

Recommendations for safe working loads on Boulton Gravlock 'E' Type Supa-Ties

UGD 5
Issue 3
January 1995

1) These recommendations are intended to provide guidance to scaffold designers and users of Boulton Gravlock 'E' Type Supa-Ties. They are not intended as a design guide for scaffolds which we recommend should be designed, erected and used in accordance with the recommendations contained in BS 5973 together with the advice contained in NASC Technical Guidance Notes.

Unlike ring type anchors, the design of Gravlock 'E' Type Supa-Ties enables both the coupler nut and the anchor bolt to be independently checked for tightness without dismantling the tie arrangement.

2) The tensile strength capacity of Gravlock 'E' Type Supa-Ties almost totally depends on the condition of the fabric of the building in which the anchor sleeve is installed. Because of the extensive variety of buildings which require scaffolding, it is essential that the safe working strength of new and old anchor sleeves for each individual building be established by calibrated pull-out tests. These tests should only be carried out by trained personnel.

Further advice is contained in BS 5973 and NASC Technical Guidance Note TG4.

3) The recommended tightening torque range for both the anchor bolt and the coupler nut is 55 Nm to 61 Nm.

4) Because of its unique design, the maximum safe working tensile load on Gravlock 'E' Type Supa-Ties is almost exclusively limited by the tensile value of the anchor sleeve installed in the building fabric. This anchor sleeve tensile value should be ascertained as indicated in 2) above. Other considerations are the safe working load of the load bearing coupler which connects the tie tube to the scaffold structure and the maximum safe bending moment of the scaffold tube directly connected to the Gravlock 'E' Type Supa-Tie.

Other than the limitations stated above, the maximum safe tensile design load on Gravlock 'E' Type Supa-Ties is:

16 mm diameter anchor bolt = 55 kN

20 mm diameter anchor bolt = 69 kN.

These maximum safe tensile design load values are based on a safety factor of 1.6:1 against the minimum yield strength of the anchor bolts. Both of these figures exceed the maximum safe single shear load on BS 1139 x 4 mm wall thickness steel scaffold tubes.

- 5) The maximum safe bending design load on Gravlock 'E' Type Supa-Ties is:
16 mm diameter anchor bolt = 65 Nm
20 mm diameter anchor bolt = 126 Nm.

These maximum safe bending design load values are based on a safety margin of 1.6:1 against the minimum yield strength of the anchor bolts. Caution should be exercised in using these bending design load values because of possible limitations of the building fabric in which the anchor sleeve is installed - as indicated in 2) above.

- 6) The recommended maximum design coupler slip load for both the 16 mm diameter and 20 mm diameter Gravlock 'E' Type Supa Ties along the axis of the connecting tie tube running parallel to the face of the building is 5.4 kN. This value is greatly in excess of the maximum safe bending design load on Gravlock 'E' Type Supa-Ties referenced in 4) above.

- 7) The two anchor sleeve threads in common use are M16 and 5/8" diameter Whitworth. Because these threads are not interchangeable, it is essential that the correct anchor bolt thread is screwed into the anchor sleeve with at least six complete turns without the use of excessive force.

The M20 anchor bolt should also be is screwed into the anchor sleeve with at least six complete turns without the use of excessive force.

When new anchor sleeves are installed in a building, it is recommended that either M16 or M20 anchor sleeves are used.

NASC Technical Advice Note TG4 contains useful advice on the selection and testing of anchor sleeves.

- 8) For COSHH purposes, there is nothing concerning Gravlock 'E' Type Supa Ties which would be harmful to health and therefore only normal hygiene precautions need be taken.