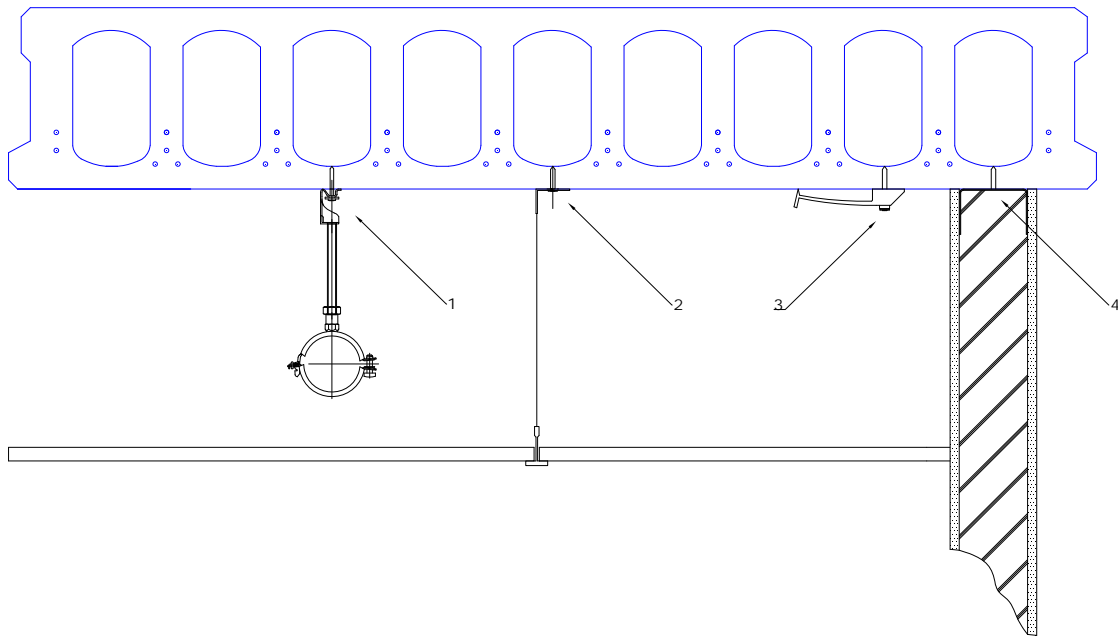


Hilti fixings Bison precast hollow concrete units using Gas and Powder Actuated Fastenings.

Introduction

Light duty fixings are required into the floor and the soffit of slabs to support services and decorative finishes in a completed building.

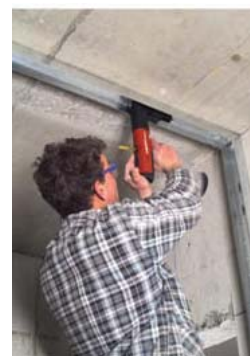
For light duty multi-point fixings gas and powder actuated fixings offer significant time savings compared to drill and fix methods. In order for these fixings to be fit for purpose, Hilti have carried out a series of tests into Bison Hollowcore Slabs using two Direct Fastening systems. The first being powder actuated technology (DX) and the second being gas tool technology (GX).



Securing head track with gas tool

Typical Applications

- 1 X-HS Hanger system
- 2 X-CC-U Ceiling clip (Not GX)
- 3 X-EKB cable clasp
- 4 X-U or X-GHP nail securing header track



Securing head track with a DX tool

DX and GX Hilti fasteners in Bison Hollowcore Concrete

- Due to the high concrete strength achieved with Bison Hollowcore units and the low concrete thickness under the cores, the standard product data for these fixings is not applicable and the data and limitations given in this data sheet must be observed.
- Care has to be taken to prevent spalling and a reduced fastener penetration depth is required when compared with normal concrete.
- There are high strength steel reinforcing strands placed near the bottom face of the Bison slab which must not be broken by the placement of direct fasteners. This means that the maximum penetration depth must not exceed 18mm.
- For the applications shown; fixing drywall header rail, suspended ceiling fixings, heating and ventilation pipe runs and provision of electrical services, the user must consider the applied loads and the fixing capacities in accordance with the information in this Data Sheet before installing the fixing.



