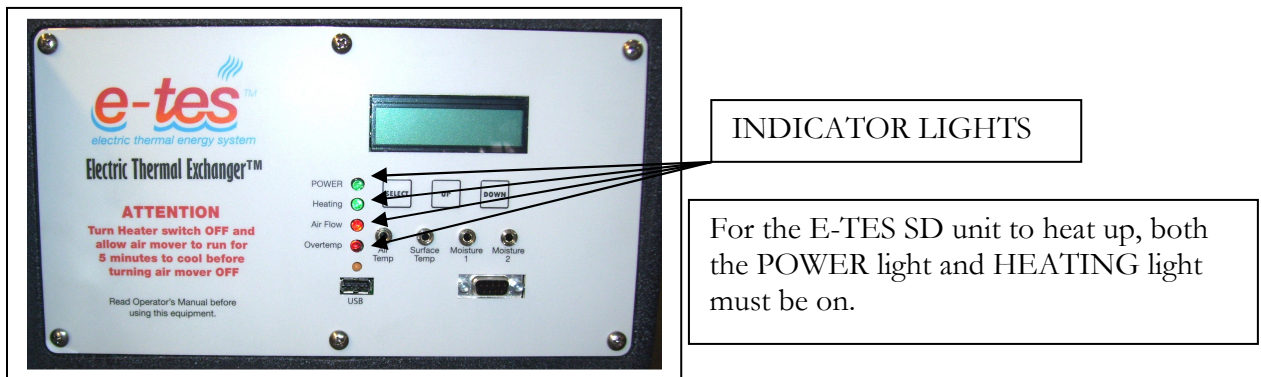
- 5) Reset GFCI. Push TEST button to test GFCI and if RESET button pops out, push RESET button back in and proceed with set-up. If RESET button does not pop out when TEST button is pushed, replace cord or contact your nearest service center for advice or assistance. Make sure E-TES SD unit heater switch is in the OFF position, and then connect the receptacle end of GFCI E-TES SD power cord or extension cord to E-TES SD unit.



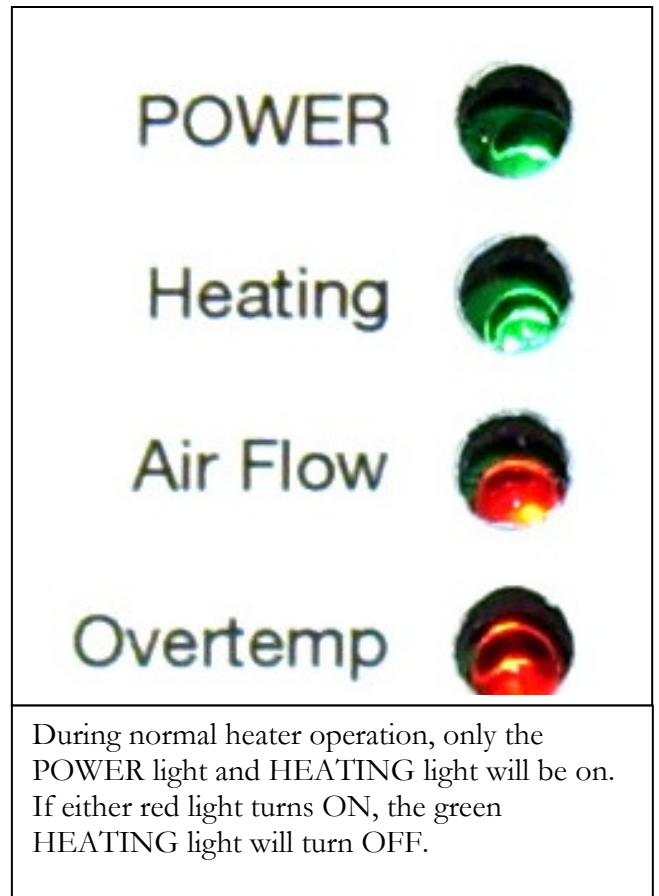
- 6) Turn the E-TES SD power switch to the ON position and set the remote sensor activation points at the temperature or moisture level required for your application. (See SECTION 2 to adjust activation points.)
- 7) Place an air mover into the E-TES SD unit. Plug in the air mover and turn the air mover switch ON.



- 8) Observe indicator lights. When both green lights are illuminated system is operating properly and the heating elements are getting power. If the green **HEATING** light is off, the unit is not heating properly.



- **POWER** – When the green **POWER** light is lighted it indicates that the heater switch is in the ON position and the 240vac power has been supplied to the heater. (If the green **POWER** light is off the other lights will not light.)
- **HEATING** – When the second green light, the **HEATING** light, is lighted it indicates that power is being supplied to the heating elements and the unit should be heating.
- **AIR FLOW** – When the first red light, the **AIR FLOW** light, is lighted it indicates that there is not sufficient air flow for the heater to operate or the airflow switch is malfunctioning and power is being shutoff to the heating elements. When this light is ON, the **HEATING** light should be OFF.
- **OVERTEMP** – When the second red light, the **OVERTEMP** light, is lighted it indicates that the heating element temperature is above the safe operating range and power being shutoff to the heating elements. When this light is ON, the **HEATING** light should be OFF.



If the green **HEATING** light is not lighted look for the following:

- If the two red lights are OFF, but the **HEATING** light does not come on, make sure you have power to E-TES SD and the green **POWER** light is ON. Check your set points on your remote sensors. One or more of them may be reading beyond their set point and have shut off the power to the heating elements. Usually when this happens the display screen will flash indicating the sensor which has signaled the unit to shutdown. Reset your activation points, disconnect or replace the sensors as needed.
- If the green **HEATING** light is OFF and the red **AIR FLOW** light is ON, the air flow through the E-TES SD unit is not enough to allow the Air Flow switch to be engaged. Check the air mover operation and check the circuit providing power to the air mover to assure proper air flow. If the air mover is operating properly, the discharge flow may be restricted. **If you are using a Flexi-Dry, open one end of the Flexi-Dry or remove restriction. Open it only as much as needed to engage the air flow switch. The Air Flow sensor may need to be recalibrated to account for the air flow change. See the Air Flow Set-up instructions on page 11.** If the **AIR FLOW** light does not turn off, there could be a loose wire or the airflow switch may be defective. Contact your nearest service center for advice or assistance.
- If the green **HEATING** light is OFF and last red light, the **OVERTEMP** light is ON the heating elements may have reached the maximum temperature or the internal temperature inside the E-TES SD box is too high and the power to the heating elements has been cut-off to allow the unit to cool. Turn the heater switch off. Make sure the air mover is ON and remove any restriction to allow the air flow to cool the elements. When cool turn the heater switch back ON. If the unit has cooled and the **OVERTEMP** light stays on, there could be a loose wire or the temperature switches could be defective. Contact your nearest service center for advice or assistance.

- 9) Observe unit operation to be sure that air flow is kept at a high enough flow rate to prevent the heater from turning ON and OFF. Remove restrictions to increase air flow as needed to maintain proper air flow rate.
- 10) Make sure circuit breakers are not tripping and the power supply to the air mover and E-TES SD unit will not be interrupted.
- 11) When the E-TES unit is adjusted properly and operating normally, the unit can be left alone during operation.

HEATER SHUTDOWN PROCEDURE

- 1) Turn the heater switch to the OFF position.
- 2) Keep the air mover running for 5 minutes to cool the heating elements.
- 3) When the unit has cooled turn the air mover OFF.
- 4) If required, insert USB Flash Drive into the USB port on the E-TES front panel, turn switch ON to log data from job. When Flash Drive stops flashing, turn switch off, remove the Flash Drive and proceed with shutdown. (Display will freeze on **Updating USB - Do Not Remove** screen while data is downloading.)



Flash Drive inserted into USB port to download job data.

E-TES Charter software required to read & chart data log information downloaded from the E-TES SD. (See instructions on page 17)

- 5) Disconnect the power cord from the power outlet and heater connection. Roll up and store cord.
- 6) Remove remote sensors and pack for storage.
- 7) Remove and store air movers and E-TES SD Electric Thermal Exchanger.

E-TES SD Troubleshooting


Problem	Cause	Solution
240vCircuit Breaker	Circuit Breaker rated too low for power demand of heater	The E-TES unit requires a 30 amp circuit breaker. Move plug to another outlet & circuit or have electrician replace circuit breaker
Blowing	Too much current demand on circuit	Move plug to another outlet & circuit or disconnect other devices from this circuit.
	Circuit breaker faulty	Move plug to another outlet & circuit or have electrician replace circuit breaker
	Heating Element faulty	Replace Heating Element
	Faulty power cord	Replace cord
	Faulty switches or internal wiring	Check wiring & test switches - Repair as needed *
Unit Not Heating	Heater Switch in OFF position	Turn switch to ON position
HEATING Light OFF (GREEN)	240v Building circuit breaker tripped.	Reset breakers or move cord to another outlet
	GFCI tripped	Reset GFCI
	Faulty power cord	Replace cord
	Faulty GFCI	Replace cord
	Air Mover not running	Turn on air mover or check power to air mover. Repair or replace air mover as needed
	Low Air Flow	Remove restrictions to maintain adequate air flow
	Probe Temperature set point too low	Reset Air Temp & Surface Temp set points
	Moisture 1 or 2 Value set point too low	Reset Moisture Value set point
	Moisture 1 or 2 Value stuck at zero	Connect Moisture probe – Turn Power switch OFF then ON
	Faulty Remote probes	Check probe readings – Replace probes as needed
	Internal Temperature sensor faulty	Replace circuit board
	Faulty switches or internal wiring	Check wiring & test switches - Repair as needed *
	Faulty Safety Switch	Observe Lights to determine function Correct condition or Repair as needed *
	Faulty indicator light	Replace light
POWER Light OFF (GREEN)	Heater Switch in OFF position	Turn switch to ON position
	240v Building circuit breaker tripped.	Reset breakers or move cord to another outlets
	GFCI tripped	Reset GFCI
	Faulty power cord	Replace cord
	Faulty GFCI	Replace cord
	Faulty switches or internal wiring	Check wiring & test switches - Repair as needed *
	Faulty indicator light	Replace light
Start-Up Error Display	Memory Locked Up	Re-initialize Memory (See Page 31)
	Software Corrupted	Reprogram processor
	Circuit Board Faulty	Replace Circuit Board

* **⚠ WARNING** To reduce the risk of injury, repairs to electrical systems should only be performed by experienced technicians. Contact your nearest service center for assistance.

E-TES SD Troubleshooting

Continued

Problem	Cause	Solution
Air Flow Light ON (RED)	Air Mover not running	Turn on air mover or check power to air mover. Repair or replace air mover as needed
	Low Air Flow	Remove restrictions to maintain adequate air flow
	Unit Overheated	Let unit cool. Reset Hi-Limit Switch as needed.
	Faulty switches or internal wiring	Check wiring & test switches - Repair as needed *
	Air Flow switch out of Calibration	Recalibrate Air Flow Switch (See Page 12)
	Faulty Safety Switch	Observe Lights to determine function Correct condition or Repair as needed *
OVERTEMP Light ON (RED)	Unit Overheated	Let unit cool. Allow temperature Switch to cool off and reset.
	Faulty switches or internal wiring	Check wiring & test switches - Repair as needed *
	Faulty Temperature Switch	Observe Lights to determine function Correct condition or Repair as needed *
Remote Sensors Not reading	Faulty sensor	Replace sensor
	Circuit board faulty	Replace circuit board
	Software Corrupted	Reprogram processor (See page 18)
Display Blank	No Power	Check green power light – See green light section
	Faulty switches or internal wiring	Check wiring & test switches - Repair as needed *
	Processor Locked Up	Reset Processor (See Page 33)
	Faulty indicator Display	Replace Circuit Board
	Software Corrupted	Reprogram processor (See page 18)
Clock, Date or Time Wrong	Temporary Glitch	Reset Date & Time (See page 12)
	Software Corrupted	Reprogram processor
	Battery Dead	Replace Battery – Use Panasonic BR-2/3A only
	Circuit Board Faulty	Replace Circuit Board
Cannot move through menu	Wrong key being pushed	Check instructions for available key options for each screen
	Process locked up	Turn power switch OFF and back ON to reset
	Faulty push buttons	Replace circuit board
	Faulty circuit board	Replace circuit board
	Software corrupted	Reprogram processor (See page 18)
System Overheating	Faulty switches or internal wiring	Check wiring & test switches - Repair as needed *
	Faulty Safety Switch	Observe Lights to determine function Correct condition or Repair as needed *
	Air Flow too low - Not enough Heat draw from system	Turn air movers switches to higher speed or remove restrictions to increase air flow
	Room Temperature too high	Use exhaust controllers to reduce room temp.
	Internal Temperature sensor faulty	Replace circuit board
	Remote temp sensor set point too high	Reset air & surface temperature set points
	Defective remote sensors	Replace air temperature or surface temperature remote sensors

*  **WARNING** To reduce the risk of injury, repairs to electrical systems should only be performed by experienced technicians. Contact your nearest service center for assistance.

