Air Science®

SafeSTORE DrugKEEPER™

Air Science SafeSTORE & Drugkeeper Storage Cabinets

USER OPERATION MANUAL

Air Science Manual Revision No.:
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pictured: SafeSTORE Model 64T

MADE IN AMERICA BY THE NEW AMERICA

ENERGY STAR PARTNER

CERTIFIED
ISO 9001:2015
ISO 14001:2015

Table of Contents

Safety Warnings

- This cabinet does not offer product and/or sample protection.
- Read all instructions before proceeding and observe the installation procedure and environmental/electrical requirements.
- Anyone working with, on or around this equipment should read this manual. Failure to read, understand and follow the instructions given in this documentation may result in damage to the unit, injury to operating personnel and/or poor equipment performance.
- Any internal adjustment, modification or maintenance to this equipment must be undertaken by qualified service personnel.
- The use of any hazardous material in the cabinet must be monitored by an industrial hygienist, safety officer or some other suitably qualified individual.
- Explosive or inflammable substances should never be used in the cabinet unless a qualified safety professional has evaluated the risk involved.
- If chemical, radiological or other non-microbiological hazards are being used in the cabinet, additional protective measures should be taken. Additionally, the operation should be monitored by a suitably trained individual.
- Before you proceed, you should thoroughly understand the installation procedures and take note of the environmental/electrical requirements of the cabinet.
- If the equipment is used in a manner not specified by this manual, the protection provided by this equipment may be impaired.
- Even with the benefits they provide, germicidal ultraviolet lamps pose imminent danger if used without taking the proper precautions. You MUST avoid exposure to direct or reflected germicidal ultravioletrays, since they cause painful eye irritation and reddening of the skin. In order to use our direct germicidalUVC products, you MUST wear personal protection equipment—gloves, a long sleeve shirt with no gapsbetween cuffs and gloves and an ultraviolet-blocking face shield to protect eyes and exposed skin. Under no circumstances should any direct germicidal UVC unit be permitted to operate with humans, plants or animals present in the operation area.

Symbols

	Warning of hazardous area or situation

Limitation of Liability

The disposal and/or emission of substances used in connection with this cabinet may be governed by various local regulations. Familiarization and compliance with any such regulations are the sole responsibility of the users of the cabinet. The liability of Air Science® is limited with respect to user compliance with such regulations.

European Directive on Waste Electrical and Electronic Equipment (WEEE)

At the end of your product / accessories life, it must not be discarded as domestic waste. Ref: EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment Directive (WEEE). Please contact your distributor / supplier for further information. For end users outside of the EU consult applicable regulations.

Warranty

Air Science products come with a Legacy Limited Lifetime Warranty™ and can be registered online by visiting our website: www.airscience.com/warranty-registration.

Read more about our Legacy Limited Lifetime Warranty and Damaged Freight Claim Information.

- Legacy Limited Lifetime Warranty: www.airscience.com/warranty.
- Damaged Freight Claim Information: www.airscience.com/damage-claims-policy.

Warranty Registration

Register your new Air Science product online by visiting: www.airscience.com/warranty-registration.

Customer Satisfaction Survey

Air Science values your business, so your satisfaction is important to us. To help serve you better, please take a few minutes to complete our Customer Satisfaction Survey.

I. Product Information

SafeSTORE™ and Drugkeeper™ storage cabinets are useful for storage of noxious and odorous hazardous chemicals, designed to minimize health and environmental risks from chemical vapors and residues, VOCs and other hazardous materials. The innovative Air Science Multiplex™ Filtration System protects the safety of personnel during use, maintenance and decontamination of the cabinets.

Visit our website for SafeSTORE specifications:
https://www.airscience.com/safestore-vented-chemical-storage-cabinets.

Visit our website for Drugkeeper specifications:
https://www.airscience.com/drugkeeper-storage-cabinets.

II. Unpacking Your Cabinet

This chapter aims to provide relevant information on how to handle the cabinet properly upon receipt. Failure to follow these instructions may damage the cabinet. We strongly advise you to read this chapter carefully before proceeding further.

