![Omnitec Design logo]

VULCAN
Structural Drying Heater
Vulcan and Vulcan RT Models

Operation and Maintenance Manual

WARNING

"GROUNDING INSTRUCTIONS - This appliance must be grounded. In the event of a malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current. This appliance is equipped with a cord having an appliance-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is installed and grounded in accordance with all local codes and ordinances."

AVERTISSEMENT: "INSTRUCTIONS DE MISE À LA TERRE - Cet appareil doit être mis à la terre. En cas de défaillance ou de panne, la terre réduira le risque de choc électrique en fournissant un chemin de moindre résistance au courant électrique. Cet appareil est équipé d'un cordon comportant un conducteur de l 'appareil à la terre et une prise de mise à la terre. La prise de mise à la terre doit être branchée dans une prise électrique appropriée, installée et mise à la terre conformément aux codes et règlements locaux."

"ATTENTION - Une connexion incorrecte du conducteur de l 'appareil à la terre peut entraîner un risque de choc électrique. Vérifier avec un électricien qualifié ou un représentant de service si vous êtes dans le doute si l'appareil est correctement mise à la terre. Ne pas modifier la fiche fournie avec l'appareil;. si elle n'entre pas dans la prise, faites installer une prise adéquate par un technicien qualifié."

CONFORMS TO UL STD 507
CERTIFIED TO CAN/CSA STD
C22.2 NO. 113-M1984

Safety Warning Instructions:

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

"GROUNDING INSTRUCTIONS - This appliance must be grounded. In the event of a malfunction or breakdown, grounding will reduce the risk of electric shock by providing a path of least resistance for electric current. This appli- ance is equipped with a cord having an appliance-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is installed and grounded in accordance with all local codes and ordinances."

This equipment to be operated only by trained personnel. Do not use with combustible or explosive material.

Connect only to grounded outlet with GFCI device. Disconnect power for cleaning and servicing.

Do not operate if cord or plug is damaged. Contact a authorized service facility for examination and/or repair. Do not run

cord under carpeting.

Do not cover cord with throw rugs, runners, or similar coverings. Arrange cord away from traffic areas and where it is not a tripping hazard.

Avertissement de sécurité Instructions:

LIRE ET CONSERVER CES INSTRUCTIONS

ATTENTION - Une connexion incorrecte du conducteur de l 'appareil à la terre peut entraîner un risque de choc électrique. Vérifier avec un électricien qualifié ou un représentant de service si vous êtes dans le doute si l'appareil est correctement mise

Risque d'électrocution. Ne pas ouvrir. Aucune pièce utilisable à l'intérieu. Cet

équipement doit être utilisé que par un personnel formé.

Ne pas utiliser avec des matières combustibles ou explosives.

Connectez uniquement à une prise mise à la terre avec un dispositif GFCI.

Coupez l'alimentation électrique pour le nettoyage et l'entretien.

Ne pas utiliser si le cordon ou la fiche est endommagé. Contactez un centre de service autorisé pour examen et/ou réparation.

Ne pas passer le cordon sous un tapis. Ne pas couvrir le cordon avec des carpettes, les coureurs, ou revêtements similaires. Éloigner le

cordon des endroits passants et où il n'est pas un risque de déclenchement.

The Vulcan heating system is a compact and powerful tool for structural drying projects, sanitizing and emergency heating. It features six industrial duty heating elements for 11kW drying capacity, a variable speed blower and precise temperature control for long service life. The Vulcan operates on 208/230VAC/10-50 Amp and is compatible with 50 Amp spider boxes. The Vulcan is simple to set up and can operate in vertical or horizontal position. Flex ducting connected to the inlet and outlet of the Vulcan can deliver heat where needed with minimal heat losses.

Vulcan Specifications

Airflow: 100 - 475 CFM

Power Requirements: 200-250VAC/50-60 Hz/50 Amp max

Motor: motorized impeller with thermal overload

Controls: variable speed controller; digital hour meter; digital temp control w/ 25' thermocouple; auto/manual temp control; individual switches for all 6 heating elements. Vulcan RT: 15' power/control cable with 8' sensor cable for monitoring & controlling temperature.

Operation/Heat: 104° F max ambient temp; 160 $^\circ$ F max outlet air temp

Filtration: MERV 11 primary/secondary filter

Housing: aircraft grade aluminum; closed end rivet construction; (2) rubber grip handles; (4) 3" hospital grade locking casters

Exhaust Collar: 10" diameter

Size/Weight: 12"W x 18"H x 30"L; 63 lbs.

