



# OPERATING MANUAL ROOF FANS



CE

## 1. Application

Our Jet Fan type CVS-RV / CVS-RH are designed for both the daily ventilation requirements under normal conditions and smoke/heat exhaustion in the event of a fire in all kinds of commercial and industrial buildings.

They are tested and approved to meet the requirements of fans for smoke exhaustion class F300-F400 (300-400°C for 120 minutes) according to standard: EN12101-3. Certificates available on request.

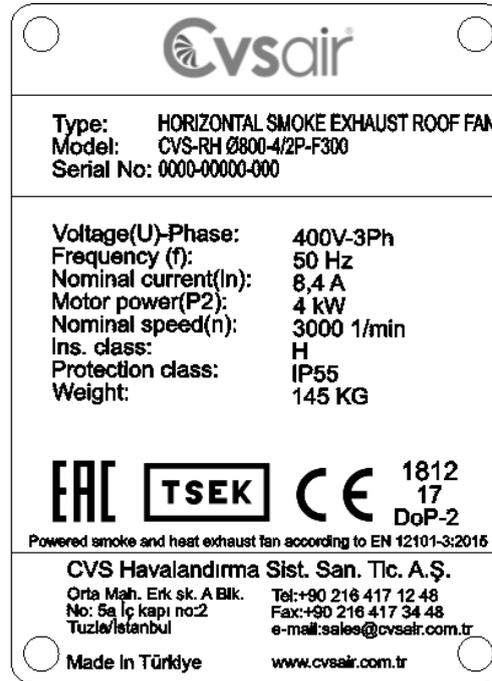
## 2. Technical Details and Transportation

### 2.1 Marking

The CVS-RV and CVS-RH axial vertical roof fans are provided with a standard nameplate with Cvsair name and address. It also mentions type/size e. g., number of blades, year of production, weight, serial number/order number (production number). Furthermore, it mentions maximum temperature and working period in minutes and if the fan is supplied with approval number, class/category are also mentioned as well as test standard Applied (EN 12101-3).

Also, you can find, output and maximum speed per minute of the fan and if it is requested you can see fan pressure, air quantity values on the name plate.

The fan is also provided with a motor nameplate with relevant motor data including insulation class of the motor.



## 2.2 Weight

The total weights shown in name plate of the fans. The total weight is determined on the basis of type/size of fan and existing motor size employed and is in terms of Kg.

## 2.3 Transportation

The fans are supplied on wooden pallets and they are packed in plastic foil. Please don't transport the fan without its original packaging.

Never lift a product by pulling it by the wires or terminal casing. Likewise, no pressure should be applied on the propeller, turbine or safety grid while manipulating the product.

Load and unload the fan carefully, in order to avoid possible damage. Use suitable lifting equipment.

## 3. Storage

The packaging used for this equipments has been designed to support normal transporting conditions. The equipments must always be transported in its original packaging as not doing so could damage the product.

The product should be stored in a dry place in its original packaging, protected from dust and dirt until it is installed in its final location. Do not accept delivery if the equipments is not in its original packaging or shows clear signs of having been manipulated in any way.

If the fans are stored indoors under well ventilated conditions with no risk of condensation the storage period may be extended to 4-6 months. The storage place must not be exposed to vibrations likely to damage the motor bearings.

Do not place heavy weights on the packed product and avoid knocking or dropping it.

## 4. Installation

### 4.1 Pre-Checks Before Installation



Before the installation, axial fan location on the project should be double checked and, fan features on the name plate have to be compared with actual device values. If fan has a project code, it should also be compared to name plate.

