

General

The Airvelope PCR is a self-contained Laminar Flow module designed to meet requirements for a stand-alone cleanroom with cleanliness levels of ISO Class 5 or better.

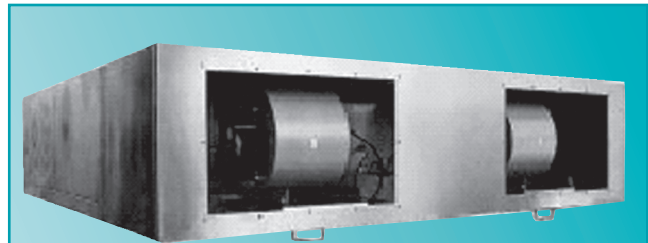
When suspended from the ceiling, the Airvelope PCR provides a stationary Cleanroom that can be demounted and stored when necessary. When mounted on legs and casters, it provides a truly portable Cleanroom environment. Considering the module is self-contained and requires no ductwork or external air handling system, it can be installed quickly and economically. Single units can be used for small applications and larger applications can be satisfied by configuring two or more units into groups.

Versatile Applications

The Flanders PCR portable Cleanroom modules are used in many different applications, including:

- Pharmaceutical
- Biomedical
- Bioresearch
- Microelectronics
- Hospitals
- Universities
- Food Processing.

The Airvelope PCR portable Cleanroom is used to provide conditions that require ISO Class 5 or better Cleanroom applications per Federal Standard. This includes the ability to retrofit an existing facility or to provide for upgrading of fill lines to meet desired cleanliness levels. These units provide ISO Class 5 or better air where unprotected product is exposed to unfiltered air. These modules are used to provide clean air for all process equipment. Types of equipment and process which can be used in conjunction with the Airvelope PCR include freeze dryers, autoclaves, vial filling, vial filling with powders, R & D work, cell culturing and ovens.



Important Features

- Stainless steel plenum can be easily cleaned or sterilized.
- Panelized fabrication has a smooth, finished appearance without metal distortion or visible welds.
- Blu-Jel® Seal bottom-load filters are proven to eliminate bypass leaks. The gel seal design allows for quick filter service. Filters are conveniently installed, changed, or tested from roomside.
- Direct drive forward curve centrifugal blowers provide variable frequency drives for speed control.
- 480 V single-point connection provides easy electrical hookup
- Multiple inlet locations allow easy access to room air.
- Units are equipped with an aerosol test port.
- Units are equipped with a static test port.

Quality Assurance

Any industry that has dangerous process or exhaust gases and/or particulates has a vital concern for the health and safety of personnel. In addition to corporate concern, the United States Government has dictated that safety equipment meet minimum safety standards. Any equipment sold to meet these minimum standards has to be manufactured using accepted Quality Control procedures.

Flanders has developed a Quality Assurance program to assure that the product or service provided meets these standards. This program addresses the entire range of Flanders' involvement, including the purchase of raw materials, the shortage of these raw materials, incorporation of these materials into a product or service, testing this product or service, and then shipping it to its destination.

The program at Flanders has been audited many times, and each time the program has been acceptable. An uncontrolled copy of the program manual is available with each request for Quality Assurance information. Like any dynamic document, the program is continually being revised to include recent issues of standards and specifications in order that Flanders may use the latest state-of-the-art methods in providing its products and services.

Notes:

1. As part of our continuing program to improve the design and quality of all our products, we reserve the right to make such changes without notice or obligation.
2. Flanders, through its limited warranty, guarantees that the products describe herein will meet all specifications agreed to by the buyer and the seller.

NOTICE . . . Compliance with installation and operation standards must be met to ensure quality performance.

HEPA filters are factory tested to meet the requirements of IEST RP-CC001.4.

- Industrial Grade
- Nuclear Grade
- Laminar Flow Grade
- Bio/Hazard Grade HEPA
- VLSI
- ULPA
- Pharmaceutical Grade

Test results appear on both the filter label and upon the filter carton label. An additional quality assurance test report is kept on file and is available on request.

Flanders recommends that all HEPA filters be tested in place by qualified personnel to ensure that the filters have been correctly installed.

