



Double Wall Lifting Anchors

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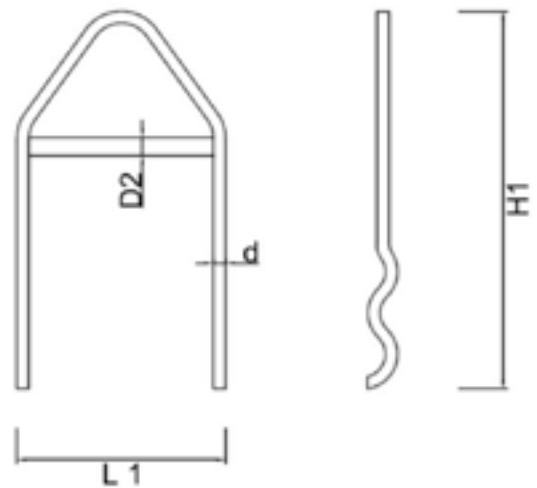
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Double Wall Anchors

Double Wall anchors are used for transporting and relocating precast concrete sandwich panels.

About Double Walls

Double walls consist of two thin precast concrete formwork layers which are joined by lattice girders. These form permanent shuttering and after installation on site, the core is concrete-filled.



Dimensions of Double Wall Anchors

| Anchor width | Leg bar diameter | Crossbar diameter | Length |
|--------------|-------------------|-------------------|--------|
| | Smooth steel S235 | | |
| L1 | d | D2 | H1 |
| mm | | | |
| ≤ 200 | 14 | 20 | 450 |
| 200 - 310 | 14 | 22 | 450 |
| 310 - 360 | 14 | 25 | 500 |

Maximum Wall Weights

| Concrete Strength | Min concrete thickness | Min concrete cover | Min Edge distance | Allowable loads | | | Maximum wall weights | | | | | | | |
|-------------------|------------------------|--------------------|-------------------|-----------------|------------------------|-------|----------------------|-----------|------------|-----------|------------|-----------|------------|-----------|
| | | | | Axial | Angled $\leq 45^\circ$ | Shear | Loadcase 1 | | Loadcase 2 | | Loadcase 3 | | Loadcase 4 | |
| | | | | F_v | F_{vs} | F_Q | 2 anchors | 4 anchors | 2 anchors | 4 anchors | 2 anchors | 4 anchors | 2 anchors | 4 anchors |
| N/mm ² | mm | ci | c | kN | | | tonnes | | | | | | | |
| 15 | 50 | 10 | 300 | 25.2 | 23.1 | 7.9 | 4 | 7.9 | 2.5 | 5 | | | | |
| 20 | 50 | 10 | 300 | 29.1 | 26.7 | 9.1 | 4.6 | 9.1 | 2.9 | 5.7 | 4.2 | 8.4 | 2.9 | 5.7 |
| 25 | 50 | 10 | 300 | 32.5 | 29.8 | 10.2 | 5.1 | 10.2 | 3.2 | 6.4 | 4.7 | 9.3 | 3.2 | 6.4 |
| 30 | 50 | 10 | 300 | 35.6 | 32.6 | 11.2 | | | | | 5.1 | 10.2 | 3.5 | 7.0 |
| 35 | 50 | 10 | 300 | 36.5 | 35.3 | 12.1 | | | | | 5.5 | 11.1 | 3.8 | 7.6 |
| 15 | 65 | 15 | 300 | 35.5 | 35.5 | 11 | 5.6 | 11.1 | 3.5 | 6.9 | | | | |
| 20 | 65 | 15 | 300 | 36.5 | 36.5 | 12.7 | 5.7 | 11.4 | 4 | 8 | 5.7 | 11.4 | 4 | 8 |
| 25 | 65 | 15 | 300 | 36.5 | 36.5 | 14.2 | 5.7 | 11.4 | 4.5 | 8.9 | 5.7 | 11.4 | 4.5 | 8.9 |
| 30 | 65 | 15 | 300 | 36.5 | 36.5 | 15.6 | | | | | 5.7 | 11.4 | 4.9 | 9.8 |
| 35 | 65 | 15 | 300 | 36.5 | 36.5 | 16.8 | | | | | 5.7 | 11.4 | 5.3 | 10.5 |

The minimum edge distances given in this table are for the loadings given in this here. Please contact CFS if you have different conditions and we can provide a bespoke calculation.

