

BD70

INDUSTRIAL DEHUMIDIFIER

OWNER'S MANUAL

BD70 VERTICAL DEHUMIDIFIER 1016900
BD70 VERTICAL DEHUMIDIFIER 1022900



www.eipl.co.uk

UNPACKING

Carefully remove the BD70 dehumidifier unit from its transit box and visually check for signs of transit damage. If there is evidence of damage DO NOT attempt to operate the unit, call your supplier for advice. Do not discard the packing; it will be useful when transporting the dehumidifier unit in the future.

INTRODUCTION

Dehumidifiers remove moisture from the air that is circulating through the unit. The resulting reduction of relative humidity helps prevent rust, rot, mould, mildew and condensation within the room, or other enclosed spaces where the dehumidifier is used.

A dehumidifier consists of a motor-compressor unit, a refrigerant condenser, an air circulating fan, a refrigerated surface, a means of collecting and disposing of the condensed moisture and a cabinet to house these components.

The fan draws moist air over the refrigerated surface and cools it below its dew point, removing the moisture which is collected and lead away. The cool air then passes the hot condenser, where it is reheated. With the addition of other radiated heat the air is discharged into the room at a higher temperature but lower relative humidity than when the air entered the unit. Continuous circulation of the room air through the dehumidifier unit gradually reduces the relative humidity in the room.

The BD70 dehumidifier is a robust, compact unit designed to control the humidity in the enclosed space in which it is placed.

The unit is thermal protected and will switch off for a period of time if the maximum operating temperature of 35°C is exceeded.

The BD70 has been designed for the exacting conditions which can prevail in offices, shops, houses, restaurants, public houses etc. It combines lightness and compactness with high reliability and strength.

Handles and Castors contribute to its portability.

The gas which is used inside the hermetically sealed refrigeration circuit is R134a, which contains no CFC's and has therefore a zero ozone depletion factor.

BUT under no circumstances should this gas be released into the atmosphere, the unit should be serviced by trained personnel who will reclaim any of the unwanted gas.

BD70 DEHUMIDIFIER SPECIFICATION

HEIGHT:	508 mm
WIDTH:	305 mm
DEPTH:	305 mm
WEIGHT:	25/27 kg
AIRFLOW:	170 M ³ /Hr
POWER:	0.460 KW (max)
POWER SUPPLY:	110/230v, 50hz 230v, 50hz
FINISH:	Epoxy Coated Zintec steel
MOBILITY:	Light in construction and easily positioned
EFFECTIVE VOLUME:	100 M ³
REFRIGERANT TYPE:	R134a
REFRIGERANT CHARGE:	0.170 Kg

"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 centre of the room, or area to be conditioned if it all possible. However, if a damp patch is particularly apparent the outlet grille should be directed towards it.

Note: Both the inlet and outlet grille of the dehumidifier unit must have clear space around them and not be obstructed in anyway.

WIRING

Connect the power mains cable/plug of the dehumidifier to a 15 amp power supply. As follows:

110/230 Volt supply

Brown	Live
Blue	Neutral
Green/Yellow	Earth (Ground)

DRAINAGE

Connect a 12.5 mm inside diameter hose to the condensate outlet pipe (positioned centrally, beneath the air inlet grille). 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 dehumidifier.

GENERAL OPERATION

The operation of the dehumidifier 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 conditioned space slightly warmer and dryer than when it entered the dehumidifier unit.

AIR MOVING SYSTEM

Air is drawn in through the inlet grille at the front of the dehumidifier and over the two heat exchanges (Evaporator/Condenser coil) 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 motor used in the dehumidifier unit is induction protected i.e. the motor is able to take stalled current without burning out the motor windings.

REFRIGERATION CIRCUIT

CONDITIONING OPERATION

The basic operation of a refrigeration system is to boil liquid refrigerant in the evaporator coil, and re-condense it into a liquid in the condenser coil.

Liquid refrigerant is metered out from the capillary tubes into the evaporator coil and under the influence of the suction port of the compressor; it boils or evaporates into gas. In order to change its state from liquid into gas the refrigerant requires a large amount of heat. This is gained by the tubes of the evaporator coil which thereby become sufficiently cold to fall below the dew point of the air which is passing over them. The refrigerant gas is taken into the compressor and discharges into the condenser coil as high pressure gas. The heat which was used to evaporate the refrigerant at low pressure is still present and is shown by a rise in temperature of the gas as it leaves the compressor. As heat is removed from the hot condenser coil by the air flowing over it, the refrigerant gas is condensed back into liquid. It then leaves the condenser coil and passes through the filter dryers before continuing the cycle via the capillary tubes. In this way heat which is taken from the air as it passes over the evaporator coils is re-introduced into the same air flow as it passes over the condenser coil. However, since the temperature of the evaporator coil is below the dew point of the air. Its moisture content is reduced and thereby the air passing out to the conditioned space is reduced in relative humidity (drier air).

