

SECTION 11535 - BIOLOGICAL SAFETY CABINETS

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Section 11610 – Laboratory Fume Hoods and related products
- B. Section 12345 – Laboratory Casework and related products

1.2 BIOLOGICAL SAFETY CABINETS

- A. Basis of Design: Kewaunee Scientific Interceptor Class II A2 Biological Safety Cabinet
 - 1. Kewaunee Scientific Corporation PO Box 1842, Statesville NC 28687
 - Tel: 704-873-7202

1.3 DESIGN AND PERFORMANCE CRITERIA

- A. Biological Safety Cabinets equipped for work with low to moderate risk agents as defined in Biosafety Levels 1, 2, or 3. Biosafety Level 4 with proper Personal Protective Equipment. Must meet or exceed all NSF/ANSI 49 standards.
- B. Design as defined by NSF Standard 49
 - 1. Class II A2: shall be designed and constructed to function properly and operate in a safe manner, minimize contamination, provide personnel, product and environmental protection. Shall be capable of being cleaned and decontaminated.

1.4 SUBMITTALS

- A. Shop Drawings: submit complete shop fabrication and installation drawings, including plans, elevations, sections, details, fittings and thimble connections (if applicable).
- B. Informational Submittals
 - 1. Provide piping, wiring, and control diagrams. Include all connection locations and sizes. Detail inflow and down flow velocity, static pressure, voltage and amperage. Indicate service requirements, loads, and rough-in locations of all piped services and electrical connections.
 - 2. Certificates:
 - a. Provide factory test results indicating cabinet meets or exceeds NSF 49 requirements
 - b. Cabinet shall be field tested per NSF 49 standards before being placed into service by NSF accredited certifier and test report shall be made available. Field test is the responsibility of the owner.
 - c. Operation and Maintenance Data
 - 1. Description of equipment operation and control, motor control and alarm systems.
 - 2. Wiring diagrams showing separate circuits for outlets, lights and blowers.
 - 3. User's manual and factory test report for each Class II A2 unit by serial number.
 - 4. Each cabinet shall carry a three year warranty from delivery date.

1.5 QUALITY ASSURANCE

- A. Cabinet shall be U.L. and C.U.L listed for electrical safety and integrity.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Cabinet shall be palletized with “skidmate” style shocks, and covered with stretch wrap for protection. Each cabinet shall come with a Drop N Tell indicator.

1.7 PROJECT CONDITIONS

- A. Biological Safety cabinet shall not be delivered or installed until building is totally enclosed, dry-walled, painted and HVAC system is fully functional.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design: Kewaunee Scientific Interceptor Class II A2 Biological Safety Cabinet
 - 1. Kewaunee Scientific Corporation PO Box 1842, Statesville NC 28687
Tel: 704-873-7202
 - a. INT-1100A: Exterior dimensions – 43 3/16”w x 32 1/16”d x 91 3/8”h
 - b. INT-1400A: Exterior dimensions – 55 1/16”w x 32 1/16”d x 91 3/8”h
 - c. INT-1700A: Exterior dimensions – 66 9/16”w x 32 1/16”d x 91 3/8”h
 - d. INT-2000A: Exterior dimensions – 78 7/16”w x 32 1/16”d x 91 3/8”h
- B. Comparable product by one of the following permitted:
 - 1. Baker SterilGARD e3
- C. Other Substitutions not permitted

2.2 MATERIALS

- A. Work Surface: 16 gauge, type 304 stainless steel with no. 4 finish
- B. Cabinet Interior: 16 gauge, type 304 stainless steel with no. 4 finish
- C. Cabinet Exterior: 16 gauge and 12 gauge cold rolled steel minimum, exterior coating shall be VOC free, acid resistance powder coat finish.
- D. Glass: ¼” laminated safety glass with no frame. No permanent etchings on glass.
- E. Airfoil: 16 gauge, type 304 stainless steel with no. 4 finish
- F. Armrest: Aluminum extruded oval comfort shaped armrest is standard

