



Caron Products & Services
OPERATIONS MANUAL



SAMPLE PREP TABLE RANGE
MODELS: DT1004

PO Box 715, Marietta, OH 45750 / PHONE 740 373 6809, 800 648 3042 / caronproducts.com

Dear Valued Customer:

Thank you for purchasing CARON Products & Services equipment. We appreciate your business and look forward to being your preferred supplier of controlled environment equipment products in the future.

At CARON, we are committed to continuous quality improvement. Our goal is to supply our customers with highly reliable equipment at a fair price. In order to openly monitor our performance, we would appreciate your feedback on our products and services.

If you have questions, or any suggestions for improvement based on the installation or operation of the equipment you have purchased, please contact our service department at www.caronproducts.com or 740-373-6809.

Thanks again for your business!

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EQUIPMENT LIMITED WARRANTY

Please review this section before requesting warranty service. At CARON, one of our primary goals is to provide customers with high levels of personal service and top quality products, delivered on time, backed by technical service and supported for the life of the product.

Before contacting us for warranty service, please be aware that there are repairs that are not covered under warranty.

WARRANTY DEFINED

Caron Products & Services, Inc. (herein after CARON) hereby warrants that equipment manufactured by CARON is free from defects in materials and workmanship when the equipment is used under normal operating conditions in accordance with the instructions provided by CARON.

COVERED:

- Parts and labor for a period of two (2) years from date of shipment.
- Any part found defective will be either repaired or replaced at CARON's discretion, free of charge, by CARON in Marietta, OH. Parts that are replaced will become the property of CARON.
- If CARON factory service personnel determine that the customer's unit requires further service CARON may, at its sole discretion, provide a service technician to correct the problem, or require the return of the equipment to the factory or authorized service depot.
- CARON will have the right to inspect the equipment and determine the repairs or replacement parts necessary. The customer will be notified, within a reasonable time after inspection, of any costs incurred that are not covered by this warranty prior to initiation of any such repairs.

NOT COVERED:

- Calibration of control parameters.
- Improper installation; including electrical service, gas and water supply tubing, gas supplies, room ventilation, unit leveling, facility structural inadequacies or ambient conditions that are out of specification.
- Cost of express shipment of equipment or parts.
- Any customer modifications of this equipment, or any repairs undertaken without the prior written consent of CARON, will render this limited warranty void.
- CARON is not responsible for consequential, incidental or special damages; whether shipping damage or damages that may occur during transfer to the customer's point of use. When the equipment is signed for at the customer's site, ownership is transferred to the customer. Any damage claims against the shipping company become the responsibility of the customer.
- Repairs necessary because of the equipment being used under other than normal operating conditions or for other than its intended use.
- Repair due to the customer's failure to follow normal maintenance instructions.
- Parts considered consumable; including: light bulbs, filters, gases, etc.
- Damage from use of improper water quality.
- Damage from chemicals or cleaning agents detrimental to equipment materials.
- Force Majeure or Acts of God.

This writing is a final and complete integration of the agreement between CARON and the customer. CARON makes no other warranties, express or implied, of merchantability, fitness for a particular purpose or otherwise, with respect to the goods sold under this agreement. This warranty cannot be altered unless CARON agrees to an alteration in writing and expressly stated herein shall be recognized to vary or modify this contract.

Ohio Law governs this warranty.

EQUIPMENT INTERNATIONAL LIMITED WARRANTY

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- If CARON or their authorized representatives determine that the customer's unit requires further service, CARON or the representative may, at its sole discretion, provide a service technician to correct the problem, or require the return of the equipment to the an authorized service depot.
- CARON or their authorized representative will have the right to inspect the equipment and determine the repairs or replacement parts necessary. The customer will be notified, within a reasonable time after inspection, of any costs incurred that are not covered by this warranty prior to initiation of any such repairs.

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PO Box 715 · Marietta, OH 45750
740-373-6809

ABOUT THIS MANUAL

This User Manual is intended to provide guidance for the **Installation, Commissioning, Operation and Servicing** of the Downflow Table.

This manual's descriptions do not describe the functionality or processing of the final system into which this product may be incorporated. Reference should be made to other applicable documentation.



SAFETY INFORMATION

HAZARDS

During servicing and maintenance, this equipment can potentially cause danger through exposure to used (contaminated) filters, the employment of high voltages¹ and high-speed rotating fans where access panels are opened.

Operational risk assessment applied to this product identifies that it can potentially cause risk during the following circumstances:

- Exceeding the maximum indicated load capacity of the table
- Using for purposes not intended for the product e.g., standing on the table surface to gain height, storing heavy objects on the surface.
- Failure to lock down both castor wheels
- Use of high voltages and high-speed rotating fans where access panels are opened for servicing and maintenance tasks.
- Through exposure to used (contaminated) filters when servicing
- The downflow table is by design an open-faced local exhaust ventilation system using a constant volume airflow principle. It must never be used for handling or processing hazardous substances which would mandate use of a semi-enclosed fume cabinet or full biological category safety cabinet.

Failure to observe the recommendations in this manual will constitute a SAFETY OR ELECTRICAL SHOCK HAZARD

INSTALLATION, COMMISSIONING, OPERATION AND SERVICING

The equipment must be operated and serviced as recommended in this manual, otherwise the electrical protection and/or the airflow integrity of the cabinet could be compromised. Any such installation or use may affect the terms and conditions of any guarantees and warranties.

PRODUCT GUARANTEE

Caron guarantees that this product is free from defects in materials and workmanship when shipped from the factory and will replace or repair the unit if it proves defective in normal use or during service for a period of 12 months from delivery and commissioning. This guarantee is invalidated if the unit is used incorrectly, poorly serviced, misused or accidentally damaged.

ENVIRONMENT

- This product is intended for indoor use;
- It is not designed or certified for use in a potentially explosive environment as defined in Atex Directive 94/9/EC.
- Temperature range: 15°C to 32°C
- Humidity: Max RH 80% for temperatures up to 31°C.
- Mains supply voltage fluctuations up to $\pm 10\%$ of nominal voltage 240V
- Mains supply voltage: 110V to 120V AC
- Containment & Operator Protection

Safe, acceptable levels of hazardous substances containment, for operator protection can only be assured whilst the cabinet is fully operating, developing correct airflow face velocity under normal conditions. In the event of a power failure, all substances under process should be removed from the enclosure (to a separate safe environment), or separately sealed whilst within the enclosure, with all doors remaining closed.

FIRE OR EXPLOSION RISK

There are no direct sources of ignition within the working zone of the cabinet and no intrinsic risk of fire or explosion during normal use. The acrylic enclosure may only provide initial containment should a fire occur, caused by flammable materials and an ignition source introduced during a process by the end-user. Adequate risk assessment must be applied to determine the potential hazards posed by all processes to be undertaken.

¹ *Defined in LV Directive 2006/95/EC as voltages of 50VAC-1000VAC, 75VDC-1500*

INTERNATIONAL SYMBOLS AND DEFINITIONS

The equipment is fitted with identification and ISO/ANSI safety hazard warning labels shown below, which uniquely identifies the product, validation and safety information. These labels must not be removed or defaced, as evidence of compliance to Quality Assurance Tests, and CE Mark may be lost.



