



# DONN<sup>®</sup> ScrewFix<sup>™</sup>

## Suspension System

**USG BORAL**   
INNOVATION INSPIRED BY YOU.™

Apartments

Hotels

Retail Malls

Banks

Medical

Industrial

Food Preparation Areas

For a high quality, lightweight alternative to timber framed ceilings, DONN ScrewFix is a dimensionally stable, cost effective steel furring channel ceiling system, expressly designed for screw attaching sheet linings such as plasterboard, fibrous plaster and fibre cement.

DONN ScrewFix can be successfully used for new installations, interior retrofits, construction of exterior soffits, and as a batten system for wall furring. It is also suitable for residential constructions featuring large areas of suspended smooth ceilings.

For fire protection and safety, DONN ScrewFix can provide a number of different Fire Resistant Rating (FRR/FRL) ceiling design options.



# Lightweight and Stable

# Users Guide

For all areas requiring a smoothly finished, monolithic ceiling plane

- Flat, curved or inclined
- Fire Resistant Ratings
- Flexibility of configuration
- Dimensionally stable
- Impervious to rot, fungal and insect attack
- Corrosion resistant
- Won't warp, twist or bow
- Easily worked, few tools required
- Non-combustible

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## Components

Fewer DONN ScrewFix components means simpler installation and stock holding, yet the range is extensive enough to allow for most installations, including Fire Resistant Ceilings.

### User friendly component design

- Rolled safety edge to Furring Channel prevents handling injuries.
- Knurled Furring and Perimeter Channel faces resist screw slip damage to sheet linings
- Compact stacking, eases freight and storage costs.
- Low profile Furring Channel (23mm) maximises available ceiling height.
- New SnapFix® Clip for faster assembly of Furring Channel to DJ38 Primary Channel.
- Furring Strap secures to 'C' Channel or DONN DX38D-3600 main tee.
- New CC38 Strongback Clip provides fast, positive connection. It **cannot** be accidentally disengaged - important for Fire Resistant installations.
- New short and long Direct Fix brackets for purlin, truss or joist.
- MC37 Masonry Clip for furring uneven block/brick walls.
- PC24 Perimeter Channel ideal for edge fixing to walls, bulkheads and access hatches.
- New design Perimeter Channel back is pre-dimpled every 50mm for easier screw fixing.
- Components are USG identified to ensure system compatibility. Any substitution is likely to result in lower performance and is at the risk of the builder, designer or owner.

### Building Code Compliance:

**Stability:** (Clause B2 - Durability)

DONN ScrewFix when installed and used in normal dry interior conditions will have a minimum serviceable life of 15 years.

**Sound Rating:** (Clause G6 - Airborne and Impact Sound)

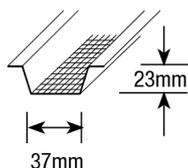
Installation of Winstone Wallboard's GBDA60b, GBSCA30 and GBSCA60a tested systems using DONN ScrewFix will meet Clause G6 requirements and provide ratings of STC 55 and IIC 72 minimum.

**Fire Rating:** (Clause C3 - Spread of Fire)  
(Clause C4 - Structural Stability During Fire)

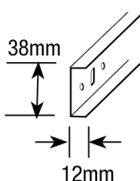
Winstone Wallboard's systems GBSC30 and GBSC60a using DONN ScrewFix suspension systems will provide a FRR of 30 minutes (30/30/30) and one hour (60/60/60) respectively in compliance with the above clauses (ref page 8).

