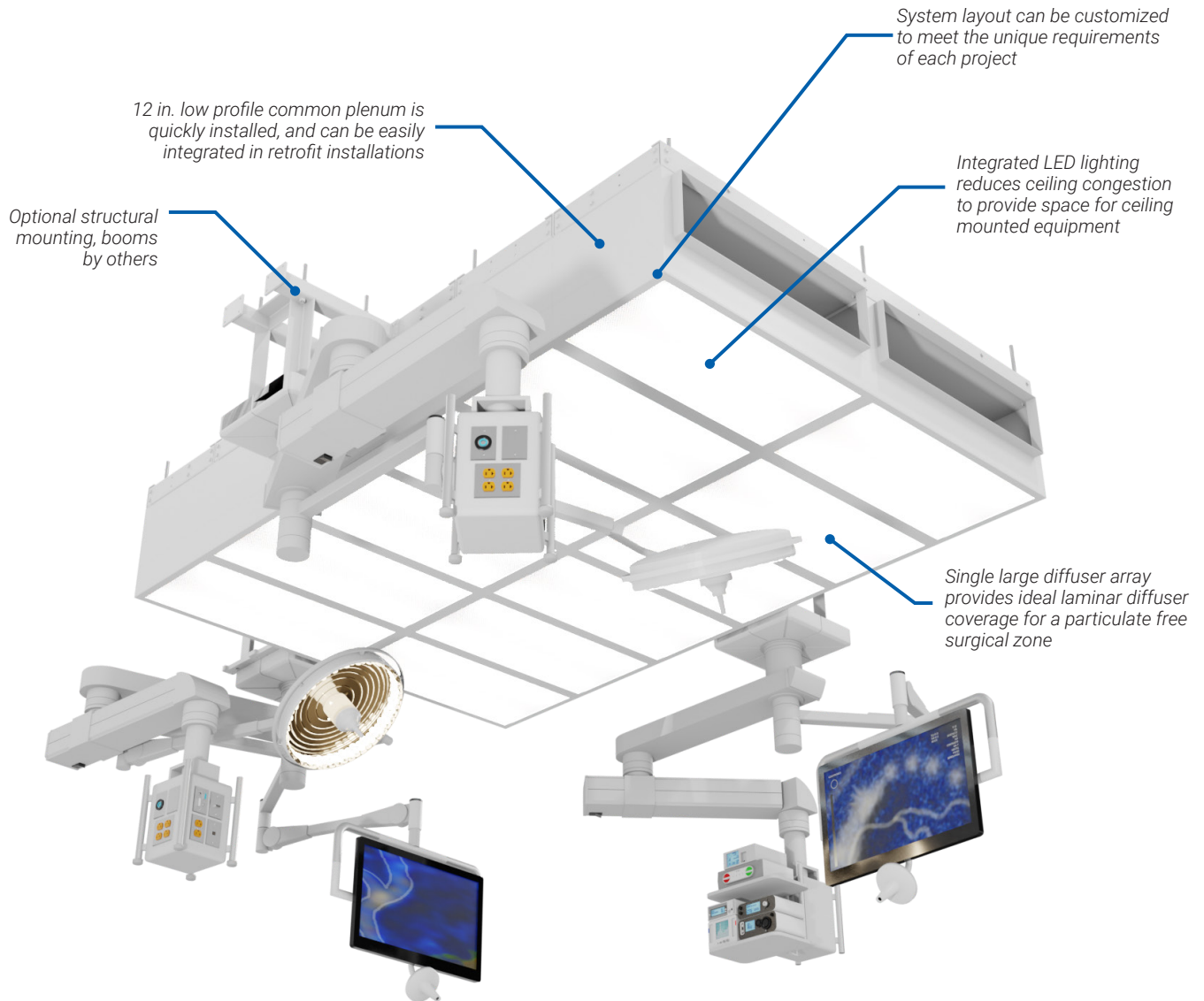# SUPERSUITE
by **price**

Operating Room Diffuser System with LED Lighting

Supersuite by Price™ is a customizable air distribution and lighting solution specifically engineered for hospital operating rooms. High-output LED lighting combined with precision equalized laminar airflow eliminates the traditional "light ring", opening valuable ceiling space for surgical equipment while optimizing contaminant removal from the surgical zone. Conforming to all ASHRAE 170 requirements, the patented (pat. 10,401,049) Supersuite by Price™ is the perfect combination of performance, aesthetics and efficiency.

System layout can be customized to meet the unique requirements of each project

12 in. low profile common plenum is quickly installed, and can be easily integrated in retrofit installations

Integrated LED lighting reduces ceiling congestion to provide space for ceiling mounted equipment

Optional structural mounting, booms by others

Single large diffuser array provides ideal laminar diffuser coverage for a particulate free surgical zone

| LED	L80	Dimmable	IP67	90+ CRI
High Efficiency 100+ lm/W LED	L80 > 60,000 hours	Dimmable	IP67 Sealed LED	90+ CRI

Integrated LED Lighting

- The Supersuite transforms a typical laminar flow array diffuser into a combination high performance LED light fixture and laminar diffuser by incorporating LED lighting inside each individual diffuser module.

- Lighting at the surgical table is optimized with the Supersuite positioned directly above the patient, reducing shadows within the surgical zone. The Supsersuite lights also have a Color Rendering Index (CRI) of 90+ producing more true/saturated colors.

- The large light-emitting surface of the Supersuite provides even lighting with a low luminous intensity to reduce glare on monitors and other reflective surfaces.

- Various lighting color temperatures and flexible dimming control allow the Supersuite to meet the unique requirements of modern healthcare facilities.

- Optional green lighting facilitates improved visibility of flat panel displays for the surgeon by enhancing images while also eliminating the glare that traditional overhead white lights cast on monitors.

TYPICAL APPLICATIONS

The Supersuite is a fully customizable lighting and air distribution packaged system designed specifically for Operating Rooms. The Supersuite meets the unique needs of operating rooms by providing low velocity laminar airflow, providing lighting directly above the patient table, and by freeing up valuable ceiling space for ceiling mounted equipment.

