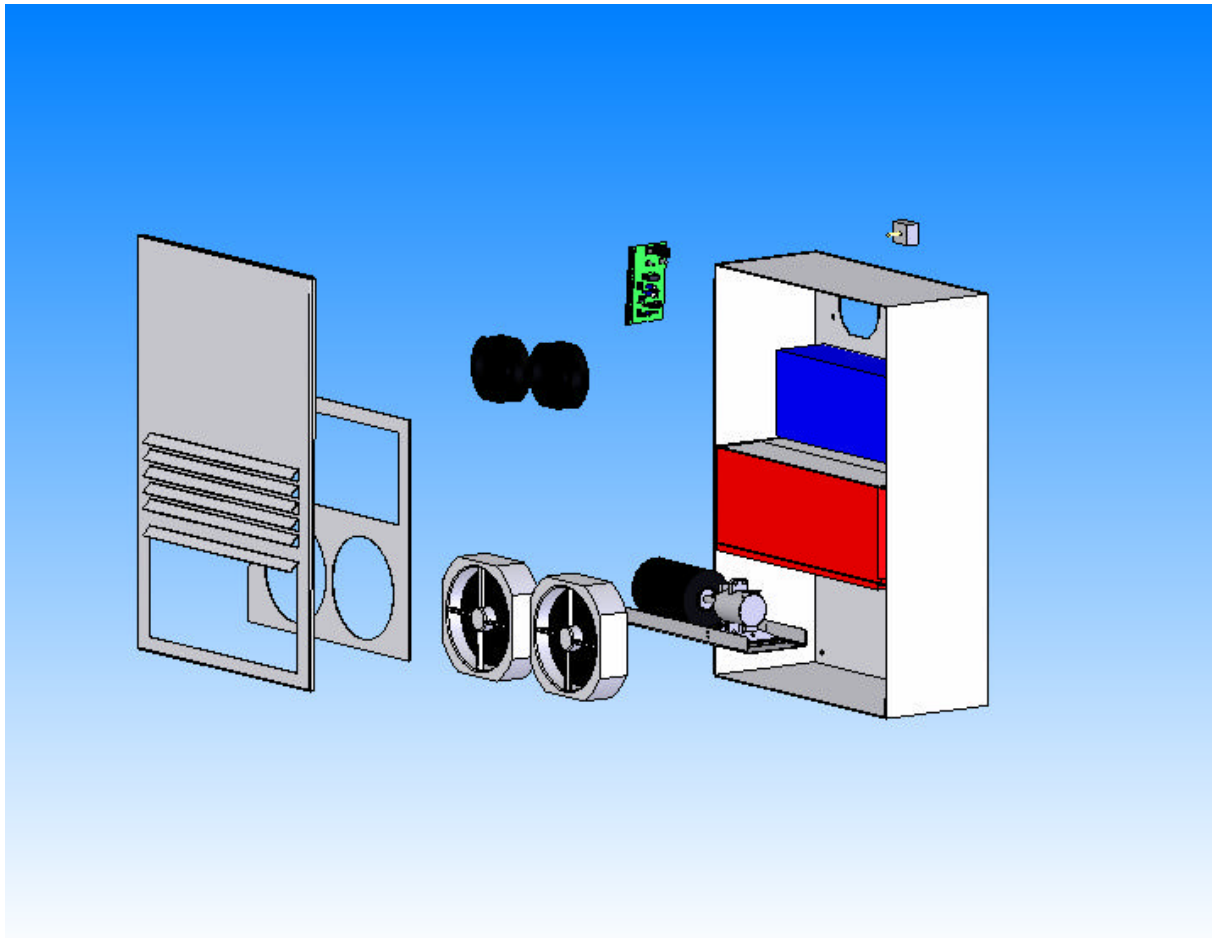




**PRODUCT INFORMATION MANUAL**

**DC AIRCO 10000 and  
DC 10000 HA High Ambient**

**3000 Watt - 10000 BTU/h  
24 VDC or 48 VDC**



## CONTENTS

general safety and warning instructions	3
transport, unpacking, & inspection	3
installation	4
testing	5
drawing	6
design data	7
maintenance	9
trouble shooting	10
electrical schematics	15
warranty	17
return authorization procedure	18
Parts list	19

## **GENERAL SAFETY AND WARNING INSTRUCTIONS**

### **READ THIS MANUAL FIRST BEFORE INSTALLING!!**

- In case of working on the unit always disconnect the battery, certain parts may have high operating temperatures. Observe caution at all times.
- Failure to observe these conditions and installations can cause injury and damage.
- The system is to be installed and maintained by only by trained qualified personnel.
- The unit is fitted with pressed and folded metal parts, which could have sheared metal edges. Be cautious handling the unit, especially when working in poorly accessible places.
- Check that no tools, test equipment have been left in or on the equipment on completion of work.
- Ensure the cover and all mounting hardware is firmly secured before leaving installation
- When servicing the unit do not test run it without the cover to prevent overheating of the unit.

