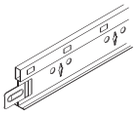
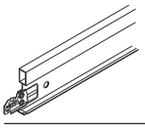
DONN® Brand Exposed Grid

DONN® CENTRICITEE®
15mm Exposed Grid

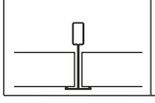
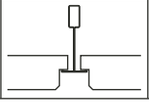
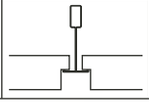
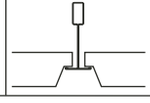
15mmTee System



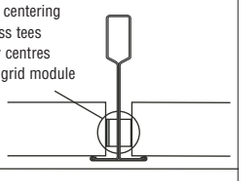


	Profile	Product	Profile Height	Component Length [1]	Code	Panel Edge Options
Main Tee	Deep	Main Tee (Standard)	38mm	3600mm	DXT30D-3600	A, B, C, D
		Main Tee (Heavy)	38mm	3600mm	DXT38D-3600	A, B, C, D
Cross Tee	Deep	Cross Tee (Standard)	38mm	1200mm	DXT30D-1200	A, B, C, D
		Cross Tee (Standard)	38mm	600mm	DXT30D-0600	A, B, C, D
		Cross Tee (Heavy)	38mm	1200mm	DXT38D-1200	A, B, C, D

USG Panel Edge Detail

A Square Edge (SQ)[2]	**B** Fineline Bevel Edge (FLB)	**C** Fineline (FL)	**D** Interline Tapered (ILT)
			

Patented self centering device in cross tees automatically centres ceiling panel grid module



1. Imperial and non-standard lengths/modules available subject to minimum order quantities and lead times.
2. Limited suitability. Refer to individual acoustical panel brochures

Installation

Suspended ceilings are finished products intended for interior use and should be treated accordingly.

Delivery, Storage and Handling

- All materials shall be delivered in their original, unopened packages and stored for as short a time as possible, in an enclosed shelter providing protection from exposure to the elements and damage by/to other trades. Damaged, deteriorated or obviously faulty material is not to be installed and shall be removed from the premises.
- Materials should be handled in such a manner as to prevent racking distortion or physical damage.

Installation

- Ceiling layout should be planned prior to installation to determine grid configuration, direction etc. and to ensure that all fixing points are compatible with structural members and/or other services.
- Installation of exposed grid shall not begin until the building is closed in, fully glazed, roof watertight and residual moisture from wet trades such as plaster, concrete and terrazzo has dissipated.
- Mechanical and electrical ductwork above the suspension system shall be completed before installation of the suspension system.

Seismic Bracing Requirements

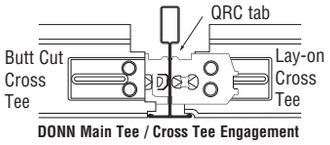
Consult the *USG Seismic Design Guide*.

Main Tee

- For standard installations Main Tees are spaced at 1200mm centres.
- Where heavy ceiling panels are used, close Main Tees in to 600mm centres. Refer *Loadings* pages 12-15
- Main Tee integral splices are to be offset from each other across the ceiling. Where this cannot be avoided, aligned splices shall be mechanically fastened with a pop-rivet, tek screw or similar.

Cross Tee

- Cross Tees interlock with opposing Cross Tees through the Main Tee web slots to form the required module.

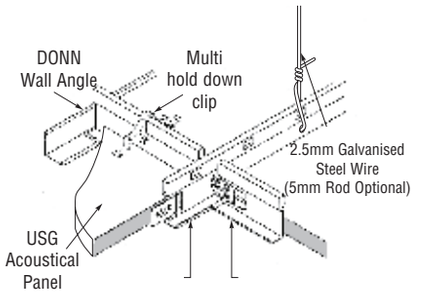


DONN Main Tee / Cross Tee Engagement

- A positive “click” is heard when the DONN QRC tab correctly engages.
- The Cross Tee being installed should be inserted on the ***left side*** of the already installed Cross Tee.
- Slots are punched along the Main Tee for convenience at 100mm centres for metric systems and 6” for imperial systems.
- Main and Cross Tees can be arranged in a variety of module configurations - see *Loadings* pages 12-15 for standard common layouts.

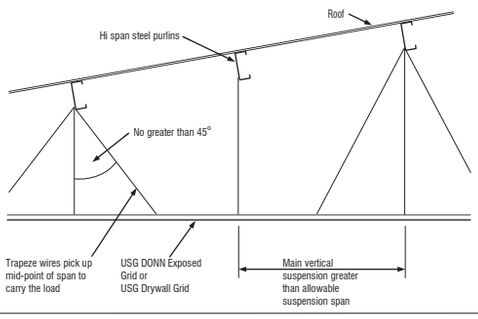
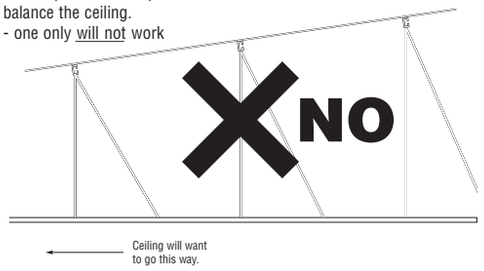
Suspension

- Main Tee hangers are spaced at 1200mm centres, no more than 600mm from the perimeter Wall Trim or 150mm from the Main Tee splice or 200mm from the Main Tee / Cross Tee joint. For heavier ceilings closer spacings may be required and/or hangers provided through the Cross Tee. Wider spacing may be allowable - see *Loadings* pages 12-15 or contact your USG Ceiling Specialist.
- For Cross Tees not directly attached to walls and where building movement may be anticipated and there is a risk of them losing support, provide extra hangers or suitable restraint to the Cross Tees. (eg ACM7 Seismic Clip)
- Where ceilings are back-braced for seismic restraint, do not attach grid to walls. Provide one hanger within 200mm of the end of every Main Tee and Cross Tee, or suitable support to allow for movement. (eg ACM7)



Suspension methods include:

- 2.5mm diameter straightened galvanised wire located through the pre punched convenience holes in the Main Tee bulb or web and secured with three tight 360° turns.
- 2.5mm wire or 5mm galvanised rod with the DONN CL315 suspension clip over the bulb.
- 5mm rod with the CL2424 clip through prepunched hole in the web or bulb of DONN Centricitee or DONN DX grid.
- Flat steel strip or Wall Angle secured to the tee web with fasteners the greater of 50kg or ultimate load from AS/NZS 2785.
- DONN Direct Fixing Clips **between bulb holes only** (no less than 10mm).
- Hangers are not to be bent or kinked as a means of levelling the grid or for any other reason.
- Hangers or bracing are not to be fixed to, or closer than 150mm to plenum building services e.g. ducting, sprinkler pipes.
- Fixing of the hanger to the structure above with proprietary fasteners shall be installed in accordance with their manufacturers recommendations, be suitable for the structure material and comply with any required Standards. Such fasteners shall have a design ultimate strength the greater of 50kg (0.5kN) minimum, or load requirements of AS/NZS 2785 Clause 3.2.2 (c).)
- Hangers using the CL315 clip shall not vary from the vertical by more than 5°.
- Where hangers are splayed up to a maximum of 45° to the vertical, they should always have an equally applied hanger in the opposite direction.
- Suspension method and position may be dependant on load requirements. See *Step 3* tables pages 13 and 15.