2.1 Step-By-Step Procedure

1. Inspecting the Crate, Pallet, Boxes.
   - » Upon receipt of your new cabinet, inspect all cartons. If there is any visible damage to the exterior please refer to Damaged Freight Claim Information on our website.
2. Moving the Pallet.
   - » The pallet is designed to protect our cabinet from any foreseeable circumstances. However, excessive impact onto the boxes or pallet may also damage the cabinet. Prevent any direct impact or hitting to the pallet when moving.
   - » When lifting the pallet, always ensure that the floor jack or mechanical lift truck has fully entered under the pallet in order to achieve stability. Failure to do so will increase the risk of the pallet falling off the floor jack or mechanical lift truck during handling. Please use a suitable extension bar when necessary.
3. Opening the Boxes.
   - » If you did not receive one or more of the parts listed on the packing checklist, or if any of the items are damaged, please refer to the Damaged Freight Claim Information on our website.
4. Removing the Packaging Material.
   - » The cabinet is protected by Styrofoam, cardboard and/or shrink-wrap.
   - » If you find any damage during this stage of unpacking please refer to the Damaged Freight Claim Information on our website.
   - » We recommend leaving the cabinet secured with straps to the pallet until the cabinet is located in its approximate final position to facilitate ease and safety in handling.

Note: Choosing the best location for your cabinet in order to achieve optimum operating performance is determined by a number of factors. Please refer to the next chapter for some guidelines.

5. Moving the Cabinet.
   - » When lifting the pallet with the cabinet, always ensure that the floor jack or mechanical lift truck has fully entered under the pallet. This is to increase the stability of the cabinet and reduce the risk of the cabinet falling down. Please use a suitable extension bar when necessary. During the moving of the cabinet, ensure there is enough distance between the supports of the pallet and the ground. Dragging the pallet against the ground will damage the pallet and possibly your new cabinet.
   - » When removing cabinet from pallet or placing cabinet onto pallet, use at least two people.
6. Removing the Strapping.
   - » Remove the strapping by cutting it at a safe position to prevent any scratching the surface of your new cabinet.
   - » Do not discard the packaging material for your cabinet until you have checked all of the components, installed and tested the unit.
7. Lifting the Cabinet.
   - » Install the cabinet on the existing work surface or location desired.

Note:

- » When installing the cabinet onto an existing work surface, ensure that the structure can safely support the combined weight of the cabinet and any related equipment. Some modifications to the work surface may be necessary.
- » The work surface should be smooth, non-porous and resistant to the disinfectants and chemicals used in conjunction with the cabinet.

2.2 Packaging Contents

A copy of your factory test report and certificate of conformance can be obtained by contacting Air Science and providing the product model and serial numbers.

III. Installing Your Cabinet

3.1 Choosing a Suitable Location

Location impacts the nature and extent of external airflow disturbances, which may affect performance of the cabinet when it is exposed to these disturbances.

When installing the cabinet, it should be located as far away as possible from sources of airflow disturbance and in an orientation which optimally shields the airflow of the cabinet from all external airflow disturbances. Please note that the cabinet should not be placed close to another cabinet.

Please follow these guidelines when choosing a suitable location for your cabinet:

- The location must be far away from:
  - » Personnel traffic flows.
  - » Air vents (in and out).
  - » Doors and windows.
  - » Any other sources of disruptive air currents or air drafts.
- If drafts or other disruptive air currents exceed the face velocity of the filter, the potential exists for contaminated air to enter the work zone of the cabinet.
- A minimum distance of 50 cm (20 in) to the top of the ceiling is recommended for blower changing purposes.
- A clearance of 183 cm (6 ft) in front of the cabinet is strongly advised in order to maintain proper airflow.
- Please permit adequate space for cleaning behind the cabinet.