## **TRANSPORT , UNPACKING & INSPECTION**

- The air conditioner can be shipped horizontal or vertical  
If there is any abrasion, oil leakage or loose components, make a note on the freight bill when the units are being delivered.  
Immediately notify the freight company for filing a freight claim
- All packing materials should be retained for inspection.

## INSTALLATION

- Inspect air conditioner for transport damage after opening the door. The units are filled with a fluorescent green additive showing leaks in the system.
- Use the carton template for outlining and cutting the required holes in the cabinet.  
The DC AIRCO can only be mounted in the upright position!  
As shown on page 1
- Mount the DC AIRCO on the cabinet using the packaged bolts.  
Caution: When you use longer bolts you might damage the evaporator or other parts. Use the rubber packing material to ensure a airtight connection with the enclosure, see drawing page 6.  
The rubber gland is used around the hole.
- Do not run the unit on a inverter without the use of a battery.  
Any AC ripple will blow the 1 amp fuse on the circuit board  
Use always a battery bank as the main power source.  
A battery bank rectifies any AC ripple into pure DC.
- Connect the cables to the battery.  
Red = power/+ and black = ground/ -.  
The third wire is the sense wire this is going direct from battery + pole to the low voltage disconnect at the circuit board.  
The circuit board is to be protected by fuses. It is advised to use a fuse of 25 A (24 volt) or 15 A (48 volt) in the power cable near the battery.
- When you have connected the 3 wires, the 2 red led's on the circuit board will illuminate for 3 seconds while the low voltage disconnect is measuring the battery voltage.  
The cut –out voltage with a 24 volt system is 21,5  
And with a 48 volt system 43 volt.

- Set desired temperature.

25° C = 77° F

30° C = 86° F

35° C = 95° F

- When during the first connection the battery voltage is below 26 (24V) or 52 volts (48V) the unit will not start – load batteries over the set point of 26 / 52 volts. This set point is made for preventing the unit to go off/on all the time when battery voltage is low and the battery is recharged.

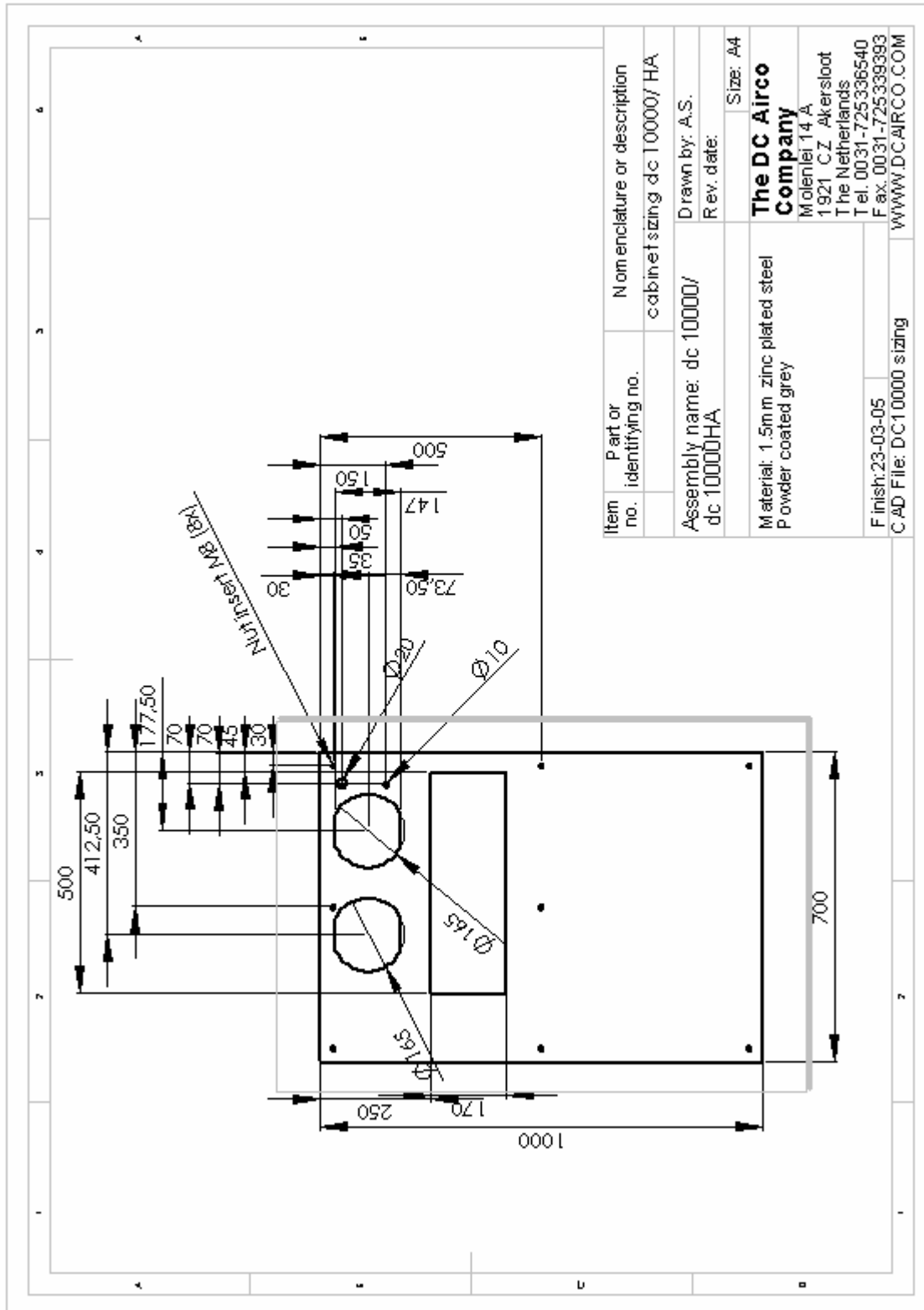
Caution : **DC AIRCO** will automatically start when room or cabinet temperature reaches or exceeds the set temperature.