### Primary Components

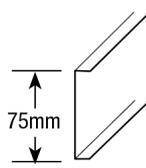
**Furring Channel FC37\***



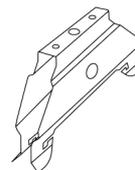
**Primary 'C' Channels DJ38**



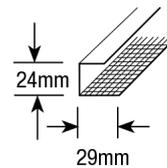
**DJ75**



**SnapFix® Clip SC37**

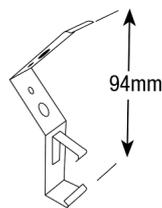


**Perimeter Channel PC24**

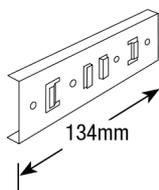


### Accessories

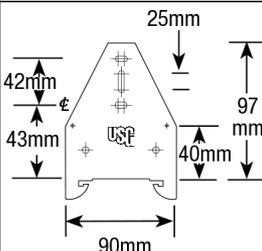
**Suspension Clip CL038**



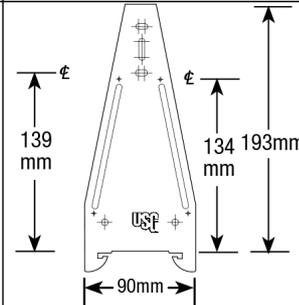
**C Channel Clip CC38**



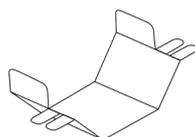
**Direct Fix Brackets DF37-S**



**DF37-L**

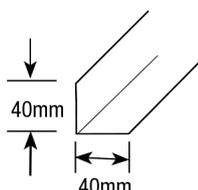


**Furring Strap FS37\***

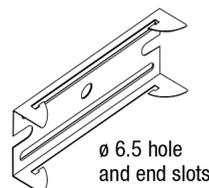


\*50mm option available to order

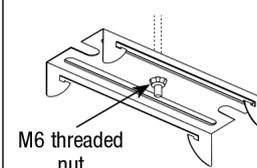
**Bulkhead Angle DJ4040**



**Masonry Clip MC37**

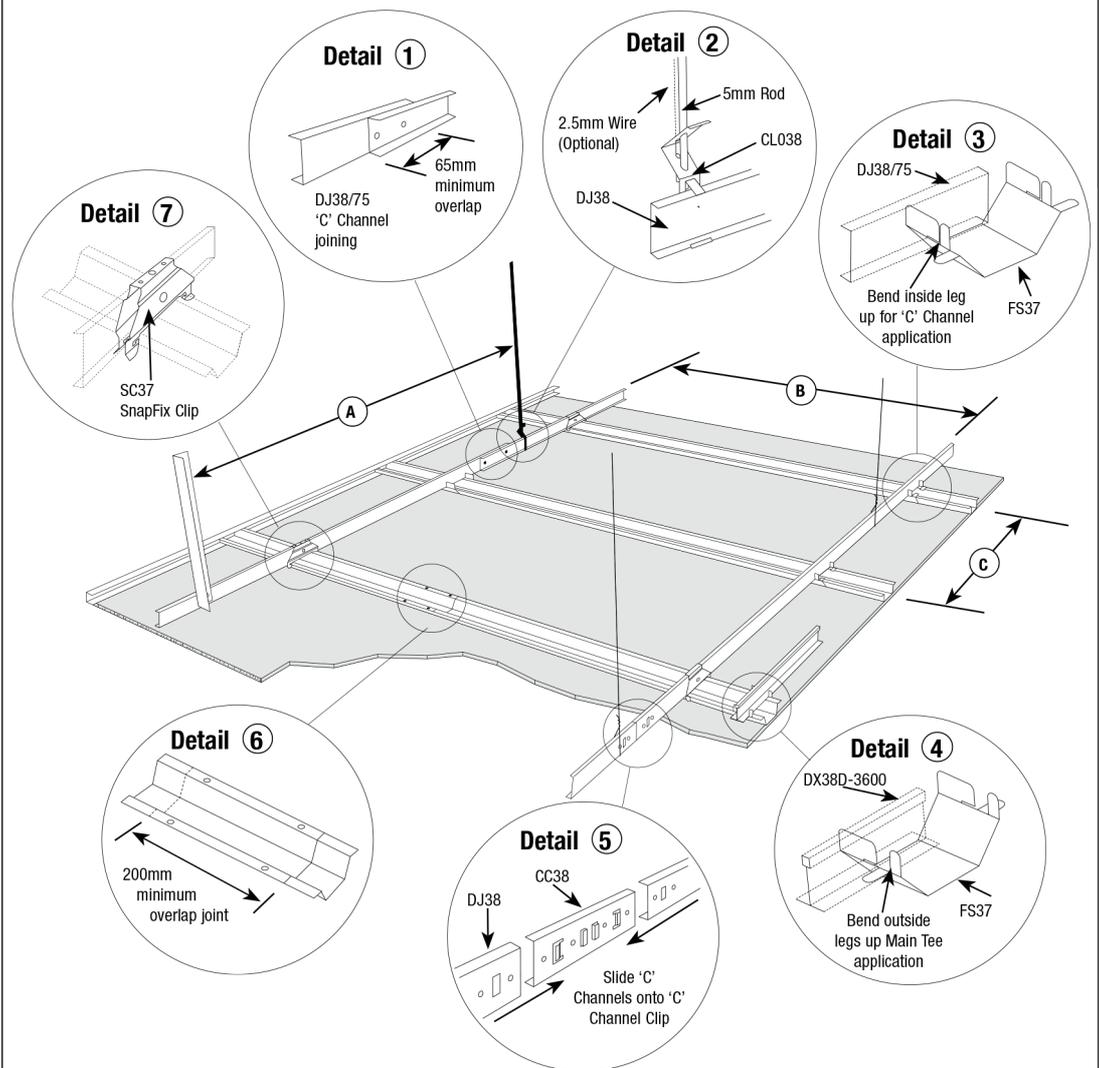


**Threaded Rod Clip TR37**



## Installation

### Details



### Set Out

- In large ceiling areas allow for control joints at 9m centres in both directions without perimeter relief or 15m with perimeter relief. (Consult board manufacturers specifications).
