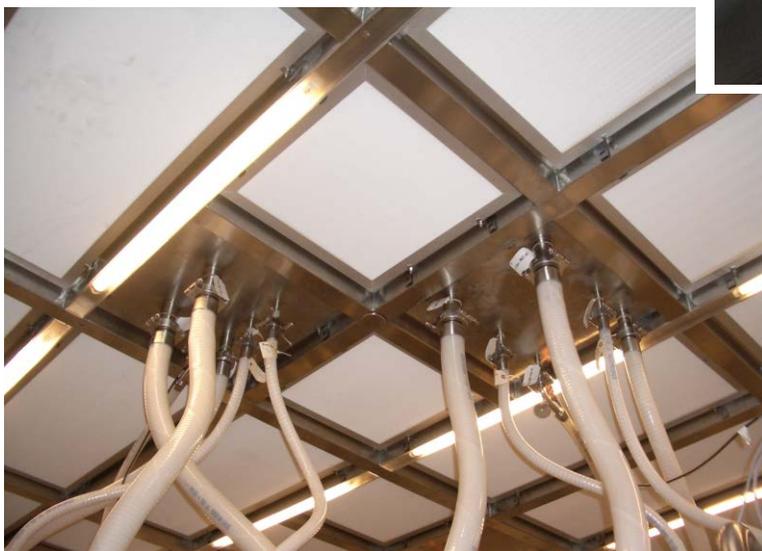
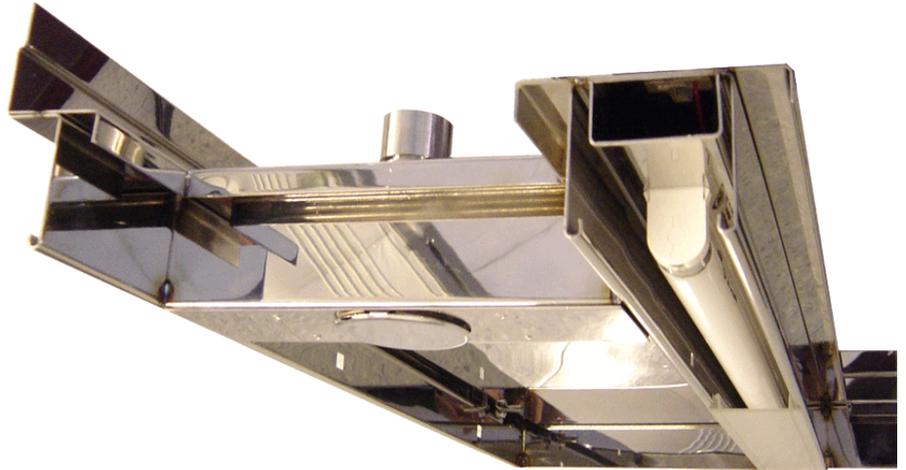


