CEILING&WALL | SYSTEMS

Between us, ideas become reality®

CI/SfB (35) Xy
10/2013

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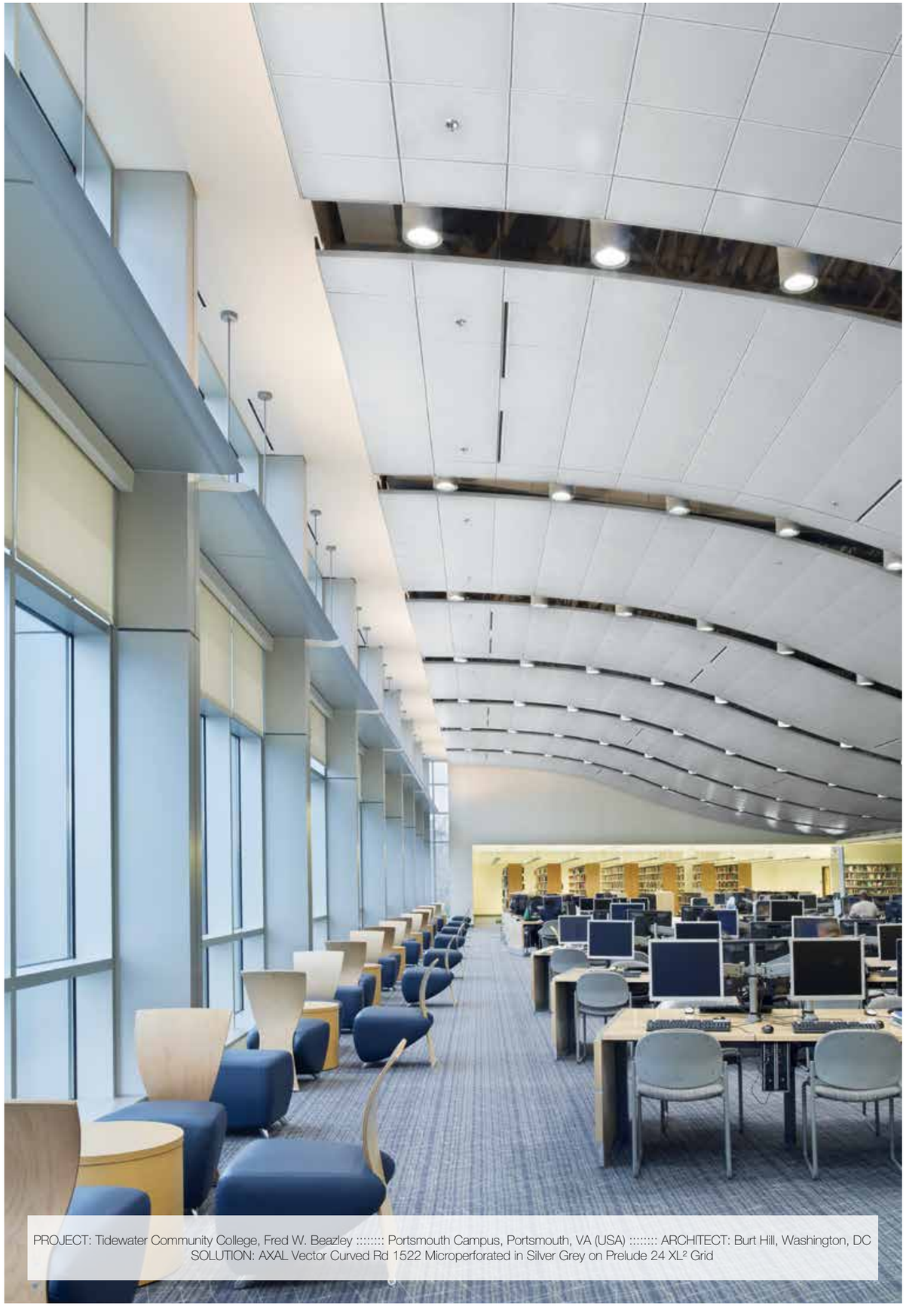
metal ceilings & walls

Armstrong®

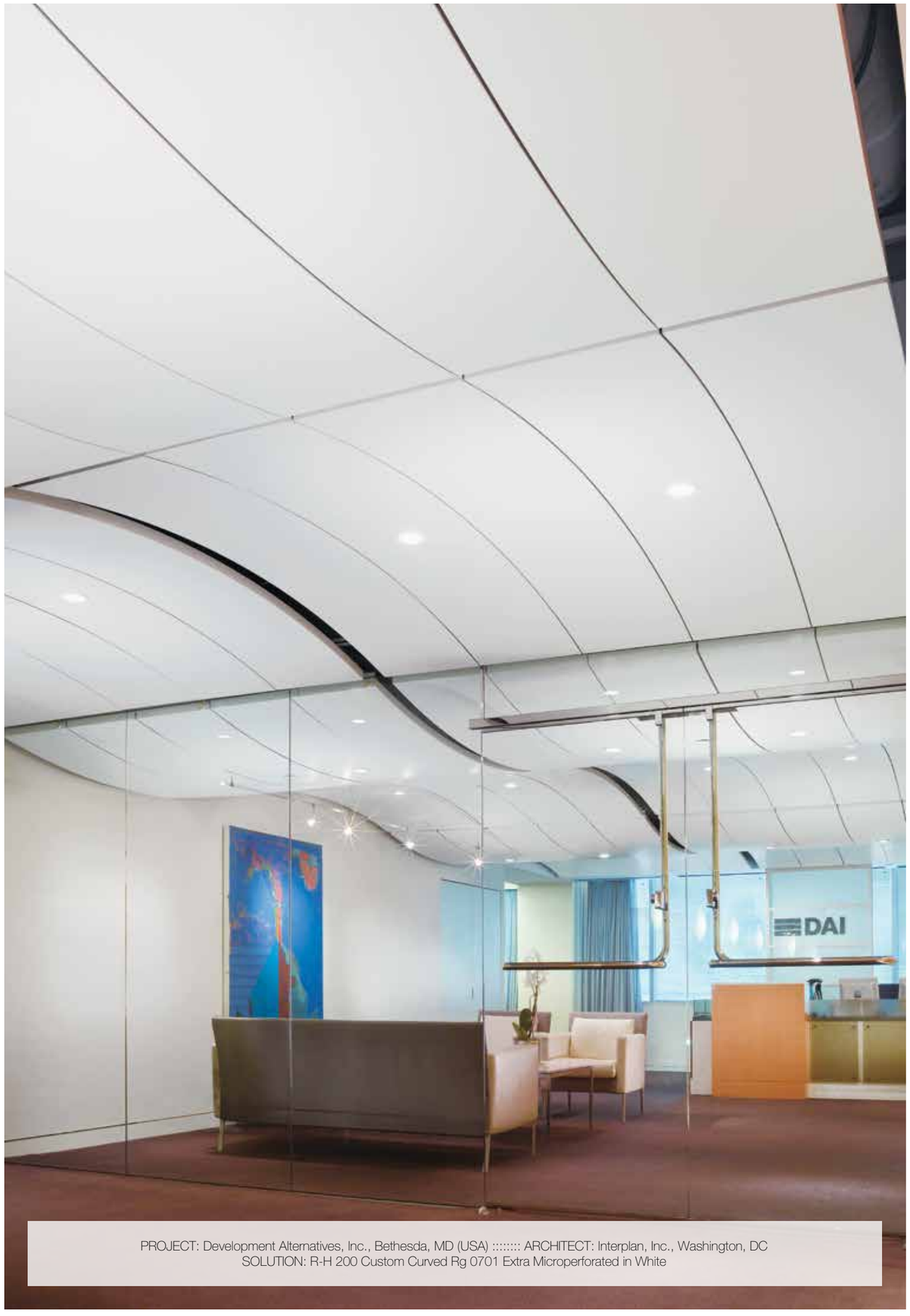


PROJECT: Tidewater Community College, Fred W. Beazley :::::::: Portsmouth Campus, Portsmouth, VA (USA) :::::::: ARCHITECT: Burt Hill, Washington, DC
SOLUTION: AXAL Vector Curved Rd 1522 Microperforated in Silver Grey on Prelude 24 XL² Grid

INTRODUCTION

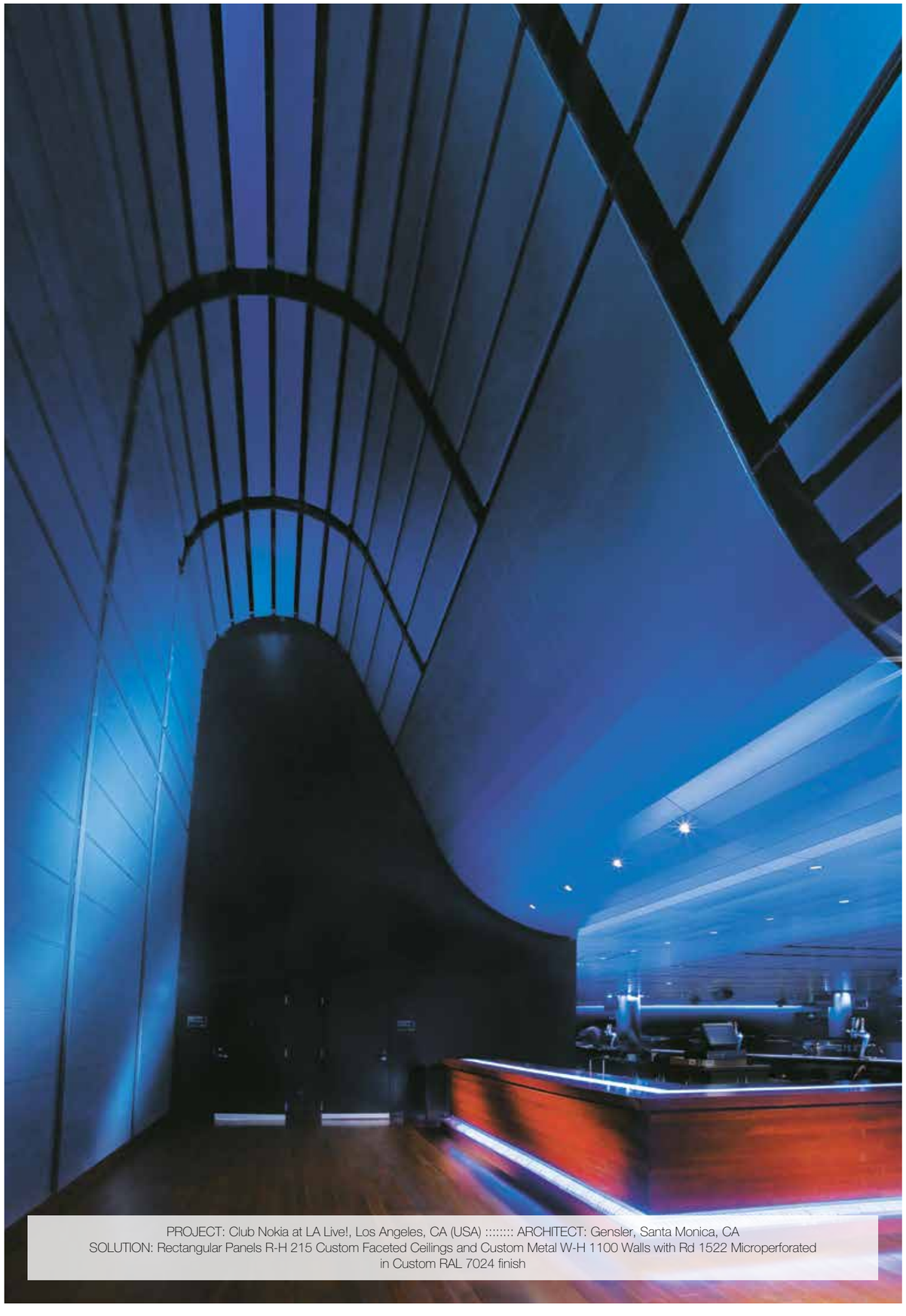
SOLUTIONS

PERFORMANCES



PROJECT: Development Alternatives, Inc., Bethesda, MD (USA) :::::::: ARCHITECT: Interplan, Inc., Washington, DC
SOLUTION: R-H 200 Custom Curved Rg 0701 Extra Microperforated in White

Armstrong's 150-year history may have been built originally on mineral ceiling tiles but its metal systems have proved equally successful, capturing the interest and imagination of specifiers globally. The company puts the reason for this success down to a combination of factors – innovative and outstanding products and services, constructive dialogue with prospective customers and partners in a diverse range of countries with equally diverse requirements, supported by highly qualified technical specialists offering advice and guidance.



PROJECT: Club Nokia at LA Live!, Los Angeles, CA (USA) :::::::: ARCHITECT: Gensler, Santa Monica, CA
SOLUTION: Rectangular Panels R-H 215 Custom Faceted Ceilings and Custom Metal W-H 1100 Walls with Rd 1522 Microperforated in Custom RAL 7024 finish

Armstrong's Unique Service

1

Consulting and planning
Each Armstrong project begins with an in-depth, one-on-one consultation with the specifier or main contractor. Technical support and product recommendations are made once we understand the design, functionality and performance requirements of the space.

2

Engineering and production
Working to this design brief, CAD drawings bespoke to the project are created which detail aspects such as ceiling layout, views and perspectives. These details are then used to engineer a production schedule along with any specific installation instructions that may be required at this early stage. Some are best sorted sooner rather than later!

3

Logistics and installation
It doesn't matter if one project uses the same products in the same way as another. It's still unique to us and it's still unique to the specialist contractor installing our systems. That's why we provide them with a tailored logistics plan devised to maximise the benefits of JIT (Just-In-Time) implementation. Then, if they need us on site for additional guidance, we will deliver there too.

4

Maintenance and support
Our customer service doesn't end when a project is complete. Because if that project then needs adapting to some new requirements in any way or expanding, we can continue to provide fitting solutions. We partner with specialist contractors throughout the world who we rely on to help you take your project to the next stage, whether it is adaptation, expansion, repair or basic maintenance.

Welcome to our playing field

Design
It is often important to create a convivial and relaxed environment. A successful ceiling design with good lighting will create a warm atmosphere. Signage is an important element of ceiling design, and the ceiling grid system can play an important role to help achieve this.

Lighting
Although natural light is generally preferred, it appears that many modern offices require artificial lighting in order to create a comfortable environment. The ceiling can play a crucial part in optimising light reflectance and can even produce energy savings.

Acoustics
It is difficult to work if you can hear every word of a conversation taking place in the next office. Noise originating from areas close by have to be attenuated while maintaining the sound absorption required for an individual office. Airports or railway stations are frequently very noisy places where acoustical control is an important issue. Irrespective of the size of a teaching space and the use for which it is intended, certain acoustic criteria must be considered. For each segment and each space, we have a dedicated acoustical solution.

Integrating services
Lighting, speakers, air conditioning, ventilation and smoke detectors are essential components that can be incorporated into the ceiling.

Durability
Durable ceiling tiles ensure that when the tiles need to be removed for service maintenance or cleaning, the risk of tile damage is minimised. The powder coat finish provides a tough, durable finish that can be easily cleaned.

Fire
Particularly in an establishment open to the public, fire reaction and fire resistance properties of the suspended ceiling, can be of critical importance.

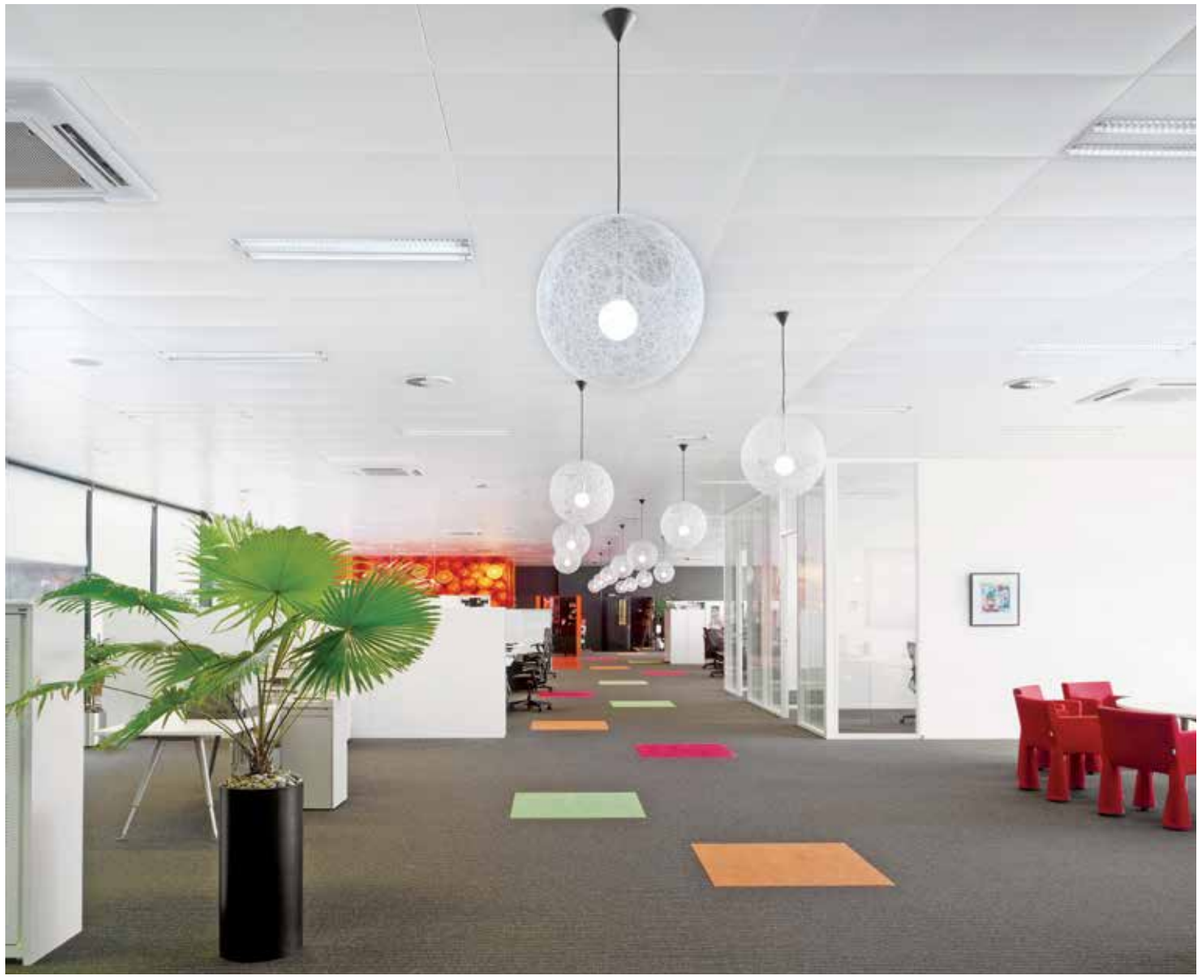
Demountability
Nothing is more disruptive than an area in a shop closed off while a leak or an electrical problem is being repaired. Hence the importance of demountability of the ceiling, which also means that decor can be arranged or regularly refurbished.