- Fix Perimeter Channel PC24 at 600mm centres maximum, 450mm for Fire Rated systems.

#### Suspension

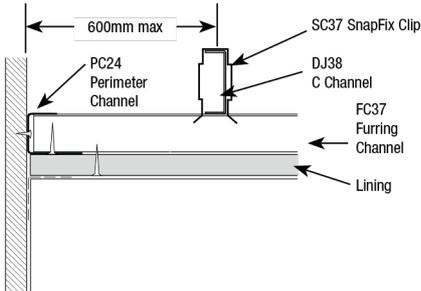
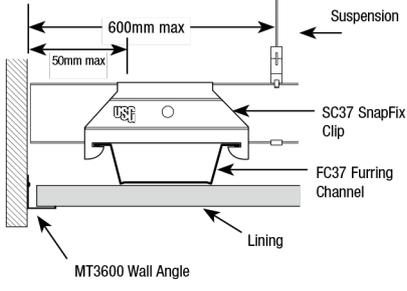
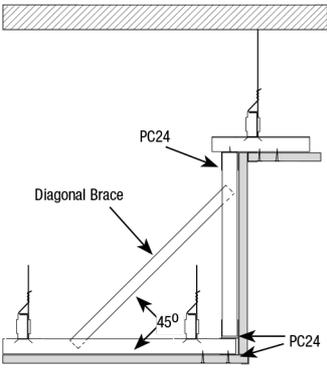
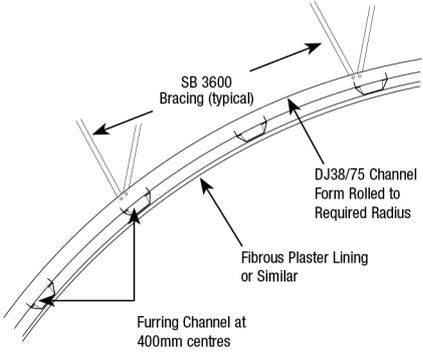
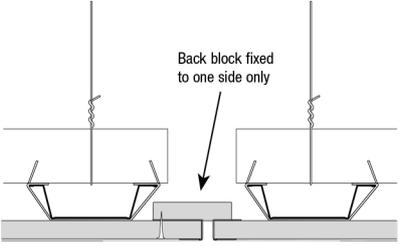
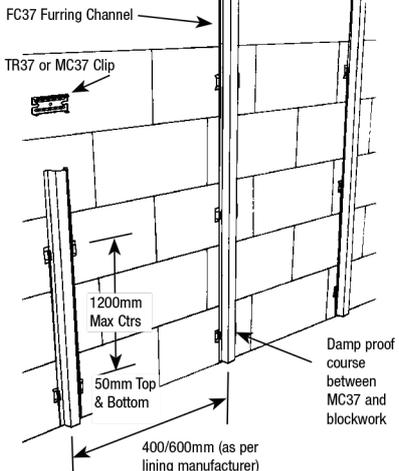
- Suspend 'C' Channels at required load centres (A) and (B) with a 2.5mm diameter galvanised wire, (1200mm required for GIB Noise Control® and GIB® Fire Rated Systems, or 5mm diameter rod and CL038 clip (Detail 2). (Ref load tables page 9).
- Accurately level 'C' Channels. Wires must be twisted off three tight 360° turns, when CL038 clip is not used.
- Join 'C' Channel lengths using the 'C' Channel Clip CC38 (Detail 5) or by lapping 65mm back to back and pop riveting (Detail 1). Provide a suspension hanger within 200mm of joint. Offset joints across ceiling.