3.2 Environmental / Electrical Conditions

The equipment is designed to be safe for at least the following conditions:

- » Indoor use.
- » Altitude < 2,000 m (6,562 ft).
- » Temperature range 20°C to 30°C (68°F to 86°F). It is recommended that the temperature in the laboratory be maintained withing +/- 2 °C under all conditions.
- » Relative humidity 20% to 60%.
- » UL Installation Category II.
- » UL Pollution Degree 2.
- » Main supply voltage fluctuations not to exceed +/- 10% of the nominal voltage. It is recommended that the voltage fluctuation does not exceed +/- 2% of the nominal voltage at all times.
- » 120VAC, 60Hz, 10A or 230VAC, 50Hz, 5A.
- » Always ensure unit is connected to a reliable and properly grounded receptacle.

Power Cord:

» 1) For units intended to be operated at 120 volts (North America): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

» 2) For units intended to be operated at 230 volts: Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.

3.3 Installing Your Cabinet

1. Please refer to Unpacking Your Cabinet - page 5.
2. Inspect your cabinet carefully. Should you find any defect please refer to the our Legacy Warranty.
3. Peel off any protective masking that was left on the cabinet during manufacturing.
4. Wipe down the interior and exterior of the cabinet with water or a mild household detergent.
5. Connect cabinet to the main power supply and turn on the blower. Each cabinet requires its own dedicated 13A (230V) or 15A (115V) power outlet which should not be shared with other appliances.

WARNING! Do not move the cabinet without observing the following precautions:

- Observe the necessary precautions when relocating the cabinet, as it is heavy.
- Warning - Tipping Hazard. Pushing high up on the unit may cause system to tip over. Be careful when moving. Move with assistance only.

3.4 Installing Filters and Shelves

1. Main Filter Installation

a. Using the key supplied, unlock the locks of the blue cover door to access the filter compartment.

b. Unscrew the black knobs on the underside of the head of the unit (located inside the cabinet on either side of the prefilter) until the main filter just fits into the filter clamps.

c. Unwrap the main filter (carbon or HEPA) or filters, if a stacked configuration.

d. Slide the bottom filter in place first, ensuring that the side with the foam rubber gasket is facing down. Push it all the way in until it stops. Use caution not to tear gasket.

e. Unwrap the optional stacked filter.

f. Slide the carbon filter in place on top of the bottom filter, ensuring that the side with the foam rubber gasket is facing down. Push it all the way in until it stops.

g. Retighten the black knobs on the underside of the head of the unit until the filter foam rubber gaskets are about 50% compressed.

h. Note filter details on the Filter Maintenance sticker for easy reference and place sticker in a convenient location on outside of unit. You may also write the install date on the filter itself. (Actual filter not shown.)

i. Replace the blue cover door to the filter compartment. Turn locking key until dots align indicating lock in engaged.

PLEASE KEEP THIS KEY IN A SAFE PLACE.

2. Pre-filter Installation

To add the pre-filter located inside the cabinet on the underside of the head unit:

a. Unpack pre-filter from installation pack.
b. Unclip the white pre-filter retaining tray.
c. Place the pre-filter on the retaining tray, ensuring the whole tray is covered.
d. Replace the retaining tray and re-fasten the clips.

To add the optional pre-filter to the front:

a. Remove the blue pre-filter retaining tray on the outside of the cabinet.
b. Place the pre-filter on the retaining tray, ensuring the whole tray is covered.
c. Replace the retaining tray and re-fasten the clips.

3. Install the shelves

a. Depending on unit these may be metal or polypropylene.

3.5 Performance Validation / Certification

After installation and prior to use, cabinet performance must be validated and certified to factory standards. The following tests should be performed:

Airflow Velocity

The testing methods and equipment required are specified on the test report. It is recommended that these tests be performed only by a qualified technician who is familiar with the methods and procedures for certifying these types of cabinets.

3.6 Importance of Performance Validation / Certification

An airflow velocity value that falls below the value specified inside the test report will not provide adequate operator protection.

3.7 Disclaimer

The performance of the cabinet, while rigorously evaluated at the factory, cannot be guaranteed after transit and installation. Therefore on-site testing is always recommended.