Washability
Medical environments require high levels of cleanliness, it is therefore essential that the specifier chooses a ceiling with a durable and easily cleaned finish.
Armstrong Metal Bioguard provides protection against bio-contamination.

office

Bright, spacious office environments make for happier, and thus more productive workers! Armstrong solutions are perfect to liven up any office, thanks to ergonomic design, enhanced lighting, optimised sound absorption and improved sound attenuation.

PROJECT: DSV Venlo (NL) :::::::: ARCHITECT: Clevis Kleinjans Architecten BNA Venlo :::::::: CONTRACTOR: Verhaag Plafondsystemen, Sevenum
SOLUTION: S-Clip F Rd 1522 Microperforated RAL 9010 with Fleece



retail

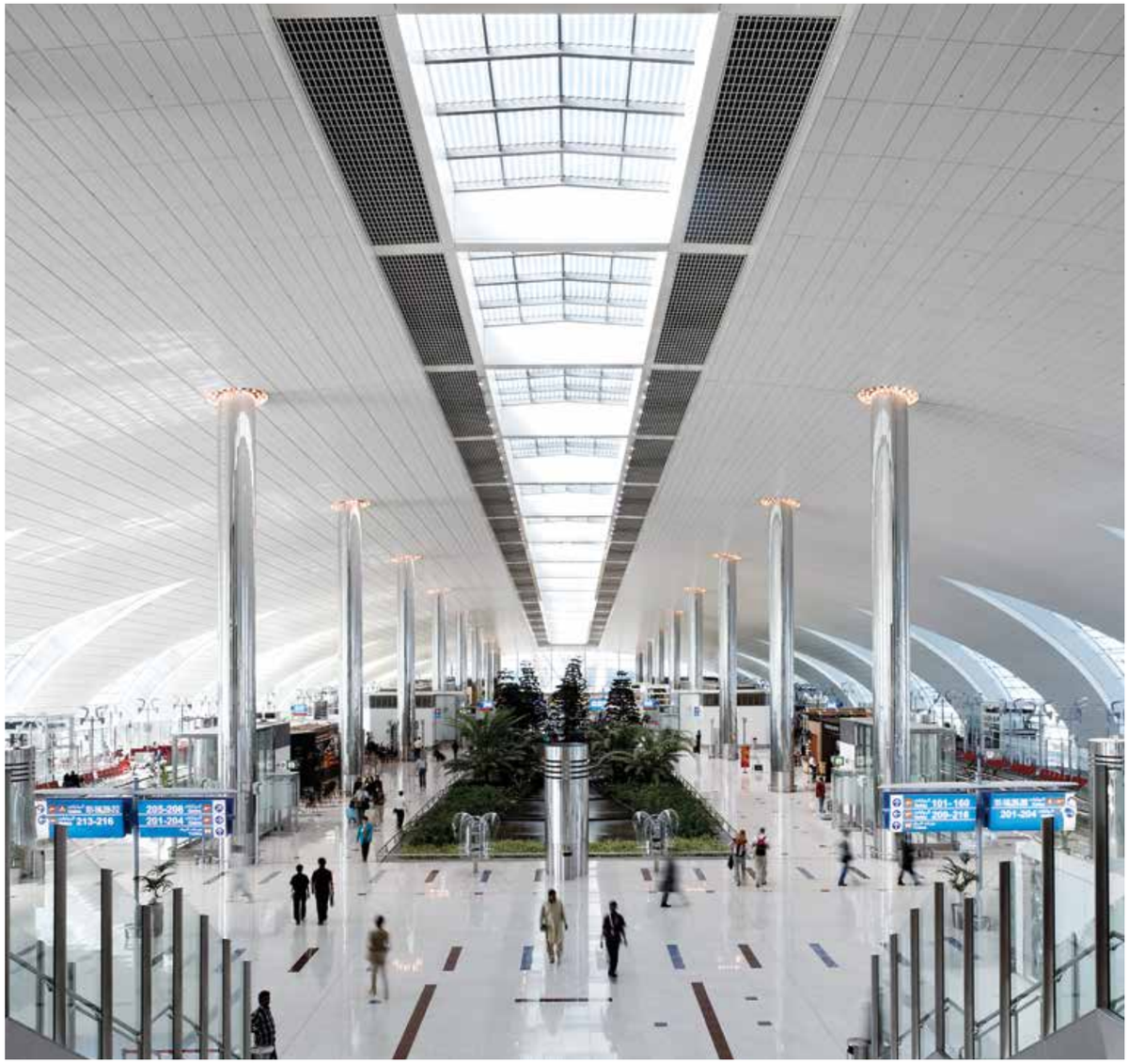
When customers venture out into the consumer world, they look for more than just good products and services. They also want an agreeable experience. Often ambience and design solutions from Armstrong help to make a memorable visit.

PROJECT: Centostazioni S.p.A. (IT) :::::::: ARCHITECT: Cristian Piccolo
SOLUTION: Axiom KE Canopy with Axal Vector

transport

A pleasant airport lounge or railway station can do a lot to relieve anxiety amongst busy travellers. Armstrong's interior-ceiling solutions soothe by enhancing lighting, absorbing noise and improving overall well-being, whether travellers are queuing at the ticket office or standing on the platform.

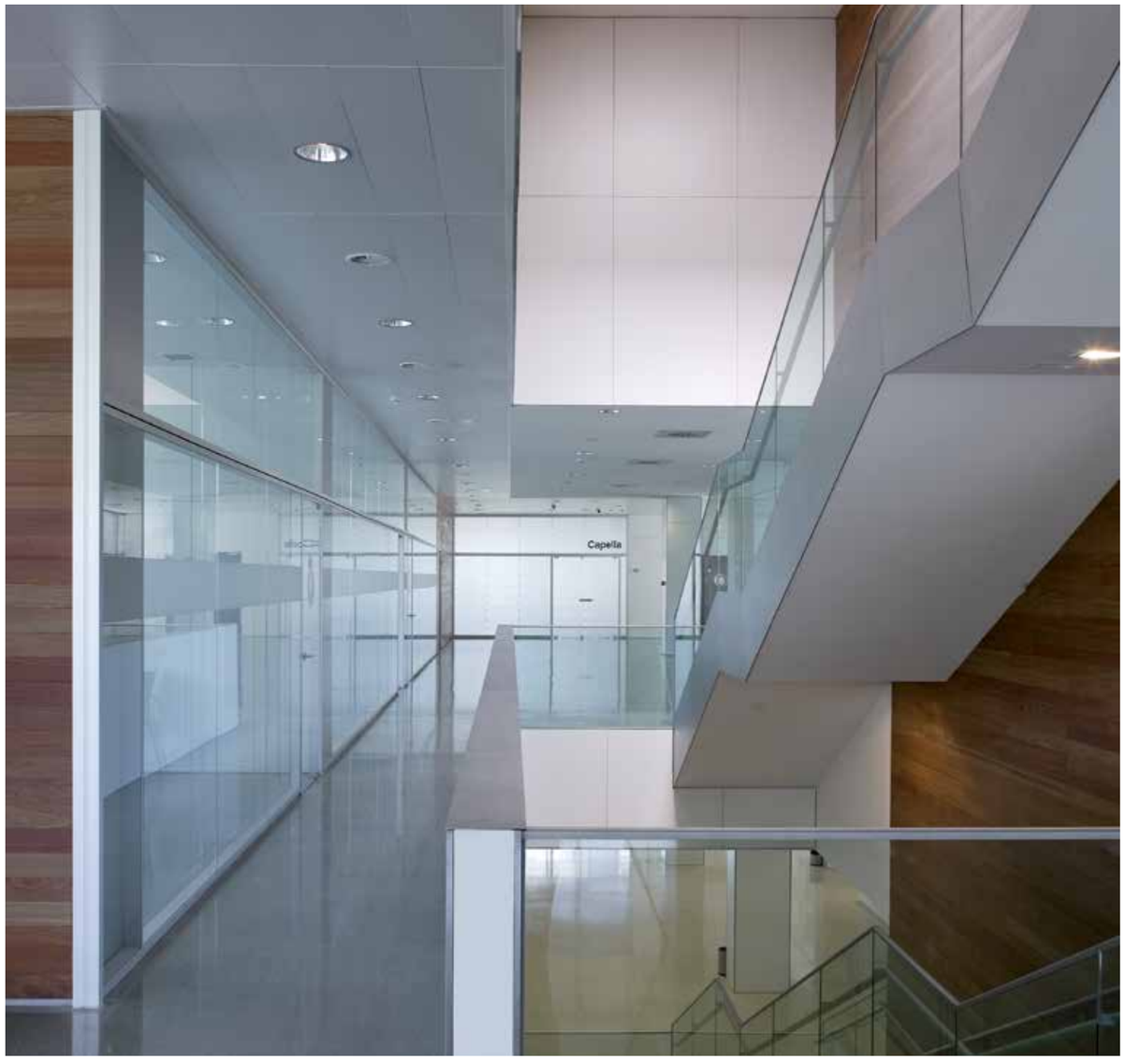
PROJECT: Dubai International Airport (UAE) :::::::: ARCHITECT: Aeroport de Paris (ADPI)
GENERAL CONTRACTORS: Al habtoor Engineering (Dubai – UAE), Murray & Roberts (Bedfordview – South Africa), Takenaka Corporation Dubai Office (UAE)
SOLUTION: Interior Roof Lining, Metal Wall Cladding, Clip-In Ceiling



health

Hygiene and maintenance are a top priority in healthcare environments. A smooth ceiling surface is ideal for treatment rooms and utility areas, and solutions such as metal BIOGUARD plain can meet ISO 3 requirements.

PROJECT: Hospital de Sant Joan de Déu (SP) :::::::: ARCHITECT: Joan Prat Aguilar y Toni Codina Jané de CPVA Arquitectes
SOLUTION: Rectangular Panels R-H 200



education

Acoustics present a major challenge to educational institutions. Intelligibility and concentration are acoustical performance demands that our teachers need today, to improve their working conditions as well as their students'. Armstrong develops solutions that address these concerns.

PROJECT: Papieska Akademia Teologiczna - Biblioteka Theology University of Jan Pawel II Library (PL) :::::::: OWNER: Papieska Akademia Teologiczna
ARCHITECT: K. Ingarden, J. Ewy Architekci Sp. z o.o. :::::::: SOLUTION: R-H 200 Plain with Special Perforations (RAL 9007)

Environmental commitment and certifications

Armstrong recognises the importance of protecting the environment and using resources responsibly. We are committed to good environmental stewardship in our dealings with customers, employees, the government and our communities.
We are systematically reducing our environmental footprint and providing products and services that enable our customers to reduce the environmental impact of the buildings they create and to provide end user comfort.

Visual Comfort
The 'light reflectance' of a surface is its ability to reflect light. Daylight and electrical lighting represent the two primary sources of lighting available in the workplace. The light reflectance of the ceiling, floor and wall surfaces play the second most important role for overall illumination of the room, thus also directly affecting working comfort and productivity.

- High light reflectance ceilings also enhance indirect lighting by improving overall lighting uniformity.
- A light reflectance of 90% allows 20% of cost savings with indirect lighting and can yield total building energy savings of up to 11% compared to a ceiling with 75% light reflectance.*
- Metal ceilings with smaller Extra or Ultra Microperforations have a light reflectance almost as high as that of an unperforated tile, providing up to 15% more light reflectance than traditional perforations, whilst still helping to provide acoustic comfort by controlling reverberation within the space.
- Extra Microperforated metal island ceilings installed in the workplace can improve the light reflection over a workstation and provide better comfort for the end user.

*Brinjac Engineering Study: 'Energy and Environmental Effects of High Light Reflectance Ceilings' 2006.

Acoustical Comfort
In all types of spaces, choosing the right acoustical solutions will enhance the end user' needs and overall comfort. With acoustics, you need to determine whether intelligibility, concentration or confidentiality is required? Armstrong can help you find the right acoustic solution for your space. You can choose from a wide portfolio of products such as Armstrong canopies, standard suspended ceilings and i-ceilings sound masking products.
Armstrong acoustical ceilings reduce noise levels in interior spaces, allowing for an optimum balance of high performance sound absorption and room to room sound attenuation to maximise / minimise speech intelligibility as appropriate.

Thermal Mass
To control the thermal environment in an office, we can use the thermal mass of the concrete to control the temperature in the room instead of relying on air-conditioning and heating. Without the need to power these, the amount of electricity being used is reduced significantly, lowering the building's energy requirements.To enable the thermal slab to work efficiently, it is important to maximise the open area. Solutions like canopies make it possible, still improving acoustical and visual comfort.

15YEAR guarantee

15 Year Guarantee
Armstrong metal ceilings are durable by their very nature and easily cleaned, and this can mean less damage and fewer replacements required, resulting in a lower impact on the environment. Most Armstrong metal products have a guarantee of up to 15 years.

up to 30% Recycled Content

Recycled Content
Armstrong metal ceiling tiles can be fully recycled and reprocessed for re-use.

For more information, please contact us.

Manufacturing Accreditation
In our manufacturing operations, not only do we continue to take care in the selection of raw materials and energy, reduce waste and embrace effective recycling methods, but we also ensure that our products conform to safety, environmental and quality standards.
Our European manufacturing plants are certified to:

ISO 9001:2008
ISO 14001:2004
OHSAS 18001:2007

Product Certification
Armstrong has a long history of environmental product certification, and uses these tools to better understand the environmental impact of our products.

Our UK manufactured mineral tile and grid systems have been certified for nearly 10 years using BRE's life cycle assessment methodology resulting in an Ecopoint score and a Green Guide to Specification (3rd edition) 'A' rating to the 2004 BRE LCA methodology. The 2008 LCA methodology saw a further reduction in the Ecopoint rating for these tiles.

In France, Armstrong has developed product categories and profiled our mineral and metal product ranges to create FDES (Fiches Déclaration Environnementale et Sanitaire) datasheets. This information is utilised by the HQE (Haute Qualité Environnementale) project accreditation approach.

The Armstrong range of metal ceiling solutions are produced and certified in accordance with EN 13964 and are CE marked.
In addition, many metal ceiling solutions have technical approvals from DIBt (Deutsches Institut für Bautechnik) and are provided with a U-mark.

Memberships and Associations
Armstrong is a member of TAIM (Technical Association of Industrial Metal Ceilings).
TAIM was founded in 1988 and its primary objective is to promote quality and to set minimum quality standards and requirements for metal ceilings systems.

Armstrong is a member of the following Green Building Councils and actively participates in the work of these to contribute to the sustainability agenda and to inform our product development processes.

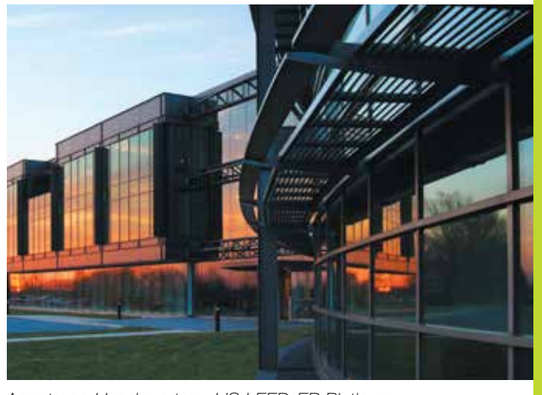
UK-GBC; Dutch GBC; DGNB (Germany); Spanish GBC; US-GBC; Indian GBC; GBC of Australia.