GX 120 used for fixing Dry wall track










DX 351 pole tool used for fixing into the soffit from the floor without needing special access provisions



DX 460 being used for fixing electrical conduit.

Powder Actuated Fastenings

Standard cartridge tools type DX 460	Cartridges	Fastening	
		Single fixings	Magazine fixing
		Fixings for concrete and steel	
		 <ul style="list-style-type: none"> X-U 15 P8 TH X-U 16 P8 X-U 19 P8 X-U 22 P8 X-U 27 P8 X-U 32 P8 X-U 37 P8 X-U 42 P8 X-U 47 P8 X-U 52 P8 X-U 57 P8 X-U 62 P8 	 <ul style="list-style-type: none"> X-U 16 MX X-U 19 MX X-U 22 MX X-U 27 MX X-U 32 MX X-U 37 MX X-U 42 MX X-U 47 MX X-U 52 MX X-U 57 MX X-U 62 MX
Standard cartridge tools type DX 351	Both of these tools use standard Clean-Tec cartridges.	Fixings for concrete only	
		 <ul style="list-style-type: none"> X-C 22 P8 X-C 27 P8 X-C 32 P8 X-C 37 P8 X-C 42 P8 X-C 47 P8 X-C 52 P8 X-C 57 P8 X-C 62 P8 	 <ul style="list-style-type: none"> X-C 22 MX X-C 27 MX X-C 32 MX X-C 37 MX X-C 42 MX X-C 47 MX X-C 52 MX X-C 57 MX X-C 62 MX

- Both the DX460 and the DX 351 are available in single fix and magazine versions.
- Hilti also supply a large range of specialist fixings for electrical and other trades which are secured to the concrete with DX fixings, see product catalogue for more details.

Nail type and length selection.

Use fasteners designated X-U ** P8 where the asterisks designates the nail length in millimetres. Also for drywall track the nail type X-U 15 P8TH is suitable.

Nail Length– DX460 and DX351

Add the required penetration depth (h_{ET}) of 18mm to the fastened thickness (t_1).

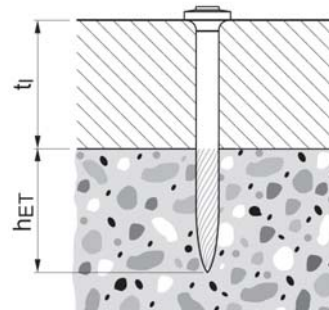
For example; to fix 25mm timber using a DX460 ($t_1=25$).

Nail length (L_S) = $h_{ET} + t_1 = 18 + 25 = 43$ mm.

Select the next shortest fastener in this case the X-U 42P8 fastener.

Cartridge Selection




Use a green cartridge at the lowest power setting. Increase power until the nail head is flush in the timber.



Setting Details

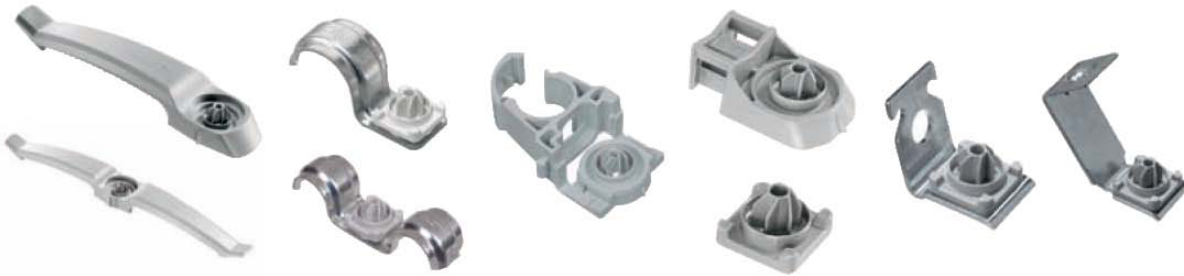
Please refer to the operating instructions supplied with the tools for setting instructions for these fixings.

