



Airscrew Military Shelter Systems

Military Shelter Systems Information

Airscrew is a recognized expert in the design and manufacture of Environmental Control Systems for integration into aerospace and military platforms, which enable personnel and equipment to operate effectively in the most hostile environments. Airscrew is dedicated to further consolidation of its

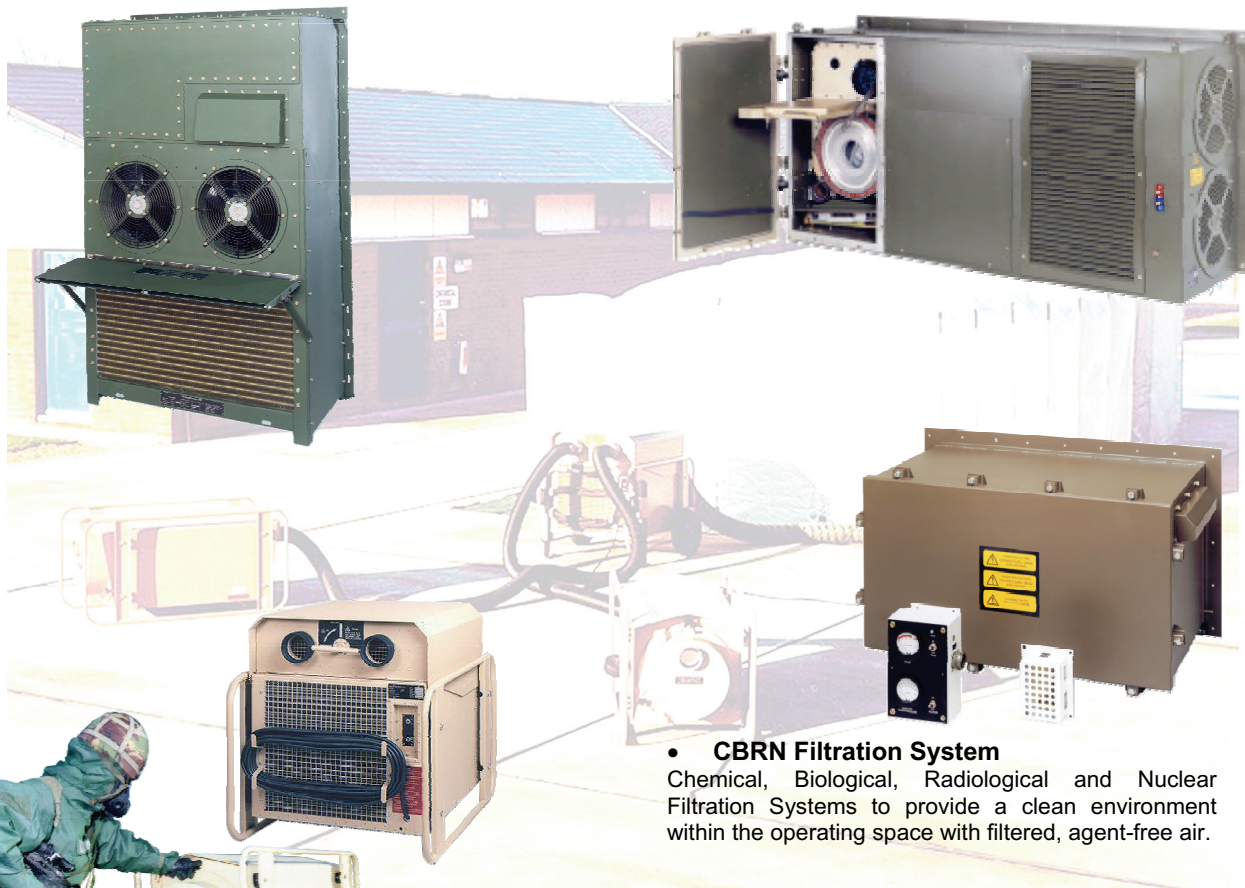
role as a major supplier of specialist equipment on a worldwide basis, continuing to provide professional service and support to its customers, basing its designs on sound engineering principles encapsulating the latest relevant technological developments.

- **Air-Conditioning Systems**

Air-conditioning units designed to maintain stabilized control of the shelter's internal environment for the operators and installed electronic equipment.

