AES ENVIRONMENTAL

JULY 2025

CYTOGARD CG2000 SERIES CYTOTOXIC DRUG SAFETY CABINET

OPERATION AND MAINTENANCE MANUAL

bsi. ISO 9001 Quality Management

CLYDE-APAC

EMAIL AIRHANDLING

VOKES Filtration Technology

CONTENTS

1. INTRODUCTION

Thank you for your decision to purchase an AES Environmental/Clyde-Apac Cytogard CG2000 series cytotoxic drug safety cabinet.

Cytogard CG2000 Series cabinets have been developed to comply with the Australian Standard AS2252:2017 which specifies performance requirements for cytotoxic drug safety cabinets. Our choice to use the Australian Standards as a benchmark for our products provides our customers with the confidence and knowledge that they are indeed purchasing a reliable product. AES Environmental operates to an ISO 9001: quality accreditation system ensuring that all stages of design, material sourcing and product manufacturing are subjected to rigorous checks. All stages of manufacture are subjected to rigorous checks to ensure that specified quality standards are maintained.

HEPA filters are individually tested and certified for efficiency, integrity and pressure drop before installation in cabinets. Each “cytogard” undergoes stringent factory testing of airflows, and other performance aspects. A NATA accredited factory laboratory using calibrated apparatus and test procedures conducts all tests.

Your investment in this cabinet and its vital contribution to laboratory safety should be protected by regular specialised inspection, testing and certification. AES Environmental through its vast network of domestic international service centres and agents, can service “cytogard” and any competitive brand of cytotoxic drug safety cabinet. For information on other AES Environmental services for HEPA, Clean Room, Laminar Flow and Biological Safety Cabinet accredetation scan the QR code below.

SCAN HERE!

2. CYTOGARD CABINETS - DESCRIPTION

2.1 GENERAL

Cytogard cabinets are part-recirculating laminar air flow enclosures with HEPA filtration of exhaust air and an air barrier at the work opening. Separate fan/HEPA filter systems are provided for exhaust and laminar air flow.

An inflow of room air into a full-width grille in the work opening creates an air barrier. HEPA-filtered vertical laminar air flow, which is recirculated in the work zone, creates an ultra-clean work environment. The barrier air mixes with the recirculated laminar flow air in a sump underneath the work tray, and is exhausted from the cabinet via a HEPA filter which is located directly under the tray.

Cytotoxic drug safety cabinets provide protection for cabinet users, drug products, service personnel and the room environment.

2.2 FEATURES

These include the following:

- Low voltage touch controls located away from contaminated zones
- Alarms and maximum-exhaust boost mode automaticaly engaged when window is open
- Pneumatically-operated viewing window with no fasteners or clasps
- Visible and audible alarms

2.3 OPTIONS

Factory options available for Cytogard cabinets are:

- IV hanging rail
- UV lamp
- Air tap
- Gas tap with solenoid control
- Vacuum tap with 0.2µm filter
- Power outlet
- Manometer
- Post-use over-run timer
- Exhaust discharge on left or right hand side, or top

In typical pharmacy applications, the only option commonly required is the IV hanging rail option. Although these options attract modest additional cost when supplied with a new cabinet, fitting of some items to installed cabinets can be very costly.

3. CABINET APPLICATIONS, SELECTION AND LIMITATIONS

3.1 APPLICATIONS

Cytogard cabinets have been designed to meet the needs of pharmacy applications involving the handling of cytotoxic drugs. These cabinets may also be used where the handling of other drugs and chemicals requires both containment and aseptic manipulation. The design provides safe access for service personnel to maintain critical component items increasing product longevity.

The increasing use of cytotoxic drugs has introduced special problems in their preparation, manipulation and dispensing. Many of these drugs are known to be mutagens, and are suspected of being carcinogens and teratogens. The effects are insidious and may not manifest themselves for some years.

The requirements for protection involve:

- Protection of cabinet users and other staff from exposure to aerosols or vapours which may be generated in the preparation, manipulation and dispensing of cytotoxic drugs.
- Protection of drug products, so that they may be prepared in an environment which is essentially free from particulate and biological contamination.
- Protection of cabinet maintenance personnel from the residue of drug particles which can contaminate filters, fans and other mechanical components.
- Cytotoxic preparation can not be fumigated.

Australian Standard AS2252.5:2017, Controlled Environments Part 5: Cytotoxic Drug Safety Cabinets – Design, construction, installation, testing and use, defines cytotoxic drug safety cabinets as the primary barrier against exposure to airborne contamination in such applications. This Standard recommends that these cabinets be installed in HEPA-filtered, pressure-controlled cleanrooms to enhance the levels of protection provided for drug products and personnel. However, Cytogard cabinets will provide a high degree of protection in any suitable room of normal construction (see 4.2 below).

3.2 LIMITATIONS OF OTHER CABINETS

3.2.1 Laminar flow cabinets

Laminar flow work stations or cabinets (sometimes called 'clean benches'), as specified in Australian Standard AS2252.6, are intended for work involving the handling of non-hazardous materials which require aseptic or particle-free manipulation.

Although they provide protection for materials handled in the work zone, they do not provide personnel or environmental protection, as aerosols from the work zone are directed towards the operator.

These cabinets are unsafe for use with cytotoxic drugs.

4. ASSEMBLY OF CABINET AND INSTALLATION

4.1 PRE-INSTALLATION PRODECUDRES

Typically, Cytogard cabinets are installed by a competent person from AES Environmental (AES) or an authorised installation agent or contractor. In some situations other arrangements may apply to the installation of this cabinet. A technical bulletin detailing procedures for cabinet assembly and commissioning is available.

Immediately on delivery to the site, the cabinet should be carefully unpacked and inspected for shipping damage. Any damage must be reported immediately to the responsible carrier and your insurance company/order contact, as applicable.

4.2 LOCATION

If not installed in a cleanroom as specified in AS2252.5, Cytogard cabinets should be located in a clean, draught-free room. The area chosen should not be subject to air turbulence from air conditioning inlets, room exhausts, personnel traffic and other sources. All windows should be fixed.

Temporary loss of air barrier containment can be caused by air turbulence in front of cabinets. Simple partitions to minimise effects from personnel traffic can be installed, and excessive velocities from room air inlets can be inhibited by regulating dampers and/or blanking or baffling.

Requirements for the design and operation of the cleanroom specified in AS2252.5 are outside the scope of this document.

4.3 SERVICES

Electrical power and any other reticulated services which are required for cabinet operation should be provided at the cabinet installation site.

Significant fluctuations in electrical power supply have been reported from some sites. Such fluctuations may adversely affect the function of cabinet alarms and visual indicators. Line conditioning of the power supply should be considered for those sites where such fluctuation is experienced. Compliance with local regulations should be confirmed.

4.4 EXHAUST AIR DISCHARGE

Where cabinet exhaust air is not directed into a room exhaust system (see AS2252.5), clearance in the direction of exhaust discharge should be at least 60cm. This is necessary in order to minimise airflow resistance, and to minimise turbulence near the cabinet.

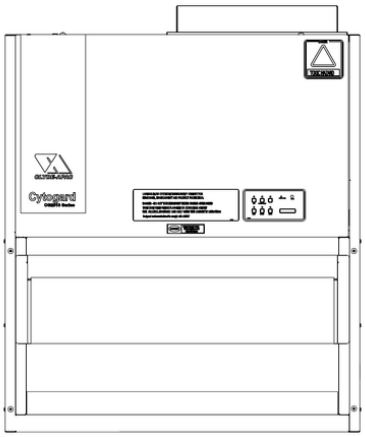
4.5 ASSEMBLY OF CABINET

The Cytogard cabinets are supplied in two sections for easy assembly into the room.

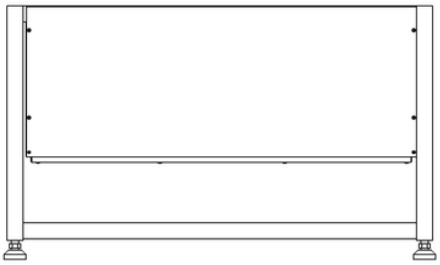
4. ASSEMBLY OF CABINET (CONT)

1. Position the base section in the room in the required location. Remove the front access cover and the exhaust HEPA filter. Note exhaust HEPA may alternatively be boxed in the sump or boxed as a separate package.