- Space Furring Channels at centres (C) to suit lining - to maximum of 600mm using SnapFix clip with DJ38/FC37 (Detail 7) or lock to 'C' Channels or DX38D-3600 Main Tee with Furring Strap FS37. Bend up both legs to prevent straps disengaging (Detail 3 or 4).
- Join Furring Channels by overlapping 200mm minimum and securing with four pop rivets or 8g-16 x 12mm (minimum) self drilling wafer head screw. (Detail 6). Offset joints across ceiling.
- Provide extra hangers where heavy light fittings or services are supported by the suspension system.

#### Linings

- Butt joints centrally on Furring Channel, unless back-blocking, stagger adjacent butt joints.
- Screw fix with appropriate self drilling bugle head screws at centres recommended by lining manufacturers.
- Locate screws between 10mm and 16mm from sheet edges.

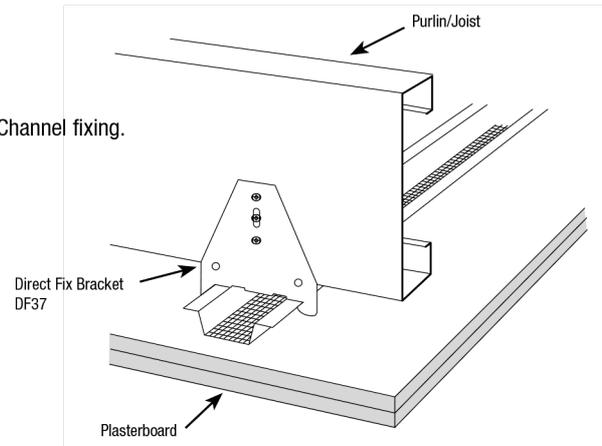
## Details

<p><b>Perimeters</b></p>	<p><b>Square Stop</b></p>  <p>600mm max</p> <p>PC24 Perimeter Channel</p> <p>SC37 SnapFix Clip</p> <p>DJ38 C Channel</p> <p>FC37 Furring Channel</p> <p>Lining</p>	<p><b>Standard Wall Angle</b></p>  <p>600mm max</p> <p>50mm max</p> <p>Suspension</p> <p>SC37 SnapFix Clip</p> <p>FC37 Furring Channel</p> <p>Lining</p> <p>MT3600 Wall Angle</p>
<p><b>Miscellaneous</b></p>	<p><b>Bulk Head</b></p>  <p>PC24</p> <p>Diagonal Brace</p> <p>45°</p> <p>PC24</p>	<p><b>Vaulted Ceiling</b></p>  <p>SB 3600 Bracing (typical)</p> <p>DJ38/75 Channel Form Rolled to Required Radius</p> <p>Fibrous Plaster Lining or Similar</p> <p>Furring Channel at 400mm centres</p>
	<p><b>Ceiling Joint - Seismic</b></p>  <p>Back block fixed to one side only</p>	<p><b>Wall Furring</b></p>  <p>FC37 Furring Channel</p> <p>TR37 or MC37 Clip</p> <p>1200mm Max Ctrs</p> <p>50mm Top &amp; Bottom</p> <p>400/600mm (as per lining manufacturer)</p> <p>Damp proof course between MC37 and blockwork</p>

