STRATOPANEL®
INSTALLATION MANUAL

For ceiling systems with Cleaneo technology

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All works undertaken to prescribe the use of or to install Knauf's products and systems must be performed by experienced and, where required by applicable laws, appropriately licensed personnel. Knauf's products and systems must be installed in accordance with Knauf's installation manual, Systems+, and any other product or system specific literature issued by Knauf. If installation works are not performed in compliance with such product literature, by experienced and licensed personnel, or are incorrectly performed by experienced or licensed personnel, there is a serious risk that the works, application and performance of the relevant system or products will be compromised, which could result in property damage, injury or death.

All personnel who undertake works to install Knauf's products and systems must comply with all applicable health and safety laws, including wearing appropriate personal protection equipment. If personnel do not comply with applicable health and safety laws, including by not wearing appropriate personal protection equipment, there is a serious risk of injury or death.

All of Knauf's products and systems must only be used for the uses identified in this document (and any other product or system specific literature issued by Knauf from time to time). Before prescribing or using any Knauf product or system for any other use, you must contact Knauf.

All recommended component parts for Knauf's products and systems should be used and not substituted for other products. If component parts are substituted, there is a serious risk that the works, application and performance of the relevant system or products will be compromised, which could result in property damage, injury or death.

GENERAL INFORMATION

Introduction

Stratopanel® perforated acoustic plasterboard offers combined benefits of a decorative lining and a high level of sound absorption required for commercial spaces such as educational institutions, hospitals, retail, offices, conference halls and hospitality.

Stratopanel is the ideal solution for noise absorption treatment and is available in a number of stylish designs for creative freedom. Stratopanel is the perfect balance of function and aesthetics, allowing Architects to design with flexibility and confidence, creating monolithic and seamless internal spaces.

Stratopanel is suitable for ceiling applications and offers an acoustic plasterboard system that is quick to install, ideal for new or renovation projects with time-critical construction programs.

Stratopanel has been engineered with Cleaneo air purifying technology, reducing the impact of internal in-air pollutants.

Features and Benefits

- Monolithic, seamless or express joint look
- No visible joints after finishing UFF edge profile with Uniflott Jointing Compound
- Fast installation
- Various perforation patterns for architectural design flexibility
- Improve indoor climate with Cleaneo air purifying technology
- Acoustic performance up to NRC 0.80
- Repaintable without the loss of acoustic performance
- Demountable/reusable when using screw cap system with express UFF

GENERAL INFORMATION

Cleaneo Technology

The movement to designing 'greener' buildings to achieve a level of increased air tightness and partly to save energy, have led to some air quality issues in offices, schools, hotels and restaurants.

Indoor air can become contaminated in many ways. Everyday substances including paints and lacquers, cleaning products, glues and solvents all create potentially harmful emissions including volatile organic compounds (VOC), which have been linked to headaches, allergies and asthma.

With the objective to ensure indoor comfort to the occupants of a building due noise and air pollution, Knauf have integrated an active air purifying technology called Cleaneo to our Stratopanel perforated acoustic plasterboard range.

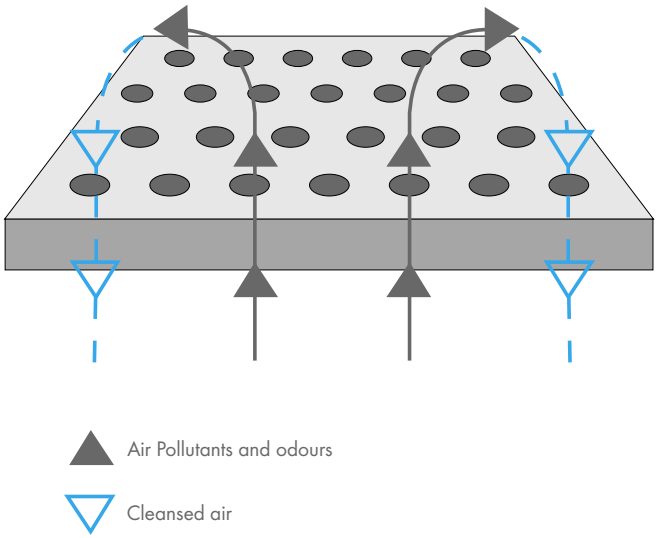
Cleaneo is derived from a natural volcanic rock called zeolite. When plasterboard containing dehydrated zeolite is perforated, it purifies air as it streams through the perforations, removing unpleasant pollutants and leaving the air cleaner.

Independent laboratory testing at the Fraunhof Institute for Building Physics in Germany, highlight the effectiveness of the Cleaneo products. Throughout all the tests, the Cleaneo technology improved the indoor air quality by reducing the concentration of polar volatile compounds like alcohol, aldehydes, ketones and esters – all typical emissions from cleaning agents and care products.

The Cleaneo effect continues to improve air quality long after installation. There is no special maintenance required and Stratopanels can be coated with a suitable painting system without any detrimental effect on its performance.

All Stratopanel® standard perforation range comes standard with Cleaneo air purifying technology.

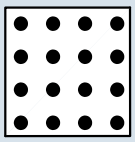
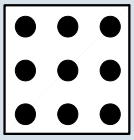
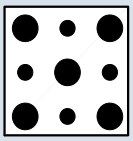
Figure 1: Cleaneo Cleansing Effect



GENERAL INFORMATION

Stratopanel® Product Range

Table 1: Standard Perforation

Product Name	Perforation	Open Area	Thickness (mm)	Width (mm)	Length (mm)	Nominal Weight (kg/m²)
Circular 8/18 R		15.5%	12.5	1188	1998	8.20
Circular 12/25 R		18.1%	12.5	1200	2000	7.90
Square 12/25 Q		23.0%	12.5	1200	2000	7.40
Alternating Circular 12/20/66 R		19.6%	12.5	1188	1980	7.70
Random Plus 8/15/20 R		9.9%	12.5	1200	2000	8.60
Random Rectangluar RE		13.6%	12.5	1199	1999	8.40

GENERAL INFORMATION

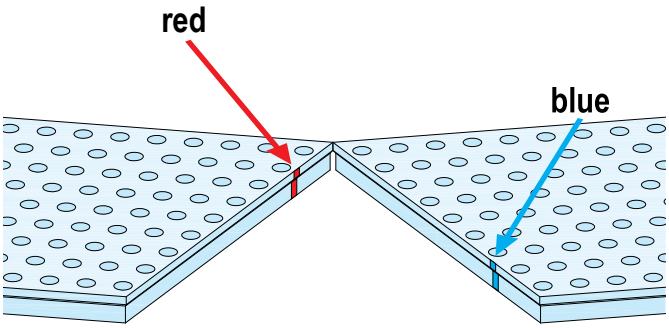
Edge Profiles

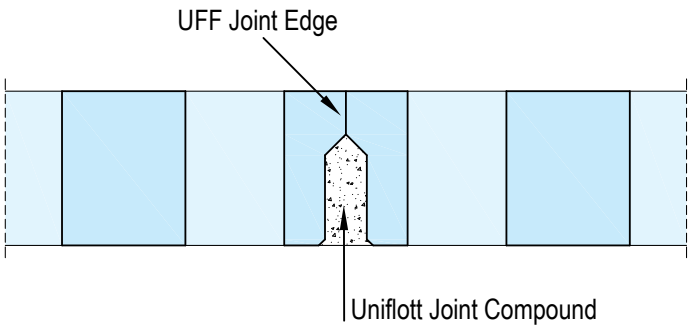
UFF edge

Stratopanel® Standard Perforation range comes with UFF edge profile. The unique edge profile ensures that panels are installed straight, in alignment and the continuous perforations patterns are in perfect alignment. The UFF edge profile and Uniflott jointing and topping compounds when professionally installed by contractors forms a tapeless joint that appears seamless.

