AIR|GUARD®
the cool choice.™

RAISED FLOOR GROMMETS
IMPROVING DATA CENTER COOLING EFFICIENCY

LIMITING AIRFLOW BYPASS AND REDUCING ENERGY CONSUMPTION

Why is it so challenging to cool data centers? The problem often isn't a lack of cooling capacity, but the lack of cold air delivery. Installing additional cooling capacity won't solve the problem. To get cold air to go where you want it, you must stop it from going where you don't want it to go.

Applying airflow management best practices improves cool air distribution, contributing to increased cooling capacity and extending the life of a data center cooling system. These best practices include sealing cable openings and pipe, pillar, and utility penetrations in a raised floor with cable seal grommets.

AirGuard cable seal floor grommets are designed to eliminate nearly all bypass airflow, increase cooling capacity, enable higher equipment density and dramatically lowering energy consumption.

AirGuard cable seal floor grommets maximize cooling efficiency by limiting bypass airflow, facilitate improved cable management and satisfy NFPA 75 standards for protecting cable openings and minimizing the entrance of debris beneath the raised floor.

AirGuard Cables Seals are named new product of the year*

Proving that sometimes the best things are the simple things, PDU Cable's AirGuard cable seal takes the gold for helping to prevent air loss in plenum cooled floors with its simple concept and design. The overlapping brushes in AirGuard's unique design close up cable openings, increasing the static pressure under the floor and keeping debris from entering the air plenum.

AIRGUARD® the cool choice.™

The Flush Mount's innovative design incorporates a mechanical latch on the sidebar allowing users to detach one side of the unit to remove floor tiles without disconnecting power and data cables. The heavy duty ABS polycarbonate construction is UL 94 V-O rated for flammability. The textured surface is slip resistant and compliments all floor coverings. Mounting hardware and cutout template complete the standard product kit. Dimensions: 6.0" H x 12.0" W x 1.5" D.

The overlapping brushes in the Flush Mount's unique design allow flexibility and simplicity in cable routing and are easy to install in any location on a floor panel. Relocating the Flush Mount is also simple and inexpensive.

AirGuard Flush Mount

PDU Cables' New AirGuard Cable Seal was a winning entry in SearchDataCenter.com's "Product of the Year" award for 2006 in the category Data Center Cooling.

REDUCE BYPASS AIRFLOW—
INCREASE COOLING EFFICIENCY

Ninety-six percent. That is how effective AirGuard cable seals were at reducing bypass airflow when used to seal cable cutouts in a raised floor data center.

A series of tests performed to evaluate the effect of brush grommets in reducing bypass airflow found they reduced bypass airflow in all conditions by over 96% compared to a typical open hole. The tests also found that there was only a nominal change in performance as the static air pressure increased from 0.2″ WG to 0.5″ WG.

The University of South Hampton performed a series of tests to evaluate AirGuard cable seals in their data center. They found that after installing AirGuard cable seal floor grommets their rack temperatures declined from 86°F to 71.6°F, a drop of 14.4°F.

Data centers can save 4% to 5% in energy cost for every 1° F increase in server inlet temperature. www.energystar.gov

Overlapping brushes seal cable openings eliminating bypass airflow and limiting under-floor contamination

AirGuard 5″ Round

AirGuard... the superior cable floor grommet:

Limits bypass airflow.

Increases underfloor airspace static pressure.

Reduces underfloor airspace contamination.

Protects power/data cables from damage.

Provides flexibility and simplicity in cable routing.

Installation is simple and inexpensive.

Extends cooling equipment life.

Improves cooling efficiency.

Increases cooling capacity.

Improves energy efficiency.

Reduces energy consumption.

Saves money.

Meeting and exceeding industry standards:

Constructed of flame retardant ABS polycarbonate material.

ABS, EPDM and Nylon Brush Polymers all carry a V-O rating per the ANSI/UL 94 Standard for "Tests for Flammability of Plastic Material for Parts in Devices and Appliances".

Meets NFPA 75 Standards for Flame Spread Rating, protecting cables from damage and limiting debris from entering the underfloor airspace.

NEC 645.5(E) code compliant for protecting cables in cable openings through floors against abrasion and minimize the entrance of debris beneath the floor.

RoHS compliant.

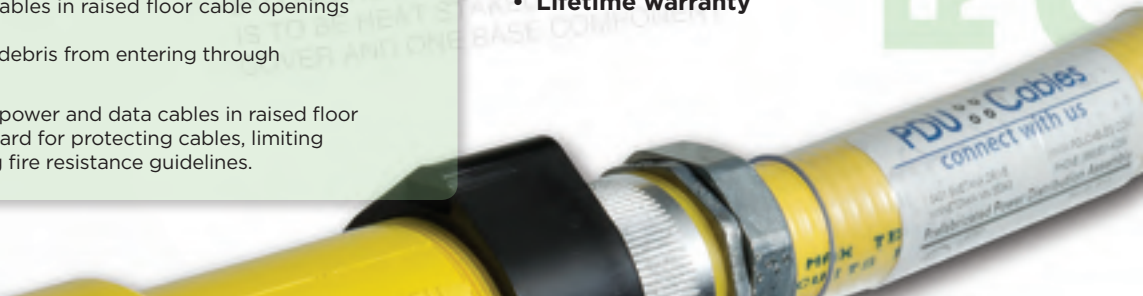### SATISFYING NFPA 75 AND NEC ARTICLE 645.5(E) STANDARDS

AirGuard cable seal floor grommets satisfy the requirements of both NFPA 75 and NEC 645.5(E). The NFPA 75 and NEC 645.5 address standards for managing a data center's raised floor. Encase all openings or cut edges of floor tiles. All raised floor components must a flame-spread index of 25 or less. Protect cords and cables in raised floor openings against abrasion. Openings in a raised floor must be sealed to limit the entrance of debris beneath the floor.

