## Wire rope cast-in lifting loops

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One of the most popular, economic and simple methods for lifting precast concrete is the cast-in lifting loop.

The loop consists of a steel wire rope with the ends swaged together with an aluminium ferrule to form a closed loop. Every loop has a coloured plastic tag attached showing the safe lifting capacity.

The range goes from 800 kg to 57 tonne capacity, although it must be borne in mind that the bigger capacity loops are very large indeed in size. Even a 25 tonne loop is some 850 mm long and weighs nearly 8.5 kg. This size, and the embedment required, (see below) makes them generally unsuitable to cast into shallow concrete.

Loops are not generally recommended for turning thin units. In particular, if units are very thin and the loop is in the narrow face, care must be taken that loops cannot 'burst out' under 90° loading. (see below for minimum dimensions). Where possible, it is preferable for the loop to be aligned so pitching is in the direction of the arrow (see below). Generally, loops greater than 4 tonne capacity should not be used for pitching, due to the stiffness of the loop.

Generally manufacturers do not give specific requirements for reinforcement required at/through the loops. However, if used for pitching thin units, it is good practice to provide reinforcement to prevent bursting.

The wires are galvanised to cut down corrosion, but they are still more liable to rust than polyethylene ropes, or threaded lifters, particularly if left exposed for a long time. **It is critical to check whether possible rust staining could be a factor in their use.** For this reason they are not normally used on 'architectural' units.

Visual inspection should be made of loops before each lifting operation to confirm integrity.

When detailing/using them, the amount protruding should be as the guidance below. The ferrule must always be embedded with at least the same cover as the reinforcement. The identification tag must always be exposed as shown. They **should not** be attached to steel in the way polypropylene ropes are.

| SWL (kg) | e | D | $X_{min}$ | $Z_{1\,min}$ | $Z_{2\,min}$ |
|---|---|---|---|---|---|
| 800 | 60 | 145 | 400 | 145 | 70 |
| 2000 | 80 | 220 | 500 | 185 | 100 |
| 4000 | 100 | 270 | 650 | 215 | 120 |
| 8000 | 130 | 350 | 650 | 400 | 280 |
| 16000 | 170 | 500 | 930 | 620 | 430 |

These values are indicative only, and vary between Manufacturers

Wire rope hoops