Warning of hazardous area



Warning of dangerous electric voltage



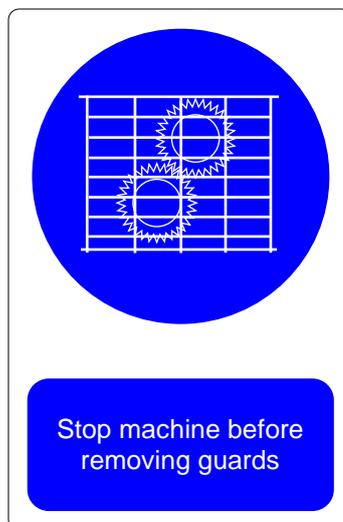
UV-C Radiation from The Biocidal Lamp is Harmful to Both Eyes and Skin



Earth (ground) protective conductor



Tested For Electrical Safety



Warning Label Fan Label Guard



Warning Label Operating Voltage

WARNINGS



The use of the WEEE Symbol indicates that this product cannot be treated as household waste at end-of-life.

By ensuring that this product is disposed of correctly, you will help protect the environment.

For more detailed information about the recycling of this product, please contact your supplier,

Restriction of the use of certain Hazardous Substances (RoHS) 2011/65/EU as amended

1.0 INTRODUCTION

This Manual is applicable to the following products:

DOWNFLOW TABLE MODEL: DT1004

1.1 INTRODUCTION AND OPERATING PRINCIPLES

Caron's Downflow Table is an open faced local exhaust ventilation system, with fully filtered recirculating air chemical fumes or airborne particles. The cabinet offers either advanced carbon and/or HEPA filtration. No ducting is required.

Designed and manufactured in the UK, the Down flow table provide extraction of particle contaminants being processed from a workers localised breathing zone, using highly efficient advanced downflow air technology coupled with recirculating filtration techniques. All models in the range are built, tested and approved to exacting standards, for the safe handling and containment of a variety of substances, including solvents, acids and particles offering excellent all round visibility, accessibility, with maximum operator protection and minimum maintenance.

When used as part of a comprehensive laboratory safety routine, and with the recommendations in this manual, your Downflow table will provide optimum protection handling toxic and or biological substances, together with extended filter life.

During normal operation, room/laboratory air is drawn down into the table surface by the high-performance dynamically balanced centrifugal fan where it immediately flows downwards into the grill perimeter surrounding the work surface. This creates the required negative pressure environment within the enclosure.

This negative air is drawn down through the exhaust chamber, then passes through the main filter (Enviro™ Carbon filter and/or HEPA filter combination), exhausting as fully filtered clean air where it is recirculated back into the room/laboratory air space. This volume air exchange is repeated continuously and in the process will enhance the quality of the localised area within the room/laboratory air making it a safer, more pleasant place to work.

The airflow velocity developed by the fan is pre-set to provide a velocity of >0.45 m/sec at the grill surface, and provides the essential barrier between airborne vapours, aerosols or particles occurring on the downflow table area and the continuous safety of the operator, giving the highest level of containment possible for an downflow table.

2.0 GENERAL CONSTRUCTION

In this section the general components of the unit are given with a detailed explanation for the key components of a unit.

2.1 MAIN FEATURES

The table is fabricated from welded high-grade, box-section steel framework and steel compartment containing the fan and filter. Removable features allow access to aid maintenance and replacement of contaminated filters.

Perforated, stainless steel air intake grilles are mounted around the periphery of the table surface.

A stainless-steel work surface is integrated into the table top surface.

The framework is fitted with four lockable castor wheels to provide full mobility and positive placement on site.

All steelwork is finished in chemical-resistant oven-baked epoxy paint.

2.1.1 WORK SURFACE

The full-width perforated stainless steel work surface on the table can accommodate chemical spills during processes. Spills can easily be mopped up using appropriate absorbent material (and disposed of in accordance with your local Safety procedures).

2.1.2 PRE-FILTRATION

Past the worksurface is where the pre-filter is mounted. The pre-filter provides 'first-stage' particle filtration, which improves overall efficiency and extends the life of the main filter. The pre-filter can be removed under negative pressure without having to open the fan/filter housing above and therefore provides a safe-change method during servicing.

2.1.3 2-STAGE FILTRATION

Caron's Downflow Table is fitted with a two-stage filtration system comprising a high performance 'Enviro™' (activated carbon) or a HEPA Filters along with a spacer frame at the bottom of the exhaust chamber above the fan. This is enhanced with the addition of a pre-filter, which is independently accessible and can be replaced using safe-change method.

2.1.4 3-STAGE FILTRATION

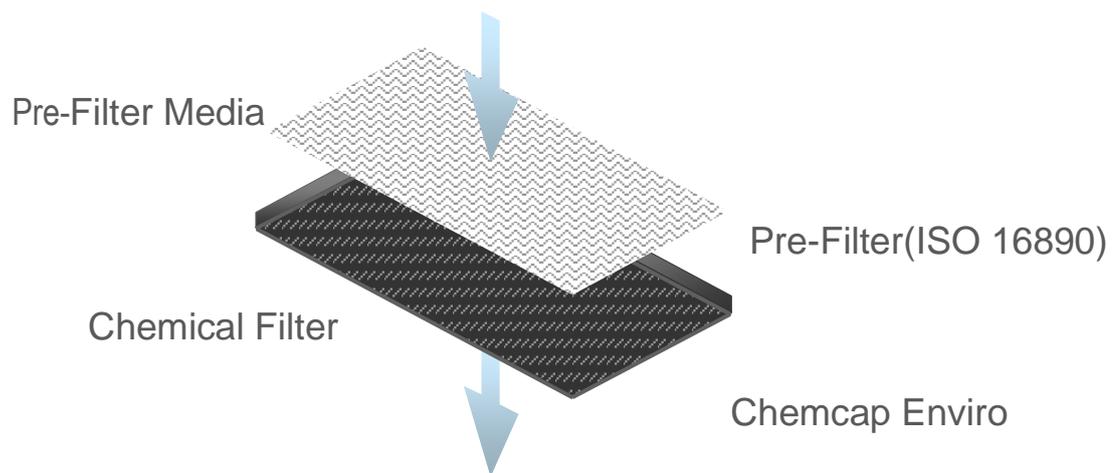
An optional 3-stage filtration system is available which comprises an Enviro™ carbon filter and a HEPA or ULPA particle filter with pre-filter pad.

Optional, specific chemical capture Enviro™ filter types can be fitted together with HEPA filter combinations.

GENERAL CONSTRUCTION

Graphic Representation Only

Main Filtration (Default)



2.1.5 FAN(S)

A single, dynamically balanced, thermally protected, centrifugal fan is assembled within the top housing assembly.

The fan creates the desired face velocity at the intake aperture and maintains (negative pressure) airflow throughout the enclosure.

2.1.6 INTERNAL LIGHTING

An LED down light is installed through the bottom panel of the fan/filter housing. In this position on the enclosure interior it does not affect the airflow pattern or containment integrity of the cabinet.

3.0 INSTALLATION GUIDELINES

Follow the below guidelines to ensure safe use and unpacking along with optimum operation of the unit.

3.0.1 UNPACKING

Where supplied 'flat-packed' the cabinet will require re-assembling on site by trained installation personnel. All component parts must be carefully unpacked, and the protective film should remain on the acrylic panels intact until the cabinet is fully assembled and ready for commissioning.

3.0.2 SITE SELECTION

For operator safety and reliable function, the cabinet should be placed on a firm and level bench/work surface, or on top of the (optional) custom trolley frame.

3.0.3 AIRFLOWS AND PRESSURE REGIMES

To avoid air currents and pressure fluctuations in the room affecting the overall performance of the safety cabinet, it should be positioned well away from direct sources of disruptive air changes such as open windows, doors etc. Room air velocity should not exceed 0.25m/s.