- All four edges are pre-primed
- UFF edges have red and blue markings to help with Stratopanel alignment during installation
- Cut sheets can be rotated 180° to minimise wastage at perimeters (dependent on pattern)
- Easy to install
- Seamless joint look with Unilflott compound
- Express joint look achieved by not filling UFF joint

Figure 1: UFF Joint Edge Details





GENERAL INFORMATION

Accessories

Table 2: Accessories

Product Image	Item Description
	**Uniflott Joint Compound** Uniflott is a jointing compound used to deliver a strong, seamless finish. Uniflott must be used for the installation of Stratopanel. All site cuts should be primed with PVA Based Primer prior to application of Uniflott. As an approximate guide a 5 kg bag will cover 50m^2 of installed Stratopanel (UFF Edge).
	**Rondo 605 Batten** Rondo 605 Batten must be used at all short edge joints.
	**Cap Screws (refer to brochure for seismic application limitations)** Screw and cap for easy fixing of 8/18 R, 12/25 R & 12/25 Q sheet patterns only. Cap Screws remove the need for setting screw heads, as screw fixings are hidden in the perforation's holes improving the appearance of the final finish. Allow approximately 32 caps per sheet.
	**Jet Spatula With Raised Edge** Very useful tool for 'chipping' off excess filler from joints once Uniflott hardens. This helps to reduce damage to perforations.
	**Jet Trowel With Punch** Trowel which can be used to easily patch screw heads in Stratopanel with finishing compound, providing a neat finish.
	**Standard Screws** 6–18 x 25mm type screws are required for stratopanel installation.
	**Knauf Finishing Compounds** Knauf Finishing compounds including Sheetrock Total Lite, Final Cote and Lite Finish should be applied as a topping compound over Uniflott to finish screw heads and UFF joints. When sanding, care should be taken not to damage the perforation pattern edges.
	**Knauf Jointing Compound** Knauf Basecote can be used to fill perforations at solid look borders.

Safety

Stratopanel is not classified as hazardous according to the criteria of the NOHSC. The VOC and formaldehyde content have been independently tested, achieving low levels to meet the Green Building Council of Australia Green Star specification. Reference report CETEC V2111045 available upon request.

Safety Data Sheets SDS for Stratopanel and compounds is available at www.knaufapac.com/en_au/ or call TecAssist on 1800 811 222.

Product Storage

- Must be stored on site indoors in a clean and dry area, clear off the floor
- Must be fully protected from the weather and kept away from direct moisture and water, recommend products be wrapped in plastic if not installed after delivery
- Care should be taken not damage the surface or edges of the Stratopanel. Do not use/install damaged product.

GENERAL INFORMATION

Access Panels

Stratopanel® Access Panels are designed specifically for Stratopanel ceiling linings. A range of patterns and sizes matched to the Stratopanel perforations to maintain a seamless finish over access points in the ceiling system. Refer to installation details for Stratopanel access panels and Rondo steel framing details.

600x 600 Stratopanel access panels are stocked for the standard perforation patterns. Other sizes and patterns are available to order.

Access Panel Sizing

Perforation Pattern		**Access panel size in mm** (Stratopanel opening = Access panel screen + 4mm)
Universal Access Panel	Blank Panel	600 x 600
Circular R	8/18/ R	613 x 613
	12/25 R	601 x 601
Square	12/25 Q	601 x 601

GENERAL INFORMATION

Fire Hazard Properties

Stratopanel® has been tested to achieve group 1 linings in accordance with NCC Specification C1.10 Fire Hazardous Properties requirements for Class 2-9 buildings. Table below shows permitted application of Stratopanel. Reference report FH14377 available upon request.

Class of building	Fire isolated exits and control rooms	Public Corridors	Specific Areas	Other areas
Class 2 or 3, Unsprinklered Excluding accommodation for the aged, people with disabilities, and children	✓	✓	✓	✓
Class 2 or 3, Sprinklered Excluding accommodation for the aged, people with disabilities, and children	✓	✓	✓	✓
Class 3 or 9a, Unsprinklered Accommodation for the aged, people with a disability, children and health-care buildings	✓	✓	✓	✓
Class 3 or 9a, Sprinklered Accommodation for the aged, people with a disability, children and health-care buildings	✓	✓	✓	✓
Class 5, 6, 7, 8 or 9b schools, Unsprinklered	✓	✓	✓	✓
Class 5, 6, 7, 8 or 9b schools, Sprinklered	✓	✓	✓	✓
Class 9b other than schools, Unsprinklered	✓	✓	✓	✓
Class 9b other than schools, Sprinklered	✓	✓	✓	✓
Class 9c, Sprinklered	✓	✓	✓	✓

DESIGN CONSIDERATIONS

General Acoustics

Stratopanel ceiling systems has been designed to reduce noise reverberation in the internal space. The acoustic performance of the space can be fine tuned by the choice of Stratopanel perforation patterns, adjusting depth of ceiling cavity and cavity insulation. This should be done in conjunction with an acoustic consultant to ensure the design intent and performance requirements can be satisfied.

The Stratopanel systems have been extensively tested to achieve a NRC value of up to 0.8. Refer to product performance section for information.

Reverberation Time and Acoustic Absorption

The "Acoustics" of a room generally refers to the reverberation time in a space which can range from "very live" through to "dead". A live space is very reverberant and can be considered "echoey" or loud, and speech intelligibility is generally poor (but speech privacy is high). A very "dead" space is not very reverberant and is considered "quiet". The speech intelligibility is high in these rooms, but speech privacy is low.

The measure of how "live" or "dead" a space is, is the reverberation time, RT_{60}, which is defined as the time (in seconds) that it takes for a steady noise to drop by 60 dB once the sound source is turned off. The longer the RT_{60}, the more live or reverberant the space. Typically, reverberation times are in the range from 0.3 seconds to 2-3 seconds. Rooms for music generally require longer reverberation times than rooms for speech.

Reverberation times can only really be measured in fully enclosed rooms, because rooms that open to other areas means that sound can leave and re-enter the room in complicated ways which reduces the ability to measure a meaningful RT_{60}. The reverberation time is usually measured across a range of frequencies, typically from 100 Hz to 5 kHz, and will vary across the frequency range.

There is not a single "good" reverberation time, as this depends on the purpose or use of a space, whether speech privacy or speech intelligibility is important, or whether the room will be used for music or speech, or both.

Australian Standard AS/NZS 2107:2016 *"Acoustics - Recommended Design Sound Levels and Reverberation Times for Building Interiors"*, provides guidance on the appropriate reverberation times for various rooms and uses in Public, Educational, Office and other buildings. The guidance is typically provided as a range (eg 0.4-0.6 seconds, being an arithmetic average of the RT_{60} values at 500 Hz and 1 kHz).

The reverberation time in a room can be controlled by using absorptive materials within the space which reduces the acoustic reflections in the room and so reduces the RT_{60}.

The absorption characteristics of a material will vary as a function of frequency, being higher at some frequencies and lower at others. Specifying absorptive material with the appropriate absorption at the correct frequencies, and in the correct surface area, will result in the desired reverberation time being achieved in the space.

Acoustic Absorption Parameters

The acoustic absorption of a material is measured in a Reverberation Chamber, in accordance with Australian Standard AS ISO 354:2006 *"Acoustics - Measurement of Sound Absorption in a Reverberation Room"*. The measurements are made in ⅓ octave bands and the acoustic absorption of the material is calculated on the effect the material has on the reverberation time in the Reverberation Room. That is, the reverberation time is measured in the room both with and without the absorptive material.

The absorption coefficients are calculated at each ⅓ octave band and reported to 2 decimal places from 0.00 (totally reflective) to 1.00 (completely absorptive), and is a measure of the absorption properties of the material.

Although very useful to acoustic consultants, graphs showing the absorption coefficients of different materials is very difficult to compare. For this reason, a number of single value descriptors have been developed to compare the absorptive characteristics of different materials.

The mounting of the acoustic material also affects the acoustic absorption characteristics of the system and so most absorptive products, especially ceilings, note the mounting conditions. In most cases, the E system is used where, for example, the E-100 mounting refers to the overall depth of the system being 100mm. So a 20mm thick ceiling will have an 80mm cavity behind it to a solid backing (eg concrete soffit). The most common test mountings are E-100, E-200 and E-400.