Flanders service personnel are available for installations, supervision of installation, testing and certification of compliance to industry and government standards and instruction of the owner's personnel in testing and maintenance procedures. Flanders does not guarantee that its equipment will operate at the performance levels given on the identification labels or in the catalog specifications under all conditions of installation and use, nor does Flanders guarantee the suitability of its product for the particular end use which may be contemplated by the buyer.

For best results, it is recommended that the buyer supply complete information about the operating conditions of the ventilation system to Flanders for evaluation. When the system components are supplied to the buyer or his agent for final installation and assembly in the field, it should be under the supervision of factory trained personnel.

Failure to adhere to this recommendation or failure of the buyer to have filters timely retested and serviced will nullify or limit any warranties which might otherwise apply and may result in a compromised installation.

Construction

The plenum is constructed of 14 gauge Type 304 stainless steel with a #4 brushed finish outside and a 2B mil finish on the inside.

Direct drive blower provides a minimum velocity of 90 fpm with an initial filter pressure drop of .80 inches w.g. and a final pressure drop of 1.2 inches w.g.

Dimple-Pleat® Filters

Final filters for the Airvelope PCR are Flanders separatorless, low-profile Dimple-Pleat®, available in three efficiencies and guaranteed to meet or exceed the cleanliness level requirements of ISO 14644-1. All final filters are scan-tested in accordance with IEST-RP-CC-001.4.

Installations Options

- Airvelope PCR modules may be provided with hangers for suspension from overhead structures.
- When mounted on optional legs and casters, the unit functions as a mobile portable cleanroom.
- Units may be provided with the customers choice of curtain materials and designs.

Filter Comparison		
Laminar Flow Grade	Minimum Efficiency (percent)	Micron Particle Size
HEPA	99.99	0.30
VLSI	99.9995	0.12
VLSI II	99.999999	0.12

Available options

- Teardrop lighting (120V) (277 V)
- Photohelic gage
- Aerosol injection port
- Audible alarm (with silence button)
- Visual Alarm
- 316 L stainless steel construction
- Vinyl curtains
- Adjustable legs/casters
- Prefilters/polypad
- Sprinkler connection

Self Contained Laminar Flow Module								
Nominal Clean Area (feet)	1 h.p. Motors (Number)	A	B	C	Light Fixtures		Weight	Cubic Feet
					No.	Size (feet)		
4x4	1	48-1/2	48-3/4	72-3/4	1	4	588	49
4x6	1	48-1/2	74-1/8	98-1/8	2	4	660	65
4x8	2	48-1/2	99-1/2	123-1/2	3	4	750	83
4x10	2	48-1/2	124-7/8	148-7/8	4	4	896	110
4x12	2	48-1/2	150-1/4	174-1/4	5	4	1350	116
6x6	2	72-1/2	74-1/8	98-1/8	2	6	876	97
6x8	2	72-1/2	99-1/2	123-1/2	3	6	954	124
6x10	3	72-1/2	124-7/8	148-7/8	4	6	1440	149
6x12	3	72-1/2	150-1/4	174-1/4	5	6	1560	173
8x8	3	96-1/2	99-1/2	123-1/2	3	8	1490	166