3.0.4 GENERAL INSTALLATION RECOMMENDATIONS

The following environment requirements should be considered during installation:

- Ambient temperature: from 15°C to 32°C
- Relative humidity: RH < 80% at 30°C
- Recommendations as detailed in BS 14175:4 2003.
- Refer to HSG 258 guide to local exhaust ventilation for your requirements

3.0.5 NOISE LEVELS

The noise generated by the fan and resulting air movement will not rise above measured limits during normal operation, with the bi-folding access door closed and secured.

3.0.6 CLEANLINESS STANDARD

The site should be maintained as clean and dust free as possible, since the cleaner the environment the more efficient the filtration will be and also help to reduce pre-filter maintenance costs. Use a damp cloth, to clean the exterior surfaces of the cabinet, regularly, particularly the front and side surfaces, to remove accumulated dust.

NOTE:

Do not use solvent-based chemicals to clean the acrylic panels, particularly on a regular basis as this may promote stress cracking of the acrylic material.

3.0.7 ELECTRICAL CONNECTION

The Cabinet must be earthed

Connect the cabinet to an adjacent, earthed and switched supply of 115 Volts, single phase, ~ 60Hz outlet or 230 Volts, single phase, 50/60Hz outlet using the IEC mains lead supplied

PART 1 - COMMISSIONING

4.0 COMISSIONING

4.1 COMMISSIONING GUIDELINES

After connecting to the electrical supply, operate the cabinet fan by pressing the on/off button on the side of the downflow table. You should see that the button illuminates and that the fans power up.

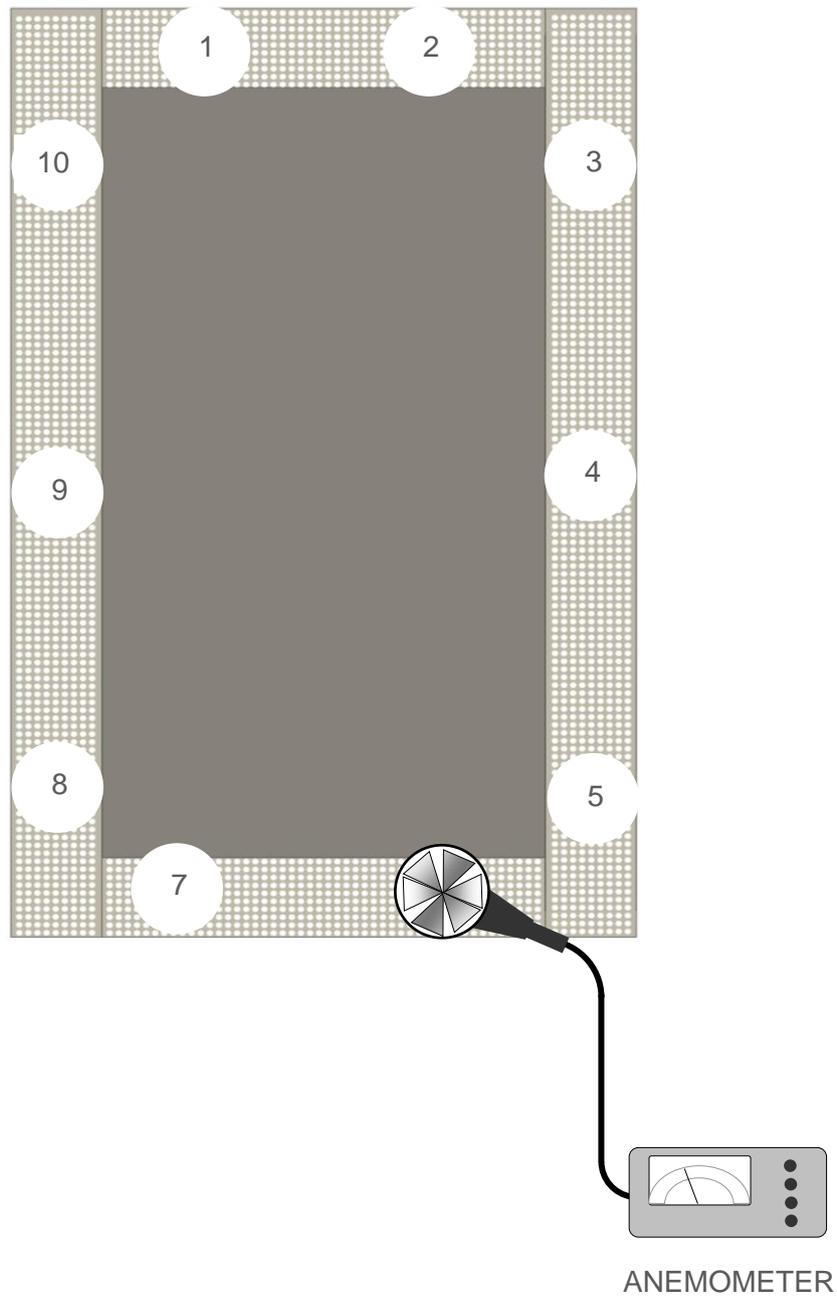
4.1.1 SETTING NORMAL AIRFLOW VELOCITY AND CALIBRATING THE TFT ALARM:

GENERAL

- For the following commissioning procedures, the cabinet should already be fitted with new chemical filters of the type suitable for capturing the chemical vapours, which will be encountered when using this cabinet and must be emptied of all labware. The internal fan should be allowed to run for several minutes in order to stabilise, after which measurements and adjustments may be made as follows:
- Face velocity measurements are used to establish that the safety cabinet continues to meet both design and industry compliance standards and that no significant deterioration in performance has occurred since previous factory acceptance tests or future servicing. It forms the basis of all subsequent testing and thorough examination protocol.
- The fan speed and alarm calibration set point have been pre-set during factory acceptance testing at a mean face velocity reference of >0.45 m/sec.
- Measure the inflow face velocity directly at the face of the inflow grill that surrounds the work surface, using a calibrated rotary-vane type anemometer. Readings should be taken over a 30 second interval noting the highest and lowest values at multiple notional 'grid points' at the front aperture. (Refer to Figure 2) If adjustments are required to the airflow velocity please refer to section "**4.4 AIRFLOW CALIBRATION PROCEDURE**"

4.1. FIGURES 2

Figure 2
notional measurement positions 1-10 at the
work surface to determine average airflow velocity



4.2 FILTER INTEGRITY TEST

There are two forms of Filter Integrity testing for these units, as standard the Carbon Filter Integrity test is used where the option has been taken for the HEPA Filters you are required to do a HEPA Filter and Seal Integrity.

4.2.1 CARBON FILTER INTEGRITY TESTING

During servicing, carbon filter integrity testing can be performed with gas detection tubes such as the Draeger™ or Gastec™. The filter is challenged with a known chemical, and the concentration of this chemical in the exhaust air is measured with a suitable detection tube.

4.2.1.1 METHOD

Ensure the cabinet is switched on and confirm airflow is correct by direct measurement

Introduce the chemical challenge on top of the worksurface of the table that is appropriate to that normally in use within the unit (or a less toxic equivalent Iso Propyl Alcohol IPA for test purposes)

Test the exhaust filter to confirm there is no evidence of the chemical.