The Stratopanel systems have been tested in Knauf's acoustic laboratory in Iphofen, Germany. The acoustic absorption descriptors (NRC, SAA, α_w and Sound Absorption Class) have been calculated in accordance with the relevant standard. The individual test reports are available on request.

DESIGN CONSIDERATIONS

NRC – Noise Reduction Coefficient. This is a term that was developed in the US under their ASTM standards, but is no longer in use. Unfortunately, it is still commonly referenced and specified in Australia, although it was never part of the Australian standard. The NRC is calculated by arithmetically averaging the ⅓ octave absorption coefficients at 250 Hz, 500 Hz, 1 kHz and 2 kHz, to determine a single value NRC number.

SAA - Sound Absorption Average. This term has superseded NRC in the US, but is still not referenced in any Australian standard. It is calculated by arithmetically averaging the ⅓ octave absorption coefficients at each of the frequencies from 200 Hz to 2.5 kHz, inclusive. The SAA have a wider frequency range and more data points to provide a more representative value than the NRC.

α_w - Weighted Sound Absorption Index. The method of calculating the α_w is detailed in Australian Standard AS ISO 11654:2002

"Acoustics - Rating of Sound Absorption - Materials and Systems". α_w is calculated based on the Practical Absorption Coefficients at each octave band from 250 Hz to 4 kHz inclusive. The Practical Absorption Coefficient is calculated from the arithmetic average of the ⅓ octave acoustic absorption coefficients (rounded to the nearest 0.05). The Practical Absorption coefficients are then plotted against a Reference Curve, as described in the standard, and the value at 500 Hz is determined to be the α_w of the absorptive material.

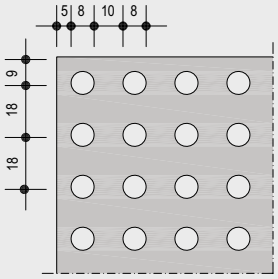
α_w can also indicate where the absorptive coefficient of the material significantly exceeds the acoustic performance of the Reference Curve (by 0.25 or more) at either Low frequencies (250 Hz), Mid frequencies (500 Hz and/or 1 kHz) or High frequencies (2 kHz and/or 4 kHz). For example, an α_w of 0.65(L) indicates good acoustic absorption overall and significantly higher performance compared to the Reference Curve at 250 Hz.

Sound Absorption Class. This parameter is also defined in AS ISO 11654:2002 (Annex B) and classifies the acoustic absorption of a material based on the value of α_w, from A (high values of α_w) through B, C, D and E, with α_w values of 0.00, 0.05 and 0.10 falling under "Not Classified".

DESIGN CONSIDERATIONS

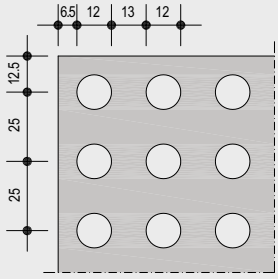
Acoustic Performance – Standard Perforation

Circular 8/18 R



	Acoustic Data						Physical Properties	
	Absorption Coefficient, α_s							
Acoustic Descriptor	No Insulation			KI 50G14 or KI 75G11*			Thickness (mm)	12.5
	Overall Cavity Depth			Overall Cavity Depth			Length (mm)	1998
	E65	E200	E400	E65	E200	E400	Width (mm)	1188
NRC	0.60	0.60	0.60	0.65	0.65	0.65	Weight (kg/m^2)	8.20
SAA	0.57	0.61	0.60	0.66	0.65	0.63		
α_w	0.60	0.60	0.60(L)	0.70	0.65	0.60	Open Area (%)	15.5
Class	C	C	C	C	C	C		

Circular 12/25 R

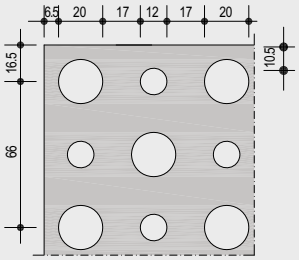


	Acoustic Data						Physical Properties	
	Absorption Coefficient, α_s							
Acoustic Descriptor	No Insulation			KI 50G14 or KI 75G11*			Thickness (mm)	12.5
	Overall Cavity Depth			Overall Cavity Depth			Length (mm)	2000
	E65	E200	E400	E65	E200	E400	Width (mm)	1200
NRC	0.60	0.65	0.60	0.70	0.70	0.65	Weight (kg/m^2)	7.90
SAA	0.60	0.65	0.64	0.70	0.70	0.69		
α_w	0.60	0.65	0.65(L)	0.75	0.70	0.70	Open Area (%)	18.1
Class	C	C	C	C	C	C		

Note: Perforation dimensions shown in millimetres
* Knauf Insulation glasswool

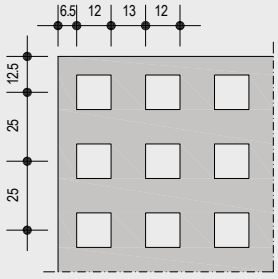
DESIGN CONSIDERATIONS

Alternating Circular 12/20/66 R



Acoustic Descriptor	Acoustic Data: Absorption Coefficient, α_s						Physical Properties	
	No Insulation			KI 50G14 or KI 75G11*			Thickness (mm)	12.5
	Overall Cavity Depth			Overall Cavity Depth			Length (mm)	1980
	E65	E200	E400	E65	E200	E400	Width (mm)	1188
NRC	0.60	0.65	0.60	0.75	0.70	0.70	Weight (kg/m^2)	7.70
SAA	0.57	0.66	0.64	0.72	0.71	0.70		
α_w	0.60	0.60(L)	0.65(L)	0.70	0.70	0.70	Open Area (%)	19.6
Class	C	C	C	C	C	C		

Square 12/25 Q

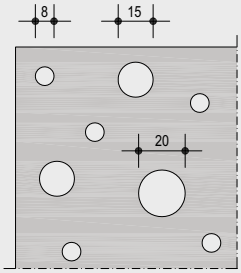


Acoustic Descriptor	Acoustic Data: Absorption Coefficient, α_s						Physical Properties	
	No Insulation			KI 50G14 or KI 75G11*			Thickness (mm)	12.5
	Overall Cavity Depth			Overall Cavity Depth			Length (mm)	2000
	E65	E200	E400	E65	E200	E400	Width (mm)	1200
NRC	0.65	0.70	0.65	0.80	0.75	0.75	Weight (kg/m^2)	7.40
SAA	0.62	0.70	0.68	0.77	0.77	0.75		
α_w	0.60	0.70	0.70(L)	0.80	0.80	0.75	Open Area (%)	23.0
Class	C	C	C	B	B	C		

Note: Perforation dimensions shown in millimetres
* Knauf Insulation glasswool

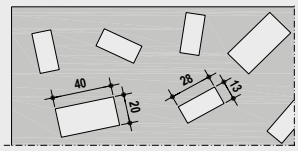
DESIGN CONSIDERATIONS

Random Plus 8/15/20 R



Acoustic Descriptor	Acoustic Data: Absorption Coefficient, α_s						Physical Properties	
	No Insulation			KI 50G14 or KI 75G11*			Thickness (mm)	12.5
	Overall Cavity Depth			Overall Cavity Depth			Length (mm)	2000
	E65	E200	E400	E65	E200	E400	Width (mm)	1200
NRC	0.45	0.50	0.45	0.50	0.50	0.50	Weight (kg/m^2)	8.60
SAA	0.46	0.48	0.47	0.51	0.49	0.49		
α_w	0.50	0.50	0.50	0.50	0.50	0.50	Open Area (%)	9.9
Class	D	D	D	D	D	D		

Random Rectangular RE



Acoustic Descriptor	Acoustic Data: Absorption Coefficient, α_s						Physical Properties	
	No Insulation			KI 50G14 or KI 75G11*			Thickness (mm)	12.5
	Overall Cavity Depth			Overall Cavity Depth			Length (mm)	1999
	E65	E200	E400	E65	E200	E400	Width (mm)	1199
NRC	0.50	0.55	0.50	0.55	0.55	0.55	Weight (kg/m^2)	8.40
SAA	0.51	0.54	0.53	0.57	0.57	0.56		
α_w	0.50	0.50	0.55	0.55	0.55	0.55	Open Area (%)	13.6
Class	D	D	D	D	D	D		

Note: Perforation dimensions shown in millimetres
* Knauf Insulation glasswool

DESIGN CONSIDERATIONS

Stratopanel ceiling

Stratopanel must be designed for internal space only and is non trafficable. Ceiling fixtures shall be secured to the support framing system to manufacturer's details. An allowance of 2.5 kg/m^2 is prescribed to support thermal or acoustic insulation loads. Incidental loads such as small downlights etc can be supported Stratopanel ceiling, refer to Knauf for recommendations.

