

# Mikro Septum Plus

ACOUSTICAL DRYWALL SYSTEM

[www.anutone.com/septumplus.htm](http://www.anutone.com/septumplus.htm)



*Septum Plus brochure Release 1.2  
March 2011*

**Super smooth surface finish  
and best thickness tolerance  
- see back cover for details**

# Mikro Septum Plus

## ACOUSTICAL DRYWALL SYSTEM

- 600x2400x12.5mm - Taper edge
- 1,500 kgs/m<sup>3</sup> - 18.75 kgs/m<sup>2</sup>
- STC upto 54 - Green product
- For offices, hotels, cinema

### Key Attributes

A research engineered drywall panel purpose-built for noise isolation applications in architectural and industrial spaces!

Septum Plus is mass-loaded, smooth-surfaced, seamless-finished drywall panel for the aesthetics desired by an architect and the acoustics specified by the consultant. A dream come true for the PMC and the client!

Septum Plus fulfils the major acoustic function of wideband frequency (Hz) and dynamic range (dB) noise isolation to ensure drywalls resolve noise transfer issues between spaces like hotel guestrooms, office cabins etc.

In fact, Septum Plus is the heaviest single, rigid sheathing board available in the building material industry today!

### Unique Technology

In simple terms, the outer surface of the acoustic plaster reflects the high frequency (HF) and the mid frequency (MF), all the while vibrating the low-frequency (LF) when high-decibel soundwaves strike it. The LF passes onto the inner first core which absorbs it and any residual LF are further trapped by the inner second core which then may marginally vibrate (depending on the intensity of sound) and transmit the weakened LF waves to the Synth PF that is filled in the partition void. Thus broadband noise isolation is truly achieved.

### Typical Applications

Septum Plus is used for noise-isolant ceilings, panellings and partitions mainly in

- offices - telepresence rooms, conference rooms, meeting rooms, training rooms, cabins
- hotel - guestrooms, banquet halls, discotheques.
- cinema - multiplexes, home theatre.
- industrial - plant rooms, offices etc.

### Aesthetics

Septum Plus, with a combination of Strap and Seam, when butt jointed, assists in camouflaging edge joints and rendering a smooth, seamless finish. A Level 5 trim is possible with Skim cross-hatched sprayed and provided trained skillsets execute the job!

### Framework

- Strut for ceilings, panellings
- Studd for partitions

Septum Plus can be suspended in Skelet T-system for accessible ceilings but will render only aesthetics and not provide complete noise isolation.

### Design Considerations

For achieving optimum noise isolation performance (FSTC - Field Sound Transmission Class), design requirements include LF-induced vibration management, HVAC noise control, flanking paths, openings etc.

Septum Plus is an engineered noise isolant panel but needs a design approach, domain expertise and high-fidelity installation for being effective in its application. Mere use of Septum Plus as a drywall panel may not guarantee complete noise isolation. The services of a professional acoustical consultant are recommended.

### Green

Septum Plus is a unique system as it contributes doubly to the green building movement. It is an intrinsic green product and its use adds LEED points to buildings assisting them in their certification.

### As a green product

Septum Plus is made from 100 per cent recycled wood-cement particles. The magnesite binder is a natural mineral and contains 50 per cent recycled filler. The reinforcing membrane is constructed from natural fibre that is renewable. There are no synthetic, asbestos or toxic products used. All raw materials except the membrane are sourced within 500 kms radius of the manufacturing plant. Process wastages are recycled.

### As a green application

At 12.5mm thickness and 1,500kgs/m<sup>3</sup> density, Septum Plus is the slimmest, heaviest drywall panel for noise isolation. The slimness saves valuable real estate space, the heavyness means less of other panels need to be used in combination thus saving resources. The super-smooth surface and thickness tolerances of +0.5mm means no wastages of labour and material at project sites.

### Features

- Density – Volume Surface  
~1,500 kgs/m<sup>3</sup> ~18.75 kgs/m<sup>2</sup>
- Standard dimensions - 600x2400x12.5mm ±0.5\*  
(see back cover for details on new thickness tolerances)
- Weight of standard dimensions ~27 kgs
- Edge Profile - Taper (long edges only)

### Tech Performance

For the base panel of MAT 15mm thickness and density 650 kg/m<sup>3</sup> tested for fire reaction at Fire Research Laboratory, Central Building Research Institute, Roorkee, Uttarakhand, India vide Test Report # F(S) 1906 in July-October 2006

- Non-combustibility - Mass loss 52% @ 750°C - BS 476 Part 4
- Ignitibility – 'P' - BS 476 Part 5
- Fire Propagation Index – 9.00 - BS 476 Part 6
- Surface Spread – Class I - BS 476 Part 7
- Specific Optical Density of Smoke - Flaming Exposure 25.00 Dm (Corr) - ASTM E662
- Thermal Conductivity – 0.1 Wm/k - IS 3346

## Logistics

Panels are neither primer-painted nor carton-packed. Sold in loose for bulk orders. Carton packing for smalls is optional but recommended by Anutone.

## Site Considerations

Septum Plus must be stored on a flat, dry surface. At no point must the panels be allowed to come in contact with water. Individual panels must be carefully handled and installed.

Installation surfaces must be dry and level. Proper sealing of joints with Fire and Seam is important for the noise isolation performance of Septum Plus.

## Economics

Septum Plus on either side of Studd SC48 is technologically economical for the lifecycle cost of the noise isolant partition system.

## Warranty

10 years Surety - limited warranty - on the assembled system when installed and maintained to Anutone's specifications.

## Architectural Specifications

Scope – Design, Supply, Build of Septum Plus as per approved drawings and specifications, by Anutone Acoustics Limited, an ISO 9001 2000 company.

Caulking - Apply Fire, two bead lines on the floor, walls and roof that are to receive the Studd framework.

Framework – Studd consisting of FC/HC floor/head channels and SC Stud Channels fixed at 600mm centres.