Suspension cont.	 Two trapeze wires required to balance the ceiling. - one only will not work 
Wall Perimeter	A variety of different Wall Angle profiles are available to suit the Donn Brand systems and designer's requirements. See *Wall Angles* page 6 for details. - Typically fix trim to walls or bulkheads up to 600mm centres maximum.
Panel Hold Down Clips	Clips may be required for seismic restraint, fire ratings or wind uplift on ceiling panels. - Typically install 2 Hold Down Clips (steel or other) per parallel tee (Cross or Main). This will give four points per panel restraint. - Where frequent access in to the plenum is anticipated, some clips can have one side removed to allow clipping one side of the tee but access on the other. - Ensure clips are of a type suitable for DONN DX or DONN Centricitee and for the thickness of acoustical panel being clipped.
Plenum Depths	Minimum plenum depths for the ease of removal of - 600 x 600mm panels = 150mm - 1200 x 600mm panels = 200mm Where lesser plenum depth is required, particularly under non-continuous structure or services, like joists/purlins or ducts, side loading of ceiling panels can further reduce the depth in these areas to 70mm (subject to panel thickness).
Cutting	DONN Grid and Wall Angle systems are easily cut on site with aviation snips or fine toothed band or hack saws.
Ceiling Acoustics	Acoustical absorption and sound transmission can be controlled to desired levels with the appropriate selection from the extensive range of USG acoustical ceiling panels. See page 22 for an overview selection. Consult your USG Ceiling Specialist for advice on a total acoustical ceiling system.
Fire Rating	Main, Cross Tees and perimeter trims are non-combustible (BS476 Part 4). DONN DXL grid system and appropriate USG Firecode acoustical ceiling panel provide floor/ceilings, roof/ceilings assembly Fire Ratings up to 1 hour. Refer to *USG Fire Rated Grid* brochure for full details. Please consult USG Interiors for regional compliance and availability.
Lighting/Air Handling	Most standard luminaires, louvres, grills and linear diffusers integrate with the standard module configurations. Refer *Lighting Installation* pages 16-17 for specific details.
Thermal Properties	DONN suspension systems are unaffected by thermal movement between ambient temperature variations of 10˚ to 30˚C.
Health and Safety	The material composition represents no health hazard. When handling, take care and ensure that safe work practices are adhered to at all times. Some products may have surface treatments and sharp edges/ends. All reasonable care should be taken when handling or installing to avoid any potential injury to self or others. Users should be properly trained and supervised in the use and handling of these materials. Appropriate personal protective equipment should be used when necessary eg: gloves/glasses etc. to avoid any potential injuries.
Maintenance	- Cleaning - Remove ceiling panels, then perform necessary cleaning of the grid with non-solvent based commercial cleaner. - Painting - Repainting of grid system members should be with a high quality solvent based paint for use over metal surfaces and applied as recommended by the paint manufacturer. - Paint colour - Powder coating: Ameron Coatings - Product Code PE522 polyester matt, Colour Code 9249AN ANOGRAIN Pacific White - Wet spray Ameron Coatings - Product Code 640 Amercryl (acrylic lacquer), Colour Code 100322 Pacific White NZ
Materials	Main and Cross Tees are a double web design, roll formed from hot dipped galvanised steel with prepainted galvanised steel cap. Cross Tees have a DONN QRC high tensile steel tab clinched to each end, zinc chromate finish.
Partitions	A partitions mass may impact on the installation requirements of a suspended ceiling due to seismic movement. Partitions should not be rigidly fixed to the suspended ceiling where possible, but can be fixed with provision for seismic or other building movement. The Revoe Clip accessory can be used for this. Refer to the *USG Seismic Design Guide* for full details.

Loadings - Maximum Allowable

To determine which is the most appropriate and cost effective grid combination compliant with AS/NZS 2785:2000 Suspended Ceilings - Design and Installation, use the following calculations.

Step 1

Maximum Load Calculations
Ultimate Limit State

1.1 Factored Dead Load (A)

G = Grid Weight + Panel Weight + Lights/Fixtures/Insulation etc Weight

G = _____ + _____ + _____ = _____ kg/m²

(A) = _____ x 1.4

Therefore **Maximum Load** (A) = _____ kg/m²

1.2 Factored Dead Load (A) plus Factored Service Load (B)

If required under AS/NZS 2785:2000 Clause 3.2.2(b)

From **1.1** above (A) _____ kg/m²

\+

U* x1.7 = (B) _____ kg/m²

Therefore **Maximum Load** (A) + (B) = _____ kg/m²

* Where ***U*** is 3.0 kg/m² minimum unless specified otherwise

Notes:

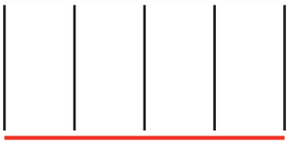
1. Load calculations **1.1** and **1.2** are based on AS/NZS 2785:2000 Clause 3.3.5(a). Load calculation **1.2** is based on a minimum Service Load of 3.0 kg/m² as required by the Standard. The contractor is to confirm that this load will not be exceeded, or alter the calculation accordingly. If Service Load ***U*** is NOT a requirement, use calculation **1.1** values only.
2. These tables apply to areas of buildings that have **no openings to the outside**, such as doors, windows, ducts etc. In all other cases the appropriate design loading must be determined by the project structural engineer in accordance with AS/NZS 2785:2000 Clauses 3.3.5(b) or (c).
3. Standard testing and installation for suspension is at 1200mm centres. Wider centres may be allowable - refer to respective grid combination tables. Hangers must be within 200mm maximum of Main Tee / Cross Tee connection.
4. Heavy lighting or other mechanical services shall be supported on the main tees, included in the dead load **1.1** above, able to be supported by the selected grid combination, and/or should be independently supported if greater than 10kg (NZS4219).
5. All point loads shall be fixed under suspension point on Main Tees only and hanger capacity should be checked against Step 3.
6. Loadings are laboratory tested in accordance with AS/NZS 2785 with a deflection limit of L/360. Maximum allowable system loads take into account continuous spans and are applicable for ceilings 2.4 metres or longer. For ceilings shorter than 2.4 metres use a minimum of two hangers
7. Seismic considerations for in-plane loads may take precedence in determining the required grid combination (refer to the USG Seismic Design Guide)
8. Not all products may be available in all areas.
9. For non-standard modules eg. 750 x 750mm etc. contact USG for availability and lead times prior to specification.

Step 2

Alternative Grid Layouts

From the grid diagrams below and opposite, select a ceiling layout and hanger spacing where the :
Maximum Load (from Step 1, above) **is less than or equal to the Maximum Allowable Load** from the Tables.
This will guide you as to the minimum grid combinations to use to fully comply.

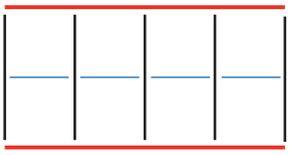
Standard 1200mm x 600mm



Grid Combinations: Main Tee	Cross Tee	Cross Tee	Hanger Spacing (mm) 1000	1100	**1200**	1350	1500	1800	System Weights kg/m²
DX30D-3600	DX30S-1200		11.6	11.6	**11.6**	11.6	11.6	N/A	0.76
DX30D-3600	DX30M-1200		23.5	23.5	**19.7**	15.5	11.6	N/A	0.79
DX30D-3600	DX30D-1200		31.3	25.9	**19.7**	15.5	11.6	N/A	0.87
DXL38D-3600 Fire Rated Grid	DX38D-1200		19.0	19.0	**14.5**	N/A	N/A	N/A	1.00
DX38D-3600	DX30D-1200		31.8	31.8	**30.1**	21.3	15.4	N/A	0.92
DX55D-3600* *(to special order)	DX30D-1200		31.8	31.8	**31.8**	28	20.4	11.8	1.05