E-TES SD 240 INDICATOR LIGHT PANEL CONFIGURATIONS

E-TES SD INDICATOR LIGHTS:

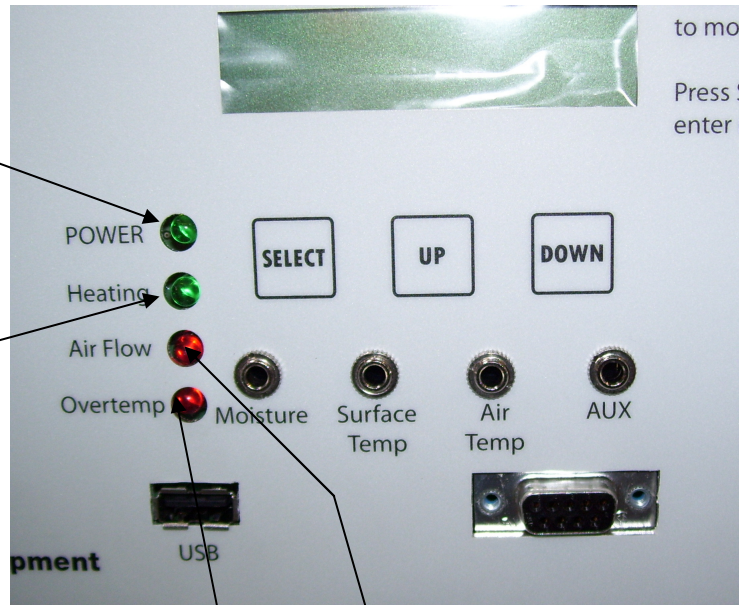
During normal operation both Green lights will be ON when the unit is heating.

POWER LIGHT

When the green POWER light is ON, the switch is on and power is being supplied to the unit.

HEATING LIGHT

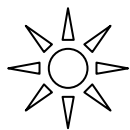
When the green HEATING light is ON, the controls are all within limits and power is being supplied to the heating elements



If either red light is ON, the green HEATING light will turn off, indicating that the unit is no longer heating.

AIR FLOW LIGHT

OVERTEMP LIGHT



Indicates Light is ON



Indicates Light is OFF

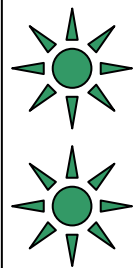
When both of the green lights are ON and both red lights are OFF, as shown here, the heater is operating normally and the heating elements are receiving power.

POWER

HEATING

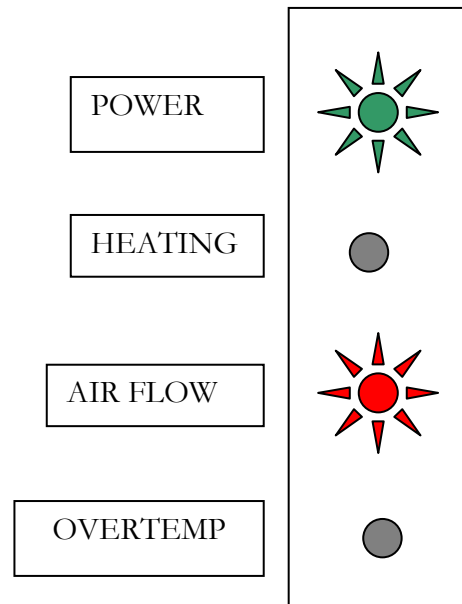
AIR FLOW

OVERTEMP



When the red **AIR FLOW** light is ON, the air flow is too low for proper operation and the unit has shutoff the power to the heating elements. This will cause the green **HEATING** light to turn OFF.

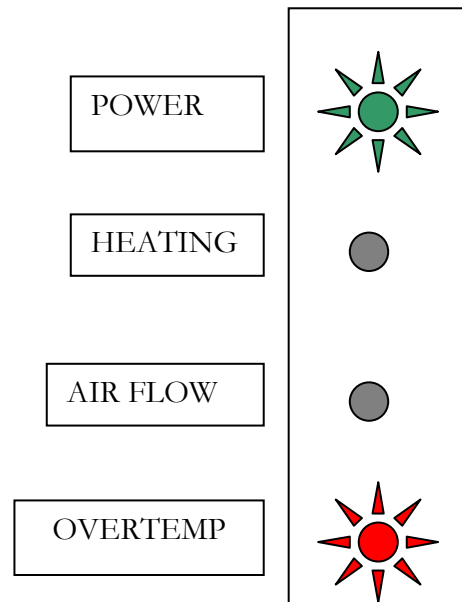
If the air flow is restored, the red **AIR FLOW** light will turn OFF, the green **HEATING** light will turn back ON and the unit will again heat up.



When the red **OVERTEMP** light is ON, the temperature of the heating elements has exceeded 210°F and the unit has shutoff the power to the heating elements. This will cause the green **HEATING** light to turn OFF.

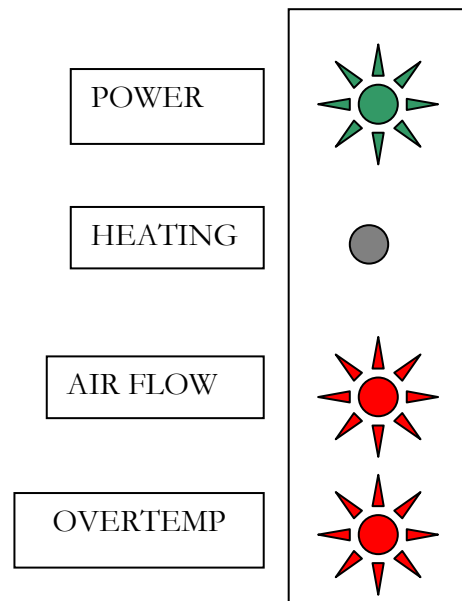
The red **OVERTEMP** light will also come ON if the internal temperature exceeds 140° and the internal temperature switch on the circuit board shuts off the power to the heating elements.

When the temperature cools sufficiently the red **OVERTEMP** light will turn OFF, the green **HEATING** light will turn back ON and the unit will again heat up.



In some situations when the air flow is too low and the **AIRFLOW** light comes ON, the heat exchangers will also over heat and cause the **OVERTEMP** light to come ON too.

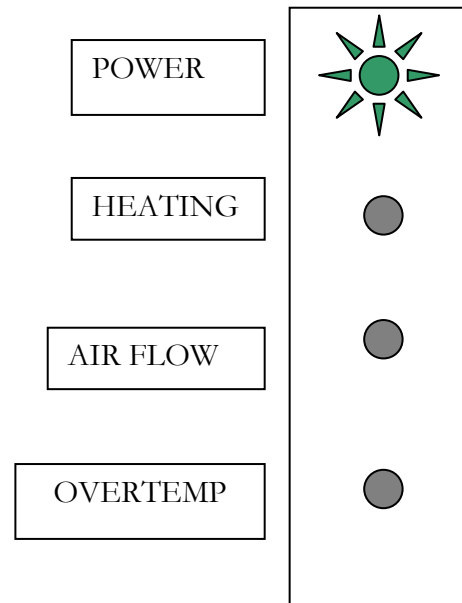
When the air flow is restored the red **AIR FLOW** light will turn OFF and when the temperature cools sufficiently the red **OVERTEMP** light will turn OFF, the green **HEATING** light will turn back ON and the unit will again heat up.



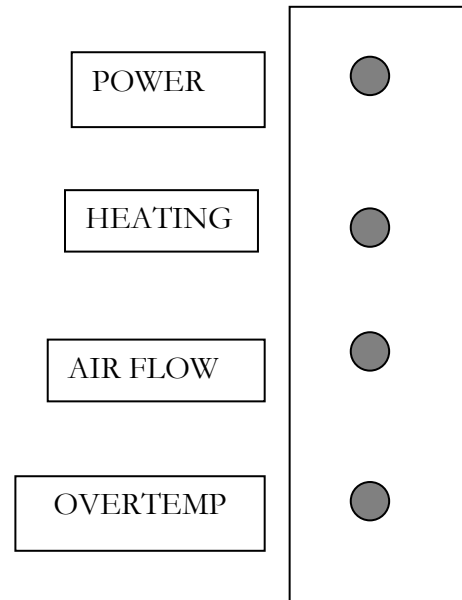
When the green **HEATING** light is OFF, but neither of the red lights is ON, it usually means that one on the remote sensors is getting a reading past its set point. When the AIR TEMPERATURE, SURFACE TEMPERATURE or MOISTURE VALUE measured by the corresponding probe exceeds the set point the green **HEATING** light will turn OFF indicating unit has shutoff the power to the heating elements.

The screen for the sensor sending the shutdown reading will be displayed, flashing the current reading and the shutoff set point.

When the temperature cools sufficiently or the moisture level rises the green **HEATING** light will turn back ON and the unit will again heat up.



The power supply to the E-TES SD unit has been cut off. Check the building 240v circuit breaker and the GFCI and reset as needed. There also could be a malfunction in the heater switch or other internal wiring. Contact your nearest service center for assistance.

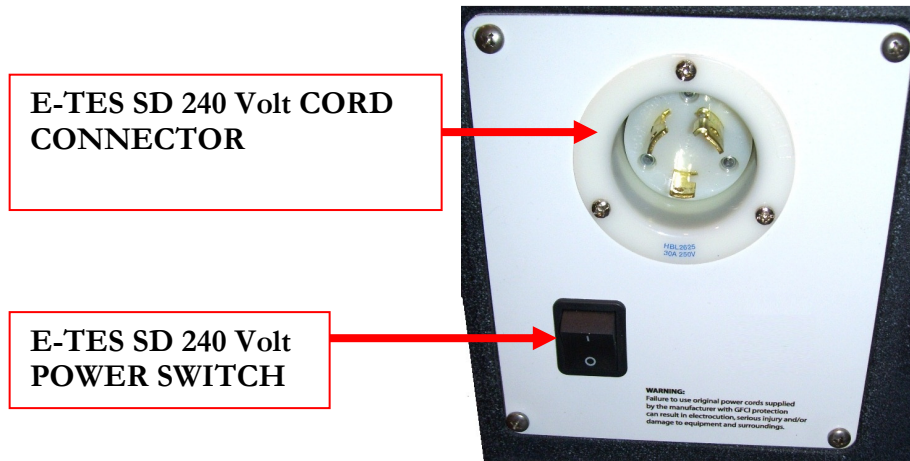


ALL OTHER LIGHT COMBINATIONS WILL ONLY OCCUR WHEN THERE IS A MALFUNCTION IN THE SYSTEM. IF YOU HAVE A LIGHT COMBINATION NOT SHOWN AND DESCRIBED HERE, CONTACT YOUR NEAREST SERVICE CENTER FOR ADVICE OR ASSISTANCE.

E-TES SD 240 Re-Initializing the Memory

On occasion the memory on the E-TES SD units will need to be re-initialized. When this happens, the E-TES SD will not function and the display will show the Start-up Error screen when the power switch is turned on or will not accept new software updates. These problems can usually be corrected in the field by re-initializing the E-TES SD memory.

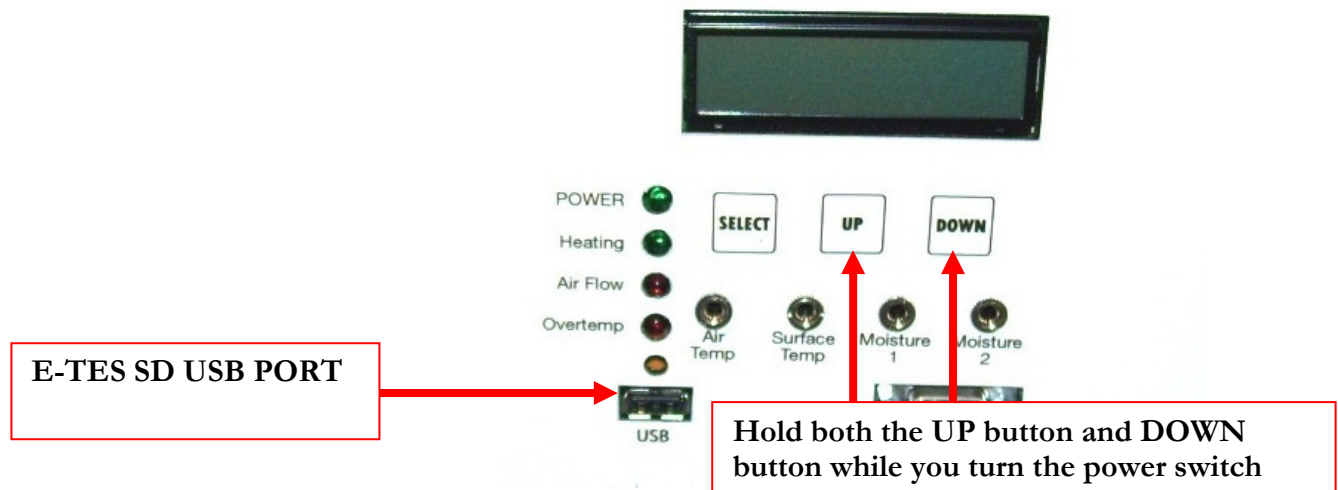
1. Connect the power cord to the power source and reset the GFCI.
2. Connect the power cord to the E-TES SD.



3. If you are updating the software, insert the flash drive with the new software into the USB port on the front panel of the E-TES SD.