DUAL VOLTAGE

The BD70 dehumidifier unit is fitted with a transformer which will allow the unit to operate on either 110 volts or 230 Volts 1Ph 50 Hz power supply.

All the electrical components within the dehumidifier unit are rated for 110 volts, for safety reasons. The change over (voltage selector) switch, can be found on the electrical panel at the rear of the dehumidifier unit (air outlet), can be accessed by removal of the cover.

DEFROST OPERATION

If the ambient temperature of the room in which the dehumidifier unit is conditioning falls below 15°C ice will form on the Evaporator coil as the air is passed over it, after time this build up of ice on the Evaporator coil will effect the efficiency of the dehumidifier unit, on its ability to maintain the required set conditions for the room.

The BD70 is therefore fitted with Defrost control device. This defrost control device is timed to operate every 55 minutes, at which time for approx 4 minutes the high pressure gas is diverted by means of a by-pass valve to enter the Evaporator coil. The affect of this high pressure gas entering the Evaporator coil is to melt any build up of ice on this coil; this melted ice is collected and disposed of by means of the condensate tube.

WARNING

Due to the high pressures that are within the sealed refrigerant circuit, under no circumstances must heat be applied to the Evaporator coil in an attempt to remove the build up of ice.

Neither should any attempt be made to cut open, any part of the refrigeration circuit for the same reasons.

HIGH TEMPERATURE CUT OUT

The BD70 dehumidifier unit has been designed to work in ambient conditions between 0°C and +35°C, should the temperature in the room become excessive a thermo-stat (winding protector) within the Compressor casing will open and Dehumidifying will stop until such times as the thermo-stat automatically resets.

WARNING

If the unit is switched off at the mains power supply for any reason, it must be allowed to stand at rest for at least three minutes before restarting. Failure to do this may cause the unit to blow the fuses owing to the compressor starting current occasioned the imbalance of refrigerant pressures.

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, 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 (approx 6") 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 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 cover. The evaporator coil should be evenly frost coated across its surface. At temperatures above 25°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.
5. To check the operation of the defrost system, switch the machine on and leave it running for approximately 45 minutes. The machine will then enter "Hot Gas" defrost mode for approximately 4 minutes before returning to normal operation. If the unit will not defrost, the printed circuit timer board may be defective or the by-pass valve may be inoperable.

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>
Little or no airflow	1. Loose fan on shaft 2. Fan motor burnt out 3. Dirty refrigeration coils 4. Loose electrical wiring	1. Tighten fan 2. Replace the fan motor 3. See <i>Routine Maintenance</i> Section 4. Check the wiring diagram to find fault and repair
Little or no dehumidifying effect	1. Insufficient air movement check above items 2. Compressor not running: <ul style="list-style-type: none"> a) No power supply to compressor b) Compressor tripped on internal overload – allow reset time of two hours c) Compressor burn out d) Loss of refrigerant gas e) Blocked filter dryer 	1. Check all of the above 2. Contact the Factory Service Center
Little or no defrost when required	1. Faulty Timer 2. Faulty bypass valve	1. Contact the Factory Service Center 2. Contact the Factory Service Center

BD70 SPARE PARTS LIST

DESCRIPTION	Part Numbers	
	1016900	1022900
Compressor	3022132	3022134
Comp O/H protector	3021519	3021521
Comp Relay	3021520	3021522
Condenser Coil	2131147	2131147
Evaporator Coil	2013713	2013713
Filter Dryer	3020937	3020937
Fan Motor	3035752	3030175
Fan Blade	2017708	2017708
By-pass Valve	3020811	3020811
PCB Timer	1016900	1600500
Solenoid coil	3030422	3030421
Mains Cable	2133711	3031331
Straining Brush	3032501	3032501
Drain Tube	3014338	3014338
Worm Drive Clip	3086101	3086101
Clip Nut	3080501	3080501
Terminal Block	3031460	3031460
Castor	3050216	3050216
Handle	3090101	3090101
Transformer	N/A	3031005
Switch	N/A	3032301

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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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	: - TPC143
Issue	: - 4
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