Top:

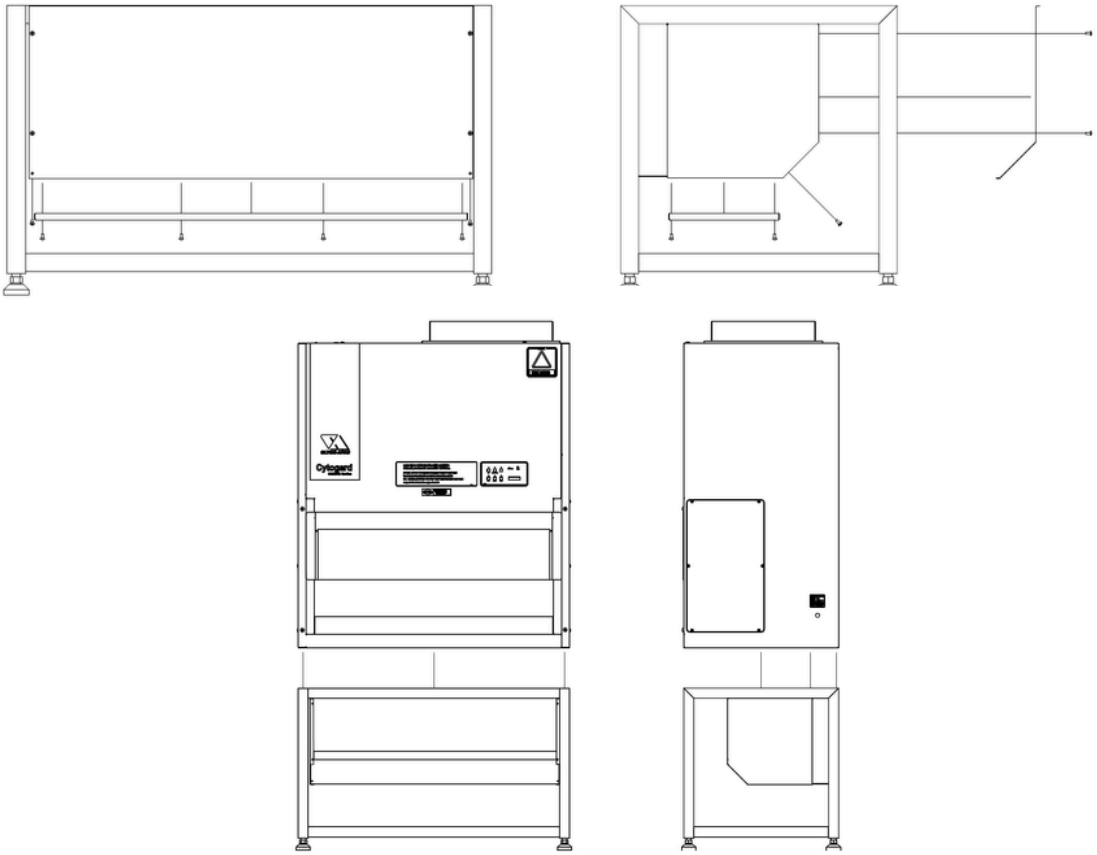


Base:



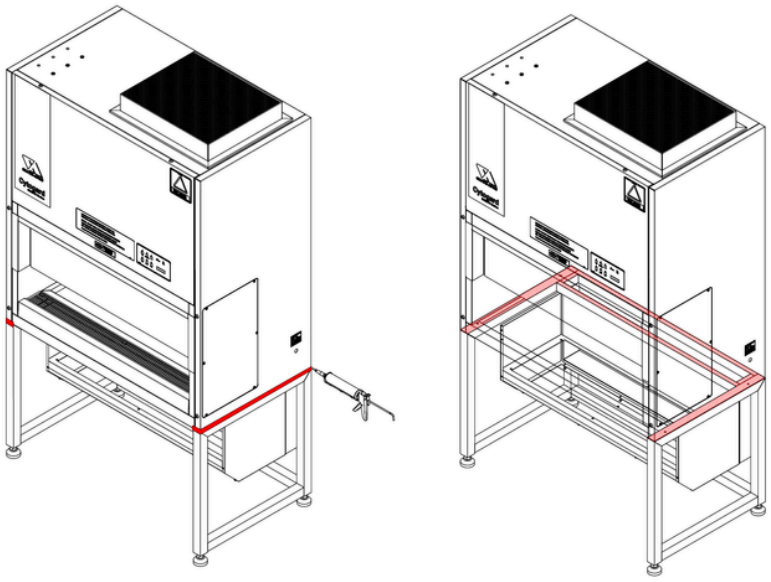
2. Lift the top cabinet section on to the base and align the holes for the location bolts. You should ensure that the plastic pressure sensing hose is not caught between the two sections and hangs freely in the return air plenum.

Hole locations:



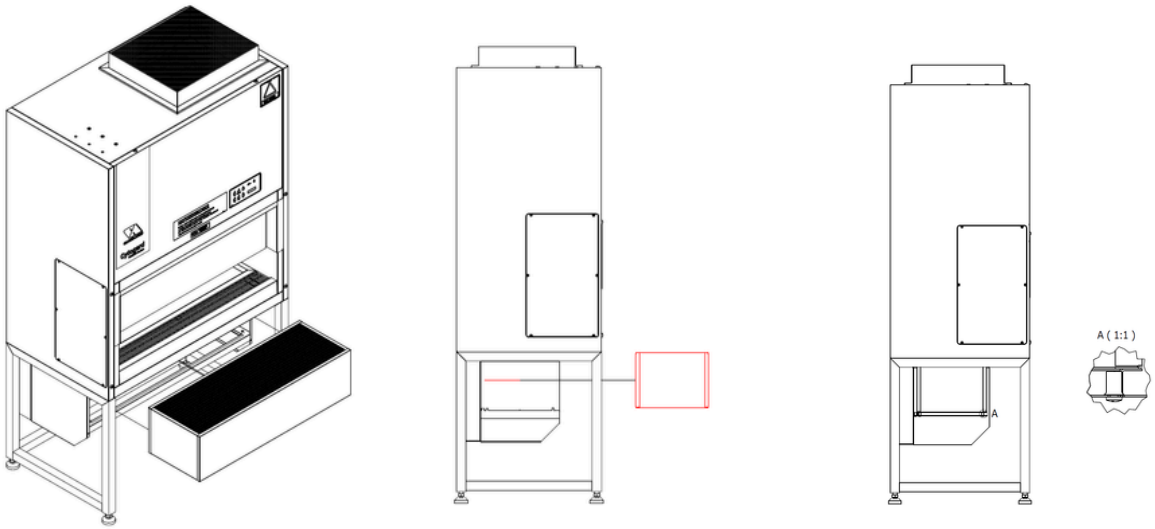
4. ASSEMBLY OF CABINET (CONT)

3. Apply silicone sealant that is approved for use in the installed location along the inner and outer joins highlighted below;



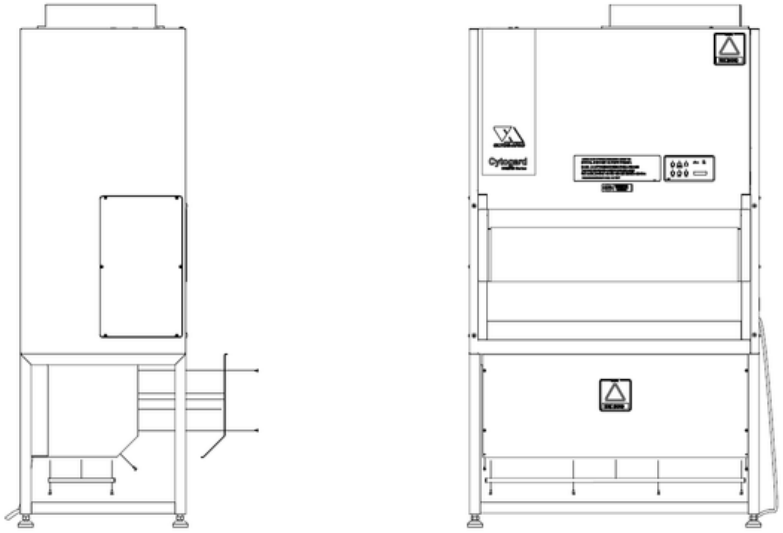
4. Fit the location bolts to the cabinet and secure the two sections together.

Loosen the bolts on the exhaust clamp frame to allow the HEPA filter to be slid in from the front. When the filter is aligned with the underside of the sump, tighten the clamping bolts to secure the filter in position.



4. ASSEMBLY OF CABINET (CONT)

5. Fit the front access cover back to the base of the cabinet.



5. TESTING AND CERTIFICATION

5.1 GENERAL

All testing procedures should be conducted in accordance with AS1807 and AS2252.5, using calibrated apparatus. In Australia, cabinet users are able to specify that all maintenance and testing of safety cabinets is performed by a competent person from an accredited service organisation.

5.2 FREQUENCY

Cytogard cabinets are tested in the factory and further testing is recommended as follows:

a. On site, prior to use.
b. After any electrical or mechanical maintenance.
c. After filter replacement.
d. After relocation.
e. At least annually.
f. In special circumstances, such as a significant change in the work programme, or where unsafe cabinet operation is suspected.