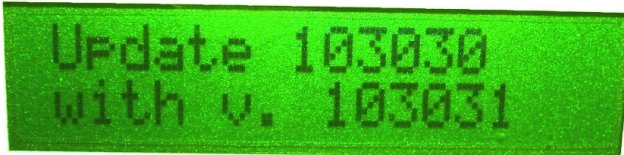
4. Press and hold both the UP button and DOWN button while your turn the power switch ON.



5. Continue to hold both the UP button and DOWN button until the advances past the booting screen. If you are updating the software you can release the buttons as soon as you see the Update Screen. Once the memory is re-initialized and the software is updated the unit should advance to the main screen and operate normally. If not, contact you E-TES SD distributor for advice or assistance.



E-TES SD
Booting Screen



E-TES SD
Software Update Screen

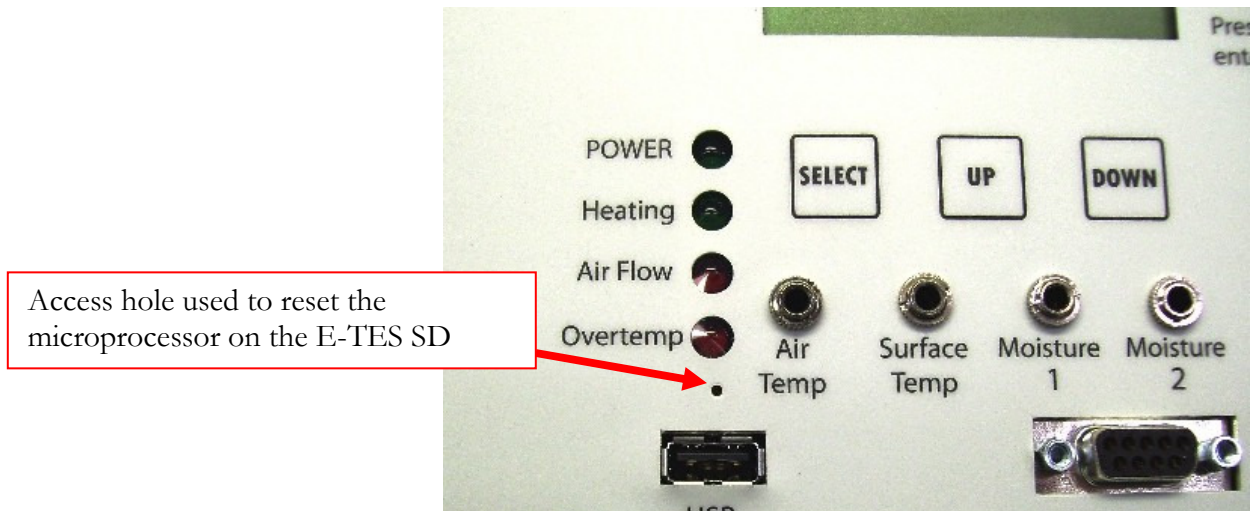


E-TES SD
Main Screen

E-TES SD 240 Resetting the Processor

On occasion the processor on the E-TES SD units will lock up. When this happens, the E-TES SD will not function and the display will show only a line of rectangles or will remain blank when the power switch is turned on. This problem can easily be corrected in the field by resetting the processor. Sometimes simply clicking the Power Switch OFF and back ON quickly will unlock and reset the processor. If not, follow these instructions:

E-TES SD machines have a small hole in the front face plate just above the USB port and below the indicator light. With the E-TES SD unplugged and the Power Switch in the OFF position, poke a toothpick or paper clip through the small hole to push the reset button behind the front faceplate. Hold the button for 2-3 seconds.



After resetting the processor, the E-TES SD Date & Time Clock must be reset.

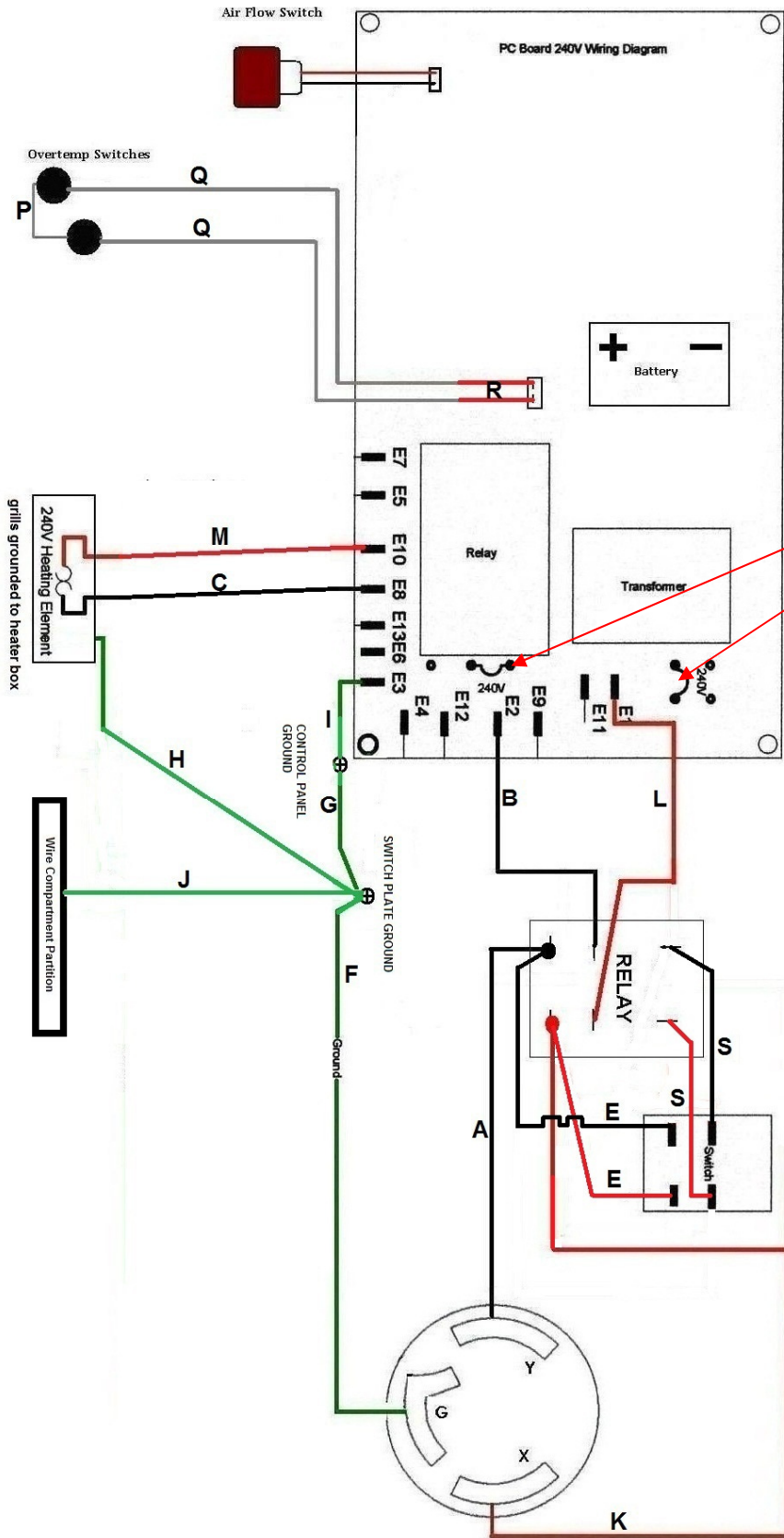
Use the UP & DOWN buttons to move through the menu to the current date & time screen.

- ◆ Press **SELECT** to set the E-TES SD Date & Time Clock.
- ◆ HOUR will flash first. Use the **UP/DOWN** buttons to change the HOUR setting. When correct, press **SELECT** to move to MINUTES.
- ◆ Use the **UP/DOWN** buttons to change the MINUTES setting. When correct, press **SELECT** to move to SECONDS & press **SELECT** again to move to the MONTH setting.
- ◆ Use the **UP/DOWN** buttons to change the MONTH setting. When correct, press **SELECT** to move to DAY NUMBER. (The DAY NAME will change as you adjust the MONTH, DAY NUMBER & YEAR.)
- ◆ Use the **UP/DOWN** buttons to change the DAY NUMBER setting. When correct, press **SELECT** to move to YEAR.

Use the **UP/DOWN** buttons to change the YEAR setting. When correct, press **SELECT** to save setting and exit the date & time screen. Use the **UP/DOWN** buttons to move through the menu to check and reset your activation or shutdown settings on Air Temperature, Surface Temperature, Moisture 1, Moisture 2, Remote Setup & Air Flow Setup as needed.

Heater Wiring

Section 3



Two jumpers used to convert circuit board for use with 240vac must be in the positions shown for proper operation of E-TES SD unit.

Circuit board may be damaged if board is used with jumpers in the wrong position

⚠ WARNING

The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100° C (212° F) or incinerate. Replace battery with Panasonic, Part Number BR-2/3A only, use of another battery may present a risk of fire or explosion.”

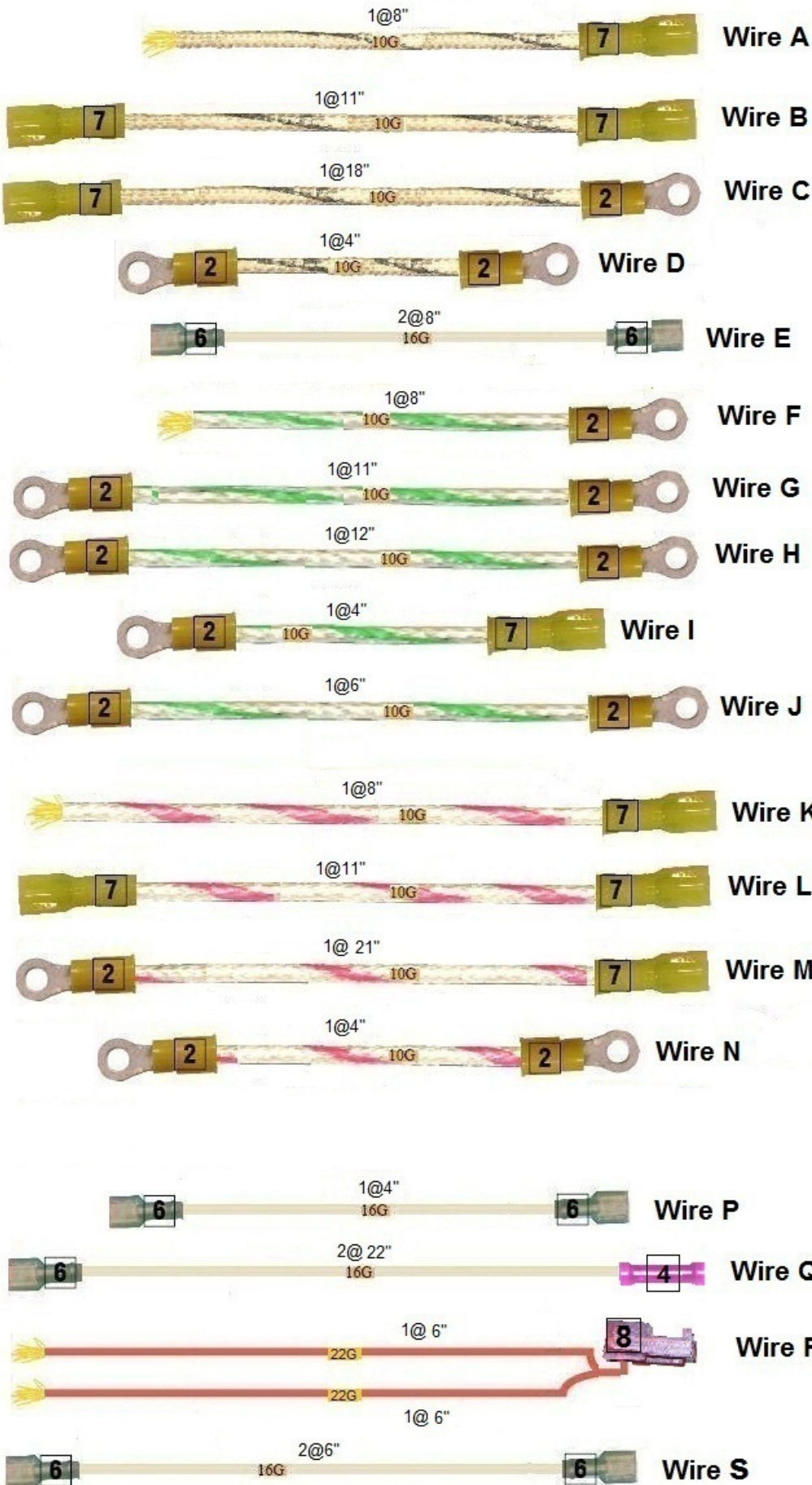
Dispose of used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.