- All AirGuard grommets seal exposed core of floor tiles.
- All AirGuard grommets are UL 94 V-O flame rated and meet the flame spread index of 25 or less, per ANSI/UL 723.
- All AirGuard grommets protect cables in raised floor cable openings from abrasion.
- All AirGuard grommets minimize debris from entering through cable openings.

Simply filling, covering up or booting power and data cables in raised floor openings do not meet NFPA 75 standard for protecting cables, limiting underfloor contaminants and meeting fire resistance guidelines.

The preferred choice for sealing raised floor cable openings:

- **Superior sealing effectiveness**
- **Multiple sizes and configurations**
- **Ease of installation**
- **Maintenance free**
- **Durability**
- **Safety**
- **Lifetime warranty**

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PART NUMBER		UL94 VO Rated Construction	Brush Technology	EPDM "Rubber" Gasket Technology	Safety Cover	Dimensional Drawings	Installation Instructions	Mounting Hardware
Flush Mount 116-800-001	p 5	●	●		Optional	●	●	●
Extreme 116-800-015	p 6–7	●	●	●	Standard	●	●	●
Extreme Split 116-800-015-Split	p 7	●	●	●	Standard	●	●	●
5″ Round 116-800-050	p 8	●		●		●	●	●
Surface Mount 116-800-003	p 9	●	●			●	●	●
Surface Mount Brush Kit 116-800-100	p 9	●	●			●	●	●
Brat 116-800-030	p 10	●		●		●	●	●
Brush Kit 116-800-020 (12″) 116-800-022 (24″)	p 10	●	●			●	●	●
AirBlock 6″ Round 116-800-010	p 11	●		●	Standard	●	●	●
AirBlock 6″ Round (Brush Option) 116-800-060	p 11	●	●		Standard	●	●	●
AirBlock 3.5″ Round 116-800-040	p 11	●		●		●	●	●
AirBlock 4″×8″ Rectangular 116-800-070	p 11	●		●	Standard	●	●	●

LIFETIME WARRANTY PDU Cables, Inc. provides a lifetime warranty for all AirGuard products purchased through PDU Cables, and warrants that each product is free from defects in quality and workmanship from the date of original purchase. If any AirGuard product should fail because of a manufacturing defect, PDU Cables will repair or replace the product free of charge, provided that the product has not been subjected to abuse, misuse, accident, disaster or non-authorized modification or repair.

Under no circumstances will PDU Cables be liable in any way for damages including lost revenue or profits, or other incidental or consequential damages arising out of the use of, or inability to use, such product.

For more information contact PDU Cables at **1.866.631.4238** or **warranty@pducables.com**.

AirGuard Flush Mount, top view

AirGuard® Flush Mount

The award winning AirGuard Flush Mount, is the ideal cable seal when making new installations in your data center to maximize energy efficiency.

The Flush Mount minimizes air loss in plenum cooled floors and increases under-floor static pressure. The Flush Mount closes cable openings with an overlapping brush design preventing under-floor contamination. Designed with a removable brush feature, the Flush Mount allows for easy removal of floor tiles without disconnecting the cables. This feature also allows large connectors to pass through the grommet without the need for an oversized cutout.

The overlapping brushes in AirGuard Cable Seal's unique design provide flexibility and simplicity in cable routing. The brushes seal the floor openings, preventing debris from entering the air plenum and causing damage to sensitive electronic equipment.

Removable Brush

Flush Mount Safety Cover

AirGuard Flush Mount
Part Number: 116-800-001
Dimensions:
Cutout—Center Installation—10.25″× 4.5″
Cutout—Edge Installation—10.25″× 5.25″
Usable Area—9.0″× 3.0″
Overall—13.0″× 6.25″

Manufactured from flame retardant ABS polycarbonate material that provides a finished look on all raised floor panels, solid construction and textured surface compliments all floor coverings. The kit includes a cutout template, hardware, and integrated mounting trim to save time and labor during installation.