Knauf recommends Stratopanel designed with a furring channel/clip system or suspended ceiling system. Direct fix to super structure is not recommended and designers must consider impact to floor to ceiling levels when designing a Stratopanel ceiling.

Knauf recommends screw cap fixing system with express joint details for Stratopanel. Screw caps come in 8mm Round, 12mm Round and 12mm Square sizes which are suited to fit 8/18 R, 12/25 R & 12/25 Q Stratopanel patterns only.

Screw caps have low shear capacity and have limited seismic applications. It is important to inform Rondo of the preferred fixing method when submitting a design request for Stratopanel and Keylock systems to be used in seismic applications.

A number of perimeter details such as shadowline, casing bead or wall angles are provided in the Installation Details to give designers flexibility. The Stratopanel Installation Details can be found on https://www.knaufapac.com/au/cad-finder. It is recommended that Stratopanel is not rigidly fixed to the perimeter.

The standard perforation range creates a "monolithic" look ceiling with UFF (notched) edge profile and compound jointing system. Option to design the Stratopanel with express joint can be achieved by not filling joints with compound.

Expansive ceilings, generally require access panels for service and maintenance, Stratopanel provides dedicated access panels to maintain the continuous and monolithic appearance. Refer to Accessories section for details.

DESIGN CONSIDERATIONS

Structural

Framing

Stratopanel is recommended for internal space applications only and as such along with the supporting framing system needs to be designed for internal loads as defined in relevant Australian Standards and NCC. It is recommended that Stratopanel is installed to furring channel and clip system or a suspended ceiling system. **Direct fix to purlins, trusses or flooring systems is not recommended.**

Knauf advises the use of steel components manufactured by Rondo Building Services Pty Ltd in all Stratopanel systems. Refer to Rondo for design and details. If other steel components are to be used it is the responsibility of the steel component manufacture to substantiate equivalent or better performance than the recommended Rondo component.

Seismic

Non-Structural components such as ceilings, including Stratopanel and framing often represents a high percentage of a project's capital investment. Failure of the components in an earthquake has the potential to cause harm, block egress, impede rescue efforts can disrupt the building's function. The basic objective of seismic design for non- structural components is to provide life safety, minimise property loss and functional loss.

All framing components and connections must be suitably designed by Rondo in accordance with AS/NZS 1170.4 *Earthquake Actions* and other relevant Standards for use in seismic applications.

There are a number of methods to design a ceiling system for seismic actions, below are generally 2 accepted methods:

Seismic compliance refers to the use of approved systems and designs that meet the seismic design requirements of a building project to provide life safety to occupants and maintain building function during and after an earthquake.

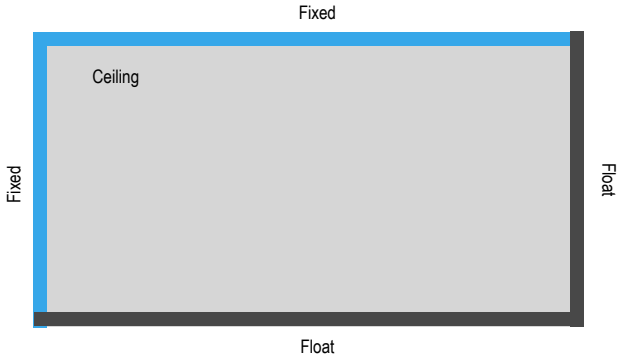
Seismic design solutions include:

Method 1: Perimeter Restrained Ceilings

a) Perimeter fixing on adjacent edges

Ceiling is fixed to the perimeter on two adjacent sides and a seismic sliding joint is used on the opposite sides. Lateral loads are transferred from the ceiling to the perimeter support (wall/bulkhead/partition) through the perimeter fixing (Figure 2).

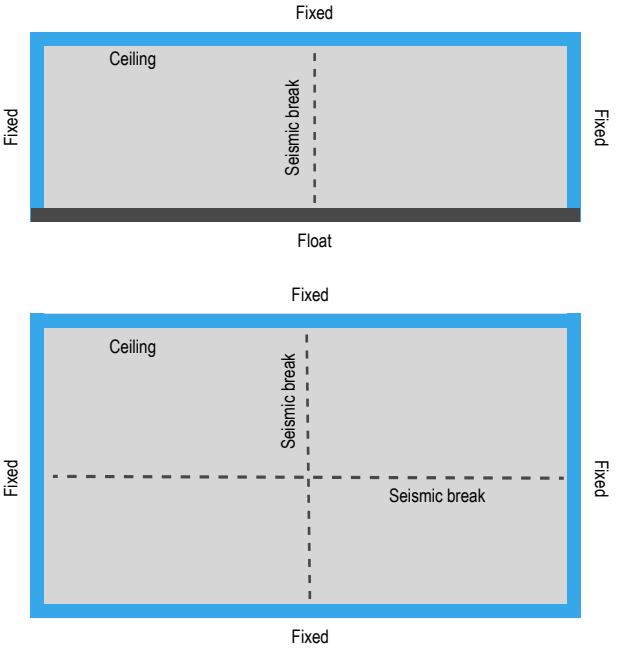
Figure 2: Perimeter fixing on adjacent edges



b) Perimeter fixing on more than two edges (with seismic breaks)

To accommodate installation of ceilings with longer spans, the ceiling is split up into smaller sections by means of seismic breaks. The ceiling can then be fixed to the perimeter on opposite sides. Lateral loads are transferred through perimeter fixings to the main structure. Seismic breaks can be constructed in one or two directions (Figure 3). Seismic breaks in ceilings may also be required at the location of movement joints or seismic breaks in the main structure.

Figure 3: Perimeter fixing on more than two edges



DESIGN CONSIDERATIONS

Method 2: Back Braced Ceilings

a) Back Bracing in two directions

In this method, the ceiling is restrained to the structure above with a series of back braces. Floating connections are required around the entire perimeter, as the ceiling may not be braced to both the structure above and the perimeter. Bracing shall be placed at 45° (nominal) angles in both directions as shown in Figure 4 and in accordance with manufacturers specifications.

b) Back Bracing in one direction

Bracing in one direction is used in long corridors and rooms. In this method, the ceiling is restrained to the structure above with a series of back braces only in one direction. A floating connection is required on perimeters as shown in Figure 5, as the ceiling may not be braced to both the structure above and the perimeter. Bracing shall be placed at 45° (nominal) angles in one direction as shown in Figure 5 and in accordance with manufacturers specifications.

Figure 4: Back bracing in two directions

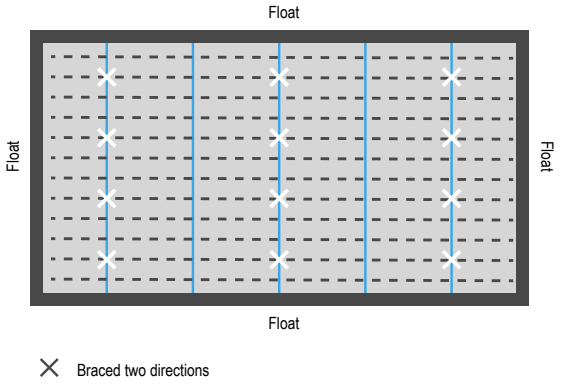
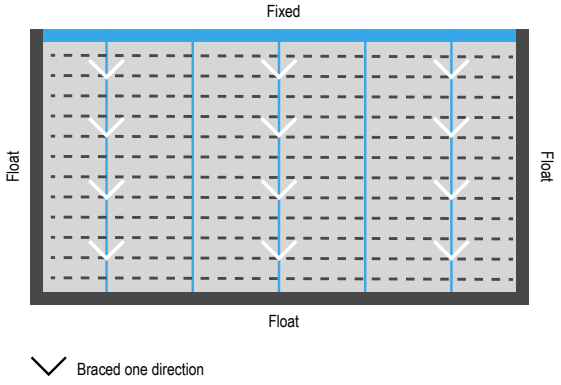


Figure 5: Back bracing in one direction



Fasteners to superstructure

All fasteners to superstructure must be designed by the Rondo/Project Engineer in accordance with AS 5216 and all other relevant Australian Standards and Provisions of the National Construction Code (NCC).