CLEAN-TRAK BOTTOM-LOAD STAINLESS FLUSH CEILING PLENUMS

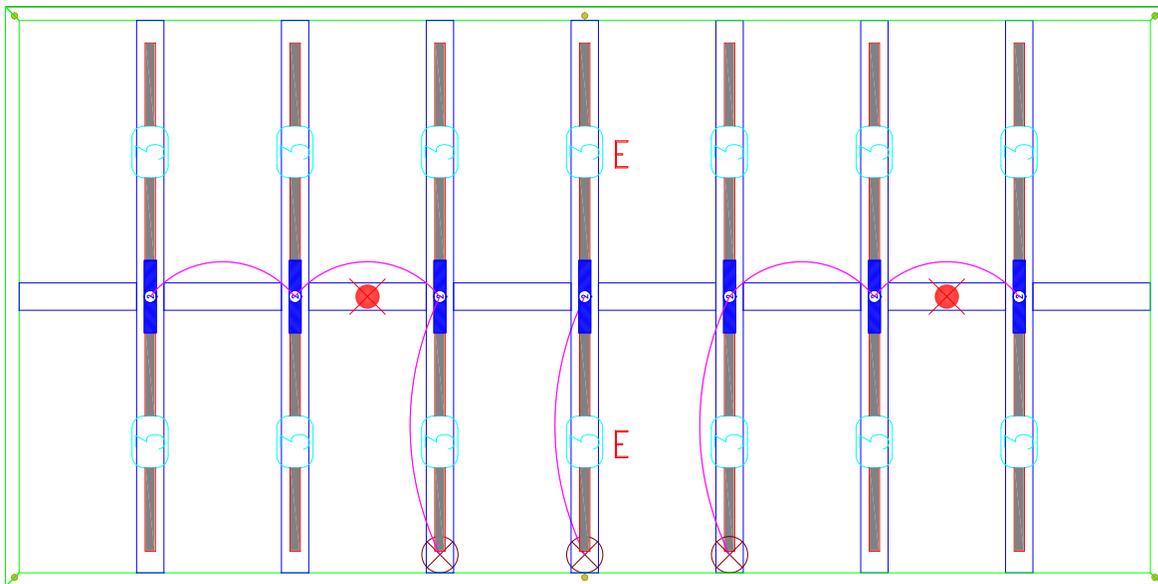
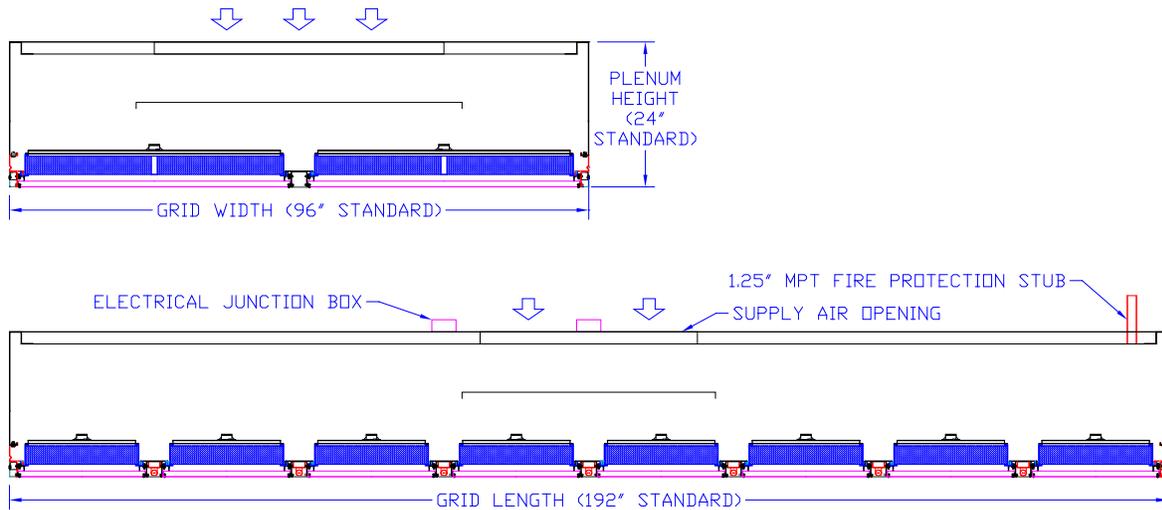
CLEANPAK's patented Clean-Trak[®] flush ceiling system is the standard method of delivering air for leading biopharma companies worldwide for critical Grade A and B applications. It incorporates a modular ceiling system with flush integrated lighting and fire protection that allows for up to 100% filter coverage and the highest level of flexibility in room operations and configurations. It enables you to load filters or blank pans straight up without tipping or rotating them through the grid opening. The grid features a downward facing knife-edge to which the gel in the filter or blank pan will seal.

