Capped End Lifting Inserts

Capped End inserts are low profile (see h in chart below) and hence are ideal for the face of thin panels or top of slabs. The socket and cap are fully welded so the socket is effectively sealed.

Capped End inserts are available in mild steel BZP and stainless steel A4. When supplied in stainless steel, the capped end helps prevent water ingress and corrosion.

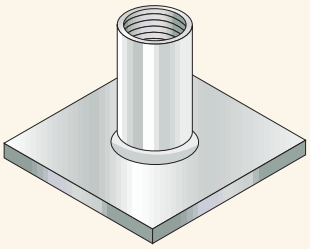
Preferred angle of lift $\beta \leq 30°$. If the insert is to be cast in a recess see pages 15 and 17.

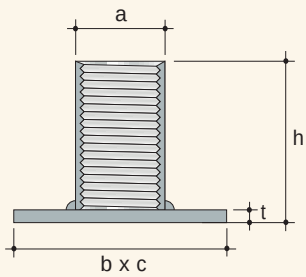
Safe working loads shown are after the application of a safety factor on test of 2 for 15 N/mm² concrete and 3 for steel.

Actual working load must be calculated as shown on pages 6 and 7.

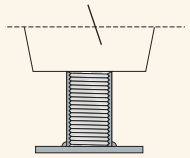
Size, availability and anchorage reinforcement

Capped End Lifting Inserts – Code **PG**

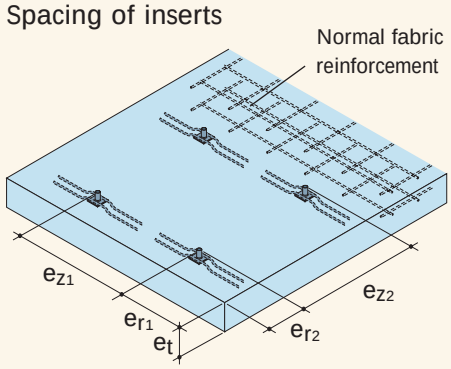




If recess required, see pages 15 & 17 for details



Spacing of inserts



Size	Order code Mild steel – BZP / Stainless steel	Dimensions a mm	h mm	b x c mm	t mm	SWL in 15N/mm² concrete kg	Min. e_{r1} mm	Min. e_{z1} mm	Min. e_{r2} mm	Min. e_{z2} mm	Min. e_t mm
Rd12	PG2 12030 PG8 12030	15.0	30	25x35	4	500	180	360	65	115	70
Rd16	PG2 16035 PG8 16035	21.0	35	35x50	4	1200	250	500	75	140	85
Rd20	PG2 20047 PG8 20047	27.0	47	60x60	5	2000	300	600	80	180	100
Rd24	PG2 24054 PG8 24054	31.0	54	60x80	5	2500	400	800	95	215	115
Rd30	PG2 30072 PG8 30072	39.5	72	80x100	6	4000	500	1000	120	275	140
Rd36	PG2 36084 PG8 36084	47.0	84	100x130	6	6300	650	1300	145	330	160
Rd42	PG2 42098 PG2 42098	54.0	98	130x130	8	8000	650	1300	165	375	175
Rd52	PG2 52117 PG8 52117	70.0	117	130x150	10	12,500	750	1500	190	435	215

Minimum e_{r1} and e_{r2} assumes insert is within the normal cage reinforcement. Cover to the reinforcement must be acceptable to the designer: in some cases stainless steel may be needed.

Special minimum e_{r1} and e_{r2} may be agreed with Halfen Ltd on a job basis, for example if unit to be lifted is 30 N/mm².

For recess former for Swivel Lifting Eye, see page 17.

For recess former for increased cover, see pages 15 & 17.

Lifting on site is usually the worst case due to higher crane factors and worse angle of lift (β).

Summary calculations – details page ...