SUPERSUITE | **Operating Room Diffuser System with LED Lightning**

Supersuite integrated light and diffuser system (80 sq. ft.)
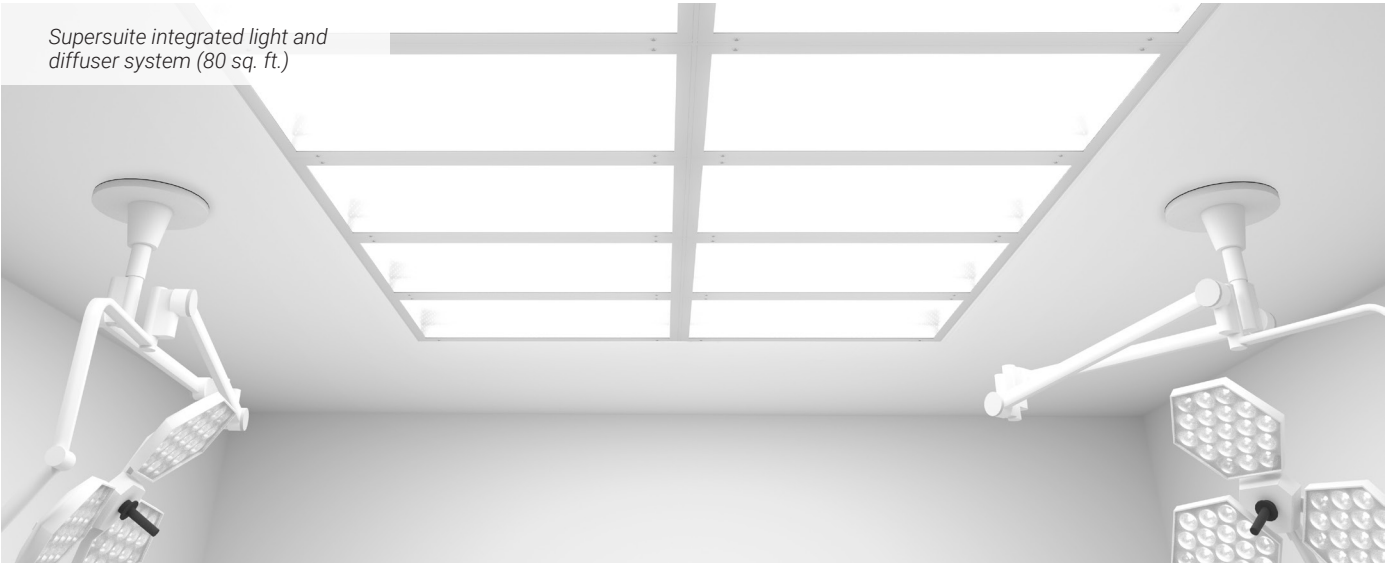
Traditional perimeter lighting and laminar diffuser system (168 sq. ft.)
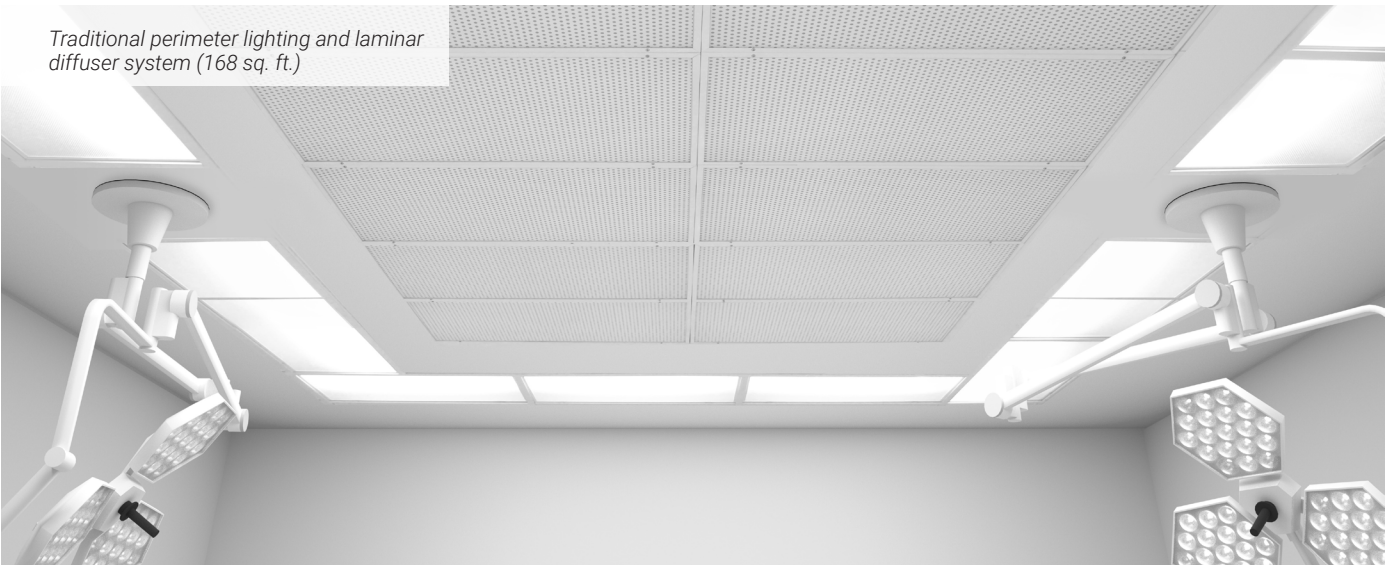
Reduced Ceiling Congestion

- The Supersuite dramatically reduces the HVAC footprint in the ceiling by incorporating high-performance LED lighting directly within the laminar flow diffusers, effectively freeing space for other ceiling mounted equipment.
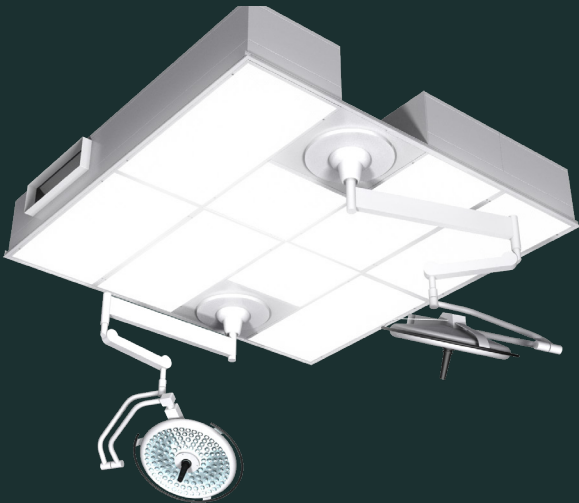
Single Large Diffuser Array