Project Certification
Armstrong products can contribute to environmental performance and the overall rating of a building by winning or contributing towards credits in the various green building rating tools.
BREEAM – HQE – DGNB – LEED – ESTI-DAMA – GREENSTAR

Areas in which Armstrong products can provide credits include: energy saving; acoustics; Indoor air quality/low emitting materials; local/regional sourcing; waste management; recycled content.

Armstrong's corporate headquarters building in Lancaster, PA, in 2007 was the first to be certified as LEED-EB (existing building) Platinum, the highest and most difficult rating to achieve.

Dutch Green Building Council
DGNB
UK GREEN BUILDING COUNCIL Member
TAIM



Armstrong Headquarters, US LEED-EB Platinum Building

SQUARE & RECTANGULAR TILES - CLIP-IN

BENEFITS

- Concealed grid system for a monolithic ceiling surface
- Downwardly demountable with the use of an extractor tool and provides full access to the ceiling void (ventilation duct, electrical lines etc.)
- Cost effective
- Solution with optional or integrated swing-down function (except T-Clip F)

APPLICATION AREA

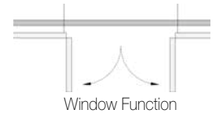
Used in a variety of ceiling areas: from small service rooms to large commercial office buildings and major transportation terminals.

PROJECT: DSV Venlo (NL) :::::::: ARCHITECT: Clevis Kleinjans Arch. BNA :::::::: CEILING CONTRACTOR: Verhaag Plafondsystemen
SOLUTION: Q-Clip Microperforated Rd 1522

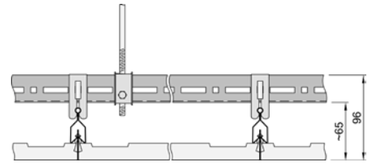
SQUARE & RECTANGULAR TILES
Clip-In - Q-Clip / S-Clip F /T-Clip F

Q-CLIP **Q-CLIP F**	Clip-In solution with square tiles Q-Clip: square edged variant Q-Clip F: bevel edged variant (3 x 3 mm)	
Grid	System 3000 with spring A-bar	
Modules	Q-Clip 600 x 600 mm 625 x 625 mm	Q-Clip F 500 x 500 mm 600 x 600 mm / 300 x 600 mm* 625 x 625 mm / 312.5 x 625 mm*
Hinge-down option	Type Q-Clip window or Q-Clip F window; supplied with hinge-down brackets to be attached to spring A-bar	

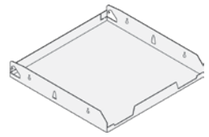
* Half size module without window function

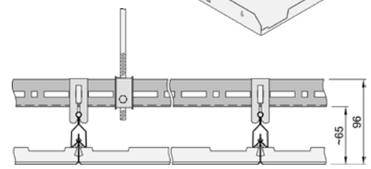


Window Function

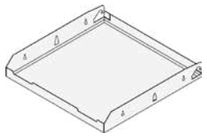


Q-Clip



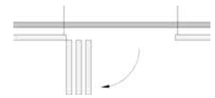


Q-Clip F

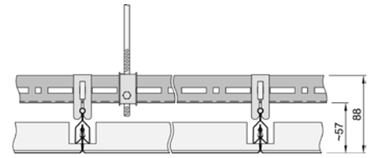


S-CLIP F	Clip-In solution with square tiles Bevel edged (3 x 3 mm)	
Grid	System 3000 with spring A-bar	
Modules	600 x 600 mm 625 x 625 mm Additional rectangular modules available 312.5 x 625 mm*	
Hinge-down option	Type S-Clip F swing-down function	

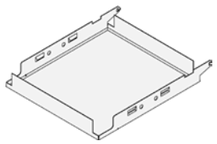
* Half size module without swing-down function



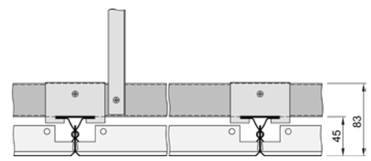
Swing-Down Function



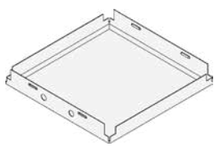
S-Clip F



T-CLIP F	Clip-In solution with square tiles Bevel edged (5 x 5 mm) Square edged optional	
Grid	C-channel with spring T	
Modules	500 x 500 mm / 600 x 600 mm 675 x 675 mm / 750 x 750 mm Additional rectangular modules available 600 x 1200 mm	
Dimensions	Length 900 – 2500 mm Width 300 / 450 / 500 / 600 mm	



T-Clip F



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SQUARE & RECTANGULAR TILES - Lay-In

BENEFITS

- Diversity of design and application
- Easily assembled and fully demountable
- An easy to install, flexible system
- Cost effective ceiling solution
- Semi-concealed grid for a monolithic effect
- Axal Vector provides easy access to the ceiling void (ventilation duct, electrical lines etc.) as it is downwardly demountable

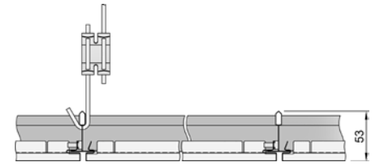
APPLICATION AREA

Used in a variety of ceiling areas: from small service rooms to large commercial office buildings and major transportation terminals.

PROJECT: South Roof Office Block - South Terminal - Gatwick Airport (UK) :::::::: OWNER: BAA PLC
ARCHITECT: Area 2 Limited :::::::: CONTRACTOR: South Ridge Interiors Ltd
SOLUTION: Axal Vector Rg 0701 Extra Microperforated with Fleece

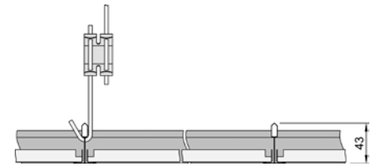
SQUARE & RECTANGULAR TILES
Lay-In - Axal Vector / Board / MicroLook 8 / MicroLook 16

AXAL VECTOR	Lay-In solution with square tiles Square edged 6 mm reveal detail, semi-concealed system
Grid	Prelude 24 XL^2
Modules	500 x 500 mm 600 x 600 mm 675 x 675 mm 750 x 750 mm Additional rectangular module available 300 x 600 mm

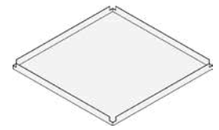


Axal Vector

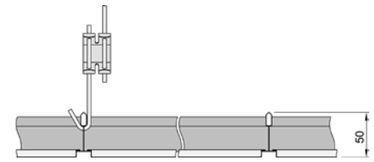
BOARD	Lay-In solution with square tiles Square edged
Grid	Prelude 24 TLX
Modules	600 x 600 mm 625 x 625 mm Additional rectangular module available 600 x 1200 mm



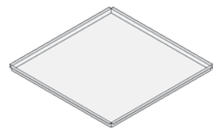
Board



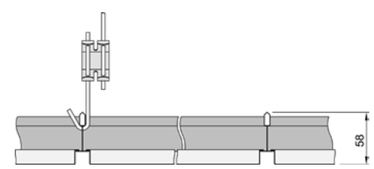
MICROLOOK 8	Lay-In solution with square tiles Square edged, with 8 mm drop
Grid	Prelude 15 XL^2 / TL Design option Silhouette XL^2 Design option Interlude XL^2
Modules	500 x 500 mm 600 x 600 mm 675 x 675 mm 750 x 750 mm Additional rectangular modules available 600 x 1200 mm 300 x 1200 mm



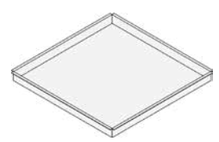
MicroLook 8



MICROLOOK 16	Lay-In solution with square tiles Square edged, with 16 mm drop
Grid	Prelude 15 XL^2 / TL
Modules	500 x 500 mm 600 x 600 mm 675 x 675 mm 750 x 750 mm



MicroLook 16



Standard hanger is pre straightened wire

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SQUARE & RECTANGULAR TILES - Lay-In

BENEFITS

- Diversity of design and application
- Easily assembled and fully demountable
- Cost effective ceiling solution
- Tiles are easily lifted out by hand, allowing full and easy access to the ceiling void.

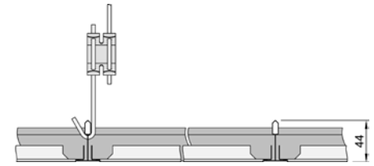
APPLICATION AREA

Used in a variety of ceiling areas: from small service rooms to large commercial office buildings and major transportation terminals.

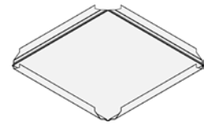
PROJECT: Leman Cake Decorations (B) :::::::: ARCHITECT: Didier Leman :::::::: CONTRACTOR: Vinquier Youri
SOLUTION: Lay-In Tegular 8 Perforated Rg 2516

SQUARE & RECTANGULAR TILES
Lay-In - Tegular 2 / Tegular 8 / Tegular 11 F / Tegular 16

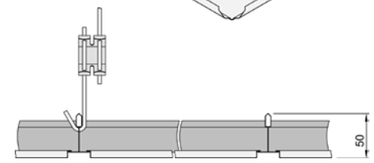
TEGULAR 2	Lay-In solution with square tiles Square edged, with 2.5 mm drop
Grid	Prelude 24 TLX
Modules	600 x 600 mm 625 x 625 mm



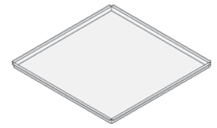
Tegular 2



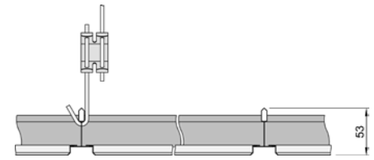
TEGULAR 8	Lay-In solution with square tiles Square edged, with 8 mm drop
Grid	Prelude 24 XL² / TLX
Modules	500 x 500 mm 600 x 600 mm 675 x 675 mm Additional rectangular modules available 600 x 1200 mm 300 x 1200 mm



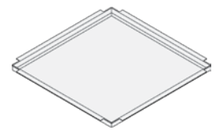
Tegular 8



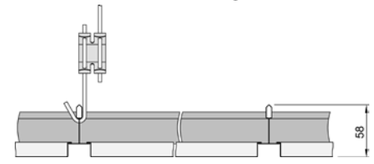
TEGULAR 11 F	Lay-In solution with square tiles Bevel edged (3 x 3 mm), with 11 mm drop
Grid	Prelude 24 XL² / TLX
Modules	600 x 600 mm 625 x 625 mm Additional rectangular modules available 600 x 1200 mm



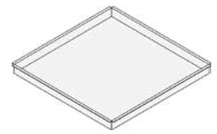
Tegular 11 F



TEGULAR 16	Lay-In solution with square tiles Square edged, with 16 mm drop
Grid	Prelude 24 XL² / TLX
Modules	500 x 500 mm 600 x 600 mm 675 x 675 mm 750 x 750 mm



Tegular 16



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Standard hanger is pre straightened wire

RECTANGULAR PANELS / PLANKS - CLIP-IN

BENEFITS

- Versatile system and simple design
- Concealed grid for a monolithic effect
- Excellent acoustic performance
- Ease of installation (alignment) and fully demountable
- Easy access to the ceiling void
- Maintenance friendly system

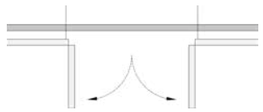
APPLICATION AREA

Suitable for large open plan / circulation areas.

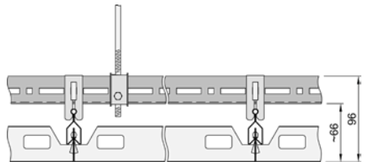
PROJECT: Element Office Building (AU) :::::::: ARCHITECT: Wolfgang Ritsch, Dornbirn
CONTRACTOR: Ing. Kurzemann GmbH&Co. KG, Dornbirn :::::::: SOLUTION: R-Clip Microperforated Rd 1522

RECTANGULAR PANELS / PLANKS
Clip-In - R-Clip / S-Clip F /T-Clip F

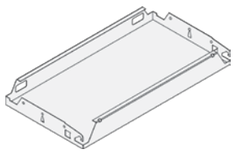
R-CLIP **R-CLIP F**	Clip-In solution with rectangular panels Square edged variant Bevel edged (3 x 3 mm)	
Grid	System 3000 with spring A-bar	
Dimensions R-CLIP	Length 600 – 2500 mm Width 247 – 600 mm	
Modules	R-CLIP 400 x 1500 mm 400 x 2000 mm 400 x 2500 mm	R-CLIP F 300 x 1200 mm 600 x 1200 mm 400 x 1800 mm
Hinge-down option	Optional swing-down function window	
Special designs*	- Exterior ceiling solution when secured - Chilled and heated ceilings *Please contact Armstrong Technical Sales service	

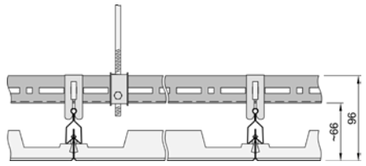


Window Function

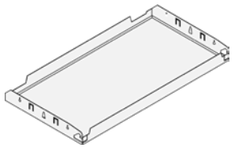


R-Clip

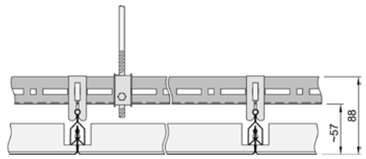




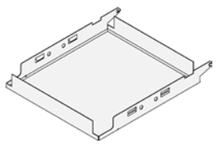
R-Clip F



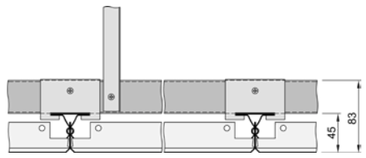
S-CLIP F	Clip-In solution with rectangular panels Bevel edged (3 x 3 mm)
Grid	System 3000 with spring A-bar
Modules	300 x 900 mm 300 x 1200 mm 300 x 1500 mm
Hinge-down option	Type S-Clip F swing-down function



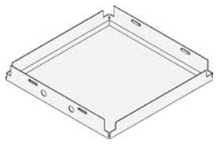
S-Clip F



T-CLIP F	Clip-In solution with rectangular panels Bevel edged (5 x 5 mm) Square edged optional
Grid	C-channel with spring T
Modules	300 x 1200 mm 300 x 1500 mm
Dimensions	Length 900 - 2500 mm Width 300 / 450 / 500 /600 mm



T-Clip F



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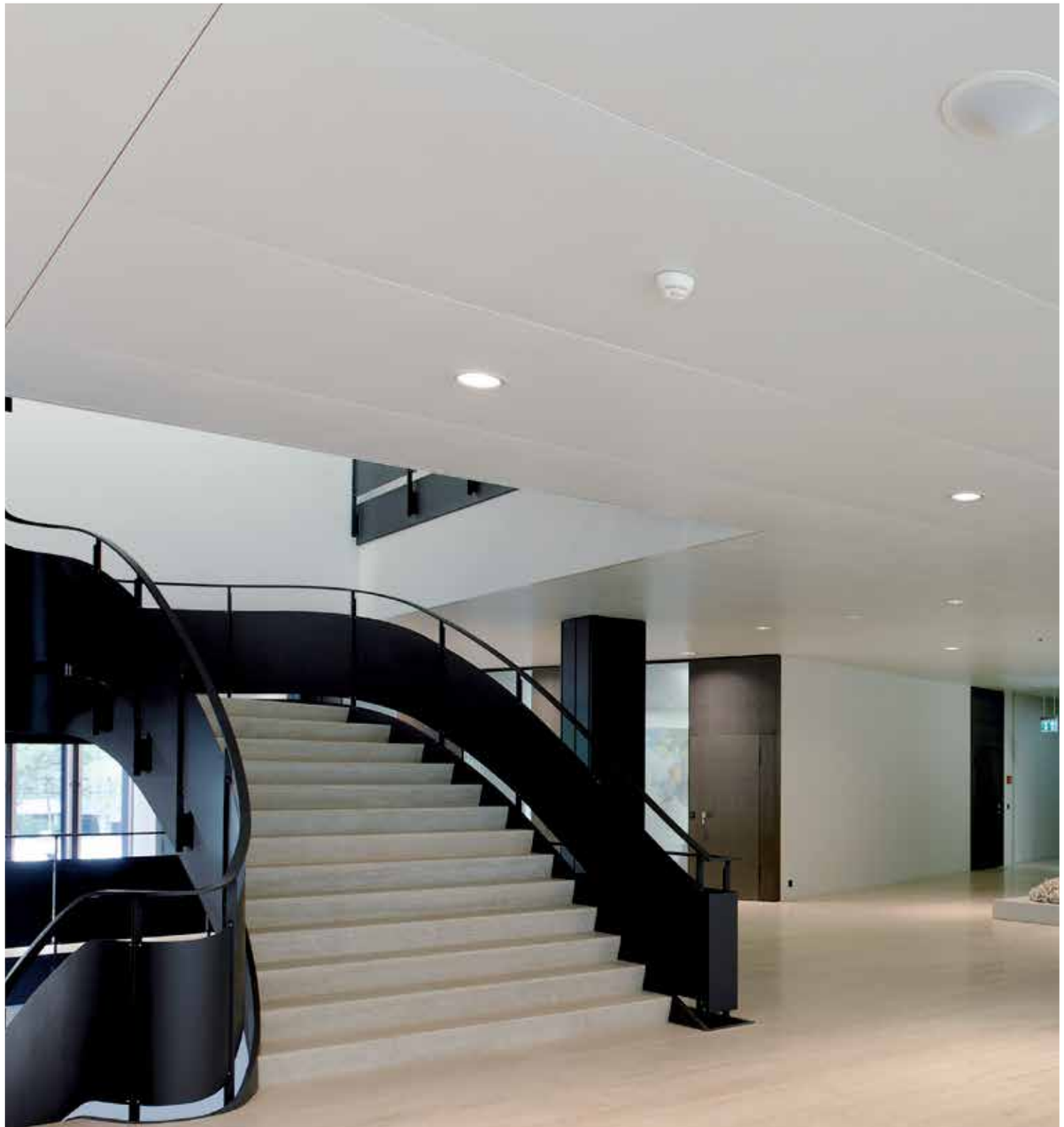


RECTANGULAR PANELS / PLANKS - HOOK-ON

BENEFITS

- Versatile system and simple design
- Concealed grid for a monolithic effect
- Good acoustic properties
- Ease of installation (alignment) and and fully demountable
- Easy access to the ceiling void
- Maintenance friendly system

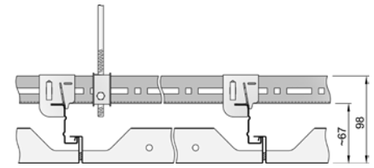
APPLICATION AREA

Suitable for large open plan / circulation areas.