Yard, e.g. demould

$$F = \frac{G + (q \times A) \times f \times Z}{n}$$

Site – handling

$$F = \frac{G \times f \times Z}{n}$$

i.e. factors f and Z are usually worse on site

where:

F = load per insert when lifting

G = dead weight of unit

qxA = adhesion to the mould

f = crane factor

Z = factor for angle β

n = number of inserts

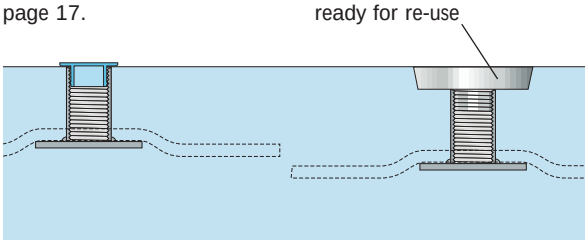
Capped End Lifting Inserts

The details below show thin units such as slabs and panels.

Capped End inserts are ideal for use and re-use, such as access panels which are to be removed for maintenance. In this case a range or permanent caps are available. Capped End inserts are not normally used for turning / pitching, but should an application arise, please consult Halfen Ltd.

Stainless steel socket with plastic sealing cap – see page 17.

Steel sealing plate screws into insert to keep it clean ready for re-use

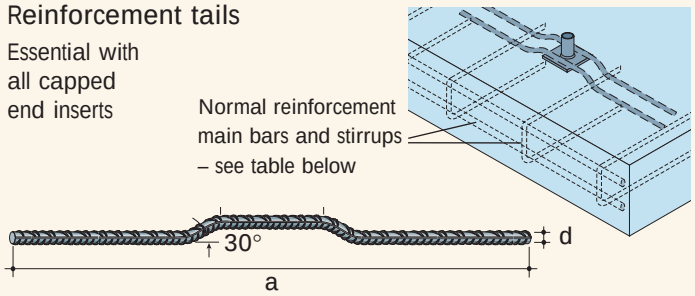


All sockets may be temporarily covered using a plastic sealing cap – see bottom of page. Where regular use of an insert is required, Halfen produce special threaded steel sealing plates to suit the design detail.

Reinforcement tails

Essential with all capped end inserts

Normal reinforcement main bars and stirrups – see table below

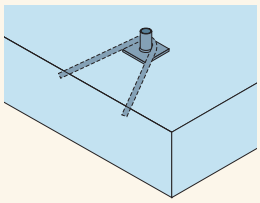


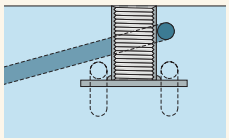
Detail of reinforcement tail

d mm	b mm	a mm	Size	Normal reinforcement Main bars dia. mm	Fabric
6	60	250	Rd12	10	A142
8	90	420	Rd16	10	A142
8	90	640	Rd20	12	A193
10	90	640	Rd24	12	A193
12	110	830	Rd30	16	A252
16	140	1140	Rd36	16	A252
16	140	1250	Rd42	16	12mm bars
20	160	1530	Rd52	20	12mm bars

Lateral reinforcement for β > 12.5° < 45°

In addition to the normal cage and tails, lateral reinforcement is required for angles >12.5° <45° – as shown below:





Detail shows position of reinforcement

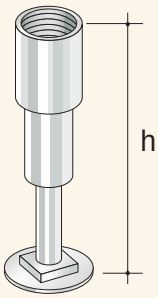
Insert dia.	Reinforcement dia.	unbent length
12	8	500*
16	8	500*
20	12	800*
24	12	800*
30	12	800*
36	16	1500*
42	16	1500*
52	16	1500*

Allowable SWL as table shown opposite

* If lateral bars are needed at min. e_{r1} min. e_{r2} please consult Halfen Ltd.

Screw anchor insert – Code **PT** Mild steel bright zinc plated

Screw Anchor inserts are suitable for shallow embedment without the need for a reinforcement tail. Lateral bars needed as above for angled lifts.



Thread diameter	Order code Mild steel BZP	Dimension h mm	SWL in 15N/mm² concrete kg
Rd12	**PT212060**	60	500
Rd16	**PT216080**	80	1200
Rd20	**PT220100**	100	2000
Rd24	**PT224115**	115	2500
Rd30	**PT230100**	150	4000

For stainless steel please contact Halfen Ltd.