Drawing	: TPC465
Issue	: C
Date	: 05/01/2017

DD3000
460V / 3PH / 60HZ

INDUSTRIAL DEHUMIDIFIER

OWNER'S MANUAL

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UNPACKING

-WARNING
HEAVY ITEM

Carefully remove the DD3000 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 DD3000 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 air through the dehumidifier unit gradually reduces the relative humidity in the space.

The DD3000 dehumidifier is a robust unit designed to control the humidity in the enclosed space in which it is placed. The casing is fabricated from Steel then painted and has been designed for the exacting conditions which can prevail in offices, shops, houses, restaurants, public houses etc. It combines compactness with high reliability and strength.

The unit is thermally protected and will automatically switch off in excessive or abnormal conditions.

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.

Drawing	: TPC465
Issue	: C
Date	: 05/01/2017

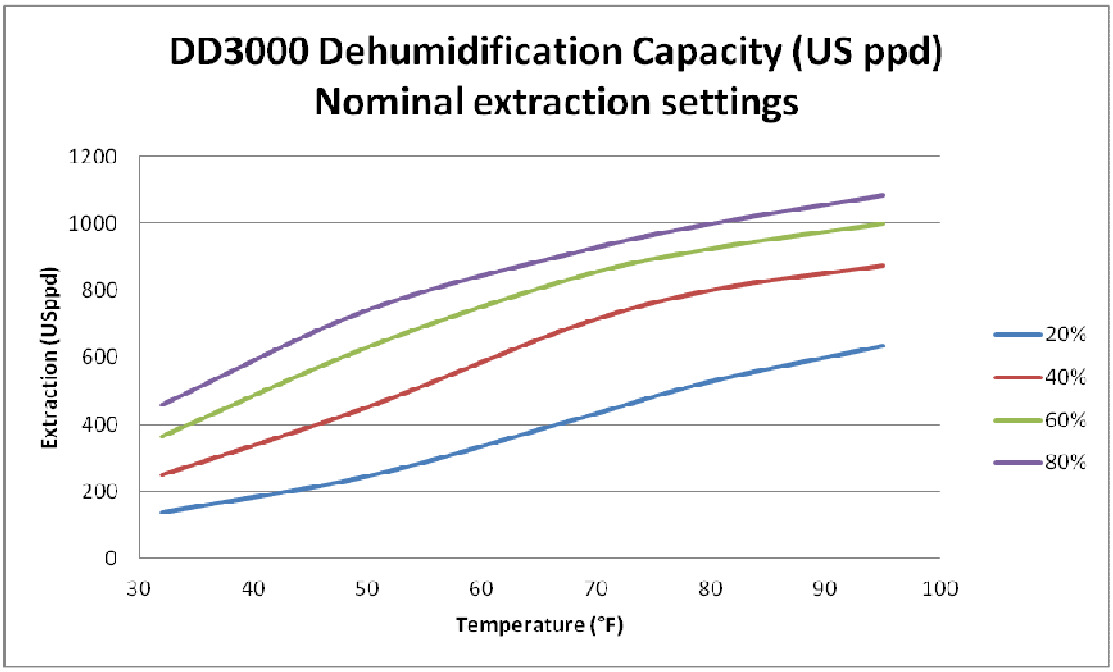
SPECIFICATIONS

MODEL:	DD3000
HEIGHT:	1400mm (55.1“)
WIDTH:	2000mm (78.7“)
DEPTH:	1000mm (39.4“)
WEIGHT:	505Kg (1113 lbs)
POWER SUPPLY:	460V, 3 ph, 60Hz
POWER	28 kW (max)
PROCESS AIRFLOW MAXIMUM:	3500m³/hr (2060 cfm)
PROCESS AIRFLOW NOMINAL:	3000m³/hr (1766 cfm)
REGENERATION AIRFLOW NOMINAL:	750m³/hr (441 cfm)
PROCESS AIR OUTLET DIAMETER:	400mm (15.75”)
REGENERATION AIR OUTLET DIAMETER:	250mm (9.84”)
ROTOR WHEEL SPEED:	13.6 (RPH)
ROTOR SIZE DIA X DEPTH:	650mm (25.6”) x 200mm (7.9”)
HIGH EXTRACTION SETTING @ 27°C 60% RH:	568 l/day (1200 ppd)
HIGH EFFICIENCY SETTING @ 27°C 60% RH:	438 l/day (925 ppd)
DEEP DRYING SETTING @ 27°C 60% RH:	527 l/day (1114 ppd)
TYPICAL DRY AIR OFF HIGH EXTRACTION SETTING (%RH)	20
TYPICAL DRY AIR OFF HIGH EFFICIENCY SETTING (%RH)	17
TYPICAL DRY AIR OFF DEEP DRYING SETTING (%RH)	13
MINIMUM OPERATING TEMPERATURE:	-20°C (-4°F)
MAXIMUM OPERATING TEMPERATURE	40°C (104°F)

