

Labgard Laboratory Animal Isolator

Models

NU-605-500/600

NU-605-500E/600E

Manufactured By:

NuAire, Inc. - Plymouth, Minnesota, U.S.A.

1.0 General Description

The NU-605 is a small animal portable isolator that provides protection for both animals and personnel simultaneously. The assembly is displayed on drawing BCD-03434; the customer can purchase the NU-605 model which in itself can be used to provide protection for either animal or personnel (but not both simultaneously). The optional canopy may be purchased along with the NU-605 to provide both product and personnel protection.

1.1 The portable animal isolator employs a unique combination of vertical downflow air and horizontal flow air in order to execute the mission of both animal and personnel protection. The vertical downflow air becomes the reservoir of clean HEPA filtered air interposed between a curtain and the animal cages. Clean air from this reservoir is drawn past the animal cages into a suction wall through roughing filters which remove fur and dander, through activated charcoal filters to remove odors and then into the blower which pressurizes the air forcing it through a HEPA filter. The clean filtered air from the HEPA is captured in a plenum and ducted back to the reservoir of clean air previously mentioned. The reservoir of clean air not only serves as a source for the air flowing past the cages but also envelopes personnel (as one stands in front of the cages to perform service on the animals) flowing gently downward providing a "shield of clean air" and finally flowing into the reservoir entry grill where it and the air flowing past the animal cages combine to recycle through the system (see Drawing BCD-03436, Airflow Schematic).

The isolator is essentially a **Mini Clean Room** with recirculated airflow. The recycling feature is an extremely influential function in producing ultra clean air for both personnel and animals. Room air is added to the recirculated air upstream of the HEPA filter via the ambient air grill to provide a slight positive pressure within the clean air reservoir which removes heat through air leakage under the vinyl curtain.

1.2 HEPA filtered air flows down from the canopy through a diffuser carrying aerosol contaminants from the operator through the animal cages into the return grill.

1.3 Clean air from the reservoir is drawn into the suction wall at inflow velocities averaging approximately 30 FPM. Because the suction wall is under a uniform vacuum, velocity vectors are perpendicular to the suction wall eliminating cross contamination between cages, side-to-side and up-and-down.

- 1.4 The service operator enters the service area through a tent-flap opening in the vinyl curtain and should be dressed in typical "clean room" attire. The operator should stand (as displayed in Drawing BCD-03434) away from the cages but yet having convenient access to the cages.
- 1.5 Under normal operation, the airflow system runs continuously maintaining a slight pressure within the reservoir of clean air by virtue of the room ambient air flowing into the ambient air grill. Some clean air escapes from the reservoir out-flowing under the curtain and under the NU-605.
- 1.6 High Efficiency Particulate Air (HEPA) filtration is utilized for the (recirculated) air system. The HEPA filter is rated at 99.99% efficiency on removal of all particulate matter 0.3 micron with greater efficiency on larger and/or smaller particles.
- 1.7 HEPEX Pressure Plenum provided by the HEPEX Absolute Filter System results in greater reliability for a continuing Class 100, Federal Standard 209b, Bio-clean environment within the working zone of the cabinet. The air-space between the HEPEX and the cabinet structure is always less than room ambient pressure which prevents any air outflow other than the filtered outflow. The HEPA filter is nested in non-flammable elastomeric foam in a manner which ensures zero leak and preserves the Class 100 environment free from the rigors of shipping and moving.

2.0 Construction Features

- 2.1 The NU-605 is comprised of two modular components which can easily be disassembled and reassembled:
- Cage Shelving Module
 - Blower & HEPA Filter Module
- 2.2 The NU-605 contains two members that clamp together: (1) motor/blower and HEPA filter cabinet and (2) the all stainless steel cage rack. Both members are castored.
- 2.3 The NU-605 is fabricated to easily accept the optional Canopy and Plenum. The Canopy and Plenum are shipped separated and a simple joining procedure has to be performed at assembly.
- 2.4 The flexible duct (part of the canopy) has a hydrostatic bursting strength of 160 psi, will not support combustion, as excellent resistance to chemicals, oils, greases, liquid or vapor phase decontaminates such as formaldehyde, alcohol, iodophors, peracetic acid, halogenated phenols, hypochlorite solutions and is antibacterial, self-deodorizing and self sanitizing.
- 2.5 The NU-605 Animal Isolator when connected to an external source of electrical power is completely independent of all other sources for success full operation and performance.
- 2.6 The cabinet shell is constructed from 16 gauge cold-rolled steel in all welded construction, finished in textured baked polyurethane.
- 2.7 All cabinet surfaces, interior and exterior, are constructed of, or finished with, materials which are corrosion, flame and moisture resistant and which will not deteriorate under exposure to liquid or vapor phase decontaminates such as formaldehyde, alcohol, iodophors, peracetic acid, halogenated phends and hypochlorite solutions.
- 2.8 The Animal Cage Rack is constructed from 16 gauge, type 304 stainless steel, hand finished free from burrs. The shelves are removable and adjustable via a slot and clip style for ease of use.
- 2.9 The motor requires, single phase, 50/60 Hz power and will not exceed a temperature of 105°C in a maximum ambient temperature of 48°C (120°F) under any maximum load condition. The thermal protector will not trip at 115% of the rated voltage under maximum load and ambient temperature conditions. The motor is rated for 24 hour continuous operation and is lubricated for life. Each motor/protector and circuit breaker combination has been tested to insure that either one or the other will open under locked rotor or motor speed controller half-wave failure conditions.