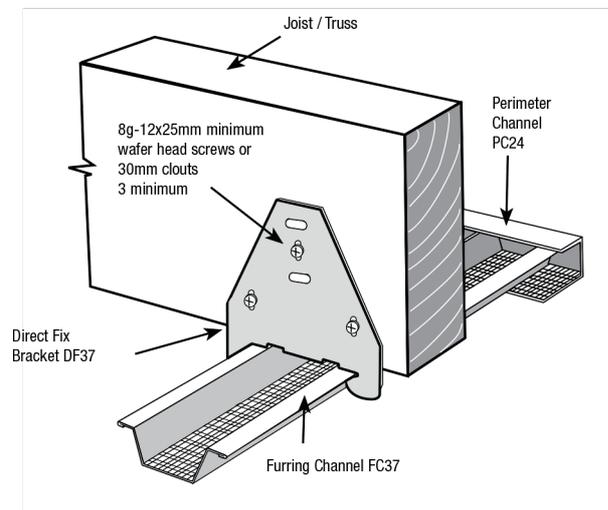
## Direct Fixing

### Steel

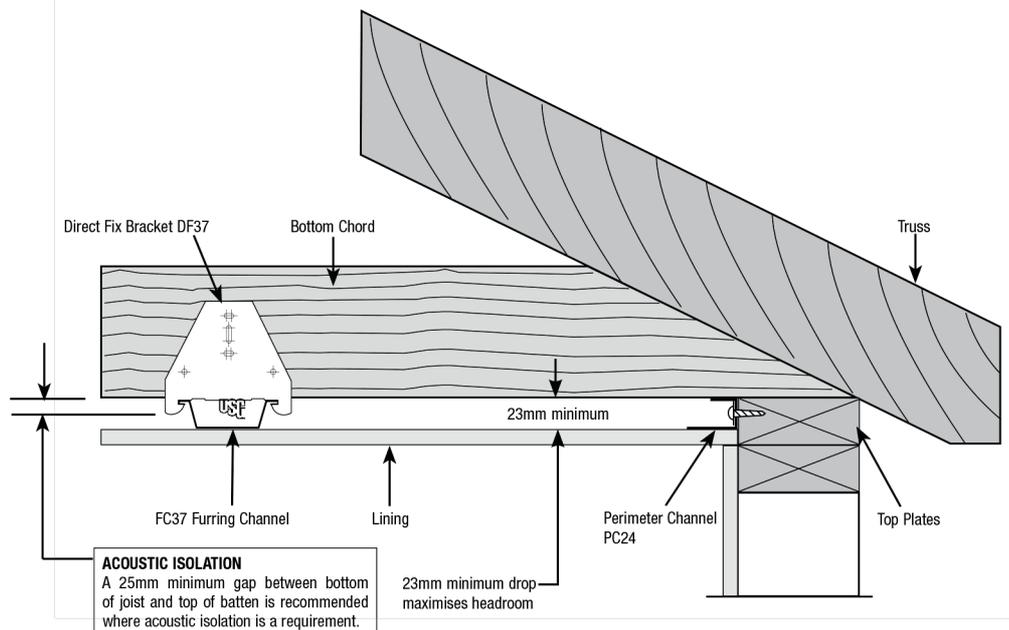
- Maximises headroom
- Screws or nails to purlins/joists.
- Quick, easy installation.
- Variable adjustment.
- Quick, snap-in design for secure Furring Channel fixing.
- Helps isolate noise transmission
- Helps minimise joint cracking from structural movement



### Timber



### Joist/Truss

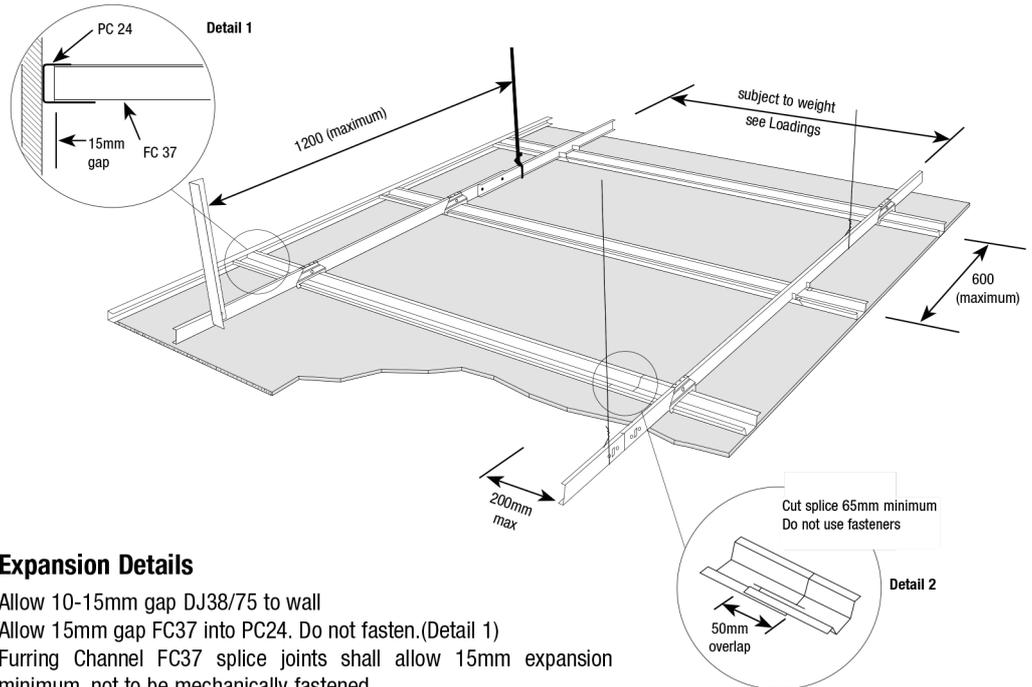


## Fire Resistance

The USG DONN ScrewFix Ceiling System has been tested\* to AS1530.4 1990 and can provide a number of different Fire Resistant Ratings (FRR's).