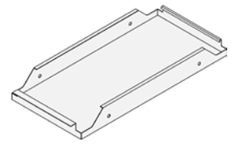
PROJECT: The City of St. Gallen (CH) :::::::: ARCHITECT: Boltshauser Architekten, Zürich
CONSTRUCTION MANAGEMENT: HRS Hauser Rutishauser Suter AG, St. Gallen :::::::: CEILING CONTRACTOR: Phonex AG
SOLUTION: R-H 200 Microperforated Rd 1522

RECTANGULAR PANELS / PLANKS
Hook-On - R-H 200 / R-H 215

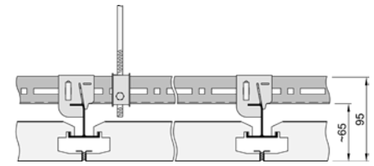
R-H 200	Hook-On solution with rectangular panels Square edged With 3 mm black gasket on one short and one long side
Grid	System 3000 with J-bar
Dimensions	Length 600 – 3000 mm Width 247 – 1350 mm
Modules	400 x 1800 mm 400 x 2100 mm 400 x 2400 mm 400 x 2700 mm 400 x 3000 mm
Special designs*	- Trapezoidal panels - Curved panels - Segmented vaulted or waved ceilings - Exterior ceilings - Chilled and heated ceilings *Please contact Armstrong Technical Sales service



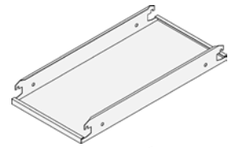
R-H 200

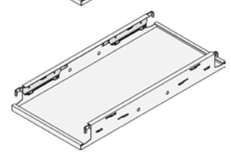


R-H 215	Hook-On solution with rectangular panels Square edged With 3 mm black gasket on one short and one long side
Grid	System 3000 with H-profile 35
Dimensions	Length 600 – 3000 mm Width 247 – 1350 mm
Modules	400 x 1800 mm 400 x 2100 mm 400 x 2400 mm 400 x 2700 mm 400 x 3000 mm
Hinge-down option	Revision opening power swing function
Special designs*	- Curved panels - Segmented vaulted or waved ceilings *Please contact Armstrong Technical Sales service

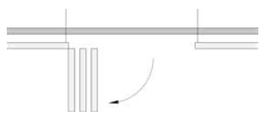


R-H 215

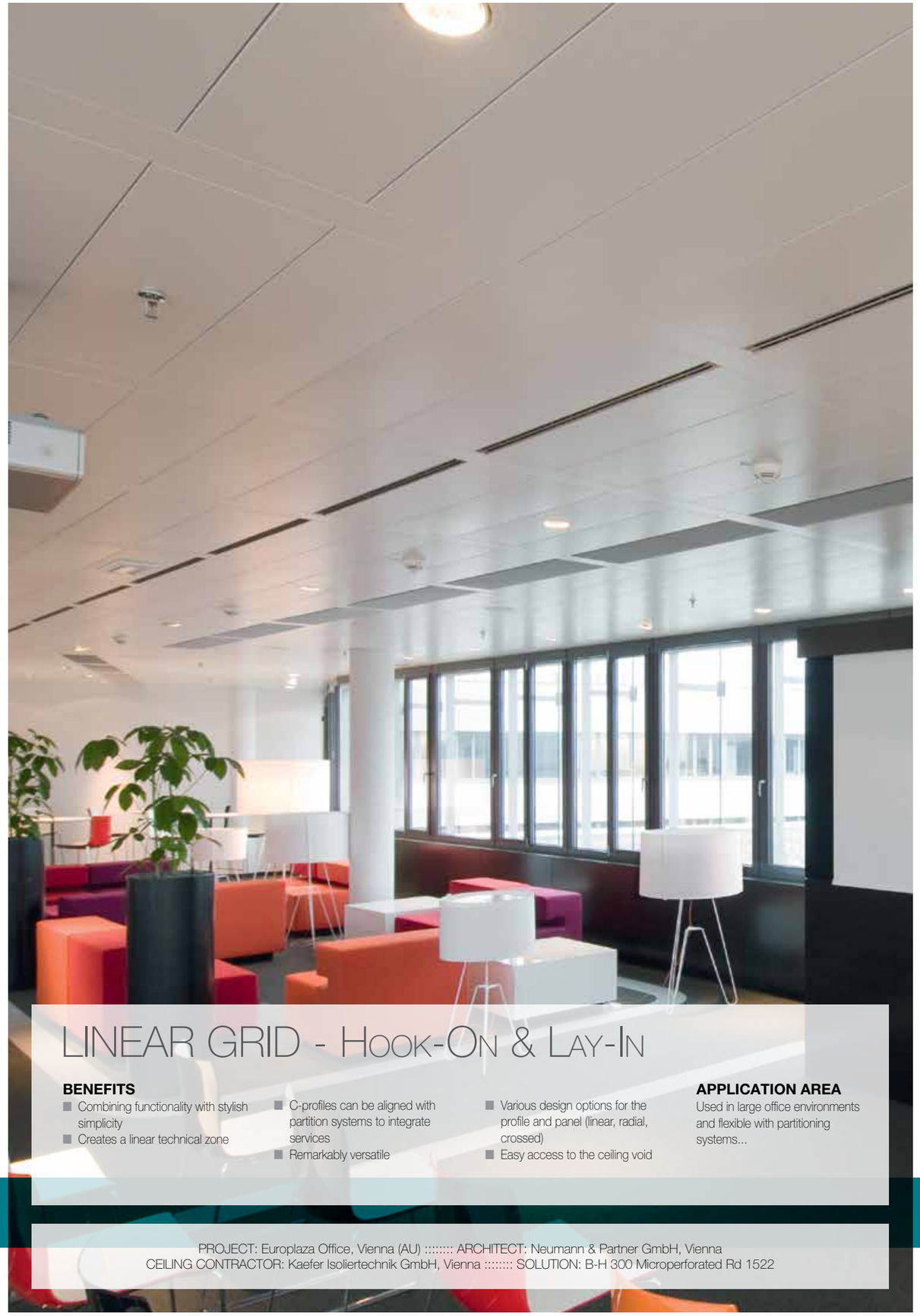




Panel with Power Swing function

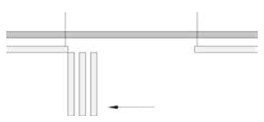


Power Swing function

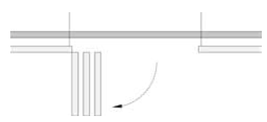


LINEAR GRID
Hook-On - B-H 300
Lay-In - B-L 302

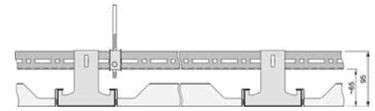
B-H 300	Hook-On solution with rectangular panels Square edged With 3 mm black gasket on two short and one long side
Grid	System 3000 with 100mm C-profile
Dimensions	Length 600 – 3000 mm Width 247 – 1350 mm
C-profile	Width min. 50 / max. 300 mm
Hinge-down option	Easy function Swing function
Special design*	- Trapezoidal panels - Curved panels - Segmented vaulted or waved ceilings - Chilled and heated ceilings *Please contact Armstrong Technical Sales service



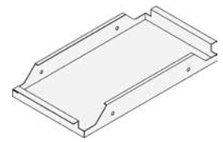
Easy Function

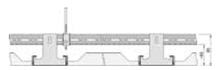


Swing Function

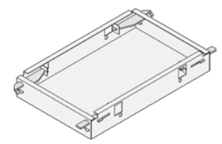


B-H 300



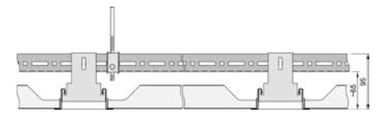


Panel with Easy function

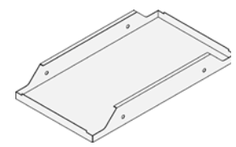


Panel with Swing Function

B-L 302	Lay-In solution with rectangular panels Square edged With 3 mm black gasket on one long side
Grid	System 3000 with 100mm Bandraster profile
Dimensions	Length 600 – 3000 mm Width 247 – 1350 mm
Bandraster	50, 75, 100, 125 and 150 mm
Special designs*	- Trapezoidal panels - Chilled and heated ceilings *Please contact Armstrong Technical Sales service



B-L 302



LINEAR GRID - Hook-On & Lay-In

BENEFITS

- Combining functionality with stylish simplicity
- Creates a linear technical zone
- C-profiles can be aligned with partition systems to integrate services
- Remarkably versatile
- Various design options for the profile and panel (linear, radial, crossed)
- Easy access to the ceiling void

APPLICATION AREA

Used in large office environments and flexible with partitioning systems...

PROJECT: Europlaza Office, Vienna (AU) :::::::: ARCHITECT: Neumann & Partner GmbH, Vienna
CEILING CONTRACTOR: Kaefer Isoliertechnik GmbH, Vienna :::::::: SOLUTION: B-H 300 Microperforated Rd 1522

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TARTAN GRID - Clip-In & Hook-On

BENEFITS

- Solution for square and/or rectangular room partitioning
- Easily installed and removed
- Grid can be emphasised by using contrasting colours
- Trim strip or C-profile can connect to the partition systems to integrate lighting systems efficiently
- Decorative solutions achieved through a variety of panel design options (square mega panel, rectangular, triangle)

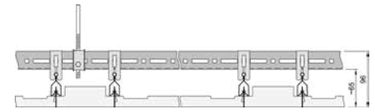
APPLICATION AREA

Ideal for breaking up large spaces.

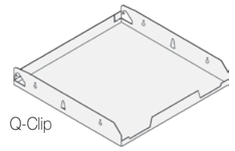
PROJECT: International Book Club - City Madrid (SP) :::::::: ARCHITECT: Stitzman Staiff, David S.
SOLUTION: K-H 400 Standard Perforated Rg 2516

TARTAN GRID
Clip-In - K-Clip
Hook-On - K-H 400

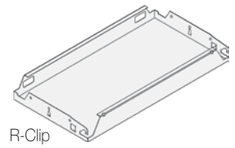
K-CLIP	Clip-In solution Crossing boxes 100 x 100 / 105 x 105 / 150 x 150 mm With Q-Clip or R-Clip
Grid	System 3000 with spring-A bar
Modules	700 x 700 mm / 705 x 705 mm / 750 x 750 mm 1300 x 1300 mm / 1305 x 1305 mm / 1350 x 1350 mm
With Q-Clip	600 x 600 mm
With R-Clip	1200 x 300 mm / 1200 x 400 mm / 1200 x 600 mm
Special designs	100 mm 105 mm 150 mm



K-Clip

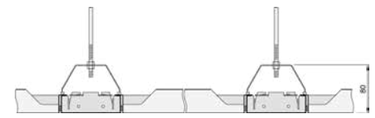


Q-Clip

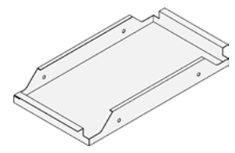


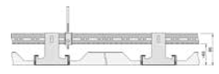
R-Clip

K-H 400	Hook-On solution Crossing boxes 100 x 100 mm With 3 mm black gasket on two short and one or two long sides
Grid	Crossing boxes and C-profile
Dimensions	Length 600 – 3000 mm Width 247 – 1350 mm
Hinge-down option	Easy function Swing function
Special designs	Light

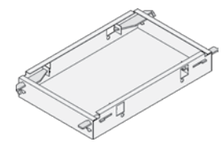


K-H 400





Panel with Easy Function



Panel with Swing Function

Easy Function

Swing Function

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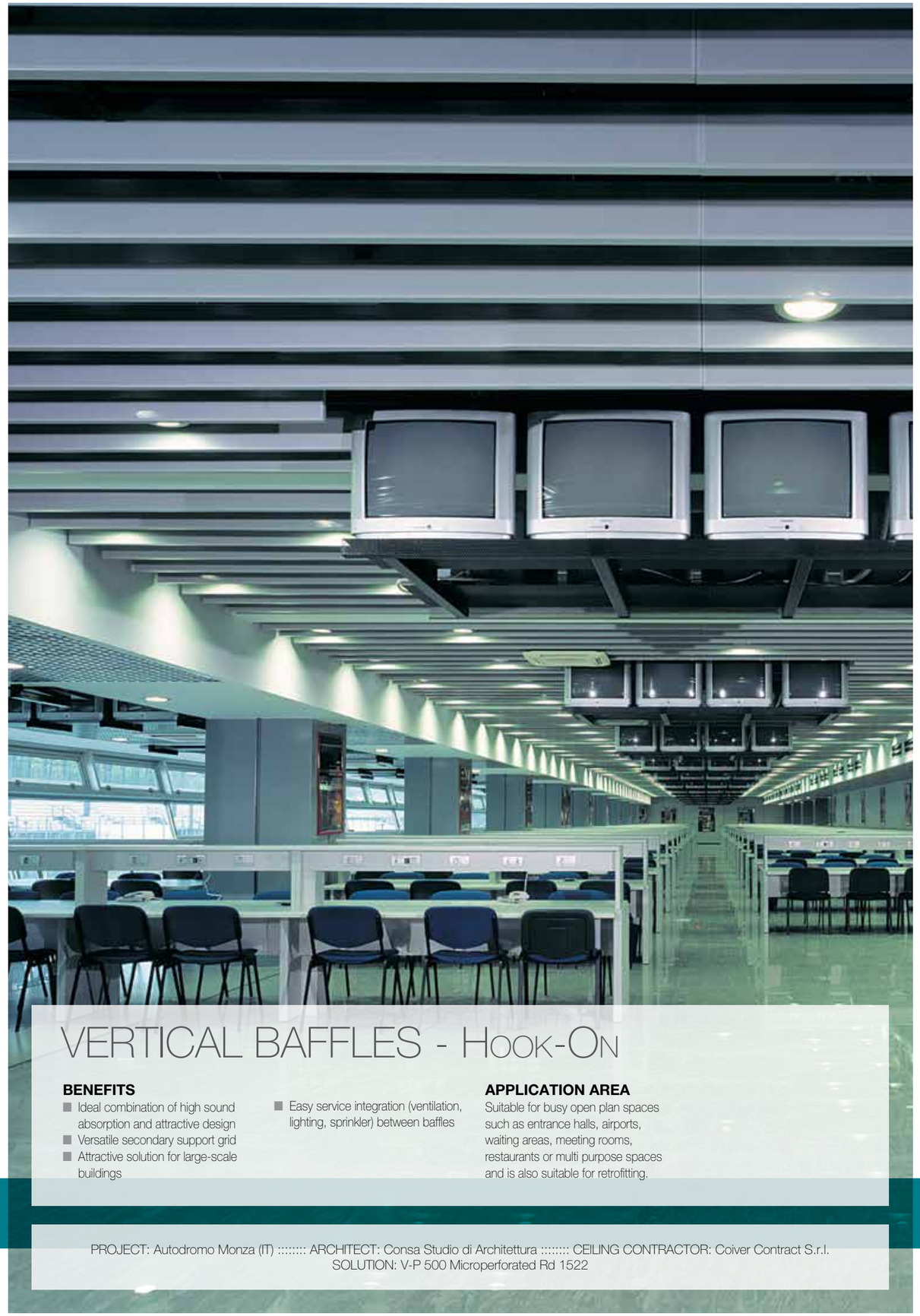


VERTICAL BAFFLES - Hook-On

BENEFITS

- Ideal combination of high sound absorption and attractive design
- Versatile secondary support grid
- Attractive solution for large-scale buildings
- Easy service integration (ventilation, lighting, sprinkler) between baffles

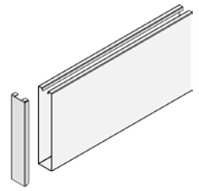
APPLICATION AREA

Suitable for busy open plan spaces such as entrance halls, airports, waiting areas, meeting rooms, restaurants or multi purpose spaces and is also suitable for retrofitting.