Maximum allowable load kg/m²

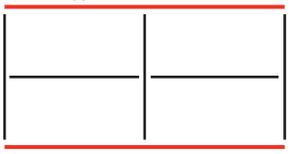
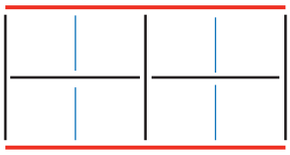
Standard 600mm x 600mm



Grid Combinations: Main Tee	Cross Tee	Cross Tee	Hanger Spacing (mm) 1000	1100	**1200**	1350	1500	1800	System Weights kg/m²
DX30D-3600	DX30M-1200	DX30S-600	23.5	23.5	**19.7**	15.5	11.6	N/A	1.00
DX30D-3600	DX30D-1200	DX30S-600	31.3	25.9	**19.7**	15.5	11.6	N/A	1.11
DXL38D-3600 Fire Rated Grid	DX38D-1200	DX30D-600	19.0	19.0	**14.5**	N/A	N/A	N/A	1.29
DX38D-3600	DX30D-1200	DX30D-600	31.8	31.8	**30.1**	21.3	15.4	N/A	1.21
DX55D-3600* *(to special order)	DX30D-1200	DX30D-600	31.8	31.8	**31.8**	28	20.4	11.8	1.34

Maximum allowable load kg/m²

Loadings - Maximum Allowable

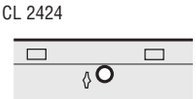
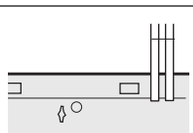
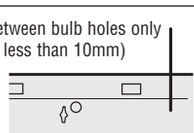
Alternative Grid Layouts	Grid Combinations: Main Tee	Cross Tee	Cross Tee		Hanger Spacing (mm): 1000	1100	**1200**	1350	1500	1800	System Weights kg/m²
Cross Nogged 1200mm x 600mm 	DX30D-3600	DX30M-1200		Maximum allowable load kg/m²	11.7	11.7	**11.7**	11.7	11.6	N/A	0.79
	DX30D-3600	DX30D-1200			15.9	15.9	**15.9**	15.5	11.6	N/A	0.87
	DX38D-3600	DX38D-1200			21.9	21.9	**21.9**	21.3	15.4	N/A	1.00
	DX55D-3600* *(to special order)	DX38D-1200			21.9	21.9	**21.9**	21.9	20.4	11.8	1.13
Cross Nogged 600mm x 600mm 	DX30D-3600	DX30M-1200	DX30S-600	Maximum allowable load kg/m²	11.7	11.7	**11.7**	11.7	11.6	N/A	1.00
	DX30D-3600	DX30D-1200	DX30S-600		15.9	15.9	**15.9**	15.5	11.6	N/A	1.10
	DX38D-3600	DX38D-1200	DX30D-600		21.9	21.9	**21.9**	21.3	15.4	N/A	1.30
	DX55D-3600* *(to special order)	DX38D-1200	DX30D-600		21.9	21.9	**21.9**	21.9	20.4	11.8	1.42
1200mm x 1200mm 	DX30D-3600	DX30M-1200		Maximum allowable load kg/m²	11.7	11.7	**11.7**	11.7	11.6	N/A	0.54
	DX30D-3600	DX30D-1200			15.9	15.9	**15.9**	15.5	11.6	N/A	0.58
	DX38D-3600	DX38D-1200			21.9	21.9	**21.9**	21.3	15.4	N/A	0.67
	DX55D-3600* *(to special order)	DX38D-1200			21.9	21.9	**21.9**	21.9	20.4	11.8	0.80
600mm x 600mm Heavy 	DX30D-3600		DX30D-600	Maximum allowable load kg/m²	51.7	51.7	**39.5**	31.0	23.3	13.5	1.17
	DXL38D-3600 Fire Rated Grid		DX30D-600		29.1	29.1	**29.1**	N/A	N/A	N/A	1.25
	DX38D-3600		DX30D-600		60.2	60.2	**60.2**	42.9	30.8	17.8	1.25
	DX55D-3600* *(to special order)		DX30D-600		77.8	77.8	**77.8**	56.2	40.7	23.6	1.52
600mm x 1200mm Heavy 	DX30D-3600		DX30D-600	Maximum allowable load kg/m²	51.7	51.7	**39.5**	31.0	23.3	13.5	0.87
	DXL38D-3600 Fire Rated Grid		DX30D-600		29.1	29.1	**29.1**	N/A	N/A	N/A	0.96
	DX38D-3600		DX30D-600		60.2	60.2	**60.2**	42.9	30.8	17.8	0.96
	DX55D-3600* *(to special order)		DX30D-600		63.6	63.6	**63.6**	56.2	40.7	23.6	1.23

STEP 3

Maximum Allowable Loads (kg/m²) with Main Tees at 1200mm spacing.

(if at 600mm spacing double the Allowable Load)

Use a hanger type and location greater than the Maximum Allowable Loads from the tables above.
Use of these tables must take into account any point loads.

	Using a bulb hole			Using a web hole			Using a CL315 Clip			Using a DFS200 Strap		
	- Ø 2.5 wire - CL 2424 			- Ø 2.5 wire - CL 2424 						(between bulb holes only no less than 10mm) 		
Hanger spacing	1200	1350	1500	1200	1350	1500	1200	1350	1500	1200	1350	1500
DX30D-3600	N/A	N/A	N/A	33.3	29.6	26.6	40.8	36.3	32.6	N/A	N/A	N/A
DX38D-3600	31.5	28.0	25.2	48.7	43.3	38.9	49.0	43.6	39.2	37.6	33.4	30.1
DXL38D-3600 (Ø 2.5 wire only)	N/A	N/A	N/A	48.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DX55D-3600	46.2	41.1	37.0	45.1	40.1	36.1	62.5	55.6	50.0	78.0	69.3	62.4

DONN DXT
Centricitee
15mm

Loadings - Maximum Allowable

To determine which is the most appropriate and cost effective grid combination compliant with AS/NZS 2785:2000 Suspended Ceilings - Design and Installation, use the following calculations.

Step 1

Maximum Load Calculations
Ultimate Limit State

1.1 Factored Dead Load (A)

G = Grid Weight + Panel Weight + Lights/Fixtures/Insulation etc Weight

G = _____ + _____ + _____ = _____ kg/m²

(A) = _____ x 1.4

Therefore **Maximum Load** (A) = _____ kg/m²

1.2 Factored Dead Load (A) plus Factored Service Load (B)

If required under AS/NZS 2785:2000 Clause 3.2.2(b)

From **1.1** above (A) _____ kg/m²

\+

U* x1.7 = (B) _____ kg/m²

Therefore **Maximum Load** (A) + (B) = _____ kg/m²

* Where ***U*** is 3.0 kg/m² minimum unless specified otherwise

Notes:

1. Load calculations **1.1** and **1.2** are based on AS/NZS 2785:2000 Clause 3.3.5(a). Load calculation **1.2** is based on a minimum Service Load of 3.0 kg/m² as required by the Standard. The contractor is to confirm that this load will not be exceeded, or alter the calculation accordingly. If Service Load ***U*** is NOT a requirement, use calculation **1.1** values only.

2. These tables apply to areas of buildings that have **no openings to the outside**, such as doors, windows, ducts etc. In all other cases the appropriate design loading must be determined by the project structural engineer in accordance with AS/NZS 2785:2000 Clauses 3.3.5(b) or (c).

3. Standard testing and installation for suspension is at 1200mm centres. Wider centres may be allowable - refer to respective grid combination tables. Hangers must be within 200mm maximum of Main Tee / Cross Tee connection.