For every square foot of unsealed openings in a data center's raised floor reduces its cooling capacity by approximately 1 to 1-1/2 tons. Just a few unsealed cable openings can cost a data center several tons of cooling capacity. It is easy to understand why the primary cooling problem in most data centers is inadequate air distribution, not insufficient cooling capacity.
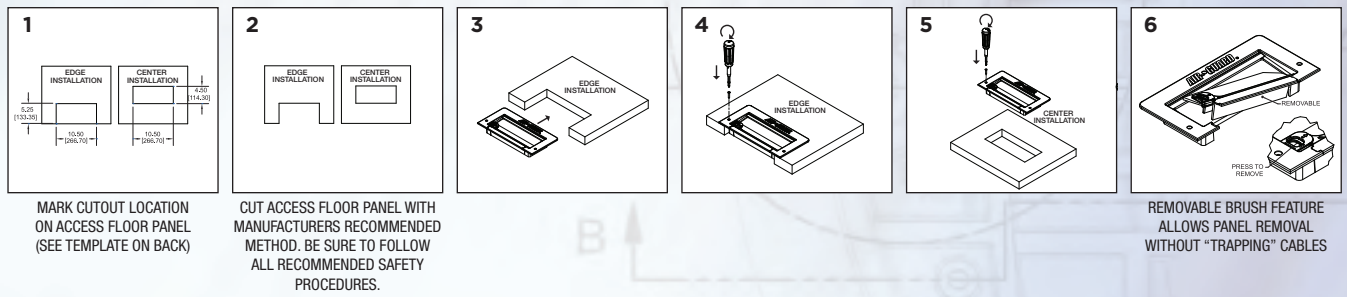
AirGuard® Safety Cover

The optional safety cover fits over the Flush Mount to provide a solid surface for increased durability and safety when installed in advance of cabling.

OSHA may require the use of Safety Covers on construction sites.*

AirGuard Flush Mount Safety Cover
Part Number: 116-800-002
Dimensions:
Overall—4.0″× 10.0″

Step-by-step Installation Instructions—Flush Mount AirGuard 116-800-001

1	2	3	4	5	6
MARK CUTOUT LOCATION ON ACCESS FLOOR PANEL (SEE TEMPLATE ON BACK)	CUT ACCESS FLOOR PANEL WITH MANUFACTURERS RECOMMENDED METHOD. BE SURE TO FOLLOW ALL RECOMMENDED SAFETY PROCEDURES.				REMOVABLE BRUSH FEATURE ALLOWS PANEL REMOVAL WITHOUT "TRAPPING" CABLES

** OSHA Statute:
1910.23(a)(8)—Every floor hole into which persons can accidentally walk shall be guarded by either:
1910.23(a)(8)(i)—A standard railing with standard toeboard on all exposed sides, or
1910.23(a)(8)(ii)—A floor hole cover of standard strength and construction. While the cover is not in place, the floor hole shall be constantly attended by someone or shall be protected by a removable standard railing.
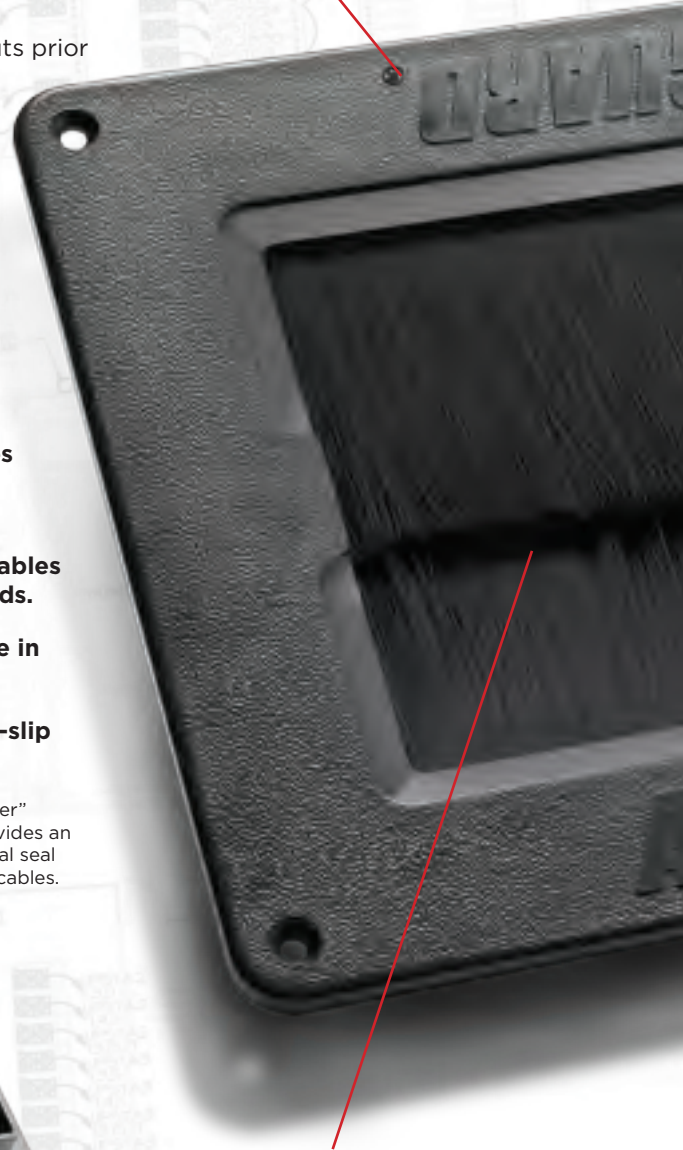
AirGuard® Extreme

Incorporating both nylon brushes and heavy duty flexible EPDM synthetic "rubber" gasket underlayment, the AirGuard Extreme delivers an airtight seal around cables. The Extreme's dual seal technology eliminates air leakage, controls bypass airflow and minimizes contaminants from entering through cable cutouts in a raised floor environment.