To prevent overheating, the door/cover should be closed when the unit is running!!

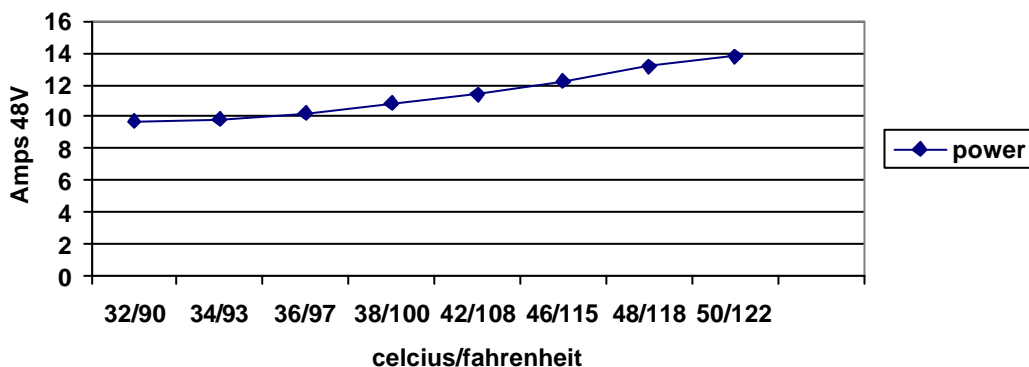
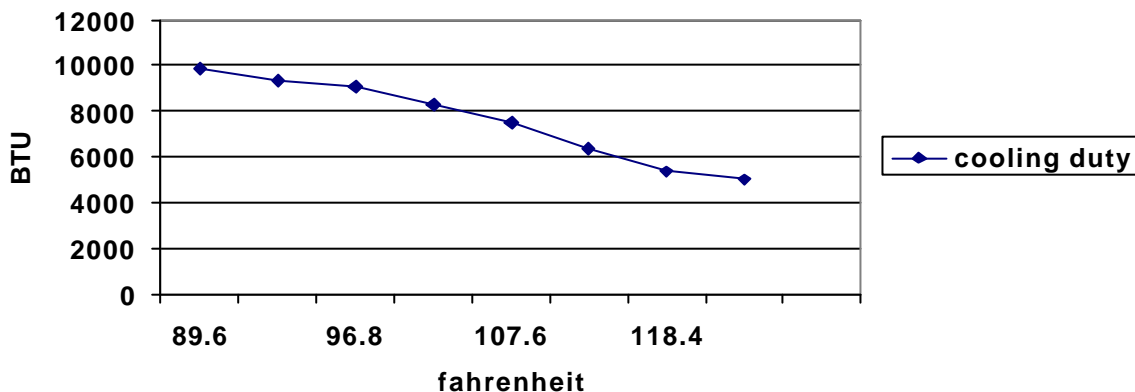
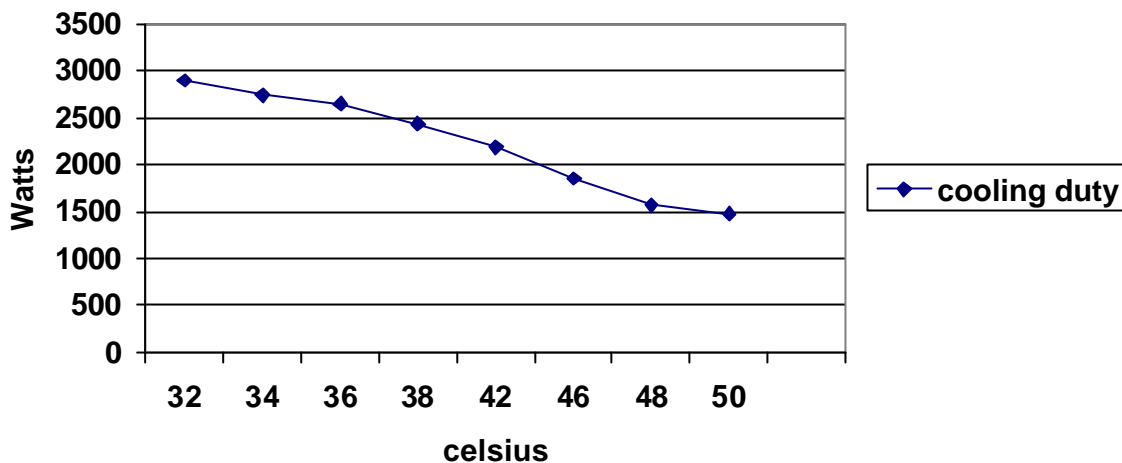
## TESTING

After mounting the hardware and the wiring the unit will automatically start unless the thermostat setting is too high. Turn thermostat to the desired setting. The unit will start.