- The single large diffuser design consists of a number of laminar flow diffusers, with a low profile common plenum.
- A highly engineered dispersion baffle and perforated face ensure even distribution of airflow within each diffuser module, regardless of system layout or inlet location.
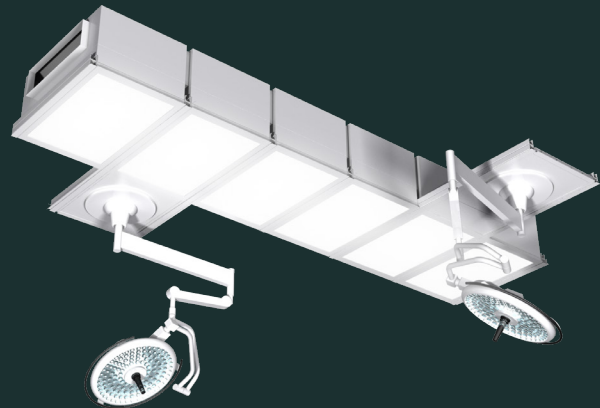
Sample layout A
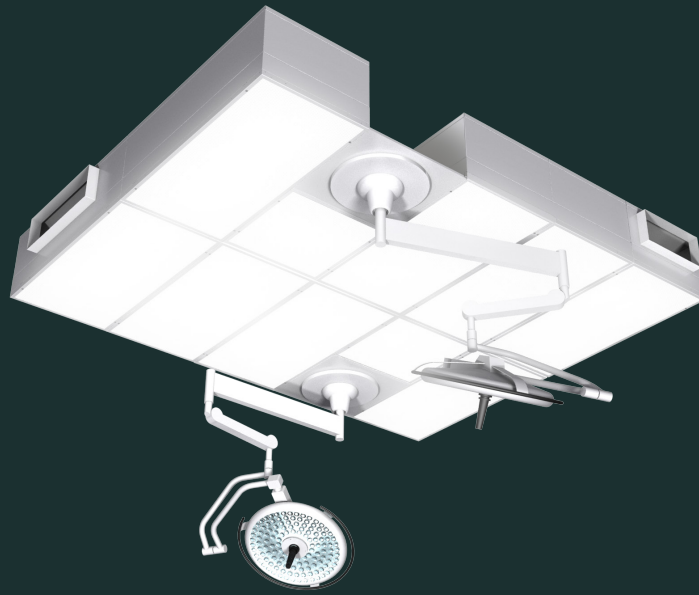
Sample layout B

Sample layout C

Supersuite with Integrated Unistrut

Fully Customizable

- Flexible system and module sizes to suit any equipment layout.
- Inlets can be positioned on the sides or top of the plenum to suit existing ductwork configurations, or to optimize ductwork layout for new construction.

For more information visit **KeystoneCleanAir.com/Supersuite**
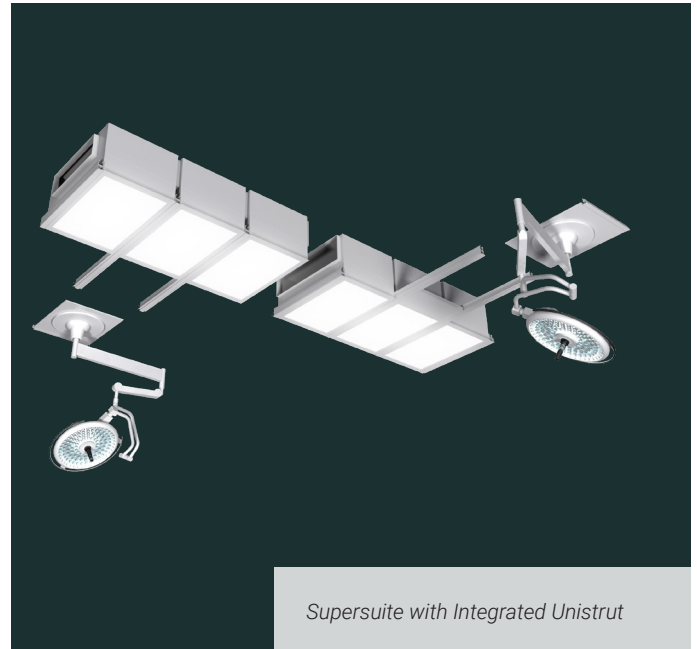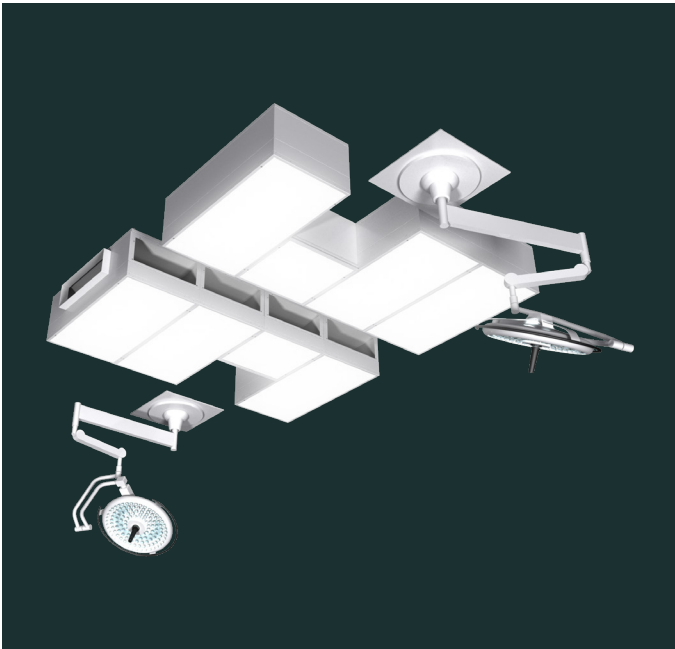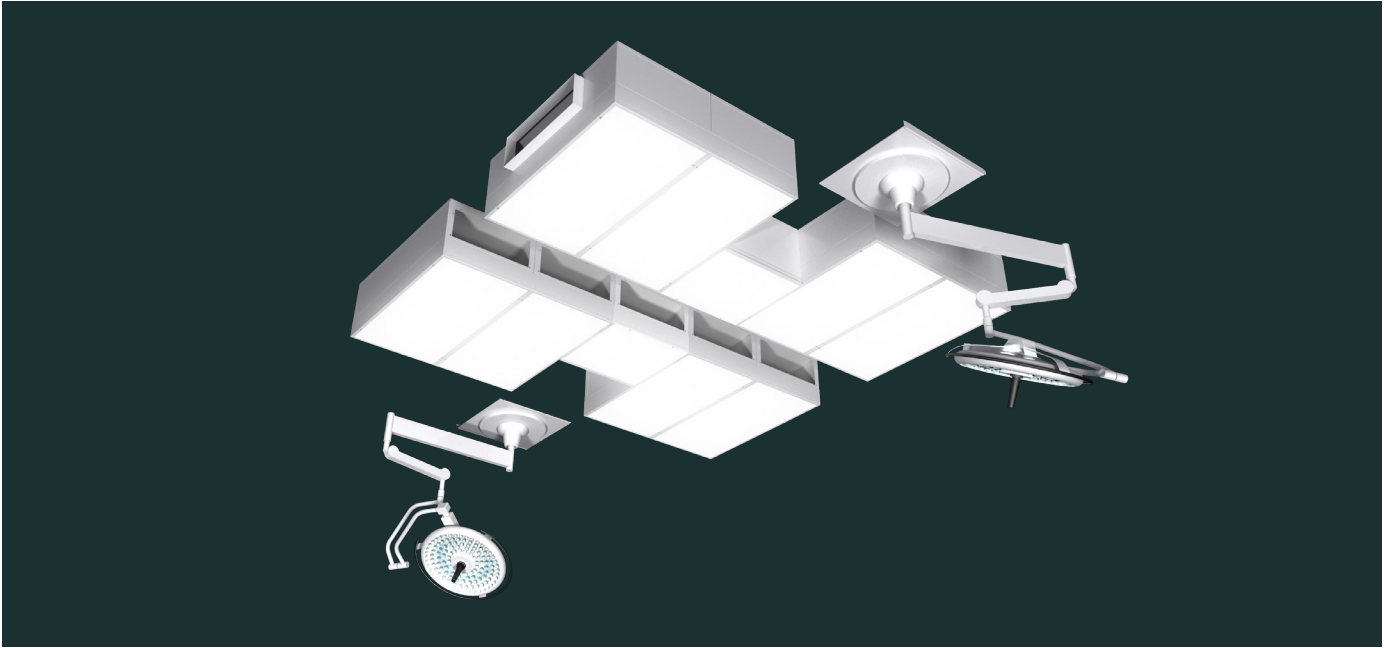
Supersuite with Integrated Unistrut