Infill - Synth PF 10x50 is positioned between the Studd SC channels and retained with Stick S7 adhesive.

Acoustical Panels – Septum Plus, Size 600 x 2400 x 12.5mm, installed on SC. The short edges of the panels are staggered.

Joints and Finish – Fire is 'beaded in' and Seam is flush-applied to the butt joints sealing them. The finishing panel - gypsum/calcium/cement/plywood is then installed on Septum Plus.

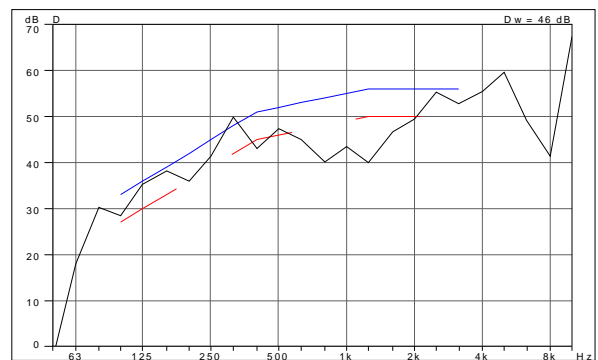
Care is taken that other openings like HVAC ducting, cable penetrations etc are caulked with resilient, non-hardening compound like Fire or Silica. Other building elements integrated in the drywall like glass and doors are esconced at the perimeter in acoustical gaskets like Snip. Ask Anutone representatives for details.

## Acoustical Parameters

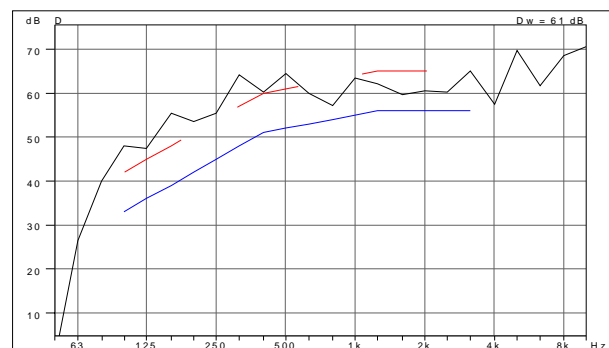
Noise Isolation as per ISO 140-3 for 1 or 2 or combi layers of Septum Plus on either side of Studd SC50 with an acoustic infill of Synth 10x50.

Hz	A	B	C	D
125	35.2	47.4	38.2	41.0
250	41.4	55.4	45.0	54.0
500	47.4	64.5	51.0	58.1
1000	43.4	63.5	58.7	56.1
2000	49.4	60.5	60.9	65.1
4000	55.4	57.5	68.7	58.2
<b>dB</b>	<b>46.0</b>	<b>61.0</b>	<b>54.0</b>	<b>57.0</b>

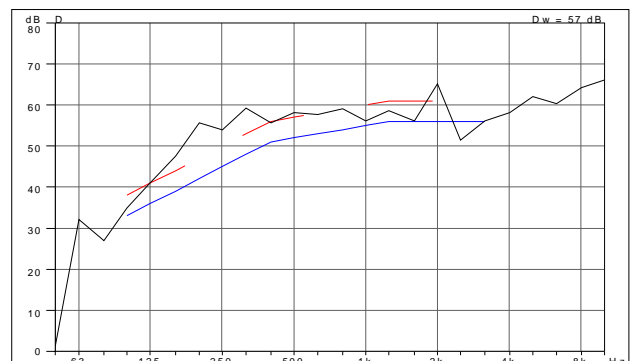
- A - Single layer of Septum Plus on either side of SC50 with Synth PF
- B - Double layer of Septum Plus on either side of SC50 with Synth PF
- C - Combination of single layer of Septum Plus with single layer of MAT BSB on either side of SC50 with Synth PF
- D - Combination of single layer of Septum Plus with single layer of MAT BSB Plus on either side of SC50 with Synth PF



A = Mass 54 - 1 Layer of SEPTUM PLUS on either side



B = Mass 108 - 2 Layers of SEPTUM PLUS on either side



D = Mass 97.2 - 1 Layer of SEPTUM PLUS & 1 Layers of MAT BSB PLUS on either side

## INSTALLATION GUIDELINES

### Part One - Pre-installation

#### Designing

Anutone, through its own design team, undertakes the acoustical, visual and spatial designing of special rooms.

Anutone takes a holistic view of the multi-sensory perception factor - the harmonious play of the five human senses - so important for achieving occupancy comfort. Necessary software, modelling techniques and project experience guarantee the ultimate in performance.

Low-frequency induced vibration, HVAC noise control, flanking paths, openings treatment, building junctions, sound absorption areas, loudspeaker placement etc often the reason for poor acoustic performance, are all micro considered.

Also considered in detail are optimum colours and lighting for video imaging, display formats, visual angles, seating layout, ergonomics, comfort, life safety etc.

Large-format computer drawings are generated for easy site interpretation. Limitations of project sites is known and idiotproof systems developed.

Hand-holding the project management team and post-installation testing ensures completion of the project cycle - a one-stop design solution.

#### Supplying

All specified products are supplied by Anutone as per Ordering Checklist. There is no mix and match, no uncertainty.

Compatible products that link the design chain and conform to international standards means Anutone is the one-stop single-source turnkey solution for products.

#### Contracting

Installation of the room's various components is undertaken by authorised applicators.

Such rooms represent a speciality installation and it is strongly recommended to engage the trained skillsets of experienced personnel that use state-of-the-art technologies that include modern tools - electric, pneumatic, gas - as required for project sites.

Personnel must be trained and skilled to undertake complex installations and render a complete finish.

#### Preparation

Ensure the building elements like floor, walls and roofs to which the room's elements will be junctioned are complete, finished, levelled, cured and dry, prior to commencing work.

Ensure all materials as per Ordering Checklist and Finishing Tools Checklist required to make this technical installation are fully available at site.