The AirGuard Extreme is designed to seal openings in raised floor cutouts prior to an installation of communications or power cabling. Manufactured from flame retardant ABS polycarbonate both the Extreme and its safety cover offer solid construction with a textured surface that has a finished look that compliments all floor coverings.

The included hardware and integrated mounting trim saves time and labor, eliminating the need to cut individual trim fittings, making the AirGuard Extreme easy to install and integrate with the access floor static dissipative system.

- **The one piece construction with integrated mounting trim saves time and allows for quick and easy installation.**

- **The overlapping brushes prevent passage of debris and contaminates from entering the air distribution system and causing damage to sensitive electronic equipment.**

- **Designed to accommodate either single cables or large bundles of cables through the same opening, providing flexibility for future wiring needs.**

- **The combined rubber gasket and brush grommets hold cables secure in the cable seal opening.**

- **Textured body and surface flush safety cover, offer a continuous non-slip solid surface in anticipation of future cabling.**

Textured ABS polycarbonate construction is flame retardant and provides a slip resistant surface.

EPDM "rubber" gasket provides an exceptional seal around cables.

Overlapping brush technology helps to prevent under-floor contamination.

AirGuard Extreme, bottom view

"I believe that the use of AirGuard cable seals will aid cooling efficiency, reduce the work load of the CRAC units and in the long-term save the data center on the energy we use."
A. B., Director of Information Technology

AirGuard Extreme with Safety Cover
Part Number: 116-800-015
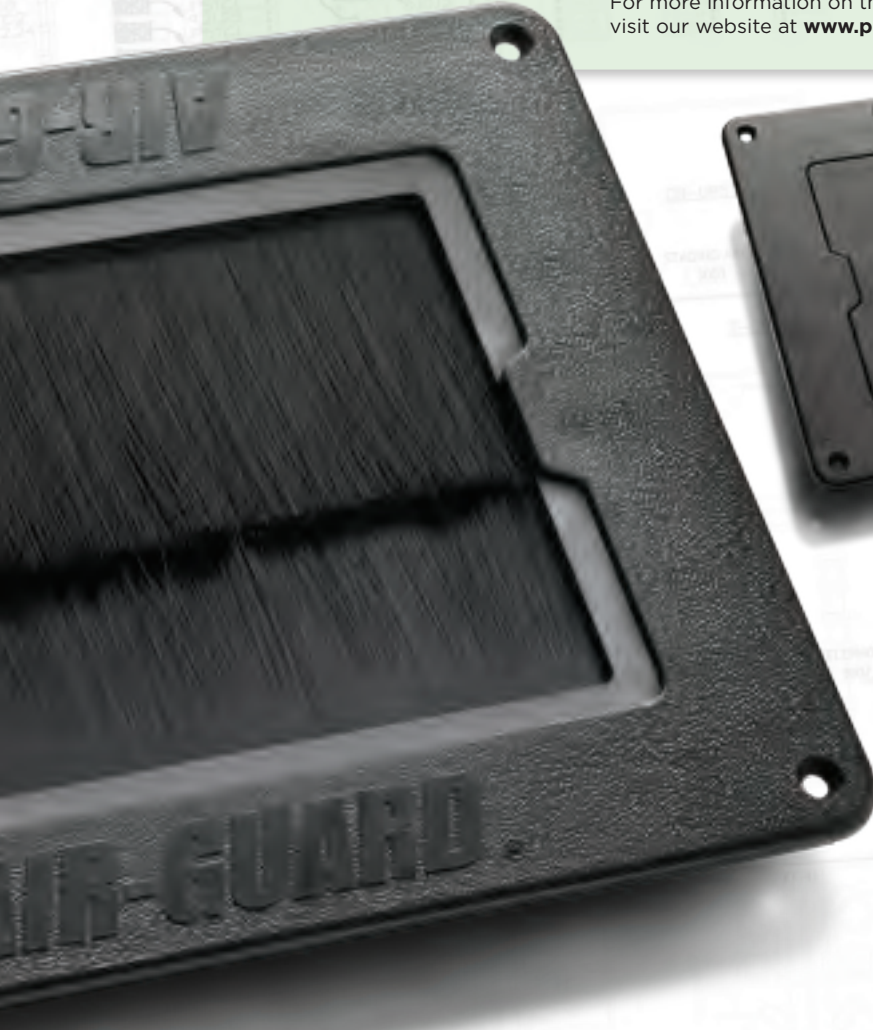**Dimensions:**
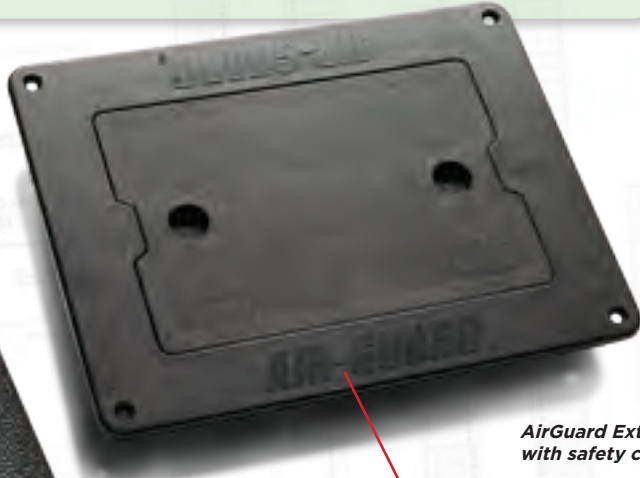Cutout—9.0"× 6.50"
Usable Area—7.25"× 4.75"
Overall—11.0"× 8.25"

