Drawing	: - TPC159
Issue	: - 4
Date	: - 24/11/16

LD-82

DEHUMIDIFIER PROCESS DRYER

(1320500)

OWNER'S MANUAL

www.eipl.co.uk

UNPACKING

Carefully remove the LD-82 dehumidifier process dryer and the Universal Controller from its transit box and visually check for signs of transit damage. If there is evidence of damage DO NOT attempt to operate the units, call your supplier for advice. Do not discard the packing; it will be useful when transporting the dehumidifier unit in the future.

INTRODUCTION

The LD-82 dehumidifier process dryer is supplied complete with a Universal Controller (STC1) ready for installation into a pre-built drying chamber.
Instructions for the building of the drying chamber can be supplied by Ebac Ltd.
Ask for the Ebac Technical Publication (TP 132), "Wood Drying with the Ebac range of small scale wood dryers"

The LD-82 dehumidifier process dryer removes moisture from the air that is circulating through the unit.

The LD-82 dehumidifier process dryer requires no previous experience with drying as it is simple to install and operate. The process dryer is energy efficient, quiet to operate and will cause no pollution problems.

The Ebac method of drying is a process of dehumidification. The LD-82 dehumidifier process dryer is placed in a sealed chamber with the produce required to be dried. By continually removing moisture from the air which is circulated through the product stack, the LD-82 process dryer creates a condition in which the product progressively releases its moisture under the controlled conditions.

As the process is one of re-circulation of the same air (within the chamber), minimal energy loss occurs and therefore the running costs are kept low. Capital costs are also kept low with the Ebac LD-82 dehumidifier process dryer. However, the dried product is of the highest quality with consistent and even moisture content.

Because the drying process is carried out within the controlled conditions, the repeatability of each batch of product being dried is always of the same high quality and moisture content.

The LD-82 dehumidifier process dryer themselves are easily installed in the ready made chamber of the requisite size.

The LD-82 dehumidifier process dryer consists of a motor-compressor unit, a refrigerant condenser, air circulating fans, a refrigerated surface, and a means of collecting and disposing the condensed moisture and a cabinet to house these components.

The fan draws air through the refrigerated surface and cools it below its dew point, removing moisture which is collected and led away. The cool air then passes the hot condenser, where it is reheated (with the same energy removed during the cooling phase). With the addition of other radiated heat and extra heat (if required), from an electrical heater bank, the air is discharged into the chamber at a higher temperature but lower relative humidity than when the air first entered the process drying unit. Continuous circulation of the chamber air through the LD-82 dehumidifier process dryer gradually (under controlled conditions), reduces the relative humidity, thereby drying the product.

SPECIFICATIONS

MODEL:	LD-82
HEIGHT:	600 mm
WIDTH:	315 mm
DEPTH:	550 mm
WEIGHT:	37 Kg
AIRFLOW:	600 m^3/hr
OPERATING TEMP RANGE:	20-55℃
POWER SUPPLY:	230V, 1 ph, 50Hz
POWER (DRYING):	350W
POWER (HEATING):	350W
MAX WATER EXTRACTION:	13 l/24hr
FINISH:	epoxy coating
EFFECTIVE VOLUME:	200M^3
REFRIGERANT TYPE/QTY:	R134a (250g)

"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 LD-82 dehumidifier process dryer in the chamber as shown and instructed (see TP 132). It is advisable to ensure that access can be made to the process drying unit even when the entire product to be dried is in place.

The Universal Controller (UC-2) should also be positioned for ease of access on the outside of the chamber or adjacent wall.

WIRING:

Connect the LD-82 dehumidifier process dryer to a 230V, 1 phase, 50Hz supply as follows:-

Brown	Live
Blue	Neutral
Green/Yellow	Earth (ground)

DRAINAGE:

Connect a 15mm inside diameter hose to the condensate outlet pipe (positioned on the drainage tray, beneath the evaporator coil). Secure the hose using a worm drive clip. The hose should at no point be raised higher than the outlet pipe. The hose should be ran to a permanent drain. Failure to observe this requirement will result in flooding of the LD-82 dehumidifier process dryer.

OPERATION

The LD-82 dehumidifier process dryer is a basic refrigeration drying unit. A control system, the Universal Controller (UC-2), is required for each of the LD-82 dehumidifier process dryers to be used in each chamber for the drying process.

The operation of the LD-82 dehumidifier process dryer is to remove moisture from the air by having it condense on the cold tubes of the evaporator coil. The air then passes over the hot condenser coil and returns to the chamber slightly warmer and dryer than when it entered the process drying unit.

AIR MOVING SYSTEM:

Air is drawn into the LD-82 dehumidifier process unit at the base of the dehumidifier and over the two heat exchanges (evaporator/condenser coils) under the influence of the axial fan, which is driven by the motor. The operation of the fan motor is to run continuously whenever power is supplied to the dehumidifier. The fan motors used in the LD-82 dehumidifier process dryer unit are induction protected i.e. the motor is able to take stalled current without burning out the motor windings.

HIGH TEMPERATURE CUT OUT:

The LD-82 dehumidifier process dryer unit has been designed to work in ambient temperatures between 20ºC and 60ºC. Should the temperature in the chamber become excessive a thermostat within the compressor casing will open and dehumidifying will stop, until the thermostat resets itself?

HEATER ELEMENT PROTECTION DEVICE:

The LD-82 dehumidifier process dryer unit has been fitted with heater elements. This heat is used intermittently during the drying cycle (under controlled conditions), to provide the heat necessary to raise or maintain the temperature of the chamber. The heater element is protected by a temperature sensitive device. If for any reason the temperature rises above the pre-set (70℃) safety point, the power to the unit will be switched off.

WARNING:

- 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. Failure to do so may cause the unit to blow the fuses owing to the compressor due to there being a refrigerant imbalance.

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 process dryer unit, maintenance procedures should be performed as follows:

Removal of the three covers, by means of the four screws in the corners of each cover, will allow access for all the maintenance to be carried out.

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 (approx 6”/150mm) to avoid damaging the fins. Alternatively, vacuum clean the coils.

WARNING:
DO NOT STEAM CLEAN REFRIGERATION COILS

2. Check that the fan is firmly secured to the motor shaft and that the fan blade is positioned centrally inside the housing and that it rotates freely. The motor is sealed for life and therefore does not require lubrication.

3. To check the refrigerant charge, run the unit for 15/20 minutes and briefly remove the cover. The evaporator coil should be evenly frost coated across its surface. At temperatures above 20°C, 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.

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.

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SPARE PARTS LIST

DESCRIPTION	PART NUMBER
Product Part Number	1320500
Compressor	3022142
Compressor OH Protector	3021529
Compressor Start Relay	3021530
Compressor Start Capacitor	3021531
Condenser Coil	3020740
Evaporator Coil	2320515
Filter Dryer	3020937
Fan Motor	3040214
Heater Element Protector	3031710
Heater Element	3031613
Terminal Block	3031460
3-Core Cable	3031231
7-Core Cable	3031219
2µF Capacitor	3036320
Condensate Drain Tube	3014315
Female Contact	3033815
Female Insert	3033811

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.

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