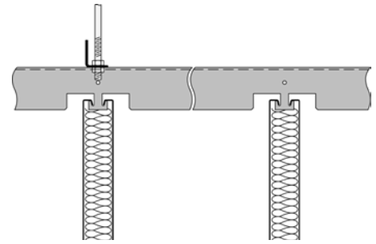
PROJECT: Autodromo Monza (IT) :::::::: ARCHITECT: Consa Studio di Architettura :::::::: CEILING CONTRACTOR: Coiver Contract S.r.l.
SOLUTION: V-P 500 Microperforated Rd 1522

VERTICAL BAFFLES
Hook-On - V-P 500 / V-K 500

V-P 500	Hook-On solution with vertical baffles Parallel alignment Optional face cover
Grid	Primary angle with black baffle support profile
Baffles	Length max. 3000 mm Width 30 mm Height 150 / 200 / 250 / 300 mm

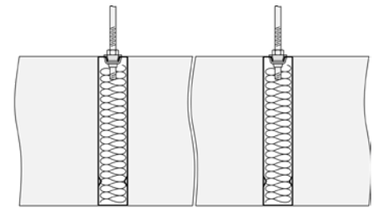


Face Cover / Baffle

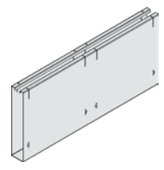


V-P 500

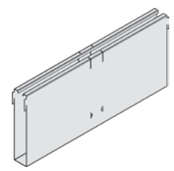
V-K 500	Hook-on solution with vertical baffles Cross alignment
Grid	Direct suspension from threaded rod
Baffles	Length max. 3000 mm Width 30 mm Height 150 / 200 / 250 / 300 mm



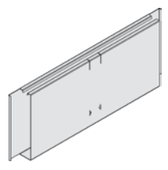
V-K 500



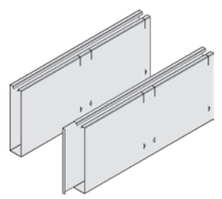
Main Baffle



Cross Baffle



Double Corner Baffle



Corner Baffles

For both systems	Further dimensions on request.

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OPEN CELL - LAY-IN

BENEFITS

- Creates a modern, open look for a space
- Variety of design options
- 100% accessible to plenum (HVAC, lighting)
- Helps mask the plenum
- Lay-In system is fast and easy to install in standard Prelude 15 grid
- Custom sizes and colours available

APPLICATION AREA

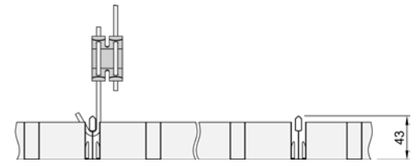
CELLIO is recommended for shops, supermarkets, shopping malls, entrance areas, airports, railway stations and showrooms.

PROJECT: Birmingham Airport (World Duty Free Area) (UK) :::::::: ARCHITECT: D5 Archtects LLP :::::::: CONTRACTOR: Miles Industries Ltd
SOLUTION: CELLIO C36

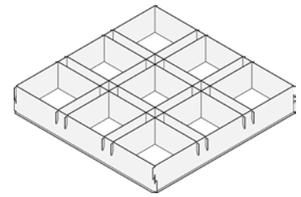
OPEN CELL
Lay-In - CELLIO

CELLIO	Lay-In solution with open cell tiles Tiles in prepainted aluminium
Grid	Prelude 15 TL
Modules*	600 x 600 x 37 mm
Colours	Available on request

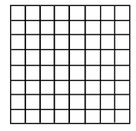
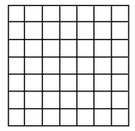
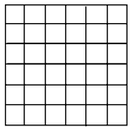
*the actual size of the opening in Cellio tiles is the cell size – 15mm

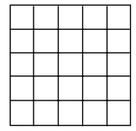
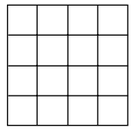
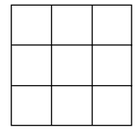


CELLIO



Standard hanger is pre straightened wire

	Cellio C64	Cellio C49	Cellio C36
			
Cell module size	75 x 75 x 37	86 x 86 x 37	100 x 100 x 37
Open area	64%	68%	72%
Cut off angle	31°	27°	23°

	Cellio C25	Cellio C16	Cellio 9
			
Cell module size	120 x 120 x 37	150 x 150 x 37	200 x 200 x 37
Open area	76%	81%	85%
Cut off angle	19°	15°	11°

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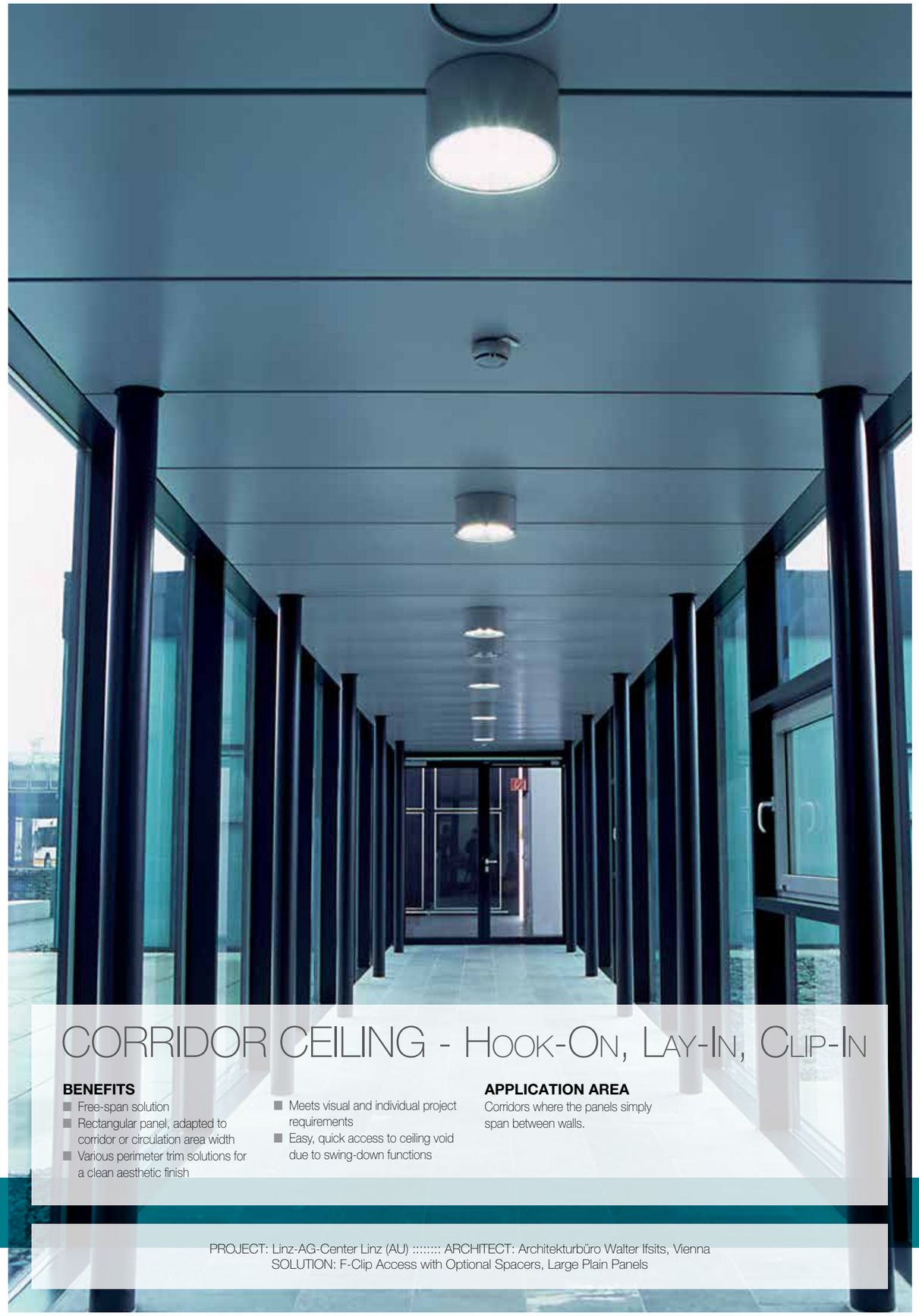


CORRIDOR CEILING - Hook-On, Lay-In, Clip-In

BENEFITS

- Free-span solution
- Rectangular panel, adapted to corridor or circulation area width
- Various perimeter trim solutions for a clean aesthetic finish
- Meets visual and individual project requirements
- Easy, quick access to ceiling void due to swing-down functions

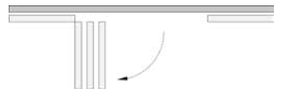
APPLICATION AREA

Corridors where the panels simply span between walls.

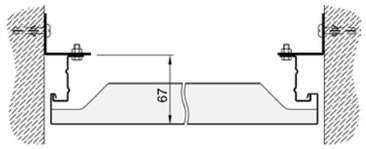
PROJECT: Linz-AG-Center Linz (AU) :::::::: ARCHITECT: Architekturbüro Walter Ifsits, Vienna
SOLUTION: F-Clip Access with Optional Spacers, Large Plain Panels

CORRIDOR CEILING
Hook-On - F-H 600
Lay-In - F-L 601
Clip-In - F-Clip Access

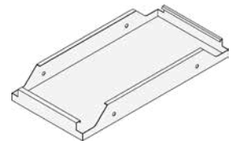
F-H 600	Hook-On solution with rectangular panels Square edged
Grid	Wall connection profile with J-bar
Dimensions	Length 600 – 3000 mm Width 247 – 1350 mm (Swing 247 - 750 mm)
Hinge down function	Optional with G-profile and swing function Swing with 3 mm black gasket on one long and two short sides



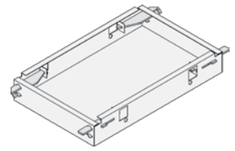
Swing-Down Function



F-H 600



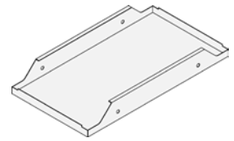
G-Profile



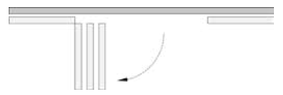
Panel with Swing Function

F-L 601	Lay-In solution with rectangular panels Square edged With 3 mm black gasket on one long side
Grid	Perimeter trim
Dimensions	Length 600 – 3000 mm Width 247 – 1350 mm

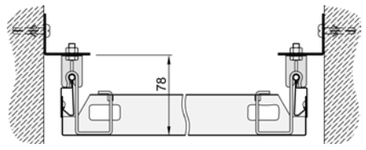
F-L 601



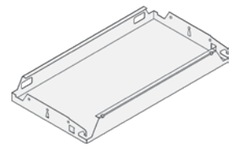
F-CLIP ACCESS	Clip-In solution with rectangular panels Square edged With swing-down function access
Grid	Wall connection profile with half spring A-bar
Dimensions	Length 600 – 2500 mm Width 247 – 600 mm



Access Function



F-Clip Access



Other corridor solutions exist. Please contact us.

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ISLAND CEILINGS - Clip-In, Hook-On

BENEFITS

- Modular concept for optimum flexibility
- Visually defines a space
- Freedom in design
- Modern absorber solution for exposed concrete ceilings
- Meets demanding acoustic requirements
- Integration of lighting, air conditioning and other equipment
- Quick and easy to install
- Concealed grid for a monolithic effect

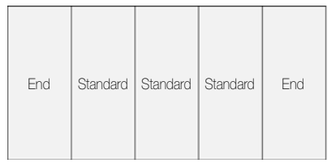
APPLICATION AREA

A contemporary design and acoustic solution for all market segments. Chilled beams or chilled ceiling elements can be achieved with the D-H 700.

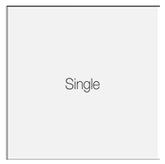
PROJECT: VRSG Rechenzentrum St. Gallen (CH) :::::::: ARCHITECT: Lantner & Olbrecht, Rorschach
CEILING CONTRACTOR: Phonex AG :::::::: SOLUTION: D-H 700 Microperforated Rg 0701

ISLAND CEILINGS
Clip-In - D-Clip
Hook-On - D-H 700

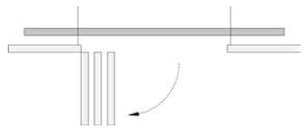
D-CLIP	Clip-In solution with rectangular panels Square edged
Grid	System 3000 grid modules with spring A-bar
Dimensions	Length 600 – 2500 mm Width 247 – 600 mm Edge detail all around 50 mm
Hinge down functions	Standard panel with swing-down function access End and single panel without access function



Modular Option

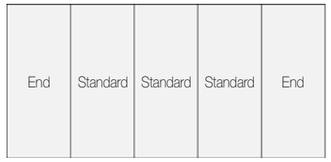


Single Panel

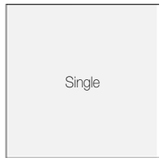


Access Function

D-H 700	Hook-On solution with rectangular panels Square edged
Grid	System 3000 grid modules
Dimensions	Length 600 – 2750 mm (in steps of 25 mm) Width 250 – 600 mm (in steps of 25 mm) Edge detail all around standard 50 mm Edge detail all around optional 65 mm (for additional inlays, chilled ceilings, etc.)



Modular Option



Single Panel

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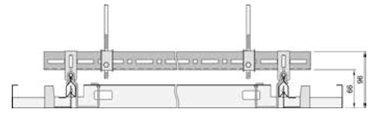
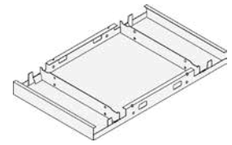
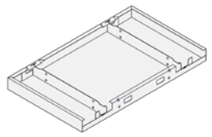


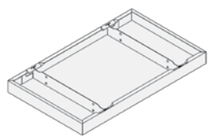
D-Clip



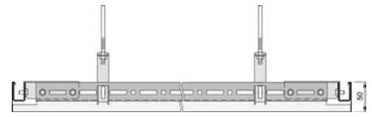
Standard Panel



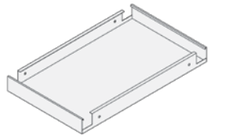
End Panel



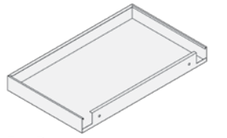
Single Panel



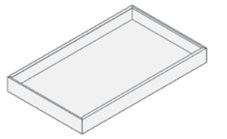
D-H 700



Standard Panel



End Panel



Single Panel

ISLAND CEILINGS - CANOPY

BENEFITS

- Modular concept offering optimum flexibility and freedom of design
- Visually defines a space
- Modern absorber solution for exposed concrete ceilings
- Meets demanding acoustic performances
- Integration of lighting, air conditioning and other equipment
- Quick and easy to install

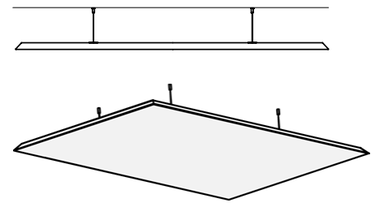
APPLICATION AREA

A contemporary design and acoustic solution for small or large rooms in all market segments.