5.3 PRE-TESTING PROCEDURES

Mechanical maintenance and testing of used cabinets should only be conducted after disinfection and decontamination of the work zone and the removal of all materials and process equipment.

All testing of cabinet airflows should be performed with the room air supply and exhaust system operating in the normal mode.

5.4 TESTS RELATING TO SAFETY

AS1807 lists 10 tests that can be performed on safety cabinets, and most of these are applicable to installed cabinets. However, tests on cytotoxic drug safety cabinets relating to personnel and environmental protection are limited to the following:

Exhaust HEPA filter integrity - test method AS1807:2021-c14.4
Air barrier containment - test method AS1807:2021-c14.9

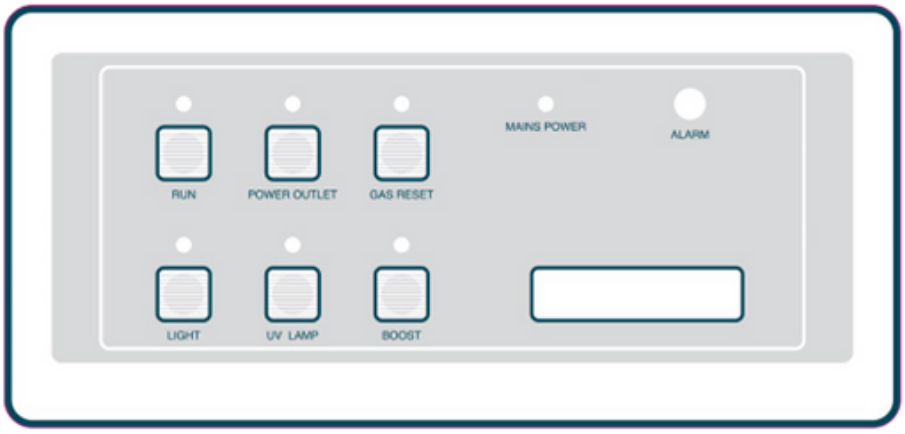
Other tests deal with various aspects of performance, but none of these has significant implications for personnel and environmental protection.

6. CONTROLS AND MONITORING

6.1 GENERAL

CG2000 Series cabinets are fitted with a purpose-designed, integrated electronic controller which incorporates function switches and indicators, system diagnostics, fan speed controllers, audible and visible alarms.

Low voltage touch-control switches operate standard cabinet functions and optional gas and ultraviolet (UV) lamp services. Light-emitting diodes (LEDs) and an audible signal indicate the status of all switched functions.



6.2 CONTROL SWITCHES AND INDICATORS

6.2.1 Description

Switches are of the momentary touch-pad type with toggle operation. A short 'pip' sound accompanies any toggle operation. A short 'pip-pip-pip' sound accompanies any valid/invalid press. LEDs indicate the status of switched functions.

UV lamps and gas taps are optional fittings. On cabinets not fitted with these services, the relevant switch functions are not operative.

6.2.2 Switch functions and indicators

i. 'RUN' switch for fans and operating modes:

This switch controls the laminar flow and exhaust fan systems. A single actuation of the touch pad turns the fans on and off.

ii. Automatic boost mode:

If the viewing window is opened when the cabinet is running, a boost mode, which activates maximum airflow and the alarm system, is automatically selected. In this mode the audible alarm sounds and the 'ALARM' LED flashes. This mode is cancelled by closing the window.

6. CONTROLS AND MONITORING (CONT.)

iii. 'LIGHT' switch for LED work lamps:
This switch controls the LED work lamps which provide work zone illumination. Operating this switch when the optional UV lamp is on toggles the UV to off.

iv. 'POWER OUTLET' switch for work zone power outlet(s):
This switch provides remote control of the standard splash-proof, general-purpose power outlet (GPO) and optional additional GPOs in the work zone.

v. 'UV LAMP' switch for UV lamp:
This switch controls the optional germicidal UV lamp. The UV lamp can only be switched on when the cabinet is not running.

Operating this switch when the LED work lamps are on toggles the LED work lamps to off.

vi. 'GAS RESET' switch for optional gas tap:
This switch re-establishes supply of gas to the optional gas tap if the solenoid safety valve has interrupted supply of gas to the tap. The optional gas tap is connected via a solenoid valve which cuts off gas supply to the tap if the cabinet has been turned off or if mains power supply has been interrupted.

vii. ‘ALARM' LED and audible alarm:
See 6.2.3 below.

6. CONTROLS AND MONITORING (CONT.)

6.2.3 Alarm system

The alarm system provides audible and visual indication of operating system malfunctions. The audible alarm and the 'ALARM' LED are activated by pressure sensors in the exhaust and laminar flow filter systems. Any significant variation in airflow will produce a change in plenum pressure. This will activate the alarm.

If the viewing window is opened when the cabinet is running, a boost mode which activates maximum exhaust airflow and the alarm system is automatically selected. In this mode the audible alarm sounds and the 'ALARM' LED flashes.

The alarm will also be activated if an error condition was pending on initial start-up, if mains power supply is interrupted while the cabinet is running, or in the event of failure of the controller. The cabinet should not be used until any identified fault is rectified.

6.2.4 Fuses

The cabinet electrical system is protected by individual fuses on all switched circuits. The fuses are located on the controller board inside the control panel.

The cabinet must be disconnected from mains supply before the control panel is opened.

6.2.5 Service mode

Authorised service technicians are able to select a service mode which provides a diagnostics facility and enables various cabinet settings to be changed.

6.3 RUN MODE STABILISATION

When the 'RUN' switch is operated the fans are switched on and the pressure-sensing switches activated. The fans require approximately 20 seconds to develop normal operating pressure and airflow. The main (laminar flow) fan is not started until the exhaust fan system has reached normal operating pressure. During this period, the alarm is activated.

7. WORKZONE

7.1 VIEWING WINDOW

An internal mechanism operated by gas struts closes and seals the viewing window without mechanical fasteners or catches.

(UK model show)

To open the window, pull it firmly outwards. It will support itself in the open position. To close the window, push it down towards the closed position.

If the viewing window is opened when the cabinet is running, a boost mode, which activates maximum exhaust airflow and the alarm system, is automatically selected. In this mode, the audible alarm sounds and the 'ALARM' LED flashes.

When the window is fully open, the alarms may be muted (de-activated) to allow lengthy procedures such as cleaning to be conducted without the sound of the alarms. This mode is selected by selecting any touch pad.

7.2 FRONT GRILLE

To remove the grille, lift it off the locating pins which engage its underside.

7.3 WORK TRAY

The work tray is designed to allow its partial rotation for cleaning within the cabinet with the cabinet running. After removal of the front grille, lift the leading edge of the work tray and rotate it so that its underside is exposed for cleaning. Removal from the cabinet is possible after removal of the front grille. An 'X' mark stamped on one of the tray supports indicates the front for correct refitting.

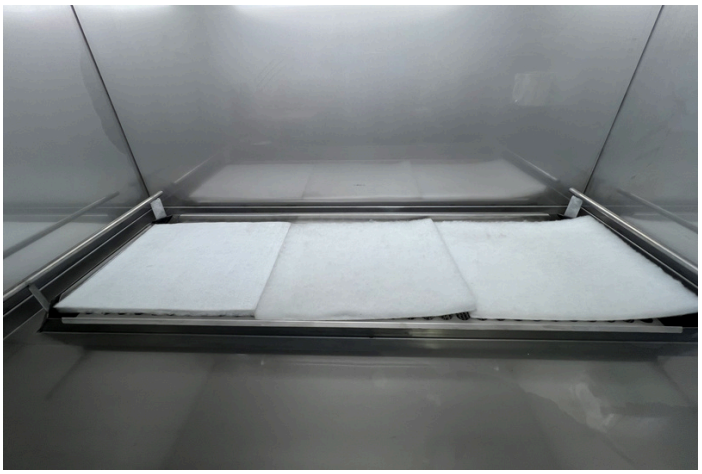

(UK model show)

7. WORKZONE (CONT.)

7.4 PREFILTER

A prefilter is fitted on top of the exhaust (lower) HEPA filter. This purpose of the prefilter is to extend the life of the HEPA filter and to protect it from contact and mechanical damage.

See 6.2 below for important information regarding the servicing of this filter.



8. RECOMMENDATIONS FOR EFFECTIVE CABINET USE

8.1 GENERAL

The function and limitations of cabinets should be clearly understood and be covered in staff training programmes, as should techniques for effective use and cleaning.
Cytogard cabinets are open-fronted enclosures and rely on stable, unimpeded airflows and good user technique in order to provide the intended levels of protection.
Australian Standard AS2252.5:2017, is a recommended guide to the installation of cytotoxic cabinets.