*Do not commence work with an incomplete checklist.*

Human reach is optimal for 2 m height and hence ensure appropriate scaffolding equipment like 2 m platforms or stilt tools etc adequately available at site.

Ensure safety equipment that includes goggles, nose mask, gloves are available to all installation personnel. If site requirements include hard hat then the same should also be worn.

For walls upto 4 m height, safety nets and belts are not necessary. Ensure First Aid box, fully stocked, always at site.

Other building trades that need to simultaneously work with the room construction like HVAC, electric, piping, AV/IT cabling etc should be ready with their materials and equipment.

*Do not commence work if others are not fully ready.*

Ensure final approved project drawings are available at site and understood by the hands on personnel executing the room.

Marking of the boundary lines of the room must be made on the building elements as per approved drawings with either chalkstring or laser leveller tool.

### Part Two - Framework

#### Caulking - Fire

Apply Fire - a noise and fire rated, non-hardening resilient caulking compound - with an appropriate caulking dispenser tool - two bead lines of 6 mm at a pitch that divides the Studd FC & HC metal framework footprint depth equally on the floor and roof that are to receive the partition walls. (See Fig 1)

Fire bead lines are also applied where Studd SC50 would abut the building walls.

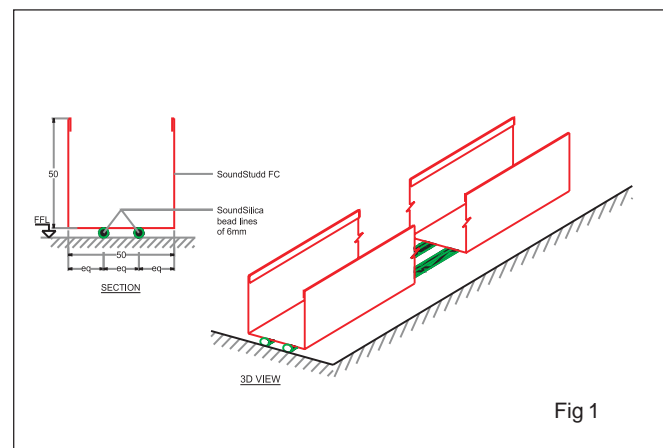


Fig 1

All surfaces must be level, clean and dry prior to the application of Fire caulking compound

### Padding - Stand Neo

Optional - Where base floor is highly uneven or structural vibration, that is induced by low frequency (LF) soundwaves or mechanical equipment, is envisaged, Stand Neo pads (an ideal blend of neoprene and rubber with vibro-acoustic control characteristics) of specified thickness and hardness, usually 5 mm thick and 55 duro hardness, are installed on the floor with Fire bead lines and again Fire bead lines applied on the pad to received the Studd framework. (See Fig 2)

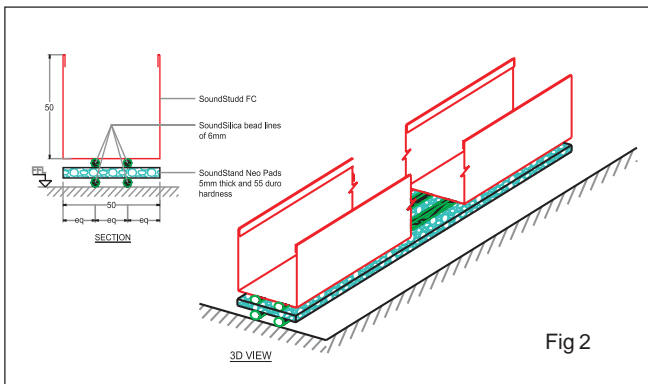


Fig 2

### Framework - Studd

Anutone's superior metal framing that boasts KEN features of Knurling, Edge seaming and Notching is used for the wall skeleton.

Studd Floor Channel (FC) and Head Channel (HC) of specified depth, usually 50 mm, are mechanically fastened to the building elements with Stitch PB - mechanical fasteners - at 300 mm pitch with a electric self-drilling tool. (See Fig 3) For Stitch PB, holes are first drilled in the concrete, plugs inserted and the screws fastened. Where base masonry is weak, Stitch AB expansion bolts are inserted for better grip.

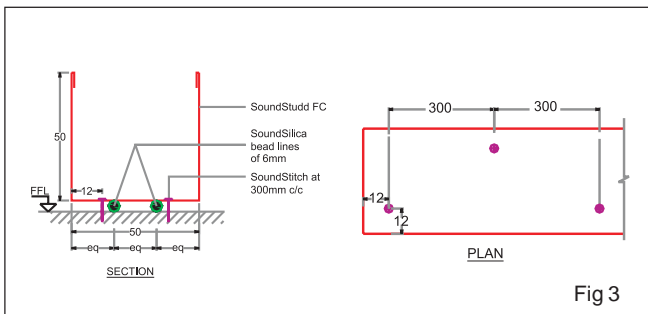


Fig 3

Optional - If slab deflection is envisaged then the Studd Deflection Head Channel (DHC) is used for positive attachment and movement.

Studd Stud Channels (SC) of specified depth, usually 48 mm, are then inserted in the FC/HC and twisted into position at 600 mm centres. (See Fig 4)

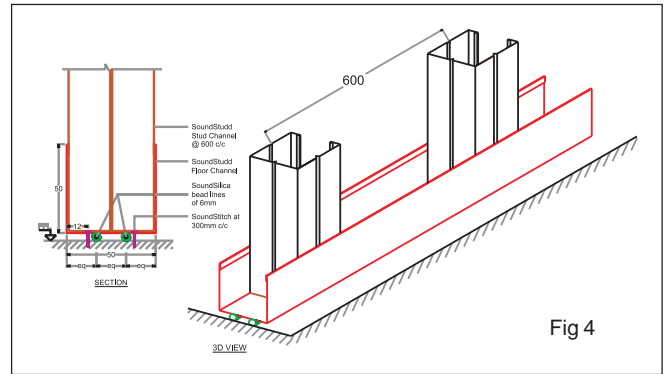


Fig 4

Optional - If LF-induced vibration is envisaged then Studd Resilient Channels (RC) are installed perpendicular to the Studd SC.