Easy Installation

- The Supersuite ships in large, factory-assembled sections to minimize installation time, and the closed-cell gasketed joints ensure an effective seal between modules.

- Integrated balancing dampers at each module as well as factory installed and wired lighting with quick connect cables make set-up and commissioning simple and efficient.

- Each Supersuite system ships with remote mounted driver cabinets. Each driver cabinet is factory wired for single point high voltage connection. All field wiring between the remoter driver cabinets and Supersuite is low voltage class 2 wiring.

Simple Maintenance

- The Supersuite meets all ASHRAE 170 requirements for cleanability with stainless steel fasteners and retainer cables for easy removal of the diffuser face.

- Optional room-side replaceable HEPA filters inside each Supersuite module provide clean air to the surgical zone. Integrated HEPA filters feature a gel seal to prevent filter bypass and pass on-site filter integrity testing.

- Integrated LED lighting is a sealed, IP67 rated fixture that effectively seals out debris and liquids.

- A remotely mounted control enclosure housing the LED drivers provides easy access for maintenance and replacement.

- High quality LED lights have a long lifespan, rated at 80% original brightness for 60,000 hours. If required, individual LED strips can be replaced with simple tools (ex: screwdriver) and quick connect wiring.
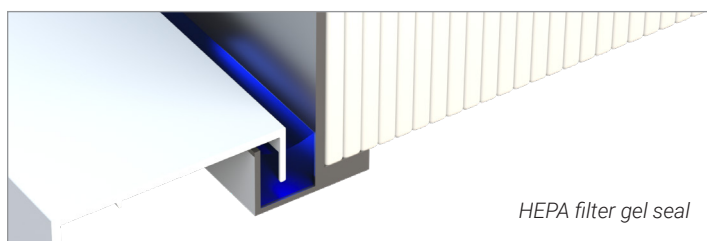
Remotely mounted LED drivers and enclosure

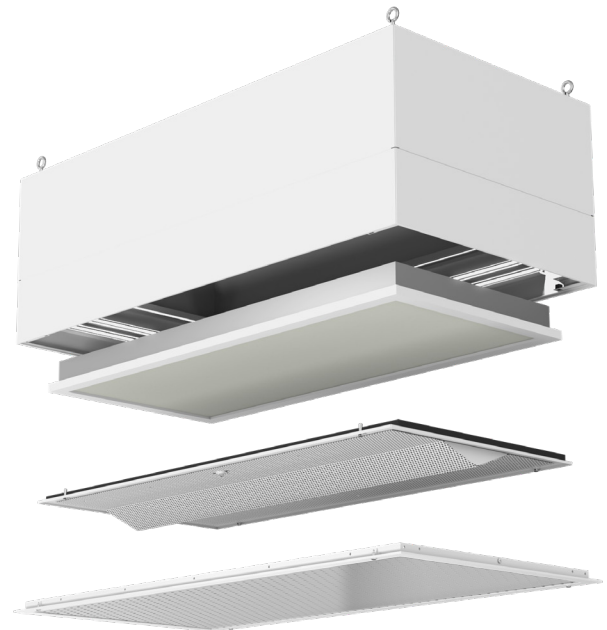*Quarter turn fasteners provide easy removal of the diffuser face*

HEPA filter retainer tabs
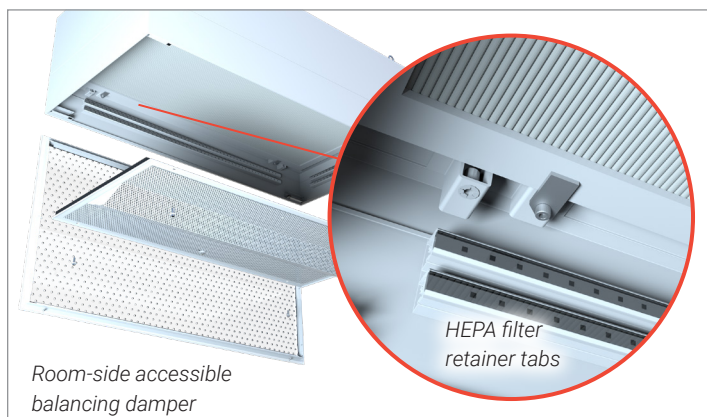
Room-side accessible balancing damper

Optional room-side replaceable HEPA filter

HEPA filter gel seal

Seismic Certification Preapproval

- Optional OSHPD Special Seismic Certification Preapproval as per OSP-0627-10.
- OSHPD Preapproval signifies that the Supersuite has undergone rigorous testing to ensure structural integrity and functionality are maintained in the event of an earthquake.