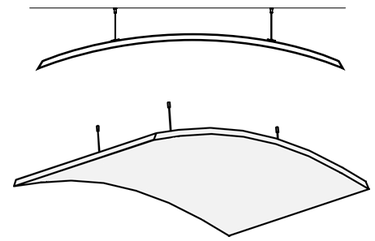
PROJECT: Parker Hannifin GmbH - Bielefeld (D) :::::::: ARCHITECT: Podufal + Wiehofsky Architekten und Ingenieure, Lohne
CONTRACTOR: Offszanka Trockenbau GmbH & Co. KG :::::::: SOLUTION: Canopy Concave

ISLAND CEILINGS
Canopy

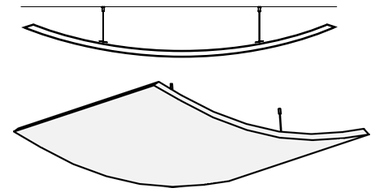
CANOPY	Single element solution Different shapes: Flat, concave, convex Edge detail 47°, thickness 40 mm Colour RAL 9010 (white) Rg 0701 extra microperforation, back perforated Rg 2516 standard perforation Acoustic pad with black fleece on both sides
Grid	Direct suspended by four cables
Flat Concave Convex	1890 x 1180 x 40 mm 1890 x 1181 x 40 mm, radius 2742 mm (inside) 1890 x 1181 x 40 mm, radius 2742 mm (inside)
Special designs*	Light integration *Please contact Armstrong Technical Sales service



Canopy Flat



Canopy Concave



Canopy Convex

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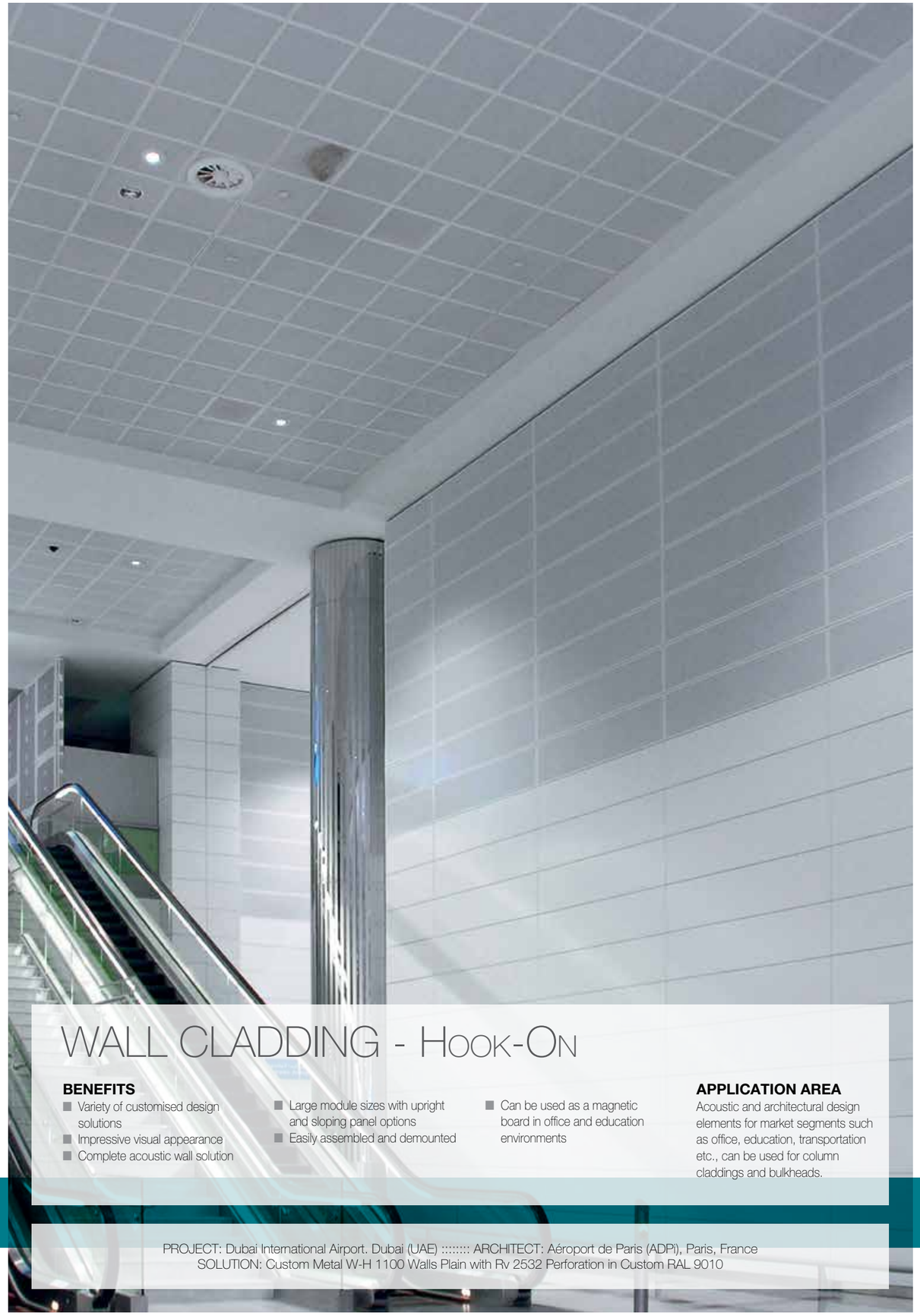


WALL CLADDING - HOOK-ON

BENEFITS

- Variety of customised design solutions
- Impressive visual appearance
- Complete acoustic wall solution
- Large module sizes with upright and sloping panel options
- Easily assembled and demounted
- Can be used as a magnetic board in office and education environments

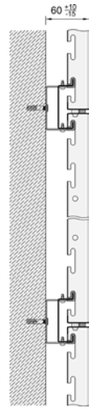
APPLICATION AREA

Acoustic and architectural design elements for market segments such as office, education, transportation etc., can be used for column claddings and bulkheads.

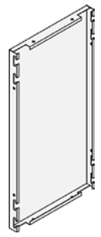
PROJECT: Dubai International Airport. Dubai (UAE) :::::::: ARCHITECT: Aéroport de Paris (ADPi), Paris, France
SOLUTION: Custom Metal W-H 1100 Walls Plain with Rv 2532 Perforation in Custom RAL 9010

WALL CLADDING
Hook-On - W-H 1000 / W-H 1100

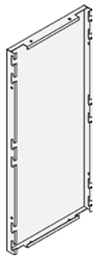
W-H 1000	Hook-on solution with rectangular panels Square edged With 5 mm black gasket and plastic spacer on one short and one long side Offset distance standard 60 $^{+10}/_{-15}$ mm
Grid	Horizontal direction C-wall profile fixed with wall anchors to the wall
Type A Type B Type C Type D	Length 600 – 1300 mm / Width 275 – 1000 mm Length 1301 – 2500 mm / Width 275 – 1000 mm Length 2501 – 3000 mm / Width 275 – 1000 mm Length 600 – 3000 mm / Width 275 – 1000 mm Edge detail all around 30 mm for standard panels 40 different types of panels available on request...



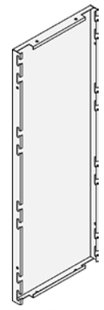
W-H 1000



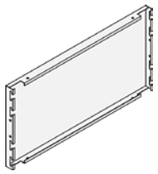
Panel Type A



Panel Type B

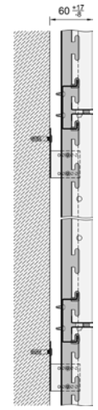


Panel Type C

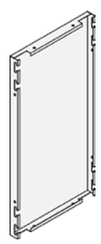


Panel Type D

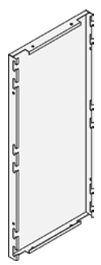
W-H 1100	Hook-on solution with rectangular panels Square edged With 5 mm black gasket and plastic spacer on one short and one long side Offset distance standard 60 $^{+17}/_{-8}$ mm
Grid	Vertical direction U-wall profile fixed with wall anchors to the wall
Type A Type B Type C Type D	Length 600 – 1300 mm / Width 275 – 1000 mm Length 1301 – 2500 mm / Width 275 – 1000 mm Length 2501 – 3000 mm / Width 275 – 1000 mm Length 600 – 3000 mm / Width 275 – 1000 mm Edge detail all around 30 mm for standard panels 40 different types of panels available on request...



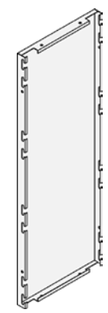
W-H 1100



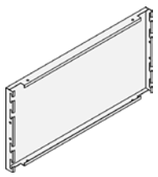
Panel Type A



Panel Type B



Panel Type C



Panel Type D

Perforations Page 46
Acoustic Performances Pages 47-49

COLOURS & FINISH OPTIONS

PROJECT: O2 ARENA, Main and VIP Lobby Schmidhuber & Partner, Munich (D) :::::::: ARCHITECT: HOK Sport
CEILING CONTRACTOR: Rogge Spezialbau, Berlin :::::::: SOLUTION: R-H 200 Ceiling, W-H 1100 Wall Cladding

Light reflectance

Pattern	RAL 9010	Global White
Plain (unperforated)	85%	75%
Extra Microperforation Rg 0701 with black acoustic fleece	80%	70%
Standard Perforation Rg 2516 with black acoustic fleece	70%	65%
Microperforation Rd 1522 with black acoustic fleece	65%	60%

Measured in accordance with EN ISO 7742-2 & EN ISO 7742-3.

Safe & Healthy

The Armstrong standard RAL 9010 Pure White powder coating consists of organic binders based on polyester and epoxy resins, small amounts of additives, and inorganic as well as pigments for colour. It contains no heavy metals and is free of toxic additives. Thus, the coating is not subject to any toxicological classification or identification requirements.
Under thermal loads, it does not emit any combustion products apart from those generated when burning other organic substances such as wood, oil, or household waste.

Powder coat finish

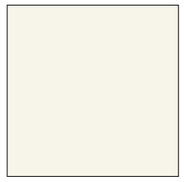
The way in which incident light is reflected by a surface depends on its texture. Smooth surfaces exhibit more gloss than textured ones.
The light reflected at an angle of 60 degrees is measured and compared with the incident light. The ratio defines the degree of gloss.
Armstrong's standard RAL 9010 Pure White colour with a satin smooth finish has a degree of gloss of about 22 percent, measured according to Gardener and DIN 67530.

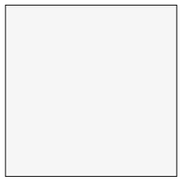
The standard finish to metal ceiling panels is a high quality polyester powder coating.
Aesthetically, the powder coat finish to metal products creates a smooth, satin appearance, which conceals its resilient technical qualities.

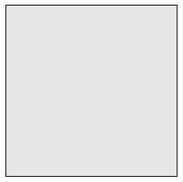
Electro-statically applied and oven cured, powder coat finishes have a greater film thickness than wet paint applications or products manufactured from pre-painted steel coil, and give a more durable and impact resistant surface. Powder coat finishes are UV stable, do not support micro-biological growth and are easily cleaned.

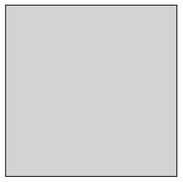
Standard colours

RAL and NCS are the most widely used colour systems in the construction industry. Armstrong uses RAL 9010 Pure White as its standard colour. Of course, all colours in the RAL and NCS palettes are available.
RAL 9010 white (20% gloss), optional Global White (12% gloss).


RAL 9010


Global White


RAL 9006


RAL 9007

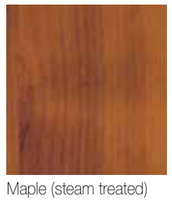
Special colours

Armstrong offer all RAL and NCS colours for your custom solutions.

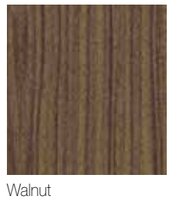
FINISH OPTIONS: Wood effects

Wood effects is a unique metal ceiling from Armstrong and offers architects and building owners the opportunity to combine the attractiveness and exclusivity of a natural wood surface with all the advantages of a metal ceiling.

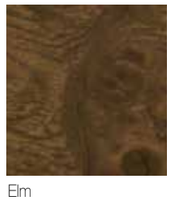
The ceiling is not laminated so the danger of exfoliation is nullified. Further, the coating generates a uniform colour tone and a consistent texture. As a result the obvious variations which so often accompany real wood panels are minimised.

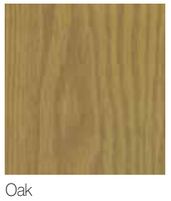

Maple (steam treated)


Douglas-Fir


Walnut


Pine


Elm


Oak

For further finish options, please contact us.

MESH METAL CEILINGS

Benefits

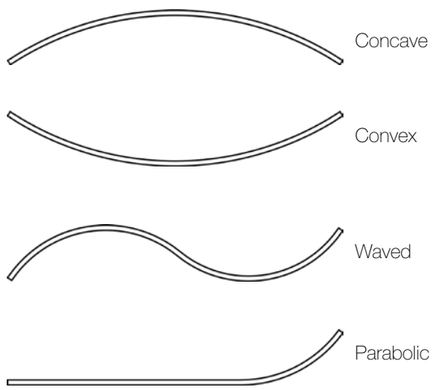
- Variety of mesh types, structures, sizes, surfaces
- Various design options available
- Light weight
- A total flexible system allowing lighting, ventilation as well as technical fittings and electrical installations
- Flexible and easy to maintain
- Air-and light permeable with a clear view into the ceiling void.

Application area

- Design element in form of a square tile or rectangular panel for various room applications
- Architectural design elements in all types of segments and especially in public areas where due to increased fire regulations a minimum free area is required (airports, railway stations, etc.).

CURVED CEILINGS

- Concave, convex or wave panels allow varying heights to create stunning visual effects
- Quick installation with minimal visible grid to create wall to wall or island solutions
- Using a concealed suspension system to create a smooth, curved visual
- Hook-On systems can also be utilised.



SPECIFIC SOLUTION - BIOGUARD

- **BIOGUARD** is a special treatment applied to Armstrong mineral and metal tiles.
- Bioguard products can be cleaned with diluted disinfectants containing active agents such as Quaternary Ammonium, Hydrogen Peroxide and Chlorine.
- Bioguard provides protection against bio-contamination.
- Bioguard solutions have the following benefits:
  - They prevent the build-up of bacteria, mould and yeast.
  - They prevent the settlement of micro-organisms that land on the surface of the tile.
  - There is no radiation or spread of chemicals in the air.
  - They are harmless for people, animals and plants.
  - They are effective during the life-time of the ceiling as long as the surface is intact.
- Bioguard tiles meet the requirements for use in Zone 4 according to NF S 90-351.
- ISO 5 Clean room performance for Bioguard Extra Microperforated with fleece and Premium B15 (tested against ISO 14644-1).
- ISO 3 Clean room performance for Metal Bioguard Plain (tested against ISO 14644-1).
- The very smooth surface of Bioguard prevents the accumulation of dust and micro-organisms (Kinetic of Decontamination test against NF S 90-351).
- Bioguard Plain is suitable for use in category 1- 6 areas as defined in HTM 60.
- 100% RH performance for Bioguard Plain when painted front and back.

	METAL		GRID
	BIOGUARD Extra Microperforated with fleece and Premium B15	**BIOGUARD Plain**	**CLEAN ROOM Grid**
HTM 60 Category	Category 2, 3, 4, 5, 6	Category 1*, 2, 3, 4, 5, 6	Category 2, 3, 4, 5, 6
Classification NF S 90-351	Zone 1, 2 & 3	Zone 1, 2, 3 & 4	Zone 1, 2 & 3
Particle emission class	ISO 5	ISO 3	ISO 4
Material	Steel with acoustic fleece and mineral fibre infill	Steel	Aluminium
Cleaning	Washable with a damp sponge	High pressure** water cleaning	Washable with a damp sponge
Resistance to disinfectants	Quaternary Ammonium, Hydrogen Peroxide, Chlorine		

* HTM 60 category 1 calls for a smooth, imperforate and jointless soffit. Where access is required Armstrong propose a Clip-In concealed grid ceiling with the joints filled with an appropriate flexible silicone mastic to provide a 'jointless' solution.
** High pressure water cleaning solution is using METAL Clip-In Plain.

PERFORATIONS

One of the key functions of a metal ceiling is to create a pleasant atmosphere enhanced by intelligent noise abatement. Armstrong perforations offer a vast spectrum of aesthetic solutions for effective acoustic comfort. Depending on the intended purpose of a room, reverberation times will need to be optimised as well. This parameter depends on the total absorption capacity of the room.

Airborne sound absorption is based on the conversion of sound energy into heat by friction processes which take place in absorbing materials and systems.
All of the perforation types can be found in the brochure “Perforations”.

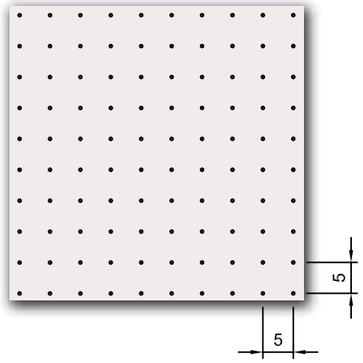
Ultra Microperforation

Rg 0501

Hole diameter: 0.5 mm

Free area: 0.64 %

Using fibre free absorber



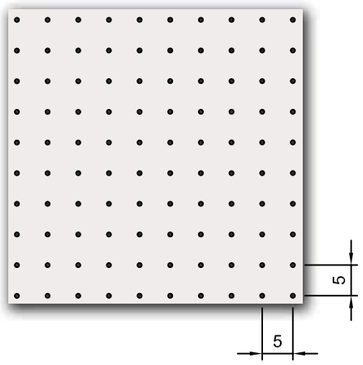
Extra Microperforation

Rg 0701

Hole diameter: 0.7 mm

Free area: 1.5 %

Standard acoustic infill



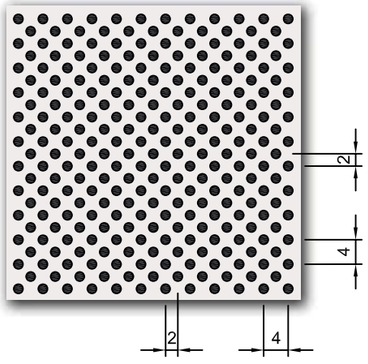
Micro Perforation

Rd 1522

Hole diameter: 1.5mm

Open area: 22%

Standard acoustic infill



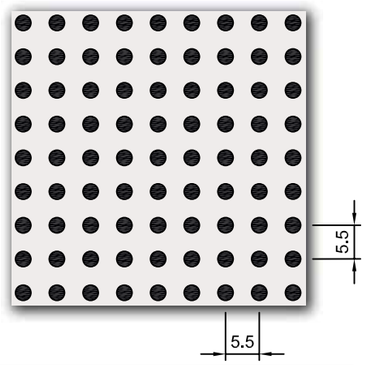
Standard Perforation

Rg 2516

Hole diameter: 2.5mm

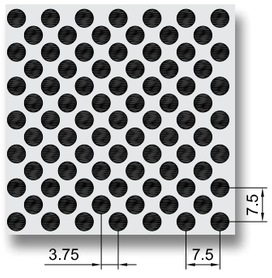
Open area: 16%

Standard acoustic infill

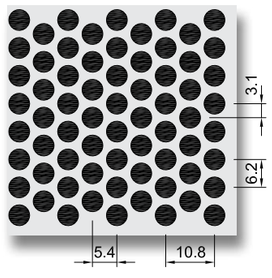


Armstrong offer special perforations for air flow (Rd 4045 and Rv 4650) and loudspeakers (Qg 4025 and Qg 8043)...