Drawing	: TPC465
Issue	: C
Date	: 05/01/2017

UNIT CAPACITY

The ambient conditions of the area to be dehumidified will determine the amount of water extraction the unit is cable of.
Measure the ambient conditions of the area to be determined and then use that information with the following capacity diagram to determine the unit capacity.



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Issue	: C
Date	: 05/01/2017

INSTALLATION

The DD3000 is designed for indoor use. The unit should be placed on a level surface and a space of 1 meter free around all faces to allow access for any duct work and servicing.

Connecting duct work:

The regeneration outlet must be ducted to outside the area being dehumidified. The outlet duct spigot is 10” diameter and only 10” ducting or greater should be attached. A damper for adjusting the airflow must be installed

The process outlet can be ducted to a specific area or another room. The outlet duct spigot is 16” diameter and only 168” ducting or greater should be attached.

Both the regeneration and process air inlets are provided with filters. The dimensions of the ducts are as follows:

Process air inlet L 740mm x W 535mm (29.1” x 21”)
Regeneration air inlet L 485mm x W 485mm (19.1” x 19.1”0

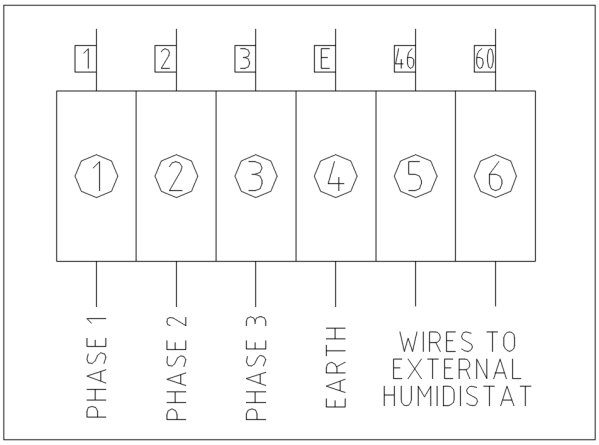
Power Supply & Humidistat Control:

The unit must be connected to a suitable 460V, 3 phase, 50Hz supply.

-WARNING-
THIS APPLIANCE MUST BE EARTHED

Feed power cables through the gland provided and then wire the unit as shown below.

An external humidistat can also be used to control the relative humidity in the dehumidified area. If a humidistat is used then the wires should pass through the gland provided and then wired as shown in the diagram at the back of this manual.



Control Settings

Once the unit is positioned correctly, required duct work attached and the power supply connected, the process fan speed and temperature control need to be set correctly.

The fan speed control is located within the main electrical control. The controls are numbered 1 to 10, with 10 being the maximum speed.

For normal (efficient) operation the process airflow should be set to 3000m³/h (1766 cfm). Measurements should be taken at the duct outlets using a suitable instrument.

The regeneration air flow is fixed and cannot be adjusted. Setting of the correct airflow is to be carried out by the installation of a damper control within the regeneration outlet airstream,

The temperature control regulates the temperature of the reactivation airflow onto the desiccant wheel. The control can be set up to a maximum of 145℃
The controller displays the set value (Green display) and also the actual value (Red display)
To adjust the temperature control simply press the ▲ or ▼ buttons to select the required setting. The controller will automatically store this value.

The temperature setting should be set to 90℃ above the ambient temperature of the area being dehumidified

If high moisture extraction is required it will be necessary to increase the process airflow. The temperature control setting should also be increased.

If very low humidity levels are required then the process airflow should be reduced.