4. Heavy lighting or other mechanical services shall be supported on the main tees, included in the dead load **1.1** above, able to be supported by the selected grid combination, and/or should be independently supported if greater than 10kg (NZS4219).

5. All point loads shall be fixed under suspension point on Main Tees only and hanger capacity should be checked against Step 3.

6. Loadings are laboratory tested in accordance with AS/NZS 2785 with a deflection limit of L/360. Maximum allowable system loads take into account continuous spans and are applicable for ceilings 2.4 metres or longer. For ceilings shorter than 2.4 metres use a minimum of two hangers

7. Seismic considerations for in-plane loads may take precedence in determining the required grid combination (refer to the USG Seismic Design Guide)

8. Not all products may be available in all areas.

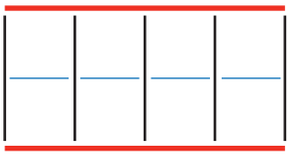
9. For non-standard modules eg. 750 x 750mm etc. contact USG for availability and lead times prior to specification.

Step 2

Alternative Grid Layouts

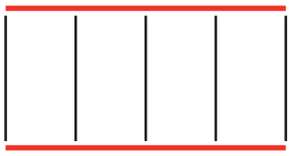
From the grid diagrams below and opposite, select a ceiling layout and hanger spacing where the :
Maximum Load (from Step 1, above) **is less than or equal to the Maximum Allowable Load** from the Tables.
This will guide you as to the minimum grid combinations to use to fully comply.

Standard 600mm x 600mm



Grid Combinations				Hanger Spacing (mm)						System Weights
Main Tee	Cross Tee	Cross Tee		1000	1100	**1200**	1350	1500	1800	kg/m²
DXT30D-3600	DXT30D-1200	DXT30D-600	Maximum allowable load kg/m²	17.6	14.5	11.1	N/A	N/A	N/A	0.93
DXT38D-3600	DXT30D-1200	DXT30D-600		28.2	23.3	17.8	14.1	11.3	N/A	1.10

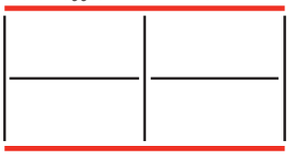
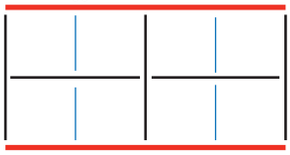
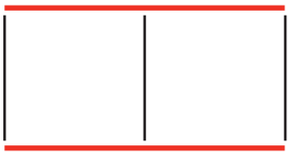
Standard 1200mm x 600mm



DXT30D-3600	DXT30D-1200		Maximum allowable load kg/m²	17.6	14.5	11.1	N/A	N/A	N/A	0.70
DXT38D-3600	DXT38D-1200			28.2	23.3	17.8	14.1	11.3	N/A	0.85

DONN DXT
Centricitee
15mm

Loadings - Maximum Allowable

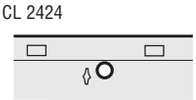
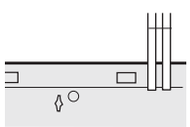
Alternative Grid Layouts	Grid Combinations: Main Tee	Cross Tee	Cross Tee		Hanger Spacing (mm): 1000	1100	**1200**	1350	1500	1800	System Weights kg/m²
Cross Nogged 1200mm x 600mm 	DXT30D-3600	DXT30D-1200		Maximum allowable load kg/m²	12.8	12.8	11.1	N/A	N/A	N/A	0.70
	DXT38D-3600	DXT38D-1200			17.1	17.1	17.1	14.1	11.3	N/A	0.85
Cross Nogged 600mm x 600mm 	DXT30D-3600	DXT30D-1200	DXT30D-600	Maximum allowable load kg/m²	12.8	12.8	11.1	N/A	N/A	N/A	0.93
	DXT38D-3600	DXT38D-1200	DXT30D-600		17.1	17.1	17.1	14.1	11.3	N/A	1.10
1200mm x 1200mm 	DXT30D-3600	DXT30D-1200		Maximum allowable load kg/m²	12.8	12.8	11.1	N/A	N/A	N/A	0.47
	DXT38D-3600	DXT38D-1200			17.1	17.1	17.1	14.1	11.3	N/A	0.57
600mm x 600mm 	DXT30D-3600		DXT30D-600	Maximum allowable load kg/m²	35.2	29.1	22.2	17.6	14.2	N/A	0.93
	DXT38D-3600		DXT30D-600		56.5	46.7	35.7	28.3	22.6	13.1	1.00
600mm x 1200mm 	DXT30D-3600		DXT30D-600	Maximum allowable load kg/m²	35.2	29.1	22.2	17.6	14.2	N/A	0.70
	DXT38D-3600		DXT30D-600		51.3	46.7	35.7	28.3	22.6	13.1	0.80

STEP 3

Maximum Allowable Loads (kg/m²) with Main Tees at 1200mm spacing.

(if at 600mm spacing double the Allowable Load)

Use a hanger type and location greater than the Maximum Allowable Loads from the tables above.
Use of these tables must take into account any point loads.

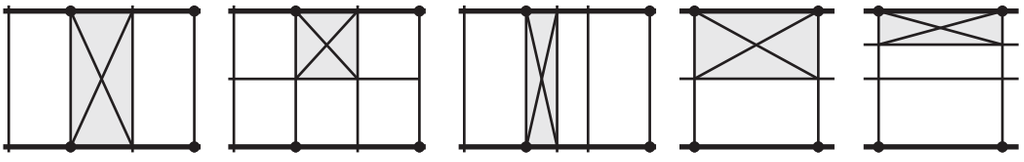
	Using a bulb hole			Using a web hole			Using a CL315 Clip			Using a DFS200 Strap		
	- Ø 2.5 wire - CL 2424 			- Ø 2.5 wire - CL 2424 						(between bulb holes only no less than 10mm) 		
Hanger spacing	1200	1350	1500	1200	1350	1500	1200	1350	1500	1200	1350	1500
DXT30D-3600	N/A	N/A	N/A	33.3	29.6	26.6	40.8	36.3	32.6	N/A	N/A	N/A
DXT38D-3600	31.5	28.0	25.2	48.7	43.3	38.9	49.0	43.3	39.2	37.6	33.4	30.1

Lighting Installation

As worldwide leaders in acoustical ceiling systems, USG Interiors works with the major lighting manufacturers to ensure system compatibility is maintained. The following guidelines are designed to assist in the correct specification and installation of light fittings in USG's DONN Brand Exposed Grid and acoustical ceiling systems.

Luminaire Positioning

Typical recessed pan fitting arrangements are shown below. Main Tees at 1200mm centres are shown horizontal, with suspension at 1200mm centres.



• Indicates Suspension Points

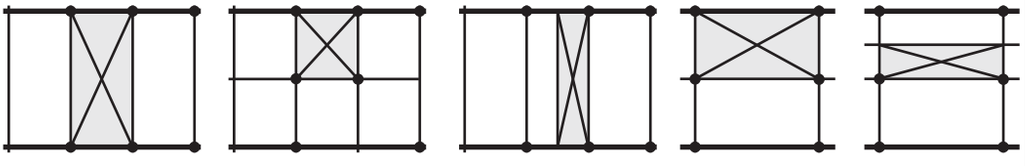
Refer to *Loadings* (pages 12-15) for maximum allowable gross ceiling loads depending on type of luminaire and DONN grid selected.

Where luminaire weight exceeds uniform load maximums consider:

a) A higher specification DONN Brand grid option if applicable (Refer to *Loadings* pages to ensure compliance).