- 2.10** The Animal Isolator has only one motor driven fan system controlled by a solid-state motor speed control. Fan housing and blades are fabricated of or protected with corrosion resistant materials to withstand normal laboratory or chemical fumes. Total fan delivery will fall off no more than 10% as a result of 50% increase in the pressure drop across the filter as they load with particulate matter.

With the use of the speed controller, the blower/motor can achieve 150% increase in static pressure across the HEPA filters before replacement is necessary. The single motor provides high reliability and insures proper air flow balance.

- 2.11** HEPEX Zero Leak Airflow System surrounds the pressure plenum with a vacuum even down to the interface of the HEPA filter with the cabinet shell. The entire cabinet is at a negative pressure relative to the room -- this absolutely precludes leaks of both chemical fumes and biologicals from the cabinet shell -- leaks around the HEPA gasket are non-existent through the life of the HEPA.
- 2.12** The HEPA filter is 99.99% efficient for removal of all particulates, and is replaceable from the front. It can be checked on site using D.O.P. smoke to establish integrity of the filter efficiency. D.O.P. is introduced into the blower/motor compartment by removing the prefilter. A pressure probe (normally plugged) can be optionally purchased to measure the D.O.P. concentration within the HEPEX pressure plenum.
- 2.13** The HEPA filter and prefilters are protected by an attractive anodized aluminum grill, held in place by an aluminum extruded frame; removable as a single unit via #8-32 self-tapping screws or spring loaded clips.
- 2.14** The prefilters are made of 1 inch thick disposable, non-woven framed fiberglass media (or optional washable expanded polyester media) both with a nominal efficiency of 40% by NBS Test Method using atmospheric dust.
- 2.15** Complete electrical protection for both operator and equipment is provided.
- 2.15.1** Cabinet shell and all electrical components are grounded back to an electrical source via the ground in the power cable.
- 2.15.2** The Motor has thermal overload protection with automatic reset.
- 2.15.3** All electrical components are U.L. listed or recognized. Electrical construction features have been designed to U.L. Standard 1262 for laboratory equipment.

3.0 Models & Features

The model NU-605 designates the basic design series of Animal Isolators which provide both personnel and animal protection and are available in two sizes.

3.1 Standard Sizes - Inches (mm):

Five-Foot (1.5m) Model NU-605-500/500E	<u>Width</u>	<u>Depth</u>	<u>Height</u>
Overall Dimensions:	66 (1676)	79 (2007)	78 (1981)
Animal Rack Dimensions:	66 (1676)	79 (2007)	78 (1981)
Six-Foot (1.8m) Model NU-605-600/600E	<u>Width</u>	<u>Depth</u>	<u>Height</u>
Overall Dimensions:	78 (1981)	79 (2007)	78 (1981)
Animal Rack Dimensions:	78 (1981)	79 (2007)	78 (1981)

3.2 Standard Features

- Personnel & Animal Protection
- HEPEX Zero Leak Airflow System
- Large HEPA Supply Filter 99.99% Efficiency
- Fiberglass Disposable Prefilter
- Protective Filter Grill
- 16 Gauge Stainless Steel Animal Rack
- 16 Gauge CRS Cabinet (Lockable Castors)
- 4 Stainless Steel Shelves (3 Adjustable)
- Instrument Panel
 - Magnehelic Gauge
 - On/Off Switch
 - Airflow Control
 - Circuit Breaker
 - Solid State Motor/Blower Speed Control
- Charcoal Filter

3.3 Optional Features

- Additional Stainless Steel Shelves
- Additional Stainless Steel Rack
- Clean Room Canopy