The following table should be used as a guide:

	PROCESS AIR FLOW (M³/H)	REGEN AIR FLOW (M³/H)	TEMPERATURE RISE (K)
STANDARD (EFFICIENT)	3000	750	90
HIGH EXTRACTION	3500	750	110
DEEP DRYING (LOW RH)	2500	750	110

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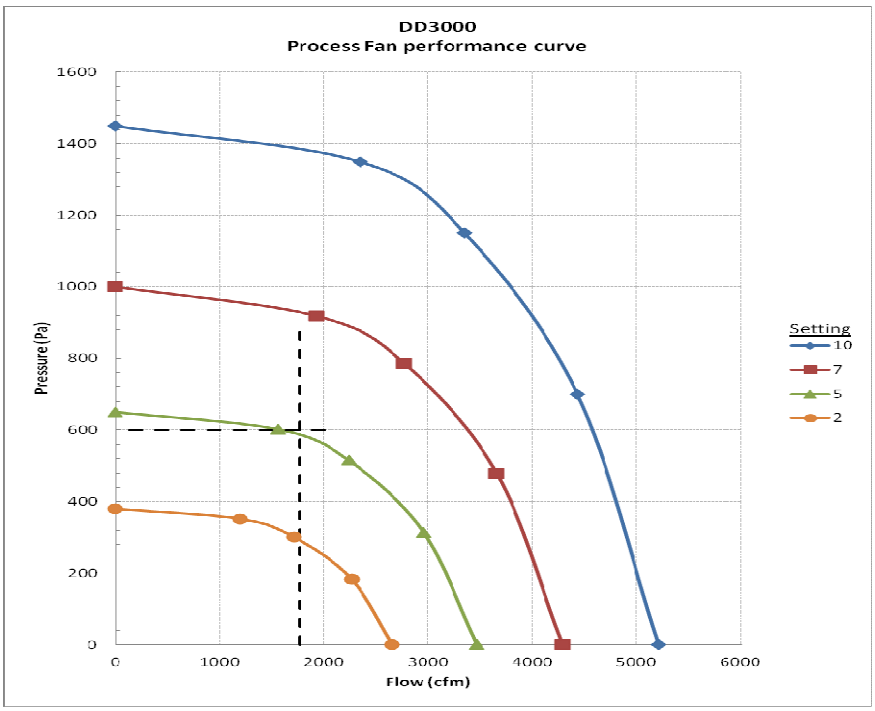
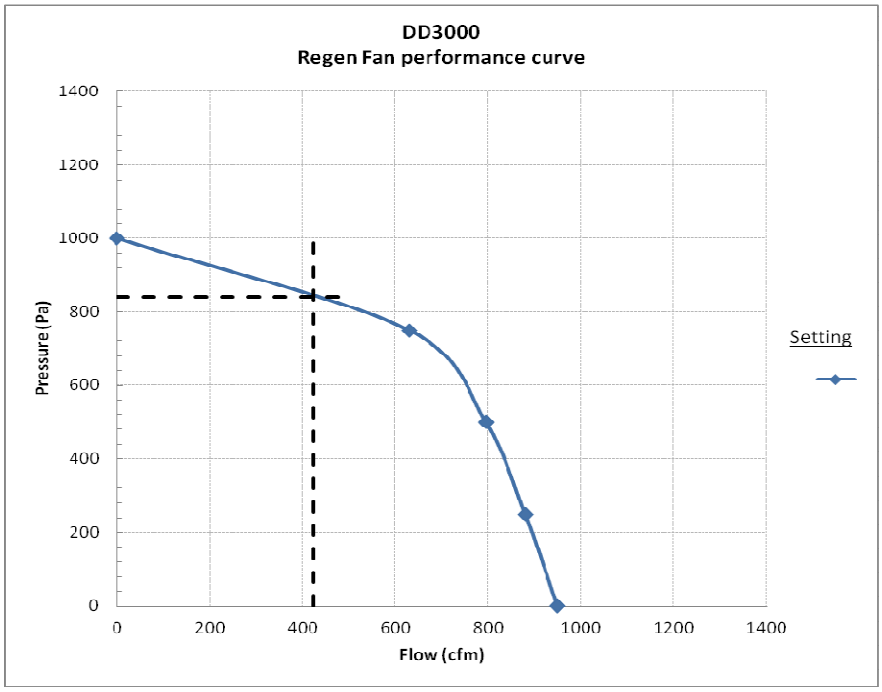
FAN PERFORMANCE CURVES



For example:
If the total system resistance is 600pa then the process fan selector would have to be set to No 5 to achieve the required airflow of 3000m³/h (1766 cfm)



For example:

If the total system resistance is 800pa then the regen airflow will be 750m³/h (441 cfm). Adjustment of the damper may be required to achieve the required regeneration airflow.