READ ALL INSTRUCTIONS BEFORE USING THE HEATER

Connect ONLY to outlets that are properly grounded and have over-current protection. Use power cords rated at 250 VAC/50 Amp with minimum of 3-#6 and 1-#8 conductors. (Recommend EDPCORDKIT.)

· Do not operate heater with damaged cord or plug, after a heater malfunction, or has been dropped or damaged in any manner.

· Use EXTREME CAUTION when operating the heating unit around children and anytime the unit is left unattended.

· To disconnect heater, turn all heating elements off, wait at least five minutes before turning blower off. Unplug the cord.

· Place cord out of the path of foot traffic to avoid trip hazard. Do not run the power cord under carpets, rugs or furniture.

· Do not use outdoors. Use only in DRY location and avoid placement where it could fall into water.

· The heater has hot and arcing or sparking parts inside. Avoid operating in an environment with flammable liquids, gas or paint. Do not use to exhaust combustible or explosive gases or operate in hazardous atmosphere.

· **Do NOT operate the Vulcan without air filter.** Do not insert or allow foreign objects to enter intake or outlet openings as this may cause electrical shock or fire or damage heater.

· Heater will be hot during operation, use handles when moving.

· To prevent possible FIRE, DO NOT BLOCK OFF INTAKE OR EXHAUST. The hot air exhaust should not be located less then 3 feet from wall and soft goods, i.e. clothing, linens, pillows, paper. The sides of the unit should be at least one foot away from the wall or soft goods.

· Do NOT cover an operating machine.

· The appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.

· Children being supervised not to play with the appliance.

· Use the Vulcan only as prescribed, any other use may cause fire, shock or injury to persons.

· Always unplug unit when not in use. See proper shutdown procedure in this manual.

· SAVE THESE INSTRUCTIONS

Operating Instructions

Unpacking: Check unit for damage. Do not operate this unit if damaged.

1. Inspect Vulcan and the power cord for any damages before using. Do not use the system or the cords if damaged. Read Caution statement.

2. Locate the unit in safe DRY area. See WARNINGS and CAUTIONS on page 2.

3. Turn all heater switches OFF and Temperature Control switch to MAN.

4. Plug your unit into 230VAC/1 phase, 30 or 50 amp power supply. POWER light will come ON.

5. Note: Use only power source with ground and over-current protection. Recommended EDPCORDKIT: Dryer/Range, 4 prong, 8' 6/3-8/1 125/250VAC 30/50 Amp plug.

6. Turn AIRFLOW controller knob from OFF to your required speed and the AIRFLOW status light will turn ON.

7. When AIRFLOW light is on and internal heater temperature is less than 180° F, the SAFETY light will turn ON.

8. Turn ON the individual heating elements, starting with #1. For 30 amp power supply only #1, 2 & 3 elements (20,500 BTU) can be ON. For 50 amps, all 6 heaters (37,000 BTU) can be turned ON.

Auto Temperature Control

Switch temperature control switch to AUTO position. On Temperature Controller, use up/down arrows to set the desired temperature Set Point (SP) up to 160° F. Locate the thermocouple end in measured area or targeted material. The Temperature Controller will display the measured temperature and selected set point SP. When SP temperature is reached, Temperature Controller will turn heating elements Off and automatically restart when temperature drops 10° F below the SP. Change your SP as needed at any time.

After the heater stabilizes at your required temperature, check the operation of the heating elements. If the Temperature Controller is frequently turning the heaters OFF/ON, reduce the number of active heaters or increase the air flow.

Manual Temperature Control

Temperature Control switch should be in MAN position. To regulate the heater temp., activate only number of heating elements required for the heat rise. Increasing airflow will decrease the exhaust air temperature.

Internal heater temperature is limited to 160° F. When this high limit is reached, thermo switch TS-2 turns all active heaters off and automatically restarts at 135° F. Note: The exhausted air temp. may be considerably higher then 160°F.

If the 160°F thermo switch is frequently turning the heaters OFF/ON, reduce the number of heating elements or increase the air flow to stay below 160° F.

Shut Down Procedure

The heat energy stored in the heating elements could heat up the outer surface of the unit if it is shut down without any cooling down period. To prevent this and to maximize the life of the heating elements, follow this procedure:

1. Place into manual mode, and switch all heating elements to OFF position
2. Allow blower to run for at least five minutes or until air flow has cooled
3. Switch blower to OFF position
4. Disconnect cords and store the unit

Operation Tips

For the Vulcan model, ensure thermocouple is plugged into the unit before powering on. For the Vulcan RT model, ensure the remote is plugged into the unit before powering on.