IV. Operating Your Cabinet

4.1 Flow Control System

Basic Control Panel (Standard)

The **basic control panel** is standard and includes an On/Off switch and Filter Blockage alarm. If the indicator lamp starts to flash intermittently or stays illuminated, the filters are beginning to become blocked and airflow may be reduced to unsafe levels. Check airflow and/or replace filters as needed. Alarm may be reset and tested.

FSA / Autocal Control Panel (Optional)

The **optional FSA/Autocal controller** displays the airflow and offers limited detection of low concentrations of hydrocarbon, some gases and organic acids. Audio and visual alarms alert users to filter saturation and if the airflow reaches preset thresholds. An Hour Counter with preset alarm intervals for pre-filter and main filter change out is also included.

Calibration Procedure

CUSTOMER:	Triangle Electronic Controls Ltd	**PRODUCT:**	Autocal Led Airflow Alarm
DATE:	03/05/12	**ISSUE:**	2
PROCEDURE NUMBER:	CL00037	**APPROVED:**	DJP

1. Power up unit.
2. To set nominal run point, press and hold the mute key for 4 seconds; when an audio beep is observed, release the mute switch.
3. Using a calibrated anemometer, set the airflow to the desired velocity.
4. Using the up and down arrows, set the display to read that reading.
5. Press the mute switch once to store calibration point.
6. To set an alarm point, press and hold the mute switch then press and hold the up arrow key for 4 seconds; after audio beep release both switches.
7. Set the display using the up and down arrows to the desired alarm point, in 0.05 m/s increments.
8. Press the mute switch once to store the alarm point.
9. To display in FPM remove LK1, to display in m/s fit LK1.

CONNECTIONS	PL2
PL2 ANEMOMETER	PIN 1 RED
PL1 POWER	PIN 2 BLUE
PL3 VOLTFREE CONTACT	PIN 3 YELLOW
PL3 PINS 1 & 2 N/O	
CLOSED ON ALARM	

FSA Control Panel (Optional)

The **optional FSA controller** offers limited detection of low concentrations of hydrocarbon, some gases and organic acids. Audio and visual alarms alert users if filter saturation reaches preset thresholds. An Hour Counter with preset alarm intervals for pre-filter and main filter change out and Low Airflow alarm are also included.

4.2 Cabinet Operating Procedure

- To start the unit, switch the power switch on. The fan will automatically operate at full speed, ready for normal operation of the cabinet.
- The doors should remain in the closed position whenever practical and only opened for loading and unloading of chemicals.
- Always keep a spare set of filters available.
- High concentrations of fumes entering the main filter may temporarily reduce the filtration efficiency. For this reason, any major spillage within the cabinet should be cleared up immediately, preferably using spillage absorption granules rather than tissue paper, which may aggravate the evaporation of toxic fumes from the spillage area. There is a spillage tray located in the bottom of each compartment under the lower shelf.
- Following a major spillage, the main filters must be changed, as the heat of wetting may reduce filter efficiency. After stabilization, the old filters can normally be reused, provided saturation has not been reached.
- The electrical equipment in the cabinet, including light fittings and control equipment, are in the head unit on the clean side of the filter.

WARNING!

» The equipment should not be used in a flammable room atmosphere.

» The cabinet should only be operated with the correct filter installed for the application. Refer to Filter Information - page 21. The cabinet must not be used for laboratory work in which chemicals of different types are used that do not match the filter type; or that the primary chemicals or their by-products are not known. The ductless fume cabinet should not be used for different chemical processes where chemicals from the different processes could react in the filter.

» Do not use a gas flame (Bunsen burner) whenever possible as it interferes with airflow.

» Do not change the cabinet original blower speed unless the change is required by a decrease in measured air velocity. Adjustment should be made only by a qualified technician. Do not operate the cabinet if fan fails to run.

» Minimize arm movement. Move arms in and out of the cabinet slowly to avoid disrupting cabinet airflow.

» Use absorbent pads on the work surface where appropriate to minimize splatter and aerosol generation in case of spillage.