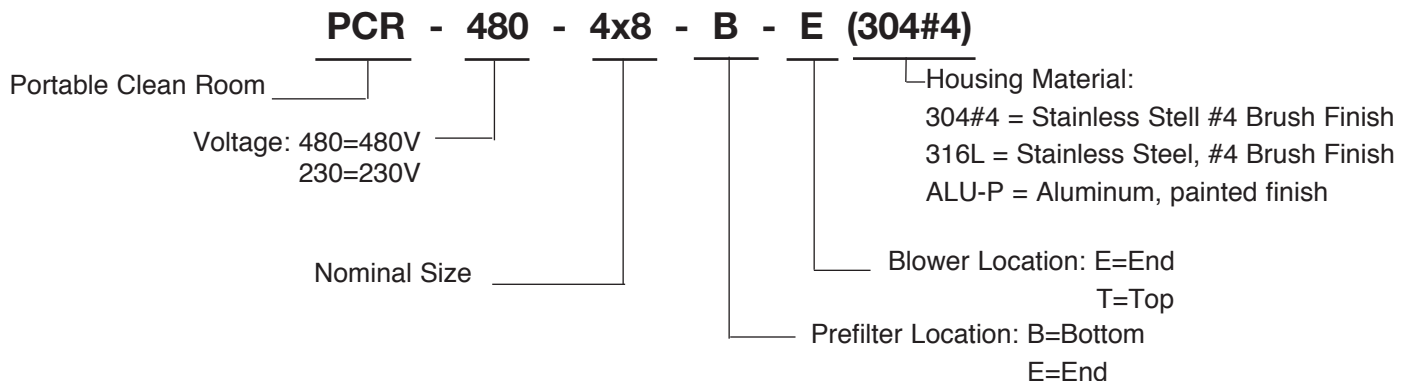
Model Number Development

Flanders Airvelope PCR self contained laminar flow module is available with a variety of optional features. The Flanders Model Number provides design and construction information.

Example:

The number below represents a Flanders Airvelope PCR wired for 480 V, 4 feet x 8 feet with the prefilter located in the bottom and the blower located in the end. The housing material is number 304 Stainless Steel with a #4 brush finish.

Note: Bottom-mounted Prefilter is not available with top-mounted blower.



Guide Specifications

1.0 General

1.1 The portable laminar flow cleanroom module shall be Airvelope PCR Model ____ as manufactured by Flanders. Filters shall be fabricated by the module manufacturer

2.0 Filter Construction

2.1 The housing shall be constructed of 14 gauge 304 stainless steel with #4 brushed finish outside and a 2B mil finish on the inside. The module frame knife edge shall be welded 11-gauge 304 stainless steel. Joints shall be welded solid, welded intermittently, or bolted and sealed with silastic sealant. Exterior welds will be ground smooth and blended to an approximate #4 brushed finish. Dimensional tolerance shall be plus or minus 1/8 inch, including diagonal dimensions or squareness within 1/4 inch.

2.2 Final filters shall be Flanders Dimple-Pleat® model (specify). The filter medium shall be produced from boron silicate microfibers with a wet strength, water repellent binder and shall be a product of the filter manufacturer. The filter element shall be constructed by pleating a continuous sheet of medium so that it is entirely self-supporting without the use of separators.

2.3 Final filters shall be tested for efficiency and resistance on the manufacturer's test equipment in compliance with IEST-RP-CC-001.4. Additionally, each filter shall be scan tested over the entire face and perimeter of the filter pack for leaks greater than 0.01% of the upstream challenge. Minimum filter efficiency shall be (specify) 99.99% on 0.3 micron particle size or 99.99995% on 0.12 micron particle size.

2.4 Each filter shall be protected by a 40% open area perforated stainless steel grille with a #4 brushed finish. Grilles are mounted below the filters, flush with the framing of the unit, and are held in place by four stainless steel mounting nuts and washers. Final filters shall seal within the module by means of Flanders Blu-Jel® seal. The filters shall be accessible and replaced from the roomside after removing the protective grille.

2.5 Prefilters shall be Flanders PrePleat 40. Prefilters shall be designed for low resistance and low intake velocity. A stainless steel grille shall protect the prefilters.

2.6 Blowers shall be direct drive, 480 volt, three-phase, 60 HZ and shall have a variable frequency drive for fan speed control.

2.7 Lighting shall be (specify) stainless steel or painted teardrop; light fixtures mounted on 2-ft. centers with smooth outside, ribbed inside clear diffusers.

2.7 The motor/blower assembly and the lighting shall have separate on/off switches. Incoming power shall be connected to terminal strips on a control panel located inside the blower compartment. Each module shall be equipped with a magnehelic gage to measure the pressure drop across the HEPA filters.

3.0 Performance

3.1 The unit shall be sized to provide a minimum average velocity of 90 fpm with a uniformity of plus or minus 200% when measured 6 inches below the filter grille. The cleanliness level shall be class (specify) (100) (10) (1) or lower in accordance with Federal Standard 209E.



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