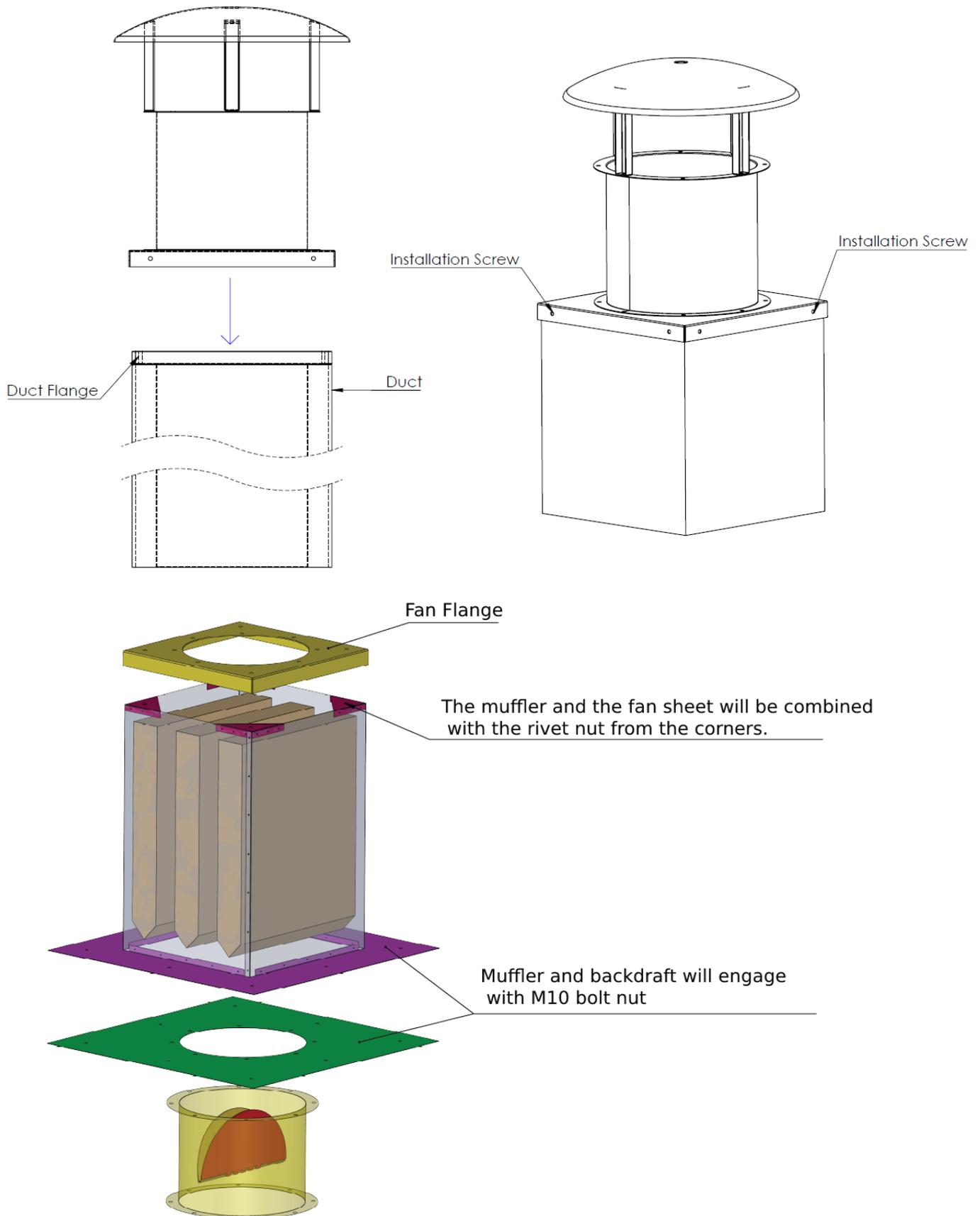


Please be sure that the impeller rotates freely in the fan casing, wherever possible with equal distance between blade tip and fan casing throughout the circumference.

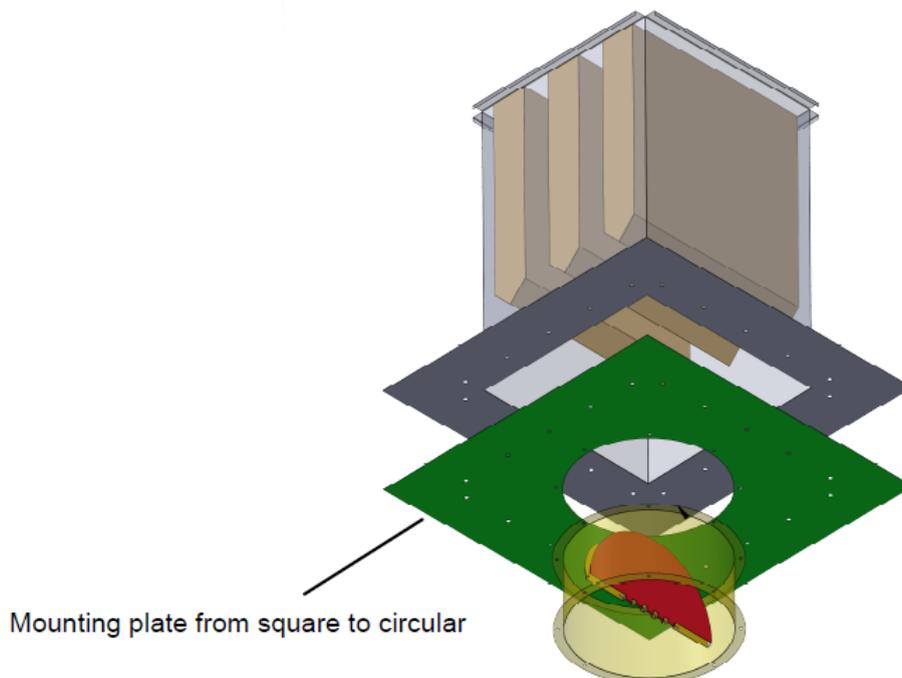
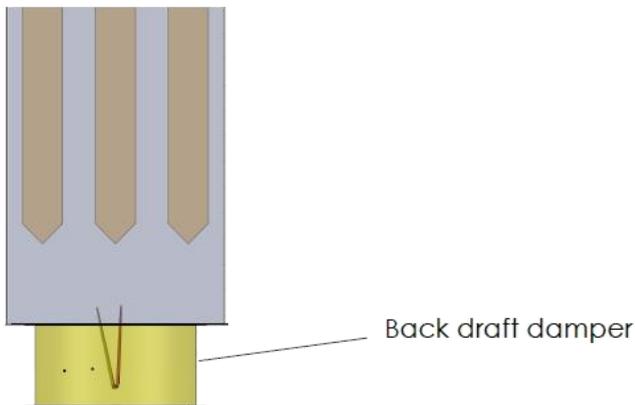


