

Standards

The Metstrut metal framing system comprises of single and combination channels, assembly brackets, channel nuts and fasteners. The integration of these items in their use, forms the basis of the system and as such should be purchased as a complete system.

The Metstrut metal framing system conforms to BS 6946:1988, the British Standard Specification for Metal channel cable support systems for electrical installations.

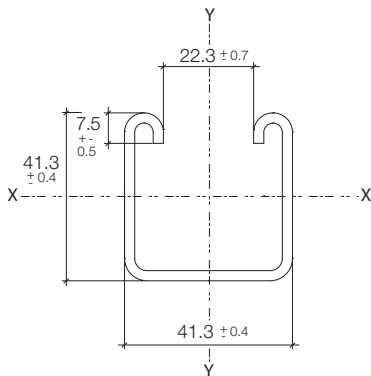
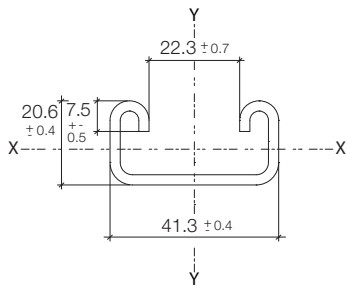
Independent testing has been carried out to verify the load tables for the various channels and to determine pull out and slip performance of the channel nuts when used as a system.

It is this system integrity that needs to be maintained for all installations to meet site safety requirements.

The material used for the Metstrut channels meets and surpasses the minimum yield strength of 250 N/mm² and brackets have a minimum yield strength of 170 N/mm².

Sectional dimensions

The Standard requires channel sections to meet the dimensional requirements stated when measured not less than 150mm from the end. Twist will not be greater than 2.5 degrees per metre and bow shall not exceed 5mm for channel 3m in length and 10mm for channel 6m in length, when measured at the centre of the length.



Safe working slip and pull-out loads

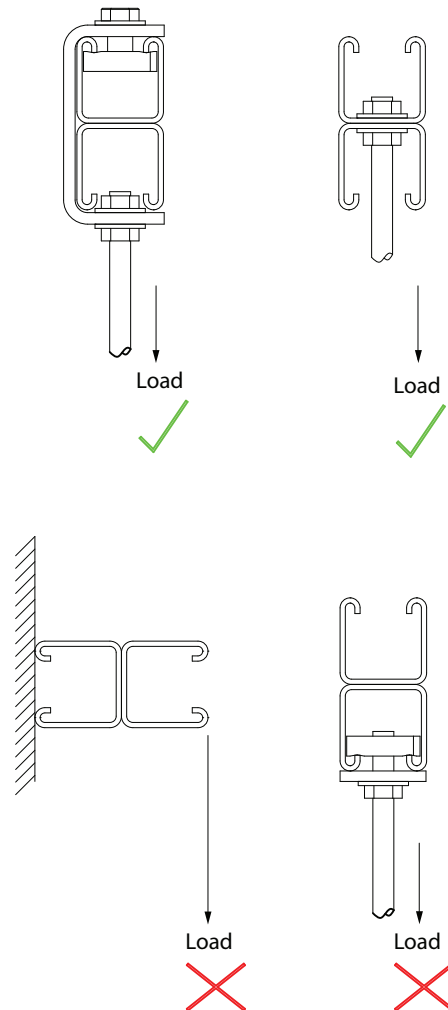
These have been determined by carrying out the tests in accordance with the method stated in section 8 of the standard. It should be noted that the channel nuts are a vital component within the system and the numerous imported products do not necessarily carry the same load and should never be mixed with Metstrut systems.

Marking

Metstrut channels are marked at regular intervals along their length in the production process. The standard requires the name of the manufacturer and BS 6946:1988 Brackets and other components are marked by labelling the packaging.

Combination channels

Channels that are required in multiple configurations e.g. back to back channel, are supplied spot welded as standard. These channels should always be fully supported at each end under the bottom face and the load should never be hung from just the lips of the bottom channel. Spot welding should never be loaded in tension or the load applied as a bending moment.



Material specification

1. Channels: manufactured from steel complying with BS EN 10326:2004 pre galvanised, BS EN 10025-2:2004 mild steel hot dip galvanised after manufacture to BS EN 1461:1999 and BS EN 10088-2:2005 stainless steel grade 316L.