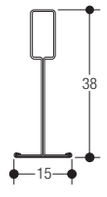
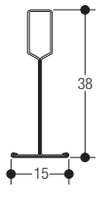
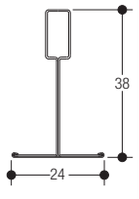
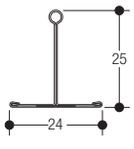
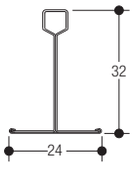
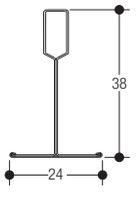
b) Independent support from structure.

c) Additional suspension points as shown below, or similar.



DONN BRAND Grid Profiles

When recessed pan fittings use the top of the DONN tee bulb for support, use the same height tee profiles for even support

Profile	D Main Tee	S Cross Tee	M Cross Tee	D Cross Tee
DONN CENTRICITEE				
DONN DX				

Attachment of Light Fittings

Fluorescent Recessed Pans / Troffer Packs

Fittings occupying a full ceiling module e.g 1200 x 600 / 600 x 600 etc. locate on the bulb of the tee or sit inside the tee and rest on the flange. With either method a positive fixing to the grid is recommended for safety reasons. This is required by the NZ Standard NZS 4219 (see over). For Australia ref. AS2946 for interface compatibility.

Fluorescent Surface Fittings / Battens

Surface mounted luminaires require a minimum of two fasteners to attach to the grid. Wherever possible, attach to the main tee. Where this is not possible and cross tees have to be used, keep fasteners as close as possible to main tee intersection for greatest strength. Proprietry fasteners are availbale that snap on to DONN DX 24mm grid profiles.

Where a fitting's weight exceeds maximum allowable loads for a particular grid type, any of the following methods may be used:

- use a proprietary fastener that fully surrounds the grid and is independently supported from the structure above.
- provide additional suspension points to the grid directly above the fixing point, ensuring each suspension is in compliance with AS/NZS 2785 Clause 3.2.2 (c) (50kg minimum).

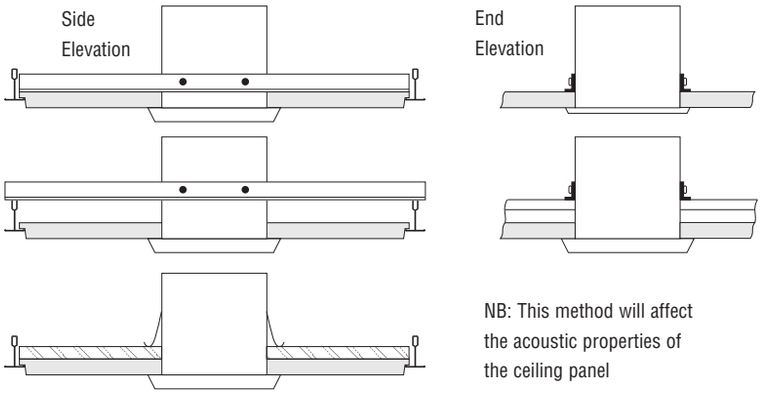
Ceiling Panel Mounted Fittings

Light fittings mounted through USG acoustical ceiling panels shall not rely on the ceiling panel for support. Their weight shall be transferred back to the grid by:

a) Simple supports across the back of the ceiling panel

b) Simple supports onto the top of the tee bulb

c) An additional rigid panel across the back of the ceiling panel



NB: This method will affect the acoustic properties of the ceiling panel

Common Recessed Luminaire Options

This table is intended as a general guide only. All products may not be available in all areas. Local manufacturers may also provide compatible options. For full luminaire details and options, contact the nearest Lighting Company office.

Company	Type	Module	Grid Type
GEC Philips	Troffer - Lay-in Diffuser	1200 x 600* 600 x 600 1200 x 300	DONN DX and DONN Centricitee
Thorn	Framed Diffuser	1200 x 600 600 x 600 1200 x 300	DONN DX and DONN Centricitee

*These options may be used with DONN Centricitee when used in conjunction with a 3.5mm prismatic diffuser.

TIP: When specifying lighting, ensure the grid type is clearly identified in the lighting section

e.g. DONN Centricitee 15mm exposed grid
DONN DX 24mm exposed grid.

Standards

Australia - AS2946 - 1991 Suspended Ceilings, Recessed Luminaires and Air Diffusers - Interface Requirements for Physical Compatibility. This standard details primarily the dimensional limitations and how they suit different ceiling grid system types.

New Zealand - NZS 4219 - 2009 Specification for Seismic Resistance of Engineering Systems in Buildings. This standard covers building services in close proximity, attached to, or passing through suspended ceilings. Relevant clauses pertaining to lighting are paraphrased below:

2.24 Electrical reticulation shall be independently supported, or allowance shall be made for relative building or ceiling movement.

2.25.2 All luminaires shall be positively clamped or fixed to the ceiling grid system.

2.25.3 All luminaires weighing greater than 10kg shall have two supports from the structure above. Each support shall be capable of supporting the full luminaire's weight.

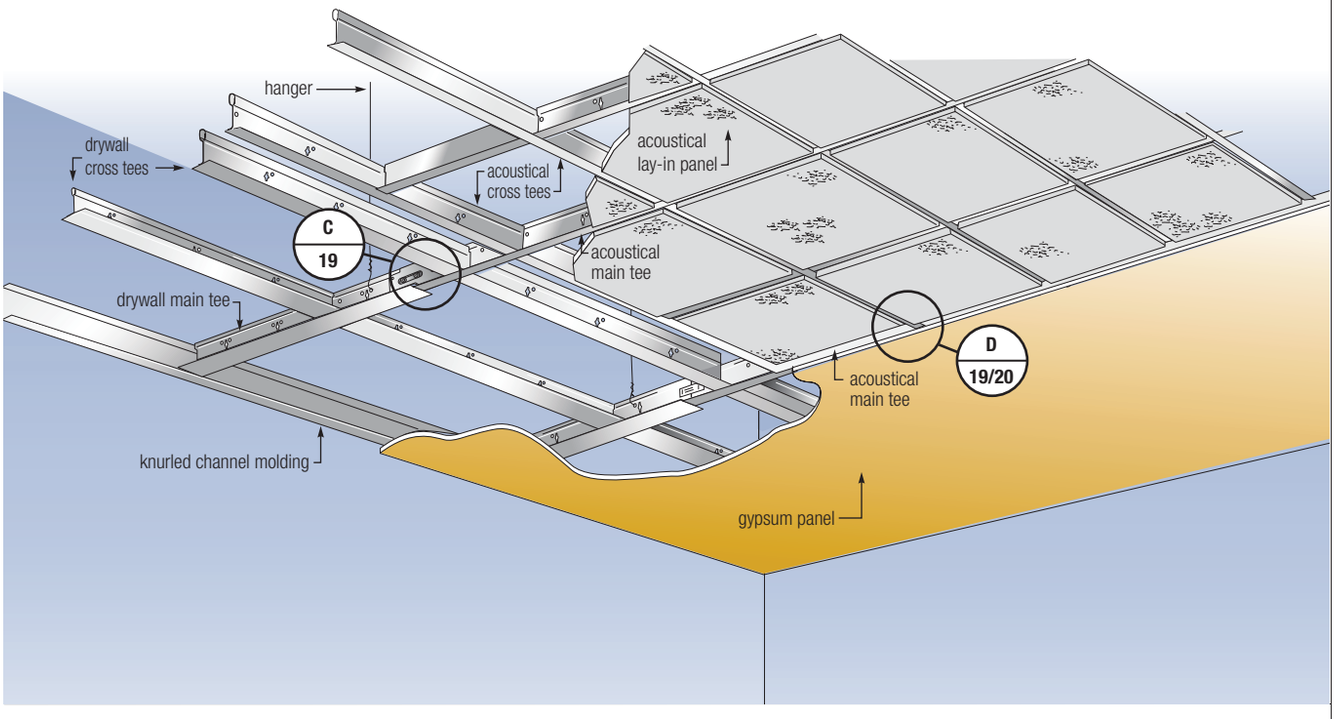
2.25.4 Surface mounted luminaires shall be fixed to the ceiling grid with at least two fixtures that completely surround the tee.