Fastener manufacturer/supplier to provide compliance documentation to ensure design intent is satisfied.

Control Joints

Movement and stresses caused by hygrometric (moisture caused) and thermal fluctuations can result in deformation and damage to plasterboard linings.

Control joints are used to accommodate these dimensional changes in plasterboard but must also be providing to allow for structural or seismic movement. Control joints must be made through the support framing system and the perforated plasterboard linings.

Control joints in Stratopanel must be installed at all construction joints in the building and at the following locations. Refer Architect for specific location:

- 12m maximum centres in both directions for ceilings
- At changes of substrate material for plasterboard lining
- At locations of control and/or movement joints in the superstructure

INSTALLATION

Installation Notes

- Install Stratopanel system only when building has been closed from external weather
- Stratopanel to be used for non-trafficable and internal ceilings only.
- Measure and locate the middle of the room/space in both directions, X-X and Y-Y. Calculate how many full size panels can be accommodated in both directions and work out perimeter panel size (cut panels) for both ends to minimise wastage.
- Install furring channel at the correct spacing with respect to Stratopanel type (refer to span table). The Rondo 605 furring channel must be set out and located at the short end of Stratopanels throughout ceiling. Ensure a Rondo 605 furring channel is located at the full panel and perimeter panel interface.
- Stratopanel to be installed across and square to furring channels, ensure short ends of panel meet on a wide face furring channel. Note Stratopanels short end joints do not need to be staggered.
- Fix Stratopanel in accordance with installation details – screw or screw cap fixing system.
- Cleaneo Caps should only be used with the respective patterns including 8/18 R, 12/25 R and 12/25 Q. **Cap screws have low shear capacity and limited seismic applications**, refer to Rondo and Knauf for information.
- Align UFF edges with red and blue markings during installation. It is not recommended to rotate Random Rectangular RE and random plus 8/15/20R as they will not have the same continuous pattern when rotated.
- Control joints in internal ceilings should be spaced at 12m max intervals in both directions.
- 2.5 kg/m^2 allowance is prescribed for Stratopanel for thermal or acoustic insulation loads.
- Refer to Rondo for steel framing design, details and guidance on suitable fixing methods for intended usage of Stratopanel with Keylock Systems.

Stratopanel spans tables for Perforation patterns

Span (Framing Centres) for Stratopanel Standard Range

Perforation Patterns	Maximum Furring Channel Spacing
Circular 8/18 R	333mm
Circular 12/25 R	333.3mm
Square 12/25 Q	333.3mm
Alternating Circular 12/20/66 R	330mm
Random Plus 8/15/20 R	333.3mm
Random Rectangular RE	333.3mm

Stratopanel Ceiling Installation

Step 1
Plan ceiling layout as per architect's design identifying centre of ceiling space, control joint, seismic joint locations, access panels and perimeter treatment. Install Rondo Keylock Suspended Ceiling System with 129 Furring Channel and 605 Furring Channel where required to Rondo's design and details.

Step 2
Set up reference line with laser or string line in both directions as indicated, both reference lines should be square. Cut perimeter panel to size (off cut may be used at the other perimeter end of first row by rotating 180°) and install first panel in alignment with the two reference lines and then progressively install panels along the first row. Ensure alignment of UFF edge markings are as per details shown and short edges of Stratopanel coincides with Rondo 605 furring channel. Site cut edges of Stratopanel or plasterboard shall be primed with PVA based primer prior to application of Uniflott at joints.

Step 3
Continuously check the perforations are aligned in the Y-Y direction of panels. The first row of panels is now installed and square to the reference lines in both directions. Continue to install the second row of panels in the same manner as per the first row. Continue to progressively check the alignment of perforations in the X-X and Y-Y and diagonal directions.

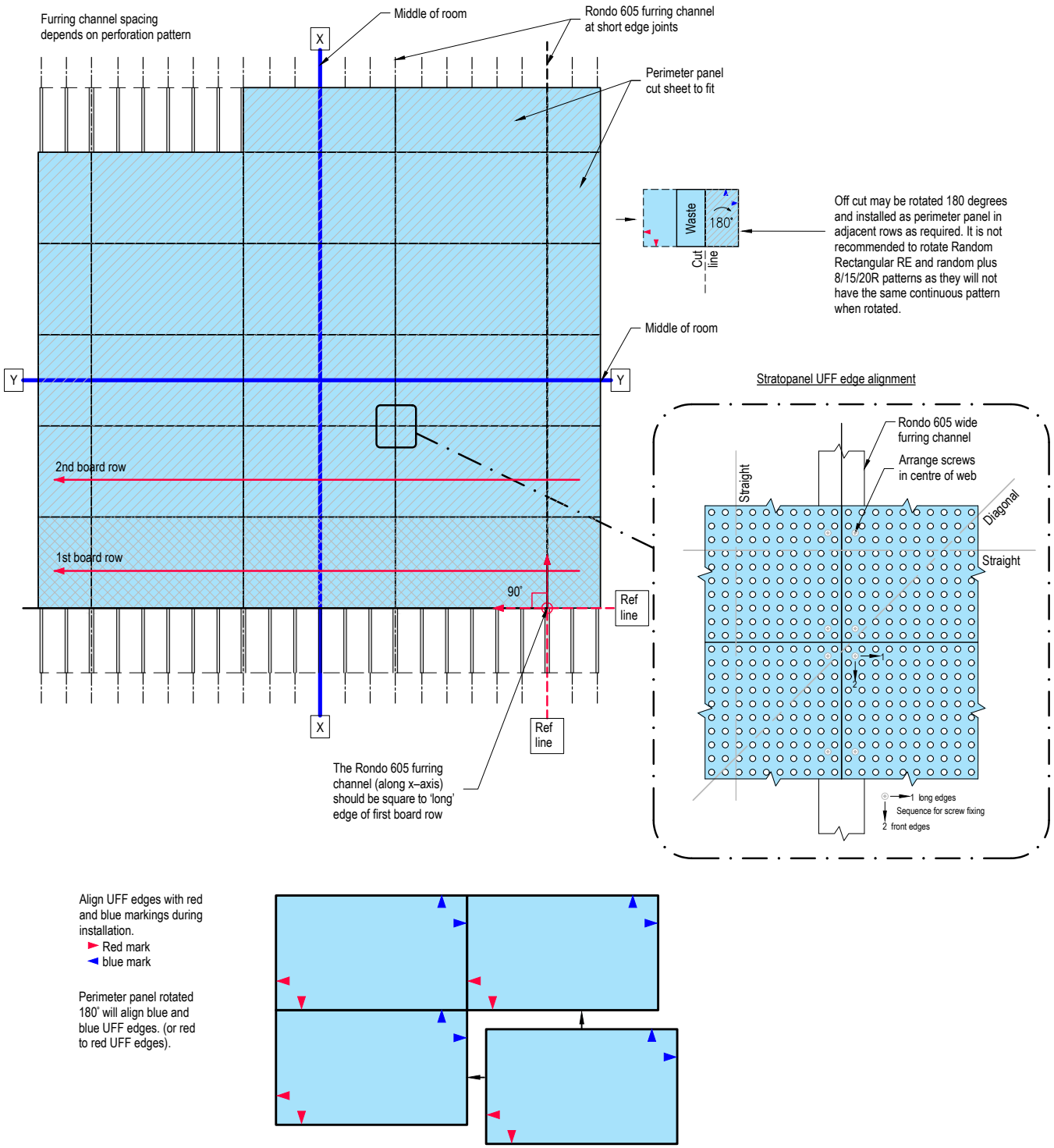
Step 4
Progressively install Stratopanel until ceiling is complete following the same principles.

