

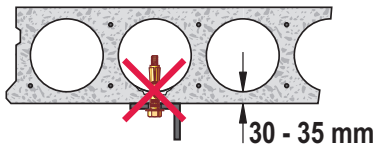
Fastening systems for hollow core concrete

Hollow core concrete offers many advantages including:

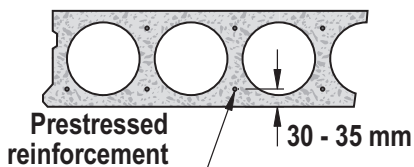
- Long spans with no propping required
- Flexible in design
- Fast construction
- Light weight structures

Hollow core concrete slabs have typically four to six longitudinal cores running through them. This design feature means less material required, light weight construction yet still ensuring maximum strength.

PROBLEM: How to fasten into hollow core concrete

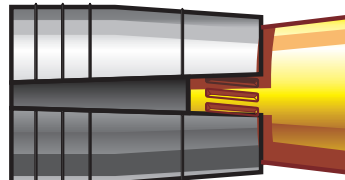


Fastening into hollow core concrete can be very difficult due to placement of cores. There is typically only 30 to 35mm of concrete to fasten into above or below hollow core concrete cores.



The placement of prestressed reinforcement between cores, (depth typically 30 to 35mm) poses further problems when fastening, as it restricts the drilling depth available.

SOLUTION Hollow Set Drop-In



Patented



The Hollow Set Drop-In anchor is designed for anchoring in hollow base materials such as hollow concrete block, extruded brick and hollow core pre-cast concrete. It can be used also in solid base materials.

Product description:

The Hollow Set Drop-In is designed with a slotted, tapered expansion sleeve and a serrated expansion cone. Hollow masonry materials often have a maximum outer wall thickness of 35mm. During the drilling process, spalling on the back side of the wall (as the bit penetrates into the hollow portion of the base material) often decreases the wall thickness available for anchoring to 25mm or less. This creates a problem for most conventional anchors which will not function properly in materials of this thickness.



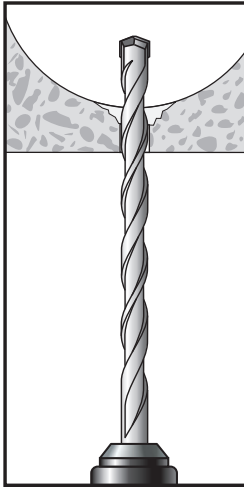
The design of the Hollow Set Drop-In overcomes this problem because the expansion sleeve length is sized to be compatible with the outer wall thickness of most hollow base materials. The expansion sleeve has a large radial bearing area which reduces the amount of compression force applied to the base material during the expansion process.



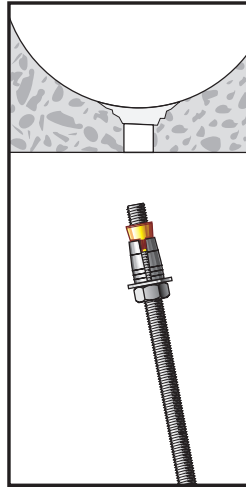
Material Specifications:

Anchor body:	Zamac 7 Alloy
Cone:	AISI 12L or 304S/S
Plating (cone):	ASTM B 633, SC1 Type III (Zn/Fe)

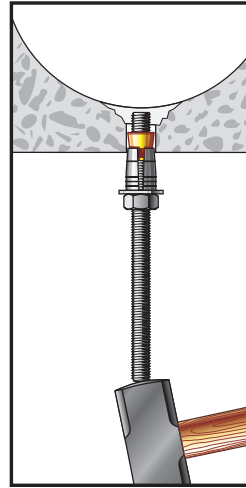
Installation – Core section



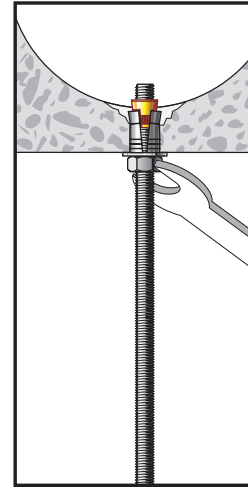
Drill a hole through the concrete into the core using a masonry bit of correct diameter and tolerance



Blow hole clean of dust and other material. Attach threaded rod, nut and washer or hollow setting tool onto anchor. Threaded rod should engage a minimum of two thirds of the cone's threads.