- **Combined AC and CBRN Protection**

To provide Air-Conditioning and Over Pressure Collective Protection in a single package.



- **CBRN Filtration System**

Chemical, Biological, Radiological and Nuclear Filtration Systems to provide a clean environment within the operating space with filtered, agent-free air.

- **Portable Systems**

Air-Conditioning and CBRN Filtration Systems for use with Portable Shelter Systems.



Specifications subject to change without notice



AC150 Shelter Air Conditioning System

The Airscrew Shelter AC150 Air Conditioning System was especially developed to provide environmental control within a wide range of military shelter applications.

Air cooling is provided by means of a vapour cycle refrigeration system, which incorporates a full bypass feature allowing the compressor to continue running when the unit switches out of cooling mode, thus eliminating repeated compressor starting surges. An integral, two-speed evaporator fan allows lower noise operation at moderate load conditions. Air heating is generated by means of electrical heating elements. Temperature control is achieved via a two-stage thermostat for cooling and heating modes.

This system has been designed for external mounting against an aperture in the shelter wall. It is specifically designed to interface with ceiling-mounted discharge ducting to ensure effective air distribution throughout the shelter. When used in conjunction with a CBRN Filtration System, a solenoid-actuated damper is operated to seal the fresh air inlet, preventing the ingress of contaminated air into the shelter.

The AC150 Shelter Air Conditioning System is ruggedly constructed to meet a wide range of climatic conditions in the most demanding environments. It is fully qualified for transportation by military cross-country vehicles and suitable for air transportation.

Features

- Advanced vapour cycle refrigeration system employing ozone benign refrigerant R134a enables operation in cooling mode from -40°C to $+55^{\circ}\text{C}$
- Incorporates high levels of EMC/EMP performance.
- Fully compatible with Airscrew Shelter CBRN Filtration System.

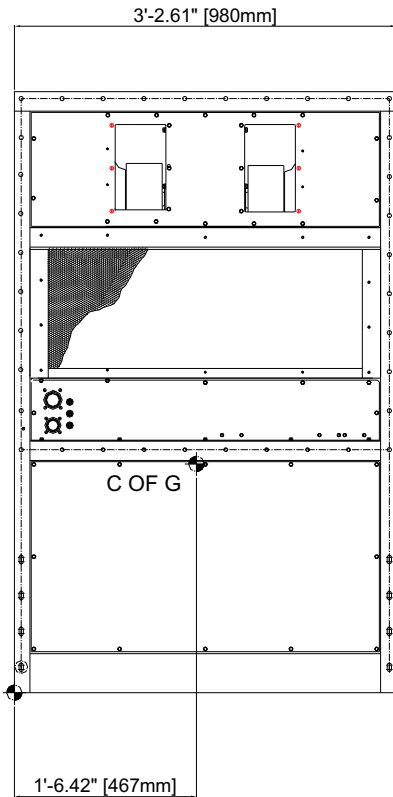


Applications

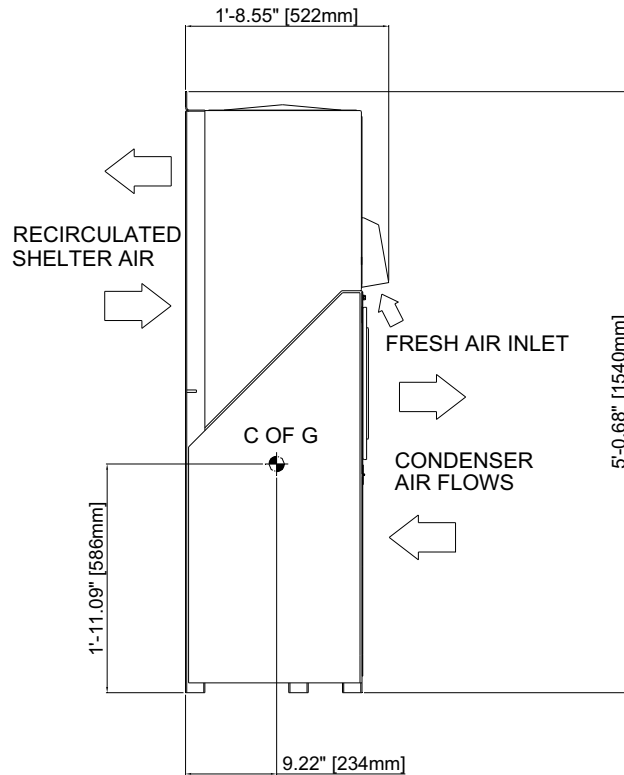
The AC150 Shelter Air Conditioning System is suitable for a wide range of military shelter applications including C^4 command posts and communication centres, radar cabins, mobile repair facilities and UAV control shelters. Examples can be found operating with in-service equipment for the UK Ministry of Defence and other customers worldwide.