Please check direction of air flow before installation. Find air direction arrows on fan case.

### 4.2 Installation of Axial Roof Fan, Silencer +Back Draft Damper



1. Please compare the roof fan project number with the actual device.
2. Lower platform of roof fan is measured and an assembly pedestal is produced according to measurements.
3. If an assembly pedestal is made, air transfer from duct to device have to be provided via a suitably sized duct.
4. After fan is placed, fan is securely screwed onto pedestal.
5. At this point mechanical installation of the fan is completed.
6. Needed cable is brought to fan.
7. All system installation and electricity connections are completed After letting the energy to device starts working.



### 4.3 Wiring Diagrams

Connection to the mains is affected direct in the motor terminal box or in the terminal box mounted on the outside of the fan casing. Connection is made according to connection diagram on the inside of the terminal box cover.

Having wired the motor terminal box, check that the direction of rotation of the impeller complies with the arrow-plate fitted on the outside of the fan.



Be sure your cable type and cable section are suitable for your fan model and motor power of the fan.



Use Fe180 cables for smoke fans.

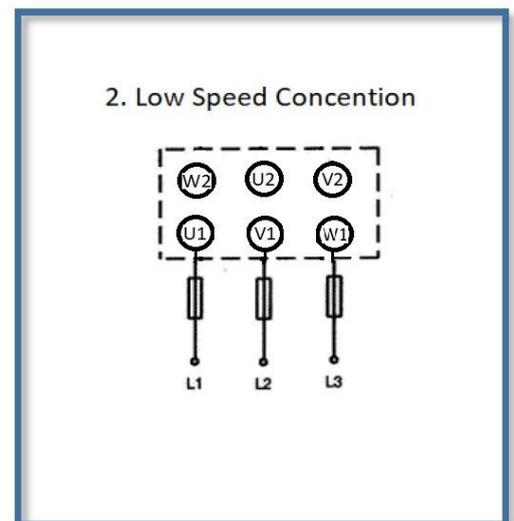
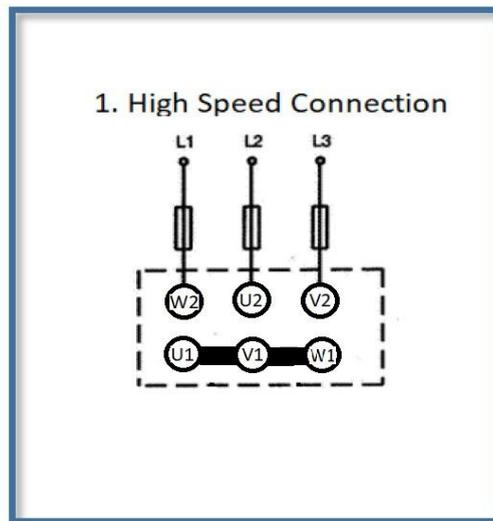


Cut the energy before start wiring, if you are not sure please don't touch unisolated cables.

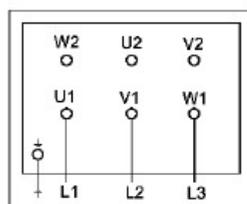
If you want to operate your fan only low or high speed, please check these diagrams.