OPERATION

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

- ISOLATOR
- On / Off Switch

M	Dehumidifier in continuous operation
A	Dehumidifier operation by means of an external humidistat
0	Dehumidifier OFF

- An hour counter is provided to display the total time the unit has been in operation
- DRYING lamp (GREEN) – unit is in drying mode.
- HEATING lamp (GREEN) – indicates heating elements are on. Cycle on/off when in drying mode.
- OVERLOAD FAULT lamp (RED) – Fault on the regeneration motor
- PROCESS FAN FAULT lamp (RED) - Fault on the process motor
- HIGH TEMPERATURE FAULT lamp (RED) – Overheat protection within the heater duct has operated

To start the dehumidifier, switch the ISOLATOR to the ON position. The temperature controller will illuminate, showing the current temperature and the set temperature for the heaters.

Adjust the On / Off switch to position M. (Manual for continuous operation)
After a slight delay the fans will operate – air can be felt blowing from the air outlets and the heater will come on.
Both the HEATING and DRYING lamps will be illuminated - the unit will operate continuously at this setting.

If an external humidistat control is fitted, turn the unit to 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.

High Temperature Cut-Out:

The DD 3000 dehumidifier has been designed to work in ambient conditions of -20ºC to +40ºC. Should the temperature in the room become excessive a manual overheat protector will operate, switching off the heaters. The fans and drive motor will continue to operate but the HIGH TEMPERATURE fault lamp will illuminate. Prior to resetting the protector, check that the dehumidifier is installed correctly and the ambient temperature does not exceed 40℃.

See repairs section for details on resetting device.

Motor Protection:

The process fan motor and regeneration fan motor are provided with protection in the event of failure.

Drawing	: TPC465
Issue	: C
Date	: 05/01/2017

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.

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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 side panels.

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 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.
- The overheat protector is located inside the control panel. 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

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

Drawing	: TPC465
Issue	: C
Date	: 05/01/2017

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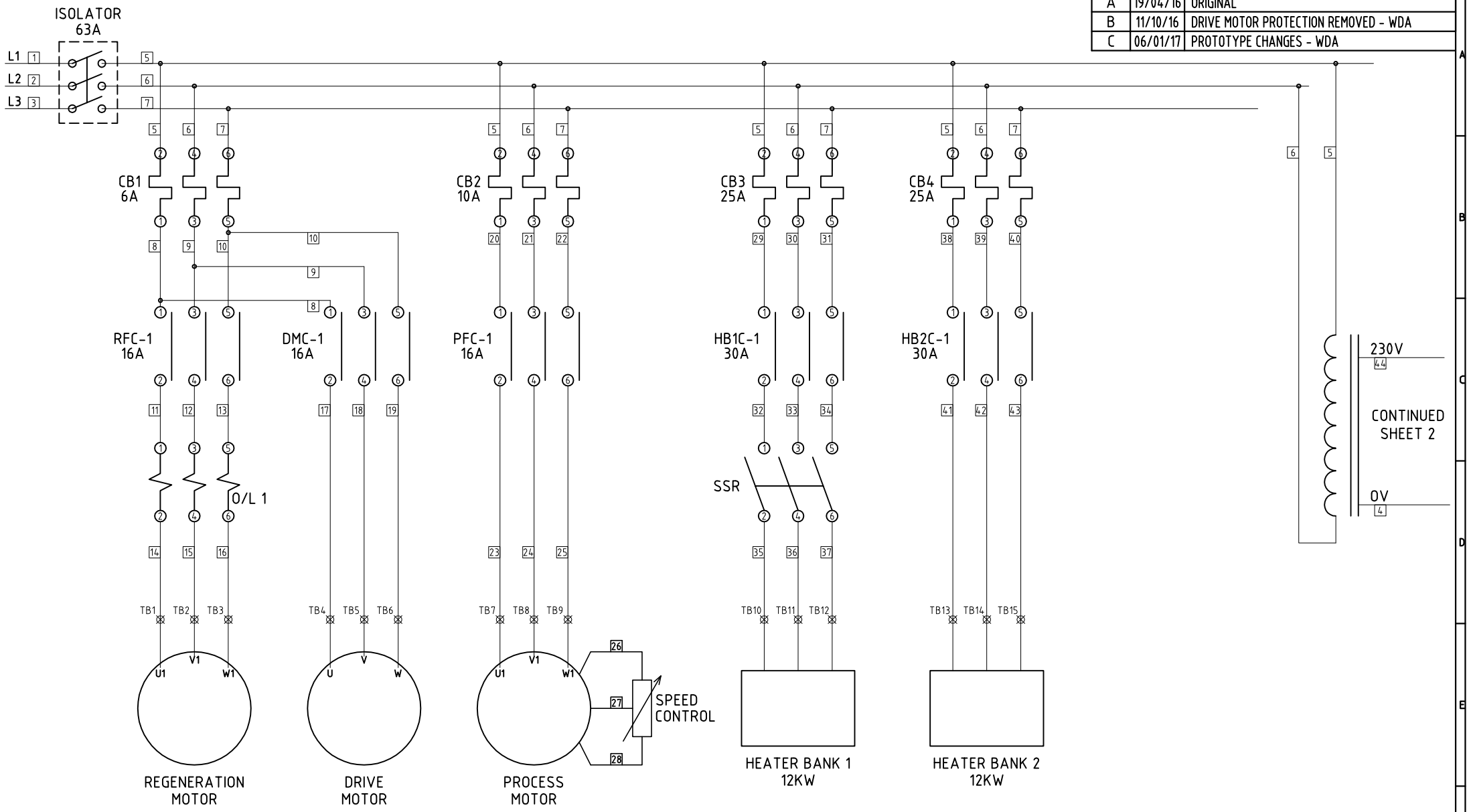
WARNINGS