8.2 PROTECTIVE GARMENTS

Recommended Practice (RP), IEST-RP-CC003.5, addresses the gowning of personnel as a critical aspect of cleanroom contamination control. Specification and use of an appropriate gowning system is essential in limiting human-generated contamination from reaching and affecting product or processes in the cleanroom. IEST-RP-CC003.5 provides nonmandatory guidance for the selection, specification, maintenance, and testing of garments or apparel and accessories appropriate for use in nonaseptic and aseptic environments.

8.3 USE OF THE CABINET

8.3.1 Pre-use checks

a. Check the test label or certificate to ensure that it is less than 12 months old.

b. Check that the power supply is suitably connected.

c. Check that the exhaust air outlet is not obstructed.

d. Check that the viewing window is closed and that the front grille is free from obstruction.

e. Switch on the cabinet and check the operation of:
   i. The control panel;
   ii. The fans and alarm systems;
   iii. The manometer (if fitted), to ensure that the reading is in the normal range;
   iv. The fluorescent lamps; and
   v. Any fitted services, such as gas or vacuum.

Note: On starting the fans, the cabinet will operate for approximately 20 seconds in the run-mode stabilisation mode (see 6.3 above).

8. RECOMMENDATIONS FOR EFFECTIVE CABINET USE (CONT.)

8.3.2 Pre-operational procedures

a. Remove unnecessary items from the cabinet.

b. Wipe down the work zone surfaces with a freshly-prepared solution of a suitable disinfectant, cleaning, sanitising or decontaminating agent. Any residual cleaning agent should be removed after 2 to 3 minutes by swabbing with a small volume of sterile water.

Alcohol solutions should be sterile or filter-sterilised before use.

CAUTION: Alcoholic solutions may pose a fire hazard and should be used sparingly, and only when the cabinet is running.

c. Run the cabinet for at least 5 minutes so as to clear away any residual aerosols.

d. Plan work so as to place all materials in, or close to the cabinet and within easy reach of the operator. Use of a stainless steel trolley for materials is recommended. Wipe down the external surface of all items of equipment with a suitable disinfectant before placing them in the cabinet.

e. Allow the cabinet to run for a further 5 minutes before use.

8.3.3 Cabinet services

a. Hoses and power leads should not be introduced into cabinets through the work opening.

b. Reticulated vacuum services connected to cabinets should be isolated by means such as a 0.2um hydrophobic filter. The optional vacuum tap on AES Environmental safety cabinets is protected by an in-line filter.

8.3.4 Techniques for cabinet operation

a. Use good aseptic practice when working in the cabinet.

b. Avoid unnecessary hand and arm movements in and near the work zone. These can disrupt airflows.

c. Disinfect work zone surfaces and allow the cabinet to run for at least 5 minutes to purge the cabinet and nearby area of residual aerosols.

8. RECOMMENDATIONS FOR EFFECTIVE CABINET USE (CONT.)

8.3.4 Techniques for cabinet operation (cont)

d. At the end of the work, leave the cabinet running and conduct the following procedures:

   i. Disinfect and remove all unnecessary materials to reduce the potential for cross-contamination and interruption of airflows; cabinets are not designed for protracted storage of materials.

   ii. Wipe the work zone surfaces with a disinfectant solution.

   iii. Remove gloves for sterilisation or disposal as contaminated waste.

   iv. Allow the cabinet to run for at least 5 minutes before switch-off.

   v. Clean the sump of the cabinet frequently, or after a spill.

8.3.5 Clean-up procedure following spillage in the cabinet.

After a significant spillage in the cabinet, the procedure should be as follows:

a. Ensure that the cabinet remains operating.

b. If liquid, remove with absorbent cloth or pad.

c. If solid, cover with a wetted absorbent cloth or pad.

d. Gather the spill and all contaminated waste into an impervious container for safe disposal as cytotoxic waste.

e. Wipe down work tray of the cabinet with an appropriate inactivator solution, then a hot 1:20 (v/v) solution of alkaline detergent, and finally with sterile water.

f. If spillage has contaminated more than the work tray, follow the procedure in 8.3.6 below.

8. RECOMMENDATIONS FOR EFFECTIVE CABINET USE (CONT.)

8.3.6 Cleaning and decontamination of work zone and sump

This procedure should be followed after a major spillage in the cabinet, before mechanical maintenance and testing, before relocation of the cabinet, or when indicated for other reasons.

a. Ensure that the cabinet is operating.

b. Working from top to bottom, decontaminate all inside surfaces of the cabinet, using an inactivator appropriate to the contaminating substance. If there is no appropriate inactivator available, use a hot solution of 1:20 (v/v) alkaline detergent, followed by sterile water.

c. Lift up front grille, place on cabinet work tray, decontaminate both sides, and remove from cabinet.

d. Clean all of the surfaces of the work tray. Turn it over within the cabinet, and clean and dry the reverse side. Remove the tray from the cabinet.

e. If liquid has collected in the sump, absorb it with cloths and pads. Clean the sump and wipe dry.

CAUTION: Wetting of HEPA filters may cause degradation of the filter media, and must be avoided.

f. Conduct further cleaning of the work zone components, if necessary.

g. Reassemble the cabinet, and prepare for aseptic operation.

8.3.7 Breakdown procedures

If the cabinet stops running, or develops a malfunction which cannot be quickly remedied, the following procedures should be followed:

a. Stop all work, securing all hazardous material.

b. Turn off any cabinet services.

c. Withdraw hands and wash with a disinfectant solution. Safely dispose of gloves.

d. Switch off the cabinet and fit the work opening cover.

e. Switch off power supply to the cabinet.

f. Mark the cabinet clearly as being unsafe for use.

g. Notify the supervisor or laboratory manager and call authorised service organisation.

9. CLEANING AND DISINFECTION AGENTS

Cleaning agents should be appropriate to the drug products in use. Appropriate chemical inactivators and disinfecting solutions should be kept near the cabinet.

Guidance on the selection of agents for cleaning, decontamination and disinfection is provided in the documents which are referenced in AS2252.5, and in Appendix B of AS2243.3.

Some disinfectants and cleaning agents, although widely used in cabinets, present problems unless their limitations are understood and their use is controlled, e.g:

a. Hypochlorite solutions can corrode stainless steel and wet residue should not be left on cabinet surfaces.

b. Alcoholic solutions pose a fire hazard and should only be used sparingly and with the cabinet running.

c. Abrasive compounds may degrade stainless steel and painted surfaces.

d. Worksafe Australia has recommended revised work practices for the use of glutaraldehyde, now classified as a toxic chemical.

e. The grade and quality of stainless steel used in cabinet construction has a high degree of resistance to staining and corrosion, but may be degraded by the use of unsuitable cleaning agents.

10. FILTERS

10.1 HEPA FILTERS

HEPA filters are fitted to the laminar flow and exhaust air systems of this cabinet. These filters, which arrest sub-micron particles, are the physical containment barrier in safety cabinets. They incorporate a very fragile filter medium which is easily damaged by physical contact and which may suffer degradation if splashed with liquid.

HEPA filters can not be cleaned and are normally replaced when their increased resistance to airflow impairs cabinet performance, when excessive leak repair is necessary, or when heavy surface contamination occurs.

Replacement filters should be manufactured in accordance with AS4260 Australian Standard for use in critical applications and should be individually tested and certified in a NATA-registered laboratory. Arrestance efficiency should be not less than 99.997% when tested using a recognised ILAC accredited rig test facility. Additionally, filters should be certified for integrity (freedom from pin-hole leaks) in accordance with AS1807.6.

Recommended replacement filters are AES Environmental HEPA filters, which have been developed for critical applications. Some other filters, although labelled as meeting these requirements, provide no means of tracing factory test results, and their use cannot be recommended.

Determination of the in-situ integrity of HEPA filters and their installation is the most important testing procedure for cabinets. Cabinets with suspected filter damage should not be used until testing of filter integrity has been carried out.

10.2 PREFILTER FOR EXHAUST HEPA FILTER

Attempts should not be made to clean the prefilter. A new prefilter should be fitted when there is a significant amount of dust on the prefilter surface. The prefilter should only be removed when replacement is needed.

When changing the prefilter, special care should be taken to avoid contact with the exhaust filter. HEPA filters are very fragile, and are easily damaged by physical contact.

11. UV LAMPS

UV lamps are not fitted to the cytogard cabinets as standard. The following applies where UV has been selected as an option.