Gas tools type GX 100 & GX120 for Drywall and M&E installations

Tool	Propellant	Fixing
		
<p>GX 120 fitted with support leg</p>	<p>Gas can GC22</p> <p>1 gas can and 750 pins supplied in one Combo pack</p>	<p>X-GHP 18 MX X-GHP 20 MX</p>

Accessories

Hilti also supply a large range of specialist fixings for electrical trades which are secured to the concrete with GX fixings, see product catalogue for more details.

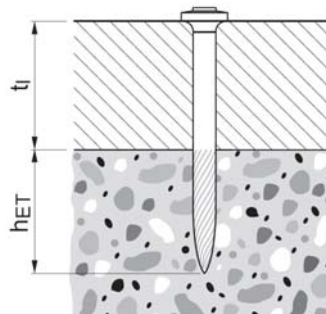


Nail type and length selection.

Use fasteners designated X-GHP ** MX where the asterisks designates the nail length in millimetres.

Nail Length– GX 120

Add the required penetration depth (h_{ET}) of 18mm to the fastened thickness (t_1).
 For example; to fix 1mm thick dry wall header rail using a GX120 ($t_1=1$ mm).
 Nail length (L_S) = $h_{ET} + t_1 = 18 + 1 = 19$ mm.
 Select the next shortest fastener in this case the X-GHP 18 MX fastener.



Setting Details

Please refer to the operating instructions supplied with the tools for setting instructions for these fixings.

Technical / Design Data

Design data for Bison Hollowcore Products with Hilti Fasteners.

	Type	Penetration	Load Table		Min. edge	Min spacing
			F _{rec}	V _{rec}		
Recommended load capacity	X-GHP 18	14-16mm	0.1kN	0.1kN	100mm	200mm
	X-GHP 20	16-18mm	0.2kN	0.2kN	100mm	200mm
	X-U	14-16mm	0.1kN	0.1kN	100mm	200mm
	X-U	16-18mm	0.2kN	0.2kN	100mm	200mm
	X-C	16-18mm	0.2kN	0.2kN	100mm	200mm
	X-CCU	16-18mm	0.2kN	0.2kN	100mm	200mm
	X-HSU	16-18mm	0.2kN	0.2kN	100mm	200mm

Design Limitations.

- All fixings to be made by trained and certified installers.(Training is available on request from Hilti.)
- Minimum of 5 fastenings per fastened unit.
- All visible failures must be replaced.
- These loads also apply to the special purpose nails for electrical applications.
- It is also important to ensure that the rate of “failure to fix” during an installation is typically less than 20%
- It is recommended that due to the presence of hollow cores within the slabs and the possibility that the fixings may be unintentionally made directly along one of these cores, that the spacing between individual fixings must be increased from our standard recommendations for fixings into concrete – see table above for guidelines.

**HILTI TECHNICAL ADVISORY SERVICE
TELEPHONE 0161 886 1144**

IMPORTANT NOTES

1. The information and recommendations given herein are believed to be correct at the time of writing. The data has been obtained from tests done under laboratory, or other controlled, conditions and it is the users’ responsibility to use the data given in the light of conditions on site and taking account of the intended use of the products concerned. Whilst Hilti (Gt. Britain) Limited can give general guidance and advice, the nature of Hilti products means that the ultimate responsibility for selecting the correct product for a particular application must lie with the customer.
2. All products must be used, handled and applied in accordance with current instructions for use published by Hilti (Gt. Britain) Limited.
3. All products are supplied, and advice given, subject to Hilti (Gt. Britain) Limited terms of business.
4. Hilti’s policy is one of continuous development. We therefore reserve the right to alter specifications etc. without notice.
5. Construction materials and conditions vary on different sites. If it is suspected that the base material has insufficient strength to achieve a suitable fixing, contact the Hilti Technical Advisory Service.

	<p>Hilti (Gt. Britain) Ltd is a member of the Construction Fixings Association.</p>
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Bison Manufacturing Limited, Gresley Park, William Nadin Way, Swadlincote, Derbyshire, DE11 0BB