Step 5
Fill joints and screw heads with Uniflott compound and specified topping compound as detailed. Complete perimeter treatments as detailed and specified by designer. Allow to dry as per product specification and sand as detailed.

Step 6
Ceiling ready for paint decoration, refer to details.

INSTALLATION

Figure 8: Stratopanel Installation Layout

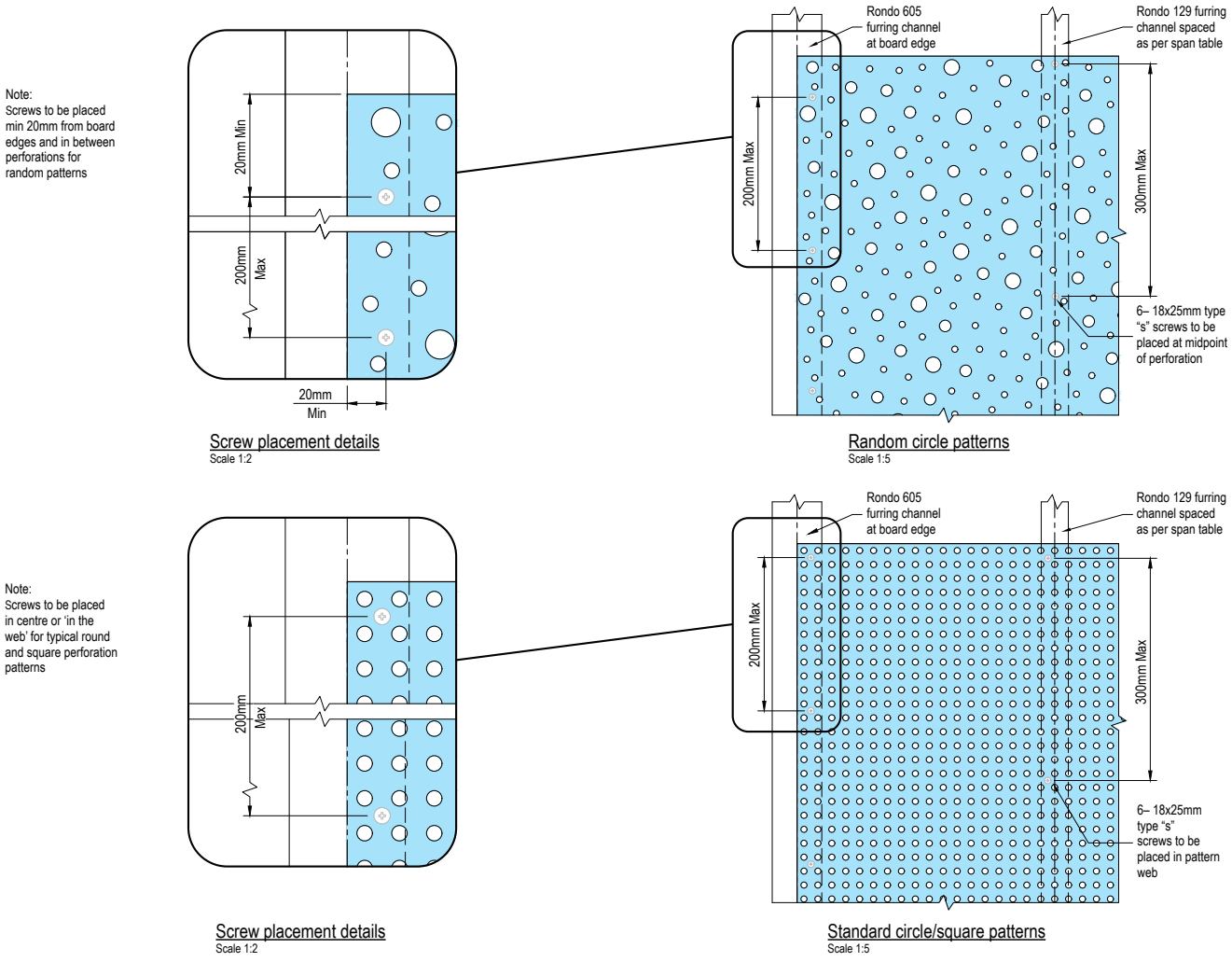


INSTALLATION

Product	Screw Type	Screw spacing in the field of panels	Screw spacing end of panels (short edge)
All Stratopanel range	6-18x 25mm Type S	300mm max ctrs	200mm max ctrs
8mm Round Caps	Supplied black screws		
12mm Round Caps	Supplied black screws		
12mm Square Caps	Supplied black screws		

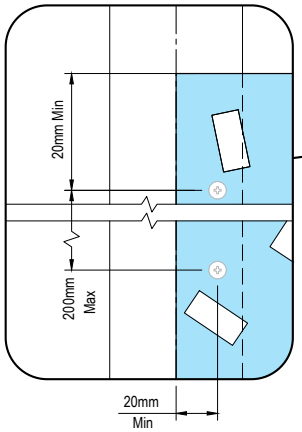
Notes:
- Screws sequence to be started from the corner along the long edge and then fasten along the short edge.
- Cleaneo Caps and supplied screws should only be used with the respective matching patterns including 8/18 R, 12/25 R and 12/25 Q. **This fixing system has limited seismic applications**, refer Knauf and Rondo for information.
- Stratopanel is installed using a screw fixing system only, the use of adhesive is not permitted.
- Ensure screws are not overdriven, to avoid cracking during installation. If the board is cracked during or prior to installation, it must be replaced with a new sheet.
- Rondo should be consulted for guidance on suitable fixing methods for the intended usage of the Stratopanel and Keylock systems in seismic applications. This information should be included in the design request sheet, along with any relevant specifications for the specific application.

Figure 9: Stratopanel Installation

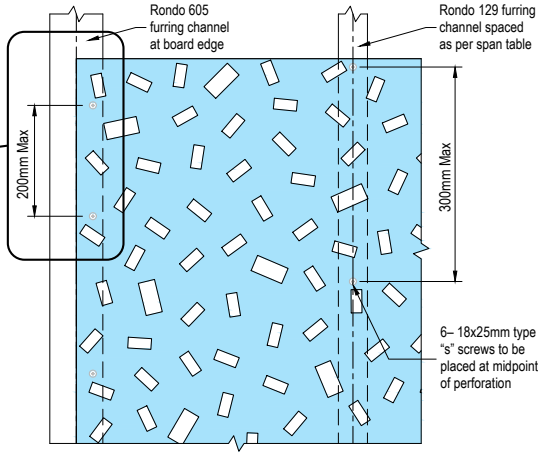


INSTALLATION

Note:
Screws to be placed min 20mm from board edges and perforations for random patterns

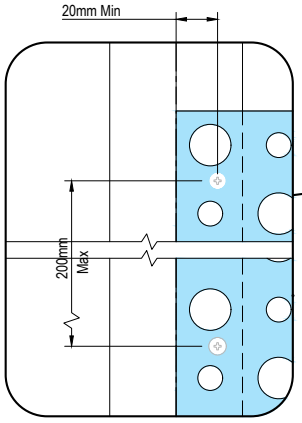


Screw placement details
Scale 1:2

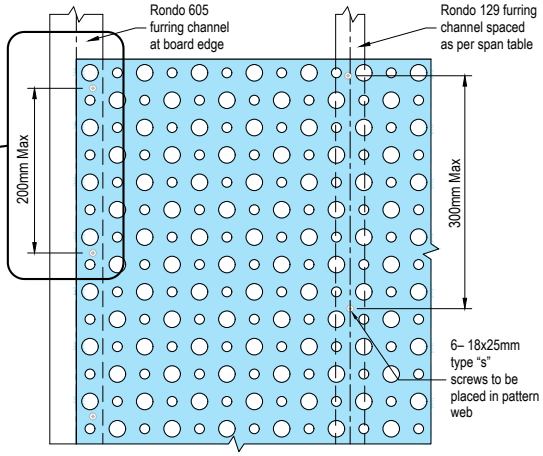


Random rectangle patterns
Scale 1:5

Note:
Screws to be placed min 20mm from board edges and in between perforations for alternating round patterns