UV lamps on the cytogard cabinets are fitted in the work zone. The intended use and occupational health and safety aspects of UV should be understood by cabinet users, i.e:

i. UV can be a useful adjunct to surface cleaning procedures, but should not be seen as a panacea that can replace good cleaning technique.

ii. UV lamps should be used for 20 to 30 minutes at the beginning and end of work programmes. They should not be left on for extended periods.

iii. Personnel should avoid exposure to UV radiation. Exposure may cause eye damage and erythema. Work opening covers should be in place whenever UV lamps are in use.

iv. Radiation intensity reduces over time due to degradation and external staining of lamps. Where the use of UV is a significant element of surface decontamination procedure, regular testing of lamp intensity and lamp replacement should be specified.

v. UV radiation degrades nitrile, plastics and rubber products and organic coatings, such as those used in typical cabinet construction.

vi. UV lamps must be fitted permanently to the workzone area.

12. ADJUSTABLE STAND (OPTIONAL)

The adjustable height electric floor stand is ideal for shared workstations where operating height can be adjusted to suit each individuals' requirements. This stand has also been equipped to accommodate wheelchair access. With the touch of a button, the stand can be adjusted between 560 to 1210 mm. The motors operate quietly and safely while the cabinet is in use. Programmable buttons on the control panel allow pre-set heights to be stored. The control panel is simple, easy to clean, and splash-resistant.

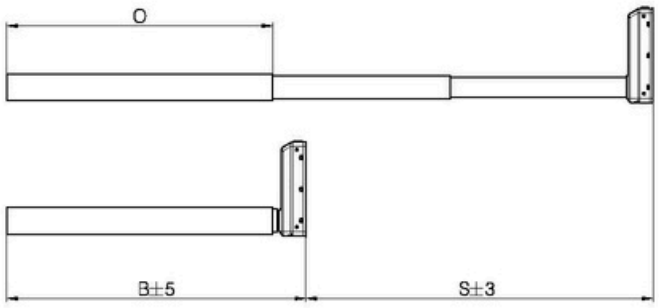
12.1 DL6 SYSTEM

The lifting units are equipped with a motor and parallel/memory drive is ensured by means of software in the CBD6 that also takes account of oblique load on the cabinet. The software includes soft start and stop features for smooth adjustments.

Irrespective of the load the duty cycle 10% ~ 6 min./ hour or max. 2 min. at continuous use stated in the data sheets, must NOT be exceeded as this will result in a superheating of the motor, the brake and the spindle nut. Exceeding the duty cycle will result in a dramatic reduction of the life of the system.

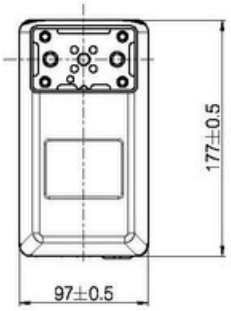
The system is initialised by pressing the down button once or twice and holding it down until DL6 runs into end stop, it will then automatically run approximately 3 mm out again and hereafter slowly running in again. Only release the down button when the movement has completely stopped. If the key is released before the sequence is completed then the initialisation is interrupted and must be started again from the beginning. It is sometimes necessary to press the down button twice to start the initialisation as the system can be in different modes when the initialisation starts. In most instances the commissioning technician will ensure the stand is setup for use. If the cabinet has been relocated then it may be necessary to contact your local service agent to assist with stand installation.

12. ADJUSTABLE STAND (OPTIONAL) (CONT.)

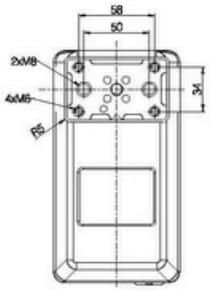


Version	Combination code	B (Built-in length) [mm]	S (Stroke length) [mm]	O (Outer profile length) [mm]
EU	DL6xxxxxx650560	560	650	498
BIFMA	DL6xxxxxx665518	518	665	456
High-speed XL	DL63xxxPx1100785	785	1100	723

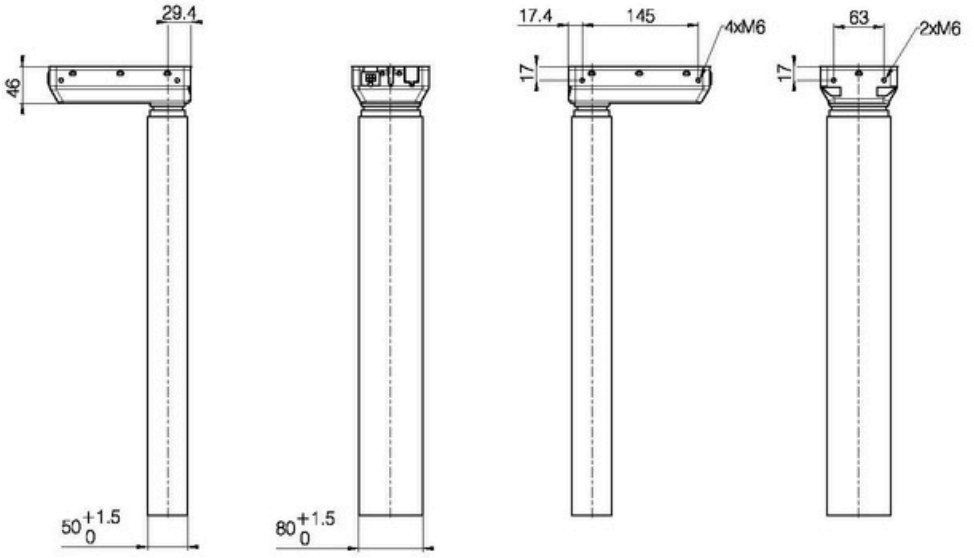
Built-in length, stroke length, and outer profile length



Motor housing



Bottom plate



Profile dimensions (mm)

13. WARRANTY AND REPLACEMENT PARTS

13.1 WARRANTY

Cytogard is protected by a 2 year warranty covering all materials, components and workmanship.

We will honour this warranty on advice to an AES Environmental branch or authorised distributor with full details of the cabinet, including date of purchase, serial number, and the nature of the fault.

Items which have a limited service life, such as fluorescent and ultraviolet lamps and cabinet filters, are not covered in respect of normal degradation over time. Servicing of the cabinet by other than AES Environmental technicians or authorised service agents may wholly or partially invalidate the warranty.

13.2 REPLACEMENT PARTS

Only genuine AES Environmental replacement parts should be used in this cabinet. The use of non-genuine parts may significantly compromise the protection afforded by the cabinet and may invalidate the warranty. Continuing 100% ex-factory availability of all replacement items is maintained. To obtain replacement parts, contact your nearest AES Environmental branch or distributor with the following information:

1. Full description of part(s).

2. Cabinet model.

3. Cabinet serial number.

13.2.2 Control Parts

Part Number		Description
252005D	-	Display Board (Front Panel)
252005P	-	Power Board (Side Panel)
252005C	-	Power to Display Board Cable
254417	-	Overlay Label (Touch Panel)
1687-0530/1	-	Laminar Fan
1687-0530/11	-	Exhaust Fan

13. WARRANTY AND REPLACEMENT PARTS (CONT.)

13.2.3 Consumable Parts

CGA 60 Parts List

DESCRIPTION	TOP EXHAUST 2030023	RIGHT HAND EXHAUST 2030021	LEFT HAND EXHAUST 2030022	QTY.
Carbon Filter	253345	253346	253347	1
Laminar HEPA Filter	1589-7182/702	1589-7182/702	1589-7182/702	1
Sump HEPA Filter	1589-7182/703	1589-7182/703	1589-7182/703	1
Fluro	258505	258505	258505	2
EBM Fan	248226	248226	248226	2
Booster Fan	1687-0530/1AFMC	1687-0530/1AFMC	1687-0530/1AFMC	1

CGA 90 Parts List

DESCRIPTION	TOP EXHAUST 2030023	RIGHT HAND EXHAUST 2030021	LEFT HAND EXHAUST 2030022	QTY.
Carbon Filter	253390	2040240	2040240	1
Laminar HEPA Filter	753329	753329	753329	1
Sump HEPA Filter	753380	753380	753380	1
Fluro	258507	258507	258507	3
Pre Filter Media	215090	215090	215090	1

CGA 120 Parts List

DESCRIPTION	TOP EXHAUST 2030203	RIGHT HAND EXHAUST 2030201	LEFT HAND EXHAUST 2030202	QTY.
Carbon Filter	253390	253390	253390	1
Laminar HEPA Filter	1589-7182/310	1589-7182/310	1589-7182/310	1
Sump HEPA Filter	753390	753390	753390	1
Fluro	1687-0540/4	1687-0540/4	1687-0540/4	3
Pre Filter Media	205001	205001	205001	1

CGA 180 Parts List

DESCRIPTION	TOP EXHAUST 2031203	RIGHT HAND EXHAUST 2031201	LEFT HAND EXHAUST 2031202	QTY.
Carbon Filter	253395	253395	253395	1
Laminar HEPA Filter	753329	753329	753329	2
Sump HEPA Filter	753381	753381	753381	2
Fluro	1687-0540/4	1687-0540/4	1687-0540/4	3
Pre Filter Media	215180	215180	215180	1