The AirGuard Extreme dual technology floor sealing system provides a superior seal as determined by an independent, certified testing lab.*

Measured against a leading competitor's product, the AirGuard Extreme was found to beat out the competition in three separate tests. In each of the three tests, the AirGuard Extreme tested with 50% less air leakage than the Koldlok model 1010. The results demonstrate that the double layer gasket system, incorporating a flexible EDPM "rubber" gasket seal, along with the AirGuard brush technology, provide a superior air seal. Testing results make it clear – the AirGuard Extreme with its dual-technology cable seal system is the best choice when choosing a cable grommet for your data center.

For more information on the Independent Cable Grommet Test Results visit our website at **www.pducables.com**.

AirGuard Extreme, top view with safety cover

One piece construction with integrated mounting trim saves time and allows for quick and easy installation

- **Standard with every AirGuard Extreme, the safety cover can be easily inserted or removed using finger holes.**

- **Flame retardant ABS polycarbonate material provides a tough, durable finish that will hold up to extensive floor traffic without the worry of damage due to equipment cart wheels or other objects.**

AirGuard Extreme, top view

Extreme Safety Cover

The safety cover is designed to fit perfectly inside and set flush with the opening of the AirGuard Extreme. The finger grips allow for easy access, removal and installation as needed. Remove any worries about accidental injuries when grommets are installed but left unattended.

AirGuard Extreme Split with Safety Cover
Part Number: 116-800-015-Split
Dimensions:
Cutout—9.0"× 6.50"
Usable Area—7.25"× 4.75"
Overall—11.0"× 8.25"

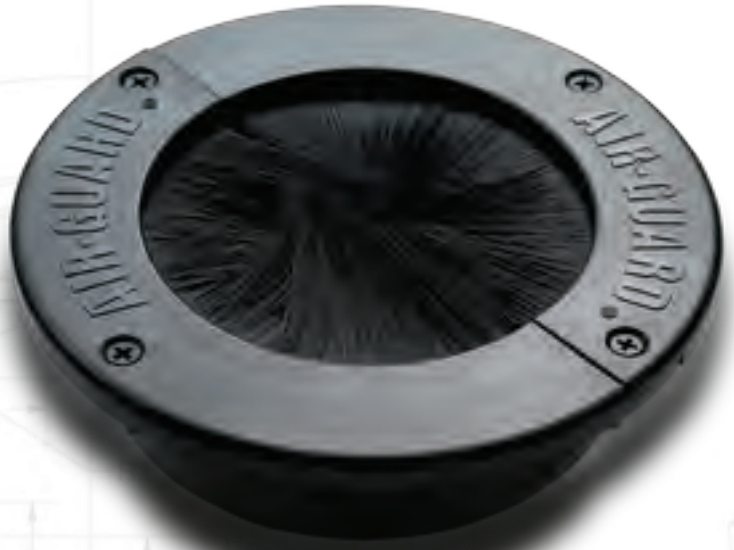*AirGuard Extreme Split*

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AirGuard® 5″ Round

The AirGuard 5″ Round, the perfect solution for both new and existing cable cutouts. The AirGuard 5″ Round is a data center's best option to limit airflow bypass and underfloor contamination for installation of smaller bundles of power and or data cables.

Featuring AirGuard's innovative double-layer cable seal technology; the 5″ Round utilizes overlapping brushes partnered with flexible EPDM synthetic "rubber" gasket material to deliver airtight seals around cables.

Together the brushes and rubber gasket work in tandem to hold cables in the center of the cutout while limiting the passage of contaminants under the floor. The dual stage sealing system provides a superior seal to prevent bypass airflow, reduce energy consumption, and aid in the implementation of hot/cold aisle configurations.

The AirGuard 5″ Round is the superior choice for sealing smaller cable cutouts in a raised floor data center.
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AirGuard 5″ Round
Part Number: 116-800-050
Dimensions:
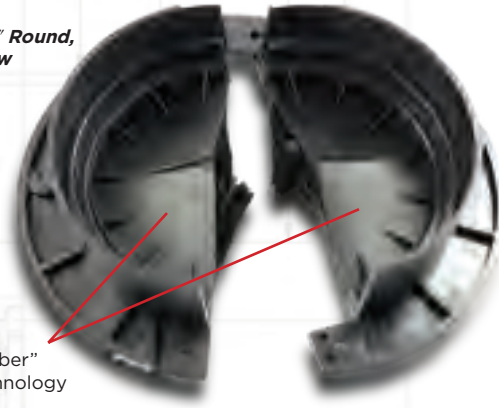Cutout Diameter—5.0″
Inner Diameter—4.5″
Outer Diameter—6.5″

AirGuard 5″ Round, top view

Overlapping Brush Technology

AirGuard 5″ Round, bottom view

EPDM "Rubber" Gasket Technology

The preferred choice to seal raised floor cable openings:

- **Overlapping brush technology, limits airflow bypass.**
- **The attractive textured finish offers an impact and slip resistant surface.**
- **Avoid tripping hazards with the grommets low profile.**
- **Constructed of flame retardant and heat resistant thermoplastic polymer.**
- **EPDM "Rubber" gasket membrane keeps cables centered on the grommet.**

- **Two piece assembly, designed to retrofit around existing cables.**
- **ABS polycarbonate construction features industry leading UL94 V-O rating.**
- **Each 5″ Round includes self-threading screws for quick and easy installation.**
- **Popular for sealing cabinet cable cutouts.**

LEED CERTIFICATION

Whether you are seeking LEED Certification or not, improving energy efficiency will save data center money. Research suggests only 40% of a cooling system's cold air goes directly to cool servers. Sealing cable cutouts and holes in walls and raised floors will help address the bypass airflow problem and improve energy efficiency.

With AirGuard Cable Seal grommets, an immediate energy savings benefit is realized by increasing static air pressure under a raised floor. AirGuard minimizes wasted cold air lost to bypass airflow and concentrates cold air at server intakes making cooling systems more effective. Increased cooling efficiency saves on operating costs and helps to prevent expensive electrical equipment from overheating in a raised floor environment.

AirGuard® Surface Mount

Need a quick fix to cover existing raised floor cable cutouts? The AirGuard Surface Mount is designed to retro-fit around existing cables without the need to disconnect cables.

Simply remove adhesive tape from the underside of the Surface Mount, position the two sides around existing cables, and press in place. Finish with the included mounting screws and the cable cutout is enclosed with AirGuard Brush Technology.
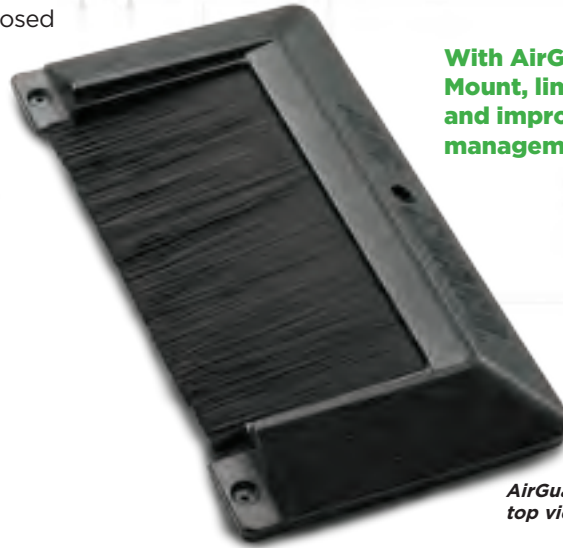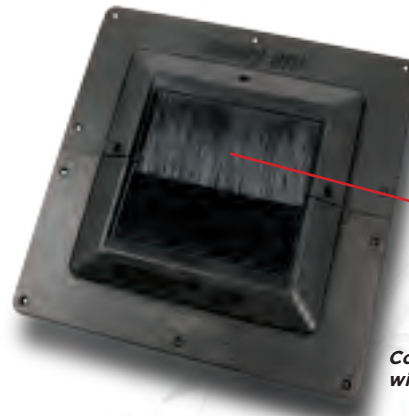
With AirGuard Surface Mount, limiting air bypass and improving airflow management is easy.

AirGuard Surface Mount, top view

Will allow installations over cutouts of 12.5″× 12.5″

Overlapping Brush Technology

AirGuard AirAdapt, top view

Combination AirAdapt with Surface Mount

AirGuard® AirAdapt

AirGuard Air Adapt, the perfect solution for enclosing oversize cable cutouts in existing floors. The AirAdapt extends the Surface Mount to applications up to 12.5″× 12.5″.

AirGuard® Surface Mount Brush Kit

Ideal for sealing holes against walls; with the Surface Mount Brush Kit, there is no need to cut floor panels to mount over odd shape or sized floor cutouts.

