

CS90E

INDUSTRIAL DEHUMIDIFIER

OWNER'S MANUAL



www.eipl.co.uk

INTRODUCTION

Designed for a wide range of applications, the CS90E dehumidifier is a rugged, industrial unit which utilizes an energy-efficient compressor and a compact portable design to provide easy efficient drying.

The CS90E has a number of special features:

- Compact Size
- High efficiency rotary compressor
- Ebac's "**Hot Gas**" defrost system
- Exterior epoxy powder-coated finish
- Provision for permanent drainage
- Extra long power cord
- Integral condensate pump
- Electronic humidity controller

The fan draws the moist air through the cold evaporator coil, which cools the air below its dew point. Moisture forms on the evaporator coil and is collected in the condensate tray, which is equipped with a permanent drain. The cooled air then passes through the hot condenser coil where it is reheated using the same energy removed during the cooling phase, plus the additional heat generated by the compressor. The air is, therefore, discharged from the dehumidifier at a slightly higher temperature with a lower absolute humidity than that which entered. Continuous circulation of air through the dehumidifier gradually reduces the relative humidity within the area.

The CS90E controls consist of an electronic humidity controller, incorporating Bluetooth connectivity and Real Time Clock, allowing the unit to interface with Android and IOS smart phones and provide additional control and data logging features. The respective apps are available for free download through the normal channels

Smartphone App

The Smartphone interface allows the following additional functions

- a) Real time monitoring of the relay status and room conditions
- b) Adjustment of Control and set point (To allow this functionality, the link fitted to J3 on the main controller board, will need removing)
- c) Data logging of, Time, Temperature, Humidity, Relay Status, Control and Alarm Set points
- d) Adjusting the data Logging Interval
- e) Resetting the data log
- f) Downloading logged data
- g) Emailing logged data in RAW or CSV formats (Allowing importing into Excel)

The CS90E dehumidifier is a rugged, reliable drying unit designed to operate effectively over a broad range of temperature and humidity conditions. An active hot gas defrost system, controlled by an electronic timer, guarantees positive de-icing, thereby optimizing operation at low temperatures.

The unit incorporates a welded and galvanized steel chassis and is finished in an epoxy coating for resilience to damage caused by rough handling.

SPECIFICATIONS

MODEL: CS90E

HEIGHT: 386mm

WIDTH: 353mm

DEPTH: 564mm

WEIGHT: 38 kg

AIRFLOW: 390 M3/hr

POWER SUPPLY: 230V/ 50Hz/ 1 ph

FINISH: Powder-coated Epoxy

OPERATING RANGE: 3 °C – 35 °C

REFRIGERANT: R-407c (430g)

"This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. The refrigeration system is hermetically sealed.

The Global Warming Potential (GWP) of refrigerants used in products manufactured by Ebac Industrial Products Ltd is as follows

R134a – 1300

R407c – 1610

For type and weight of refrigerant contained in this unit, please refer to the product data label"

INSTALLATION

POSITIONING:

Position the dehumidifier unit in the center of the room to be conditioned if at all possible. However if a damp patch is particularly apparent the outlet grille should be pointed towards it.

NOTE: Both inlet grille and outlet grille of the dehumidifier unit must have clear space around them and not be obstructed in anyway. For correct installation and operation the unit must have a clearance of 0.5M from all adjacent surfaces and or structures

WIRING:

Connect the power mains cable to a designated circuit breaker as follows:-

For Models without plugs:-

Brown	Live
Blue	Neutral
Green/Yellow	Earth (ground)

If the SUPPLY CORD is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified person in order to avoid hazard.

DRAINAGE:

The CS90E has an integral water pump fitted as standard. This condensate pump is capable of discharging the condensate water 4.3m vertical lift away from the unit & 30m horizontal. The water can, therefore, be discharged into a drain some distance away. Please attach a suitable hose to the outlet of the unit.

OPERATION

The following procedures should be followed to test the CS90E for correct operation:

1. After unpacking, examine all external features to confirm damage-free shipment. Report all defects and damage at once. Connect the power cable to a grounded 13 Amp electrical outlet.
2. Setting the humidistat
 - Turn fully clockwise
3. Check dehumidification process as follows:

TO ENSURE CONTINUED FULL EFFICIENCY OF THE DEHUMIDIFIER, MAINTENANCE PROCEDURES SHOULD BE PERFORMED AS FOLLOWS:

- A. Place unit on a level surface.
- B. Start up unit by turning the ON/OFF switch to ON
- C. Check that the compressor is running.
- D. Leave the machine running for 15 minutes.
- E. Observe the evaporator coils through the rear upper grill, to confirm frost operation.
 - i. If the air temperature is below 80° F, an even coating of frost should cover the entire evaporator coil
 - ii. If the air temperature is above 80° F, frost and/or droplets of condensed water should cover the entire evaporator coil.
- F. After continuous running time of approximately 55 minutes, the unit will enter "Hot Gas" defrost mode for 5 minutes and then automatically return to normal operation.

If, after carrying out the above procedures, the unit does not appear to function properly, refer to the *Trouble Shooting* section, which follows, or contact the Factory Service Center.

<p>CAUTION: ONCE THE UNIT HAS BEEN SWITCHED OFF, WAIT AT LEAST FIVE MINUTES BEFORE RESTARTING.</p>

ROUTINE SERVICE

WARNING:

ENSURE THAT THE POWER CORD TO THE MACHINE HAS BEEN DISCONNECTED BEFORE CARRYING OUT ROUTINE SERVICE. THE SERVICING AND REPAIR OF THIS UNIT SHOULD ONLY BE CARRIED OUT BY A SUITABLY QUALIFIED PERSON.