Code Compliance & Listings

- NFPA 90A-2018 Installation of Air Conditioning and Ventilating Systems.
- ASHRAE 170-2017 Ventilation of Healthcare Facilities.
- UL1598 Air-Handling Luminaries.
- UL 2043 Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces.
- UL2108 Low Voltage Lighting System.
- UL8750 Light Emitting Diode (LED) Equipment for Use in Lighting Products.
- UL1310 Class 2 Power Units.
- UL94 Flammability of Plastic Materials for Parts in Devices and Appliances.
- IP67 rated Ingress Protection Against Dust and Liquids.

Integrated Structural Support

- Optional integrated structural support is designed to support ceiling mounted medical devices, such as surgical lights, booms, and imaging equipment.

- An external structural support grid is mounted to the top of the Supersuite to maintain the patented equalized lighting across the diffuser array and eliminate any effect on air distribution.

- Design of the Supersuite structural support grid is coordinated by the Keystone team and stamped drawings from a structural engineer are provided for any state/province. The structural engineer of record for the building is responsible for the design, coordination and connection of the Supersuite structural grid to the building deck.

- Supersuite +Structure is completely customizable and ships in large factory pre-assembled sections to promote quick installation.

Supersuite +Structure ships in large pre-assembled sections (top view)
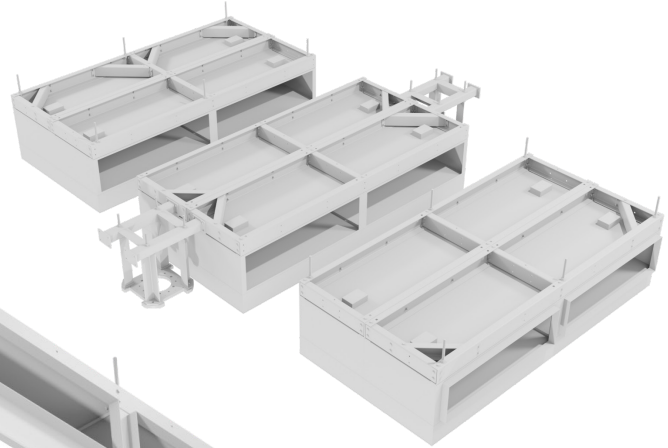
*Integrated structural support (roomside view)*
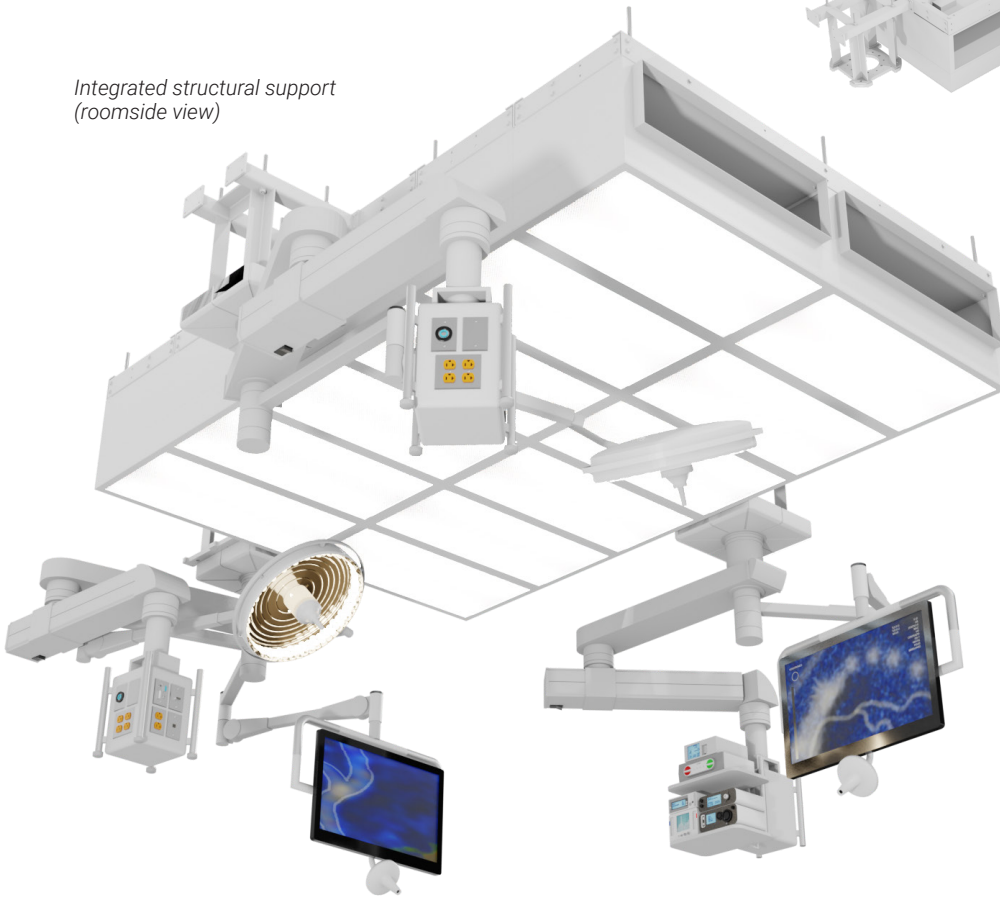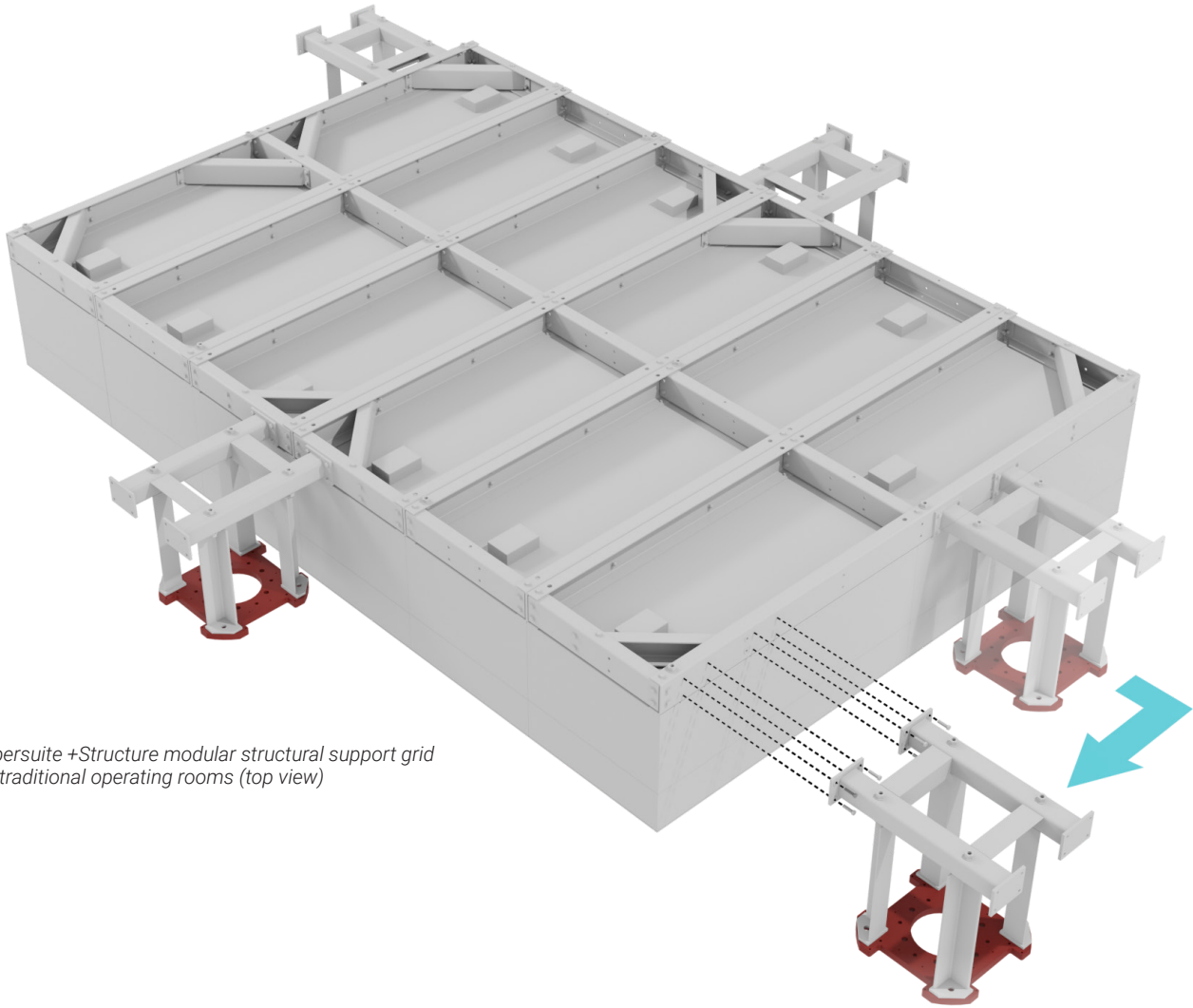
Supersuite +Structure modular structural support grid for traditional operating rooms (top view)