All installation details shall comply with this documents standard or **specific** details as outlined below<sup>o</sup>.

Alternative fire rated plasterboards can be used provided their tested resistance is **no less** than the tested product and the lining is installed as the manufacturers requirements. See chart below for options<sup>#</sup>.



### Expansion Details

Allow 10-15mm gap DJ38/75 to wall

Allow 15mm gap FC37 into PC24. Do not fasten.(Detail 1)

Furring Channel FC37 splice joints shall allow 15mm expansion minimum, not to be mechanically fastened

(including plasterboard sheet screws) and no greater than 200mm from primary channel. (Detail 2)

**(Test Floor Construction** 20mm particle board on 250 x 50mm joists at 600mm centres.)

## Construction Options using USG DONN ScrewFix™ Ceiling System

System No.	Manufacturer's Reference	Fire Rating FRR (minutes)	RISF* (minutes)
GBSC30	Winstone Wallboards Ltd	30/30/30	-
GBSC60a	GIB® Fire Rated Systems	60/60/60	-
CS17	Boral Plasterboard	30/30/30	30
CS15	July 1996 Fire Manual	60/60/60	60
CS10		90/90/90	90
CS6		120/120/120	120
CSR 819/875/839	CSR Gyprock Fire and Design Guide	60/60/60	60
CSR 817/837		90/90/90/	60
CSR 876/865		90/90/90/	60
PS620	Lafarge Plastamasta Technical	60/60/60	60
PS630	Bulletin 200.4	60/60/60	60

<sup>o</sup>Construction of the steel ceiling suspension system is to be the same as used in Test FR2399 except that the Direct Fix System using the DF37 Bracket may be used instead.

\*Test Report: BRANZ FR2399 30/10/97, FRL 60/60/60, Incipient Spread of Fire 60 minutes

<sup>#</sup>Opinion Report: BRANZ 98/1170, 23/01/98

<sup>♦</sup>RISF: Resistance to Insipient Spread of Fire

## Loadings

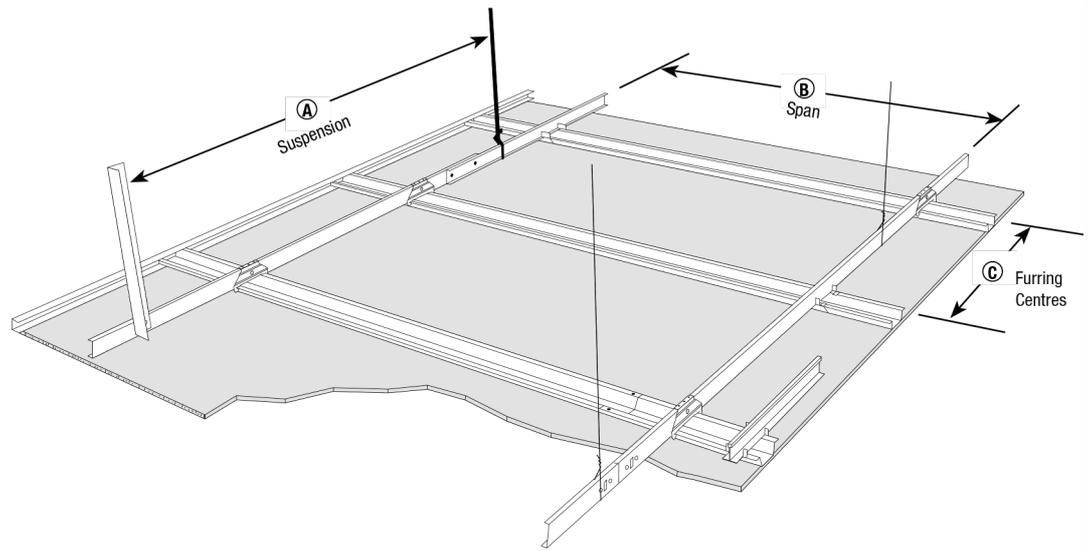
### Maximum Allowable Loads (kg/m<sup>2</sup>)

From the following tables select the level of finish required.

Deflection of:

L/600 = high finish level

L/360 = less critical level



#### Common Installations\* with DJ38

Plasterboard mm	≤10	≤13	13≤L/360	13≤L/600
A Suspension	1500	1500	1200	1200
B Span	1500	1200	1800	1500
C Furring Centres	400-600	600	600	600
kg/m <sup>2</sup>	7.6	9.5	10.8	11.2

\*Maximum allowable loadings (in kg/m<sup>2</sup>) is the combination of attached linings **plus** any equipment or services supported by the DONN ScrewFix suspension system.