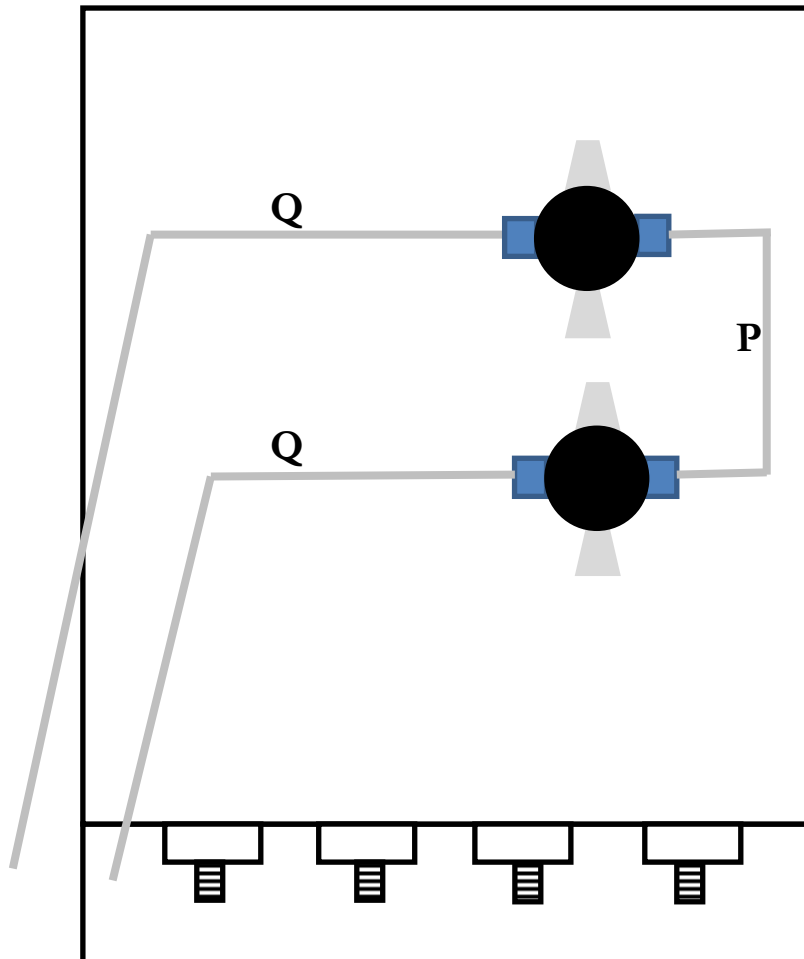
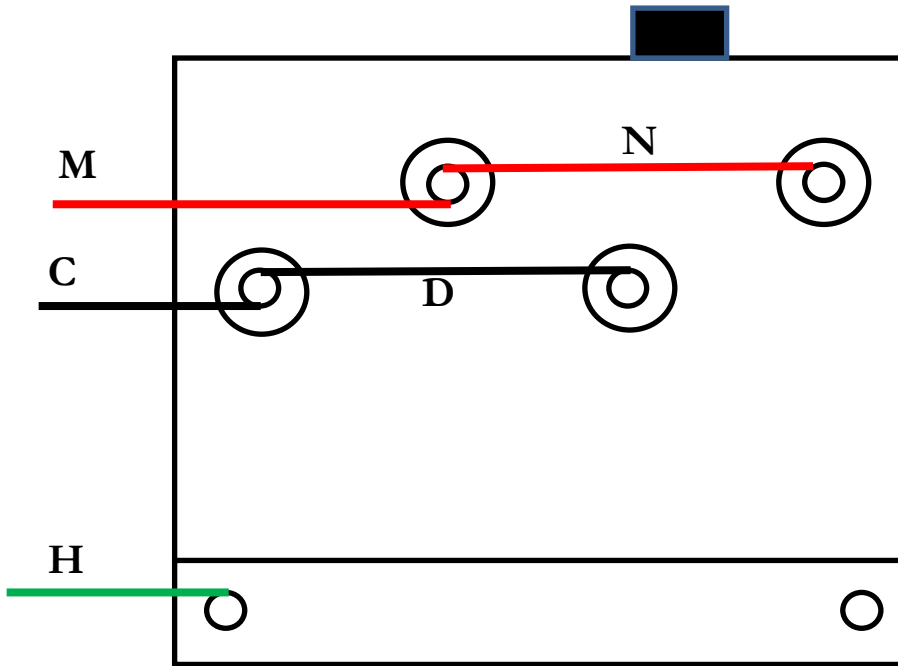
E-TES SD 240V LOW PROFILE WIRING

LIST#	PART #	DESCRIPTION	LENGTH "	QTY	END #1	END #2
A	NM4033B	WIRE 10 GA HI-TEMP BLACK STRIPE	8.00	1	NONE	NM4317
B	NM4033B	WIRE 10 GA HI-TEMP BLACK STRIPE	11.00	1	NM4317	NM4317
C	NM4033B	WIRE 10 GA HI-TEMP BLACK STRIPE	18.00	1	NM5061	NM4317
D	NM4033B	WIRE 10 GA HI-TEMP BLACK STRIPE	4.00	1	NM5061	NM5061
E	NM5021HT	WIRE 16 GA HI-TEMP	8.00	2	100004	100004
F	NM4033G	WIRE 10 GA HI-TEMP GREEN STRIPE	6.00	1	NONE	NM5061
G	NM4033G	WIRE 10 GA HI-TEMP GREEN STRIPE	11.00	1	NM5061	NM5061
H	NM4033G	WIRE 10 GA HI-TEMP GREEN STRIPE	12.00	1	NM5061	NM5061
I	NM4033G	WIRE 10 GA HI-TEMP GREEN STRIPE	4.00	1	NM5061	NM4317
J	NM4033G	WIRE 10 GA HI-TEMP GREEN STRIPE	6.00	1	NM5061	NM5061
K	NM4033R	WIRE 10 GA HI-TEMP RED STRIPE	6.00	1	NONE	NM4317
L	NM4033R	WIRE 10 GA HI-TEMP RED STRIPE	11.00	1	NM4317	NM4317
M	NM4033R	WIRE 10 GA HI-TEMP RED STRIPE	21.00	1	NM5061	NM4317
N	NM4033R	WIRE 10 GA HI-TEMP RED STRIPE	4.00	1	NM5061	NM5061
P	NM5021HT	WIRE 16 GA HI-TEMP	4.00	1	100004	100004
Q	NM5021HT	WIRE 16 GA HI-TEMP	22.00	2	100004	NM4042
R	NM5404	WIRE 22GA RED	6.00	2	NONE	NM5402
S	NM5021HT	WIRE 16 GA HI-TEMP	6.00	2	100004	100004

LIST#	NOTE
A	PLUG Y TERMINAL TO RELAY
B	RELAY TO CIRCUIT BOARD
C	HEATER TO CIRCUIT BOARD
D	BACK HEATER TO FRONT HEATER JUMPER
E	RELAY POWER IN TO ROCKER SWITCH POWER IN (X & Y)
F	PLUG TO SWITCH PANEL GROUND LUG
G	SWITCH PANEL GROUND LUG TO CONTROL PANEL GROUND LUG
H	HEATER TO SWITCH PANEL GROUND LUG
I	CONTROL PANEL GROUND LUG TO CIRCUIT BOARD
J	PARTITION TO CONTROL PANEL GROUND LUG
K	PLUG X TERMINAL TO RELAY
L	RELAY TO CIRCUIT BOARD
M	HEATER TO CIRCUIT BOARD
N	BACK HEATER TO FRONT HEATER JUMPER
P	TEMP SWITCH JUMPER WIRE
Q	TEMP SWITCH TO SPLICE WITH WIRE R
R	BOTH WIRE CONNECT TO SINGLE NM5401 & SPLICE WITH BOTH WIRE Q
S	ROCKER SWITCH POWER OUT TO RELAY TRIGGER

**E-TES SD 240 Volt
Low Profile Wire Specs**





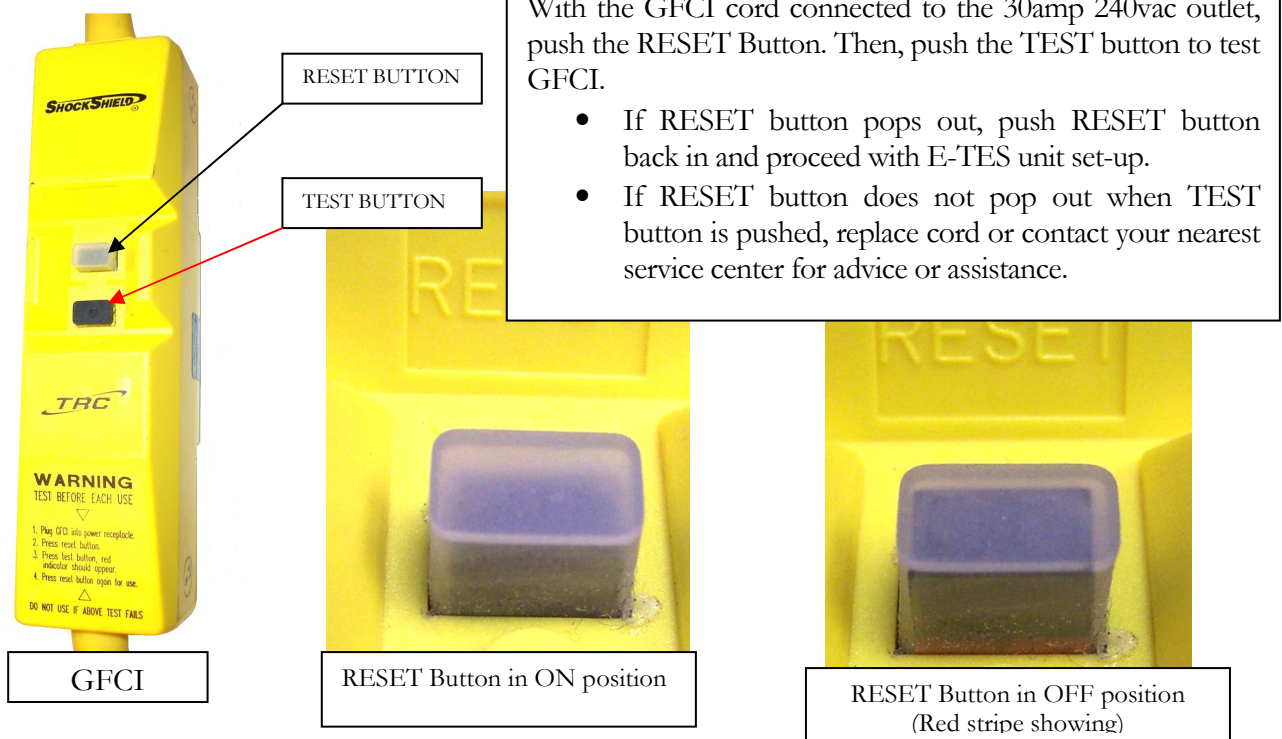
Heater Maintenance

The E-TES SD 240 Volt Low Profile Electric Thermal Exchanger requires very little maintenance.

WARNING

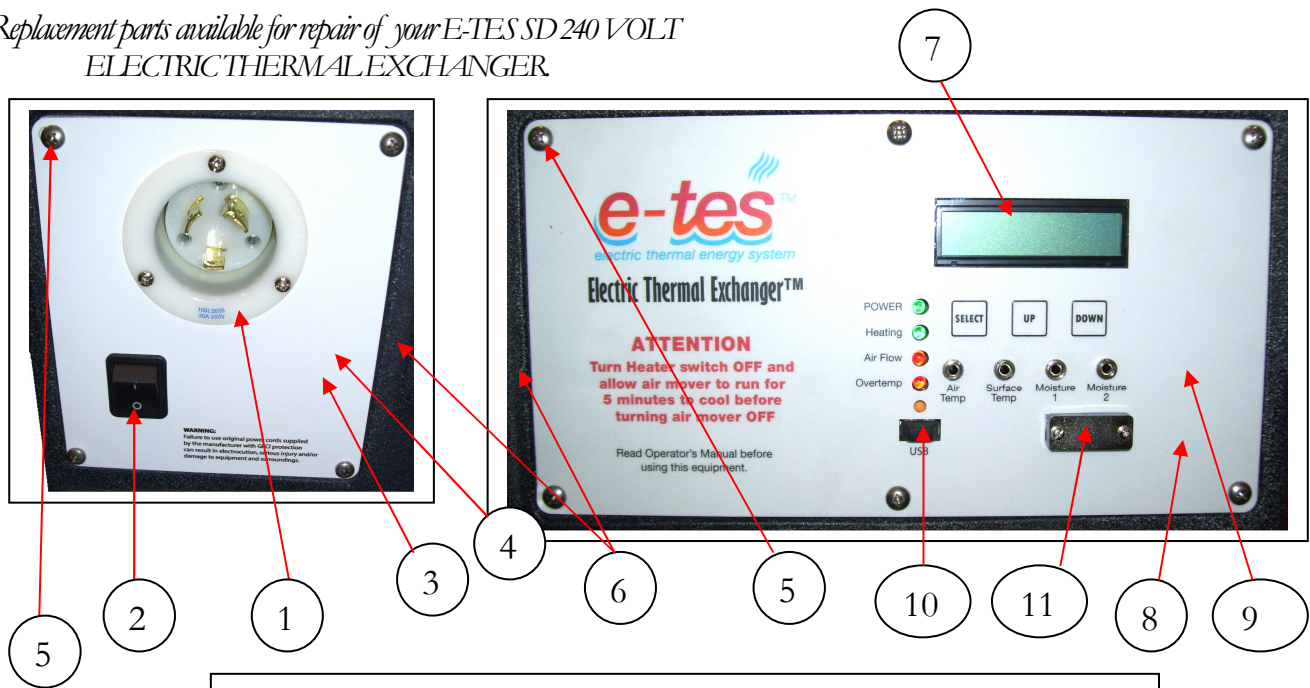
To keep this unit in **safe** operating condition, perform the following inspections each time before using this equipment:

- Remove lint or debris that may be collecting on heating elements or inside E-TES SD unit.
- Examine wiring to ensure wiring to switches and heating elements is not damaged or worn. Check wire connections to ensure that they are tight and have not worked loose due to vibration or other related conditions. Repair or replace wires before using this equipment.
- Examine plastic E-TES SD body for damage and repair or replace as needed.
- Clean sensor cord plug ends. Check sensor cords for wear or damage and repair or replace as needed.
- Check Clock setting. If clock does not keep time & needs to be reset after turning the E-TES SD off and back on, the battery should be replaced. Replace battery with Panasonic, Part Number BR-2/3A only.
- Check air flow sensor calibration. (See Page 12)
- Check power cords for wear or damage and repair or replace as needed. Test GFCI and replace cord if GFCI is not operating properly. Replace cord as needed.