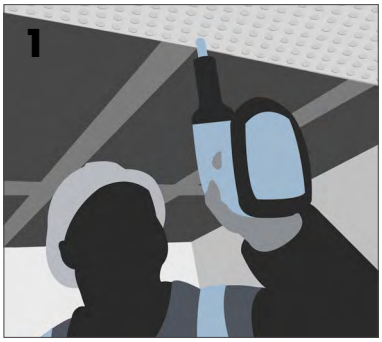
Screw placement details
Scale 1:2



Alternating circle patterns
Scale 1:5

INSTALLATION

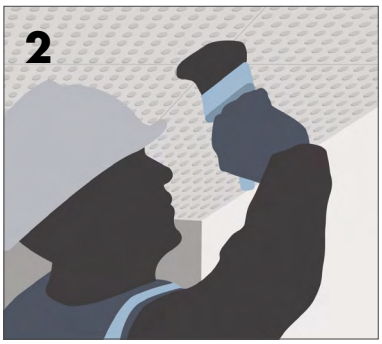
Fixing Procedure



1. Fixing Knauf perforated plasterboards

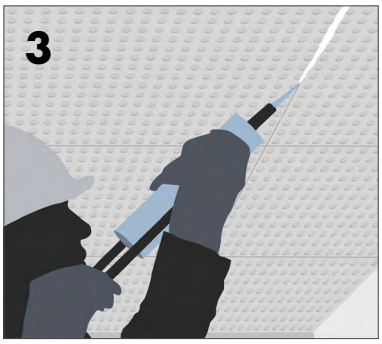
Once ceiling framing system has been set out as per recommended layout and to manufacturer's details, screw fix Stratopanel as per details – 300mm maximum centers in the field and 200mm maximum centers at the edges with 6-18x25mm Type S screws. Align UFF edges with red and blue markings during installation.

Alternative fixing systems using screw caps is available for limited seismic applications. Refer to installation details or contact TecAssist for more information.



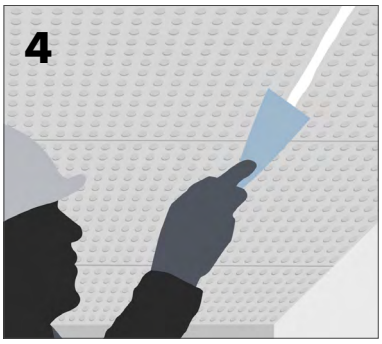
2. Ensure joints are clean of dust & prime cut joints

Site cut edges must be primed with a PVA based primer prior to application of Uniflott.



3. Apply Uniflott Jointing Compound

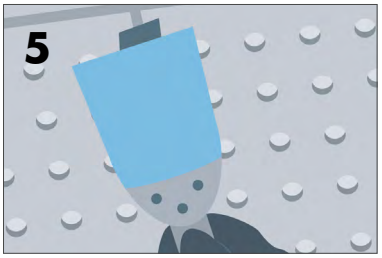
Cut the nozzle of the applicator to suit. Using a standard sealant gun fully fill the joint and skim over screw heads. Ensure that the applicator has been cleaned prior and after use.

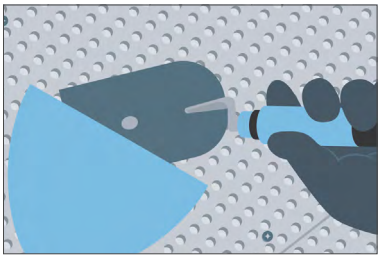


4. Carefully remove the excess

When the Uniflott Compound has stiffened in the joints, remove any excess with a jointing knife, being careful not to damage the paper. To remove Knauf Uniflott push the jointing knife away from you.

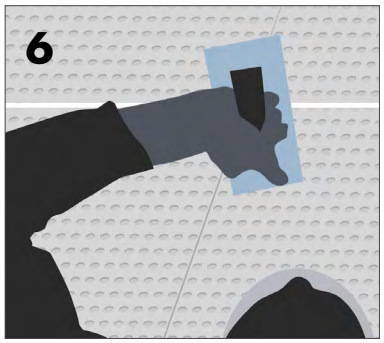
INSTALLATION





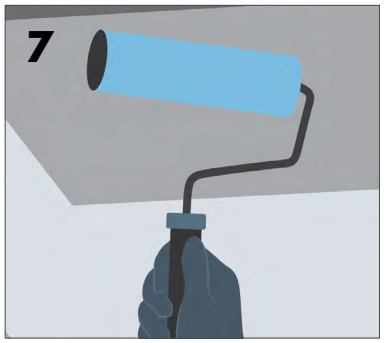
5. Apply topping compound to joints and screw heads.

Care should be taken not to fill perforations with compounds.



6. Sanding

Once the joints are completely filled and set, sand to a flat and even finish.



7. The Stratopanel ceiling is ready for painting decoration, ensure 3 coat painting system to manufacturers' specification.

Note painting system should be applied with a short-napped roller to ensure the acoustic felt on the back of Stratopanel is not sealed. DO NOT spray as filled or blocked perforations will reduce the absorptive performance of Stratopanel.

INSTALLATION DETAILS

To view the full range of Stratopanel installation details, scan QR code below or head to **https://www.knaufapac.com/au/cad-finder**.

Includes important details such as:

- Stratopanel Perforation Details
- Stratopanel Installation
- Stratopanel Fixing and Framing Details
- Stratopanel Cleaneo Caps Installation Details
- Stratopanel Perimeter Finishing Details
- Stratopanel Perimeter Finishing Details - Proud Border
- Stratopanel Joint Details
- Stratopanel Joint Details - Parallel
- Stratopanel Control Joint Details - P35 Expansion Joint Perpendicular
- Stratopanel Control Joint Details - Stopping Angle Joint Perpendicular
- Stratopanel Control Joint Details - Express Joint Perpendicular
- Stratopanel Perimeter Details - Free End
- Stratopanel Perimeter Details - Fixed End
- Stratopanel Acess Panel Framing Details