14. TROOBLESHOOT GUIDE

When contacting AES environmental, please have the cabinet model and serial no. (found on the side of the cabinet next to power connection)

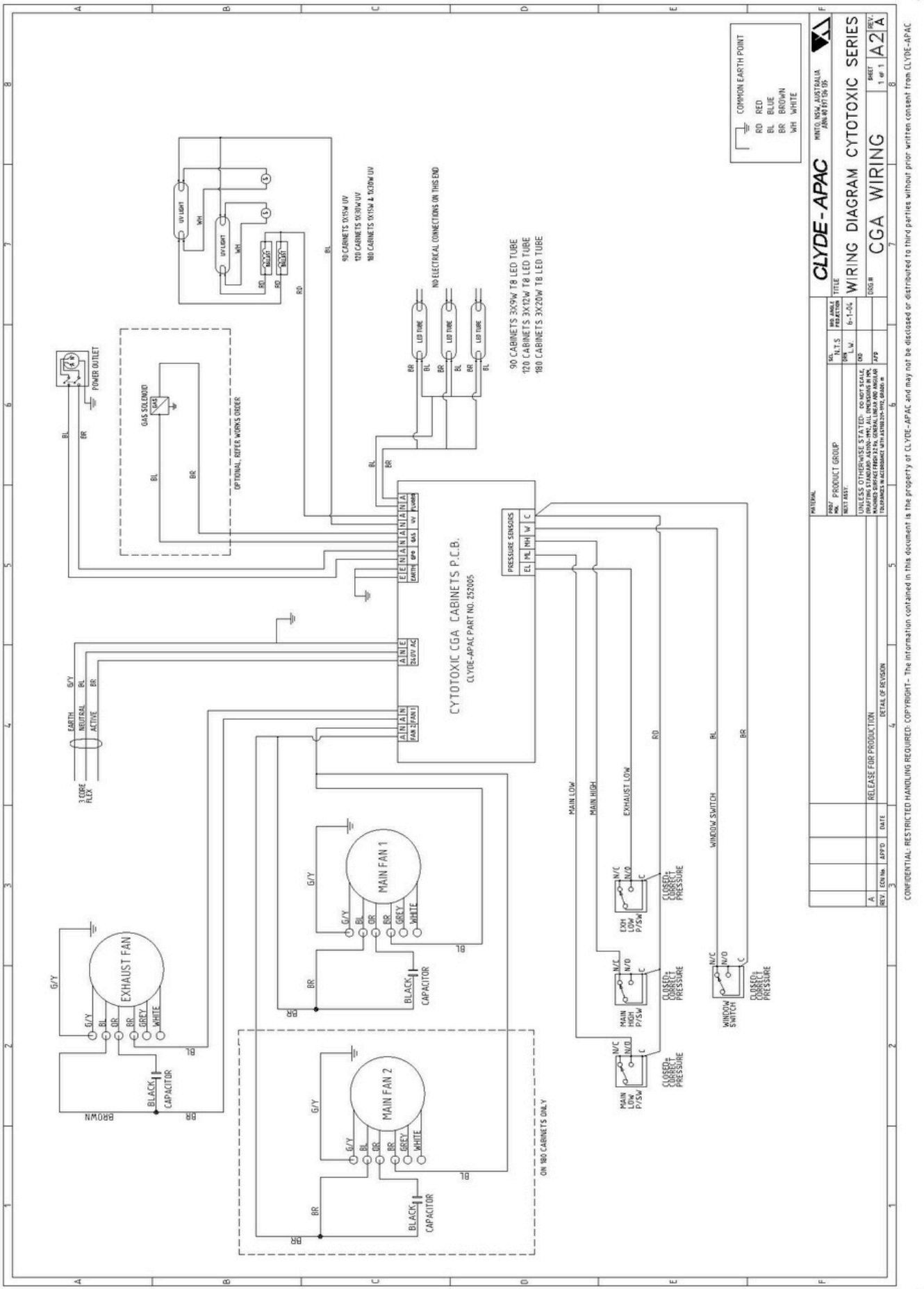
NO.	PROBLEM	POSSIBLE REASON	SOLUTION
P1	Unable to start BSC	Occurs when cabinet is not receiving power	1. Ensure cabinet is plugged into wall 2. Ensure wall plug is switched on 3. Try a different wall socket 4. See problem
P2	Warning message “Error Power Failure”	Occurs when the cabinet detects an issue with power	1. First try solution to problem one 2. Press ‘BOOST’ button for one second 3. See Problem 3
P3	VDP buttons inoperable	The button overlay or the switch underneath may be damaged	To check: • Ensure buttons are only pressed for 1 second • Visually inspect the overlay for damage • See if different buttons are pressing in • See if button press is firm • Excessive force is used to get button to work If buttons appear to have any of the above problems, contact AES
P4	BSC fail to shut down	Can happen for the following reasons: 1. ‘RUN’ button has not been pressed 2. DAO mode is on 3. Boost mode is on 4. Buttons appear to not work 5. Cabinet displays “Error Power Failure”	See cabinet LCD screen to see what mode it is running in or if an error message appears. 1. Press ‘RUN’ button for 1 second to turn cabinet off 2. See solution to problem 5 3. See solution to problem 6 4. See solution to problem 3 5. See solution to problem 2
P5	BSC in post-use overrun mode (DAO)	Occurs when ‘RUN’ button is pressed and held down	Press and hold the ‘RUN’ button while cabinet is on until the cabinet enters regular run mode
P6	BSC in boost mode	The pressure sensor measured a deviation in pressure or boost button was pressed by accident	Press ‘BOOST’ button for 1 second

14. TROOBLESHOOT GUIDE (CONT.)

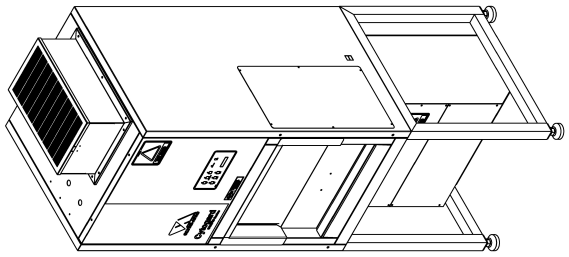
P7	Warning message on VDP: “Laminar High” “Laminar Low” “Exhaust Low”	The pressure sensor measured a deviation in pressure	1. Switch cabinet off by pressing ‘RUN’ button (NOTE: If cabinet in boost mode see P6) 2. Unplug cabinet from wall socket 3. Wait 30 seconds 4. Plug cabinet back into wall socket 5. Switch cabinet on and see if problem persists 6. If problem persists, repeat steps 1-5 but wait for 1 second in step 3 If steps 1-6 do not solve problem, contact AES
P8	BSC shuts down unexpectedly	Check for accidental operation of post-use overrun mode (DAO)	See solution to problem 5
P9	UV light does not turn on	Can occur for the following reasons: 1. UV cover is not on or positioned correctly 2. UV button not pressed correctly 3. Magnet is not present on cover	• Ensure cover is pushed back, sitting on the grille and, flush with viewing window • Press ‘UV’ button for 1 second • Inspect UV cover for a magnet, if missing contact AES If magnet is present and step 1 and 2 do not resolve the issue contact AES
P10	BSC work zone power inoperable	Can occur for the following reasons: • ‘POWER POINT’ button not on • Switch on power point itself is not on	1. Press ‘POWER POINT’ button for 1 second, a light above the button will turn on 2. Flick the switch on the GPO in the on position If the above steps do not resolve the issue, contact AES
P11	Warning message on VDP “Warning! Window Open”	Can occur for the following reasons: 1. Viewing window is open 2. Magnet is not present on window	1. Close the viewing window 2. Inspect the inside of the window frame for a magnet. If not present, contact AES If magnet is present and step 1 does not resolve the issue contact AES
P12	‘STABALISING’ takes longer than normal	Occurs when air resistance in the cabinet has increased	1. If cabinet goes into ‘BOOST’ mode, see P6 2. Switch cabinet off by pressing the ‘RUN’ button 3. Switch cabinet on and see if cabinet stabilises If the above steps do not resolve the issue, contact AES