The Surface Mount Brush Kit contains one brush piece and two side rail clips, and all the hardware needed for a quick and easy installation.
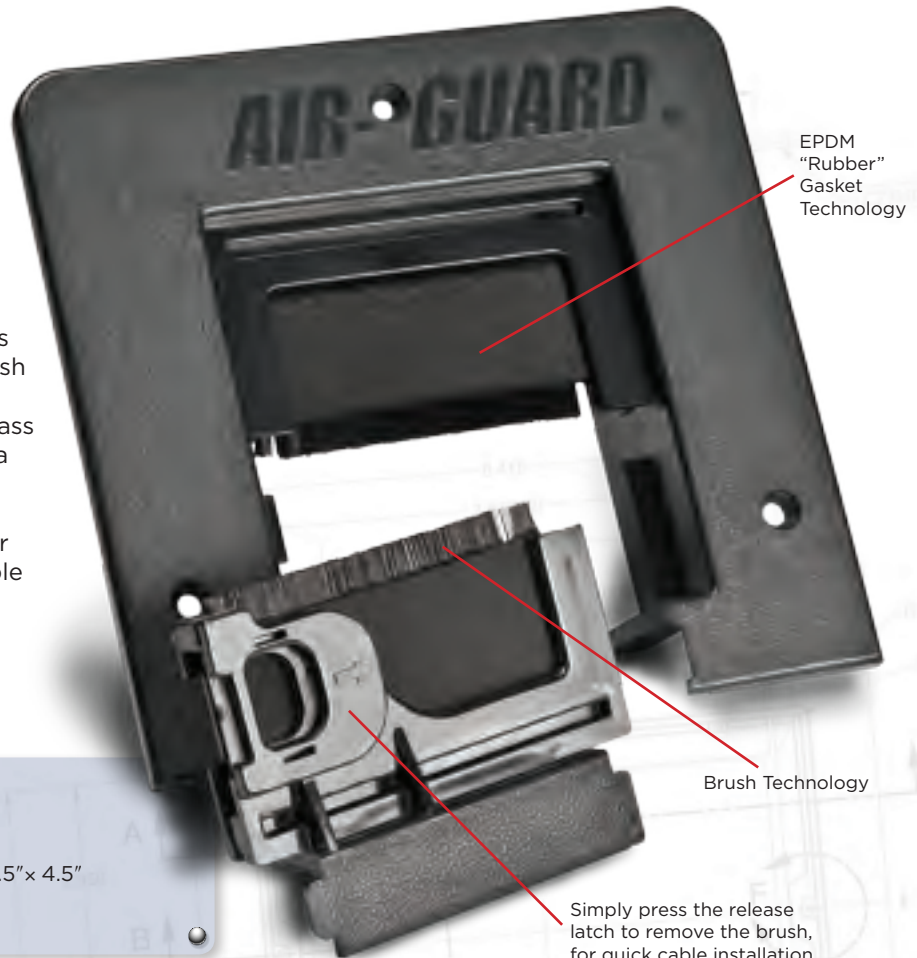
AirGuard® Brat

The AirGuard Brat, for when you need the best cable seal on the market but in a smaller size.

Utilizing the same dual cable seal system that made the AirGuard Extreme a test proven superior product, the Brat features a similar removable back brush as the Flush Mount. The AirGuard Brat is another data center favorite choice for eliminating bypass airflow and controlling air leakage under a raised floor cooling system.

Ideal for smaller cutout cable openings, or smaller cable bundles, the Brat's removable brush allows panel removal without "trapping" cables

EPDM "Rubber" Gasket Technology

Brush Technology

AirGuard Brat
Part Number: 116-800-030
Dimensions:
Cutout—Center Installation—4.5″× 4.5″
Usable Area—3.3″× 3.2″
Overall—6.9″× 6.4″

Simply press the release latch to remove the brush, for quick cable installation.

AirGuard Brat, top view

AirGuard® Flush Mount Brush Kit

The AirGuard Brush Kit is designed to seal odd sized cutouts using brush technology. Brush Kits can be cut to fit any custom floor cutout size, the perfect application for sealing existing cable cutouts.

AirGuard's Flush Mount Brush Kit feature side rail clips engineered to provide cable protection as required by code (NFPA 75-5.4.4). Available in 12 and 24-inch lengths, AirGuard Brush Kits include factory applied adhesive strips, making them both fast and easy to install.

AirGuard 12″ Flush Mount Brush Kit
Part Number: 116-800-020
Dimensions:
Brush Coverage—12.0″× 9.0″

AirGuard 24″ Flush Mount Brush Kit
Part Number: 116-800-022
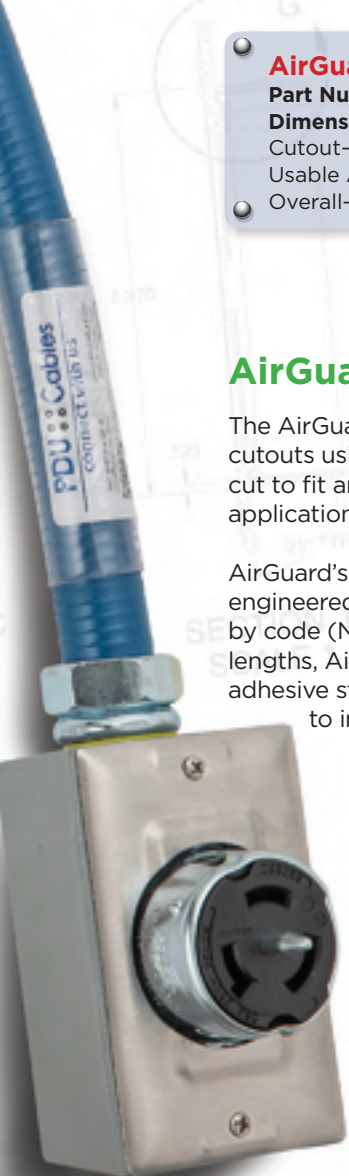**Dimensions:**
Brush Coverage—24.0″× 9.0″

A perfect solution for sealing off hard conduit and pipes running through floors along walls.

By limiting and controlling airflow through a raised floor, you improve the effectiveness of a fire suppression system.

AirGuard Brush Kit components, top view
Brushes and rails can be cut to fit any size cable cutout

AirBlock™

The AirBlock line of cable seal grommets are designed to seal 0.5″ or 0.75″ diameter cables in single or pairs. The most common AirBlock configuration utilizes the heavy duty split EPDM rubber gasket sealing system for raised floors, access flooring, and enclosed cabinet tops.