To minimize the On and Off cycling of the heaters, balance the airflow and the number of active heaters by watching the heater switch lights to see the ON/OFF operation.

The temperature Safety switch will turn the heaters Off and ON between 180° and 150° F. This is a safety cutoff and heater should not operate this hot.

When the safety switch shuts the heaters down, the SAFETY light also turns off.

When internal heater temperature reaches 160° F limit, the exhaust air temperature would be around 180° F. Take this in consideration when ducting hot air to a remote containment area.

Vulcan delivers up to 37,000 BTU and at 400 cfm of air flow at temperatures from ambient to 160° F. The heater outlet can be ducted to deliver heat where needed. The air intake could be open to ambient air or ducted from a dehumidifier.

At air flow of 350 cfm, operating with all 6 heaters, the temperature rise is 95° F above the ambient air. When operating on 30 amp circuit with 3 heaters, the temperature rise is 55° F. At lower air flow, the heat rise will be higher. At 475 cfm, the heat rise is 75° F with 6 elements on.

Vulcan is designed for indoor use only and it is important to locate heater in dry, safe location. Heater exhaust must be 3 feet or more from a wall or any soft material. When ducting hot air to a remote area, using a shorter duct reduces heat losses.

Please read Safety warnings before starting to operate your new Vulcan.

Unit may be operated in horizontal or upright position with exhaust aiming up. Do NOT lay unit on air intake side or block the outlet.

The Heater must be plugged in to a 250 VAC power supply equipped with over-current protection. The heater unit blower must be running before the safety interlock circuit enables the heater elements to be turned on. Depending on the 30 or 50 amp power supply, 3 or 6 heating elements can be selected. Since there are many variables from project to project, we recommend setting your air flow first and then start to turn the heating elements on. Depending on your ambient temperature, selected airflow and required temperature rise, the number of operating heating elements will vary.

The Vulcan offers maximum versatility with variable airflow and 6 heating elements which can be individually turned on as needed. After manually setting the air flow and number of heating elements, the heater temperature could be regulated in MAN (Manual) or AUTO mode. In MAN, the High temperature switch is set to shut off heating elements when internal heater temperature is 160º F and restart at 135º F. In AUTO mode the Temperature Controller measures remote air or material temperature with a thermocouple connected to the temperature controller.
The measured temperature is compared with selected Set Point which cannot be higher than 160° F. Temperature Controller automatically turns selected heating elements on and off to maintain the set point.

The Safety circuit protects the unit from overheating. If the heater loses a minimum required air flow, all the heaters will shut down until the airflow is restored. Also, if the internal heater temperature reaches 160° F, the safety thermo switch TS-1 shuts the heating elements down and restarts automatically at 150° F.

Electrical Requirements: Vulcan unit requires 250 VAC/ 1 Phase power source with over-current protection rated at 50 amp maximum. It can be plugged into a dryer/range outlet, generator or hardwired into an electrical panel by a certified electrician. The amperage draw will depend on the number of elements engaged. Each element draws
about 8 amps. For maximum heat gain, use all 6 heating elements. Note: Heater can operate on 208 VAC at reduced heat output.

Operator's Controls

Figure 1. Vulcan Control Panel

Figure 2. Vulcan RT Control Panel

1. On the Vulcan model, air flow is controlled by changing speed of the blower. Turn the control knob from OFF to anywhere on the dial and check that AIRFLOW light turns ON. On the Vulcan RT model, air flow is a fixed speed when the unit is on.
2. The digital hour meter measures the cumulative time the unit is running to tenths of an hour. It stores and displays the total time when the unit is disconnected from power supply.
3. Temperature Controller displays measured temperature, Set Point and provides automatic ON/OFF heaters control. Temperature Controller is programmed to maintain user selected set point temperature when AUTO mode is selected and remote thermocouple is connected to thermocouple on the control panel (figure 1 point 4). Place the sensor end in containment area to monitor air or materials temperature to prevent overheating delicate parts of structure.
4. Thermocouple connector for K-type sensor
5. Temperature Control mode selector switch with MAN/AUTO positions.
6. Heaters switches 1 to 6 - ON/OFF switch with internal light. Lights illuminate as each heating element is activated. If the element is not activated, the switch light will not be illuminated.
7. Blower speed controller with OFF and Max provides adjustable airflow settings.
8. Temperature Controller Plug (for remote control), remotely displays measured temperature, provides automatic ON/OFF heaters control.