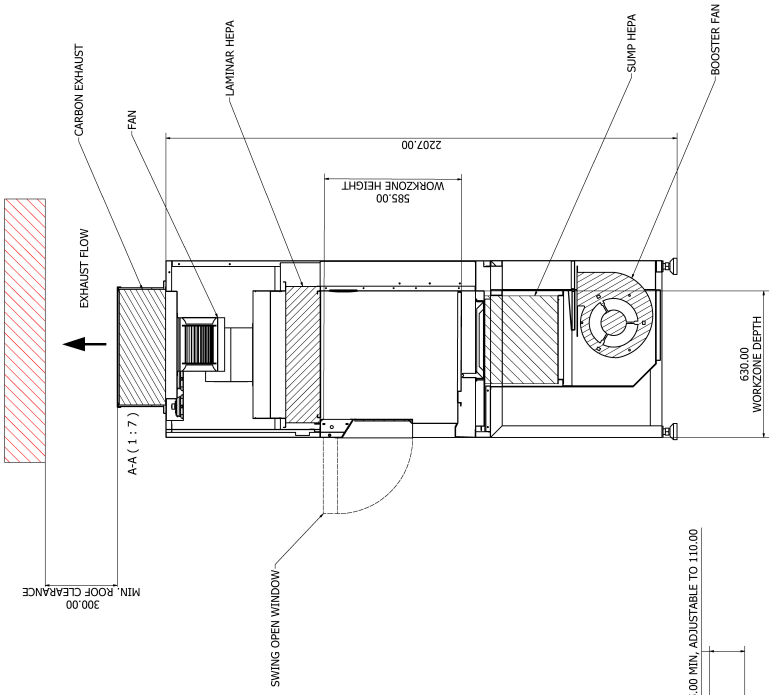
15. APPENDIX

WIRING DIAGRAM



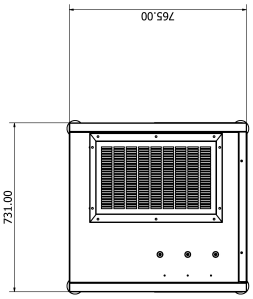
15. APPENDIX (CONT.) CGA 60 - GENERAL ARRANGEMENT DIAGRAM

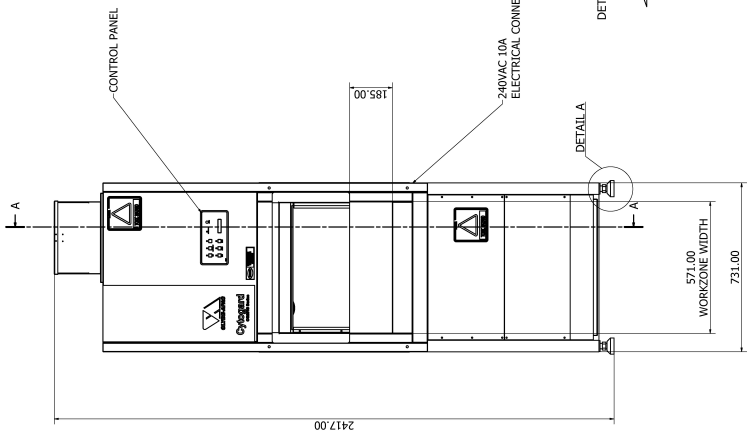




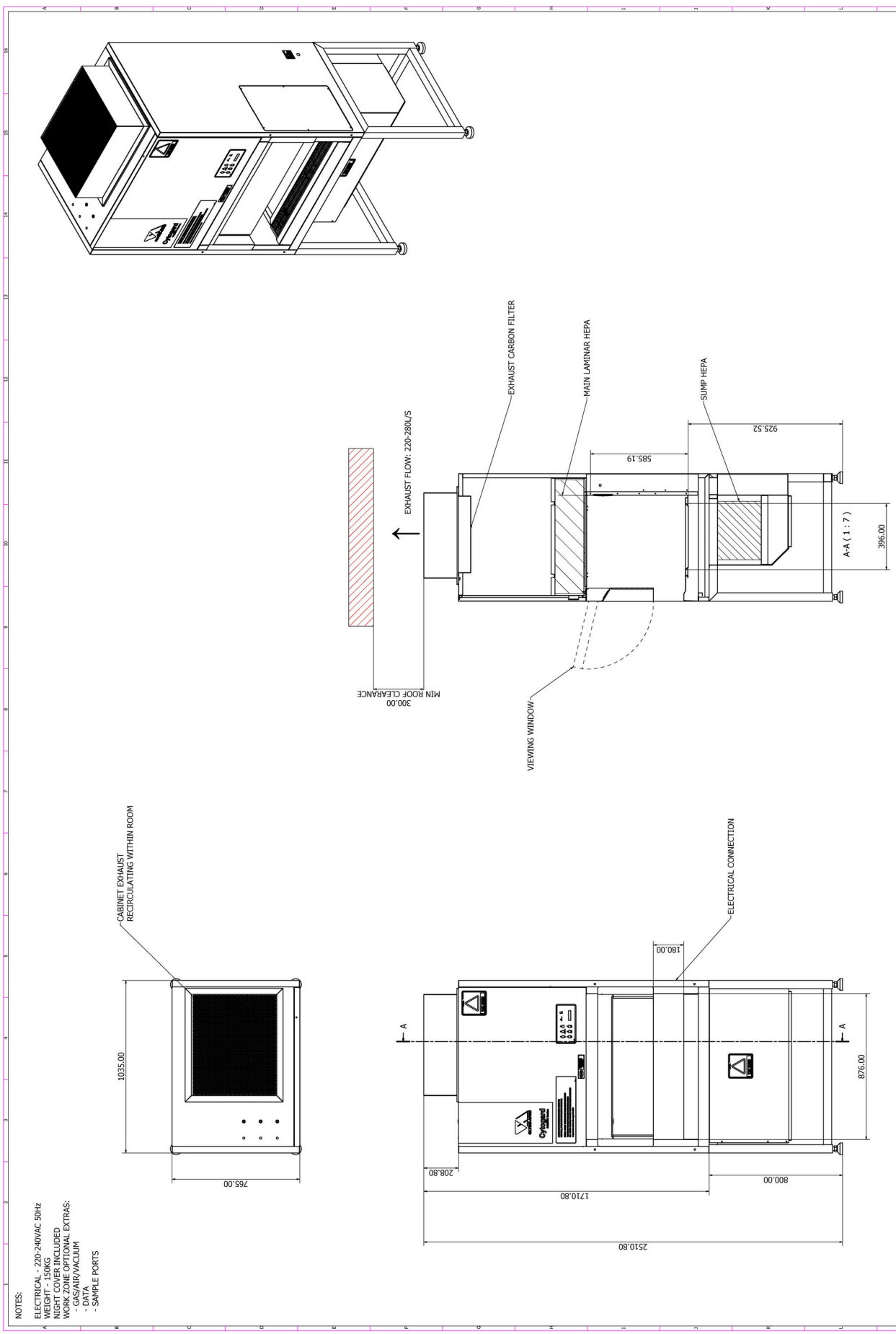
NOTES:

ELECTRICAL - 220-240VAC 50Hz 10A
WEIGHT - 150KG
NIGHT COVER INCLUDED
WORK ZONE OPTIONAL EXTRAS:
- GPO
- UV LIGHT
- GAS/AIR/VACUUM PORT
- DATA PORT
- SAMPLE PORT