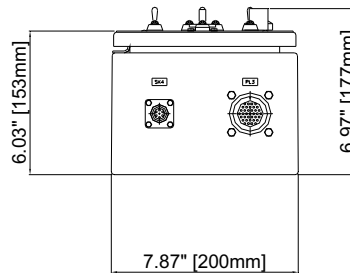
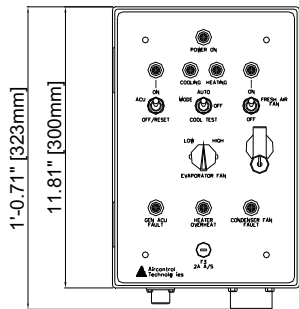
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INTERNAL VIEW



SIDE VIEW



REMOTE CONTROL BOX

Specifications

Power Supply: 400v, 50Hz, 3ph
 Cooling Capacity: 9kW @ 55°C (30°C Internal)
 Heating Capacity: 6kW
 Fresh Airflow: 0.03m³/s

Power Consumption: Cooling Mode: 7.65kW
 Ambient Operating Range: -40°C to+55°C
 Weight: 285Kg

Specifications subject to change without notice



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Shelter CBRN Filtration System

The Airscrew Shelter CBRN Filtration System was especially developed to provide Collective Protection (COLPRO) within a military shelter whilst operating under Chemical, Biological, Radiological and Nuclear (CBRN) conditions.

External air is drawn into the CBRN unit and passes through three stages of filtration before being introduced into the shelter. The first two stages of filtration provide coarse and fine particulate filtration. The third and final level of filtration involves an activated charcoal anti-vapour stage. Peacetime filters can be supplied for cost effective training purposes and to preserve war stocks of CBRN filters.

The filtered air is then used to generate a positive internal overpressure within the shelter, preventing

the ingress of harmful agents through any small leakages, if present. A flow control device is provided to regulate overpressure when the shelter is deployed with airlocks. A Pressure Relief Valve (PRV) and a remote Combined Control and Indicating Unit are also included as part of this system. Crew members are thus able to operate efficiently inside the shelter without the hindrance of wearing respirators and protective clothing under CBRN conditions.

The Shelter CBRN Filtration System is ruggedly constructed to meet a wide range of climatic conditions in the most demanding environments. It is fully qualified for transportation by military cross-country vehicles and suitable for air transportation.

Features

- Can be mounted horizontally or vertically.
- Employs the standard British Army No.1 Mk.4 Composite NBC Filter or Aircontrol Technologies AC161 Composite NBC Filter.
- Incorporates high levels of EMC/EMP performance.
- Fully compatible with Airscrew Shelter Air Conditioning Systems.

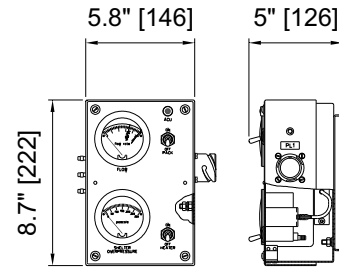
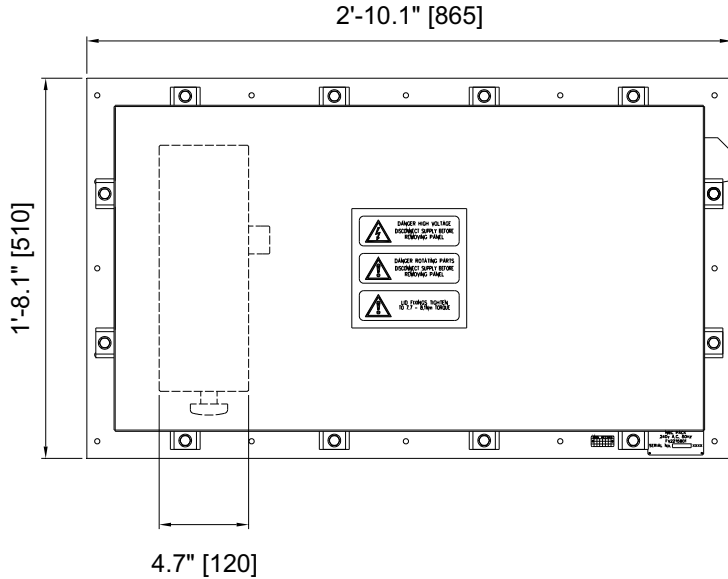