If the challenge chemical is detected then the follow actions should be taken:

1. Ensure that the filter seal is undamaged and free of gaps
2. Check that the filter is fitted correctly with the seal seated and evenly compressed
3. Replace the filter and retest the cabinet

The result should be recorded in a logbook, a legal requirement under section 9 of the Control of Substances hazardous to Health (COSHH) regulations.

4.2.2 HEPA FILTER AND SEAL INTEGRITY (LEAK TEST)

This test only applies when a HEPA filter option is fitted.

The integrity of the optional HEPA filter and seal is established during factory acceptance testing in accordance with Caron Quality Standard (SOP 9.0) using the D.O.P. aerosol test method.

After installation the system should be re-tested by the installation engineer to re-confirm filter and seal integrity as follows:

The HEPA filter should be tested at normal operating airflow velocity \pm 10% using calibrated test equipment.

4.2.2.1 METHOD

The aerosol generator pipe is to be placed on top of the downflow tables intake grilles, in such a way that the aerosol can be introduced into the upstream side of the filter as far from the filter as is practical to ensure adequate mixing and minimal interruption to the airflow velocity through the intake aperture.

Use the scanning probe positioned over the exhaust grille of the fan housing to determine downstream aerosol concentration levels, with separate passes made around the entire periphery of the filters, along the bond between the filter set and the enclosure frame, to confirm integrity of the seal of the filters.

Tests should be applied in accordance with SOP 9.0 and results should confirm the following:

- The photometer reading should indicate < [0.01%] penetration for leakage value
- The photometer reading should indicate < [0.005%] penetration for efficiency value

If a steady and repeatable reading on the photometer at any point exceeds the stated maximum permitted concentration, then a leak must be assumed.

Readings on the test set can be set to indicate direct percent penetration using [0.01%], [0.1%] scales as appropriate.

The average downstream concentration value shall not exceed (0.01%) of the upstream concentration measurement.

4.3 CONTAINMENT TEST

It is not practical to apply containment testing to BS EN 14175-4:2003 using SF₆ gas to this type of recirculatory fume cabinet on site, due to the safety requirement to include specific exhaust ducting and where restrictions on introducing sulphur hexafluoride in particular laboratories exist. This may prevent the application of any quantitative containment integrity testing, however, qualitative measurement of the airflow profile at the face of the cabinet, operating at the correct face velocity and in a specific room environment can be evaluated by smoke visualisation testing.

In accordance with BS EN 14175-4:2003, a smoke pencil generating a trace should be placed approx. 400mm in front of the cabinet with smoke released upwards to the ceiling. The tracer should be moved across the frontal region of the cabinet not faster than 0.2 m/s.

The airflow profile should show no evidence of escape of the tracer 'smoke' from the cabinet and a smooth and a continuous airflow pattern should exist.

There should be no evidence at any point of smoke being significantly disrupted or otherwise deflected counter to the inflow or indications of a delay in entering the aperture.

If tests show significant disturbance to the airflow profile, then room air velocity must also be checked to ensure it is not greater than 0.2m/s.

4.4 AIRFLOW CALIBRATION PROCEDURE

Position a Ø100mm calibrated anemometer and traverse along the length of each intake grille on top of the table and measure the average inflow velocity value to determine the mean average refer to **“4.1 FIGURE 2”**. The value should be greater than 0.45 m/s.

If the average velocity is incorrect then adjust by rotating the speed controller dial found on the RH side of the lower compartment.

PART 2 - OPERATING THE DOWNFLOW TABLE

5.0 OPERATING THE DOWNFLOW TABLE

The Downflow table must have been installed and commissioned in accordance with 4.0 Commissioning of this manual before attempting to operate.

5.1 To Operate the table:

With the mains supply on, press the on/off push button. Which will illuminate when on. At this moment you should be able to audibly hear the fans power up.

Allow sufficient time (10 minutes) for the downflow airflow to stabilise and be drawn evenly through the intake grilles before carrying out any processing.

With the fans running, the downflow table will provide a localised safe environment and protection for the operator during processing.

This protection can only be assured if the airflow velocity remains constant. Do not place large containers or other objects directly over the intake grilles as face velocity will be affected.

5.2 Good Laboratory Practice

Good Practice Should Include the Following:

- Adequate planning and understanding the function of the table.
- Keep the intake grilles free from obstruction by apparatus or containers.

NOTE:

- *The product is not designed or certified to Directive 2014/34/EU (Atex) 240V models, or Directive 94/9/EC (Atex) 115V models, or use in a potentially explosive atmosphere.*
 - *It is not designed for use where toxic substances above OHC3 category may be used.*
 - *There are no direct sources of ignition within the working zone of the cabinet and no risk of fire or explosion during what is considered normal use.*
 - *It should not be relied upon to provide absolute protection and you should evacuate the laboratory/room according to your current fire regulations.*
 - *If it is safe to do so, switch the fan off promptly; this may help to prevent fan-assisted airflow aiding further combustion.*
- Do not make sudden or extreme movements close to the cabinet access aperture or allow other personnel to walk past closely. This may cause disturbance to the airflow reducing the containment efficiency.
 - In the event of a significant disturbance to the incoming airflow during use the airflow alarm monitor will activate, however, this will cease as soon as the airflow velocity is allowed to return to pre-set levels.
 - Do not switch the table off during processing operations and allow 15 minutes *after* operations cease before switching off the fan.
 - The downflow table is an open-faced local exhaust ventilation system. It must never be used for handling or processing hazardous substances which would mandate a semi-enclosed fume cabinet or a biological category safety cabinet.
 - Never physically stand on the table
 - Never operate the table above its safe working weight capacity

PART 3 – PREVENTIVE MAINTENANCE

6.0 EXAMINATION & TESTING

6.1 Statutory Examination, Testing and Preventative Maintenance-General

This downflow table is subject to statutory examination and testing under current COSHH 2002 and OSHA regulations for LEV systems-the interval between examinations must not exceed 14 months.

The tests subjected to the downflow table should determine:

- airflow velocities meet design limits,
- HEPA or Carbon filter levels meet specification,
- operating switches function correctly,
- continued low noise operation
- general condition of the perforated intake grilles/work surface
- operational faults and other quality incidents during operational periods have been recorded in a suitable logbook and dated.

After each examination and service filter replacement, the dates should be recorded in a Log Book maintained by the end-user.

The Log Book should include record of:

- Identified daily, monthly checks for each item in the system,
- Maintenance carried out,
- Replacements made,
- Planned and unplanned repairs,
- Faults observed (information for next operator where appropriate)
- Operators daily correct use of the cabinet,
- Fan increased noise or vibration

6.2 FILTER CONTAINMENT BREAKTHROUGH

When a drop in velocity is detected filter blocking could be taking place and this could be a sign a new Enviro Chemical Filter and or HEPA Filter is required and so the filter in use should not be left for a long period when this is detected since “breakthrough” of aerosols or particulates may occur.

When measurement of the exhaust air reveals a breakthrough of contaminant, the Enviro chemical and or HEPA filter must be replaced.

6.3 CARBON FILTER CHANGE PERIOD-GUIDANCE

Chemcap Enviro™ carbon filters have retention capacities which exceed those of many other filter manufacturers; long life under normal use is highly achievable for these products.

It is also notable that the shelf life of these carbon filters in their original sealed packaging has been determined to be at least 5 years. However, when filters are removed from their packaging, they soon begin to adsorb vapours and moisture from their immediate environment.

This has minimal effect on the performance of a filter in the short to medium term, but if stray vapours are often present in the vicinity of the enclosure in which the filter is installed the lifetime of the filter can be compromised.