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.

ISSUE	DATE	AMENDMENTS
A	19/04/16	ORIGINAL
B	11/10/16	DRIVE MOTOR PROTECTION REMOVED - WDA
C	06/01/17	PROTOTYPE CHANGES - WDA



CB1 - CIRCUIT BREAKER 1
CB2 - CIRCUIT BREAKER 2
CB3 - CIRCUIT BREAKER 3
CB4 - CIRCUIT BREAKER 4
CB5 - CIRCUIT BREAKER 5
RFC - REGENERATION FAN CONTACTOR
DMC - DRIVE MOTOR CONTACTOR
PFC - PROCESS FAN MOTOR
HB1C - HEATER BANK 1 CONTACTOR
HB2C - HEATER BANK 2 CONTACTOR
O/L1 - OVERLOAD 1
RLA - OVERLOAD RELAY
RLB - HIGH TEMP CUT OUT RELAY
TC - TEMPERATURE CONTROLLER
SSR - SOLID STATE RELAY

3RD ANGLE PROJECTION

DO NOT SCALE
IF IN DOUBT ASK

DIMENSIONS IN m.m.
TOLERANCES UNLESS OTHERWISE STATED
0. ± 1
0.0 ± 0.25
0.00 ± 0.05
ANGULAR ± 0.5 DEGREE

TITLE: DD3000 ELECTRICAL - 460V / 60Hz

MATERIAL: N/A

FINISH: N/A

DRAWN: W DAGLISH

CAD SCALE: N/A