Applications

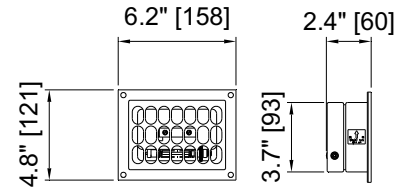
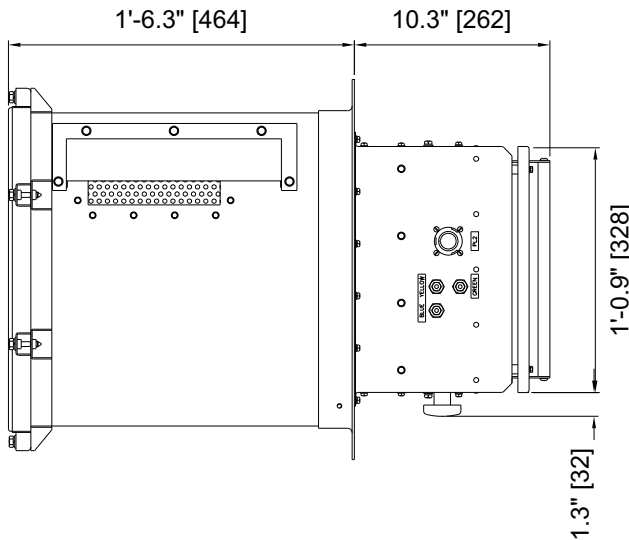
The Shelter CBRN filtration System is suitable for a wide range of military shelter applications including C⁴ command posts and communication centres, radar cabins, mobile repair facilities and UAV control shelters. Examples can be found operating with in-service equipment for the UK Ministry of Defence and other customers worldwide.



CBRN FILTRATION PACK



COMBINED CONTROL and INDICATING UNIT



PRESSURE RELIEF VALVE

Specification

Power Supply: 230v, 50Hz, 1ph or 28v DC

Airflow: 170m³/h

Design Overpressure: 125 to 250Pa

Heating Capacity: 1kW

Power Consumption: Heater on, 1.85kW

Ambient Operating Range: -33°C to+49°C

Weight: 83Kg

(Not including CBRN Composite Filter, 16.5Kg)



AC160 Combined Shelter CBRN Filtration and Air Conditioning System

The Aircrew AC160 Combined Shelter CBRN Filtration and Air Conditioning System was especially developed to provide Collective Protection (COLPRO) and environmental control within a wide range of military shelter applications whilst operating under Chemical Biological Radiological and Nuclear (CBRN) conditions.

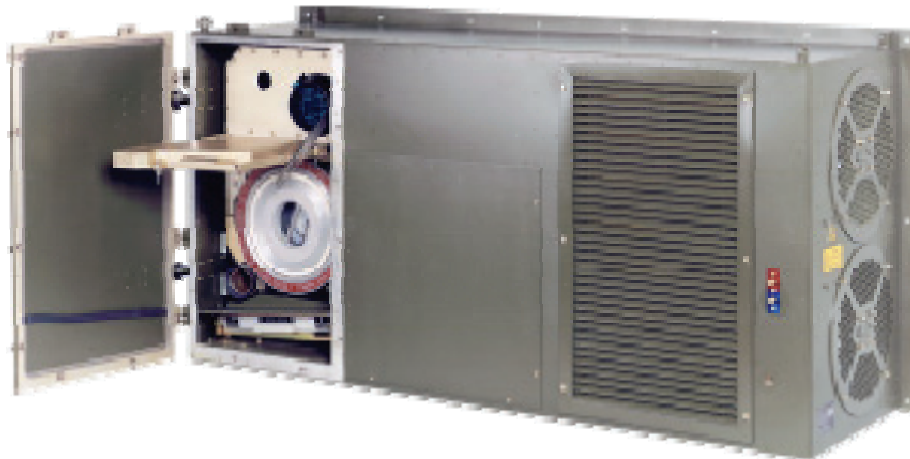
External air is drawn into the CBRN section of the AC160 and passes through two levels of particulate filtration, followed by an activated charcoal anti-vapour stage. The filtered air is then conveyed into the air conditioning section of the AC160. Peacetime filters can also be provided for cost effective training purposes and to preserve war stocks of CBRN filters.