Status lights:

- POWER - Red light indicates power to the unit is On.
- AIRFLOW - Amber light indicates blower is operating and the air flow switch is closed.
- SAFETY– Amber light indicates the air flow is safe and the heater internal temperature is below 180° F.
  HEATER ELEMENTS - Each heating element switch illuminates when switched ON and active.

Maintenance of the Vulcan

The blower and motor do not require any maintenance when the heater is operated with MERV 11 filter in place. Replace filter as needed. If filter becomes clogged with debris it will reduce the performance of the unit.

ALWAYS UNPLUG FROM POWER BEFORE OPENING THE UNIT.

ALWAYS FOLLOW YOUR ESTABLISHED HAZMAT PROCEDURES.

Troubleshooting

This guide may identify easy to correct problems in Vulcan operation and does not require opening the unit. Only qualified maintenance person should replace internal heater parts. Removable control panel provides easy access to panel mounted components. The heating elements and blower motor can be accessed by removing cover panels on the bottom.

Note: Start testing with Temperature Control switch in MAN position. POWER (red) light does not come on when plugged in 230 Vac/1 ph power

1. Check the power supply source and the extension cords are in good working condition and providing 230V.

Blower is running, but AIRFLOW light is off

1. Increase the blower speed until the AIRFLOW light comes on - if no AIRFLOW light comes on and contactors do not energize (loud click), problem could be a faulty air flow switch.

Blower is running, AIRFLOW light is on but SAFETY light is off while heater is cool.

1. TS-1 Safety thermo switch needs to be checked. It is set to open at 180° F and close again at 150 F.

Blower is running, AIRFLOW and SAFETY lights are on, but contactors do not click on (heater switches do not illuminate when switched ON)

1. If heater is hot, let the airflow cool it down. High limit thermo switch TS-2 is set to open at 160° F and restart automatically at 135 F.

2. One or both contactors could be faulty.

Both contactors are energized, but some heater switches do not illuminate when selected. Note: Contactor #1 controls heater elements 1, 2 and 3; Contactor #2 controls heater elements 4, 5 and 6.

1. Turn ON one heater at the time to check each heater circuit. The heater switch will illuminate when heater is turned on and functioning.

2. Check the heater output for the temperature rise.

3. If selected heater switch does not illuminate, problem could be a faulty heater switch or heating element.

Heater is frequently cycling ON and OFF as the High temperature switch operates between 160° and 135° F. Watch heaters switch lights for cycling frequency.

1. Reduce number of heating elements turned ON.

2. Increase air flow.

3. Check for obstacles on suction and discharge side. This could be dirty filter or a long ducting.

Temperature Controller in AUTO mode Temperature Controller (TC) will display temperature measured by the thermocouple all the time, but only in AUTO mode will it use the measured temperature and the set point (SP) temperature to control the heaters. When SP is reached, the heaters are turned off till temperature drops 15° F below SP, then turned on again. The SP temperature can be adjusted with Up/Down arrows at any time.

NOTE: The programming functions on Temperature Controller are locked to prevent unauthorized program changes. See programming section of the manual to unlock, reset or change the program.3. Check for obstacles on suction and discharge side. This could be dirty filter or a long ducting.

Heater works when Temperature Control switch is in MAN but heaters turn off when TC controls the heaters in AUTO.

1. The thermocouple must be plugged in for TC to operate. If display reads NO CONT., thermocouple could be faulty.

2. The SP temperature must be set a minimum of 15° above the temperature measured by the thermocouple for heaters to turn on - use Up/Down arrows to change the SP.

NOTE: High temp. limit switch shuts down heater at 160° F internal temperature even if SP calls for more heat.

Ordering Info   # Part

Ordering Info	Part #
Vulcan 37,000 BTU Heater	OVH230
Vulcan-RT 37,000 BTU Heater	OVH230-RT
Pleated Filter MERV 11 Efficiency	OFP1212
Replacement Thermocouple Sensor 25' L (Vulcan model only)	EC25TC
Intake Flex Duct 10" Dia. x 25' L**	OAD10
Exhaust Flexible Duct, Wire & Fiber Reinforced**	OAD10R
Quick Clamp, 8"-12" Dia. ** (Required for Exhaust Ducting)	QCW12
Cord Kit** (Dryer/Range, 4 prong, 8' 6/3-8/1 125/250VAC 30/50 Amp plug)	EDPCORDKIT
Optional Activated Carbon Filter OdorGuard 600	OG1212

**not included with machine purchase

Omni CleanAir LIMITED WARRANTY

This warranty policy covers Equipment (Machines and Accessories) sold by Omni CleanAir and applies to the OmniClean, OmniTec, and AgriAir portfolio of brands. Omni CleanAir warrants that our products are free from defects in workmanship and materials under normal use during the warranty period.