Parts

*Replacement parts available for repair of your E-TES SD 240 VOLT
ELECTRIC THERMAL EXCHANGER.*



**E-TES SD 240V LOW PROFILE
FRONT SWITCH PLATE AND CONTROL PANEL**

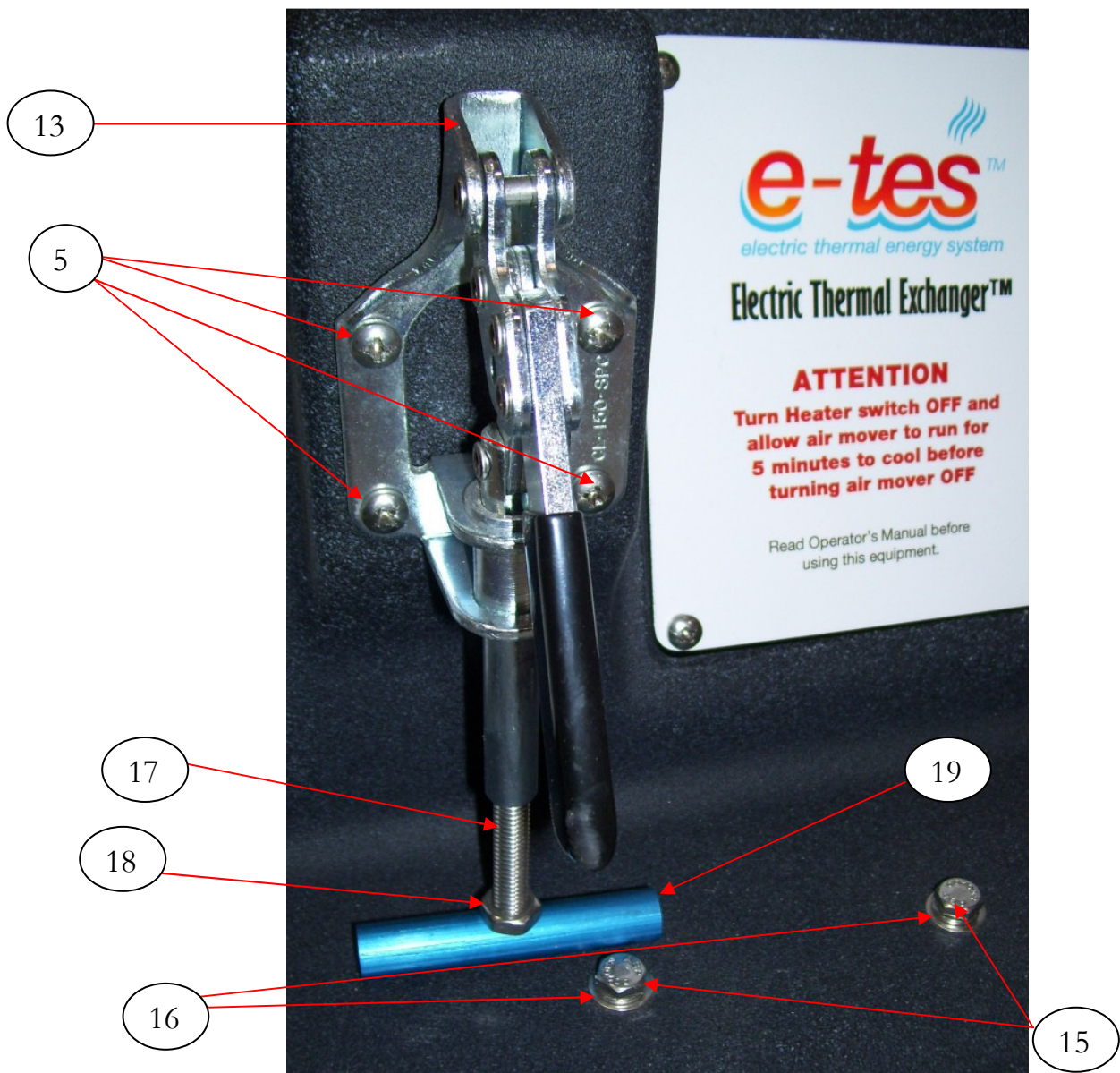
1	FLANGED PLUG NEMA L6-30P TWIST LOCK	NM4400	8	DECAL E-TES SD LOW PROFILE CONTROL PANEL	NM5392B
2	ROCKER SWITCH DPST	NM5714	9	PANEL E-TES SD LOW PROFILE CONTROL	NM5908
3	DECAL E-TES SD 240 VOLT LOW PROFILE SWITCH PANEL	NM5907A	NS	RELAY DPST 240V	NM4450
4	PANEL E-TES SD 240 VOLT LOW PROFILE SWITCH	NM5907	10	USB PORT DUST CAP	NM5384
5	SCREW 10-24 X 1/2" PHPH SS (QTY 10) (Attach switch panel & control panel)	NM5947	11	SERIAL PORT DUST CAP	NM5385
6	BODY TEX THERMAL EXCHANGER – LOW PROFILE PLASTIC	NM5900	NS	SCREW 6-32 X .375" PPH SS (QTY 4) (Attach circuit board to panel)	NM5436
7	CIRCUIT BOARD E-TES SD 240V	NM5394	NS	WASHER #6 INTERNAL STAR (QTY 4) (Attach circuit board to panel)	NM5434

E-TES LOW PROFILE FRONT VIEW OF COMPONENTS



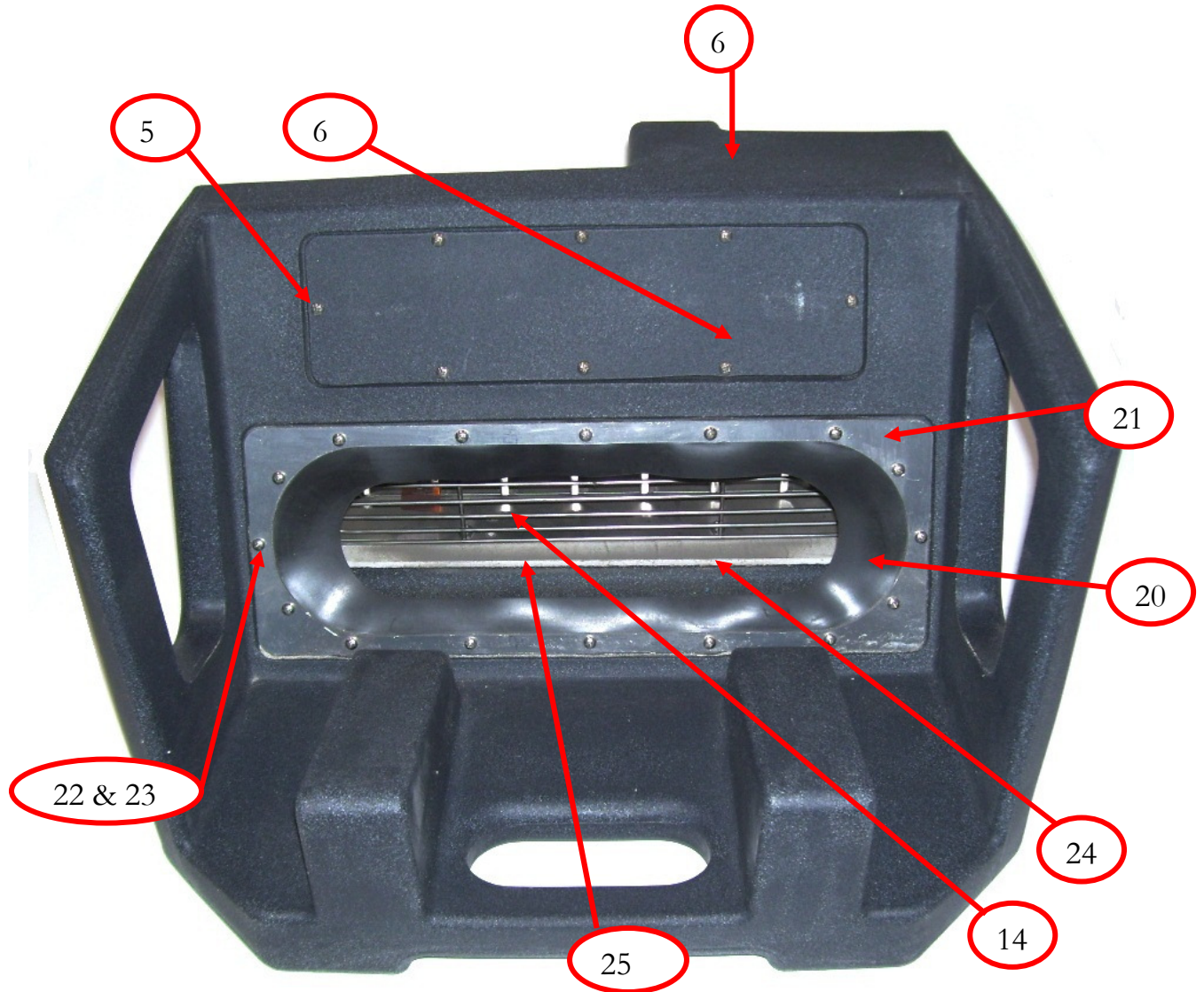
1	FLANGED PLUG NEMA L6-30P TWIST LOCK	NM4400	12	CLAMP ASSEMBLY	SEE PAGE 40
2	ROCKER SWITCH DPST	NM5008	13	HEATER BOX E-TES LP (TOP 25A & BOTTOM 25)	SEE PAGES 42 - 45
3	DECAL E-TES SD 240 VOLT LOW PROFILE SWITCH PANEL	NM5907A	14	FRONT GRILLE E-TES LOW PROFILE	NM5932
4	PANEL E-TES SD 240 VOLT LOW PROFILE SWITCH	NM5907	15	SCREW 1/4-20 X 3/4" HXHD SS	NM5017
5	SCREW 10-24 X 1/2" PHP SS (QTY 10) (Attach switch panel & control panel)	NM5947	16	FLAT WASHER 1/4" SS	NM5066
6	BODY E-TES LOW PROFILE EXCHANGER	NM5900	NS	RELAY DPST 240V	NM4450
7	CIRCUIT BOARD E-TES SD 240V	NM5394			
8	DECAL E-TES SD LOW PROFILE CONTROL PANEL	NM5392B			
9	PANEL E-TES SD LOW PROFILE CONTROL	NM5908			