The DC Airco products have a high airflow and a small delta T as part of their efficiency. The air coming out of the DC Airco will therefore be not so cold as a 115 volt or 230 volt AC unit.

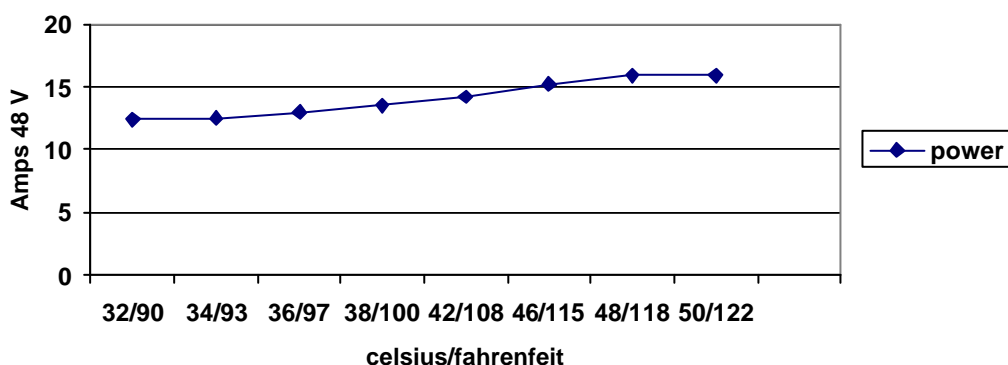
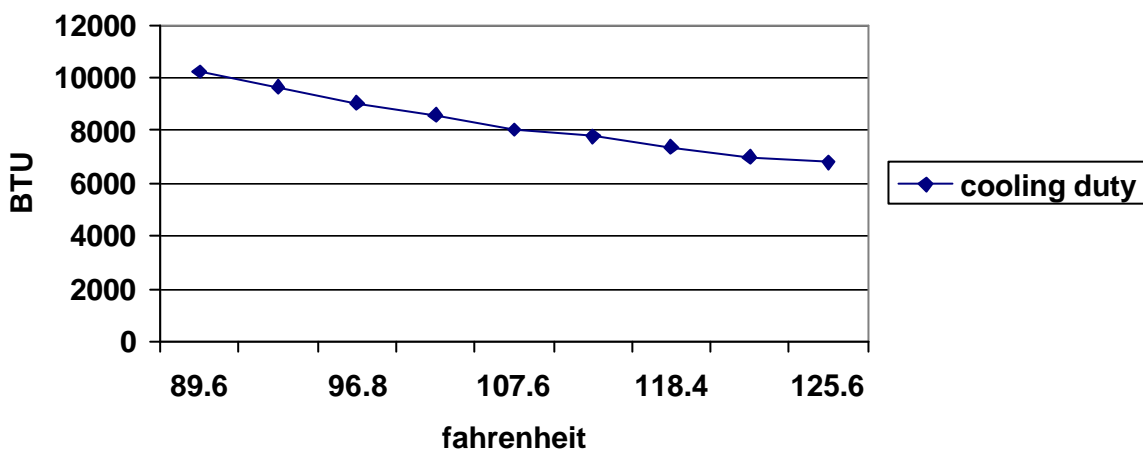
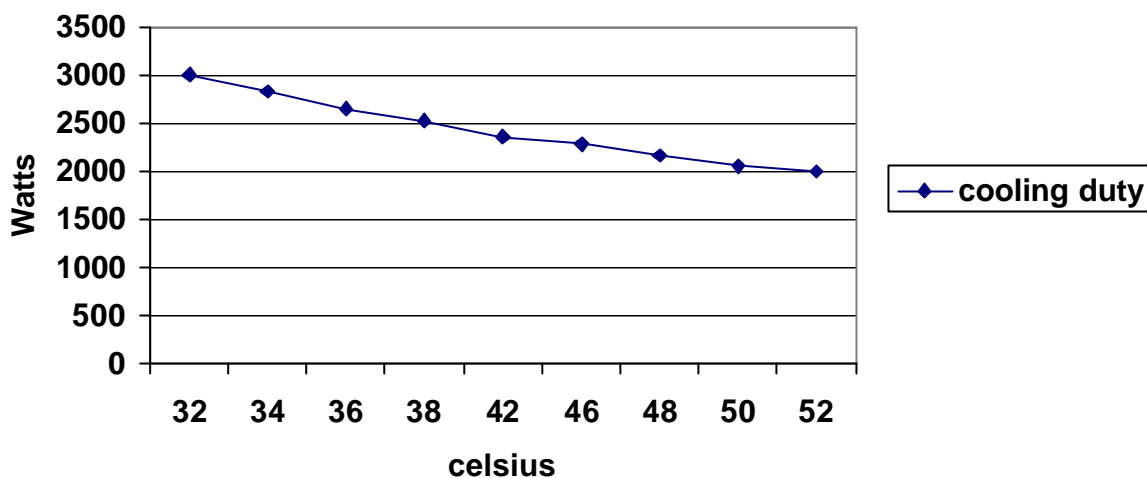