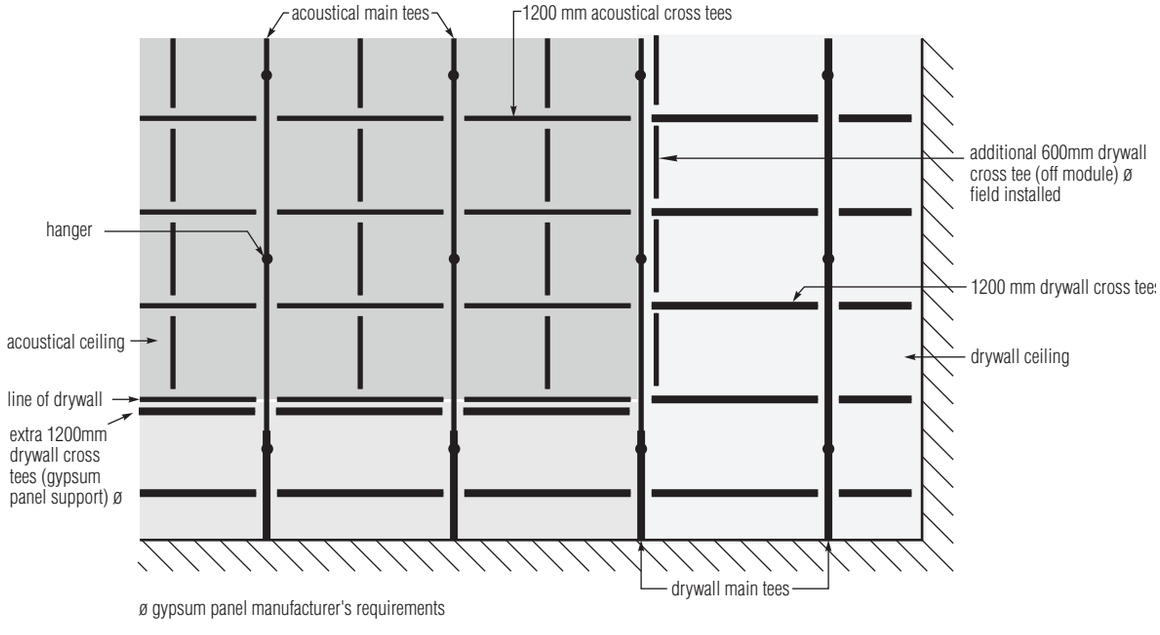
2.29.1 All ceiling suspended services including luminaires not exceeding 10kg in weight, shall be positively secured to the ceiling grid, or to the structure above, but not supported by the ceiling panels or tiles. Separate equipment supports are not necessary if the equipment is adequately fastened to the grid, and the grid has been specifically designed to withstand both the gravity and seismic loading from the equipment.

Transition to a Plasterboard Ceiling

The Donn® DX® and CENTRICITEE® acoustical suspension systems are totally compatible with our new USG Drywall Grid Suspension System making it easy to transition between flat drywall and acoustical ceilings.

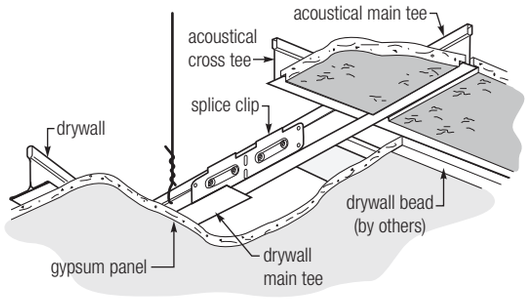
Flush or offset transitions are possible. Additional cross tees are necessary at drywall edge to provide adequate support (as shown on plan view).





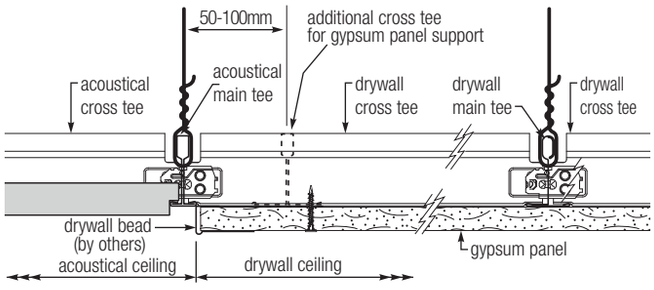
ø gypsum panel manufacturer's requirements

Drywall to acoustical transition--field cut connection



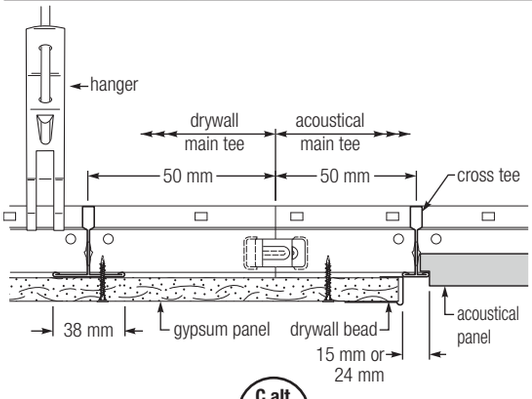
C 19

Drywall to acoustical transition



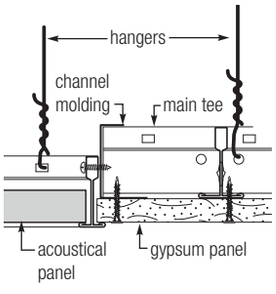
D 19

Drywall to acoustical transition--factory end connection



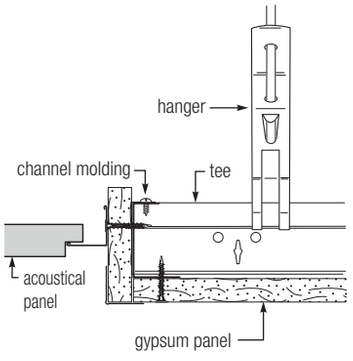
C alt 19

Flush transitions



D alt 19

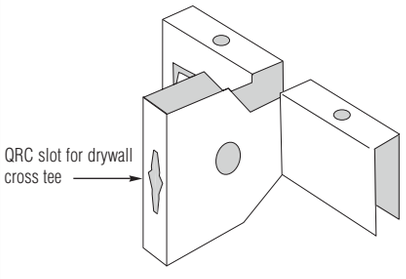
Standard offset



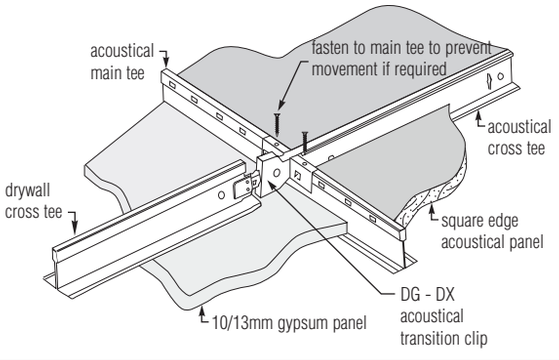
D alt2 19

Flush Acoustical Transition Clip

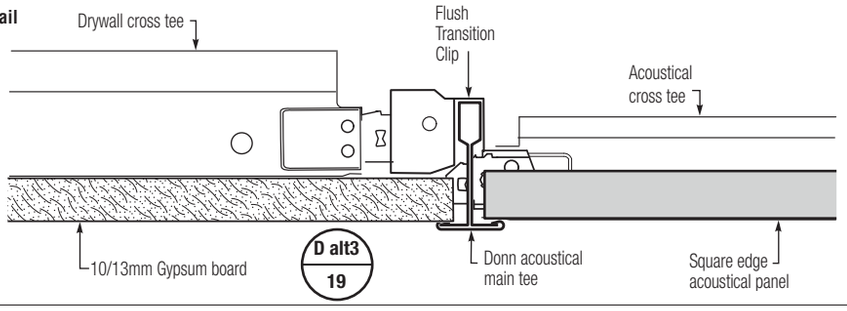
DG - DX Flush Acoustical Transition clip