This is clearly important particularly where filters are being used for very harmful challenges, such as: formaldehyde.

6.4 ELECTRICAL SAFETY

6.4.1 For 230V Units:

This safety cabinet must continue to meet the requirements of the Electricity at Work Regulations 1989 and conformity assessment to BS EN 61010 Safety Requirements-Electrical equipment for laboratories

The correct fuse must be fitted to the mains plug at all times and the mains lead should be examined frequently for signs of damage.

There should be regular formal inspections carried out by a 'competent person' and must include earth bonding and insulation tests. All inspections carried out should be recorded.

6.4.2 For 115V Units:

The product must continue to meet the requirements of NEC 2008 with the correct fuse fitted -the mains lead should be examined frequently for signs of damage.

There should be regular formal inspections carried out by a 'competent person' and must include earth bonding and insulation tests. All inspections carried out should be recorded.

7.0 PREVENTATIVE MAINTENANCE

Regular maintenance and statutory testing is essential to the proper functioning of this safety cabinet and we strongly advise entrusting this to trained personnel who are technically competent and equipped with suitable calibrated instruments.

7.0.1 HEALTH AND SAFETY RESPONSIBILITIES



- a) When carrying out servicing or preventive maintenance to this cabinet you are responsible for both yourself and others in the local vicinity for Health & Safety, as the product can potentially cause danger through exposure to hazardous voltages, manual handling injuries and contact with high torque rotating fans.
- b) Service engineers must comply with all customer on-site safety regulations and obtain the necessary Work Permits before carrying out any of the tasks required by this document.
- c) Processes being carried out in the Chemcap Optiflow cabinet must be halted and any ancillary equipment should be removed to avoid contamination or damage during the servicing/repair tasks.
- d) Appropriate PPE (which includes overalls, protective gloves, FFP3 grade facemask and safety glasses) should be worn at all times.



7.0.2 TEST EQUIPMENT

The following calibrated test equipment will be required to validate the cabinet on site:

- PAT tester (approved type BETAPAT M2140 or M2141)
- 100mm Ø Rotary vane type anemometer calibrated type (type Airflow LC6000)
- DOP test set (Calibrated) comprising: TEC Services Model PH-3 or ATI 2GA series photometer,
- A validated aerosol smoke generator, generating a polydisperse aerosol. (Approved types C.F. Taylor or Concept Vi-count)
- Air-flow integrity Test Kit (smoke pencil)

7.1 CLEANING AND CLEANLINESS STANDARD

7.1.1 DAILY

Using a damp cloth, clean the exterior surfaces of the table by wiping with diluted detergent and water, to remove accumulated dust.

7.1.2 WEEKLY

Thoroughly surface-decontaminate the work surface using ethanol/propan-2-ol such as Micronclean (or other approved disinfectant).



IMPORTANT: NEVER USE STEEL WOOL, BRUSHES, BLEACH OR CHLORINE-BASED CHEMICALS TO CLEAN THE STAINLESS-STEEL GRILLES. THE USE OF ANY KIND OF ABRASIVE MATERIAL WILL CREATE PERMANENT SCRATCHES AND MAY AFFECT THE ABILITY OF THE SURFACE TO BE SANITIZED.

7.2 CHANGING THE PRE-FILTERS

The particle pre-filter is the first-line of defence and will therefore be contaminated with particles from the range of substances processed on the table. It requires changing regularly to ensure proper airflow and to ensure long life of the main filter.

The frequency of changing depends on the environment. It can vary from a week in exceptionally dusty conditions to 6 months or more in a clean environment. Pre-filters should ideally be replaced at each service visit.

7.2.1 PROCEDURE FOR SAFE-CHANGE REMOVAL, PRE-FILTER



Safety Warning!

Service engineers should wear appropriate PPE, which may include, protective overalls, gloves, facemask and safety goggles when carrying out these procedures.

The oiled glass fibre in the media can cause irritation to eyes and skin. Flush eyes or Wash hands with copious amounts of cold water if affected by such contact.

1. Clean the work surface and inflow grilles on top of the tables.
2. Switch the cabinet ON to operate the fan(s) in order to create a safe (negative air pressure) environment within the acrylic enclosure.
3. Place a hazardous waste sack close to the cabinet in preparation.
4. Now lift off the work surface and inflow grilles so that you can access the pre-filter tray below
5. Lift out the saturated pre-filter from the tray below. There maybe some resistance due to the negative pressure created by the fan running but this should be minimal.
6. Place the saturated pre-filter into the hazardous waste sack
7. Locate a new pre-filter element into the grille tray
8. Now re-fit the work surface and inflow grilles back into place

7.3 MAIN FILTER REMOVAL AND REPLACEMENT

7.3.1 PREPARATION



Safety Warning!

ENSURE THAT THE CABINET IS SWITCHED OFF AND ISOLATED FROM THE MAINS SUPPLY BEFORE OPENING THE FILTER HOUSING!

It is recommended that a trained service engineer should carry out the replacement of the main filter(s).

Wear appropriate PPE when handling contaminated filters.



- Ensure that a new Enviro chemical filter is only unpacked just prior to installing in position (stage:2).
- Place hazardous waste sacks close to the enclosure in preparation.
- Ensure that a HEPA filtered vacuum cleaner is available
- Place a clean plastic sheet close by to place the used filters on before bagging
- Remove all apparatus from the inside of the cabinet;

7.3.2 REPLACING CONTAMINATED FILTERS

1. Isolate power supply
2. Remove any hazardous materials and clean the worksurface and inflow grilles of the downflow table.
3. Place a hazardous waste sack close to the cabinet in preparation.
4. Once the worksurface and grilles are clean remove these parts and place them close to the table.
5. Remove the 10 bolts fixing the pre-filter tray to the downflow table.
6. Lift off the pre-filter tray from the table.

NOTE:

The 'stiction' effect of the seals on both filter and spacer frame may make initial removal difficult, however, do not apply extreme movements to remove the filter from its position, otherwise carbon dust may be loosened and contaminate the local area.

7. Remove the saturated filter element by lifting from the filter frame, place into the hazardous waste sack and seal.
8. Vacuum clean the inside of the filter housing and filter support frame and also wipe clean with a damp lint free cloth.
9. Locate a new filter onto the supporting housing.
10. Relocate pre-filter tray
11. Refit securing bolts through the pre-filter tray into the positions on the filter housing
12. Refit worksurface and inflow grilles
13. Carry out airflow velocity checks and adjust fan speed as necessary.

7.4 RESETTING AIRFLOW VELOCITY

Carry out airflow measurements and adjust fan speed as necessary.

If further assistance is required to re-set the airflow velocity please refer to “4.4 Normal Airflow Calibration Procedure”.

7.5 FILTER INTEGRITY TESTING

Please Refer to section “4.2 Filter Integrity Testing” for a guide on how to test the Carbon filters and if the unit has the optional HEPA filters

7.6 GUIDELINES TO SELECTING THE CORRECT FILTER TYPE-CHANGE OF USE

It is important that the type of substance intended for use in this fume cabinet is identified in order to determine the correct choice of filters. This is particularly important if a change of use is intended. The risk assessment, classification, labelling and subsequent disposal of used filters is the responsibility of the end-user.

If a change of use of the cabinet is intended, then it is important to carry out a suitable risk assessment to identify the predominant vapour and /or particulate that is to be filtered.