For Direct Fix brackets use:

Ⓐ Suspension 900mm centres figures.

### DJ38 Primary Channel

Maximum Loadings - kg/m<sup>2</sup>

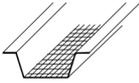
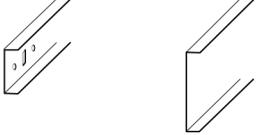
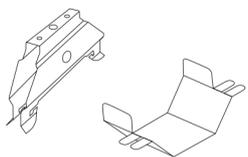
		Deflection L/600 of span				Deflection L/360 of span			
Ⓐ Suspension at		900	1200	1500	1800	900	1200	1500	1800
Ⓑ Span 900	Ⓒ 400	77.7	30.2	12.7	6.2	80.0	30.2	12.7	6.2
	Ⓒ 450	69.1	30.2	12.7	6.2	80.0	30.2	12.7	6.2
	Ⓒ 600	51.8	30.2	12.7	6.2	80.0	30.2	12.7	6.2
1200	Ⓒ 400	32.8	22.7	9.5	4.6	54.6	22.7	9.5	4.6
	Ⓒ 450	29.1	22.7	9.5	4.6	48.6	22.7	9.5	4.6
	Ⓒ 600	21.9	21.9	9.5	4.6	36.4	22.7	9.5	4.6
1500	Ⓒ 400	16.8	16.8	7.6	3.7	28.0	18.1	7.6	3.7
	Ⓒ 450	14.9	14.9	7.6	3.7	24.9	18.1	7.6	3.7
	Ⓒ 600	11.2	11.2	7.6	3.7	18.6	18.1	7.6	3.7
1800	Ⓒ 400	9.7	9.7	6.3	3.1	16.2	15.1	6.3	3.1
	Ⓒ 450	8.6	8.6	6.3	3.1	14.4	14.4	6.3	3.1
	Ⓒ 600	6.5	6.5	6.3	3.1	10.8	10.8	6.3	3.1

### DJ75 Primary Channel

Maximum Loadings - kg/m<sup>2</sup>

		Deflection L/600 of span				Deflection L/360 of span			
Ⓐ Suspension at		900	1200	1500	1800	900	1200	1500	1800
Ⓑ Span 900	Ⓒ 400	77.7	64.8	27.0	13.1	80.0	64.8	27.0	13.1
	Ⓒ 450	69.1	64.8	27.0	13.1	80.0	64.8	27.0	13.1
	Ⓒ 600	51.8	51.8	27.0	13.1	80.0	64.8	27.0	13.1
1200	Ⓒ 400	32.8	32.8	20.2	9.9	54.6	48.6	20.2	9.9
	Ⓒ 450	29.1	29.1	20.2	9.9	48.6	48.6	20.2	9.9
	Ⓒ 600	21.9	21.9	20.2	9.9	36.4	36.4	20.2	9.9
1500	Ⓒ 400	16.8	16.8	16.2	7.9	28.0	28.0	16.2	7.9
	Ⓒ 450	14.9	14.9	14.9	7.9	24.9	24.9	16.2	7.9
	Ⓒ 600	11.2	11.2	11.2	7.9	18.6	18.6	16.2	7.9
1800	Ⓒ 400	9.7	9.7	9.7	6.6	16.2	16.2	13.5	6.6
	Ⓒ 450	8.6	8.6	8.6	6.6	14.4	14.4	13.5	6.6
	Ⓒ 600	6.5	6.5	6.5	6.5	10.8	10.8	10.8	6.6