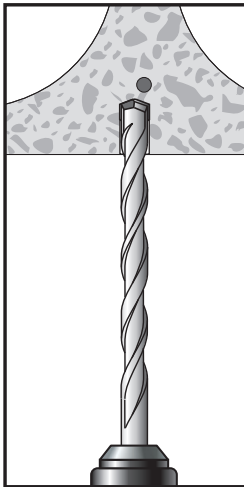
Insert cone end and tap until anchor is flush to the concrete surface



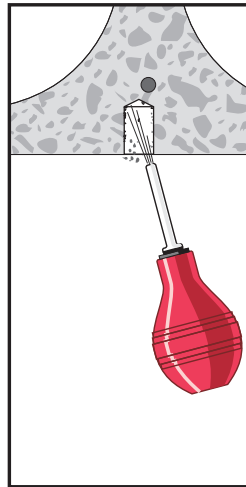
Tighten the anchor by turning the hollow setting tool or nut 3 to 4 turns. For threaded rod, anchor is now set. If using a hollow setting tool, remove and attach fixture using appropriate bolt.



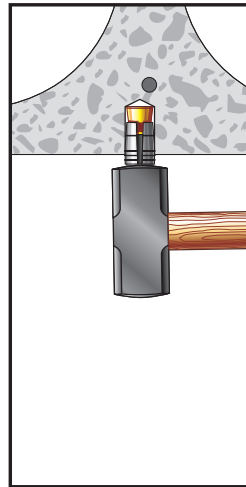
Installation – Solid section



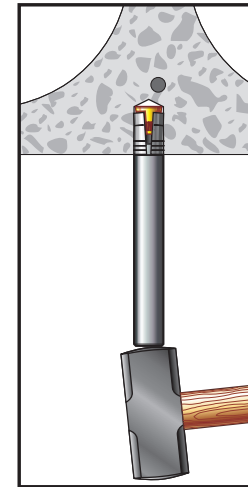
Drill a hole to the required depth using a masonry bit of correct diameter and tolerance



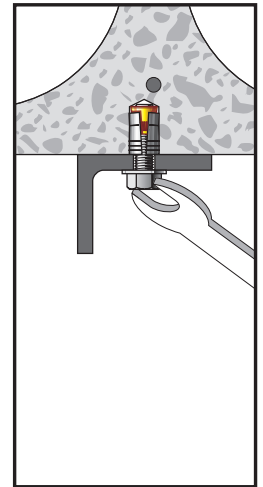
Blow hole clean of dust and other material.



Insert cone end and tap until fully seated in the anchor hole. Do not expand anchor.



Place solid setting tool inside anchor body and tap until anchor is flush to concrete surface.



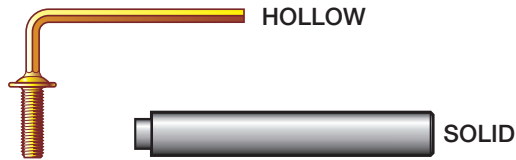
Remove setting tool, attach fixture, insert bolt and tighten. Only tighten snug tight as anchor is already expanded.



Anchor selection

Part No.	Anchorthread size	Hole size (mm)	Overall length (mm)	Anchor body length (mm)
HSDI14	1/4"	10	22	16
HSDI516	5/16"	16	33	24
HSDIM10	M10	16	33	24
HSDIM12	M12	20	45	32
HSDI12	1/2"	20	45	32
HSDI5/8"	5/8"	26	50	38

Setting tools



Anchor	1/4"	5/16"	M10	M12	1/2"	5/8"
Hollow setting	9323	9333	9343	n/a	9353	9363
Solid setting	9322	9332	9342	9352	9352	9362

Performance data – Characteristic ultimate load capacities – 32MPa hollow core concrete

Anchor size	CORE SECTION Tension (kN)	SOLID SECTION	
		Drill depth (mm)	Tension (kN)
1/4"	6.3	18	6.3
5/16"	11.7	26	15.7
M10	11.7	26	15.7
M12	15.3	34	22.6
1/2"	15.3	34	22.6
5/8"	33.4	n/a	n/a

NOTES: **Core section.** Loads based on installation below core section, concrete thickness prior to drilling 35mm.

Solid section. Loads based on installation using solid setting tool below prestressed reinforcement. Typical depth to prestressed reinforcement is 35mm.

Safety factors

Limit state design load = Characteristic ultimate load × 0.6

Allowable working load = Characteristic ultimate load ÷ 3

The above performance data should be used as guidance only as the design and characteristics of hollow core concrete may vary from site to site. ~~For site specific performance data please contact Powers Fasteners to organise an on site test program.~~