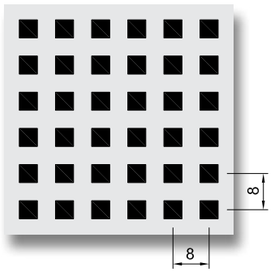
Rd 4045*



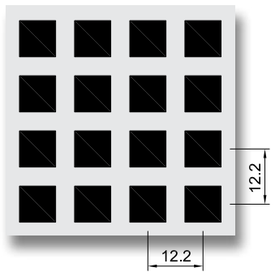
Rv 4650*



Qg 4025*



Qg 8043*

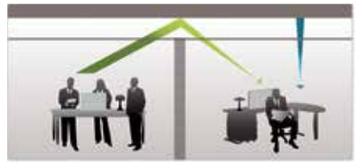


*scale ¾

A large selection of over 50 additional perforations are available on request. Please contact us for more details.

ACOUSTIC PERFORMANCES

Sound attenuation for better CONFIDENTIALITY



- **Sound attenuation** is the control of sound transmission between adjacent spaces with a common void above them.
- **Sound reduction** is the control of sound generated in the plenum or coming from the floor above.

Sound absorption for better CONCENTRATION

- **Sound absorption** is the part of incident sound that is not reflected by the tile.

Sound attenuation & absorption for better INTELLIGIBILITY

- Balance of **sound attenuation** and **absorption**.

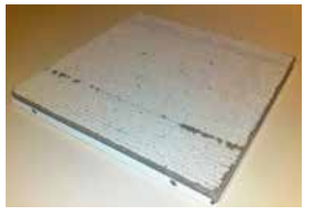
Acoustic Performance

Metal ceiling products have been tested for their acoustic performance in terms of sound absorption, sound attenuation and sound reduction. All perforated products can be supplied with a variety of factory fitted acoustic infill options.

3 standard infill options* are available across the Armstrong range of metal tiles…

Acoustic fleece black, 63 g/m²

Premium B15



Premium OP19

Acoustic Fleece
Non-woven acoustic fleece provides a cost effective solution for general sound absorption requirements. As a solution that is bonded to the reverse of the metal tile it helps eliminate pattern staining issues that may occur with loose laid solutions.

Premium B15
Premium B15 solutions have been developed to combined good both sound absorption and high sound attenuation performance. It combines the non-woven acoustic fleece with a 15mm mineral infill board as a factory fitted acoustic solution.

Premium OP19
Premium OP19 provides high sound absorption performance utilising specially developed lower density Armstrong mineral infill boards. Premium OP19 infill can achieve up to Class A sound absorption.

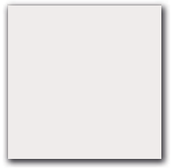
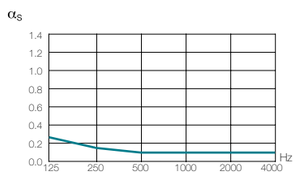
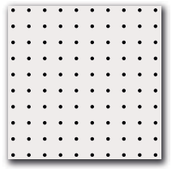
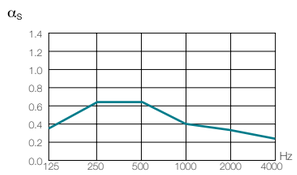
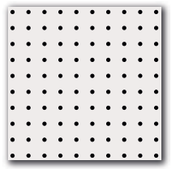
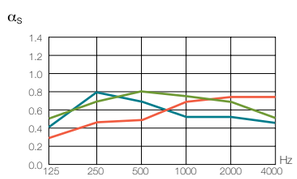
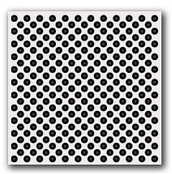
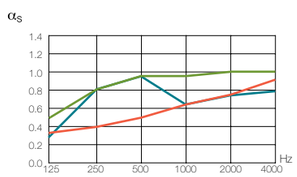
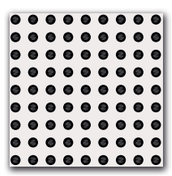
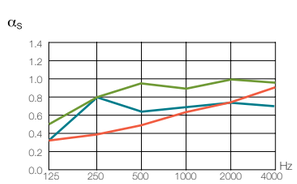
*Additional acoustic solutions are available including AM and AMPK glasswool slabs and aluminium foil black tissue faced (AFBTF) pads. Please contact us for more details.

ACOUSTIC PERFORMANCES

EN ISO 354 & EN ISO 11654

Sound absorption

Is the control of reflected sound, provided by the suspended ceiling, within a space.

	α_w	NRC 125 250 500 1000 2000 4000 Hz	Abs Class	Cert N°	Octave Band Centre Frequency (Hz)
	• **0.10(L)**	Plain - no infill 0.10 0.25 0.15 0.10 0.10 0.10 0.10 α_p	**n/c**	**2206**	
	• **0.40(LM)**	Ultra Microperforated - no infill 0.55 0.35 0.65 0.65 0.40 0.35 0.25 α_p	**D**	**2252**	
	• **0.55(L)** • **0.65** • **0.70**	Extra Microperforated with fleece 0.65 0.40 0.80 0.70 0.55 0.55 0.45 α_p Extra Microperforated with B15 0.60 0.30 0.45 0.50 0.70 0.75 0.75 α_p Extra Microperforated with OP19 0.75 0.50 0.70 0.80 0.75 0.70 0.50 α_p	**D** **C** **C**	**2253** **2334** **6714a**	
	• **0.75** • **0.60(H)** • **1.00**	Microperforated with fleece 0.80 0.30 0.80 0.95 0.65 0.75 0.80 α_p Microperforated with B15 0.60 0.35 0.40 0.50 0.65 0.75 0.90 α_p Microperforated with OP19 0.90 0.50 0.80 0.95 0.95 1.00 1.00 α_p	**C** **C** **A**	**2175** **2337** **6713a**	
	• **0.75** • **0.60(H)** • **0.95**	Standard Perforated with fleece 0.75 0.35 0.80 0.65 0.70 0.75 0.70 α_p Standard Perforated with B15 0.60 0.35 0.40 0.50 0.65 0.75 0.90 α_p Standard Perforated with 0P19 0.90 0.50 0.80 0.95 0.90 1.00 0.95 α_p	**C** **C** **A**	**141401** **2340** **6715a**	

All Armstrong acoustic testing is conducted at independent third party accredited laboratories.
Contact Armstrong for information on test methods or visit our acoustic mini-website www.acousticalceilings.co.uk

EN 20140-9 & EN 717-1

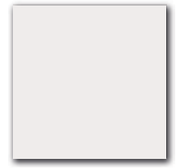
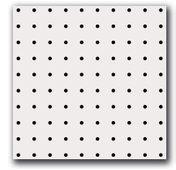
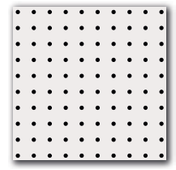
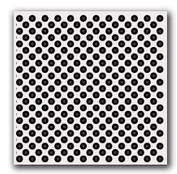
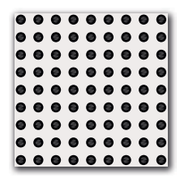
Sound attenuation

Is the control of horizontal sound transmission through a suspended ceiling and common void located above adjacent spaces.

EN ISO 140-3 & EN ISO 717-1

Sound reduction

Is the control of vertical sound transmission through a suspended ceiling located above a space.

		Dncw	Cert N°	Rw	Cert N°
	Plain - no infill	**44 dB**	**2438**	**19 dB**	**5936**
	Plain + B15	**47 dB**	**2439**	**21 dB**	**5937**
	Ultra Microperforated – no infill	**18 dB**	**3844-98-1**	-	-
	Extra Microperforated + fleece	**30 dB**	**2432**	-	-
	Extra Microperforated + B15	**40 dB**	**2427**	-	-
	Extra Microperforated + OP19	**31 dB**	**6720a**	**15 dB**	**6725a**
	Microperforated + fleece	**20 dB**	**2437**	**6 dB**	**5939**
	Microperforated + B15	**41 dB**	**2443**	**18 dB**	**5941**
	Microperforated + OP19	**27 dB**	**6719a**	**12 dB**	**6724a**
	Standard Perforated + fleece	**20 dB**	**2437***	**6 dB**	**5939***
	Standard Perforated + B15	**41 dB**	**2443***	**18 dB**	**5941***
	Standard Perforated + OP19	**28 dB**	**6721a**	**13 dB**	**6726a**

* Highlighted Dncw and Rw performances for the Standard Perforation (16% open area) are estimated as being not less than the tested Microperforated (22% open area) performance.

SERVICE INTEGRATION

Semi-standard details

The ability to integrate building services equipment is a major feature of metal ceiling systems. Metal tiles can be engineered with cut-outs, apertures and special details to accommodate the proliferation of services utilised in today's modern building projects. Whether the specifier selects a standard metal tile or a more customised answer for his project, lighting fittings, air conditioning grilles and fire protection equipment need to be harmonised with the ceiling system. For us, this is standard practice, and the advanced manufacturing capabilities of our metal ceiling facilities enable products to be offered complete with engineered solutions for the incorporation of building services.

Special size and half module tiles can also be produced when necessary to finish ceilings at perimeters and other junctions.

Punched or laser cutting of aperture for lighting fitting

Rear view of accurately formed aperture with stiffening angles

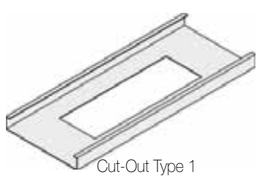
Rear view with lighting fitting

Face view of tile

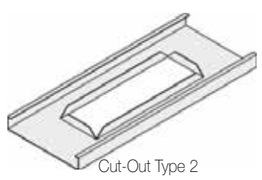
Metal ceiling tiles can incorporate a heating and cooling system to contribute to improved comfort for building occupants.

Cut-outs and perforations

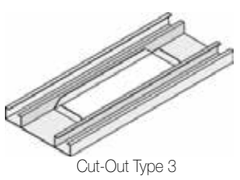
Cut-outs	Type 1 (rectangular) Type 2 (rectangular with bendings) Type 2A (rectangular with bendings and reinforcement angles for loads) Type 4 (round)
Perforations	Air-flow perforations Rd 4045 and Rv 4650 Loudspeaker perforation Qg 4025 and Qg 8043



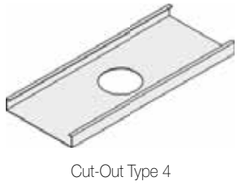
Cut-Out Type 1



Cut-Out Type 2



Cut-Out Type 3



Cut-Out Type 4

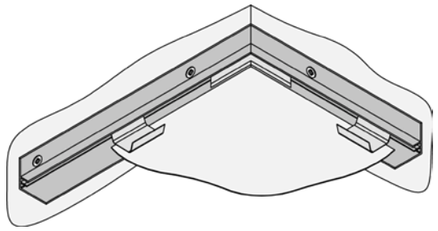
Special cut-outs available on request

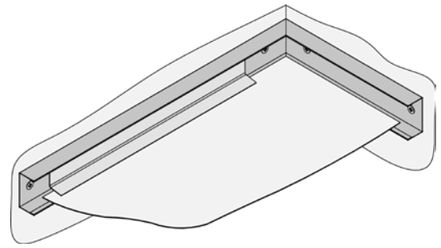
PERIMETER TRIMS

A variety of aluminium extrusions and steel channel sections are offered to provide simple and effective detailing at the perimeter of the ceiling.

Whether the requirement is to finish the ceiling directly against the perimeter wall, or to utilise plasterboard margins, a choice of solutions are available. Some of the sections have been purpose designed for use with Axal Vector, MicroLook and Tegular tiles, and form part of our Axiom Transition range of aluminium profiles.

Perimeter details





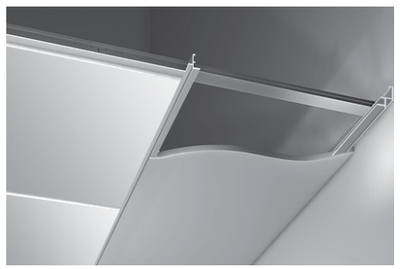
Field cutting

Tiles can be cut using tin snips, electric sheet metal shears or band saw. Care must be exercised to avoid damage to the painted surface, bending or distortion of the tiles.

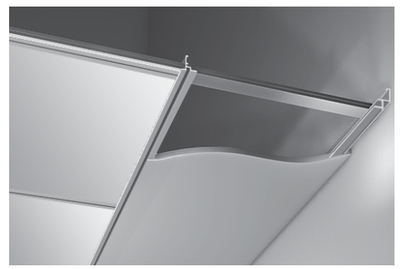
AXIOM Transitions

Axiom Transitions are the ideal solution for metal tile to plasterboard inter-faces. Five extrusions are available for use with metal tiles:

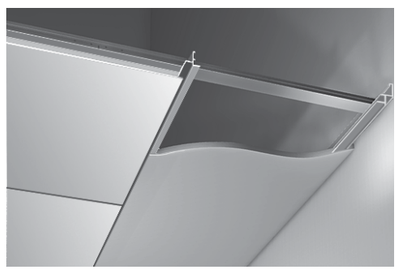
- Axiom Transitions plasterboard Perimeter Trim
- Axiom Transitions for Tegular / MicroLook
- Axiom Transitions for Axal
- Axiom Transitions Channel (cut metal tiles)
- Axiom Transitions Angle



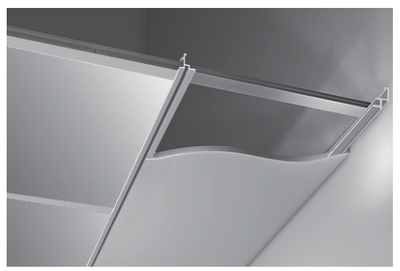
Axiom Transitions for Axal Vector



Axiom Transitions Angle with Silhouette



Axiom Transitions Channel



Axiom Transitions for Tegular / MicroLook

For more information on perimeter details, please contact us.

TECHNICAL INFORMATION

Metal walls and ceilings can be used in schools, offices, transport facilities, industrial buildings and also hospitals where their cleanability makes them ideal to meet the clean room standards required in the healthcare sector.

EN 13501-1

Fire reaction

National Building Regulations (where applicable) require that buildings meet the appropriate Euroclass fire reaction performance depending upon the area of application. Armstrong products have been tested to the harmonised European fire reaction standards and meet the minimum performance criteria. Many Armstrong products have also been tested for their fire resistance performance under various floor constructions.
Metal tiles do not burn and contain no volatile organic components. Metal provides protection against fire and can also provide a shield against radio waves due to their conductivity. As well, many of our acoustical metal ceilings and walls achieve a fire class of A1 according to EN 13501-1.

Armstrong Metal Ceilings products have been tested to meet a variety of fire test classifications

Plain without acoustic infill	
EEA	Euroclass A1 (RAL 9010)
EEA	Euroclass A2-s1, d0 (other colours)
EEA	Euroclass B-s1, d0 (with gasket)
Perforated without acoustic infill	
EEA	Euroclass A1 (RAL 9010)
EEA	Euroclass A2-s1, d0 (other colours)
EEA	Euroclass B-s1, d0 (with gasket)
With fleece, aluminium foil black tissue faced (AFBTF) pad or B15 or OP19 infill	
Perforated ø ≤ 2.5 mm (acoustic fleece)	
EEA	Euroclass A2-s2, d0 (Euroclass A1 performance available on special request).
Perforated ø ≤ 2.5 mm (acoustic fleece and gasket)	
EEA	Euroclass B-s2, d0
Perforated ø ≤ 2.5 mm (AFBTF pad)	
EEA	Euroclass A1
Perforated ø ≤ 2.5 mm (Premium B15 infill)	
EEA	Euroclass A2-s1, d0
Perforated ø ≤ 2.5 mm (metal OP19 infill)	
EEA	Euroclass A2

Thermal conductivity

The ever increasing commitment to energy conservation, dictates that buildings should be as energy efficient as is compatible with their function, use and as specified in national building regulations. Interior building products which can form part of the external structure, such as suspended ceilings beneath a roof construction, can contribute to minimising the loss of heat to the exterior by reference to their thermal conductivity values. Armstrong conducts extensive tests of thermal conductivity on a wide range of its products, in accordance with EN 12667 (as specified in EN 13964) and ISO 8301, by third party accredited laboratories. The thermal conductivity values indicated on each product data page are as determined by these tests.

Pattern	Thermal conductivity W/mK
Plain (unperforated), no inlay	0,244
Plain (unperforated), with fleece	0,163
Plain (unperforated), with 8mm (100 kg/m^3) aluminium foil wrapped mineral wool	0,187
Plain (unperforated), with fleece and B15	0,0731

Product handling & durability

Armstrong metal wall and ceiling products are durable, long-lasting and can be cleaned to prolong their service life.
Frequent ceiling tile removal, typically in areas where building service equipment is located, means that a higher level of impact resistance can be required. In this category, the level of durability and impact resistance has been improved by Armstrong.