Air cooling is provided by means of a vapour cycle refrigeration system, which incorporates a full bypass feature allowing the compressor to continue running when the unit switches out of cooling mode,

thus eliminating repeated compressor starting surges. An integral, two-speed evaporator fan allows lower noise operation at moderate load conditions. Air heating is generated by means of electrical heating elements. Temperature control is achieved via a two-stage thermostat for cooling and heating modes.

This system has been designed for external mounting against an aperture in the shelter wall. It is specifically designed to interface with ceiling-mounted discharge ducting to ensure effective air distribution throughout the shelter.

The AC160 Combined Shelter CBRN Filtration and Air Conditioning System is ruggedly constructed to meet a wide range of climatic conditions in the most demanding environments. It is fully qualified for transportation by military cross-country vehicles and suitable for air transportation.



Features

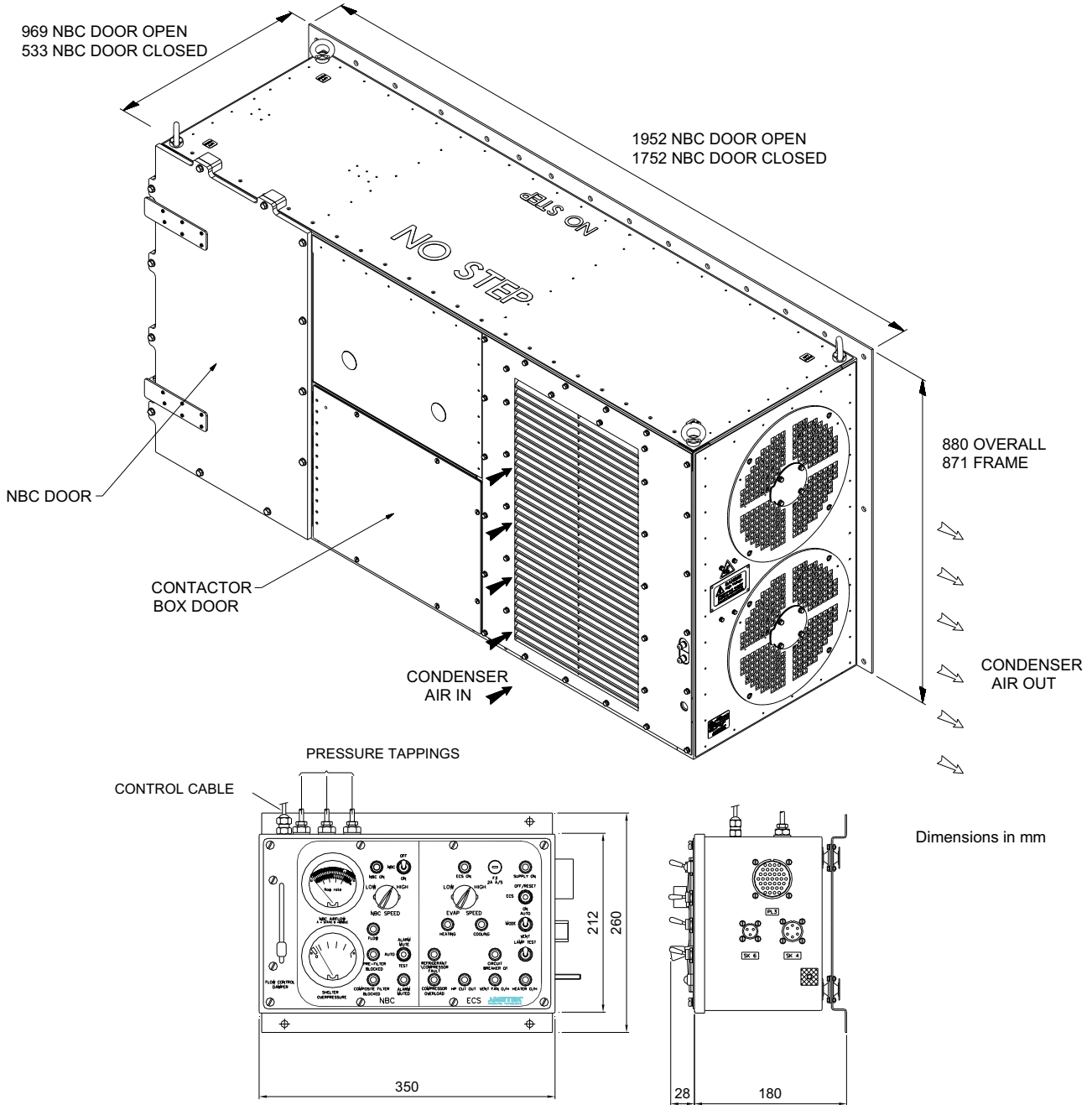
- Employs the standard British Army No. 1 Composite NBC Filter or Aircontrol Technologies AC161 Composite NBC Filter.
- Advanced vapour cycle refrigeration system employing ozone benign refrigerant R134a enables operation in cooling mode from -40°C to +55°C
- Incorporates high levels of EMC/EMP performance.

