

## **INSTRUCTIONS FOR THE DESIGN AND INSTALLATION OF STRUCTURES USING KEE KLAMP & KEE LITE COMPONENTS.**

### **THE DESIGN OF STRUCTURES WITH COMPONENTS**

Kee Klamp components are made from Galvanised cast iron whilst Kee Lite Components are made from Polished Aluminium Alloy and are supplied as standard with coated and hardened steel grub screws. They are suitable for use in the construction of Tubular structures using either Galvanised Steel or Aluminium Tubes.

Designers must be satisfied as to the fitness for purpose, and they must also be satisfied that they have referred to all relevant standards / parameters. For example:

Limit State Design parameters must be used in all Theoretical Calculations. Pin Joint assumption must be made for all components except those specifically classified as fixed joint: types 62, 63, 64, 65, 66, 68, 69, L148, L50, L152, L164, 265 & 316. Cross bracing may be required to ensure the stability of structures, especially racking, and to protect from accidental impact, for example from Fork Lift Trucks. See EN 14122 ( Safety of Machinery ) .

Note: National Standards also apply: BS 5395 ( Stairs Ladders & Walkways ), BS 5950 – 1 ( Structural use of Steelwork in Buildings ), BS 6180 ( Barriers in and around Buildings ), BS 6399 ( Loadings for Buildings ), BS 7818 ( Pedestrian restraint Systems ). Building Regulations parts K & M and reports issued from time to time by the Health & Safety Executive.

Components are designed for use with tube to EN 39 ( Scaffold Tube ), EN 10210-1 ( Structural Steel ), ISO65 / EN 10255 ( Gas Pipe ) and EN755 / BS 8118 ( Aluminium Tube ).

When designing structures with vertical and horizontal members that cross within a component, tube continuity must be maintained for the vertical, unless there is a specific structural reason to do otherwise.

Anchors and fixings must be specified to take account of the fixture thickness and design loads according to the manufacturers recommendations.

Attention must be paid to the nature, mechanical properties and condition of the Civil Structure or substrate to which the structure is to be fixed to ensure it's ability to withstand the imposed design loads.

Attention must be given to the environmental conditions (e.g. saline, cyclical loads or vibration), which the structure will have to endure in service, and the possible implications for service life and the need for regular inspections to check the integrity and conditions of structures and the tightness of grub screws.

Attention must also be given to potential abuse by vandals, the powder coating and grub-screws have sufficient durability under normal day-to-day use, but may not fair so well against the actions of determined vandals.

Components must not be used in scaffolding.

Components must not be welded.

If in doubt consult Kee Safety Ltd for further advice.

## GENERAL INSTRUCTIONS FOR THE USE OF COMPONENTS.

All grub screws must be tightened to 39Nm. Always ensure that the pointed, cutting end of the grub screw is placed against the tube and that the flat end is away from the tube.

Where possible the fittings should be assembled with open faces of the grub screws pointing downwards (or horizontally) to minimise collection and retention of rainwater etc.

Do not re-use grub screws; replace with new grub screws from Kee Safety Ltd.

Do not modify components, do not use components which are (or appear to be) damaged or defective in any way.

Do not mix Kee Klamp or Kee Lite components with any other brands. Use only genuine Kee Klamp or Kee Lite components to which these instructions relate exclusively.

## SPECIFIC LIMITATIONS ON THE USE OF COMPONENTS

'A' pre-fix add-on types	Ensure tapered pins are inserted through both sets of lugs and tapped securely into place before tightening the grub screws.
B, C, F & M prefix swivel Types 19, 50, 51, 53, LB54 & 58	Must not be used to support Bending loads; entire structures must not be constructed from Swivel fittings for reasons of Stability.
Types 14 & 18	Must not be used to join top and Mid rails within the same bay, not more than one joint is allowed between structural supports. Note BS 5395 does not permit a joint to be further than 150mm from a structural support.
Type 16	The hex. Head bolt is for retaining purposes only and must only be torqued up to 15 Nm.
Type 18	Must not be used for structural joints or to take tensile load.
Types 58, 60, 61 & 70	Must not be used as base flanges to support Guard Railing & Balustrade.
Types 62, 67 & L148	Must be used with fixing holes orientated in line with the applied load for maximum resistance.
Type 64	Suitable only for lightly loaded applications, otherwise use type 265.
Types 68 & 115	When used with packing spacers, maximum fixture thickness must be in accordance with the fixing manufacturer's recommendations.
Type 72	If used in a permanent or high load application, the type 72 must be drilled and pinned to prevent rotation on the tube.
Types 78 & 83	When used as top and bottom pairs in gate hinges, the pins must be orientated in opposite directions to ensure gate retention.

Types 81 & 82

Must be used with the retaining clips as supplied.

Joining of tubes within fittings

Tubes must not be joined within any barrel having only one grub screw, unless first secured with a type 18 / 514 splice.

De-burring of cut tubes

In order to avoid the danger of cuts or snagging, cut ends must be de-burred, especially when used with types 18, 77, 84 & 514.  
Treatment should also be given to cut tubing to limit future problems with rust – e.g. a zinc rich cold galvanising paint.

## NOTE REGARDING PART NUMBER NOTATION.

Components with an 'A' pre-fix are split to allow structures to be added to without dismantling the original structure.

Components with a 'C' pre-fix are combination (swivel) components usually assembled from 'M' ( male ) and 'F' ( female ) components; special instructions apply, see above.

The 'L' pre-fix denotes Aluminium Alloy ( Kee Lite ) components to differentiate them from other components in the Kee Safety Brand range.

## TRANSPORTATION AND STORAGE.

There are no particular limitations as to transportation and storage of fittings other than they should be kept in a dry and ventilated environment.

**ALWAYS REFER TO AUTHORISED KEE SAFETY LTD PRODUCT LITERATURE OR TO THE WEBSITE ([www.keesafety.com](http://www.keesafety.com)). FOR FURTHER INFORMATION ON THE USE OF COMPONENTS AND THEIR ASSEMBLY AND INSTALLATION. IN CASE OF DOUBT, ASK KEE SAFETY LTD OR YOUR LOCAL AUTHORISED KEE SAFETY LTD PRODUCTS DISTRIBUTOR.**



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