Traditional Operating Room Structural Support

- In Traditional Operating Rooms, where ceiling-mounted equipment booms are prevalent, the Supersuite +Structure makes use of a modular, bolt-together design that is unique in the industry (patent pending).

- The external, modular structural support grid used in the Supersuite +Structure system allows for changes late in the design process to accommodate changing equipment needs with little effect on fabrication lead time.

- Mechanical fastening of the Supersuite +Structure system provides flexibility to accommodate new medical equipment or changes to equipment location in the future with minimal on-site rework.

- The light-weight aluminum Supersuite structural support grid further simplifies installation with improved handling and maneuverability.

Hybrid Operating Room Structural Support

- The fully integrated Supersuite +Structure system is well suited to complex hybrid operating rooms. The combination of lights, diffusers, and structural support for ceiling mounted medical equipment in a single device allows for an optimized ceiling layout, meeting ASHRAE 170 guidelines and addressing the unique infrastructure needs of each operating room project.

- The Supersuite +Structure is fully customizable and compatible with all major imaging equipment manufacturers including GE, Philips, and Seimens.

- In hybrid operating rooms with large imaging equipment and rolling loads, the Supersuite +Structure features a fully welded structural support system to support the increased loads of these applications.

Supersuite +Structure with fully-welded structural support grid for hybrid operating rooms (roomside view)