Alternatively, Sway resilient wall braces are installed on the Studd SC50 at 1200mm vertical centres and 600mm horizontal centres. The Sway are fitted with Strut CC22 channels at 600mm centres, as shown. (See Fig 5)

Raceways are then installed in the 50mm void created in the Studd system for cable management (by others, not by Anutone).

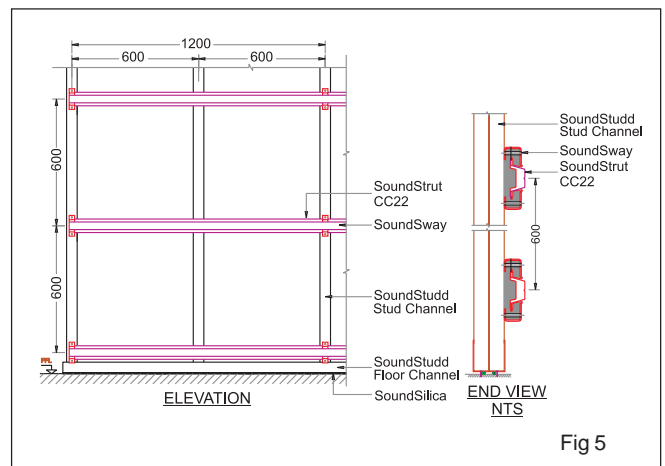


Fig 5

For openings, like windows (windows/glazing and doors), ducting etc Studd Box Channel (BC) or a pair of mated Studd SC50 channels are used for additional reinforcement. The BC/SC channels are connected at right-angle joints with Studd L-Clamps (LC). (See Fig 6)

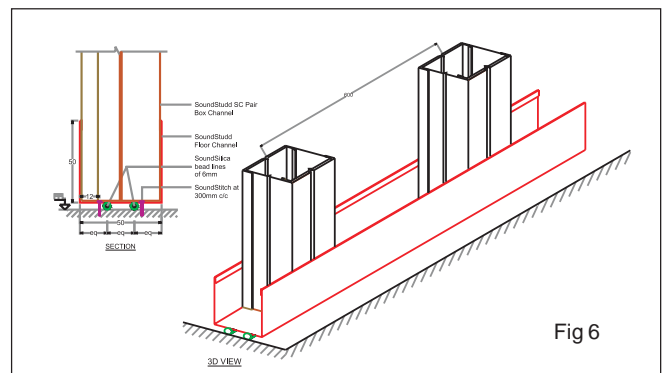


Fig 6

If HC / FC / SC channels need to be mechanically connected then use Stitch BTH813 fasteners (Code OC5-8-18x13-BTH-RP)

### Part Three - Infill

#### Infill - Synth PF with Stick S7

Synth PF - a thermally-bonded, chemically-free, polyester-wadding acoustic infill - of specs 10x50 and factory-sized 600mm width is positioned in between the Studd air cavity and retained by adhering with Stick S7, a contact adhesive, onto the framework.

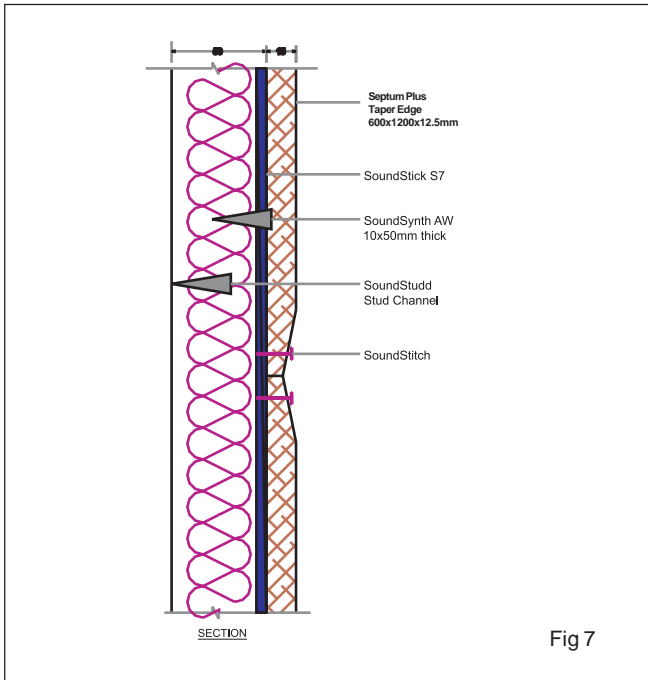


Fig 7

Alternatively, Synth PF is installed after one layer of Septum Plus panels are installed on one side of Studd and retained by adhering with Stick S7 dabs onto the Septum Plus panels. (See Fig 7)

Synth PF is EHS-friendly and, unlike synthetic mineral fibres (SMF) - fibreglass wool or mineral wool - encapsulation in protective polyethylene film or tissue paper is not necessary. This is very user-friendly.

### Part Four - Panels

#### Panels - Septum Plus

Septum Plus acoustical panels of specified thickness, tapered edge profile, density and dimensions, usually 600x2400x12.5mm, are then mechanically fastened perpendicular to the Studd with Stitch DCSK720 at 600 mm centres by the electric self-drilling tool. 10 nos. Stitch DCSK720 for panel dimensions of 600x2400mm are fastened 12 mm from the panel edge. Septum Plus is horizontal, parallel to the floor.

The Septum Plus panels are butt jointed but staggered

(ashlar pattern). The V-notch on the Studd SC50 helps to sightline the joints.