Applications

The AC160 Combined Shelter CBRN Filtration and Air Conditioning System is suitable for a wide range of military shelter applications including mobile chemical/biological detection vehicles, command posts, communication centres, radar cabins, mobile repair facilities and UAV control shelters. Examples can be found operating with in-service equipment for the UK Ministry of Defence.



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Specification

Power Supply: 400v, 50Hz, 3ph

Cooling Capacity: 7.2kW @ 55°C (30°C Internal)

Heating Capacity: 6kW

CBRN Airflow: 0.05m³/s

Power Consumption: Cooling Mode: 7.1kW

Ambient Operating Range: -40°C to +55°C

Weight: 277Kg

Specifications subject to change without notice



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Portable Air Conditioning Unit

The Airscrew Portable Air Conditioning Unit (ACU) is ruggedly designed for operation in ambient temperatures of up to 55°C. The body of the unit is mounted onto a substantial framework via anti vibration mounts. This framework provides lifting handles, a skid base and protection against physical damage. Designed to be used with up to two CBRN Air Filtration Units (AFUs), provision is made for two supply air inlets, allowing the AFUs to be connected to the ACU using interconnecting hoses. As an option, wheels and folding handles are available which improve unit mobility.

The ACU is designed for use in either “passive” or “active” mode. Under “passive” mode the unit operates with up to two Airscrew CBRN Air Filtration Units, to provide toxic free, air-conditioned air. Operation of a lever changes the ACU from “passive” to “active” mode, using the unit’s own fan to induce airflow and provide a nominal 750 m³/h of conditioned air at the outlets. This conditioned air can then be conveyed through the single outlet to a shelter, container or tent via a discharge hose.

Features

- Robust construction, fully portable.
- Capable of operating in cooling mode in ambient temperatures of between +10°C to +55°C.
- Easily operated and maintained.
- In service with Armed Forces worldwide.
- Various Inlet/Outlet Configurations
- Fully compatible with Airscrew Portable CBRN Air Filtration Units.