All OmniClean machines including the OCA500, 1200 and 1500 series, excluding consumables come with a standard two (2) year warranty. All OmniTec and AgriAir machines, excluding consumables come with a standard one (1) year warranty. Warranty covers parts and labor only, excluding consumables. Consumables (HEPA filters, prefilters, carbon filters, and UV light bulbs) carry no warranty other than to be free of defects upon arrival. Non-Consumable accessories come with a standard ninety (90) day warranty.

The warranty extends to the following parties:
- Customers (individuals or companies) to whom Omni CleanAir directly sells products covered by this policy.
- Customers (both individuals and companies) who purchase Omni CleanAir products from an authorized distributor or reseller.

This limited warranty is not transferrable or assignable to any subsequent purchaser and is only applicable in the country where the product was originally purchased.

The following circumstances are not covered by this warranty policy:
- Damage caused by an act of nature such as flood, fire, wind, earthquake or lightning.
- Damage caused during shipping or an impact event with other objects.
- Damage caused by improper care or negligence.
- Damage caused by misuse, abuse, mishandling or misapplication.
- Damage caused by alteration or adjustments by unauthorized personnel.

Under no circumstances shall Omni CleanAir or any supplier of Omni CleanAir be liable for any loss, damage or expense, including, but not limited to, loss or damage arising out of the failure of the products to operate for any period of time, inconvenience, the use of rental or replacement equipment, loss of profits or other economic loss, or general, direct, special, indirect, incidental or consequential damages or property damages.

Many states and localities have their own varied codes and regulations governing sales, construction, installation, and/or use of Equipment for certain purposes. While Omni CleanAir attempts to assure that its Equipment comply with such codes, it cannot guarantee compliance, and cannot be responsible for how Equipment is installed or used. Omni CleanAir recommends that, before purchasing and using Equipment, purchasers review the Equipment application, and federal, state and local regulations, to be sure that the Equipment, installation and use will comply with them.

Omni CleanAir offers extended warranty through the Gold Care Membership Program, for as long as membership status is maintained. For more information, please visit https://www.omnicleanair.com/resources/gold-care-membership.

To Submit a Warranty Claim or Receive Technical Support

Contact our Technical Support Department at 425-512-0379 or by email at support@omnicleanair.com. Hours are Monday through Friday 7:30am – 4:00pm PST. Please have the product model name and serial number available, along with the purchase date and invoice number, if applicable. Our service technicians will work with you to diagnose your technical issue and recommend a suitable course of action to solve your problems swiftly and to your satisfaction.

If it is determined that your product is defective and under warranty, OmniClean will repair or replace, at our discretion, any faulty parts or equipment. A Return Merchandise Authorization (RMA) will be issued for the defective product.

Customer to arrange and ship the product to Omni CleanAir at the customer's expense and must use original packaging. For units that have failed within 30 days, Omni CleanAir will pay the cost of return shipping from the customer site. If Omni CleanAir determines that the Warranty Claim is valid, Omni CleanAir will be responsible for shipping the repaired product to the customer upon completion of any repairs or replacements.

In instances where equipment is damaged in transit either while being returned to Omni CleanAir or after repairs have been completed, Omni CleanAir and the customer will need to work together to resolve these situations with the freight carrier(s) involved.

- If a shipment is made on the customer's account with a third party freight carrier, the customer is responsible for filing any claim for reimbursement and will be responsible for any associated repairs or the replacement of the Equipment in question.

- If a shipment is made on Omni CleanAir's account with a third party freight carrier, and the Equipment arrives at the customer location clearly damaged, it is the responsibility of the Customer to reject the freight carrier's delivery. If the customer accepts the shipment and determines after the fact that the Equipment was damaged during shipment, the customer is responsible to provide photos, an inspection report, and any other information to Omni CleanAir within 14 days, in order for Omni CleanAir to file a claim with the third party freight carrier. Once the claim has been filed, Omni CleanAir will work with the customer to address the damage incurred.