DRG.NO. 5020416

SHEET 1 OF 2

A3

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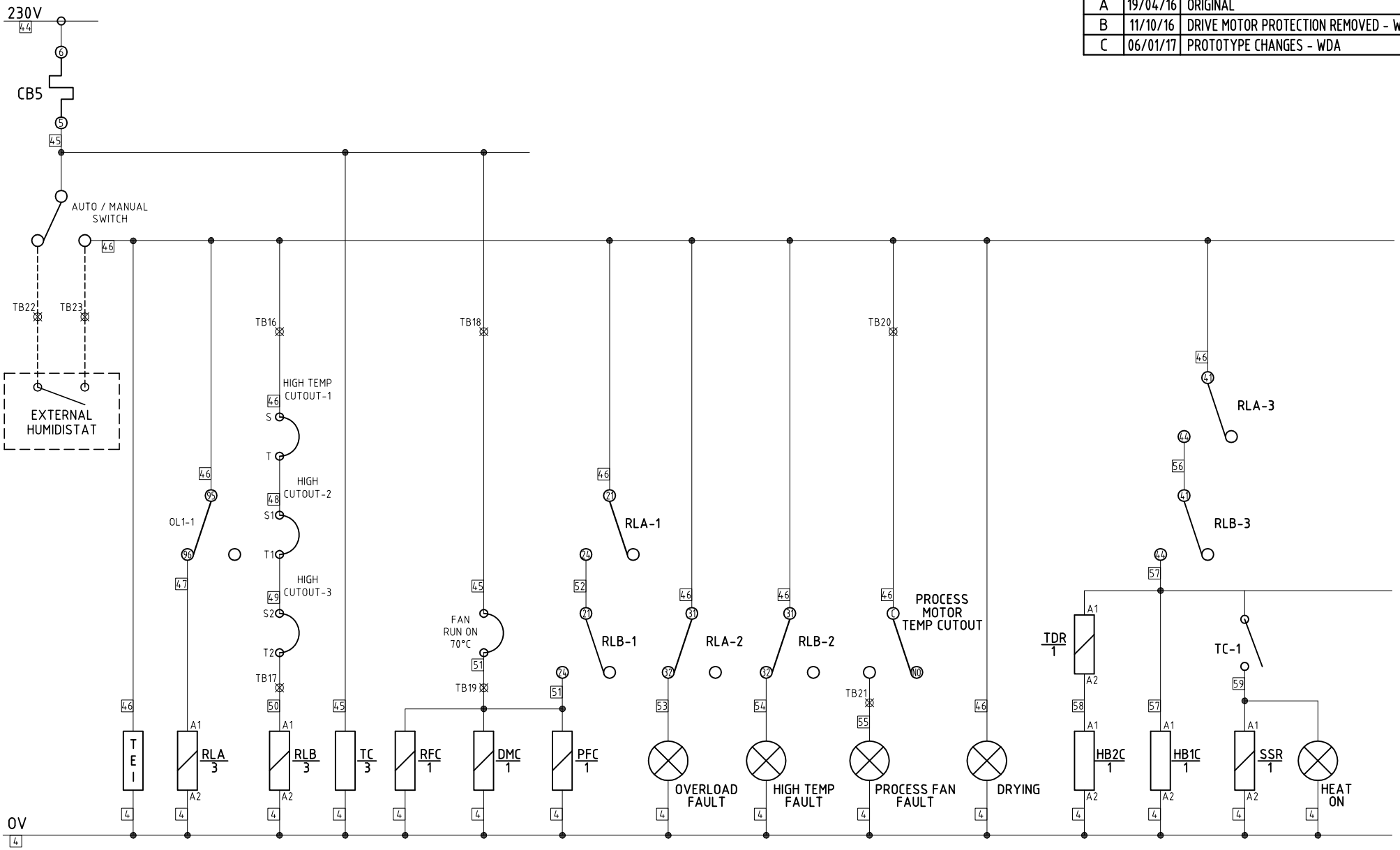

CB1 - CIRCUIT BREAKER 1
CB2 - CIRCUIT BREAKER 2
CB3 - CIRCUIT BREAKER 3
CB4 - CIRCUIT BREAKER 4
CB5 - CIRCUIT BREAKER 5
RFC - REGENERATION FAN CONTACTOR
DMC - DRIVE MOTOR CONTACTOR
PFC - PROCESS FAN MOTOR
HB1C - HEATER BANK 1 CONTACTOR
HB2C - HEATER BANK 2 CONTACTOR
O/L1 - OVERLOAD 1
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TITLE: DD3000 ELECTRICAL - 460V / 60Hz			
3RD ANGLE PROJECTION DO NOT SCALE IF IN DOUBT ASK	DIMENSIONS IN m.m. TOLERANCES UNLESS OTHERWISE STATED 0. ± 1 0.0 ± 0.25 0.00 ± 0.05 ANGULAR ± 0.5 DEGREE	MATERIAL: N/A FINISH: N/A	DRAWN: W DAGLISH CAD SCALE: N/A DRG.NO. 5020416 SHEET 2 OF 2

Drawing	: TPC465
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