To ensure continued full efficiency of the dehumidifier, service procedures should be performed as follows:

1. Clean the surface of the evaporator and condenser coils by blowing the dirt out from behind the fins with compressed air. Hold the nozzle of the air hose away from the coil to avoid damaging the fins. Alternatively, vacuum clean the coils.

WARNING:

DO NOT STEAM CLEAN REFRIGERATION COILS

2. Check that the fan rotates freely. **The fan motor is sealed for life and therefore does not need oiling.**
3. To check the refrigerant charge, run the unit for 15 minutes and briefly remove the top cover. The evaporator coil should be evenly frost coated across its surface. At temperatures above 80°F, the coil may be covered with droplets of water rather than frost. Partial frosting accompanied by frosting of the thin capillary tubes, indicates loss of refrigerant gas or low charge.
4. Check all wiring connections.
5. In order to check the defrost operation, the unit needs to be operated in an ambient temperature of less than 15°C for at least 1 hour. When operated in this condition the unit should defrost at least once every hour. The defrost mode can be monitored by observing the ice melting on the coil face, prior to defrost the face will show a white coating of frost, which should clear during defrost

IF ANY OF THE PRECEDING PROBLEMS OCCUR, CONTACT THE EBAC SERVICE CENTER PRIOR TO CONTINUED OPERATION OF THE UNIT TO PREVENT PERMANENT DAMAGE.

REPAIRS

1. Should an electrical component fail, consult the Factory Service Center to obtain the proper replacement part.
2. If refrigerant gas is lost from the machine, it will be necessary to use a refrigeration technician to correct the fault. Contact the Factory Service Center prior to initiating this action.

Any competent refrigeration technician will be able to service the equipment. The following procedure must be used:

- a. The source of the leak must be determined and corrected.
- b. The machine should be thoroughly evacuated before recharging.
- c. The unit must be recharged with refrigerant measured accurately by weight.
- d. For evacuation and recharging of the machine, use the crimped and brazed charging stub attached to the side of the refrigerant compressor.

The charging stub should be crimped and rebrazed after servicing. **NEVER** allow permanent service valves to be fitted to any part of the circuit. Service valves may leak causing further loss of refrigerant gas.

3. The refrigerant compressor fitted to the dehumidifier is a durable unit that should give many years of service. Compressor failure can result from the machine losing its refrigerant gas. The compressor can be replaced by a competent refrigeration technician.

Failure of the compressor can be confirmed by the following procedure:

- a. Establish that power is present at the compressor terminals using a voltmeter.
- b. With the power disconnected, check the continuity of the internal winding by using meter across the compressor terminals. An open circuit indicates that the compressor should be replaced.
- c. Check that the compressor is not grounded by establishing that a circuit does not exist between the compressor terminals and the shell of the compressor.

TROUBLESHOOTING

<u>SYMPTOM</u>	<u>CAUSE</u>	<u>REMEDY</u>
Unit inoperative	1. No power to unit	1. Check the power from power supply panel
Little or no airflow	1. Fan motor burnt out 2. Dirty refrigeration coils 3. Loose electrical wiring	1. Replace the fan motor 2. See <i>Routine Maintenance</i> Section 3. Check the wiring diagram to find fault and repair
Little or no water extraction	1. Insufficient air flow 2. Compressor fault 3. Loss of refrigerant gas	1. Check all of the above 2. Contact the Factory Service Center 3. Contact the Factory Service Center
Little or no defrost when required	1. Faulty timer 2. Faulty by-pass valve	1. Contact the Factory Service Center 2. Contact the Factory Service Center
Unit vibrates excessively	1. Loose compressor 2. Damaged fan	1. Tighten the nuts on the compressor mounts 2. Replace fan
Water flooding inside the machine	1. Drain pipe blocked/frozen 2. Drain pipe too high 3. Crimped or blocked tubing	1. Clear the obstruction 2. Ensure that no section of the drain hose is above the level of the water outlet 3. Straighten, clear, or replace tubing

CS90E SPARE PARTS LIST

<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>	<u>QUANTITY</u>
1	Humidity Sensor	1619514	1
2	Defrost Timer	1619516	1
3	Filter	2013831	1
4	Mains Lead	2029217	1
5	Condenser Coil	2059000	1
6	Evaporator Coil	2059001	1
7	Capillary Tube	3014249	2 x 30"
8	Drain Tubing	3014338	3 M
9	Solenoid Valve	3020837	1
10	Filter Dryer	3020901	1
11	Solenoid Coil	3030452	1
12	ON / OFF Switch	3035914	1
13	Power Relay	3036188	1
14	Capacitor	3036353	1
15	Fan Motor	3040278	1
16	Rubber Foot	3101436	1
17	Compressor	3944933	1

Spare parts available online

www.EIPLDIRECT.com

WARNINGS

This appliance can be used by children from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the application in a safe way and understand the hazards involved.

Children shall not play with the appliance.

Cleaning and user maintenance shall not be made by children without supervision.

If the SUPPLY CORD is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified person in order to avoid hazard.

This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. The refrigeration system is hermetically sealed.

The Global Warming Potential (GWP) of refrigerants used in products manufactured by Ebac Industrial Products Ltd is as follows

R134a – 1300

R407c – 1610

For type and weight of refrigerant contained in this unit, please refer to the product data label

Due to the high pressures within the refrigeration circuit, under no circumstances must direct heat be applied to the evaporator coil in an attempt to remove the build-up of ice.

No attempt should be made to cut open any part of the refrigeration circuit due to high pressures and gas involved.

If the unit is switched off at the mains power supply for any reason, the unit must be allowed to stand at rest for at least three minutes before restarting.



Drawing	: - TPC446
Issue	: - 4
Date	: - 24/11/16