NOTE:

The separate label fitted at the front of the fan housing identifies the actual filter type/filter combination fitted by Caron at first installation. It should be referred to in order to identify the correct filter replacement during planned maintenance, subject to any planned new usage and risk assessment.

7.7 TROUBLESHOOTING

The following fault symptoms and remedies are intended as a first level approach only and should be carried out by trained service personnel to isolate and rectify faults at this level.

Escalation and appropriate fault reporting should be made to Caron otherwise.

7.7.1 CONTROL SYSTEM FORMAT

The Chemcap OPTIFLOW models use the Nextion TFT Controller unit which consists of:

- Speed Controller
- EC Fan

Symptom	Remedial action
Fans Do Not Start:	<ul style="list-style-type: none"> • Check that electrical supply to the enclosure is available • Check that Fan push button switch is on and illuminated • Contact Caron otherwise
Airflow Low:	<ul style="list-style-type: none"> • Check pre-filter condition-replace in accordance with this manual • Check Main filter for saturation-replace in accordance with this manual • Check and re-adjust fan speed controller after filter change
Airflow Indication Too High:	<ul style="list-style-type: none"> • Fan speed controller requires re-calibration
Airflow Noise or Fan Vibration Excessive:	<ul style="list-style-type: none"> • Check for foreign objects in intake access apertures-remove • Fan bearing faulty [Contact Caron]

7.8 SPARE PARTS LIST

Part Number	Description
EF0069/01	Fan (230V)
EF0072/01	Fan (115V)
EF0067/03	Fan Capacitor (230V)
EF0011/03	Fan Capacitor (115V)
EC0004/01	Fan Speed Controller (230V)
EC0012/01	Fan Speed Controller (115V)
MW0016/01	Swivel and Brake Caster
MW0016/02	Swivel Caster
MW0001/02	Levelling Castor

PRODUCT SPECIFICATIONS

MODEL	DT1004	
MAIN FILTRATION	Carbon or HEPA Filter	
APERTURE	Open, rectangular	
FACE VELOCITY	>0.45m/s at Filter Face	
FAN TYPE	EBM R4E310-RA06-01 230V 50Hz x 1	EBM R2E-225-BE51-14 115V 60Hz
FAN CONTROL	Caron Variable Electronic Speed Controller	
SOUND LEVEL	< 50dBA at 1 metre	
COMPLIANCE STANDARDS	BS EN 13150:2001 (Workbenches for laboratories-dimensions safety requirements)	
	BS7989:2001 Specification for recirculatory filtration fume cupboards	
	BS EN 61010:2010 Safety requirements for electrical equipment for measurement, control and laboratory use	
	BS EN 61326:2006 Electrical equipment for measurement, control and laboratory use. EMC requirements.	
	a) EN 1822-2009 HEPA filter b) BS7989:2001-Carbon filter:	
	OSHA Section III-3 (Local Exhaust System with recirculation).	

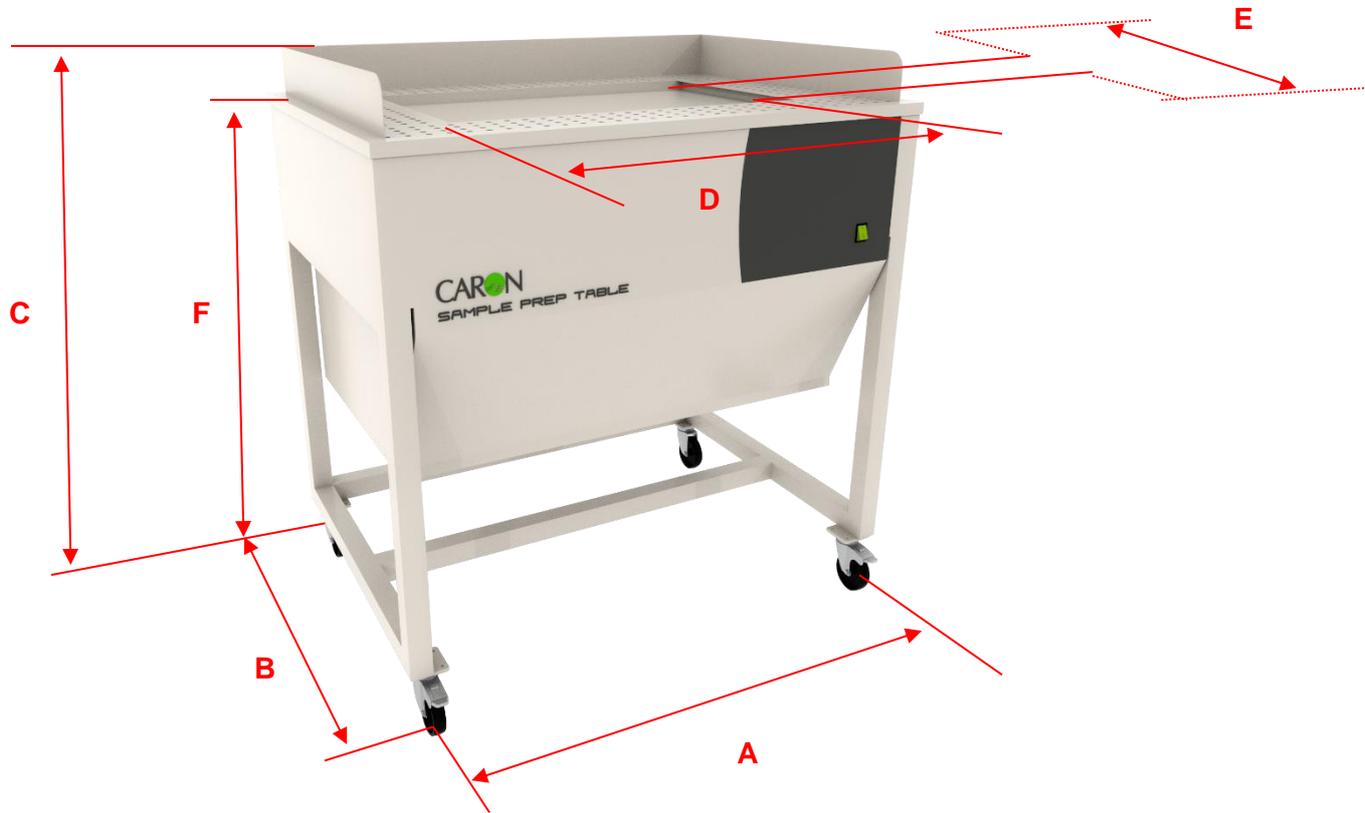
MODEL	DT1004	
	-1	-4
ELECTRICAL	110V – 120V 60 Hz,	230V +10% -6% 50 Hz
POWER CONSUMPTION	160W	137W
LOAD AMPS	1.5A	1.0A
NET WEIGHT	92kg	

FILTER SELECTION

The sample prep table is fit as standard with HEPA Filters. The product code for this filter is as follows.