Optional - To deliver an integrated and monolithic construction for superior noise isolation and prevent 'rattling' sound due to low-frequency excitation, the panel edges, their contact points with the Studd metal framework and the Stitch mechanical fasteners, are all coated with Stick JB. Added advantage is an alteration in the natural resonant sound frequencies of the various components and superior seismic resistance (earthquake-proof).

Next, a second layer of Septum Plus panels of specified thickness, tapered edge profile, density and dimensions, usually 600x1200x12.5mm, are then mechanically fastened perpendicular to the Studd with Stitch DCSK730 at 600 mm centres by the electric self-drilling tool. 10 nos. Stitch DCSK730 for panel dimensions of 1200x600mm are fastened 12 mm from the panel edge. Septum Plus is horizontal, parallel to the floor. This second layer is installed on a bead of Fire caulking compound for those panel perimeters that abut the masonry floor / wall / ceiling.

The second layer of Septum Plus is staggered 300 mm and 600 mm, vertically and horizontally, respectively, such that no joints of the first and second layer coincide. This not only assists in superior noise isolation techniques but also ensures the Stitch fasteners are suitably spaced. To achieve this the second layer bottom panel, is half-sized with an electric cutting tool. The Septum Plus outer panels abutting the floor, wall and ceiling are caulked with Fire. (See Fig 8)

#### Sealing - Silica / Fire

All the butt joints of the Septum Plus are first sealed with a continuous bead of Fire or Silica fire-rated acoustical sealant by means of a caulking dispenser tool - the Silica cartridge gun.

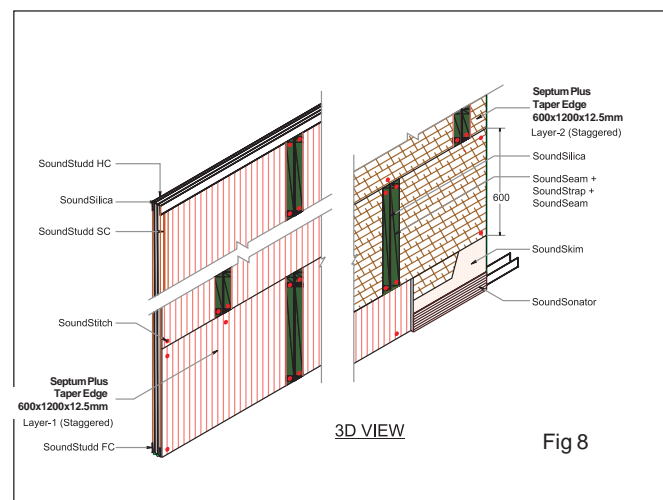
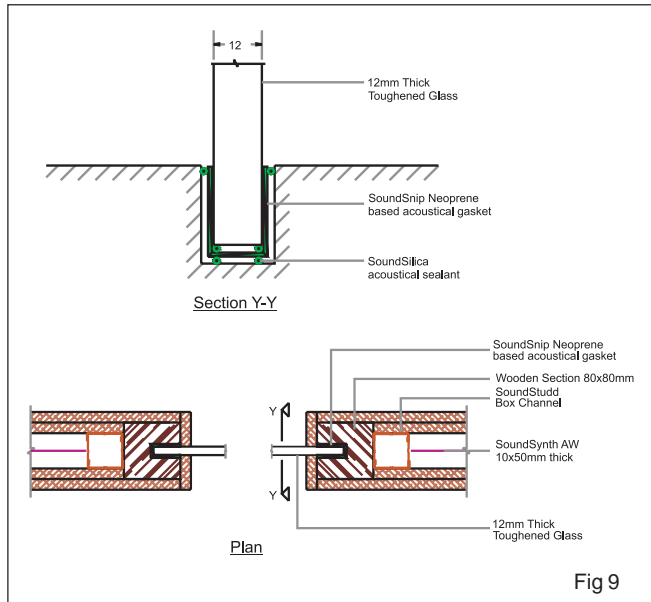


Fig 8

## Sealing - Glazing

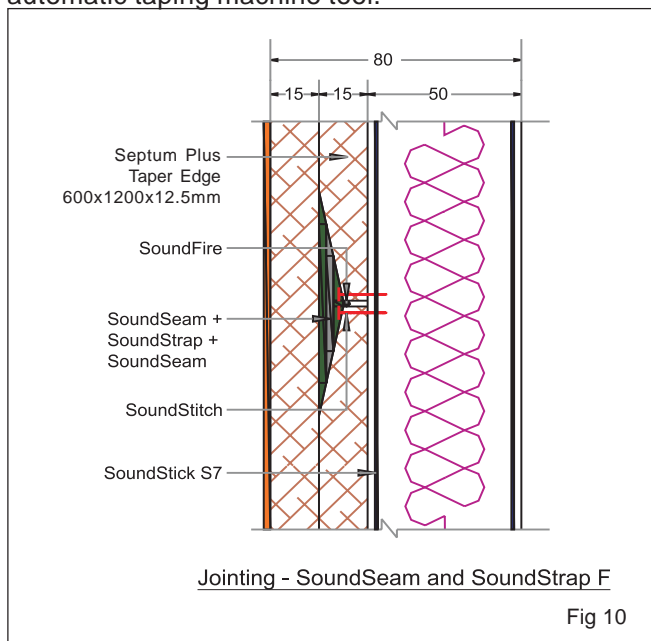
Optional - If glazing is used in conjunction with the 100/110mm acoustical drywalls of the room, then Snip neoprene-based acoustical gaskets with Silica acoustical sealant is used at the junction of the dissimilar materials. (See Fig 9)



If two glass panels are butt jointed for continuous visual clarity then Silica acoustical sealant must be injected into the joint depth. It is recommended the glazing matches the STC rating of the 100/110mm thick acoustical partition. The glazing must consist of at least 12mm thick laminated glass to isolate the sound waves in the speech frequencies or as recommended by the acoustical consultant.

## Jointing - Seam and Strap F

Jointing of Septum Plus panels is either manual with spatula tool or mechanised with taping banjo / automatic taping machine tool.