KEY FEATURES

- Patented integrated lighting that allows up to 100% filter coverage.
- Patented Clean-Screens[®] that jet air under the grid for superior air washing and laminarity.
- Integrated sprinkler system. A true flush concealed sprinkler head can be used in the grid channel.
- Patented Gellink[™] seal at module joints.
- Optional patented Equalizer[®] can be used to balance the system with a center adjustment port in the filter.
- Integral knife-edge.
- Welded module grid with welded knife-edges miters. The pressure boundary of the grid plane is 100% welded and gel sealed for leak-free operation.
- Self guiding filter retaining clips.
- HEPA filters that are pre-gelled at the filter manufacturer's facility.
- Flexible openings in the plenum for air intake—in the roof or sides.



Products may be protected under one or more of the patents listed under www.nortekair.com/patents.



- = SUSPENSION HOLE
- ⊗ = PLENUM FP CONNECTION
- ⊗ = SPRINKLER DROP
- = BALLAST, NUMBER IS LAMPS PER BALLAST
- 3' — = 3' T-5 LAMP
- ⊗ = POWER DROPS
- ⊠ = JUNCTION BOX
- E = EMERGENCY LIGHT

CONDENSED SPECIFICATION optional items noted in []

1. SYSTEM DESCRIPTION

1.1. The cleanroom filtered ceiling system shall consist of a continuous ceiling grid with stainless steel grid channel, integrated lighting, integrated sprinkler system, associated connectors, grid hanging all-thread rod from grid to turnbuckle, nominal 2x4 foot [4x4 foot] filters, and accessories such as filters, dampers, blank pans, and miscellaneous assembly hardware. The ceiling system shall also include a positively pressurized powder-coated steel plenum that is an integral part of the ceiling grid. The ceiling grid for plenums is required to have gel seals for sealing the filters to the grid. Gasketed seals between filter and grid for positively pressurized plenums are not allowed.

2. FILTERED CEILING GRID AND PLENUM SYSTEM

2.1. The grid system shall be Clean-Trak Bottom-Load Stainless Steel Gel-Seal Flush Ceiling Grid. Stainless steel shall be 304L #4 [304L #2B] [316L #4]. The grid will have a downward facing knife-edge that will accept pre-gelled filters. Filters, blank pans, and FFUs shall be capable of being loaded from the bottom without tipping or rotating of the filters into the grid opening. The stainless steel grid shall have reversed breaks in the metal so as to minimize the bioburden and particle trap areas below the filter. The ends of the cross member joints shall be solidly welded to the adjoining members. Welds shall be ground and polished. Cross members shall have flush welds to the adjoining members. For bottom-load filters, the gel sealant shall be supplied pre-installed in the filter from the HEPA filter manufacturer.

2.2. Grid members shall be welded together into modules. Grid shall be caulked with an appropriate sealant as necessary. The ceiling support grid shall be structurally constructed so as to remain dimensionally stable.

2.3. The grid system shall have integrated flush lighting within the grid channel that is capable of 100% filter coverage of the entire ceiling. Light fixtures, such as teardrop lights, are not permitted. Light fixtures that negate the possibility of having 100% filter coverage, such as recessed light troffers, are not permitted. The complete lighting system consisting of lamps, lampholders, wireway, lenses, wiring, and ballasts shall be an integral part of the ceiling grid. The grid shall be UL listed and so marked. The ballast shall be housed within the grid channel and separated from the low voltage area with a listed wireway cover. Ballasts shall be instant start electronic ballast with a UL [CE] listing and marking. Wiring within the grid for the lighting circuit shall be contained within and protected by the wireway cover. The raceway system integral to the grid shall have the ability to handle normal and emergency wiring circuits. The raceway system integral to the grid shall have the ability to handle high and low voltage wiring circuits. Lamps shall be linear fluorescent cool white T8 [T5]. The light lens shall sit flush with the bottom of the grid channel. Light lens covers shall be clear acrylic ribbed diffusers that snap flush to the grid channel without external fasteners.