## DC 10000 48 VDC Design data



In a 24 volt system the Amp draw is twice the Amp draw of a 48 volt unit

## DC 10000HA 48VDC Design Data



In a 24 volt system the Amp draw is twice that of a 48 volt unit.

Measured with:        54 VDC battery voltage  
                               Evaporator ambient(shelter) temp. 30°C // 86°F

## MAINTENANCE

All air conditioners are designed for trouble free life as long as the inlet filter is maintained in a clean condition. To aid in service definition the service personnel can initially identify probable cause by referring to the trouble shoot program mentioned on page 10 through page 15.

### Evaporator and condenser coil cleaning

Periodically the coils should be cleaned. No fixed period for cleaning can be provided due to the varying environments in which the air conditioner may be installed. However once the coils become visibly coated with dust it is recommended that they be cleaned with a brush or compressed air. Both side of the coils should be inspected regularly. ( at least every 12 months)

### Compressor and refrigerant system

The compressor is sealed and factory lubricated. If the compressor fails it is recommended that the unit be returned to DC Airco Company for servicing. In the vent that the unit cannot be returned it is possible, using suitably qualified personnel, to repair the unit on the field. However this voids product warranty.

If the refrigerant charge is lost the means of leakage should be found and repaired by a reputable refrigeration repair company. Units are filled with R134A (1600gram) and have an additional PAG 46 oil filling of 0,5 litre. In case of a broken pipe also charge new PAG oil!

### Blowers

The blowers are maintenance free. Any dust build-up should be removed.

### Filters

In outdoor filter should be checked and cleaned on regular basis dependent on the environment.

TROUBLE SHOOT LIST

DC 10000 and DC 10000 HA 04 2005

PROBLEM	POSSIBLE CAUSE	REMEDY OR COMMENT 1
<p style="text-align: center;">NO FUNCTION AT ALL</p> <p style="text-align: center;">NO RED LED ILLUMINATING ON CIRCUIT BOARD</p>	<p>A. Cables are not connected to the battery.</p>	<p>A.1. Connect the 3 cables to the battery. Including the tension wire. A.2. Test if there is voltage on the connector from the board. (power, ground and tension wires)</p>
	<p>B. Main fuse near battery is blown.</p>	<p>B.1. Change the fuse.</p>
	<p>C. Circuit board fuse F4 is blown. Only replace by 1 Amp fuse!!! (delivered with unit, hanging in plastic bag on circuit board )</p>	<p>C.1. Disconnect all connectors from the circuit board. (number them) Replace fuse circuit board fuse 1A. When it blows again change circuit board When the fuse stays ok, reconnect one by one the connectors until the fuse blows again. <u>check that wiring for short circuit.</u></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>NOTE: SYSTEM MUST BE CONNECT directly to a battery and not directly on a battery charger inverter ,without use of batteries in between. Any AC ripple will blow the fuse.</b></p> </div>
	<p>D. The communication between the circuit board and the thermostat is not functioning.</p>	<p>D.1. The 8 pin connector is not connected to the circuit board. (loose wire?) D.2. Turn the thermostat till it clicks.</p>