Loadcase 1 – Factory – Axial loading only

- Rotate to vertical using tilting table and then axial lifting with a lifting beam
- Concrete strength 15 to 25 N/mm²
- Dynamic factor = 1.3 (tower crane, mobile crane)
- No demoulding
- All axial load, no angled and no shear lifting

Loadcase 2 – Factory – Axial, angled and shear loading

- Stripping without tilting table. Tilting the walls in shear from the horizontal to the vertical using the anchors
- Concrete strength 15 to 25 N/mm²
- Dynamic factor = 1.3 (tower crane, mobile crane)
- Lifting chains at an angle $\leq 45^\circ$

Loadcase 3 – Site – Axial and angled loading

- Delivery of double wall standing vertically
- Concrete strength 20 to 35 N/mm²
- Dynamic factor = 1.3 (tower crane, mobile crane)
- Lifting chains at an angle $\leq 45^\circ$

Loadcase 4 – Site – Axial, angled and shear loading

- Delivery of double wall lying flat on the bed of the truck
- Concrete strength 20 to 35 N/mm²
- Tilting of the walls in shear to the vertical using the anchors
- Dynamic factor = 1.3 (tower crane, mobile crane)
- Lifting chains at an angle $\leq 45^\circ$

Installation

Edge Distances and Spacing

The minimum distance from the edge of a panel and from recesses is 300mm and the minimum distance between anchors is 600mm. To use the load tables shown here, the minimum distance from the edge of a panel and from any recesses is 300mm and the minimum distance between anchors is 600mm. If you have a different situation contact CFS for a bespoke calculation.

Concrete Cover

The concrete cover towards the outside of the panel must be determined by the engineer according to the durability requirements of the wall. To the inside, the concrete cover should be as stated in the table. If the contours of the stirrup are visible on the inside surface of the wall, the capacity of the anchor is not guaranteed and the anchor should not be used.

Reinforcement

Minimum reinforcement should be determined by the engineer. The manufacturer's data has been generated from tests with 1 layer of A252 mesh, please provide at least this level of reinforcement.

Insert Depth

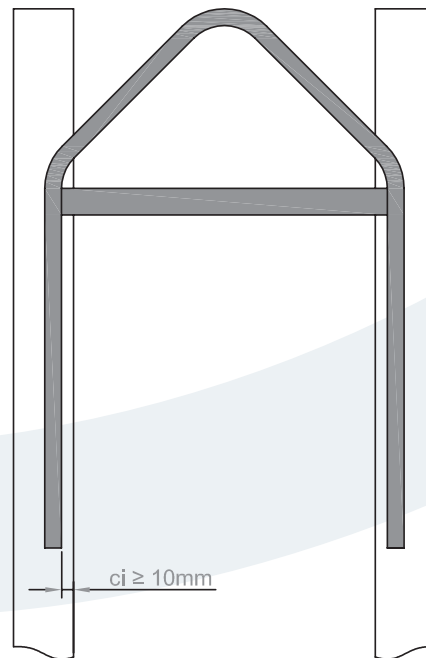
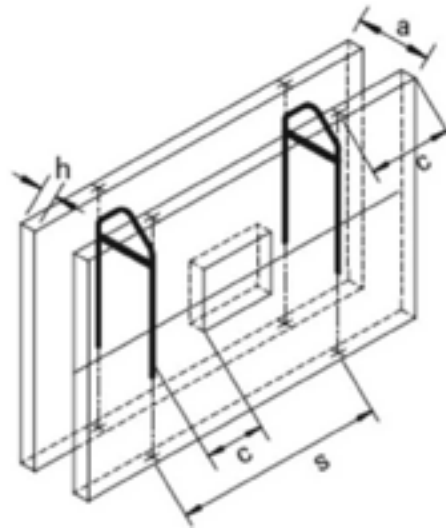
The anchors should be installed so that the upper end of the stirrup does not project out of the end of the wall.