Cleaning and disinfection

The frequency and cleaning method of a ceiling varies from one application to another. All products can at least be cleaned with a dry cloth or vacuum cleaner.

Wipeable with a dry cloth.

Wipeable with a moist cloth.

Washable with a sponge dampened in water containing mild soap or diluted detergent.

Scrubbable with water containing mild soap or diluted detergent (for plain tiles or perforated tiles without a fleece).

Can be cleaned using a high pressure water spray (High pressure water cleaning solution is using metal Clip-In Plain).

Can be cleaned with disinfectants commonly used in Healthcare premises (metal Bioguard solutions).

Air leakage

The cavity above a suspended ceiling may be used as part of the mechanical air distribution system, when it is used as a supply or extract plenum, and the air pressure in the plenum will be either positive or negative in comparison to the pressure in the room below. Similarly for 'Clean Room' applications, where it is most important to prevent the ingress of airborne dust contaminants, the room will be at positive pressure to the surrounding areas. Alternatively, to escape the egress of pathogens the room may be kept at a lower pressure relative to the surrounding areas. In these situations, it is necessary to know how much air leakage occurs through the ceiling system as a result of the pressure differential. Armstrong conducts extensive tests of air leakage on a wide range of its products, in accordance with EN 12114 and EN 13829, by third party accredited laboratories. Please contact Armstrong Technical Sales for further details of these results.

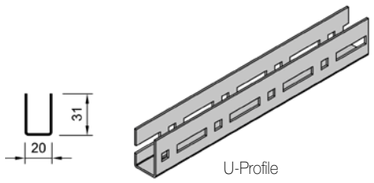
Air flow

When using perforated metal suspended ceilings, the cavity above may be used as part of the mechanical air distribution system when it is used as a supply plenum. With this arrangement the air pressure in the plenum is always positive in comparison to the pressure in the room below. Specific tiles can be selected as open (active), and these will become air diffusers, while the remaining tiles will have their perforations blocked (inactive). In this way the air flow supply volume to the room can be controlled and balanced dependent upon the pressure differential and the air change requirements.
Armstrong conducts extensive tests of air flow on a range of its more common metal products, in accordance with EN 12114 and EN 13829, by third party accredited laboratories. Please contact Armstrong Technical Sales for further details of these results.

GRID SYSTEMS

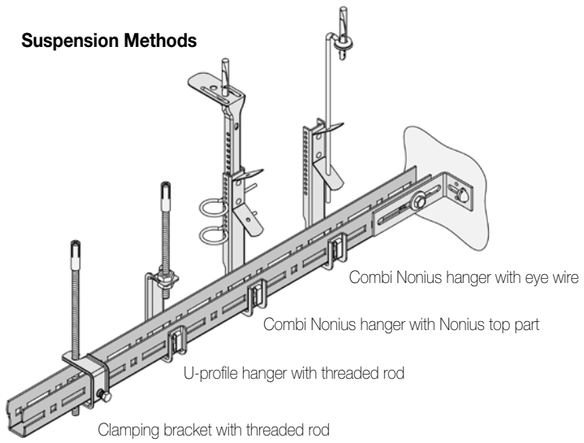
System 3000

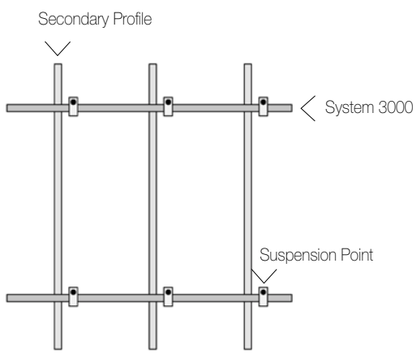
The System 3000 primary profile was specially designed for Armstrong ceiling systems. Various secondary profiles can be combined with it. This allows a wide variety of solutions. All components of the suspension system are available from stock. You can begin with installation immediately while we produce the ceiling panels. System 3000 also fulfils the two conditions stipulated by the EN standard 13964 with regard to load-bearing capacity (2.5 x to failure) and suitability for use (deflection limitations).



U-Profile

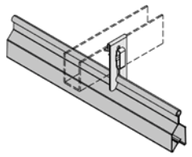
Suspension Methods

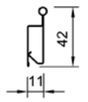




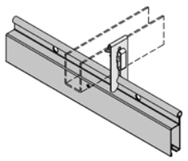
Secondary Profiles

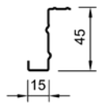
Spring A-Bar



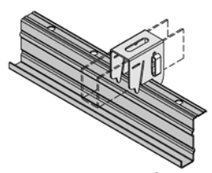


Half Spring A-Bar

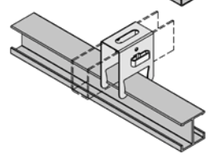




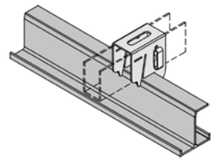
J-Bar

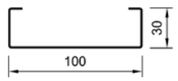


H-Profile 28

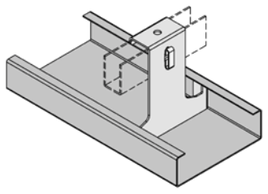


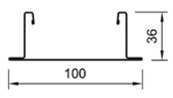
H-Profile 35



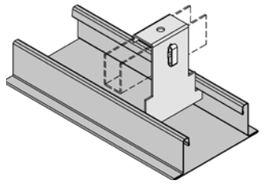


C-Profile

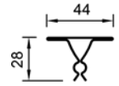


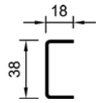


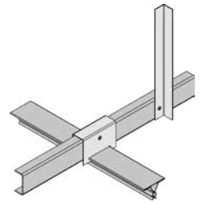
Bandraster Profile



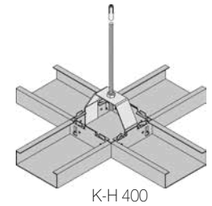
Spring T bar & C-Channel







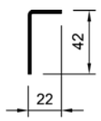
Tartan Grid



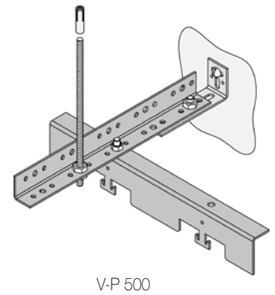
K-H 400

Vertical Baffles

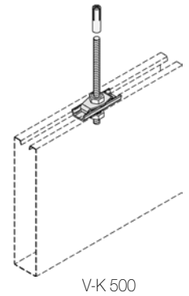
Primary Angle



Baffle Support Profile

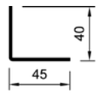


V-P 500

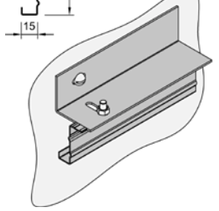


V-K 500

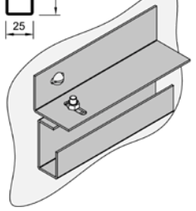
Corridor Systems



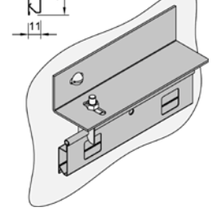
Wall Connection Profile



J-Bar

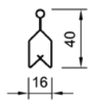


G-Profile

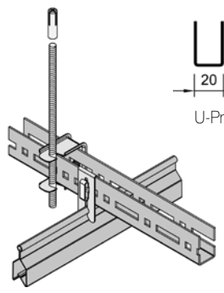


Half Spring A-Bar

Island Ceilings

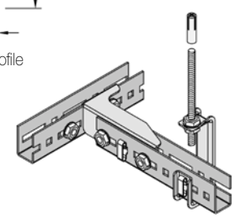


Spring A-Bar

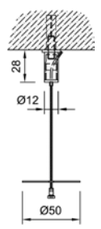


D-Clip

U-Profile

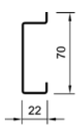


D-H 700

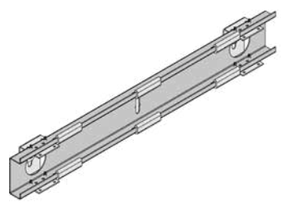


Canopy

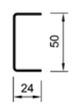
Wall Cladding



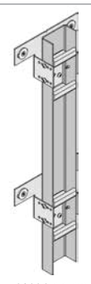
C-Wall Profile



W-H 1000

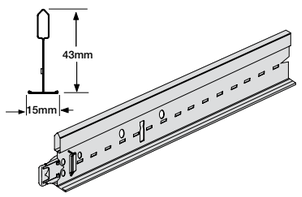
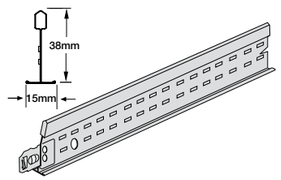
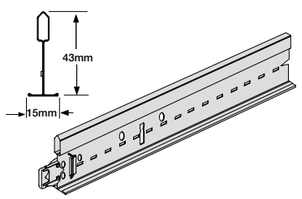
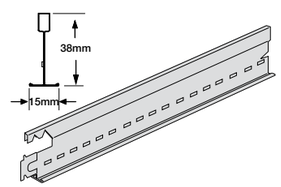
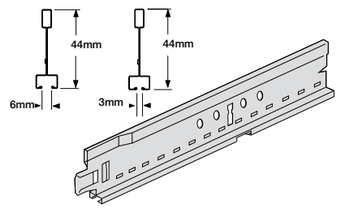
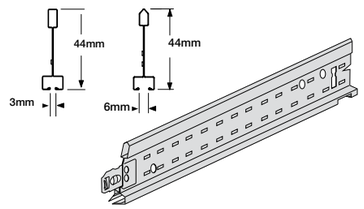
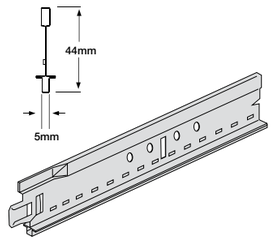
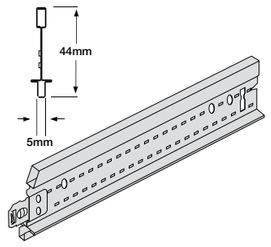


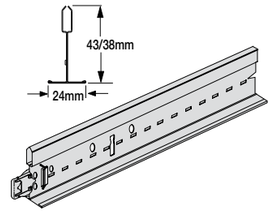
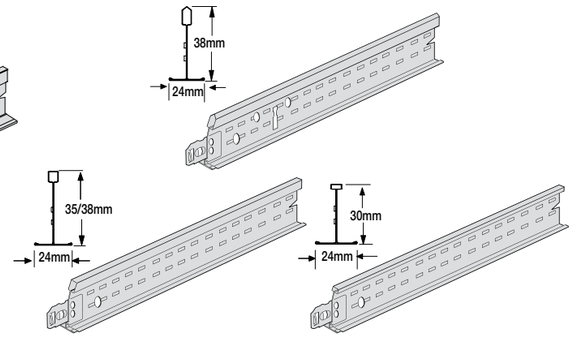
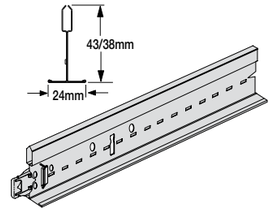
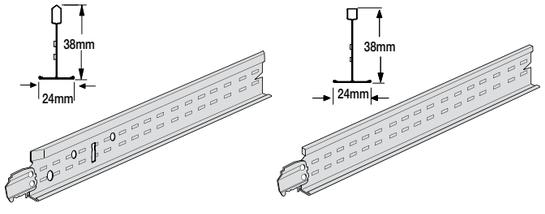
U-Wall Profile



W-H 1100

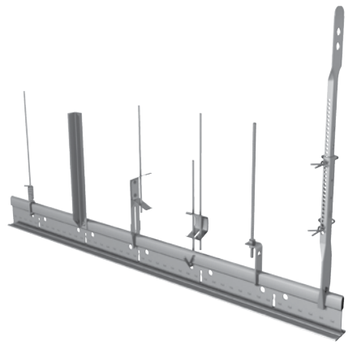
GRID SYSTEMS

	Main Runner	Cross Tee
Prelude 15 XL² System MicroLook 8 System MicroLook 16		
Prelude 15TL System MicroLook 8 System MicroLook 16		
Silhouette 15 XL² System MicroLook 8		
Interlude 15 XL² System MicroLook 8		

	Main Runner	Cross Tee
Prelude 24 XL² System Axal Vector System Tegular 8 System Tegular 11 F System Tegular 16		
Prelude 24TLX System Board System Tegular 2 System Tegular 8 System Tegular 11 F System Tegular 16		

Hangers

Suspension systems are offered with a complete range of commonly required accessories and perimeter solutions.



Standard Colours

	Global White (GW)	Silver Grey RAL 9006 (SG)	Black (BK)	White RAL 9010 (WR)	Black/ White
Prelude 24 TLX	☐	▨	■	☐	
Prelude 24 XL²	☐	▨	■	☐	
Prelude 15 XL²	☐	▨	■	☐	
Prelude 15 TL	☐	▨	■	☐	
Silhouette XL² 6mm	☐		■		◪
Silhouette XL² 3mm				☐	
Interlude	☐				

Further colours on request.

For more information, please consult our installation guide or our suspension systems brochure.

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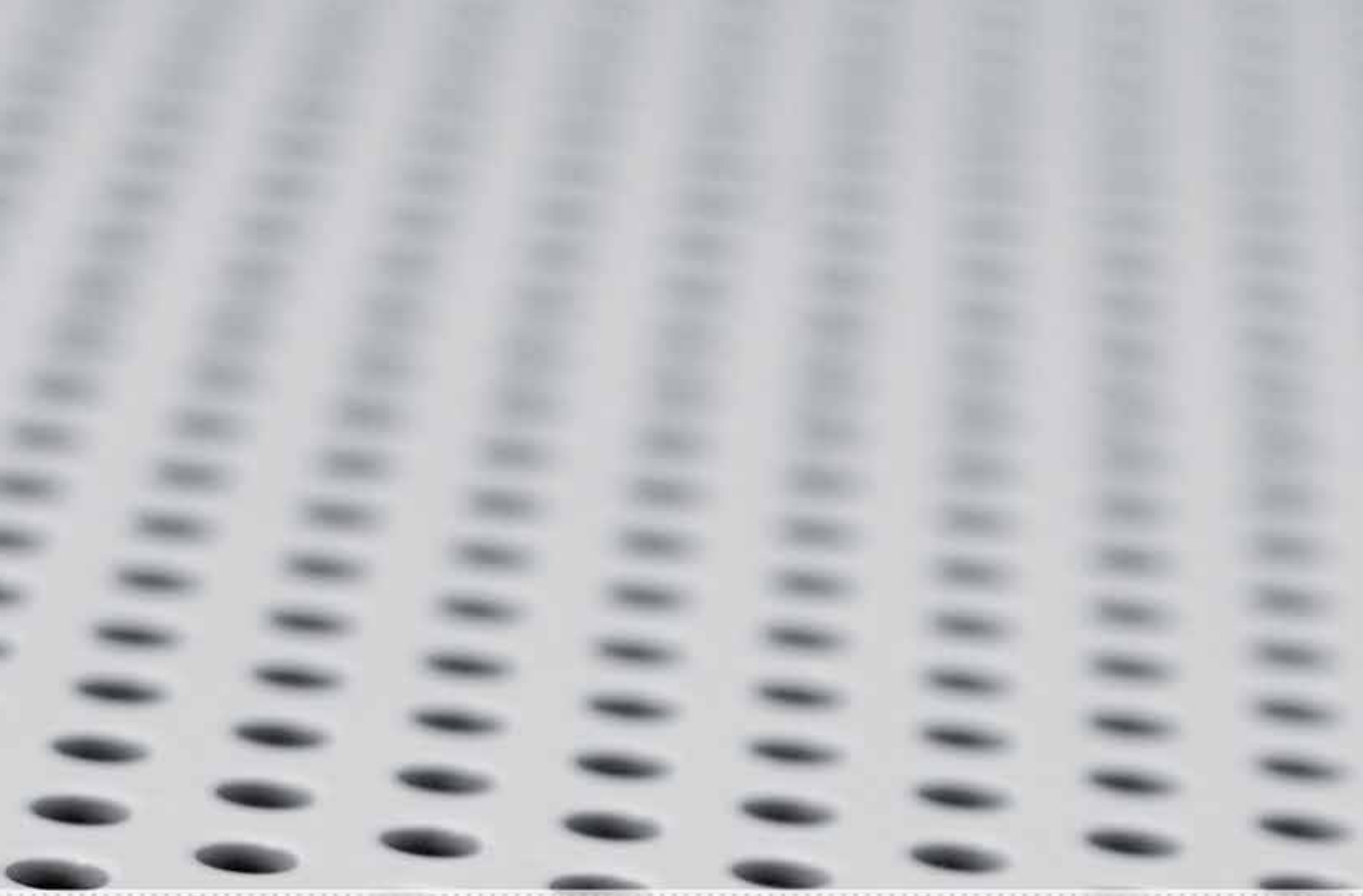

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