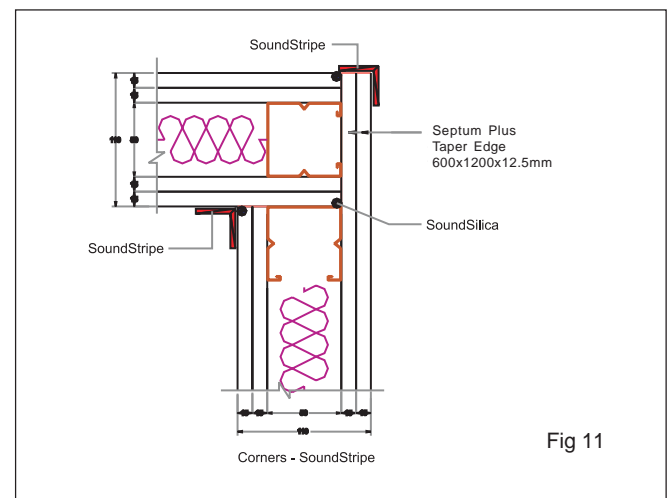
On the Taper edge of Septum Plus panels, (butt joints form a shallow V-shaped groove) Seam is applied 1 mm thick, then Strap F is applied and again Seam 1 mm thick is applied. (See Fig 10)

On drying the joints are sanded with a pole sander tool using grit 150 sandpaper.

## Corners - Stripe

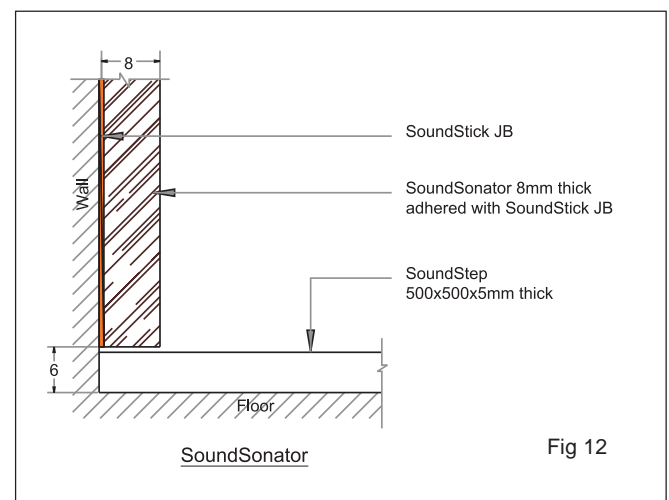
Stripe is installed at the outside and inside corners including ceiling-wall junctions for the perfect angular alignment, corner straightness and sharpness, plus the added advantage of resistance to post-occupancy abuse. (See Fig 11)

Stripe is dipped in Seam using a special tool and embedded in the corner joints of the Septum Plus.



## Skirting - Sonator

The wall-floor junction is offset with a 150mm high skirting of 8mm thick Sonator. The Sonator is adhered on the second layer of Septum Plus with Stick JB. Optional - Care is taken to ensure the lower edge of Sonator is raised 6mm from the floor to accommodate the 5mm thick Step acoustic carpet tiles. (See Fig 12)



## Part Five - Openings

### Penetrations - Septum Plus, Seam etc.

All penetrations in the walls of the room must achieve the same noise isolation to ensure overall acoustical effectiveness.

The perimeter of all openings must be ringed with Studd BC and receive two layers of Septum Plus similar to the wall. All panel joints must be sealed with Seam and Strap F.

Optional - Where HVAC duct vibration is likely, a layer of Stand Neo, 100/110mm depth x 5mm thick x 55 duro hardness is adhered onto the opening with Stick S7. (See Fig 13)

### HVAC Noise Control - Split

For supply air, Split noise attenuators may be installed if the walls of the room form the boundary of the acoustically-sensitive architectural space.

Similarly for return air, either Split or Sieve acoustical louvres may be installed. These are friction fitted (and

joints sealed) in the treated wall openings that are created above the false ceiling level in the plenum space. (See Fig 13)

Optional - If roof or duct vibration is an issue the Split attenuators may be suspended from the roof by Suspend AF acoustical hangers.

It is strongly recommended that the internal lining of the HVAC ducting for sound absorption and thermal insulation is done with Sconz acoustical melamine foam and not Synthetic Mineral Fibres (SMF) as the latter is not EHS-compliant.

### Doors - Stay

Stay wooden frame-shutter assemblies are installed as per aesthetics and acoustics requirements, the latter usually being STC40. (See Fig 14)

Optional - If Stay acoustical doors are not opted for then Snip NN acoustical gaskets must be used in the frame-shutter assemblies of custom-made doors by the fitout vendor. The Snip NN gasket set features a perimeter neoprene-aluminium seal for the jamb and head, and