HEPA: HPF04/01

DIMENSIONAL REFERENCES-DOWNFLOW TABLE MODELS



MODEL	EXTERNAL WIDTH A	EXTERNAL DEPTH B	EXTERNAL HEIGHT C	WORKING AREA WIDTH D	WORKING AREA DEPTH E	WORKING HEIGHT F
DT1004	1000mm	707mm	1021mm	670mm	410mm	941mm

EU DECLARATION OF CONFORMITY – 230V

We

Manufacturers name:	Caron UK
Postal address:	4 & 5 Pipers Wood Industrial Park, Waterberry Drive, Waterlooville, Hampshire, PO7 7XU
Telephone number:	+44 (0)2392 266400
D of C number:	DT1004-21

declare that this declaration of conformity is issued under our sole responsibility for the following product:

Product name:	Sample Prep Table
Serial number:	N/A
Model(s)	DT1004 and variants

Object of the declaration of conformity is in conformity with the relevant Union harmonisation legislation:

Directive number	Title
2006/42/EC	Machinery Directive, All of the relevant provisions to provide a presumption of conformity
2014/30/EU	Electromagnetic Compatibility Directive by external notified body.
2015/863/EU	Restriction of use of certain Hazardous Substances (RoHS ³) Directive
2012/19/EU	Waste Electrical and Electronic Equipment Directive

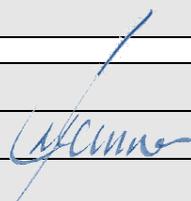
The following harmonised standards and technical standards have been applied:

BS EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control and laboratory use
BS EN 12100-2:2009	Safety of machinery-basic concepts-general
BS EN 61326:2013	Electrical equipment for measurement, control and laboratory use-EMC requirements
CISPR 11	Limits & methods of measurements of radio disturbance characteristics of industrial, scientific
IEC 63000:2018	Technical documentation for the assessment of electrical & electronic products with.. RoHS..
Notified body (where applicable)	Eurofins Hursley 4 digit number: 2635

<p>Object of the declaration: (photograph of product type)</p>	
---	---

Additional information

Product-specific compliance:	BS 7989:2001, AFNOR NFX 15-211-2009 Class 1, ASHRAE 110-1995 12-203 Containment
Operating voltage:	230V ± 10%, 50/60Hz, single phase

Signed for on behalf of:	Caron UK	
Name:	Michael Tanner	Signature 
Position:	Compliance Manager	
Date of issue:	11 th July 2020	
Place of issue:	United Kingdom	
Technical file:	Technical file TF-8004 is retained at Caron UK	

UKCA DECLARATION OF CONFORMITY – 230V

We, Caron UK

D of C No: DT1004-21

of 4 & 5 Pipers Wood Industrial Park, Waterberry Drive, Waterlooville, Portsmouth, Hampshire, PO7 7XU United Kingdom

Tel: +44 (0)2392 266400 E-mail: info@bigneat.co.uk

issue this declaration of conformity under our sole responsibility for the following product(s):

Product name:	Sample Prep Table
Serial number:	N/A
Model(s)	DT1004 and variants

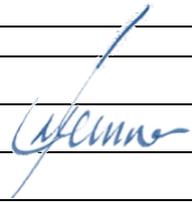
Object of the declaration is in conformity with the relevant designated standards:

Designated standards	Title
2008/1597	The Supply of Machinery (Safety) Regulations 2008+amendments
2012/3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
2016/1101	The Electrical equipment Safety Regulations 2016
2016/1091	The Electromagnetic Compatibility Regulations 2016
2013/3113	The Waste Electrical and Electronic Equipment Regulations 2013 (as amended)
2008/2852	The REACH Enforcement Regulations 2008 (as amended)
BS EN 63000:2018	Technical documentation for the assessment of electrical & electronic products with respect to RoHS..
UK assessment body	Eurofins Hursley-4 digit number:2635 EMC intervention

Object of declaration: (photograph of product)	
---	---

Additional information

Product specific compliance:	a) COSHH Regulations 7 & 9, b) HSE-HSG258 guide	
Operating voltage:	230V ± 10%, 50/60Hz, single phase	

Signed for on behalf of:	Caron UK	
Name:	Michael Tanner	Signature 
Position:	Compliance Manager	
Date of issue:	1 st January 2022	
Place of issue:	United Kingdom	
Technical file:	TF-8004-21 is retained at Caron UK	

UKNI DECLARATION OF CONFORMITY – 230V

We

Manufacturers name:	Caron UK
Postal address:	4 & 5 Pipers Wood Industrial Park, Waterberry Drive, Waterlooville, Hampshire, PO7 7XU
Telephone number:	+44 (0)2392 266400
D of C number:	DT1004-21

declare that this declaration of conformity is issued under our sole responsibility for the following product:

Product name:	Sample Prep Table
Serial number:	N/A
Model(s)	DT1004 and variants

Object of the declaration of conformity is in conformity with the relevant Union harmonisation legislation:

Directive number	Title
2006/42/EC	Machinery Directive, All of the relevant provisions to provide a presumption of conformity
2014/30/EU	Electromagnetic Compatibility Directive by external notified body.
2015/863/EU	Restriction of use of certain Hazardous Substances (RoHS ³) Directive
2012/19/EU	Waste Electrical and Electronic Equipment Directive

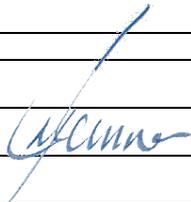
The following harmonised standards and technical standards have been applied:

BS EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control and laboratory use
BS EN 12100-2:2009	Safety of machinery–basic concepts–general
BS EN 61326:2013	Electrical equipment for measurement, control and laboratory use–EMC requirements
IEC 63000:2018	Technical documentation for the assessment of electrical & electronic products with.. RoHS..
Notified body (where applicable)	Eurofins Hursley 4 digit number: 2635

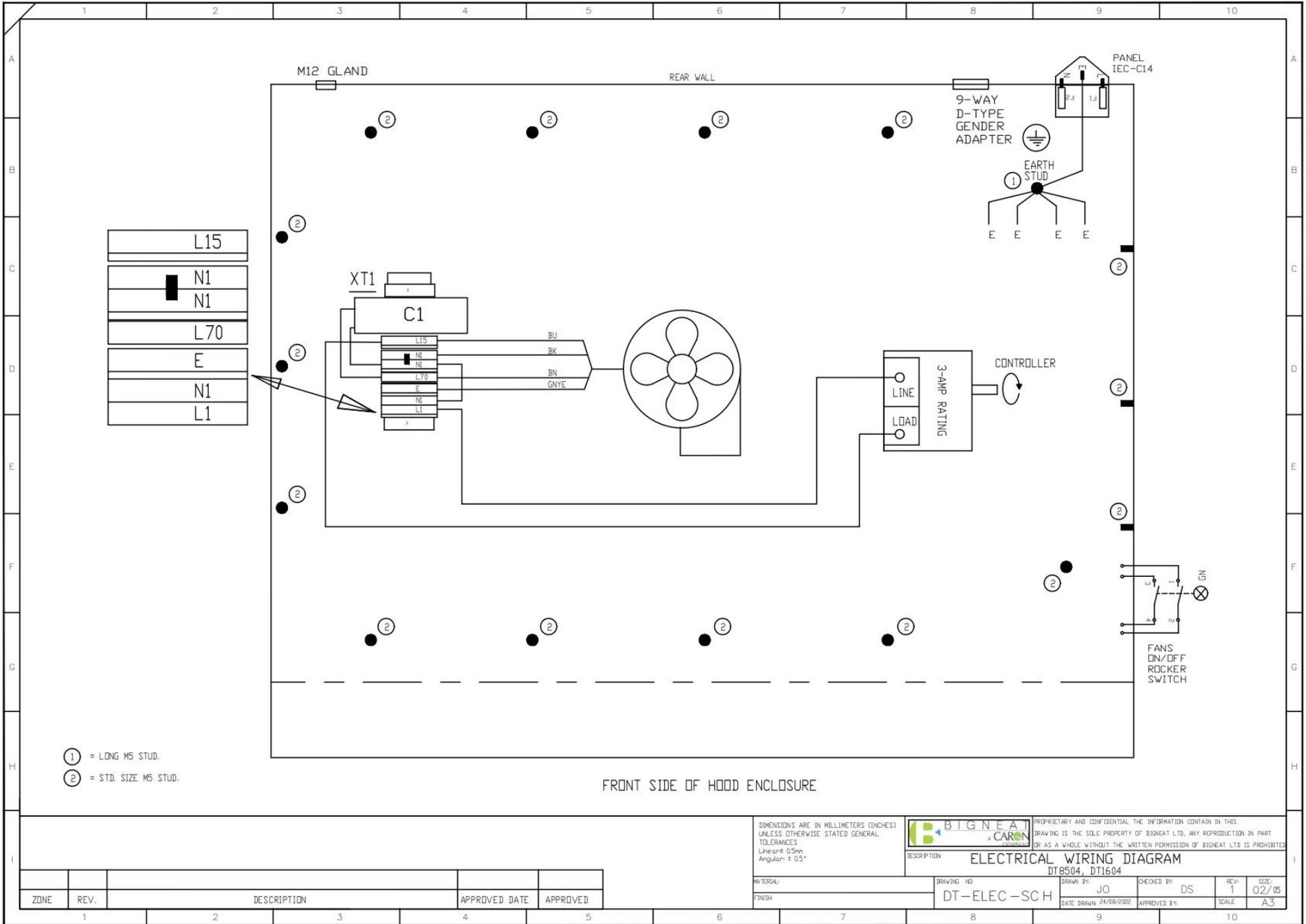
<p>Object of the declaration: (photograph of product type)</p>	
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Additional information