CARPET CLAMP ASSEMBLY

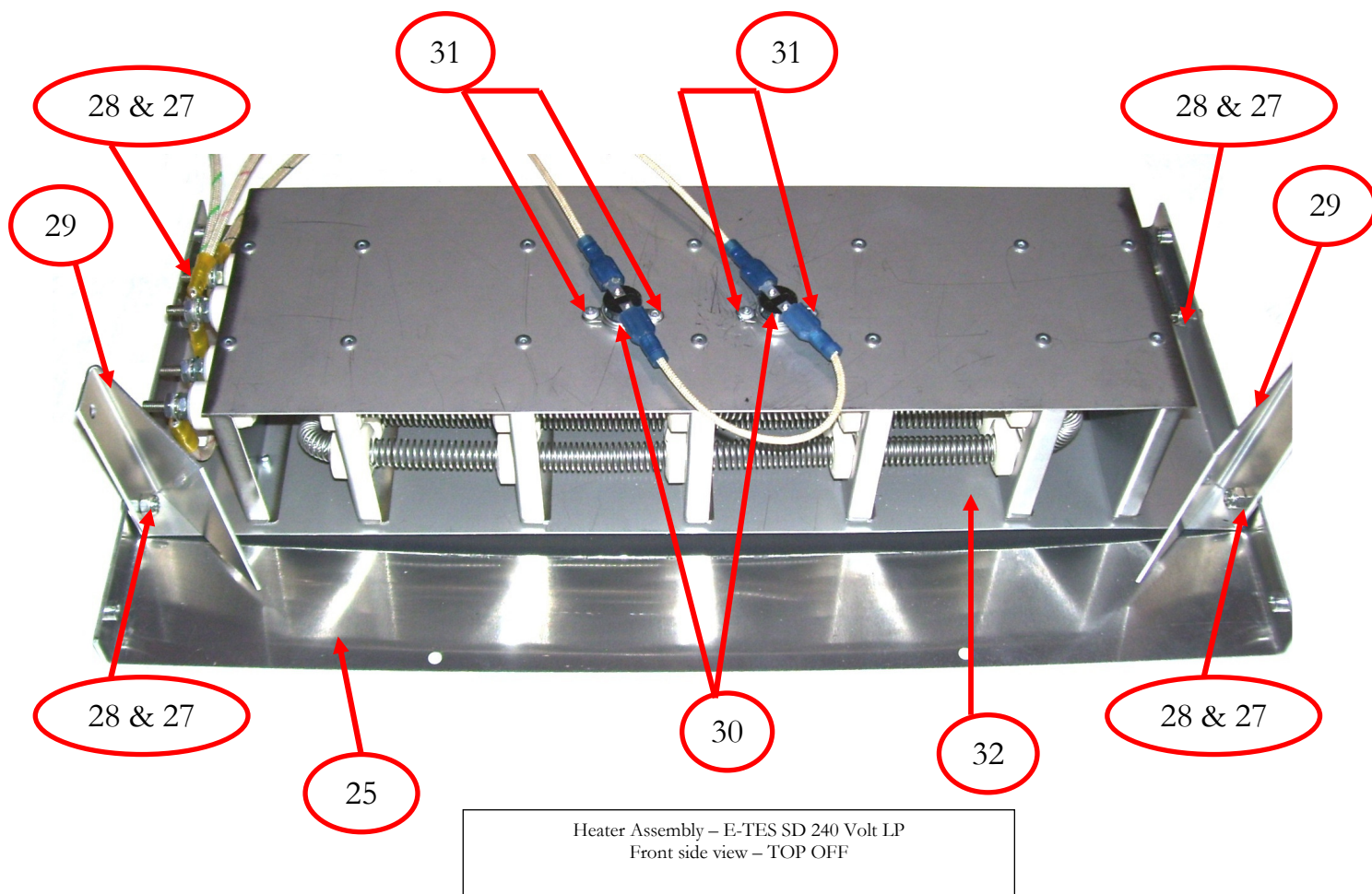


5	SCREW 10-24 X 1/2" PHP SS (QTY 4) (Attach carpet clamp to box)	NM5947	17	STUD 5/16-18 X 2-1/2"	NM4246
13	CLAMP TOGGLE	NM4245	18	NUT 5/16-18 HEX	NM4290
15	SCREW 1/4-20 X 3/4" HXHD SS (QTY 2) (Secure heater box)	NM5017	19	BAR CARPET CLAMP 1/2" X 3"	NM4247
16	FLAT WASHER 1/4" SS (Secure heater box)	NM5066			

E-TES LOW PROFILE BACK VIEW OF COMPONENTS

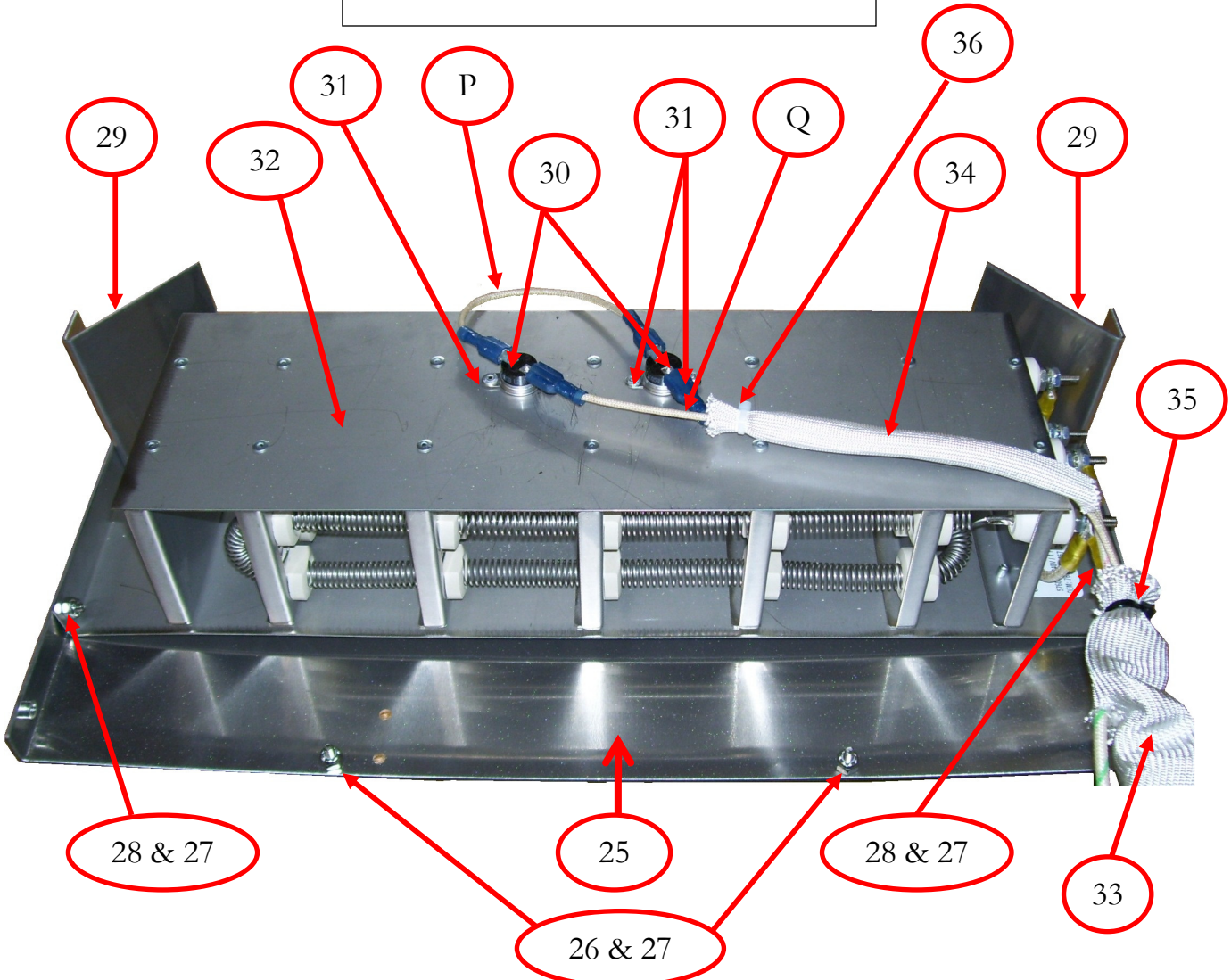


6	BODY E-TES LOW PROFILE EXCHANGER (Includes #6A)	NM5900	25	HEATER BOX E-TES LP (BOTTOM)	SEE PAGES 42 - 45
6A	BACK ACCESS PLATE E-TES LP	NOT SOLD SEPARATELY	NS	HEATER BOX E-TES LP (TOP)	SEE PAGE 45
5	SCREW 10-24 X 1/2" PHP SS (QTY 8)	NM5947	NS	SCREW 8-32 X 1/2" PHP SS (QTY 4) (Attach top to box bottom)	NM5124
20	GASKET E-TES LOW PROFILE	NM5936	14	FRONT GRILLE E-TES LOW PROFILE	NM5932
21	GASKET RETAINER E-TES LP	NM5937	24	INSULATION CERAMIC PAPER	NM4441A
22	SCREW 10-24 X 3/4" PPH SS (QTY 16)	NM4244	NS	SERIAL NUMBER PLATE	NM5572
23	NUT 10-24 NYLOCK SS (QTY 16)	PHY094-034	NS	RIVET 1/8" ALUMINUM (QTY 4) (Attach serial number plate)	NS116
NS	WIRING COMPARTMENT PARTITION	NM5934	NS	SCREW #8 X 1/2" SELFTAP SS PH (QTY4) (Attach wiring compartment partition)	NM4372



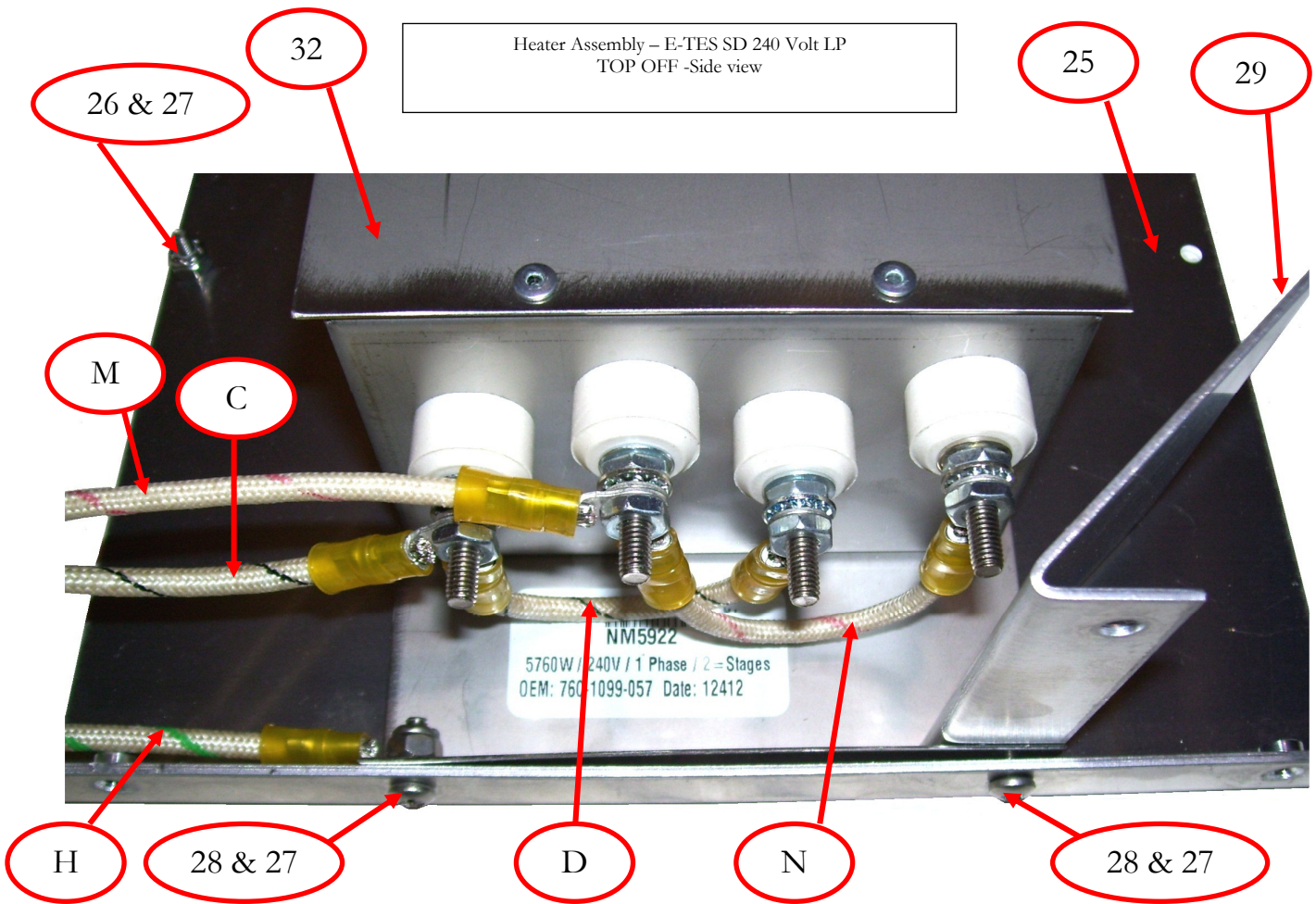
25	HEATER BOX - BOTTOM	NM5916	31	RIVET 1/8" X 3/4" ALUMINUM (QTY 4) (Attach temp switches)	NM5025
28	SCREW 8-32 X 1/2" PHP SS (AIR FLOW GUIDE BRACKET MOUNT)	NM5124	32	HEATER COIL ASSEMBLY 5760W 240V	NM5922
27	NUT 8-32 NYLOCK SS (AIR FLOW GUIDE BRACKET MOUNT)	NM5793			
28	SCREW 8-32 X 5/8" PHP SS (ATTACH HEATER COIL ASSY TO BOTTOM BOX)	NM5723	NS	WIRE SLEEVE 5/8" (1 PIECE 6")	NM5420
27	NUT 8-32 NYLOCK SS (ATTACH HEATER COIL ASSY TO BOTTOM BOX)	NM5793	NS	WIRE SLEEVE 7/16" (1 PIECE 6")	NM5421
29	BRACKET AIR FLOW GUIDE	NM5917	NS	WIRE TIE 7" BLACK (Secure 5/8" wire sleeve)	100003
30	SWITCH 210F TEMP SNAP SWITCH	NM5930	NS	WIRE TIE 4" WHITE (Secure 7/16" wire sleeve)	NM5418

