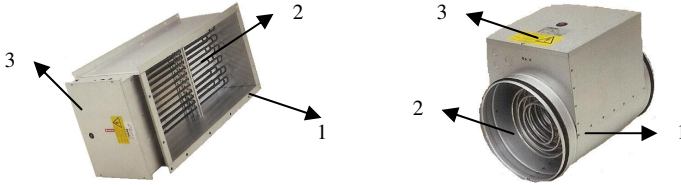


## ELECTRIC DUCT HEATER INSTALLATION-OPERATION-MAINTENANCE

### 1. INTRODUCTION



1. Case; made of galvanized or stainless material, which is optional and also depend on applications,
  2. Heating elements; made of stainless material-SST 304,
  3. Junction Box; contains the necessary terminals for electrical connections.
- The duct connection is suitable for push-in installation in rectangular ducts for VRE models and in round ducts for VCE models.

The installation of electric duct heaters with control equipments and control-box is optional.



**BEFORE START-UP, READ THE MANUEL and KEEP IT WITHIN EASY REACH OF SERVICING PERSONNEL.**



**THE UNIT MUST BE OPERATED APPROPRIATE APPLICATIONS FOR PURPOSES DESIGN and TECHNICAL SPECIFICATIONS, OTHERWISE THE APPLIER WILL BE RESPONSIBLE.**



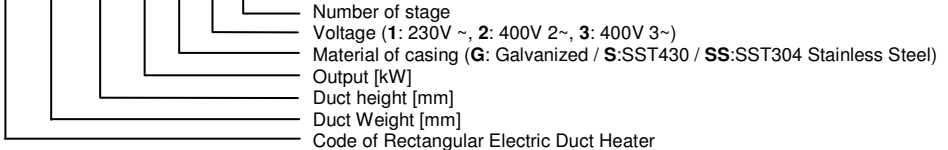
**THE APPLIER WILL BE RESPONSIBLE FOR DEFECTS OCCURED DUE TO OPERATING THE UNIT BY NOT AUTHORIZED PERSONNEL OR USING THE SPARE PARTS NOT ORIGINAL.**

### 2. OPERATIONAL LIMITS

- Electric duct heaters are designed for a maximum output temperature of 40°C.
- Air velocity must not be less than 1,5m/sn.
- Electric duct heaters can be installed in a horizontal or vertical duct.
- All electric duct heaters can be produced for the power group voltages as 230V-1phase, 400V-2phase, and 400V-3phase.
- All heaters can be operated in the environmental temperature between minimum -20°C and maximum +40°C.
- Please contact us for the specific applications such as operating the heaters in the environment which causes corrosion.

### 3. NOMENCLATURE

**VRE 800 x 500 - 5 - G - 1 - 2**



VCE 160 - 5 - G - 1 - 2

- Number of stage
- Voltage (1: 230V ~, 2: 400V 2~, 3: 400V 3~)
- Material of casing (G: Galvanized / S:SST430 / SS:SST304 Stainless Steel)
- Output Power [kW]
- Duct diameter [mm]
- Code of Circular Electric Duct Heater

#### 4. TRANSPORTATION – STORAGE – INSTALLATION

Transpalet, forklift or hands can be used for lifting or transporting the heaters. Appropriate lifting methods should be used in order to minimize any possible damage.

Electric duct heaters have to be kept in a closed area where the heat should be between – 20 °C and + 40 °C and relative humidity should not exceed 80%. Also the unit should be kept away from dust, gas, corrosive streams and effects cause corrosion. The packaging of heaters for storage should be done carefully in order to prevent damages to duct connections and electrical connections.

Electric duct heaters can be installed in a horizontal or vertical duct system. In a horizontal duct the junction box must be installed facing upwards or within an angle of rotation of 90° to the sides. Installation with the junction box facing downwards is not permitted. The duct heater must be installed in such a way that it receives an even flow of air across its entire area.



DUCT CONNECTIONS SHALL BU DONE ACCORDING TO THE DIRECTION OF AIR FLOW LABEL WHICH IS PLACED ONTO THE HEATER.

#### 5. CONNECTIONS

##### 5.1. DUCT CONNECTIONS

For circular electric duct heaters; the distance to or from a duct elbow, fan, damper and similar must be at least double the connection diameter. For rectangular electric duct heaters; it must be at least the dimension equivalent to the diagonal of the duct heater, i.e. from corner to corner in the duct section of the heater.

##### 5.2. ELECTRICAL CONNECTIONS

ELECTRICAL CONNECTIONS SHALL BE DONE ACCORDING TO EN 60204-1 STANDARD BY TRAINED and AUTHORIZED PERSONNEL.

All electricity connections should be designed and prepared according to EN 60204 – 1 Standards. The electrical materials, cables and all relevant control and remote control equipments should be chosen and designed suitable to unit peculiarities and requirements. Electrical connections shall be done according to the wiring diagram given in the junction box.

THE POWER SUPPLY TO THE DUCT HEATER MUST BE INTERRUPTED IF THE FAN/AIRFLOW IS STOPPED. OTHERWISE, ELECTRICAL DUCT HEATER WILL BE TROUBLE, BECAUSE THE AIRFLOW DOES NOT PASS THROUGH THE HEATER.

Electric duct heaters must always be installed so that they are interlocked either against the fan that blows air through the heater or against the airflow that passes the heater.

#### 6. SAFETY

##### 6.1. WARNING and ADVISE

This user manual is prepared to provide correct usage and assembling of the heaters and warn the maintenance personnel for the possible dangers.

Possible dangers related to heaters are as follow;

- Never expose the heaters to moisture, strokes and external effects.