Product-specific compliance:	BS 7989:2001, AFNOR NFX 15-211-2009 Class 1, ASHRAE 110-1995 12-203 Containment
Operating voltage:	230V ±10%, 50/60Hz, single phase

Signed for on behalf of:	Caron UK	
Name:	Michael Tanner	Signature 
Position:	Compliance Manager	
Date of issue:	1 st January 2021	
Place of issue:	United Kingdom	
Technical file:	Technical file TF-8004 is retained at Bigneat Ltd UK	

APPENDIX 1 – ELECTRICAL SCHEMATIC



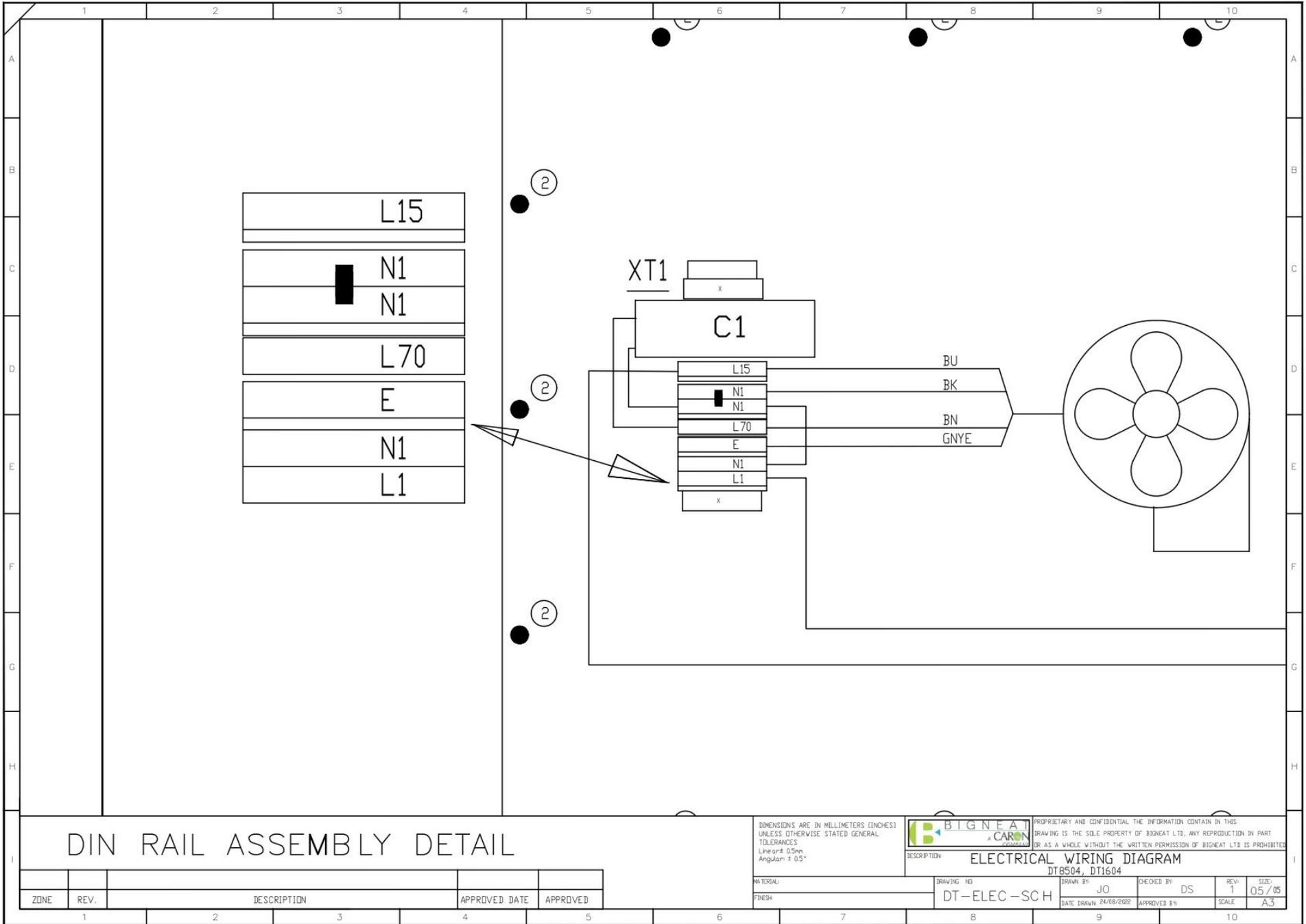
DIMENSIONS ARE IN MILLIMETERS (INCHES)
UNLESS OTHERWISE STATED GENERAL
TOLERANCES
Linear: ± 0.5mm
Angular: ± 0.5°

BIGNEAT
A CARON
CORPORATION

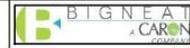
PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAIN IN THIS
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DESCRIPTION: **ELECTRICAL WIRING DIAGRAM**
DT8504, DT1604
DRAWING NO: DT-ELEC-SCH
DATE DRAWN: 24/08/2022
DRAWN BY: JO
CHECKED BY: DS
REV: 1
SCALE: A3

ZONE	REV.	DESCRIPTION	APPROVED DATE	APPROVED
1				
2				
3				
4				
5				



DIMENSIONS ARE IN MILLIMETERS (INCHES)
UNLESS OTHERWISE STATED GENERAL
TOLERANCES
Linear: ± 0.5mm
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DESCRIPTION		ELECTRICAL WIRING DIAGRAM	
DRAWING NO		DT8504, DT1604	
MATERIAL	FINISH	DATE DRAWN	APPROVED BY
		24/08/2022	
DRAWN BY	CHECKED BY	REV.	SIZE
JO	DS	1	05/05
DT-ELEC-SCH		SCALE	A3

ZONE	REV.	DESCRIPTION	APPROVED DATE	APPROVED
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2				
3				
4				
5				