Heater Assembly – E-TES SD 240 Volt LP
Back side view – TOP OFF



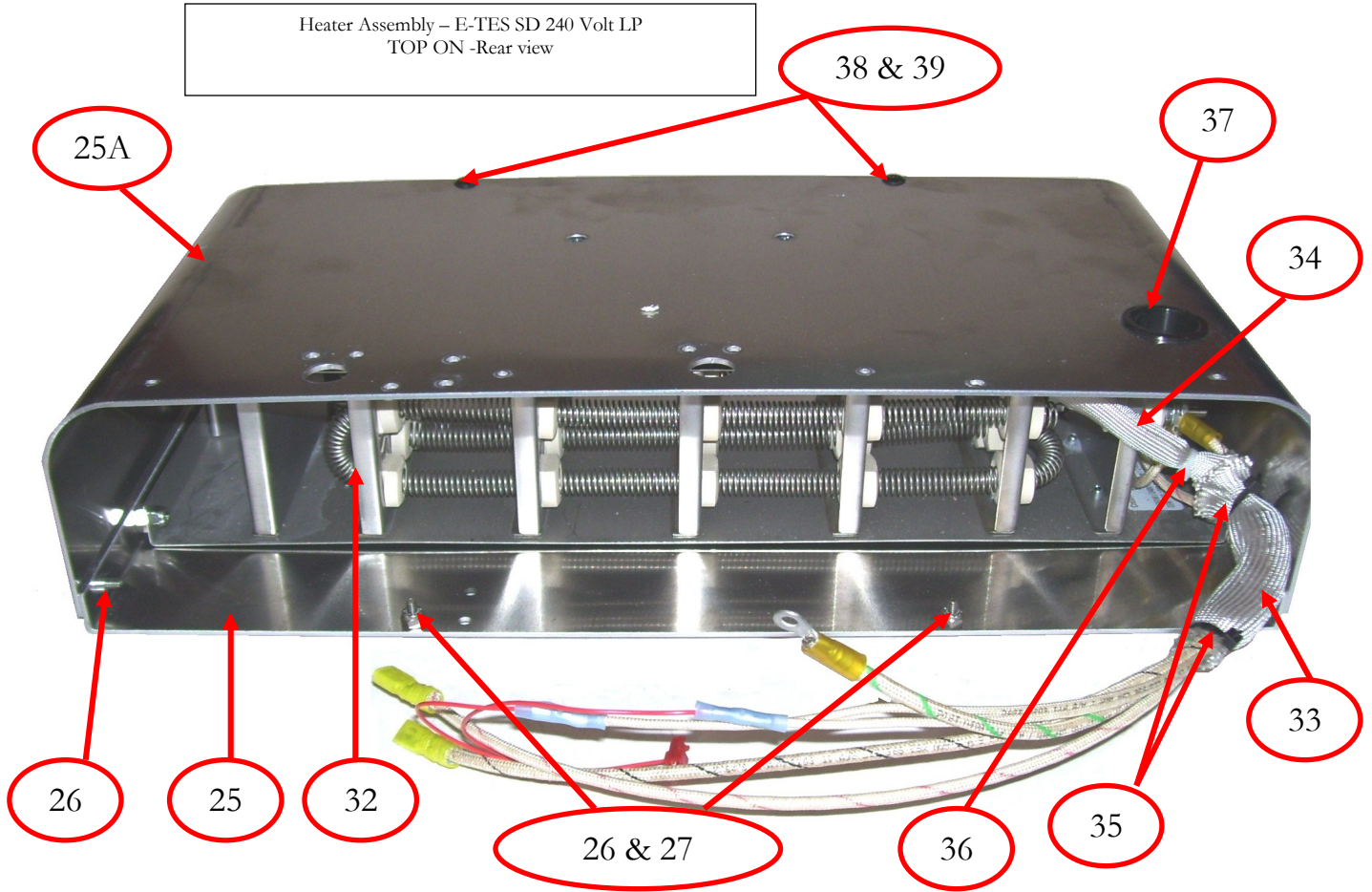
25	HEATER BOX - BOTTOM	NM5916	32	HEATER COIL ASSEMBLY 5760W 240V	NM5922
26	SCREW 8-32 X 1/2" PHP SS (BOTTOM MOUNTING PEGS FOR REAR GRILL)	NM5124	33	WIRE SLEEVE 5/8" (1 PIECE 6")	NM5420
27	NUT 8-32 NYLOCK SS (BOTTOM MOUNTING PEGS FOR REAR GRILL)	NM5793	34	WIRE SLEEVE 7/16" (1 PIECE 6")	NM5421
28	SCREW 8-32 X 5/8" PHP SS (ATTACH HEATER COIL ASSY TO BOTTOM BOX)	NM5723	35	WIRE TIE 7" BLACK (Secure 5/8" wire sleeve)	100003
27	NUT 8-32 NYLOCK SS (ATTACH HEATER COIL ASSY TO BOTTOM BOX)	NM5793	36	WIRE TIE 4" WHITE (Secure 7/16" wire sleeve)	NM5418
29	BRACKET AIR FLOW GUIDE	NM5719	P	WIRE TEMP SWITCH JUMPER 16GA HI-TEMP	SEE WIRING DIAGRAM
30	SWITCH 210F TEMP SNAP SWITCH	NM5930	Q	WIRE TEMP SWITCH TO CIRCUIT BOARD - 16GA HI-TEMP	SEE WIRING DIAGRAM
31	RIVET 1/8" X 3/4" ALUMINUM (QTY 4) (Attach temp switches)	NM5025			

Heater Assembly – E-TES SD 240 Volt LP
TOP OFF -Side view



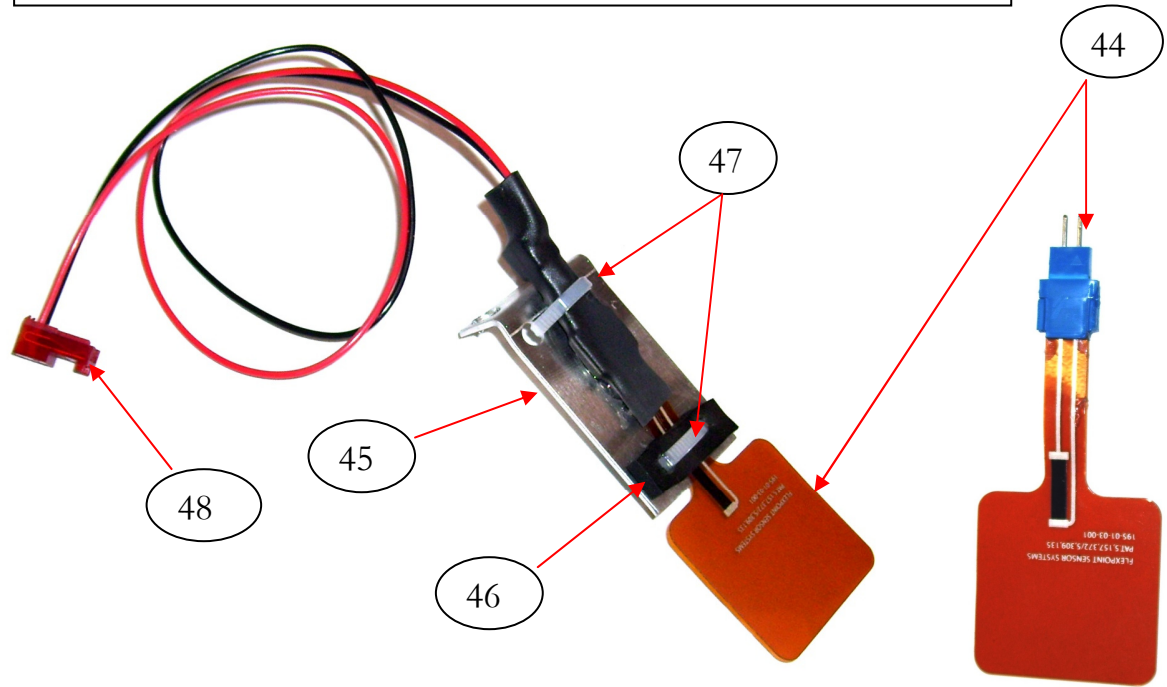
25	HEATER BOX - BOTTOM	NM5916	29	BRACKET AIR FLOW GUIDE	NM5719
26	SCREW 8-32 X 1/2" PHP SS (BOTTOM MOUNTING PEGS FOR REAR GRILL)	NM5124	32	HEATER COIL ASSEMBLY 5760W 240V	NM5922
27	NUT 8-32 NYLOCK SS (BOTTOM MOUNTING PEGS FOR REAR GRILL)	NM5793	C	WIRE CIRCUIT BOARD TO HEATER RED STRIPE 10GA HI-TEMP	SEE WIRING DIAGRAM
28	SCREW 8-32 X 5/8" PHP SS (ATTACH HEATER COIL ASSY TO BOTTOM BOX & AIR GUIDE MOUNT)	NM5723	D	WIRE HEATER JUMPER RED STRIPE 10GA HI-TEMP	SEE WIRING DIAGRAM
27	NUT 8-32 NYLOCK SS (ATTACH HEATER COIL ASSY TO BOTTOM BOX & AIR GUIDE MOUNT)	NM5793	H	WIRE HEATER GROUND GREEN STRIPE 10GA HI-TEMP	SEE WIRING DIAGRAM
NS	WIRE SLEEVE 5/8" (1 PIECE 6")	NM5420	M	WIRE CIRCUIT BOARD TO HEATER BLACK STRIPE 10GA HI-TEMP	SEE WIRING DIAGRAM
NS	WIRE TIE 7" BLACK (Secure 5/8" wire sleeve)	100003	N	WIRE HEATER JUMPER BLACK STRIPE 10GA HI-TEMP	SEE WIRING DIAGRAM
			NS	CAP THREAD PROTECTOR#8 RED	NM5923

Heater Assembly – E-TES SD 240 Volt LP
TOP ON -Rear view



25A	HEATER BOX - TOP	NM5916B	37	BUSHING SNAP-IN WIRE GUARD	NM5445
25	HEATER BOX - BOTTOM	NM5916	29	BRACKET AIR FLOW GUIDE	NM5719
26	SCREW 8-32 X 1/2" PHP SS (ATTACH HEATER BOX TOP & BOTTOM)	NM5124	32	HEATER COIL ASSEMBLY 5760W 240V	NM5922
26	SCREW 8-32 X 1/2" PHP SS (BOTTOM PEGS FOR REAR GRILL)	NM5124	38	RIVET 3/16" SPLIT TYPE (Front Grill Mount- 2 top & 2 bottom)	NM5099
27	NUT 8-32 NYLOCK SS (BOTTOM PEGS FOR REAR GRILL)	NM5793	39	WASHER 3/16" PAINT PIERCING (Front Grill Mount- 2 top & 2 bottom)	NM5933
28	SCREW 8-32 X 5/8" PHP SS (ATTACH HEATER COIL ASSY TO BOTTOM BOX & AIR GUIDE MOUNT)	NM5723	NS	RIVET 3/16" SPLIT TYPE (Rear Grill Mount- 2 top)	NM5099
27	NUT 8-32 NYLOCK SS (ATTACH HEATER COIL ASSY TO BOTTOM BOX & AIR GUIDE MOUNT)	NM5793	NS	WASHER 3/16" PAINT PIERCING (Rear Grill Mount- 2 top)	NM5933
33	WIRE SLEEVE 5/8" (1 PIECE 6")	NM5420	NS	GRILL (One in front & one in rear)	NM5932
34	WIRE SLEEVE 7/16" (1 PIECE 6")	NM5421	NS	RIVET 3/16" X 1/2" ALUMINUM	NM4288
35	WIRE TIE 7" BLACK (Secure 5/8" wire sleeve)	100003	NS	GROMMET	NM4116
36	WIRE TIE 4" WHITE (Secure 7/16" wire sleeve)	NM5418	NS	AIR FLOW SENSOR ASSEMBLY	NM5428LP

**AIR FLOW SENSOR LOW PROFILE ASSEMBLY
NM5428LP**



44	AIR FLOW SENSOR W/ CONNECTOR	NM5410
45	BRACKET AIR FLOW SENSOR	NM5414
46	RUBBER GASKET	NM5412
47	WIRE TIE 4"	NM5418
48	2-PIN FEMALE CONNECTOR	NM5402
	AIR FLOW SENSOR LOW PROFILE ASSEMBLY W/ CONNECTORS (Includes 44-48 & * items)	NM5428LP
*	RED WIRE 22 GAUGE (Sold per inch - 8")	NM5404
*	BLACK WIRE 22 GAUGE (Sold per inch - 8")	NM5406
*	2-PIN FEMALE CONNECTOR	NM5402
*	3/8" HEAT SHRINK TUBING (Sold per inch - 1.75")	NM5416

Heater Set-up Procedures

The best way to dry wet carpet, hardwood floors and walls is to implement the Reets Evaporation Method utilizing your E-TES SD unit. The following steps will explain how to this method can be applied for drying different surfaces.

Carpet Drying Procedure

Step #1 – Extraction

1. This is the key for any drying. Extract as much of the water as possible with your portable or truck mounted equipment. A weighted extraction tool will compress the padding and carpet to remove more water. The more you remove with extraction, the faster the carpet will dry. Test extraction by squeezing the pad in your hand. Continue extracting until no more water can be squeezed out. If this level of extraction cannot be achieved, remove the pad.