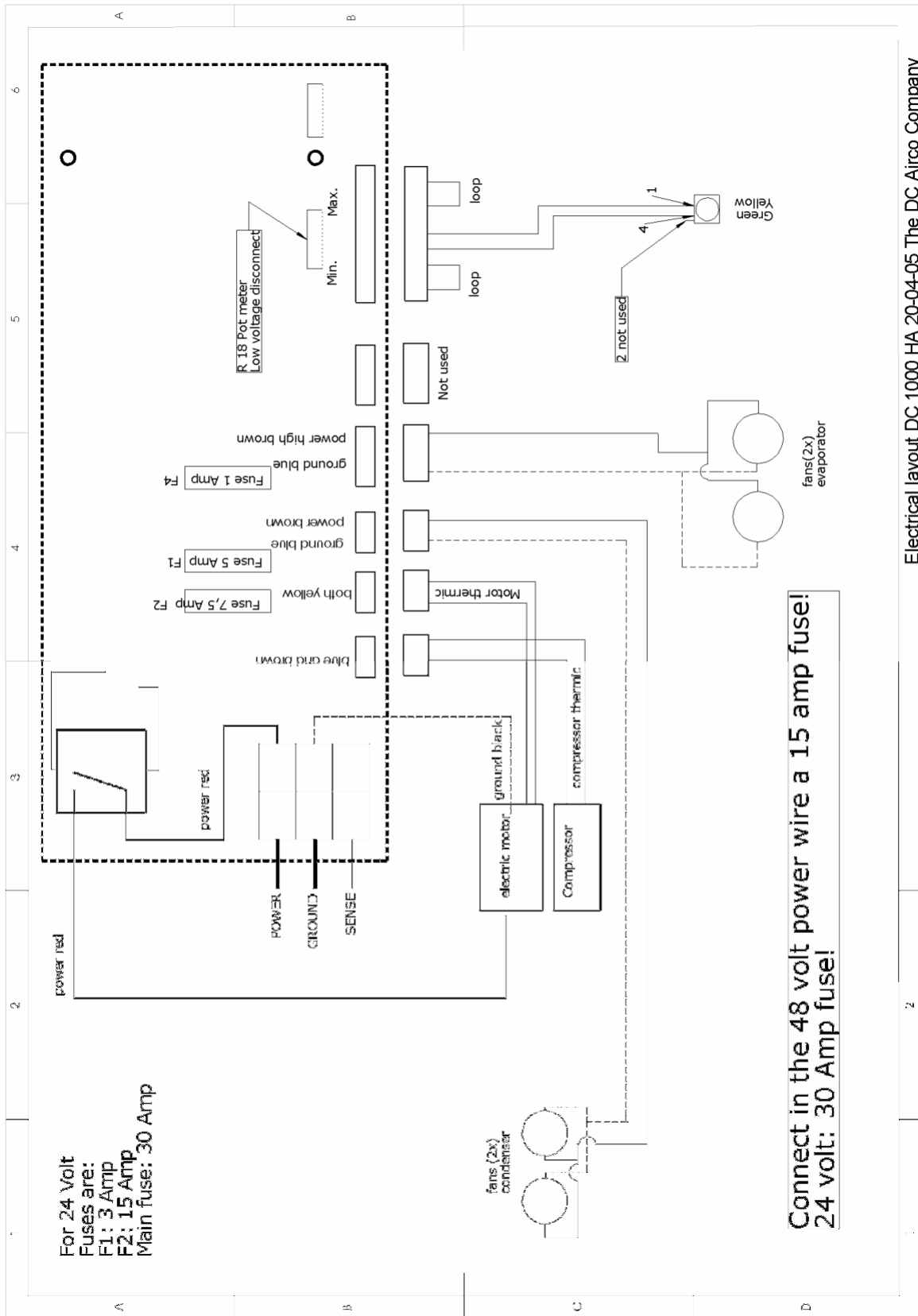
PROBLEM	POSSIBLE CAUSE	REMEDY OR COMMENT 2
<p style="text-align: center;">NO FUNCTION AT ALL</p> <p style="text-align: center;">NO RED LED ILLUMINATING ON CIRCUIT BOARD</p>	E. Thermostat is defect.	<p>E.1. To test this: connect the two wires from the thermostat together and the unit will start.</p> <p>E.2. Change the thermostat.</p>
	F. Ambient below 10°C/50°F	F.1. Thermostat will not start the unit. Put a heater in the shelter, or connect the green and yellow thermostat wires with each other in order to bypass the thermostat
<p style="text-align: center;">UNIT WORKS FOR A SHORT PERIOD OF TIME, AND LED ARE ILLUMINATED WHEN UNIT STOPPED</p>	A. Low battery voltage.	<p>A.1. Check battery capacity and condition. (see manual)</p> <p>A.2. Check battery voltage and recharge battery.</p> <p>A.3. By using GEL,SLA or start batteries you may have to reset low voltage disconnect point(R18).</p>
	B. Low voltage at circuit board	B.1. Check battery, connectors and cable sizing, when unit has been working good in the past check the fuses near battery for corrosion.

PROBLEM	POSSIBLE CAUSE	REMEDY OR COMMENT 3
OUTDOOR FAN DOESN'T WORK	A. Fuse is blown (F1)	A.1. Change fuse. A.2. Check wiring to the fan. A.3. If fuse blows again change fan.
	B. Fan is blocked	B.1. remove obstacle.
INDOOR AND OUTDOOR FANS ARE WORKING BUT NO COOLING DUTY. COMPRESSOR IS NOT TURNING	A. Compressor is overheated. (motor is not working)	A.1. Check if the outdoor fan is working correctly see manual. A.2. Check if the outdoor fan has clear space of at least 50cm (see manual) A.3. Compressor is overheated because ambient temp. is too high. Let system run. The compressor will be cooled by the fans and restart after a short period of time. (10-15minutes). A.4. Condenser is blocked with dust. Clean condenser.
INDOOR AND OUTDOOR FANS ARE WORKING BUT NO COOLING DUTY. COMPRESSOR IS TURNING	A. The thermo expansion valve (TEV) is not working.	A.1. Check if between the valve and the evaporator the piping is cold. A.2. Check if the sensor from the TEV is connected on the suction pipe at the end of the evaporator. A.3. Check if the sense line of the TEV is not broken. A.4. Check if the cork insulation tape is placed over the sensor from the TEV.