Constructed of the same flame retardant materials as the brush grommets, each AirBlock offers multiple cable knockout form an airtight seal around cables helping to eliminate air leakage through cable cutouts. The two-piece design removes the need for an outer housing ring and facilitates quick and easy installation of the grommet. The AirBlock mechanically locks into an access floor panel hole via screw toggles located on the top surface of the grommet.

Grommet splits into two sections for quick and easy installation, no fishing cables through the grommet.

AirBlock 6″, separated view (Brush Option)

AirBlock—6″ (Brush Option)
Part Number: 116-800-060
Dimensions:
Diameter Hole—6.0″
Useable Area—4.0″× 1.5″

The safety cover is designed to eliminate job site safety issues and protect the cable and gasket area when the grommet is not in use.

AirBlock—6″ (EPDM "Rubber" Gasket Option)
Part Number: 116-800-010
Dimensions:
Diameter Hole—6.0″
Knock-Outs—(2) 0.5″ and (2) 0.75″

AirBlock 6″, separated view (Rubber Gasket Option)
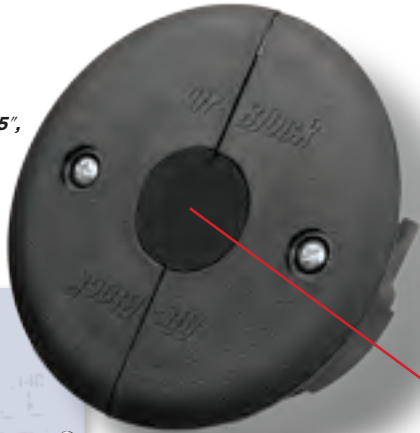
AirBlock — Rectangular, top view

AirBlock—Rectangular
Part Number: 116-800-070
Dimensions:
External—5.375″× 8.875″
Cutout—7.875″× 4.375″
Knock-Outs—(5) 0.5″ (expandable to 0.75″)

AirBlock—Rectangular, bottom view
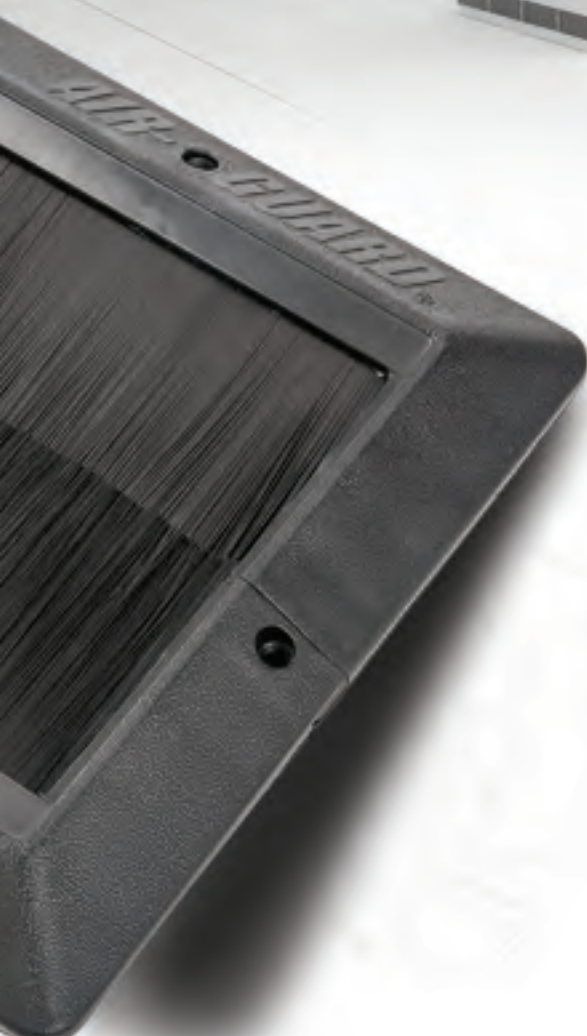
Five—0.5″ Knock-Outs (expandable to 0.75″)

AirBlock—3.5″, top view

Sealing cable openings prevent bypass airflow and improve data center cooling energy efficiency.

AirBlock—3.5″
Part Number: 116-800-040
Dimensions:
Diameter Hole—3.5″
Knock-Out—(1) 0.5″ (expandable to 0.75″)

Knock-Out expandable from 0.5″ to 0.75″

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Lower Data Center Operating Costs by Focusing on Airflow Management

The 2006 ACEEE (American Council for an Energy-Efficient Economy) summer study on energy efficiency in buildings, determined that data centers can be over 40 times as energy intensive as conventional office buildings.

A significant portion of any data center's energy consumption is the CRAC (computer room air conditioning) units. Industry studies estimate that only 40% of a cooling systems cold air goes directly to cool servers. A key problem affecting air management is when cooled air circulates back to air conditioning units through openings in raised floors such as cable openings or misplaced floor tiles with openings.

A well designed air distribution system can reduce energy consumption, reduce investment in CRAC equipment, allow for increased utilization, and improve reliability by reducing processing interruptions or equipment degradation due to overheating. A well designed data center air distribution system includes AirGuard Cable Seal products to provide an exceptional seal around cables for reduced bypass airflow through cable cutouts.

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