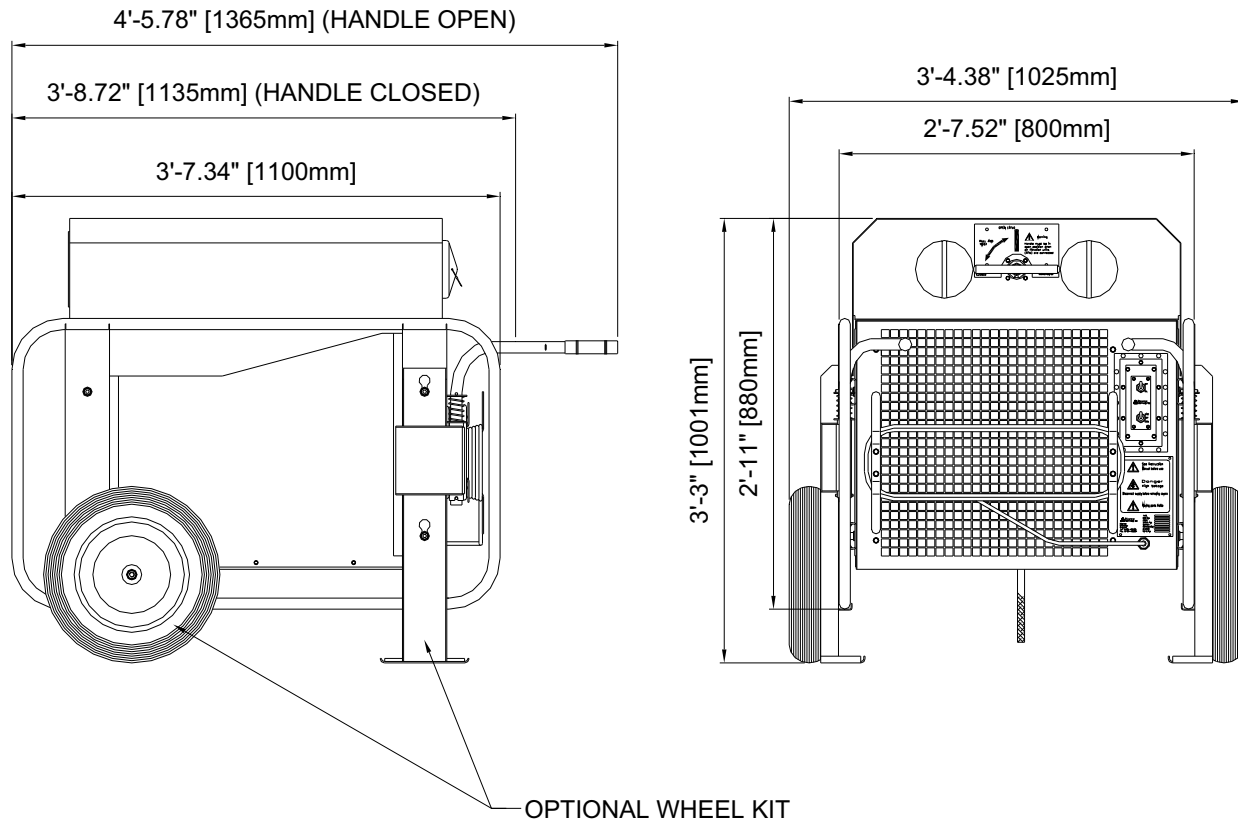


Applications

The Portable Air Conditioning Unit (ACU) is suitable for a wide range of military applications including Collective Protection (COLPRO) facilities such as inside existing buildings, hangars, hardened shelters, tented structures or ISO containers. Current deployable applications include NATO High Readiness HQ, rest and recuperation centres, field hospitals and mobile transportable surgical facilities.



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Specification

NATO Stock Number:	4120 99 302 8062
Total Cooling Capacity:	7 kW (BS 2852 Condition A)
Heating Capacity:	4 kW
Refrigerant:	R417a
Nominal Airflow:	750 m ³ /h (425 cfm). Active Mode
Power Supply:	230 V, 50 Hz, 1 phase.
Typical Power Consumption:	4 kW
Maximum Start Current:	80 A
Maximum Run Current:	30 A
Cooling Mode Ambient Operating Range:	+10°C to +55°C
Weight, skid base:	153 kg
Weight, with wheels and handles:	172 kg

Specifications subject to change without notice



Portable CBRN Air Filtration Unit

The Airscrew CBRN Air Filtration Unit (AFU) is designed for use either within existing buildings or tented structures such as Unhardened Collective Protection Systems (UCPS), whilst operating under Chemical, Biological, Radiological and Nuclear (CBRN) conditions.

The unit is mounted via shock mounts to a substantial framework on each side, protecting the housing against physical damage. This framework also provides lifting handles and a skid base to aid portability and handling.

The Air Filtration Unit is supplied with 5m long, 100mm diameter air supply hose fitted with a lever lock coupling for connection to the AFU. A 20m electrical power supply flying lead is also provided.