Assembled



Intersection Detail

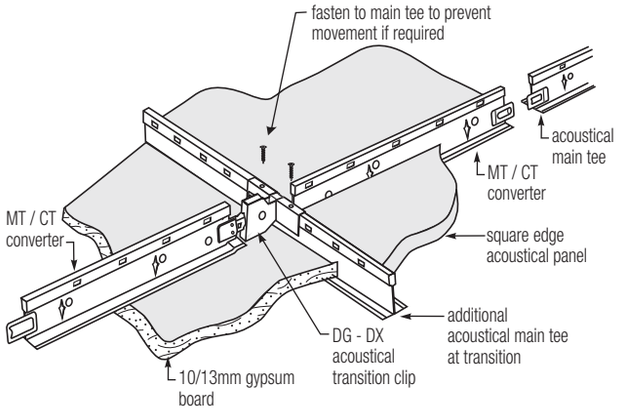


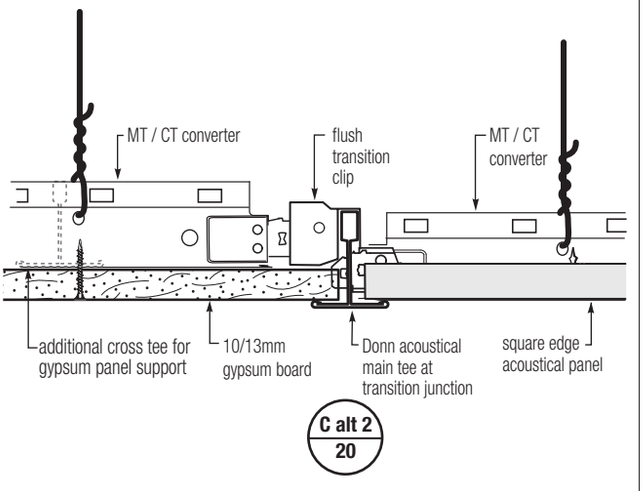
D alt3 19

Transition to a Plasterboard Ceiling

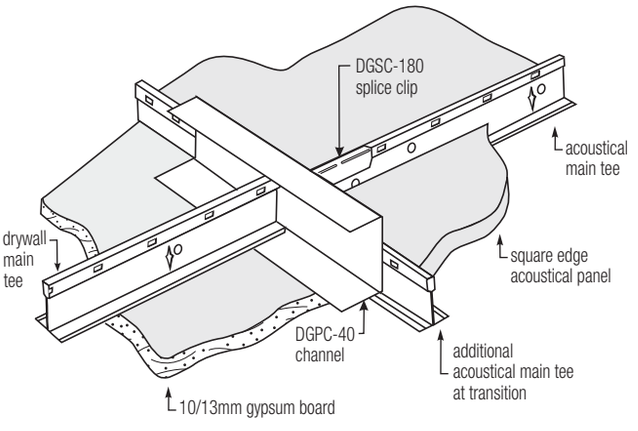
Main Tee Direction - keep acoustical and drywall main tees in line

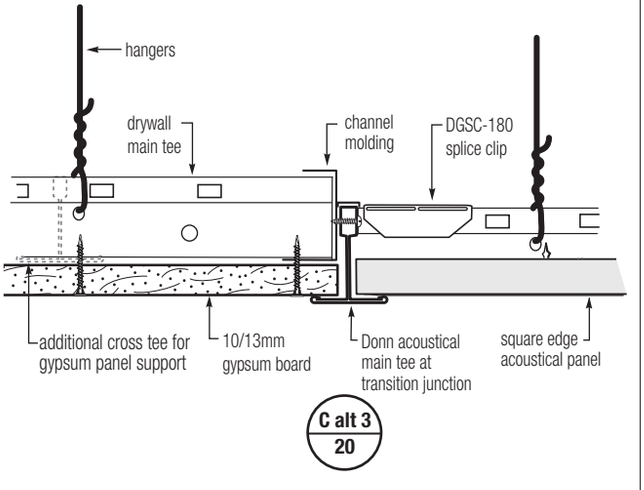
Option 1



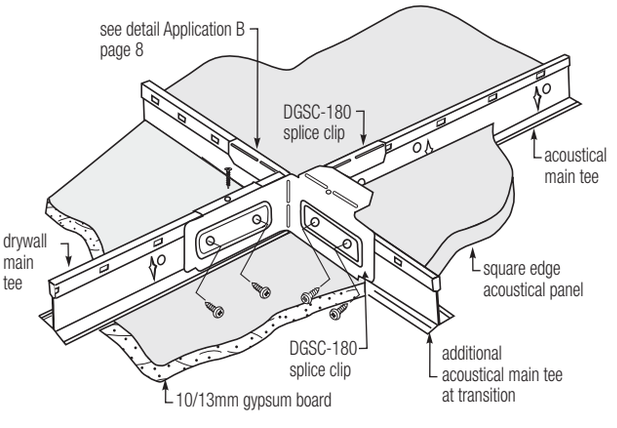


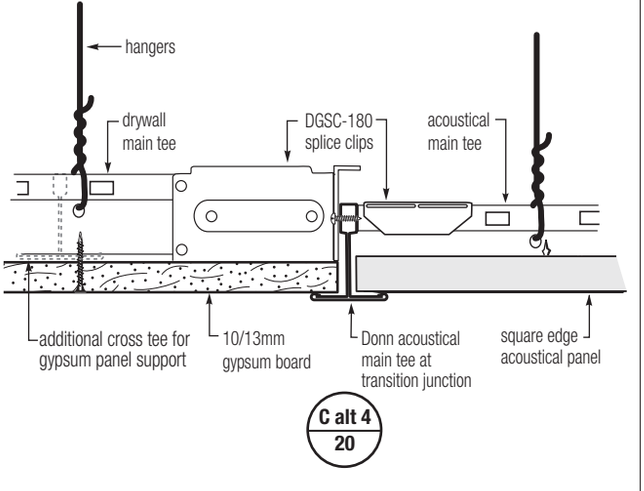
Option 2





Option 3





-Fire Rating
-Seismic Installation

Fire Rating - USG Acoustical Ceiling System 24mm Eposed Grid

USG acoustical ceiling systems can provide a FRR/FRL (Fire Resistant Rating) up to 60/60/60 as well as the benefits of acoustical control while still allowing easy plenum access to services, particularly compared to plasterboard options.

A fire rated ceiling helps prevent fire and/or heat from reaching a floor or roof above a room that is on fire. This allows time for evacuation of the floors above and protects against property damage. A fire rated ceiling system is part of a total fire rated assembly, which includes approved beams, joists and floor or roof assemblies.

