

DD400-E

INDUSTRIAL DEHUMIDIFIER

OWNER'S MANUAL



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UNPACKING

Carefully remove the DD400-E 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.

The DD400-E is of the desiccant wheel type designed to dry air by passing a large volume of air, the "process" air through a slowly rotating Silica gel rotor. Silica gel is a hygroscopic material that absorbs moisture direct from the air. As the air passes through the rotor the humidity of the air is reduced, whilst the moisture content of the rotor is increased. A smaller volume of air, the reactivation air, is heated by an internal heater and passes through a portion of the rotor in the opposite direction. As this heated air passes through the rotor it will "reactivate" it by removing the moisture content from the silica gel material. The reactivation air will leave the humidifier as warm, moist air and must be vented to outside of the building.

Continuous circulation of the room air through the dehumidifier unit gradually reduces the relative humidity in the room.

The DD400-E dehumidifier is a robust, compact unit designed to control the humidity in the enclosed space in which it is placed. The casing is fabricated from a steel chassis and is finished in an epoxy coating for resilience. It 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. Carry handles are recessed into the sides to contribute to its portability.

The unit is thermally protected and will switch off if the maximum operating temperature of 40°C is exceeded.

The dehumidifier has two separate filters. One in the "process" air inlet and one in the "reactivation" air inlet, used to clean the air entering the dehumidifier.

SPECIFICATIONS

MODEL:	DD400-E
HEIGHT:	365mm
WIDTH:	370mm
DEPTH:	475mm
WEIGHT:	27 Kg
DRY AIRFLOW:	370 M ³ /HR
WET AIRFLOW:	150 M ³ /HR
POWER SUPPLY:	230V, 1 ph, 50Hz
POWER	2.2 kW (max)
DEHUMIDIFICATION CAPACITY (AT 28°C AND 60% RH)	34 lt/day
NOISE	67dB(A)

INSTALLATION

POSITIONING:

The DD400-E is designed for indoor use. Position the dehumidifier unit in the center of the room to be conditioned if at all possible.

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

DUCT CONNECTION

The wet air outlet from the dehumidifier must be exhausted to outside of the room being dried by means of a suitable duct. All duct connections to the dehumidifier have been designed for connections to standard size ducts.

The duct should be as short as possible to reduce the risk of condensation of the wet air. The duct should slope downwards away from the unit to stop any condensed water from flowing back into the unit.

The dry air outlet is also provided with a means of attaching a duct. This can be used to direct the air towards more severe damp patches.

WIRING:

-WARNING-
THIS APPLIANCE MUST BE EARTHED

The DD400-E is provided with a standard plug and is designed to operate from a 13 Amp supply.

IMPORTANT – The wires in the mains lead are coloured in accordance with the following code:

GREEN & YELLOW.....EARTH
BLUE.....NEUTRAL
BROWN.....LIVE

If the supply cord is damaged it must be replaced by qualified Ebac Industrial Products Ltd personnel or other similar qualified persons in order to avoid hazard.

OPERATION

The electrical controls are located on the front of the unit. They are:

- ON / OFF Switch
 - 0** Dehumidifier OFF
 - I** Dehumidifier ON
- Humidity Switch
 - M** Dehumidifier in continuous operation
 - A** Dehumidifier operation by means of an external humidistat
- An ammeter is provided to display the current used by the unit.
- An hour counter is provided to display the total time the unit has been in operation
- A socket is provided for connection of an external humidistat

To start the dehumidifier, turn the On / Off switch to position I.

Turn the humidity switch to position M.

After a slight delay the fans will operate – air can be felt blowing from the air outlets and the heater will come on.

The unit will operate continuously at this setting.

Note. The DD400-E is controlled by an electronic circuit board and uses dual PTC (positive temperature coefficient) heater technology to provide the heat necessary to “reactivate” the rotor. To ensure safe start up, the heaters are switched on in stages – the first heater is switched on at start up and the remaining heater switched on after a brief delay.

At switch on, the ammeter will initially show a higher current for a few seconds, prior to settling to a steady value. This is normal. After the brief delay the ammeter will again show an increased value as the second heater is switched on. This is normal.