» Keep lids/covers on all containers, dishes or sample plates.

» It is recommended that the cabinet be operated continuously whenever possible to ensure air cleanliness.

V. Maintaining Your Cabinet

5.1 General

The purpose of the monitoring program is to ensure consistent reliability from the system. This is achieved by checking the following:

» If the pre-filters become blocked, the velocity of the cabinet will begin to fall and will eventually cause the filter blockage alarm to illuminate.

» Manual checking of the main filters by the use of a Gastec™ or Draeger™ test kit will confirm the condition of the filters.

5.2 Manual Monitoring

Manual monitoring of the cabinet should be carried out at least once per year, as this will ensure the monitoring systems are all within calibration and performing correctly.

Airflow Measurements
The inflow velocity of the cabinet should be checked at the pre-filter intake using an anemometer such as a hot wire, vane anemometer or propeller type. Depending on the size of the cabinet, a series of readings are to be taken at the front opening; these are to be recorded on a service sheet or system log sheet.

Air Flows
Check and record the inflow air velocity at the pre-filter intake cabinet air intake at the front of the cabinet aperture as follows: Using a calibrated hot wire or vane anemometer or similar approved airflow meter, take a minimum of 3 readings across the opening as shown below. The readings should be recorded on a service sheet or system log sheet.

Manual Filter Testing
The condition of the filter is to be checked using a Gastec or Draeger test kit. Boiling off a suitable chemical normally used in the cabinet or a controlled release should challenge the filter. Examples can include alcohols, toluene and trichloroethylene.

For testing acid filters (acid adsorbing) or multi combination layered filters incorporating an acid layer, use sulphur dioxide gas (SO2) at 2 bubbles per second through water.

The readings should be below your Country's Occupational Exposure Limit The results are to be recorded on a service sheet or system log sheet.

If a significant amount of chemical is noted at the exhaust of the system, the main filters should be changed.

Regular preventive maintenance on the cabinet will reduce the possibility of hazard to the operator and ensure reliable performance of the cabinet.

WARNING! Before attempting inspection and repairs to the cabinet please sure that the power to the system has been removed and that the power lead has been removed. As cabinets are often used to contain and protect users from harmful or hazardous substances, before commencing this schedule, it is important to ensure that the cabinet is safe to work on.

5.3 Filter Condition Monitor (Fitted as an Option)

Under normal operating conditions (if option fitted) the display will show a green filter to indicate it is safe. If the filter display is red, the filter should be checked as follows:

- Select a suitable test chemical (examples include alcohols, toluene, trichloroethylene or any suitable chemical in routine use in the cabinet providing it is well adsorbed and not dangerously toxic) and a matching Gastec or Draeger test kit.
- Place 6 ml of the chemical into a beaker on a hot plate inside the cabinet. Set the hot plate to boil off the chemical over a 2 minute period. This should give a concentration of about 100 - 200 PPM (parts per million) challenge to the filter.
- If testing acid filters (acid adsorbing) or multi combination layered filters incorporating an adsorbing layer, use sulphur dioxide gas (SO_2) at 2 bubbles per second released through water to challenge the filter.
- Using the test kit, take a sample reading at the outlet of the cabinet. Follow the instructions supplied with the tubes; i.e. the number of strokes for each type of tube.
- If a significant level of chemical is recorded at the outlet, the filter must be changed. It is also worth checking the gasket condition for any damage that may result in a bypass.

5.4 Calibration Instructions

Testing the Filter Blockage Alarm

- Ensure the fitted pre-filters are new. Switch on the cabinet; the red/amber neon should not be illuminated.
- Switch the unit off. Block the pre-filter using paper or cardboard to permit airflow of <0.3 m/sec or 60 fpm.
- Switch the unit on. The red/amber neon should illuminate. If not, the calibration should be reset.

Calibration

The filter blockage alarm operates using a differential pressure switch to detect a “high vacuum” situation when the pre-filter is blocked or blocking up. The pressure switch is calibrated and tested prior to leaving our factory and under normal circumstances will not require any adjustment.

