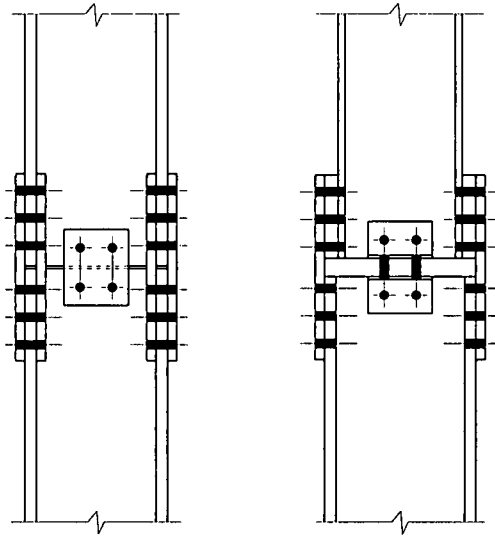
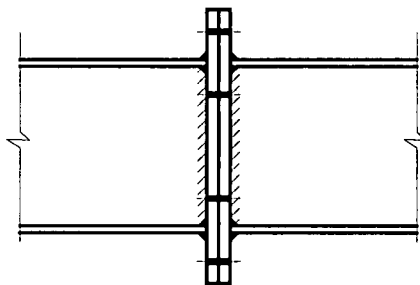


### 3.4.4 Splice connections

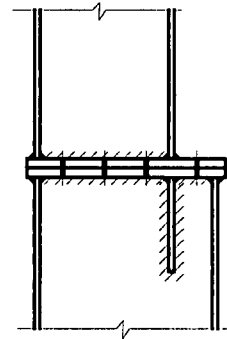
Simple column splices may be of the bearing or non-bearing type. Typical details are shown in Figures 3.9 and 3.10. In a bearing splice the loads are transferred from the upper to lower shaft either directly or through a division plate (or cap and base plates). This is the less complex type of splice, although when a cap plate is used it may interfere when erecting beams.



**Figure 3.9** *Splices using bolted cover plates - details to accommodate either equal or different sized sections*



Extended both ways - beam



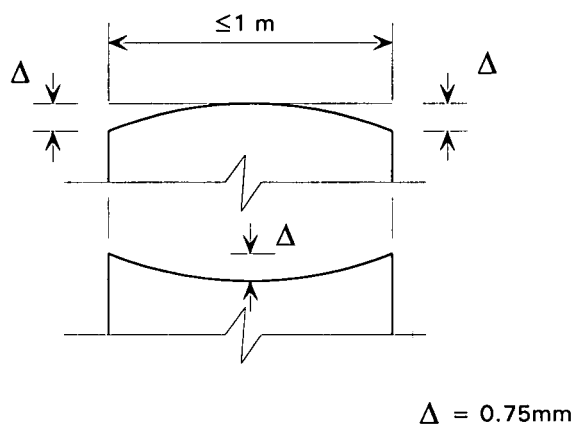
Different size - column sections

**Figure 3.10** *Splices using bolted end plates*

Cutting a member square to its axis using a good quality saw in proper working order is generally sufficient preparation for direct bearing. An admissible tolerance for flatness is specified in the NSSS<sup>(6)</sup>, and reproduced in Figure 3.11. Machining should not normally be necessary, and any lack of contact between sections will be accommodated by local plastic deformation as loads are applied.

In non-bearing splices, loads are transferred via bolts and splice plates. Any bearing between the members is ignored, indeed a gap may be detailed. Preloaded bolts should be used to provide a 'friction grip' detail if the flanges may be subjected to alternating tension and compression, or when slip is unacceptable. This type of connection can be expensive, involving heavier connection components and increased site bolting. It permits independent adjustment for verticality of the individual column lengths.

Moment resisting splices may adopt bolted flange and web cover plates, bolted end plates or similar welded details. They are used for columns or beams where bearing is not the predominant force to be transferred.



**Figure 3.11** *Tolerance on flatness*

### 3.4.5 Connections to hollow sections

Various examples of site connections to hollow section members or sub-assemblies are given in Figures 3.12 to 3.14. Welding is generally used to connect members into sub-assemblies in the shop. The assemblies are then bolted together on site. The calculation methods used to design many of the site connections are basically the same as those used for any other type of connection in 'conventional' structural steelwork. However, for the shop connections between tubular members, the member size is often dictated by the ability to form an appropriate connection, and this must not be forgotten in a situation where member and connection design is carried out by different parties. Tube to tube connection design must be considered as an integral part of the member design process.

Calculation examples and design tables may be found in reference<sup>(19)</sup>, which is one of a series of guides published by the International Committee for the Development and Study of Tubular Structures (CIDECT). Information is also given in Eurocode 3 Annex K, which deals with hollow section lattice girder connections.