If an external humidistat control is fitted, turn the humidity switch to position A. Depending on the setting of the humidistat, the dehumidifier may switch off as the relative humidity in the room decreases. As the humidity increase the unit will automatically switch back on.

The Humidistat plug supplied should be wired using pins numbered 1 & 2. See diagram 5010307 at back of manual.

AIR MOVING SYSTEM:

The DD400-E is a dual fan system with dedicated fans for the “Process” air and “Regeneration” air flows. As the air passes over the rotor, it will be heated as a result of the regeneration cycle. The air leaving the unit will be hotter than the air entering

During normal operation some parts of the dehumidifier may become hot. This is normal.

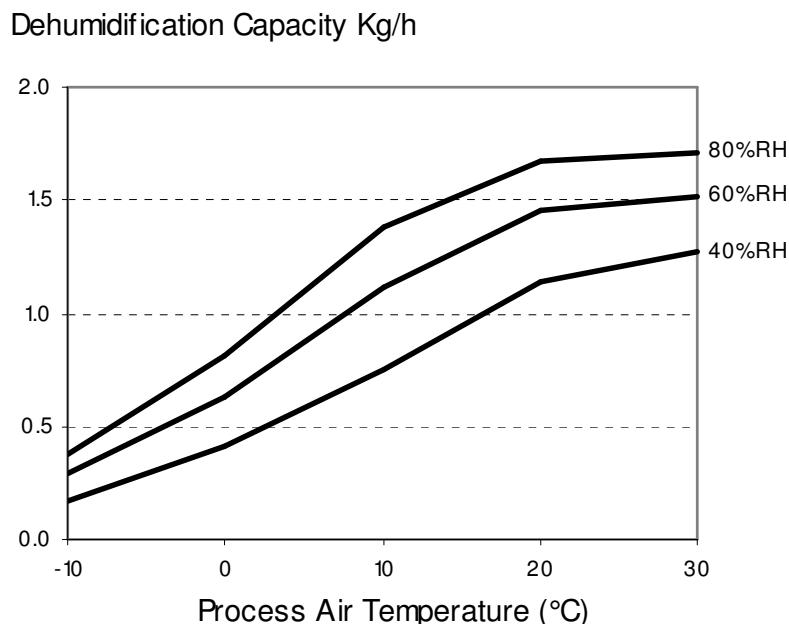
HIGH TEMPERATURE CUT OUT:

The DD400-E dehumidifier has been designed to work in ambient conditions of -20°C to +40°C. Should the temperature in the room become excessive an overheat protector will operate, switching off the PTC heaters. The fans and drive motor will continue to operate. This is a manual reset device. Prior to resetting the protector, check that the dehumidifier is installed correctly and the ambient temperature does not exceed 40°C.

See repairs section for details on resetting device.

DEHUMIDIFICATION CAPACITY

Approximate capacity in Kg/h at different inlet process air temperature and relative humidity (%)



SAFETY

-WARNING-

- ◆ **DO NOT** ALLOW CHILDREN TO PLAY WITH OR AROUND THE UNIT. ENSURE THE UNIT IS INACCESIBLE TO CHILDREN WHEN NOT ATTENDED.
- ◆ **DO NOT** USE THIS UNIT IN AN ENVIRONMENT CONTAINING FLAMMABLE FUMES
- ◆ **DO NOT** USE THIS UNIT IF THE CABINET OR POWER CORD IS DAMAGED
- ◆ **DO NOT** INSERT OBJECTS INTO ANY OF THE GRILLES ON THE MACHINE
- ◆ **DO NOT** COVER OR OBSTRUCT AIRFLOW FROM THE GRILLES
- ◆ **DO NOT** OPERATE THE UNIT WITH THE COVERS REMOVED
- ◆ **DO NOT** ATTEMPT ANY REPAIRS SHOULD THE UNIT FAIL TO OPERATE
- ◆ **DO NOT** STAND ON THE UNIT
- ◆ **DO NOT** LIFT THE UNIT WHEN SWITCHED ON
- ◆ **DO** CHECK THE PLUG ON THE EQUIPMENT MATCHES THE SUPPLY
- ◆ **DO** USE THE UNIT FOR THE PURPOSE FOR WHICH IT WAS DESIGNED
- ◆ **DO** ENSURE THE POWER CORD AND SUPPLY IS EARTHED CORRECTLY
- ◆ **DO** USE A RESIDUAL CURRENT DEVICE "RCD" WHERE POSSIBLE
- ◆ **DO** KEEP THE UNIT DRY. NEVER USE A HOSE OR PRESSURE WASHER TO CLEAN THE UNIT.