- With the cabinet running and the pre-filter blocked as described above, locate the grey pressure switch through the hole in the right-hand sidewall. Adjustment is made by turning the small screw in the end of the switch.
- Adjust the screw to make the alarm show. You may have to repeat these steps to ensure an accurate setting has been achieved.
- Remove the blockage and restart the machine. The red/amber neon should not be illuminated.

5.5 Maintenance Schedule

Please follow the suggested maintenance schedule in order to maintain your Air Science cabinet at its optimum performance.

Monthly

1. Using a damp cloth, clean the exterior surfaces of the cabinet, particularly the front and top of the cabinet, to remove any accumulated dust. When needed use soap or other household mild detergent.

Quarterly

1. Replace pre-filters.
2. All monthly activities.

Semiannually

1. Replace HEPA/ULPA filters.
2. All quarterly activities.

Annually

1. Replace all main carbon filters.
2. All semiannual activities.

5.6 User Monthly Maintenance Schedule

Model:	**Year:**
Serial Number:	**Responsible Person:**

Month	Clean Exterior Surface	Notes	By Who
Jan			
Feb			
Mar			
Apr			
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			

5.7 Fault Finding

WARNING! Before attempting any inspection or replacement of electrical components, always isolate the cabinet from the main power supply and remove the power supply cable.

Fault	Check
Filter Blockage Alarm	• Check airflow at aperture • Check pre-filter is not blocked • Check fan is running • Recalibrate
Filter Saturated (Optional)	• Check filter condition with Gastec or Draeger test kit • Check filter seal • Check filter is correct for application • Check date on filter • Replace all filters
Fan Not Working	• Check inlet fuse • Check any loose wires to terminal blocks • Bypass speed controller; if fan works, replace speed controller • Replace fan capacitor • Replace fan

5.8 Replacement Parts List

Replacement Parts List

Part Description	Part Number
Main Power Fuse, 5A	0218005.HXP
Main On/Off Switch	WRG32F2FBGLN
Power Inlet	719W-00/04
Power Cord (specify plug type)	PCORD230
Pressure Switch for Low Airflow Indication	6753-AEJA-U0000
Fan Motor--115v, AC Version	R2E160-115V
Fan Motor--230v, AC Version	R2E160-230V
Fan Capacitor	EN60252-1
Fan Speed Controller	706-123S

VI. Filter Information

For detailed information on filtration types and how to customize your application, visit the Filtration Guide on our website: www.airscience.com/filtration-guide.

Filter Types
Air Science offers over 12 types of activated carbon and particulate filter media. These formulas can be customized or layered into nearly limitless combinations to best suit your specific application. HEPA filters are available for applications involving particulates and can be combined together with any of our activated carbon filters.

7.1 Filter Descriptions

Formula	Description
GP Plus!	The most widely used filter in the range, primarily for solvent, organic and alcohol removal.
ACI Plus!	Neutralizes volatile inorganic acid vapors.
ACR	Iodine and methyl iodide vapors as well as low level radioactive iodine.
ACM	Mercury vapor.
AMM	Removes vapors from dilute ammonia solutions; removes low molecular weight amines.
SUL	Designed to remove hydrogen sulphide and low molecular weight mercaptans.
CYN	Removal of hydrogen cyanide. Many cyanide compounds will evolve HCN gas if acidified, so this filter is normally specified if working with any cyanide compound.
FOR	Designed to oxidize formaldehyde and glutaraldehyde fumes; widely used in hospital pathology laboratories.
EDU	Designed to handle chemicals normally used in a university level chemistry curriculum.
MIL	Designed for military applications involving war gasses.
HEPA/UPLA	Powders, particulates and biologicals.
EFT	Universal filtration.

VIII. Product Specifications

For additional product information, drawings, dimensions and specifications:

SafeSTORE

Drugkeeper

120 6th Street \ Fort Myers, FL 33907
T. 239-489-0024 \ **Toll Free.** 800-306-0656 \ **F.** 800-306-0677
www.airscience.com

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