## Technical Information

Component Quantities - Standard Layout	Item	Component	Length	Weight	Approximate Quantity per M <sup>2</sup> *		
	FC37	37mm Furring Channel	3.6, 4.8M	.49kg/LM	1.66 LM	Based on:  C Channel @ 1200 centres Furring @ 600 centres Suspension @ 1200 centres  * No wastage allowed for.	
	DJ38	38mm 'C' Channel	3.6, 4.8M	.54kg/LM	0.83 LM		
	DJ75	75mm 'C' Channel	3.6, 4.8M	.90kg/LM	0.83 LM		
	PC24	Perimeter Channel	3.6M	.32kg/LM	-		
	SC37	SnapFix Clip	-	5.4kg/100	1.39 ea		
	FS37	37mm Furring Strap	-	4/3.85kg/100	1.39 ea		
	CC38	'C' Channel Clip	-	6.3kg/100	0.23 ea		
	DF37-S	37mm Direct Fix Bracket	-	5kg/100	1.39 ea		
	DF37-L	37mm Direct Fix Bracket	-	10kg/100	1.39 ea		
	CL038	DJ38 Suspension Clip	-	1.33kg/100	0.694 ea		
	CL037	37mm Wall Furring Clip	-	3.5kg/100	-		
	DJ4040	Bulkhead Angle	3.6M	0.34kg/LM	-		
- Alternative Layouts #	For alternative construction layouts use the following formulae to calculate linear metres (LM) or pieces per square meter (m <sup>2</sup> )						
	<b>FC37 Furring Channel -</b>  	$1 \div \text{Furring Channel centres } \textcircled{C}$  eg. if FC at 400mm centres $\frac{1}{0.4} = 2.5 \text{ LM/m}^2$					
	<b>DJ38/75 C Channel -</b>  	$1 \div \text{C Channel centres } \textcircled{B}$  eg. if DJ at 1100mm centres $\frac{1}{1.1} = 0.91 \text{ LM/m}^2$					
	<b>Suspension Hangers or Suspension Clips -</b>	$1 \div \text{Span of suspension } \textcircled{A} \text{ along the C Channel X span between C Channels } \textcircled{B}$  eg. if $\textcircled{A} = 1400\text{mm}$ centres $\textcircled{B} = 900\text{mm}$ centres  $\frac{1}{1.4 \times 0.9} = 0.8 \text{ pcs (hangers or clips)/m}^2$					
	<b>Joining Clips SC37 or FS37 -</b>  	$1 \div \text{Span of C Channel centres } \textcircled{B} \text{ X span of Furring channel centres } \textcircled{C}$  eg. if $\textcircled{B}$ at 1100mm centres $\textcircled{C} = 450\text{mm}$ centres  $\frac{1}{1.1 \times 0.45} = 2 \text{ clips/straps / m}^2$					
	<b># Note:</b>	These calculations do not allow for wastage or irregularities, but are intended as an informative guideline to assist with the calculation of product required for a given area (in m <sup>2</sup> )					

## Technical Information

<b>Installation</b>	Shall not commence until the building is fully enclosed and dry. Mechanical and electrical duct work above the suspension system shall be completed before installation commences. For Direct Fix, timber elements are to be below 12-16% moisture content. For exterior soffits or areas of high wind uplift use rigid suspension hanger and make provision for the plenum to 'breath'.
<b>ISO 9000 Quality Assurance</b>	USG Interiors Pacific Ltd is an accredited ISO 9001-2000 manufacturer - Licence No: 5044 by QAS. 
<b>Health and Safety</b>	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.
<b>Handling &amp; Storage</b>	Store materials on a flat, dry surface and handle/store in a manner that will prevent distortion, scratches or damage of any kind by/to other trades.
<b>Seismic</b>	Where regional seismic requirements prevail, use a qualified Consulting Engineer for full Seismic Design.
<b>Finishes</b>	Steel products are hot dipped galvanised for compliance with NZBC Durability Clause B2. Suspension Clip CL038 is painted.
<b>Limitations</b>	Standard finish not for use in corrosive environments. For additional protection consult your nearest USG representative.
<b>Standards / References</b>	USG Interiors uses the following standards and references in its marketing and manufacturing policy. AS/NZS 4600-96 - Cold form steel structures code AS/NZS 1397-93 - Steel sheet and strip. AS/NZS 2785-00 - Suspended Ceilings - Design & Installation Fire - AS 1530.4 - 1990 - BS476 Part 4 - BRANZ Opinion (April 1997) - BRANZ Test Report FR2399 (Oct 1997) - BRANZ Opinion 98/1170 (January 1998) - Winstone Wallboard Ltd Gib® Fire Rated Systems
<b>Notes</b>	<ul style="list-style-type: none"> <li>• In accordance with USG's policy of continuous product improvement, we reserve the right to alter specifications without prior notice as technology or standards are introduced.</li> <li>• All sizes and weights are nominal.</li> <li>• This document has been prepared on reliance of the professional testing, advice and services provided by independent specialist organisations, and USG Interiors Pacific Ltd believes the contents of this brochure to be correct at the time of printing. Whilst all care has been taken to ensure accuracy, except to the extent prohibited by law, no liability is accepted for any claim by any person, whether for loss of profits or for any other direct, consequential, indirect or special loss, damage or injury suffered by any person, and whether arising from any negligence or omission on the part of any person or otherwise directly or indirectly from the use of the information contained in this document.</li> </ul>
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