

# **CS90H**

## **INDUSTRIAL DEHUMIDIFIER**

### **OWNER'S MANUAL**



**[www.eipl.co.uk](http://www.eipl.co.uk)**

## CS90H

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| Item       | Description                 | Quantity |
|------------|-----------------------------|----------|
| 10590GH-US | Dehumidifier                | 1        |
| 3944110    | PVC tube – 3/8" I/D         | 7.8 M    |
| 3086144    | Quick release hose coupling | 1        |
| TPC445     | Manual                      | 1        |

## INTRODUCTION

Designed for a wide range of applications, the CS90H dehumidifier is a rugged, industrial unit which utilizes an energy-efficient compressor and a compact portable design to provide easy efficient drying.

The CS90H 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
- Digital humidistat 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.

A digital Humidistat is included which allows for precise humidity control. A programmable display lets you set a specific desired humidity level.

The CS90H 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:** CS60H

**HEIGHT:** 15.2" (386mm)

**WIDTH:** 14" (353mm)

**DEPTH:** 22" (564mm)

**WEIGHT:** 84lbs (38 kg)

**AIRFLOW:** 230 CFM (390M3/hr)

**POWER SUPPLY:** 110V/ 60Hz/ 1 ph

**FINISH:** Powder-coated Epoxy

**OPERATING RANGE:** 33°F – 95°F

**REFRIGERANT:** R-407c (15.2 oz)

*"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"*

## OPERATION

The following procedures should be followed to test the CS90H 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 15 Amp electrical outlet.

2. Setting the Digital Humidistat

**The Digital Humidistat is factory preset to give the optimum level of control. Only adjustment of the desired set point is required.**

During normal operation, the display shows the current % Relative Humidity within the space being conditioned.

The required humidity level can be set as follows:

- Press the “S” button once to access the set point
- Press the ▲ or ▼ button to change the display to the desired Humidity level
- Press the “S” button again to save the set point – The control returns to displaying the current % Relative Humidity

3. Check dehumidification process as follows:

|                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------|
| <p>TO ENSURE CONTINUED FULL EFFICIENCY OF THE DEHUMIDIFIER, MAINTENANCE PROCEDURES SHOULD BE PERFORMED AS FOLLOWS:</p> |
|------------------------------------------------------------------------------------------------------------------------|

- 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.

**When the unit is defrosting, the % Relative Humidity displayed on the digital controller may increase as a result of the ice / frost melting. This is quite normal and the display will return to its normal reading when the unit returns to dehumidifying mode. (Fan running)**

**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 style="text-align: center;"><b>CAUTION:</b><br/>ONCE THE UNIT HAS BEEN SWITCHED OFF, WAIT AT<br/>LEAST FIVE MINUTES BEFORE RESTARTING.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------|

## ROUTINE MAINTENANCE

**WARNING:**  
ENSURE THAT THE POWER CORD TO THE MACHINE HAS BEEN  
DISCONNECTED BEFORE CARRYING OUT ROUTINE  
MAINTNENANCE

To ensure continued full efficiency of the dehumidifier, maintenance 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

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

## CS90H SPARE PARTS LIST

| <u>NUMBER</u> | <u>DESCRIPTION</u>  | <u>PART<br/>NUMBER</u> | <u>QUANTITY</u> |
|---------------|---------------------|------------------------|-----------------|
| 1             | Defrost Timer       | 1619508                | 1               |
| 2             | Filter              | 2013831                | 1               |
| 3             | Condenser Coil      | 2059000                | 1               |
| 4             | Evaporator Coil     | 2059001                | 1               |
| 5             | Capillary Tube      | 3014249                | 2 x 30"         |
| 6             | Drain Tubing        | 3014338                | 9 Feet          |
| 7             | Solenoid Valve      | 3020837                | 1               |
| 8             | Filter Dryer        | 3020901                | 1               |
| 9             | Compressor          | 3022198                | 1               |
| 10            | Defrost Relay       | 3030269                | 1               |
| 11            | Solenoid Coil       | 3030451                | 1               |
| 12            | Capacitor           | 3030908                | 1               |
| 13            | Humidity Controller | 3031530                | 1               |
| 14            | Mains Lead          | 3035148                | 1               |
| 15            | ON / OFF Switch     | 3035914                | 1               |
| 16            | Power Relay         | 3036157                | 1               |
| 17            | Fan Motor           | 3040277                | 1               |
| 18            | Rubber Foot         | 3101436                | 1               |

Spare parts available online

[www.EIPLDIRECT.com](http://www.EIPLDIRECT.com)



|         |              |
|---------|--------------|
| Drawing | : - TPC445   |
| Issue   | : - 1        |
| Date    | : - 02/12/15 |

## LIMITED WARRANTY

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Our products carry a one-year unconditional warranty against any defects in workmanship or material. This warranty will cover all parts and labor required to repair your Ebac product. This warranty is invalid if the unit has been abused, damaged, whether intentional or accidental, or if any modifications have been made to the unit.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS ISSUED IN LIEU OF ALL OTHER WARRANTIES (WHETHER WRITTEN, ORAL, OR IMPLIED) INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. EBAC INDUSTRIAL PRODUCTS, INC. DISCLAIMS ANY LIABILITY FOR CONSEQUENTIAL DAMAGES, LOST PROFITS, OR INCIDENTAL DAMAGES FOR BREACH OF ANY WRITTEN OR IMPLIED WARRANTY WITH RESPECT TO THE FOREGOING DESCRIBED MERCHANDISE.

For Your Records: Model: \_\_\_\_\_  
S/N: \_\_\_\_\_  
Date Received: \_\_\_\_\_

-----  
SAVE THIS SECTION FOR YOUR RECORDS

CLIP AND RETURN THIS CARD

### **PLEASE NOTE**

To ensure that your Ebac Dehumidifier is accorded the full coverage provided by this warranty, please complete and mail this card at your earliest convenience.

## ***Thank You***

### **WARRANTY REGISTRATION**

|                |             |                     |
|----------------|-------------|---------------------|
| MODEL _____    | S/N _____   | DATE RECEIVED _____ |
| OWNER _____    |             |                     |
| ADDRESS _____  |             |                     |
| CITY _____     | STATE _____ | ZIP _____           |
| COMMENTS _____ |             |                     |

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