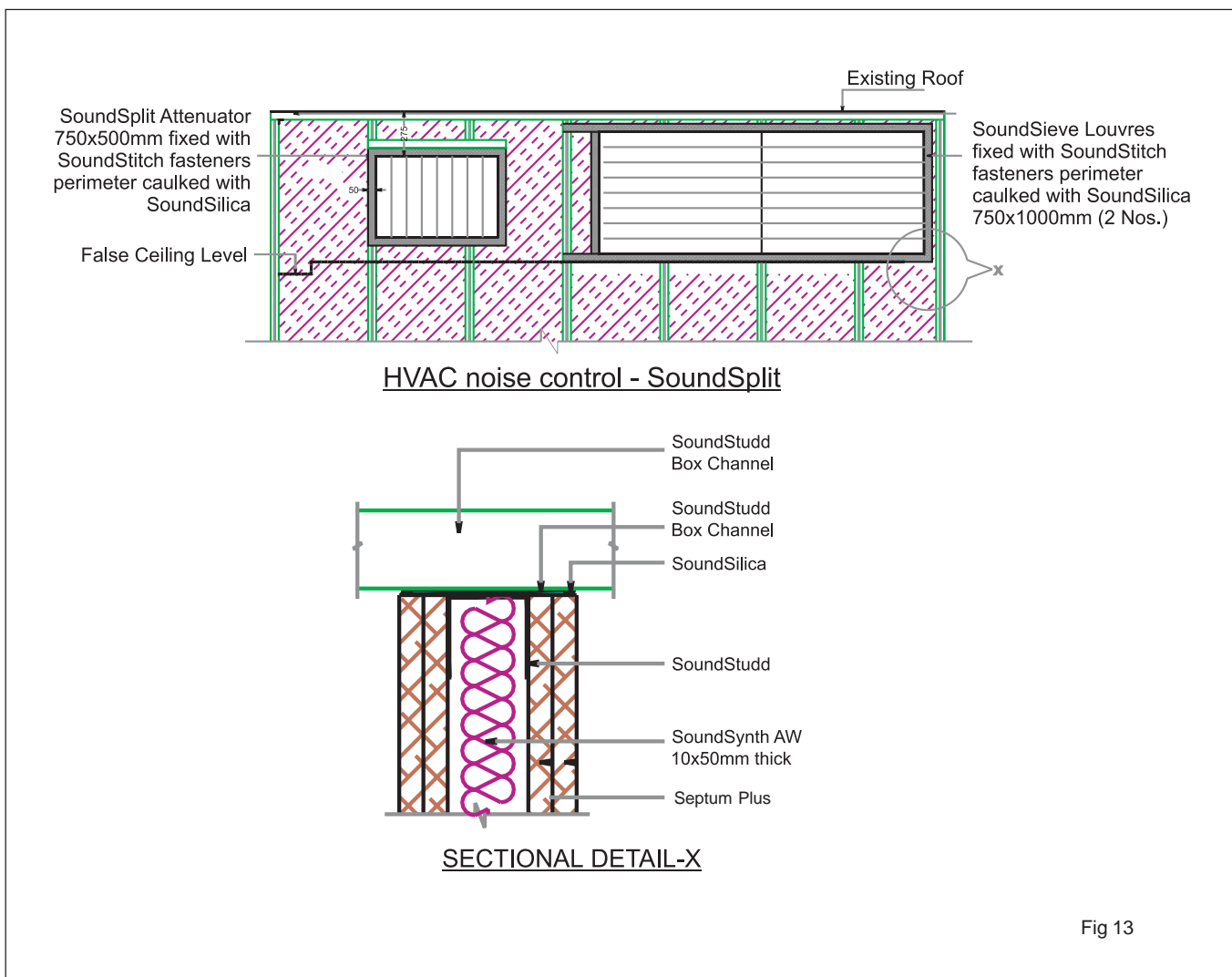
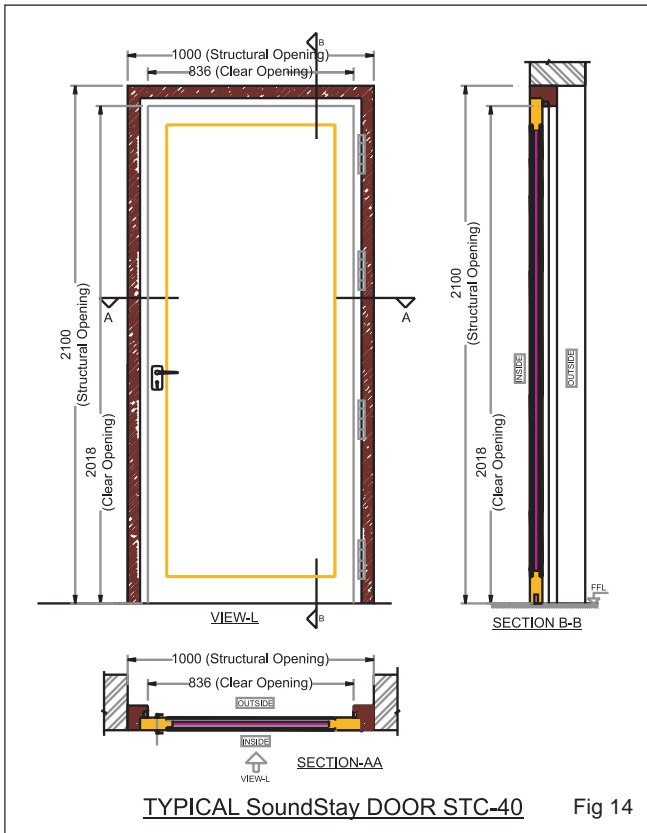


Fig 13

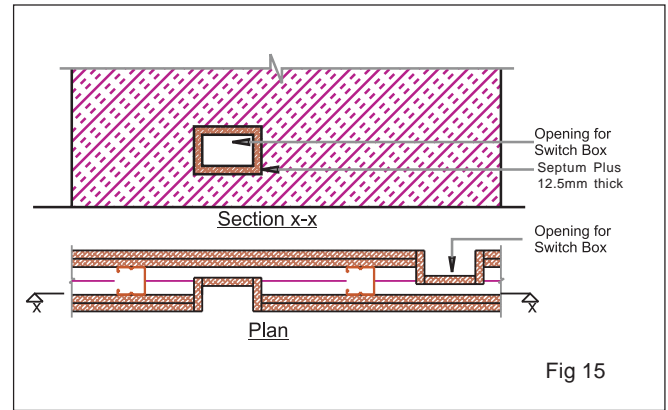


automatic drop-down seals for a threshold-free bottom to ensure STC ratings of upto 40.

### Electrical Switchboxes

Openings created due to electric switchboxes or cabling are offset and backed with Septum Plus boxing that is sealed with Seam jointing compound and caulked with Fire. (See Fig 15)

It is very important that all perimeter joints of all openings or wherever dissimilar materials meet, are



treated with Seam that is further caulked with Fire or Silica.