- BRANZ Tested to AS1530.4 Fire Resistant Tests of Elements of Building Construction
- Exclusive expansion notch formed into the main tee is designed for controlled collapse in the event of a fire, ensuring integrity of the ceiling plane
- Heavy weight tees resist buckling, longer
- Visually identical to USG DONN Brand 24mm exposed grid where the same image is required in non-fire rated areas
- High density USG Firecode ceiling panels provide choices of size, appearance and acoustical properties to suit a range of applications
- Plus all the fast easy installation features of standard DONN DX exposed grid systems

For fire rating options and full construction details please refere to our main brochure :
USG Fire Rated Exposed Grid System or visit our website at **www.usg.co.nz**

Seismic Installation

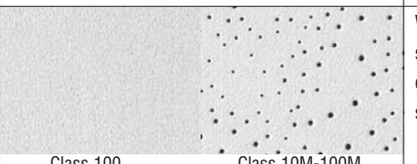
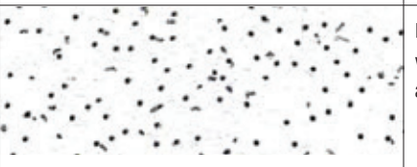
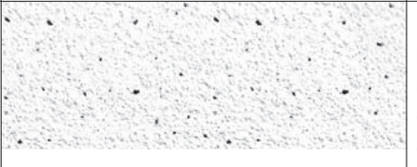
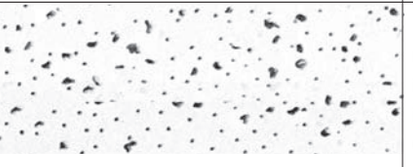
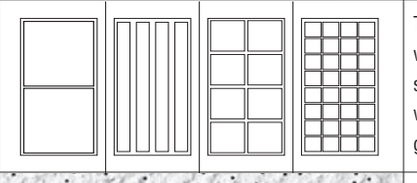
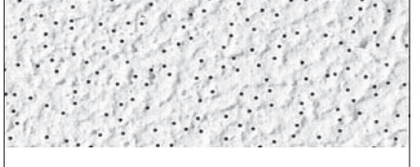
USG DONN Brand grid systems are world leaders in engineering technology to resist earthquake destruction and the compromise of human safety under suspended ceilings. Accordingly USG Australasia have invested significantly in steel engineering, testing and using expert seismic consulting engineers in preparing the :

USG Seismic Design Guide

for correct installation of USG ceilings in compliance with AS/NZS 1170. Please contact USG for the full Design Guide

USG Acoustical Ceilings Panels

Whether it is for acoustical, aesthetic, budgetary or performance reasons, USG have a range of panels to suit most application requirements. All panels bearing the *ClimaPlus*™ branding are formulated specifically to resist high temperatures and humidity#. Combined with USG DONN Brand grid the total system is covered by a Lifetime Warranty (up to a maximum of 30 years). Below are some common examples supplied throughout Australasia. (Note: some options may not be available in all areas)

	Panel Texture	Description	NRC	CAC
Clean Room™ ***CLIMAPLUS***	 Class 100 Class 10M-100M	White vinyl laminated surface with special edge and back coating control airborne particles for stringent clean air environments	**Class 100** N/A **Class 10M-100M** (perforated) 0.55-0.65	**Class 100** 35 - 39 **Class 10M-100M** (perforated) 35 - 39
Eclipse™ ***CLIMAPLUS***		Non-perforated, high NRC and stain resistant through patented technology. Medium texture for added visual appeal	0.65 - 0.75	35 - 39
Impressions™ ***CLIMAPLUS***		Light micro-fissures for a cleaner whiter appearance. Good mid-range acoustics at an economical price.	0.50 - 0.60	33 - 39
Mars™ ***CLIMAPLUS***		Excellent combination of high NRC, good CAC and a smooth white non-perforated finish. Ideal for open plan and closed plan projects and matching into plasterboard ceilings	0.70 - 0.85	35 - 39
Olympia Micro™ ***CLIMAPLUS***		Micro pin perfs provide a minimalist look combined with a fine sand-like texture for a cleaner whiter appearance. Good mid-range acoustics.	0.50	30 - 39
Radar™ **Radar High NRC** **Radar High CAC** ***CLIMAPLUS***		Micro-fissures provide a true non-directional texture allowing installation in any direction. Options include panels with higher NRC, CAC or Firecode™ performance.	0.50 - 0.60 0.65 - 0.75 0.50 - 0.60	33 - 39 35 - 39 40 - 44
Radar *CLIMAPLUS* Illusions		The Illusion range has face cuts which provide a variety of different scales and appearances to a ceiling, while semi-disguising the exposed grid.	0.50 - 0.60	35 - 39
Rock Face™ ***CLIMAPLUS***		Hard textured surface on a Firecode basemat offer an abuse resistant panel with good mid-range acoustics.	0.50 - 0.60	35 - 39

Refer to product brochures for specific data

General Information

Quantities

Approximate linear metres of product required in standard metric layout*

Component	Linear Metres	Pieces
Main Tee	m^2 x 0.833	
1200mm Cross Tee	m^2 x 1.667	
600mm Cross Tee (for 600mm x 600mm module)	m^2 x 0.833	
Hold Down Clips (if required)		m^2 x 2.778 (1200 x 600) m^2 x 5.555 (600 x 600)
Top Fixings / Suspension Clips		m^2 x 0.694
Wire	m^2 x .694 x (plenum depth + 400mm)	

- Alternative Layouts •

For alternative construction layouts use the following formulae to calculate linear metres (LM) or pieces (pcs) per square metre (m^2)

Main Tee - 1 ÷ Main Tee centres
eg. if MT at 1350mm centres $\frac{1}{1.35}$ = 0.74 LM/m^2

Cross Tee - 1 ÷ Cross Tee centres
eg. if CT at 400mm centres $\frac{1}{0.4}$ = 2.5 LM/m^2

Top Fixings or Suspension Clips - 1 ÷ span along the Main Tee X span between the Main Tees
eg. if along = 1200mm centres and between = 1350mm centres
$\frac{1}{1.2 \times 1.35}$ = 0.617 pcs (fixing or clips)/m^2

*** Note:** These calculations do not allow for wastage, damage or irregularities, but are intended as an informative guideline to assist with the calculation of product required for a given area (in m^2).

Warranty

#Warranty covers USG acoustical ceiling panel and USG DONN® Brand grid systems against defects in material or manufacturing workmanship for the useful life of the ceiling system, up to a maximum of 30 years. See your regional USG Ceiling Systems Specialist for full warranty details.

Short Specification

Supply and install a USG suspended ceiling system as manufactured and supplied by USG Interiors. System shall comprise of :

- (DONN DX 24mm) / (DONN DXT Centricitee 15mm) two way exposed grid system
- Module shall be (600 x 600) / (1200 x 600) / (other)
- Grid shall have minimum tension values of ____kg and compression values of ____kg
- Wall Angle shall be (MT/ML/MS/MSL/MXT/US 3600) fixed at 600 mm centres maximum
- Installation shall comply with AS/NZS 2785 – Suspended Ceilings - Design and Installation
- Seismic installation shall comply with AS 1170.4 or NZS 1170.5 and USG Seismic Design Guide
- Colour shall be USG (Pacific White) / (other)
- USG ( ) ClimaPlus Acoustical ceiling panel, NRC 0. __ and CAC __ - __ minimum
- Colour shall be USG (Standard White) / (other)
- Plasterboard suspension shall be USG Drywall Grid System

Web Site

For other USG product information, and contacts please visit our web site at :

www.usg.co.nz and www.usg.com.au

To request literature, samples, a visit from a USG Ceilings specialist, or for all technical questions, call your nearest USG office below.

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