Anchor Arrangement

If using more than two double wall anchors, suspension will be structurally indeterminate unless a compensation equaliser or similar is used. This is due to possible uneven rope lengths or different heights of the installed double wall anchors. Without this aid it is impossible to calculate the load on each anchor.

Allowable Load Under Angle

In the load table our load values F_{VS} (** V_S IN SUBSCRIPT) is the vertical component of the load, no angled load reduction necessary.



Double wall anchor cover

Hoisting, Transportation and Relocation

Visual Check

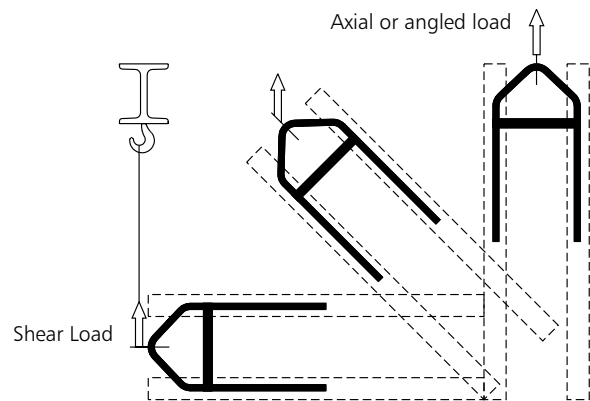
A visual check on the anchors should be carried out for obvious damage before installation. Do not use damaged anchors.

Transport cases

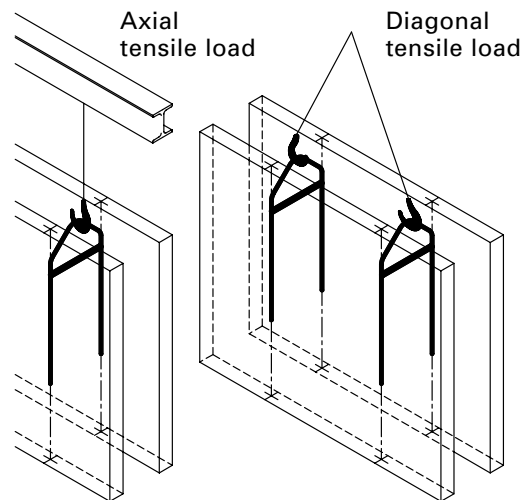
Shear loading is not generally permitted during transport. A shear lift may only be used when lifting the slabs from horizontal to upright from the formwork platform or from the transport truck on site. Please refer to the engineer's instructions for correct transportation position.

Modes of transport, hoisting and use of equalisers

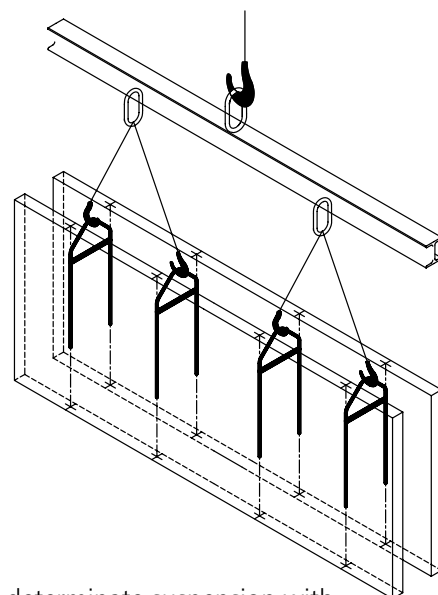
There are different hoisting load factors to take into account in the calculations depending on the transport and lifting device. Each loadcase in the table covers a different lifting situation.



Tilting up from horizontal



Axial and angled loading



Statically determinate suspension with compensation mounting