Supersuite +Structure with fully-welded structural support grid for hybrid operating rooms (top view*)
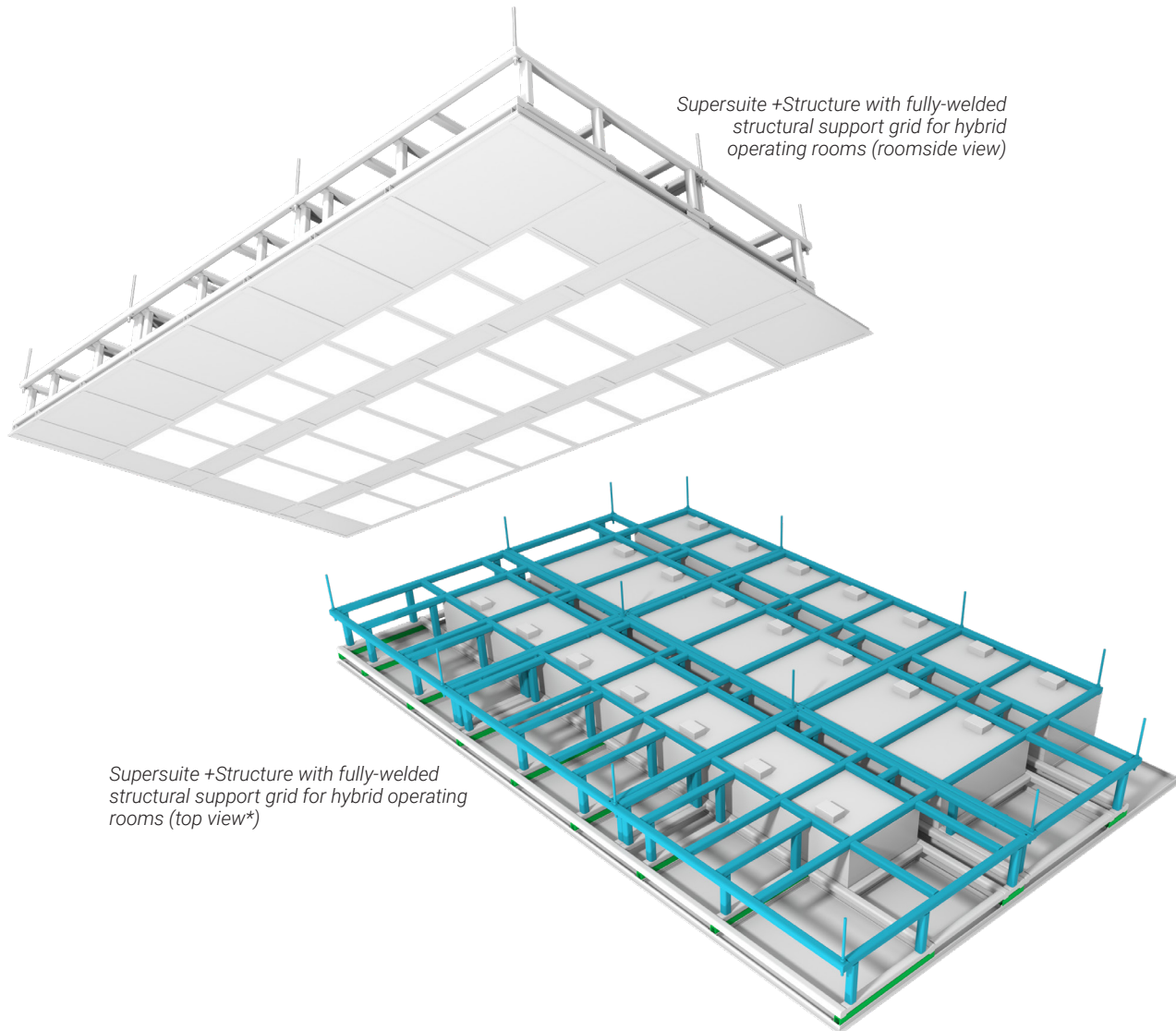
*Unistrut shown in green and Supersuite structural support grid shown in blue.

Performance Data

Individual Module

Unit Size (in.)	Inlet Size (in.)	Air Flow (cfm)	Face Velocity (fpm)	Static Pressure (in. w.g.)	Sound (NC)
24 in. x 24 in.	10 in. x 3 in.	100	25	0.05	-
		120	30	0.07	19
		140	35	0.10	24
	14 in. x 3 in.	100	25	0.04	-
		120	30	0.06	-
		140	25	0.08	17
24 in. x 48 in.	20 in. x 3 in.	200	25	0.05	-
		240	30	0.06	20
		280	35	0.09	26

Performance Notes:

1. All pressure drops are in inches water gauge (in. w.g.).
2. cfm = Air flow in cubic feet per minute.
3. NC = Noise Criteria. NC values are based on room absorption of 10dB re 10^{-12} watts.
4. Blanks "-" indicate NC level below 15.
5. Static pressure and NC performance assumes fully open damper and no filter.
6. Tested in accordance with ASHRAE Standard 70.

Array

Configuration	Quantity 24 in. x 24 in. Modules	Quantity 24 in. x 48 in. Modules	Inlet Quanity	Inlet Size	Inlet Velocity (fpm)	Air Flow (cfm)	Face Velocity (fpm)	Static Pressure (in. w.g.)	Static Pressure with HEPA filter (in. w.g.)	NC
A	2	8	2	24 in. x 10 in.	540	1800	25	0.05	0.13	25
					648	2160	30	0.07	0.16	31
					756	2520	35	0.09	0.20	35
B	2	6	2	24 in. x 8 in.	525	1400	25	0.05	0.13	24
					630	1680	30	0.07	0.16	30
					735	1960	35	0.09	0.20	35
C	0	6	1	32 in. x 10 in.	540	1200	25	0.05	0.13	22
					648	1440	30	0.07	0.16	28
					756	1680	35	0.09	0.20	32

Performance Notes:

1. Supersuite array performance is dependant on array layout. Configurations A,B, and C are sample layouts shown on page 6.
2. Recommended inlet velocity is 500-800 fpm.
3. All pressure drops are in inches water gauge (in. w.g.).
4. cfm = Air flow in cubic feet per minute.
5. NC = Noise Criteria. NC values are based on room absorption of 10dB re 10^{-12} watts.
6. Blanks "-" indicate NC level below 15.
7. Static pressure and NC are calculated values based on test data with a fully open damper.
8. Tested in accordance with ASHRAE Standard 70.
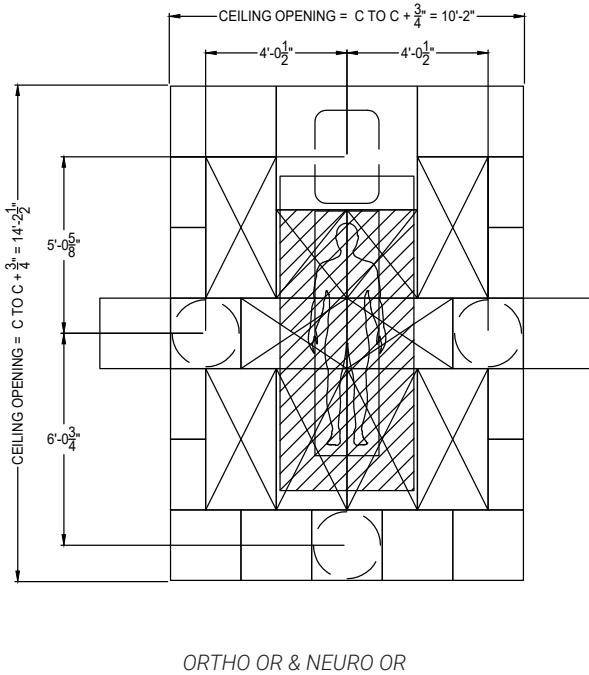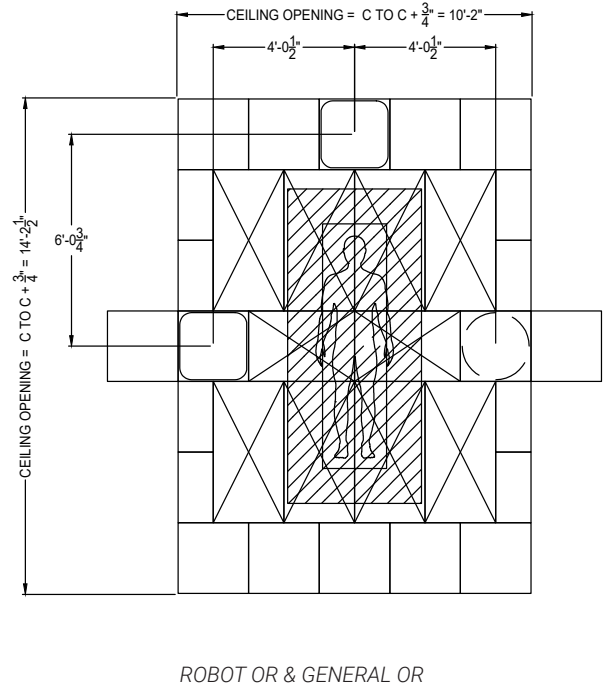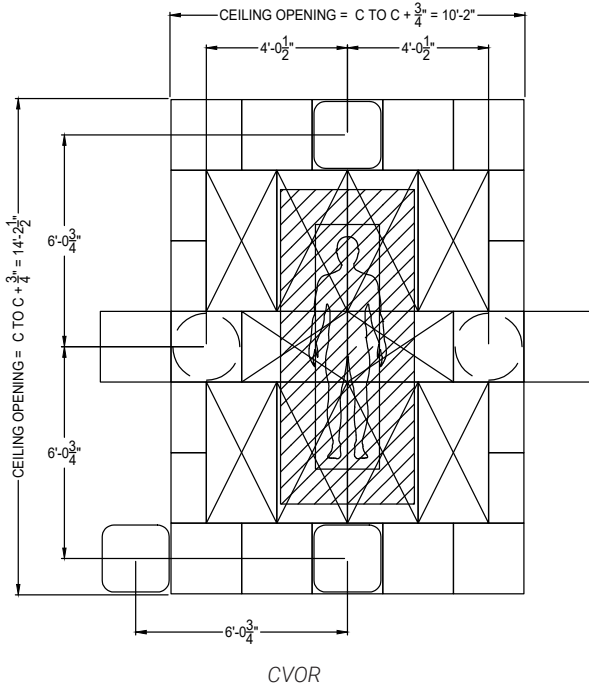
Dimensional Data

Supersuite Heights
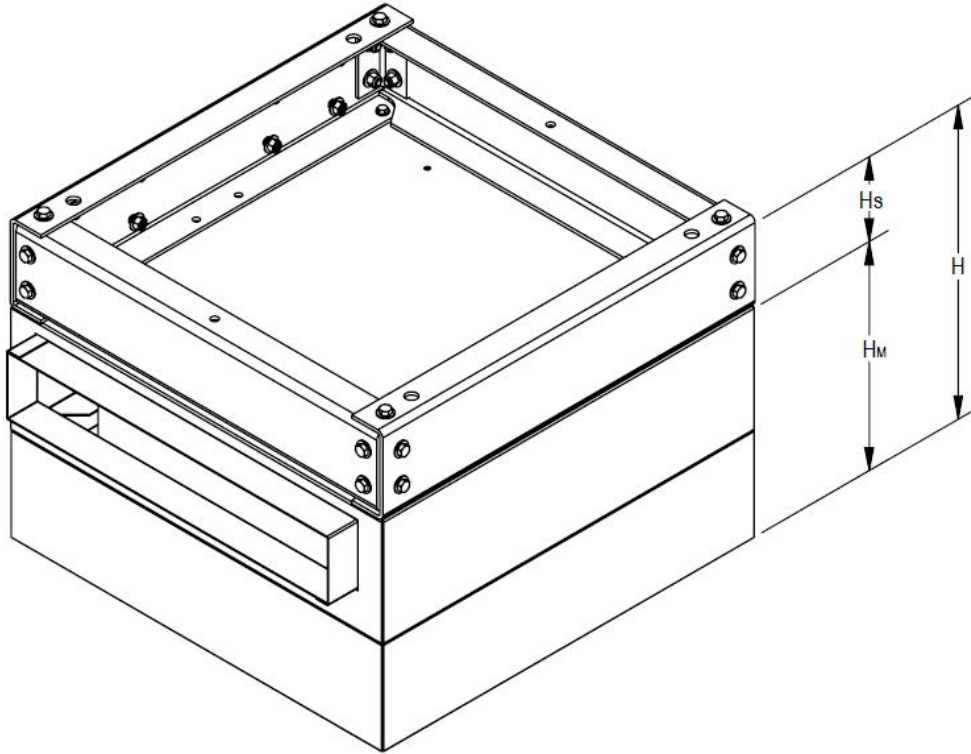
Supersuite with Modular Structure for Traditional OR shown

	Module Height (H$_M$)				Structure Height (H$_s$)	Overall Height (H)			
	Min		Standard	Max	Standard	Min		Standard	Max
	Without HEPA	With HEPA				Without HEPA	With HEPA		
Supersuite	10 in.	12 in.	15 in.	20 in.	-	10 in.	12 in.	15 in.	20 in.
Supersuite Modular Structure for Traditional OR	10 in.	12 in.	15 in.	20 in.	5 in.	15 in.	17 in.	20 in.	25 in.
Supersuite Welded Structure for Hybrid OR					3 in.	13 in.	15 in.	18 in.	23 in.
Supersuite (No Lights)	7 in.	9 in.	12 in.	18 in.	-	7 in.	9 in.	12 in.	18 in.
Supersuite (No Lights) Modular Structure for Traditional OR	7 in.	9 in.	12 in.	18 in.	5 in.	12 in.	14 in.	17 in.	23 in.
Supersuite (No Lights) Welded Structure for Hybrid OR					3 in.	10 in.	12 in.	15 in.	21 in.

Dimensional Data

Typical Supersuite Layouts with Stryker Equipment Booms

CVOR

ROBOT OR & GENERAL OR

ORTHO OR & NEURO OR

SUPERSUITE
by price