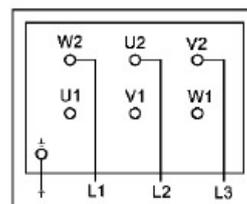
If you have a VFD for a fan please use high speed connection



Two separate windings for starting a dual-speed motor.



Low Speed



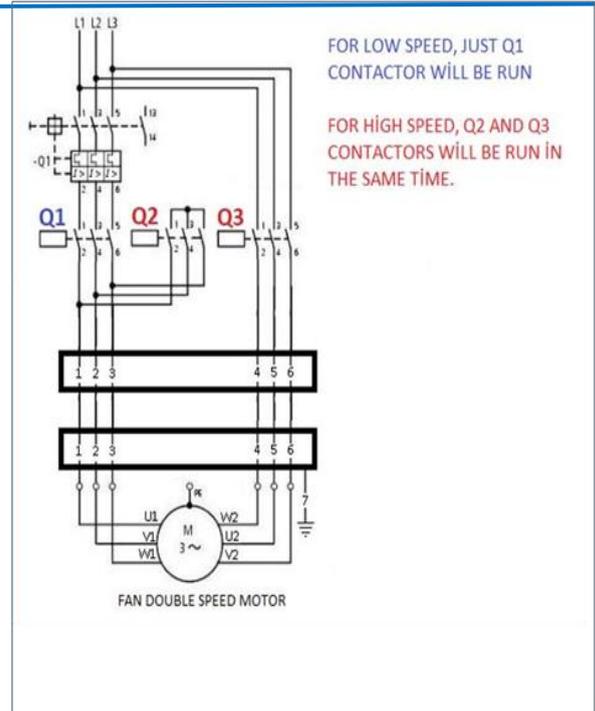
High Speed

If you use your jet fan with two speed,  
please check following dahlender diagram.

You can use your fan low speed for daily  
ventilation modes, and high speed in case of fire.

You need a dahlender contactor  
system on your board for each fan

Please don't forget to use a motor protection  
switch for low-speed contactor, and avoid usage  
for high speed one.



## 5. Commissioning

### 5.1 Safety First



Only qualified persons can carry out the commissioning procedures. Don't forget to wear personal protective equipment's.



Be sure that energy is cut off.

### 5.2 Pre-Check Before Commissioning

- Please check if Installation and electrical connection have been correctly performed.
- Be sure there isn't any foreign objects into fan or duct system.
- Inlet and outlet side of the fan must be free.
- Check the wiring and compare it with the diagram into the terminal box of the fan.
- Check the tightness of wiring connections.
- Safety devices have been fitted.
- Be sure that cable glands are tight.
- Check the equipments in electrical boards, and be sure they were selected for nominal current value (from the name plate) of the fan.
- Check the cable type and section of the fan.
- Check the voltage value of the energy system.
- Check the ohmic values of the roof fan motor for each speed low and high. This control must be done from electrical board terminals, to be sure you don't confuse low and high-speed cables in the board side.
- Don't run your roof fan without checking ohmic values of the roof fan motor.

### 5.3 Ready for Start

Check the fan if there is any visible damage and be sure all protective equipments are fitted. After you are sure that electrical equipments are suitable for fan motor power,



Switch the fan on.

First of all, check the current value from the energy cable with an clamp meter. Be sure current consumption doesn't exceed nominal motor current.

And listen the fan to feel smooth running. Be sure it doesn't have any unexpected noise and vibration. After that please check the rotation side of the fan (use rotation arrows on the fan case).

You must check tightness of the connections after first run of the fan.

If you via a frequency inverter in your system, first run the fan with a low frequency and be sure it is running smooth and check the rotation of the fan. After that test it with full capacity (50/60Hz.) and be sure all parameters are uploaded into your VFD. Please use high speed wiring diagram if you have a VFD in your system for your roof fan.

## 6. Maintenance

As Cvsair, we recommend you to perform maintenance once a month or every 3 months or at least every 6 months. If you don't do routine maintenance of your fans. They will be out of guarantee.



Before maintenance electric system must be switched off and protected so that the fan is not cut in unintentionally.

### 6.1 Maintenance for Fan Casing

The fan casing requires no maintenance other than ordinary cleaning. If the fan casing is painted, the painted surface should be checked regularly and repaired where necessary.



Make sure that the fan casing is not exposed corrosive factors

## 6.2 Maintenance for Impeller

The impeller is supplied with the blades adjusted to the pitch corresponding to the desired operating point (pressure and air flow) in the factory. Please check the impeller for visible damage, this kind of damages can cause high vibrations.