2.4. The grid system shall incorporate a screen that is flush with the light lens and has perimeter slots on all sides of the screen to jet air underneath the lens so as to wash the area below the lens of particles. The screen shall be a Clean-Screen as manufactured by CLEANPAK. The screen shall provide laminar flow 4 inches below the grid surface. Screen shall be made from stainless steel. The finish of the screen is to match the ceiling grid finish. The Clean-Screen is to be a minimum of 1.5" from filter face and shall not contact the filter media.

2.5. The grid system shall be capable of forming a gel seal between module joints--Gel-Link as patented by CLEANPAK.

2.6. The grid system shall be capable of attaching clips for hanging piping, barriers, enclosures, and wall head tracks.

2.7. The flush grid shall have an integrated fire protection sprinkler system. The grid channel shall be capable of accepting a true flush sprinkler head within the width of the extrusion. The ceiling grid shall be able to incorporate a hard-piped system. The hard-piped system couplers shall have a threaded [welded] female connection for the field connection. Fire sprinkler piping within the ceiling module will be factory-installed, sealed, and painted by the manufacturer.

2.8. Grid system shall be capable of handling structural loads to a deflection criteria not to exceed L/360.

2.9. All surfaces that are scratched shall be painted and touched up by the contractor after installation. Paint color to match wall panels or as approved by the engineer or owner. For stainless components, all surfaces that are scratched shall be buffed with non-ferrous material by the contractor.

2.10. Filler Blank Panels: Solid filler panels shall be constructed of stainless steel with welded corners, designed to affect an airtight seal in the channel grid.

2.11. For plenum style filters, furnish dampers on top of the filters to provide a means of balancing the filters. The dampers shall have a gear mechanism that can be actuated through a port in the grid channel for top-load grid systems or through a port in the center bar of the filter for bottom-load systems. These dampers shall be the CLEANPAK Equalizer.

2.12. Care should also be used in selection of materials that are resistant to cleaning agents used by the owner.

2.13. Furnish open-top plenum style HEPA filters.

2.14. Provide a plenum attached to the ceiling grid as an integral part of the ceiling grid plenum system. Positively pressurized plenums shall only be used with gelled grid (never with gasketed grid). Modules shall be supplied completely pre-assembled with the grid and plenum as one piece.

2.15. The plenum ceiling grid modules shall be capable of being suspended from the building structure on an 8'x8' hanger array or a 8'x12' hanger array. In the case of self-supported plenums with structural legs off the floor, the modules shall be capable of free-spanning between columns.

2.16. Plenums will be welded style construction using formed steel roof panels welded to formed steel side panels. Side and top panel thickness shall be sized so as to meet structural load requirements. The roof panels shall be formed such that the panel brakes are towards the outside of the plenum so as to form a smooth inside surface. Holes will be provided at the perimeter of the plenum roof for suspension. The entire plenum module shall be coated with a baked on powder coating.

2.17. Units shall be manufactured to a tolerance of +/- 1/8" on width and length and diagonal or squareness of +/- 1/8".

2.18. Supply a diffuser to provide uniform air distribution of +/- 20 fpm from the unit average at 6" beyond the filter face when plenums are individually fed from the top with 750 to 1,000 fpm air supply.

2.19. In order to accommodate service personnel and equipment, the top panels, support frame, and walking surface shall be designed for either a uniform loading of 30 pounds per square foot, or a point load of 200 pounds anywhere on the top surface. Under this added live load, the deflection of the bottom surface shall not exceed 1/8" at the midspan of the module length. Plenums shall be capable of fully supporting the weight and seismic loading of air handling equipment that is to be directly attached to and directly supported by the plenums.

2.20. Provide pre-drilled bolt holes in the sides of modules for field connection of one module to another where applicable.

2.21. The installing contractor shall furnish and install the all thread rod and hardware from the plenum to the building structure.