Step #2 - Energy applied directly to the water (*Temperature*)

To contain the heat and apply the energy (heat) to the carpet and floor:

1. Set the snout of the E-TES SD unit under the carpet to create a “soft float”. Pull up one corner of the carpet in the wet area and set the E-TES SD unit in the corner, on top of the pad. Larger rooms may require additional E-TES SD units. Leave 3-6 inches between the back of the E-TES SD box and the wall.
2. Pull the carpet up over the snout and secure the carpet to the E-TES SD unit with the carpet clamp. Then pull the E-TES SD back toward the wall to pull the carpet tight. Pulling the carpet tight will eliminate or reduce carpet flapping during the float.
3. Now place the one or two 10 lb sandbags on the carpet, along the wall, on each side of the unit to hold down the carpet and prevent it from pulling off of the tack strip.
4. Cut the pad on each side of the E-TES SD unit and fold the pad up on top of the carpet. This will help seal the space between the carpet and the floor on each side of the E-TES SD unit to reduce air escaping. Secure the pad to the carpet with pad pins or use Foam Filler to make a good seal. A good seal will increase the amount of heated air flowing under the carpet and improve the float.



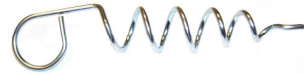
SAND BAG



FOAM FILLER

5. Insert a centrifugal air mover into the E-TES SD box. Plug the air mover cord into the wall outlet. Connect the GFCI power cord to the E-TES SD and plug the cord into the 240v outlet. Use the appropriate adapter cord if necessary.
6. Place remote sensors for air temperature, surface temperature and moisture level as needed in desired locations. Connect the sensors to the E-TES SD unit.
7. Turn the E-TES SD unit on and adjust the set points for each of the remote sensors as required for your application.
8. Turn on the air mover. Adjust the speed of the air mover, use additional sand bags to hold the carpet down in some spots and pad pins to lift the carpet in some areas as needed to get the carpet floating and prevent flapping.

PAD PIN



Step #3 - Airflow applied directly to the water **(Evaporation)**

1. We are getting air movement with the air mover and the E-TES SD box is providing the heat. We are heating the water to cause the evaporation, and removing the vapor from the floor by providing airflow under and through the carpet. This heated air heats the carpet, walls, baseboards, sill plates and walls up to 12", that may also be wet, creating water vapor. As the air escapes through the carpet and along the walls opposite the E-TES SD unit, it carries the water vapor away from the wet surfaces.



Step #4 - Reduction of vapor saturation levels (humidity) by dehumidification or evacuation (Dehumidification)

1. As we have evaporated the moisture into the air, we need to remove it from the structure along with the excess heat. This is accomplished with the exhaust controller, an air mover, 14" lay flat duct and a duct ring.
2. Set the Remote Activation temperature to turn on the exhaust fan using the Smart E-TES Remote Exhaust Fan Control or use a separate exhaust control unit set to keep the ambient room temperature below 105°F. (See Page 16 of this manual or the instructions included with separate exhaust controller unit).

NOTICE

Overheating the structure may cause damage to structure or contents. Controlling the temperature is important to prevent damage. Monitor your progress at least daily – more often if practical. Carpets, floors and walls will dry quickly!

Smart E-TES Remote Exhaust Fan Control AT206



Exhaust Controller MB230

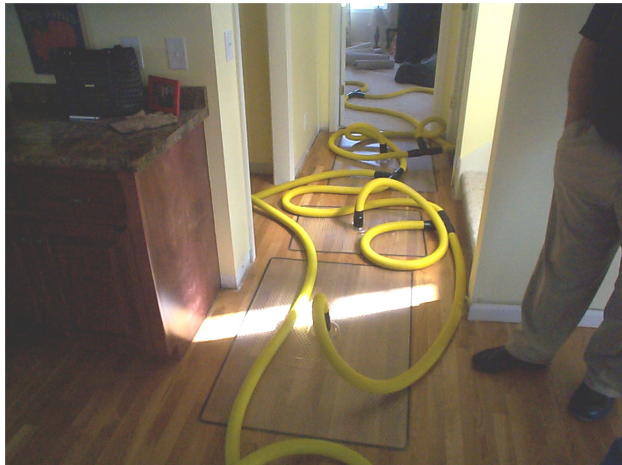
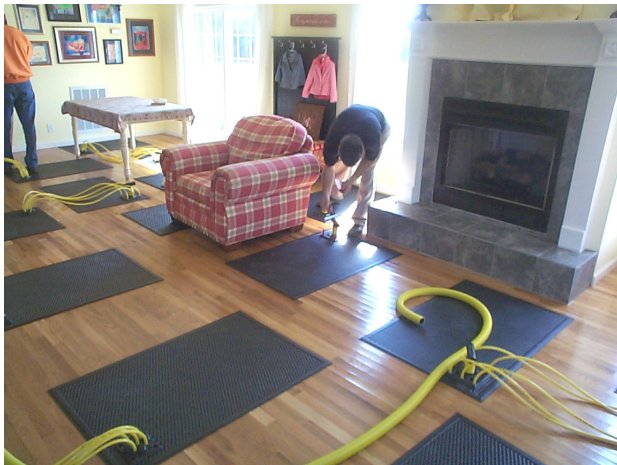


Air mover with ducting connected to Exhaust Controller

Wood Floor Drying Procedure

Step #1 – Extraction

1. This is the key for any drying and especially for wood floor drying. Extract the pooled water on top of the wood with your portable or truck mounted equipment. Use a squeegee type wand. A carpet wand may scratch the floor's finish.
2. You can also use a mop or towels. The more you remove this way, the faster it will dry.
3. Now what about the water between or under the boards? Many times there is still a substantial amount of “free” water that can be extracted to speed up the drying. To remove that water, you need to use a floor drying panel system. Place the panels on the floor and attach the hoses in the position the system will be running; however, before you attach your blower unit, attach it to your extraction unit. Let this run for up to 30 minutes or as long as you can. Pull up each panel and, using a towel, wipe up the excess water that will have been drawn out of the floor system. Depending on the amount of water, you may wish to repeat that step. You will be amazed at the amount of extra water you can remove this way.
4. Now reposition your panels and tape them as needed. Attach your blower and start the system.



Step #2 - Energy applied directly to the water (*Temperature*)

1. Set up the wood floor drying panels and attach to the vacuum unit that was designed for this application.
2. Direct containment is the best way to apply the energy (heat) to the floor. Spread poly sheeting (4-6 mil) over the affected floor and cut slightly larger than the area.
3. Now place the 10 lb sandbags around the perimeter every 3 – 4 feet or as needed to hold the poly sheeting down. You may even utilize any furniture in the room along the edges to hold the sheeting.
4. Place the snout of the E-TES SD Electric Thermal Exchanger under the sheeting and secure it with the clamp.
5. Place remote sensors for air temperature, surface temperature and moisture level as needed in desired locations. Connect the sensors to the E-TES SD.
6. Insert a centrifugal air mover into the E-TES SD box. Connect the power cord to the E-TES SD and plug in the E-TES SD and air mover cords.
7. Turn on the air mover and the E-TES SD unit.
8. Adjust the set points for each of the remote sensors as required for your application.
9. If you have a crawlspace to place an E-TES SD or can direct more heated airflow below the floor, it will aid in the drying process.
10. It is important that the blower for the floor drying panel system be placed outside the direct containment (i.e. NOT under the poly sheeting).



Step #3 - Airflow applied directly to the water (Evaporation)

1. We are getting air movement with two pieces of equipment – the air mover / E-TES SD box and also the floor drying panel system. We are heating the water to cause the evaporation, but the floor drying panel system is removing the vapor from the floor by providing airflow through the interspatial cavities in the floor.
2. The sandbags – rather than stapling/taping/sealing – allows the air to escape bringing with it water vapor and heating the walls, baseboards and sill plates that may also be affected.



Step #4 - Reduction of vapor saturation levels (humidity) by dehumidification or evacuation (Dehumidification)

1. Now that we have evaporated the moisture into the air, we need to remove it from the structure along with the excess heat. This is accomplished with the exhaust controller, an air mover, 14” lay flat duct and a duct ring. Set up the exhaust system to evacuate to the outside of the structure.
2. Set the Remote Activation temperature to turn on the exhaust fan using the Smart E-TES Remote Exhaust Fan Control or use a separate exhaust control unit set to keep the ambient room temperature below 105°F. (See Page 16 of this manual or the instructions included with separate exhaust controller unit).



Air mover with ducting connected to Exhaust Controller

NOTICE Overheating the structure may cause damage to structure or contents. Controlling the temperature is important to prevent damage.

Since there is less water in the wood than would be in a carpet/pad combination, the exhaust doesn't need to cycle as often. Monitor your progress at least daily – more often if practical. Floors will dry quickly!

Smart E-TES Remote Exhaust Fan Control AT206



Exhaust Controller MB230



Wall Drying Procedure

Step #1 – Access Wall Cavity

1. Remove the base board from the wall. Remove the base board carefully, including cutting any caulk bead at the top to prevent damage to the drywall. If not damaged, the base board can be re-installed after the drying process is completed.
2. Locate the wall studs in the area to be dried.
3. Drill 1” diameter access holes through the wall. Locate the holes between the studs, just above the wall base plate. Whenever possible place holes where they will be covered by the base board after drying is completed.
4. Insert one Flexi-Dry outlet hose into each hole. Multiple Flexi-Dry units can be connected together for larger areas.

Step #2 - Energy applied directly to the water (Temperature)

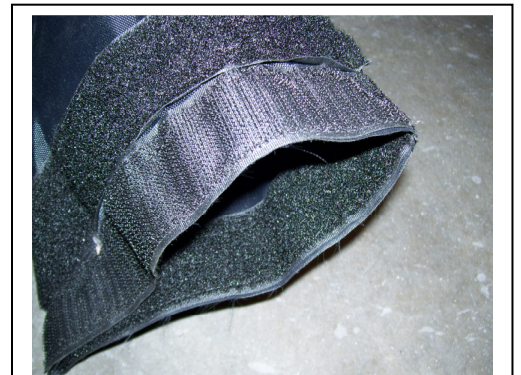
1. Insert the snout of the E-TES unit into the large opening of the Flexi-Dry. Secure the Flexi-Dry to the E-TES SD snout with the Velcro strap and the carpet clamp.



Flexi-Dry Secured to E-TES SD Snout

When using multiple Flexi-Dry units connected together, seal the Velcro strips on the other large openings to prevent air from leaking out.

2. Insert a centrifugal air mover into the E-TES SD box. Plug the air mover cord into a wall outlet. Connect the power cord to the E-TES SD and plug the E-TES SD GFCI cord into a 240v outlet. Use the appropriate adapter cord if necessary.
3. Place remote sensors for air temperature, surface temperature and moisture level as needed in desired locations. Connect sensors to the E-TES SD.
4. Turn on the E-TES SD unit and adjust the set points for each of the remote sensors as required for your application.
5. In some cases the Flexi-Dry may restrict the E-TES SD outlet air flow enough to prevent the E-TES SD airflow sensor from engaging. The Airflow Light will remain ON, the Heating light will remain OFF and the heater will not get hot. If the air mover is running and the Airflow Light is ON, open one end of the Flexi-Dry to increase the total airflow. Open the end a small amount at a time until Airflow light turns OFF. Only open the end as much as needed to engage the airflow switch. The Air Flow sensor may need to be recalibrated to account for the air flow change. See the Air Flow Set-up instructions on page 11. Opening the end too much may reduce the flow through the outlet tubes and increase the drying time.



End opened for increased airflow

Step #3 - Airflow applied directly to the water (Evaporation)

1. We are getting air movement into the wall with the air mover / E-TES SD box and the Flexi-Dry system. We are heating the water to cause the evaporation, but the water vapor still needs to be removed from the wall.
2. If the wall is wet top to bottom, air outlet holes *may* need to be drilled at the top of the wall between the studs to allow the water vapor to be removed from the wall cavity. If the wall is only wet at the bottom, drill an outlet hole below the baseboard level to allow moist air to escape.

Step #4 - Reduction of vapor saturation levels (*humidity*) by dehumidification or evacuation (*Dehumidification*)

1. Now that we have evaporated the moisture into the air, we need to remove it from the structure along with the excess heat. This is accomplished with the exhaust controller, an air mover, 14" lay flat duct and a duct ring. Set up the exhaust system to evacuate to the outside of the structure.
2. Set the Remote Activation temperature to turn on the exhaust fan using the Smart E-TES Remote Exhaust Fan Control or use a separate exhaust control unit set to keep the ambient room temperature below 105°F. (See Page 16 of this manual or the instructions included with separate exhaust controller unit).

NOTICE

Overheating the structure may cause damage to structure or contents. Controlling the temperature is important to prevent damage.

Monitor your progress at least daily – more often if practical.
Walls will dry quickly!



**Air mover with ducting
connected to Exhaust
Controller**



**Exhaust Controller
MB230**



**Smart E-TES Remote
Exhaust Fan Control
AT206**



**Smart E-TES Remote
Air Temp Sensor
AT202**



**Smart E-TES Remote
Surface Temp Sensor
AT200**



**Smart E-TES Remote
Moisture Sensor
PGE5060**