To ensure vibration free operation the impeller has been carefully balanced in this position.

Vibrations occurring during operation will normally be due to accumulations of dust or dirt on the hub and blades, and will disappear after cleaning.

Should this not be the case, expert assistance should be called in immediately, as continued vibrations will shorten the life of the motor bearings.

Please check the space between impeller blade and fan case. It must be same in all positions of the impeller.

Rotate it with your hands and be sure it rotates smoothly.

## 6.3 Maintenance For Terminal Box

Before start maintenance of the motor please check the terminal box. Clean it if it is extremely dusty. Check the tightness of the all-cable connections and make sure they don't touch each other.



If you see any corrosion in the terminal box, remove and renew all the connections. Please use anti-corrosion spray and remove the cause of corrosion

## 6.4 Maintenance for Motor

The motor normally only requires maintenance of the bearings as indicated in the maintenance instructions for electric motors.

Rotate the impeller with your hand strongly. And listen if it has a unexpected bearing noise.

Please follow instructions below:

1. First of all please disconnect all the wirings to be safe,
2. Then, you need to remove fan from the duct system,
3. Remove impeller of the fan by removing bolt in the center of hub.
4. Release the bolts of motor mounting feet, before that marked the correct place of the motor on it table.
5. Take out the motor and separate rotor and stator,
6. After that change the bearings on rotor and when you install bearings use suitable press machine.
7. Be careful to install the motor in correct place on the motor table,
8. Install the impeller and tight its bolt, use Loctite to avoid self-disassembly.
9. Be sure impeller can rotate freely and check the space between blades and fan case.

## 7. Troubleshooting

Problems	Possible Causes	Actions
<b>Motor does not rotate</b>	Incorrect supply voltage	Check voltage and your voltage supplier
	Incorrect wiring	Check wiring diagrams and re-connect it, control current value with a clamp meter
	Mechanical blockage	Remove blockage and clean inside of the fan
<b>Fan doesn't reach full speed</b>	Incorrect frequency	Check frequency parameters of the VFD
	Problem in winding of the motor	Contact with Cvsair
	Incorrect wiring	Check wiring diagrams and re-connect it, control current value with a clamp meter
<b>Fan does not run smoothly</b>	Imbalanced impeller	Rebalancing by Cvsair
	Fan rotates in wrong direction	Correct the rotation by changing phases from electrical board
	Deformation of rotor	Check the operation temperature
	Deformation of bearings	Check the life time of the bearings and change them
<b>Thermal contacts have triggered</b>	Motor overhead	Measure the motor winding or contact Cvsair
	Fan rotates in wrong direction	Correct the rotation by changing phases from electrical board
	Motor burned	Contact with Cvsair
<b>Low airflow</b>	Check the selection flow and pressure lost	compare airflow and pressure lost value with project values
	Blockage in the duct system	Remove blockage and clean inside of the duct system
	Leak in the duct system	Check the duct system and use duct isolator to fix it.
	Fan rotates in wrong direction	Correct the rotation by changing phases from electrical board
<b>VFD current error</b>	Wrong VFD selection	Check the VFD power and motor Power, Is they doesn't compare, change your VFD with a suitable one
	Wrong VFD parameters	Check max voltage, current and HZ parameters an adjust them
	Incorrect wiring	Check wiring diagrams and re-connect it, control current value with an clamp meter
<b>Working with extremely vibration</b>	Incorrect installation	Fix the fan on the base if it does not.
	Incorrect wiring	Check wiring diagrams and re-connect it, control current value with an clamp meter

## 8. Warranty

Fans are warranted to be free from defects in materials and workmanship, under normal use and service, for a period of 2-years from date of shipment.

This warranty shall not apply if:

1. The equipment is not installed by a authorized person and according to this manual.
2. The equipment is not installed and operated within the limitations set forth in this manual.
3. The invoice is not paid within the terms of the sales agreement.
4. All damages caused by electrical boards which is not supplied by Cvsair.
5. All damages without report during transportation.
6. All defects caused by using wrong selected electrical equipment's.
7. All defects caused by using wrong selected cable types.
8. All defects caused by wrong wiring.
9. All defects due to no routine maintenance by authorized person

The MANUFACTURER shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 2-year warranty period, upon examination by the MANUFACTURER, such part will be repaired or replaced by MANUFACTURER at no charge.

The BUYER shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without MANUFACTURER'S prior authorization, and all returned equipment shall be shipped by the BUYER, freight prepaid to a destination determined by the MANUFACTURER.