- The heaters should not be used in the environment where corrosion and explosive gasses exist.
- The heaters should be maintained by trained personnel.
- Do not repair or adjust, when the heater is running.
- Turn the electrical switch off, before open the junction box.
- Never expose cables and connections to the water.

## 6.2. SAFETY LABELS

Necessary warning labels are placed onto the heaters for the users or service personnel. When the unit is put into the operation, following stickers have to be controlled whether they are exist or not.

### Warning Labels:



Figure 6.2.1. Ground Label



Figure 6.2.2. Switch-Off Label



Figure 6.2.3. Wiring Diagram



Figure 6.2.4. Manuel Reset



Figure 6.2.5. Adjust Flow Switch Label



Figure 6.2.6. Direction of Airflow Label

## 7. CONTROLS BEFORE START-UP

Please make sure, electrical cables, fuse and duct connections are made correctly. There can be some materials which damage to the case of heater and also heating elements, please make sure inside of the heater is clear. Due to external effects, the case of heater can be damaged, please check it and if it is necessary, please contact us.

## 8. SAFETY REQUIREMENTS

VENCO electric duct heaters are produced according to TS 2000 (EN 60335-1) and TS 10316 (EN 60204-1) standards and EMC 89/336, LVD72/23 numbered European Union Directives and carry the CE signs on themselves. However, the unit can be dangerous if the unit is not used or the service is not given by trained and experienced personnel, and indicated security precautions are not followed.

### 8.1. WARNINGS BEFORE START-UP

- VRE-Rectangular and VCE-circular electric duct heaters are designed for operating temperature of out-going air up to 40°C and also for getting an indoor air quality. The applier will be responsible for operating the heaters for other purposes.
- Standard heaters can not be used for heating explosive and combustible gasses. Please contact us, if you require non-standard heaters.
- Operating and installation shall be done according to the national standards of the country where the heater will be used. The user will be responsible for the application of requirements in the national standards.
- It is forbidden to make any change on the heaters by the user or the authorized personnel. Damages, which are occurred as a result of that kind of changes, are not under warranty. The heater shall be operated by the authorized personnel and by applying the necessary safety requirements.
- The requirements in the Manuel shall be consider preventing the hazards which may be occurred when operating of the heater. Safety tools shall not be taken out by the user or the authorized personnel. If it is necessary for maintenance, safety tools shall be fitted and checked after the maintenance procedure.

Electricity shall be switched off, during the maintenance applications.

#### General Hazards

TYPE of HAZARD	ORIGIN of HAZARD	HAZARD
Electrical contact	Electric cables, electrical parts	Very High Dangerous

## 9. START-UP and OPERATING

Requirements in the Manual shall be considered before starting up of the heaters or after the maintenance. Electrical connections shall be done according to the standards. Duct connections shall be done according to the requirements of the Manual and shall be checked the design according to the acceptable engineering applications. If any problem is occurred, electricity shall be switched-off. Then, the reason of problem shall be checked and if it is necessary, please contact us. After switch off electric heater, airflow must continue at least two minutes.

## 10. MAINTENANCE

The power supply to the duct heater must be interrupted and airflow must continue at least two minutes, after stopping fan you must wait to stop fan blades before the maintenance periods. **Electrical connections:** The Ampere shall be measured to prevent risks once a year, which are the leakage and the overloading of electricity. **Casing:** The housing shall be checked to prevent risks once a year, which are the corrosion, external effects. **Heating Elements:** Resistances shall be cleaned by using a vacuum cleaner or wired-brush at least once a year, which will remove dust and foreign objects on the surface of heat elements.



DURING THE OPERATION NEVER CHECK OR CLEAN THE HEATERS. IT MAY CAUSE ELECTRIC SHOCK AND IT IS VERY DANGEROUS TO TOUCH THE ELECTRICAL PART. BE SURE TO TURN OFF THE OPERATION SWITCH AND

## 11. TROUBLESHOOTING and REMEDIES

When abnormality is generated, the power supply to the duct heater must be interrupted and airflow must continue at least two minutes. After the cause abnormality is removed, operate equipment and check proper functioning. Necessary measurements must be taken care, which are given below.

- Casing is bashed or not.
- Heating elements are bashed or not.
- No leakage in the duct systems and also casing.
- The details of the duct connections are checked,
- The measured airflow rate, ampere, the out-side temperature e.t.c.
- The technical specifications, which are given on the type label placed onto the heater, must be checked.



THE HEATER HAS A BUILT-IN OVERHEATING PROTECTION AT THE TEMPERATURE OF **70°C**, WHICH IS AUTOMATIC RESETTING.



THE HEATER HAS A BUILT-IN OVERHEATING PROTECTION AT THE TEMPERATURE OF **110°C**, WHICH IS MANUEL RESETTING. FIRSTLY, THE CAUSE OF AUTOMATIC RESETTING SHALL BE REMOVED. DISCONNECT THE POWER AND



WHEN ABNORMALITY IS GENERATED, PLEASE CONTACT US.

## 12. WARRANTY CONDITIONS

Warranty period starts at invoice date and it is for (2) years.

- Failures, due to wrong assembly in spite of the requirements of manuel,
- Doing wrong electricity connections, doing a connection apart from what is indicated electricity scheme label,
- Failures, due to electrical problems as a result of power supply system, are not covered by warranty.

For customer needs, please contact us as given below:

### VENCO A.S.

2004 Sokak No:5  
TOSB  
Turgutlu (45400)  
MANISA – TURKEY

Tel : +90 236 332 5070  
Fax : +90 236 332 5030  
Web : [www.venco.com.tr](http://www.venco.com.tr)  
E-mail : [venco@venco.com.tr](mailto:venco@venco.com.tr)