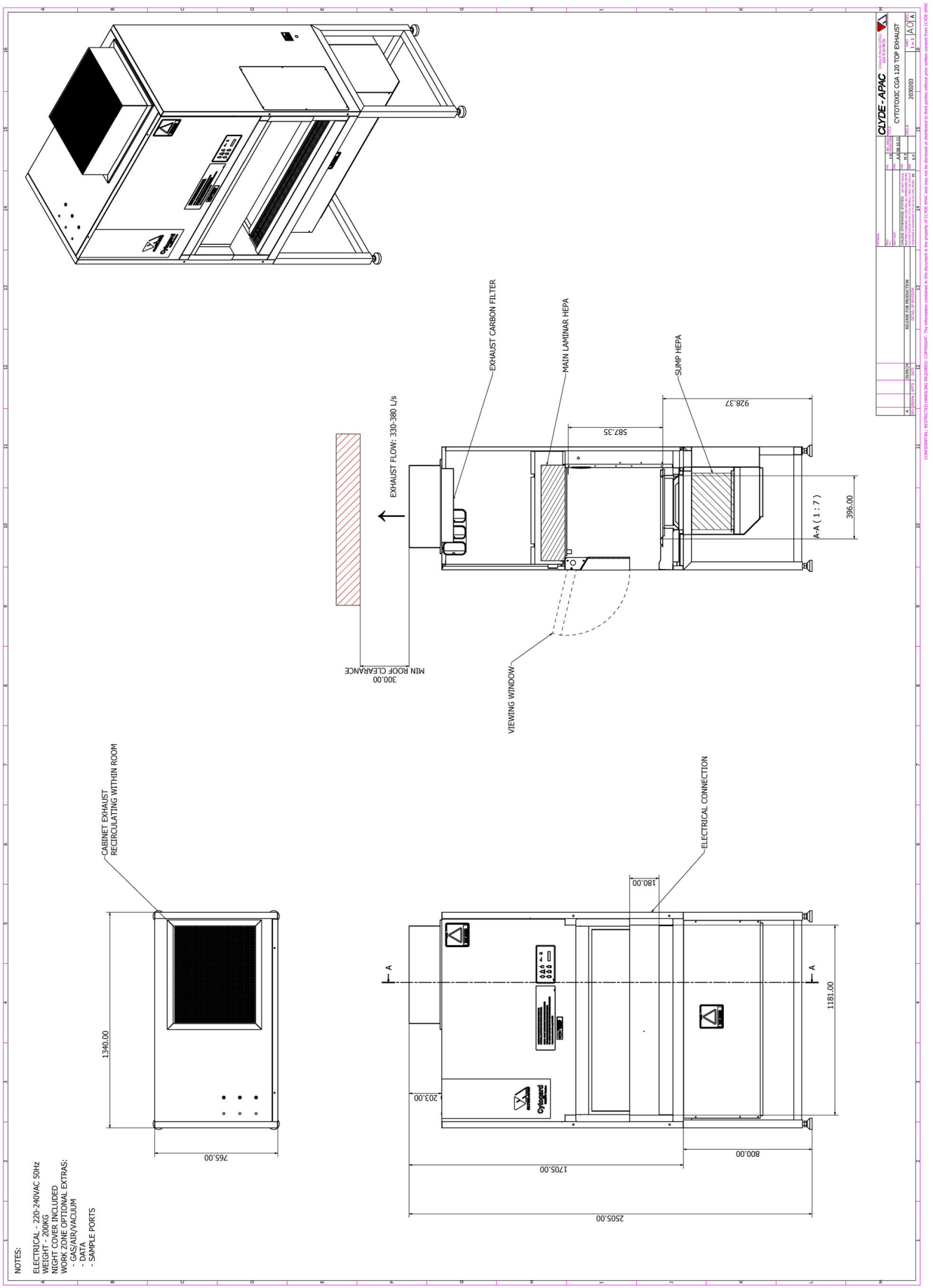




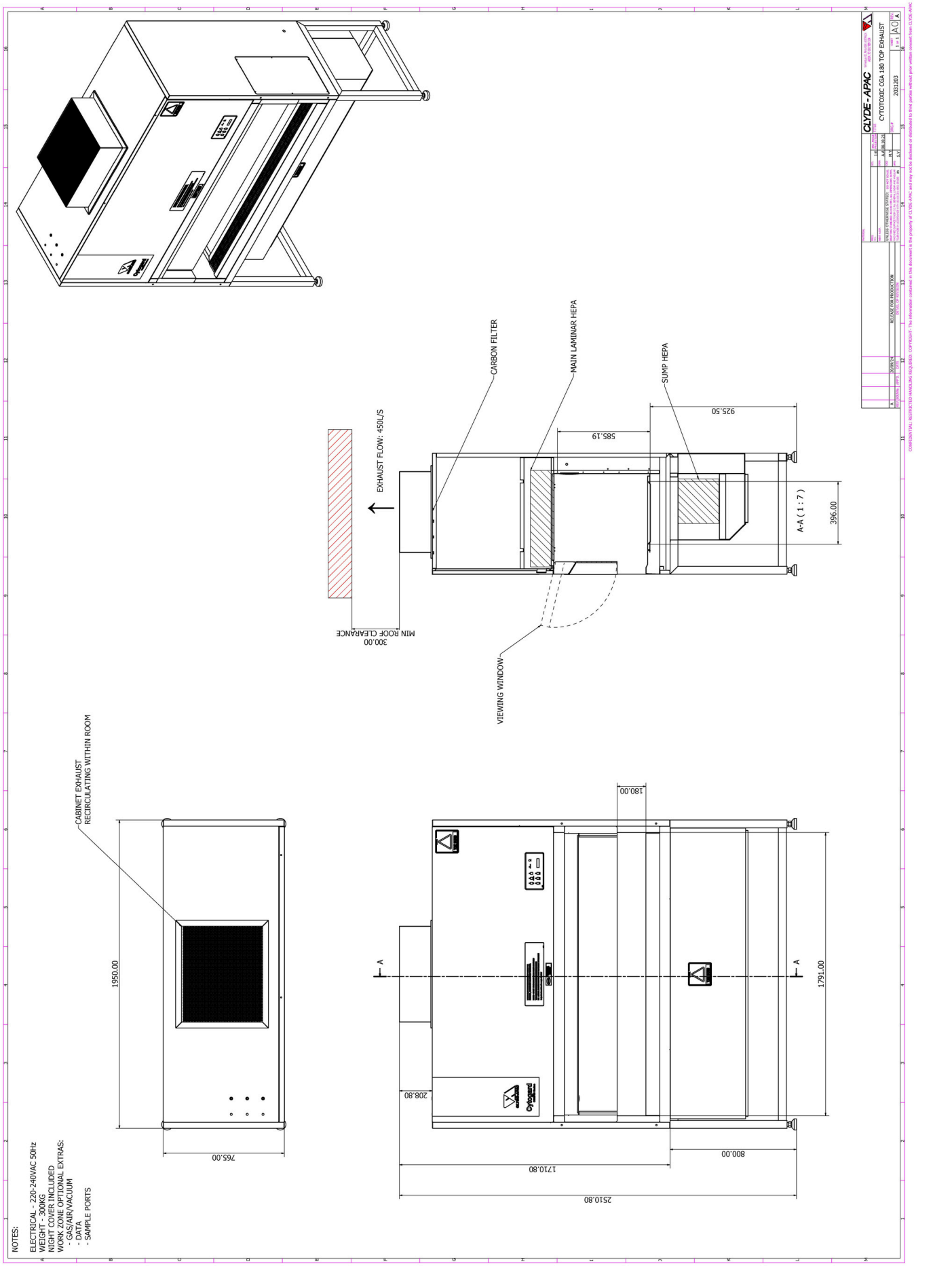
15. APPENDIX (CONT.) CGA 90 - GENERAL ARRANGEMENT DIAGRAM



15. APPENDIX (CONT.) CGA 120 - GENERAL ARRANGEMENT DIAGRAM



15. APPENDIX (CONT.) CGA 180 - GENERAL ARRANGEMENT DIAGRAM



Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

AMCCS Pty Ltd
trading as AES Environmental
9A Pembury Road
Minto NSW 2566

Holds Certificate Number: **FS 604110**

and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

Design and manufacture of air filtration equipment, including biological cabinets, cytotoxic cabinets, laminar flow cabinets, electrostatic filters, HEPA (high efficiency particulate arrestance) filters and related special products.

For and on behalf of BSI:

Michael Lam - Managing Director Assurance, APAC

Original Registration Date: 1993-06-21
Latest Revision Date: 2022-03-14

Effective Date: 2022-02-25
Expiry Date: 2025-02-28

...making excellence a habit.™

NATA
ACCREDITED LABORATORY

National Association of Testing Authorities, Australia
(ABN 59 004 379 748)

has accredited

AES Environmental
Vokes Air Filtration Pty Ltd

following demonstration of its technical competence to operate in accordance with

ISO/IEC 17025

This facility is accredited for the tests shown on the *Scope of Accreditation* issued by NATA

Jennifer Evans
Chief Executive Officer

Date of issue: 12 June 2020
Date of accreditation: 07 January 1975
Accreditation number: 1146
Site number: 1139

GET TO KNOW US

AES Environmental is a family owned, engineering and manufacturing business. The company comprises of major brands situated in the Air Filtration, Pollution Control and Life Sciences markets. Those brands and products are market-leading names within their fields ensuring that AES Environmental is capable of fulfilling its goal of providing the market with a single, integrated source for air filtration, clean room and pollution control needs.

Whatever business area you operate in, effective air filtration and pollution control is vital for your products, processes and people. All our products are manufactured in Australia and along with that, we offer installation and service Australia wide, that you can always rely on.

AES ENVIRONMENTAL

CLYDE-APAC EMAIL AIRHANDLING VOKES Filtration Technology

AES Environmental consists of an Australian head office and manufacturing location in Sydney, NSW, manufacturing and service operations in Perth, WA, Adelaide, S.A. and service operations in Melbourne, Vic. Internationally the business operates manufacturing facilities in Bangkok, Thailand and Newcastle Upon- Tyne, UK.

However large or small the need, with expertise in just about every area of industrial and process filtration and separation, we're ready to help to deliver the products and 'hands-on' support to help you build a better future.

GET IN TOUCH!

For more informaiton on replacement parts, cabinet servicing or testing, get in contact with us!

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aesenvironmental.com.au

bsi. ISO 9001 Quality Management