ROUTINE SERVICE & REPAIR

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..

SWITCH OFF THE DEHUMIDIFIER APPROXIMATELY 15 MINUTES PRIOR TO REMOVING ANY PANELS, ALLOWING THE HEATER TO COOL DOWN

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

- We recommend that the filters are checked at least once a month. Intervals for cleaning or replacement of filters will depend on the installation
- Never operate the dehumidifier without the filters, as the rotor can be damaged by dust.

To carryout the following, it is necessary to remove the top cover panel.

This machine should be serviced by qualified Ebac Industrial Products Ltd personnel or other persons having technical competence in servicing electrical equipment following the instructions in this Service Manual.

- The rotor is maintenance free. However, should it be necessary to clean the rotor, compressed air should be used to carefully blow dirt from the rotor.
- The PTC heaters are maintenance free. However should it be necessary to clean the heaters, compressed air should be used to carefully blow dirt from the heaters.
- Check that the fans are firmly secured and that the fan rotates freely.
- Check all wiring connections.
- Check the belt tensioning at regular intervals. Adjust when needed by loosening the four bolts holding the drive wheel and rotating the drive motor until correct tension is achieved.
- The overheat protector is located inside the unit, towards the front, near the rotor. To reset this device press the red button.
- Should an electrical component fail, consult the Factory Service Center to obtain the proper replacement part.

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

TROUBLESHOOTING

<u>SYMPTOM</u>	<u>CAUSE</u>	<u>REMEDY</u>
Little or no dehumidification capacity	Filter clogged No regeneration heat Reduced airflow No rotation of Rotor Air leakage	Clean or replace filters Check PTC / OHP Check fans / duct Check belt tension / drive motor Check sealing
Dehumidifier does not start	No power Correct switch setting Loose electrical wiring	Check fuse Check Auto / Manual switch Check wiring diagram - fault find & repair
Rotor does not rotate	Drive belt slipping Drive belt broken Rotor jammed Drive motor faulty	Check belt tension Replace drive belt Check centre shaft, rim of rotor Check supply /Replace motor
No Dry or Wet Air Airflow	Filter clogged Fan faulty Ducts blocked	Clean or replace filters Check supply / fan Check duct for obstruction
Low current displayed on ammeter	Low reactivation airflow PTC faulty	Check air path for restriction Check PTC / OHP
Noisy	Fan loose Loose fastenings	Check fans secured firmly Tighten all fastenings

SPARE PARTS LIST

<u>DESCRIPTION</u>	<u>PART NUMBER</u>
PCB Controller	1619522
Mains Cable	2029217
Process Inlet Filter	2050167
Regeneration Inlet Filter	2050168
Control Label	2050169
Grey Silicone Seal	3015116
Desiccant Wheel	3020761
Auto / Manual Switch	3030687
Hour Counter	3030778
Capacitor for Drive Motor	3030907
Terminal block (Small 12 way)	3031403
Terminal Block (Large 6 way)	3031418
PTC Heater	3031625
20mm Open Grommet	3032101
12.5mm Open Grommet	3032104
Klambush	3032501
PCB Jumper Socket	3035834
On / Off Switch	3035914
Humidistat Fixed Socket	3037865
Humidistat Free Plug	3037866
Drive Motor	3040289
Regeneration Air Fan Motor	3040336
Pulley	3050569
Pulley Belt	3050573
Handle	3088544
PCB Mounting Pin	3101413
Rubber Foot	3101436
125mm Outlet Spigot	3110472
80mm Outlet Spigot	3110473
Ammeter	3180101
Overheat Protector	3477026
M20 Gland	3942330
Process Air Fan Motor	3947028

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.