2. Brackets: manufactured from steel complying with BS EN 10025-2:2004 mild steel hot dip galvanised after manufacture to BS EN 1461:1999 and BS EN 10088-2:2005 stainless steel grade 316L.

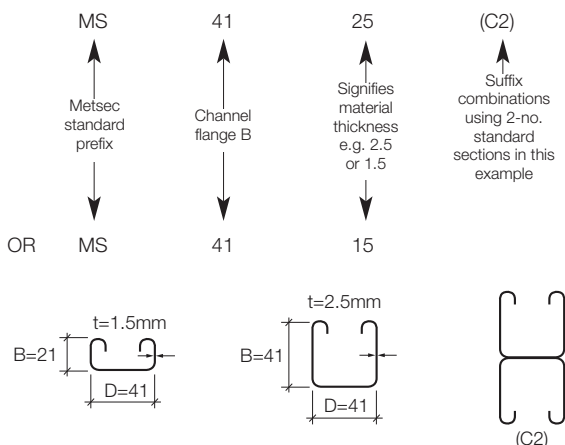
3. Fixings: bolts, hexagon nuts, screws and washers manufactured from steel complying with DIN938/8, DIN 933/8.8, BS4320 and zinc plated and CR3 passivated or hot dip galvanised after manufacture to BS EN 1461:1999. Stainless steel to BS EN 10088-2:2005 grade 316L A4.

Dimensions and tolerances

In accordance with BS 6946:1988 Metal Channel Cable Support Systems for Electrical Installations.

Channel notation

Metsec channel references are serialised for easy recognition and use, eg: channel series MS4125 comprises single channel or combinations of channel within the basic section profile thus:



Load tables

Comprehensive load tables are provided for each channel series:

MS4125 series - page 68

MS2125 series - page 69

MS4115 series - page 70

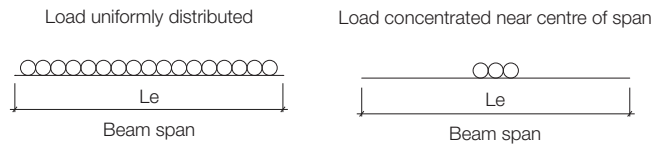
MS2115 series - pages 71

Slotted sections - pages 72-3

Basis of design and formulation of load tables

1. Safe loads calculated in accordance with BS 5950:Part 5:1998 Code of Practice for Design of Cold Formed Sections.
2. Minimum Yield Stress (Y_s) 280N/mm² (Z 28 material).
3. Beams assumed simply supported and provided with adequate lateral restraint over the given span.
4. Beam loads are applied through the shear centre of the section in the direction indicated in the tables.

5. Alternative beam safe load tables are provided for a uniformly distributed load or load concentrated near the centre of the span.eg:



6. Beam loads and corresponding deflections are calculated at a stress of 175N/mm² i.e.: using a global factor of safety of 1.6 to determine safe working loads from limit state analysis (ultimate stress ÷ 1.6 = 175N/mm²).

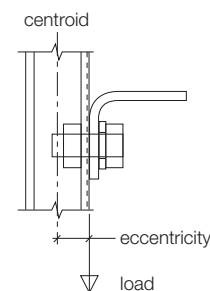
Beam safe loads tabulated with corresponding deflections may be used in the rare case where excessive deflection does not impair the strength or efficiency of the structure or its components or cause damage to the supported work.

Alternative safe loads are tabulated with deflections limited to span/200 or span/360 at the discretion of the designer and recommended where deflections are critical.

It is easily recognisable from the tables whether the design of the beam is governed by deflection or stress on a given span i.e.: the critical load is highlighted in colour.

7. Column effective lengths shall be determined by the designer in accordance with Table 9 of BS 5950: Part 5: 1998.

8. Beam loads are generally applied at the column face via the connection bracket. Therefore column safe load tables are provided allowing for this eccentricity of load from the centroid of the section.



Alternative combinations

For safe loads on alternative combinations not tabulated please refer to Metsec Technical Department.

Stainless steel

The mechanical properties of stainless steel are significantly different from those for carbon steel and safe load tables must not be used for sections in this material. Please consult Metsec Technical Department for advice.