APPENDIX A – DETAILED ACOUSTIC DATA – STANDARD PATTERN

Perforation Pattern (open area)	Insulation	Cavity	Absorption Coefficient, α_s 1/3 Octave Centre Frequency, Hz																		NRC	SAA	α_w	Class
			100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k				
Round 8/18 R 15.5%	nil	E65	0.12	0.12	0.18	0.25	0.31	0.41	0.48	0.61	0.64	0.71	0.74	0.73	0.69	0.65	0.61	0.55	0.61	0.70	0.60	0.57	0.60	C
		E200	0.36	0.47	0.50	0.52	0.57	0.66	0.67	0.69	0.70	0.65	0.58	0.59	0.58	0.55	0.56	0.58	0.64	0.75	0.60	0.61	0.60	C
		E400	0.44	0.52	0.63	0.66	0.62	0.65	0.60	0.57	0.62	0.62	0.59	0.60	0.59	0.57	0.56	0.58	0.62	0.72	0.60	0.60	0.60(L)	C
	KI 50G14 or KI 75G11	E65	0.23	0.34	0.45	0.45	0.56	0.62	0.67	0.75	0.75	0.77	0.73	0.70	0.69	0.62	0.59	0.59	0.64	0.74	0.65	0.66	0.70	C
		E200	0.40	0.55	0.59	0.57	0.66	0.72	0.69	0.70	0.69	0.66	0.66	0.65	0.62	0.61	0.59	0.61	0.64	0.79	0.65	0.65	0.65	C
		E400	0.46	0.53	0.61	0.66	0.59	0.63	0.59	0.61	0.67	0.68	0.68	0.67	0.63	0.62	0.58	0.60	0.66	0.76	0.65	0.63	0.60	C
Round 12/25 R 18.1%	nil	E65	0.11	0.11	0.16	0.23	0.30	0.41	0.48	0.62	0.70	0.76	0.79	0.78	0.73	0.70	0.65	0.50	0.50	0.65	0.60	0.60	0.60	C
		E200	0.37	0.49	0.53	0.55	0.65	0.70	0.72	0.75	0.74	0.69	0.61	0.62	0.61	0.57	0.60	0.56	0.52	0.69	0.65	0.65	0.65	C
		E400	0.45	0.55	0.68	0.69	0.67	0.69	0.65	0.58	0.65	0.65	0.63	0.63	0.61	0.61	0.59	0.55	0.54	0.68	0.60	0.64	0.65(L)	C
	KI 50G14 or KI 75G11	E65	0.21	0.32	0.43	0.46	0.57	0.67	0.71	0.80	0.81	0.84	0.80	0.74	0.74	0.67	0.63	0.57	0.59	0.70	0.70	0.70	0.75	C
		E200	0.40	0.57	0.59	0.61	0.70	0.75	0.74	0.76	0.73	0.70	0.68	0.70	0.68	0.65	0.64	0.61	0.60	0.74	0.70	0.70	0.70	C
		E400	0.47	0.56	0.68	0.70	0.64	0.68	0.65	0.67	0.71	0.75	0.72	0.71	0.69	0.66	0.64	0.60	0.60	0.74	0.65	0.69	0.70	C
Alternating Round 12/20/66 R 19.6%	nil	E65	0.10	0.10	0.15	0.22	0.28	0.39	0.48	0.62	0.70	0.77	0.85	0.78	0.62	0.60	0.57	0.50	0.55	0.65	0.60	0.57	0.60	C
		E200	0.38	0.49	0.55	0.57	0.67	0.74	0.76	0.80	0.80	0.74	0.64	0.59	0.52	0.50	0.53	0.54	0.58	0.70	0.65	0.66	0.60(L)	C
		E400	0.46	0.59	0.71	0.73	0.67	0.72	0.67	0.61	0.68	0.70	0.66	0.62	0.53	0.52	0.54	0.54	0.58	0.68	0.60	0.64	0.65(L)	C
	KI 50G14 or KI 75G11	E65	0.20	0.30	0.42	0.45	0.58	0.67	0.74	0.84	0.87	0.91	0.89	0.82	0.65	0.60	0.57	0.57	0.63	0.71	0.75	0.72	0.70	C
		E200	0.40	0.58	0.60	0.63	0.72	0.79	0.77	0.80	0.78	0.75	0.74	0.74	0.63	0.57	0.58	0.60	0.64	0.76	0.70	0.71	0.70	C
		E400	0.48	0.59	0.70	0.73	0.65	0.72	0.68	0.68	0.75	0.81	0.79	0.75	0.63	0.59	0.58	0.59	0.65	0.75	0.70	0.70	0.70	C
Square 12/25 Q 23.0%	nil	E65	0.09	0.09	0.15	0.20	0.28	0.38	0.49	0.64	0.73	0.79	0.85	0.83	0.78	0.75	0.69	0.50	0.59	0.71	0.65	0.62	0.60	C
		E200	0.37	0.50	0.56	0.58	0.70	0.76	0.78	0.82	0.82	0.75	0.65	0.67	0.66	0.62	0.64	0.56	0.61	0.75	0.70	0.70	0.70	C
		E400	0.45	0.61	0.73	0.74	0.69	0.75	0.68	0.62	0.68	0.70	0.66	0.68	0.67	0.64	0.63	0.55	0.60	0.71	0.65	0.68	0.70(L)	C
	KI 50G14 or KI 75G11	E65	0.19	0.29	0.42	0.44	0.58	0.71	0.78	0.87	0.90	0.93	0.88	0.84	0.81	0.77	0.71	0.62	0.70	0.80	0.80	0.77	0.80	B
		E200	0.40	0.62	0.63	0.65	0.76	0.82	0.80	0.83	0.83	0.75	0.75	0.77	0.76	0.73	0.73	0.65	0.70	0.84	0.75	0.77	0.80	B
		E400	0.48	0.62	0.73	0.76	0.68	0.75	0.69	0.69	0.78	0.82	0.80	0.80	0.77	0.74	0.72	0.65	0.70	0.82	0.75	0.75	0.75	C
Random Plus 8/15/20 R 9.9%	nil	E65	0.15	0.15	0.22	0.27	0.31	0.39	0.44	0.50	0.52	0.59	0.60	0.58	0.49	0.43	0.39	0.38	0.44	0.50	0.45	0.46	0.50	D
		E200	0.34	0.43	0.45	0.46	0.48	0.53	0.53	0.56	0.55	0.52	0.49	0.49	0.42	0.39	0.37	0.39	0.45	0.53	0.50	0.48	0.50	D
		E400	0.40	0.40	0.48	0.50	0.50	0.48	0.49	0.48	0.51	0.51	0.50	0.49	0.44	0.41	0.38	0.40	0.45	0.51	0.45	0.47	0.50	D
	KI 50G14 or KI 75G11	E65	0.29	0.38	0.43	0.42	0.47	0.51	0.53	0.59	0.57	0.59	0.58	0.55	0.46	0.42	0.37	0.39	0.45	0.52	0.50	0.51	0.50	D
		E200	0.34	0.48	0.50	0.49	0.49	0.52	0.53	0.54	0.52	0.53	0.52	0.51	0.44	0.41	0.38	0.40	0.70	0.56	0.50	0.49	0.50	D
		E400	0.41	0.43	0.50	0.50	0.47	0.48	0.47	0.50	0.55	0.55	0.56	0.52	0.46	0.43	0.40	0.40	0.46	0.53	0.50	0.49	0.50	D
Random Rectangular RE 13.6%	nil	E65	0.12	0.13	0.20	0.27	0.30	0.40	0.44	0.57	0.62	0.70	0.71	0.69	0.60	0.42	0.37	0.39	0.45	0.42	0.50	0.51	0.50	D
		E200	0.34	0.38	0.42	0.47	0.52	0.58	0.62	0.64	0.65	0.64	0.55	0.57	0.50	0.39	0.37	0.41	0.46	0.44	0.55	0.54	0.50	D
		E400	0.41	0.45	0.55	0.55	0.55	0.56	0.56	0.55	0.60	0.59	0.57	0.57	0.51	0.40	0.37	0.42	0.46	0.43	0.50	0.53	0.55	D
	KI 50G14 or KI 75G11	E65	0.19	0.28	0.39	0.41	0.46	0.57	0.61	0.69	0.72	0.72	0.70	0.67	0.57	0.40	0.37	0.42	0.50	0.48	0.55	0.57	0.55	D
		E200	0.36	0.44	0.52	0.53	0.55	0.61	0.62	0.64	0.64	0.63	0.63	0.62	0.57	0.43	0.38	0.43	0.49	0.49	0.55	0.57	0.55	D
		E400	0.40	0.45	0.54	0.52	0.52	0.55	0.54	0.58	0.65	0.66	0.64	0.63	0.58	0.44	0.39	0.44	0.51	0.48	0.55	0.56	0.55	D

KNAUF SERVICES

TECHNICAL ASSISTANCE

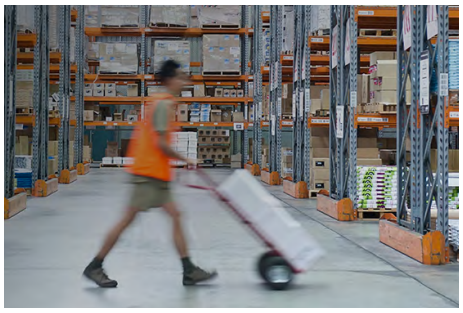
TecASSIST™ – 1800 811 222

Our National TecASSIST™ helpline is available to answer technical questions and provide free advice to builders, contractors, architects, engineers and home owners throughout Australia.

There are many variables that can influence construction projects, which affect whether a particular construction technique is appropriate. Before proceeding with any project, we recommend you obtain professional advice to ascertain the appropriate construction techniques to suit the particular circumstances of your project. We recommend you use qualified tradespersons to install this system.

The technical information contained in this manual was correct at the time of printing. Building systems, details and product availability are, however, subject to change. To ensure the information you are using is current, Knauf recommends you review the latest building information available on the Knauf website.

For further information, contact TecASSIST™ or your nearest Knauf sales office.



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