PROBLEM	POSSIBLE CAUSE	REMEDY OR COMMENT 4
INDOOR AND OUTDOOR FANS ARE WORKING BUT NO COOLING DUTY	A. Airco runs without door.	A.1. Put door back on the unit.
FANS AND COMPRESSOR ARE RUNNING BUT NO COOLING DUTY	A. The oil in the compressor is sticky and prevents the vanes to come out. Ambient below 20°C/70°F.	A.1.This is only with a new unit ,if it has been used it will start up without problems also in cold conditions. For testing the unit after installation Use a hot air blower on the compressor to heat it up 10 minutes. Compressor should kick in. A new compressor has an overshoot of oil.
	B. Short on refrigerant	B.1.Let the Airco run for 10 minutes, remove the door while the system is running. <b>WARNING: <u>LOOK OUT FOR FANS</u> +<u>MOTOR they are running!!!!</u></b> Disconnect the 8 pin connector from the circuit board. Check if all the pipes are cold.(90%) Note: the top pipes are normally not As cold as the mid section. Is it less then 90% cold look for green Liquid. If there is green liquid there is a Leak.

PROBLEM	POSSIBLE CAUSE	REMEDY OR COMMENT 5
<p style="text-align: center;">AIRCO IS MAKING NOISE AFTER A FEW MINUTES.  AND COOLING DUTY IS GETTING LESS</p>	A. Airco runs without door.	A.1. Put door back on the unit.
	B. Outdoor fan is not working.	B.1. Check if the outdoor fan is working correctly. (not bent?) B.2. Check if the outdoor fan has clear space of at least 50cm (see manual) B.3. Condenser is blocked with dust. Clean condenser. B.4. Fuse F1 is blown.
	C. Motor and compressor are not in line. Vibration.	C.1. Loosen the bolts of the electric motor to check it. Mount them in line by running the unit. Mind you hands for moving fans!
	D. Compressor makes a rattling noise.	D.1. Compressor vanes are not coming out. Let the unit restart a couple of times. D.2. Ambient temp. is below 20°C/70°F. D.3. TEV is be defect.
<p style="text-align: center;">INDOOR FANS DOESN'T WORK.</p>	A. Blown fuse. (F2)	A.1. Change fuse and check wiring on short circuit.
	B. Loose wire.	B.1. Connect wire.
	C. Fan is not running but looks good.	C.1. Check voltage and polarity. C.2. Change fan if voltage and polarity is oke.
	D. Fan makes noise.	D.1. Check if there is a obstacle in the fan.  <p style="text-align: center;"><b>Turn unit off first!</b></p>





Electrical layout DC 1000 HA 20-04-05 The DC Airco Company

## DC AIRCO LIMITED WARRANTY

DC AIRCO COMPANY warrants the DC AIRCO air conditioners to be free from defects in materials and workmanship under normal applications, use and service conditions for one (1) year from the date of delivery or 1,5 year after date of production whatever comes first to the original purchaser only.

Should any part prove defective within the warranty period, the customer may choose to return the defective product that is under warranty to [The DC Airco Company](#) or their representatives for repair at no charge, or the customer has the option to repair the defective product at his own expense and [The DC Airco Company](#) or their representative will supply repair parts at no charge providing the defective part is returned or a photo sent through e-mail, and found to have failed under warranty. Parts supplied as warranty replacement parts will assume the balance of warranty on the part returned for warranty consideration.

### What This Warranty Does Not Cover

This warranty does not apply to any of the DC AIRCO which have been subject to misuse, neglect or accident, or which have been damaged through abuse, alteration, improper installation or application, or negligence in use , prolonged operation with dirty filters or non working fans, storage, transportation or handling , or which has been repaired / refilled with other refrigerant than R 134A (+PAG 46 oil).

### Warranty Limitations

There is no other expressed warranty on these products. [The DC Airco Company](#) and their representatives are not responsible for any incidental or consequential damages arising from the use or loss of use of the product. [The DC Airco Company's](#) and their representative's maximum liability under any warranty, expressed, implied, or statutory, is limited to the purchase price of the product. The purchasers exclusive remedy shall only be as stated herein.

