

# Technical Information

### Product Range & Manufacture

Our Two Brochures: We manufacture lintels in both stainless steel and mild (galvanised) steel. However there are significant differences in the properties of the different stainless steels available; such that for optimal performance, different lintel designs are required for the different materials in the same application!

Hence we offer two ranges of lintels; the range in this (Blue) brochure is new in 2009 and designed to be manufactured in high strength stainless steels: LDX2101® & SS370. We have a separate (Red) Brochure which represents our original range of galvanised and lower strength stainless steel lintels (such as 304 & 316 grades).

The introduction of modern stainless steels LDX2101® & SS370 means the red brochure is now used predominantly for mild (galvanised) lintel designs as LDX 2101® & SS370 products are more economic than specifying red catalogue lintels in grade 304.

This brochure contains the largest range of standard lintels presently available in the UK from one manufacturer, and contains a number of designs not found in our Red catalogue. Because of this, we do manufacture products from this catalogue in mild (galvanised) steel on request (with due regard for the fact they may have reduced load capacity from the tables given in this catalogue)

**Manufacture & delivery:** In addition to offering the largest range, we can usually deliver all but the most unusual bespoke products within a week of order (and frequently within 48hrs). How?... Efficient larger lintel manufacturers minimise their costs through large production runs of a few common types of lintel and holding stock, hence many less common sizes can be hard to obtain if stocks are out. Our production approach is different; we produce very little for stock and instead manufacture almost exclusively to order using a modern 'flexible' & 'just-in-time' system. We group incoming orders into batches of similar production requirements enabling us to run almost continuously with frequent but minor setting changes on flexible machines. Production is often within 48 hours of dispatch, meaning zero costs associated with stockholding and more importantly; our customers can take advantage of our full product range! Thus, by specifying from this catalogue, not only do you get exactly the right product in an extremely durable stainless steel, but you know it WILL BE AVAILABLE when your project requires.

**Lintel Selection:** Because of the large range of lintels contained in this catalogue we have changed the way the permissible loads are presented; Normal practice is to have a load table

for each lintel, but not in the case of our blue range ... We designed our 'Blue Range' lintels from scratch to fit discrete 'load groups', so that lintels can be selected by basic form type and load requirement, knowing that most minor variations to suit different block widths etc will still have the same load capacity.

This has several advantages:

- *Lintel specifications hold if (for example) the cavity changes*
- *There are far fewer load tables to consult than other manufacturers*
- *Key specification information is conveyed efficiently, e.g. "CA17"*
- *Flexibility where you need (fit)*
- *and not where you don't (load capacity)*

Because of the fewer load tables, we are able to present lintel capacities for a particular wall type all together on one chart for easy selection. Once accustomed to the new format of our 'Blue' range this approach enables rapid & efficient selection and specification of the largest range of lintels available!

### Loading Information

**Load ratios:** Cavity wall lintels in particular have permissible load ratios listed as a guide to prevent excessive uneven loads being applied to the outer relative to the inner. These are typically listed as two ranges, with the greater range being allowed at lighter loads.

For example: "1:1 - 1:5" means that no more than half the total load may be placed on the outer leaf (left side of the ratio) but up to 5/6 of the total load may be placed on the inner leaf (right side of the ratio).

However, for lighter loads (typically less than 65% of the maximum load) the permissible range for the same lintel may be listed as "2:1 - 1:9" i.e. a more unbalanced load is permitted since the total load is not as great. These figures are for illustration only, refer to the relevant page for specific lintel details.

Our Load ratios are calculated by considering the possibilities of lintel twist, inner or outer web crushing, buckling or shearing, and are often restricted to convenient ratios similar to those of other manufacturers for simplicity.

**Uniform Loads:** Our load tables are given in terms of safe working load (in kN). This is usually matched to calculated unfactored load, since lintel design includes a safety factor of 1.6. Where used "UDL" refers to "uniformly distributed load" and is measured in kN/m, as per normal engineering convention.

We present total load in our tables to maintain

consistency with other manufacturers and enable easy and safe comparison.

Unless otherwise stated, the maximum allowable total load is the load applied on the effective span, which is equal to the lintel clear span x 1.1 (simply supported) as per BS 5977-1.

**Point Loads:** Each lintel type also has a listed maximum allowable safe working (unfactored) point load. This refers to a load applied to the normal bearing surface of a lintel over a length of no less than 50mm. For example; a truss beam bearing onto the lintel. It is the maximum recommended point load that can be applied without risk of web buckling, crushing or shearing. The moment capacity of the member must be checked for point loads (see below) and the member is assumed to be suitably laterally restrained. Point loads must be applied as near as possible to, or over the top of, the web of the lintel.

**Cantilever loads:** Lintels may safely be used in cantilever applications, such as bay windows or corners, with the following standard structural engineering considerations: The maximum unfactored (actual) shear force should not exceed half the load listed for that lintel type at span 600mm. The maximum bending moment should not exceed the listed allowable. Deflection should be checked using the relevant listed  $I_{xx}$ . The cantilever must be securely anchored or have sufficient bearing to ensure the lintels and supported load are statically stable once installed. Buckling of the lower lintel flanges should be considered unless they are suitably restrained by the building construction under.

**Permissible moments:** To assist with engineering calculations for nonuniform or multiple load applications the maximum permissible bending moment is listed for each lintel type. This is based on the minimum  $Z_{xx}$  (Effective  $Z_{xx}$ ) of all the sections of the particular lintel type.  $Z_{xx}$  takes into consideration local buckling effects due to member bending (-ve moments only considered) and is calculated as per BS 5950 parts 1 and 5. Only  $Z_{xx}$  is listed in the load tables however.

**Lateral loads:** Our lintels may be used to support lateral (e.g. wind) loads if required. For cavity lintels supporting significant lateral loads compared to vertical loads, we advise specifying lintels with a solid bottom plate. Lintel  $I_{yy}$  &  $Z_{yy}$  values can be provided if required. Standard engineering precautions should be taken with regard to the structural response of the lintel to multi-axis loading. If in doubt, please don't hesitate to contact us with your application so we can assist.

**Not Simply Supported Lintels:** Our loads tables refer to simply supported applications, for other support situations, for example fixed support or long spans with post supports, standard