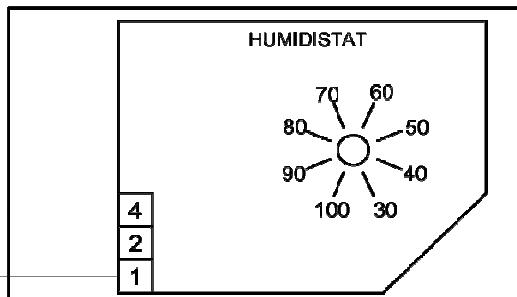
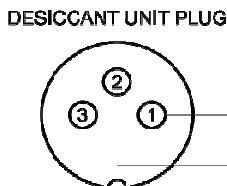
Children shall not play with the appliance.

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.

1	2	3	4	5	6	7	8	9
				ISSUE	DATE		AMENDMENTS	
				1	19/05/10	ORIGINAL		A
				2	25/02/16	DIGITAL HUMIDISTAT ADDED - WDA		B
				3	23/03/16	DIGITAL HUMIDISTAT CORRECTED - WDA		C

HUMIDISTAT 3035157



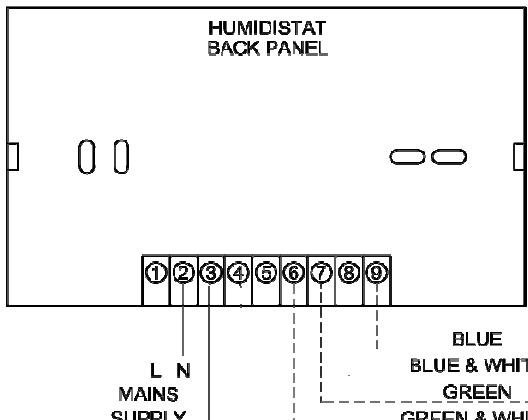
FROM	TERM.	TO	TERM.
H/STAT - 1	PLAIN	PLUG - 2	SOLDER
H/STAT - 4	PLAIN	PLUG - 1	SOLDER

HUMIDISTAT 3035159 - 230V (INTERNAL SENSOR)

HUMIDISTAT 3035160 - 115V (INTERNAL SENSOR)

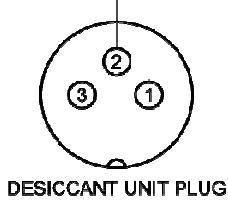
HUMIDISTAT 3035161 - 230V (EXTERNAL SENSOR)

HUMIDISTAT 3035162 - 115V (EXTERNAL SENSOR)

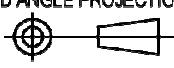


NOTE
 ON ALL VERSIONS OF THIS HUMIDISTAT, DIP SWITCH 3 MUST BE IN THE 'ON' POSITION.
 THE DIP SWITCH PANEL IS LOCATED IN THE TOP LEFT CORNER WITHIN THE FRONT PANEL OF THE HUMIDISTAT.

HUMIDISTAT SENSOR
 (3035161 / 3035162 ONLY)



FROM	TERM.	TO	TERM.
MAINS - L	-	H/STAT - 1	PLAIN
MAINS - N	-	H/STAT - 2	PLAIN
H/STAT - 3	PLAIN	PLUG - 2	SOLDER
H/STAT - 4	PLAIN	PLUG - 1	SOLDER
H/STAT - 6	PLAIN	SENSOR-GR/WH	-
H/STAT - 7	PLAIN	SENSOR-GR	-
H/STAT - 8	PLAIN	PLUG - BL/WH	-
H/STAT - 9	PLAIN	PLUG - BL	-

 1993	LIMITED BISHOP AUCKLAND ENGLAND	TITLE		
		DESICCANT - REMOTE H/STAT WIRING		
 3RD ANGLE PROJECTION DO NOT SCALE IF IN DOUBT ASK	DIMENSIONS IN mm. TOLERANCES UNLESS OTHERWISE STATED O. \pm 1 O.O \pm 0.25 O.OO \pm 0.05 ANGULAR \pm 0.5 DEGREE	MATERIAL N/A	DRAWN : W. DAGLISH	L
			CAD SCALE : N/A	A
FINISH N/A		DRG.NO.	5010307	4 OF



Drawing :-	TPC 622
Issue :-	1
Date :-	17/12/24



Drawing :- TPC 622
Issue :- 1
Date :- 17/12/24



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Issue :-	1
Date :-	17/12/24



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