Two filter versions are available providing nominal airflows of 212 m³/h or 340 m³/h respectively.

The AFU fan draws external air through a circular high capacity pre-filter within the access door. This filter removes large dust particles before the air enters a composite high efficiency particulate and gas filter. The AFU fan then discharges filtered air into the AFU case, which is pressurised to ensure that any leaks are in a safe direction. Toxic free air is then conveyed down the flexible air supply hose to the shelter or tent. In the case when the AFUs are used in conjunction with the Airscrew portable Air Conditioning Unit (ACU), the air supply hose will be connected to the ACU to allow the filtered air to be cooled or heated, prior to being introduced into the shelter or tent.

Features

- Robust construction, fully portable.
- Capable of operating in ambient temperatures of between -33°C to +55°C.
- Large capacity filters provide high levels of protection against biological and chemical agents.
- Can be supplied with peacetime filters fitted for training purposes, to preserve war stocks.
- Easily operated and maintained.
- Available in two sizes of filter.
- In service with Armed Forces worldwide.
- Fully compatible with Airscrew Portable Air Conditioning Units, and other suitably designed air conditioning and heating systems.

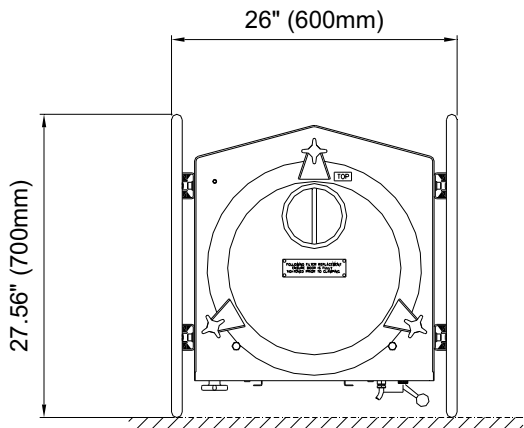


Applications

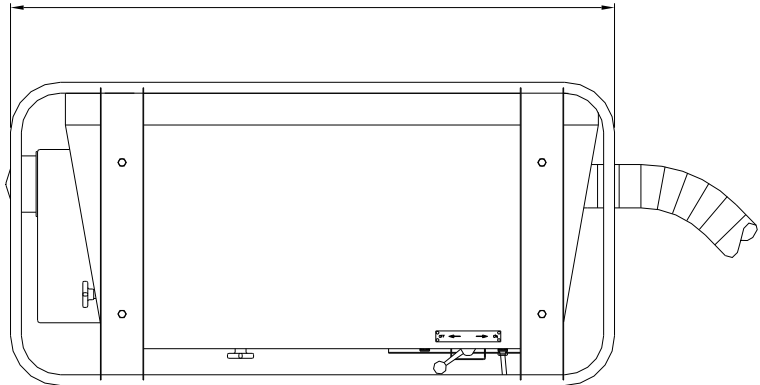
The Portable CBRN Air Filtration Unit (AFU) is suitable for a wide range of military applications including Collective Protection (COLPRO) facilities such as inside existing buildings, hangars, hardened shelters, tented structures or ISO containers. Current deployable applications include NATO High Readiness HQ, rest and recuperation centres, field hospitals and mobile transportable surgical facilities. Other non-military applications include smoke and toxic fume removal.



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46.85" (1190mm) - AC110A3
 54.9" (1395mm) - AC110A4



Specifications

Performance

Model Number:	AC-110A3	AC-110A4
NATO Stock Number:	4240-99-830-5819	4240-99-670-3731
Nominal Airflow:	212 m ³ /h (125 cfm)	340 m ³ /h (200 cfm)
Design Overpressure:	100 Pa (0.4 in w.g.)	100 Pa (0.4 in w.g.)
Power Supply:	230 V, 50 Hz, 1 ph	230 V, 50 Hz, 1 ph
Power Consumption:	150 W	480 W
Ambient Operating Range:	-30°C to +55°C	-30°C to +55°C
Weight:	91 kg	107 kg

Filter Efficiency

Pre-filter:	Better than 80% when loaded with 1 kg of No. 2 Test dust.
Composite filter particulate:	99.997% to BS3928
Composite filter vapour:	99.995% minimum