2.3 CONSTRUCTION

- A. Interior walls shall be single piece construction with coved corners for ease of cleaning
- B. Work surface shall be single piece construction, dished with coved corners, lift up handles and anchoring pins
- C. Exterior removable panels shall be made of 16 gauge cold rolled steel, and shall be removable for access to service connections.
- D. Each cabinet shall be fully welded. All gaskets shall be closed cell neoprene type providing a gas and soap bubble-tight seal.
- E. All ducts and side walls shall be constructed of 16 gauge cold rolled steel with double wall construction maintaining containment area under negative pressure.
- F. Drain Pan 16 gauge type 304 stainless steel, shall be capable of holding at least one gallon, all corners shall be radiused for ease of cleaning. Stainless steel ball valve shall be included for drainage
- G. Plenum shall be telescoping allowing unvarying airtight seal of HEPA filters. Gaskets shall be close cell neoprene type.
- H. Service fittings shall be offset. Primary service fittings forward positioned 3 ½" from front.
- I. Sash operation shall be of anti-racking design using notched steel reinforced nylon belt and sprocket system.
 - 1. "Wire Rope" is not acceptable.
 - 2. Sash shall be easily removable with simple tools
- J. Controls - Cabinet shall have Full Color VGA Monitor, fully programmable to ensure operator safety. Monitor located on lower portion of front panel. Monitor will display continuous "Remaining Filter Capacity" and "Face Velocity" readouts at all times during operation. Cabinet shall have audible and visual alarms to alert user of unsafe sash height, unsafe filter loads, and unsafe face velocity, including pre-programmed user thresholds for warnings, alarms, and UV operation indicating remaining lamp life and UV use timers. Alarm mute feature shall be provided to allow brief equipment loading. Audible alarm will resume after 5 minutes.
- K. Lighting - Cabinet shall have externally mounted T5 fluorescent lamp with solid state ballasts.
- L. Filters- Front loading, HEPA 99.99% efficient on all particles 0.3 micron by DOP test, (both exhaust and supply). Filters shall be metal framed with metal protective screen for additional filter protection. HEPA filters will be removable without disassembly of control panel or view screen assembly.

1. Bag in Bag out filter replacement not acceptable.
- M. Calculated Air Velocity- 105 fpm nominal through 10" NSF certified sash opening with audible and visual alarms if sash is not in correct position
- N. Electrical Requirements- A dedicated 115v, 20 amp, 60 Hz single phase circuit shall be required. Two GFCI outlets in the work area protected by an independent self resetting breaker
- O. Gaskets – Closed cell Neoprene gasket to form airtight seal at positive pressure plenum.
- P. Airfoil - 16 gauge, type 304 stainless steel with no. 4 finish
- Q. Armrest: Aluminum extruded oval comfort shaped armrest is standard
- R. Base stand - 16 gauge cold rolled steel minimum, fully welded assembly with modesty panel and leveling guides. Coating shall be VOC free, acid resistance powder coat finish.

2.4 STANDARD ACCESSORIES

- A. Base stand –Choose One:
 1. Telescoping fully welded steel assembly with modesty panel and leveling glides. Stand shall be adjustable in 1" increments from 28" to 33"
 2. Electrically adjustable fully welded steel assembly with modesty panel and leveling glides. Range of motion 28" to 33"
- B. VGA Monitor – full color monitor with two continuous displays while cabinet is in operation, remaining filter capacity and Face Velocity
- C. T5 fluorescent lamp – located outside of cabinet under front panel. Easily removable from the front
- D. Armrest

2.5 OPTIONAL ACCESSORIES

- A. Casters (Duratex Phenolic wheel), with front locking wheels
- B. UV Germicidal lamp

- C. Canopy or Thimble connection
- D. Ergonomic footrest
- E. Ergonomic adjustable height stool
- F. Service fittings
- G. IV Pole

PART 3 - INSTALLATION

3.1 SET UP

- A. Supplier shall receive cabinet, place on base stand and set unit in place
- B. If service fittings are included; unit will be stubbed out with a 90° elbow.
- C. Final connection to building is not part of this construction document
- D. Unit must be certified before use by NSF accredited field certifier. Certification is responsibility of owner. Field certification includes:
 - 1. Downflow velocity profile test
 - 2. Inflow velocity test
 - 3. Airflow smoke pattern test
 - 4. HEPA filter leak test
 - 5. Cabinet integrity test
 - 6. Site installation assessment tests
- E. User manual and technical manual shall be provided with cabinet in both hard and soft copies

END OF SECTION