## RETURN MATERIAL AUTHORIZATION PROCEDURE

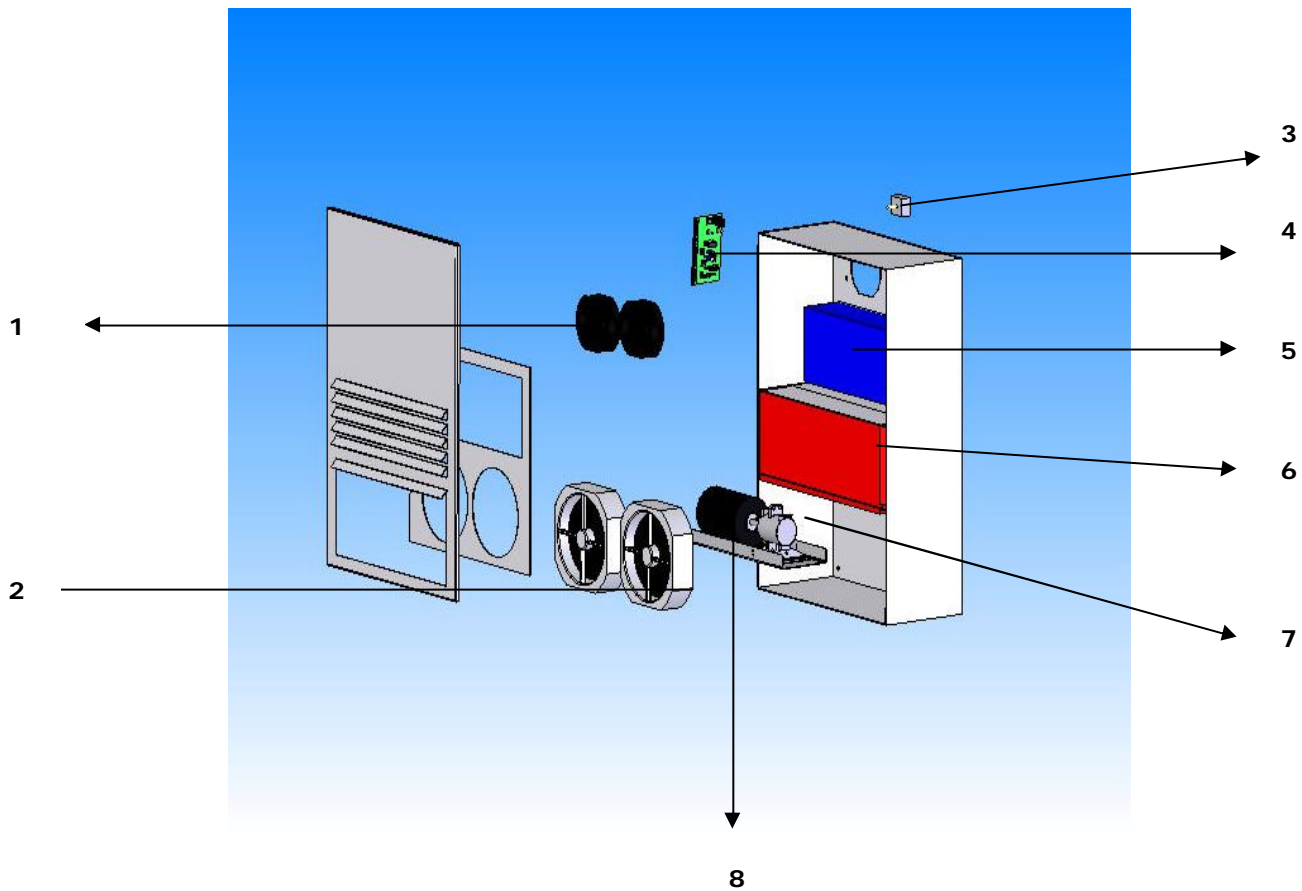
In the unlikely event of unit failure the following return procedure shall be adopted.

- All product returns require a Return Material Authorization number regardless of reason.
- The customer is required to contact the Quality Department at DC Airco Company, The Netherlands at +31(0)72 5336540 to obtain a RMA number.
- The following information must be provided prior to a RMA number being issued:
  - The DC Airco part number(s) of the product to be returned.
  - The DC Airco serial number(s) of the product to be returned.
  - Number of unit(s) requested to be returned.
  - Reason for return.
  - Contact name, phone and fax number.
  - Date of product receipt.
  - Invoice number and purchase order number covering the unit(s).

The customer is responsible for suitably packaging the unit(s) securely, ideally in the original packaging, marking all cartons with the RMA number and shipping them prepaid to the designated site specified by The DC Airco Company.

**In no event shall The DC Airco Company accept any shipment which does not comply with the above procedures.**

## SPARE PARTS



No	Part number	Description
1	10000HA/1/24	Evaporator fans 24 volt (2x)
	10000HA/1/48	Evaporator fans 48 volt (2x)
2	10000HA/2/24	Condenser fans 24 volt 1 or 2 (#)
	10000HA/2/48	Condenser fans 48 volt 1 or 2 (#)
3	10000HA/3	Thermostat
4	10000HA/4/24	Circuit board 24 volt
	10000HA/4/48	Circuit board 48 volt
5	10000HA/5	Evaporator
6	10000HA/6	Condensor
7	10000HA/7	Compressor
8	10000HA/8/24	Electric motor 24 volt
	10000HA/8/48	Electric motor 48 volt

# DC 10000 has 1 condenser fan , DC 10000HA 2 condenser fans