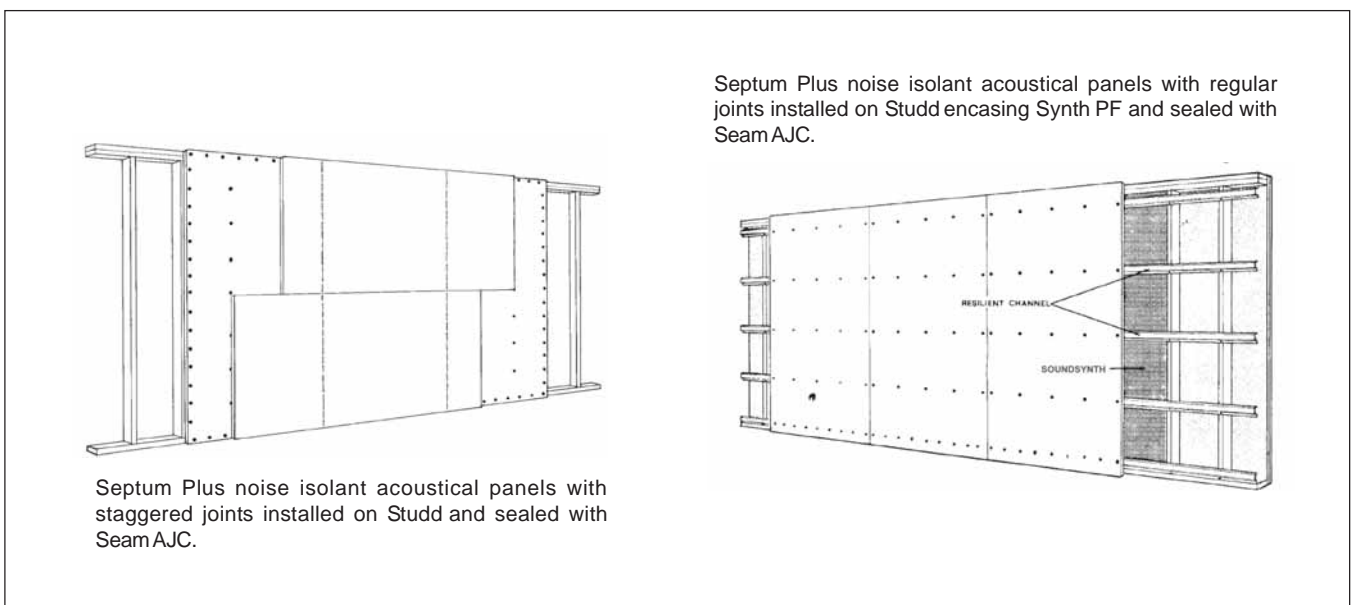
## Part Six - Finishing

### Surfacing

The entire wall surface is sanded smooth with a pole sander tool and wiped clean with a dampened roller tool. It is now ready to receive Skim, the final surface finish that imparts a Level 5 trim (egg shell type super smooth). Alternatively, the walls of the room are ready to receive textured pattern rendering.

Skim is sprayed on the wall surface with an airless spray tool in a crosshatch pattern or if texture is required then it is sprayed with a pneumatic hopper gun tool. To result in super smooth surfaces light sanding may be done with the pole sander tool.

The walls are now ready to receive paint finishes as per architect's choice (not by Anutone).



## Accessories

Anutone provides all products, systems and services required for fixing Septum Plus at project sites thus endowing architects, consultants, end users with the unique advantage of a single-source turnkey responsibility. The single-source opportunity fulfils the project credo of faster, better, cheaper.



## Tools



## Tech Primer

SI#	Description	Septum Plus
1	Thickness (mm)	12.5
2	Size (mm)	Width 600 / Length 2400
3	Core	Acoustic Plaster Sandwich
4	Nominal Density (Kg / m <sup>3</sup> )	1,500
5	Weight (Kg / m <sup>2</sup> )	27
6	Edge	Taper
7	Acoustics	STC Upto dW 61
8	Fire	Class I
9	Moisture Resistance (%)	RH 90
10	Light Reflectance (%)	NA
11	Warranty	10 Years
12	Installation	Stud SC50
13	Color	Grey-White
14	Maintenance	NA

## Bill of Quantities (BoQ) - 100m<sup>2</sup>

SI #	Description	Units	Septum Plus
	<b>Thickness / Edge</b>	<b>mm</b>	<b>12.5 / Taper</b>
1	Head Channel HC50	lm	27.8
2	Studd Channel SC48	lm	28.8
3	Floor Channel FC50	lm	27.8
4	Synth PF 10x50	m <sup>2</sup>	100
5	Stick Adhesive S7	ltrs	25
6	Silica	ltrs	2
7	Septum Plus 600x1200	m <sup>2</sup>	100
8	Fasteners	ls	
9	Seam AJC	kgs	56
10	Strap	rolls	1
11	Labour	hrs	4
	<b>Estimated Installed cost / m<sup>2</sup></b>	<b>₹</b>	

lm - Linear meter, m<sup>2</sup> - Square meter, Ltr - Litre, LS - LumpSum, hrs - Hours



### Septum Plus

\* The above indicated values are very approximate and dependent on several variables. They are for guidance only and subject to change without prior notice.



## Super smooth surface finish and best thickness tolerances!

Anutone's recent investments in finishing machines at its Ekcel plant, Bengaluru, means Septum Plus will be finished on the Automatic Double-sided Surface Planer (left) and the Automatic Wide-belt Sander (right) for an incredible super smooth surface finish and an industry-leading thickness tolerance of  $\pm 0.5\text{mm}$ . This will ensure an idiot-proof system at project sites with minimal labour time and a snag-free install. This comes at no extra cost and is a huge benefit to the contractor and client. Faster, better, cheaper - our credo!

**anutone**<sup>®</sup>  
makes you feel good™

### ANUTONE WALLS & CEILINGS

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