

SupercreteTM

Sustainable Cost Effective Construction & Coating Systems



Fixing Design & Installation Guide



SupercoatTM

100% NZ
Owned & Operated

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Supercrete™ Fixing Guide

Introduction

Supercrete™ produces lightweight products manufactured from Autoclaved Aerated Concrete (AAC). AAC has a cellular structure of extremely small, well dispersed air pockets, formed from a liberated gas during the manufacturing process.

This guide has been produce to assist in the selection of the appropriate fixing for use with Supercrete™ AAC. The choice of fixing is dependent upon the application, loading requirements and finish. The fixings detailed in this guide are available through a Supercrete™ distributor, some major hardware outlets, or the manufacturer of the particular fixing. A list of suppliers is provided.

The Supercrete™ building systems and products, as well as proprietary products by other manufacturers, are continuously being developed. This on-going development

may result in changes to product specifications, range and performance characteristics from time to time.

Therefore, it is important that the user of this guide ensure that they are in possession of the latest information by contacting the manufacturer or visiting the appropriate website.

Fixing selector

Determine the grade of fixing (Fixing Selection Table) to suit your application and select a fixing (Types of Fixing Tables). Use the Technical Data Sheets to check the adequacy of the fixing and contact the manufacturer for confirmation.

Note: 1kN is approximately 100kg.

Grade of Fixing Selection Table

Grade of Fixing	Application	Working (Permissible) Loads	
		Load (kN)	Approx. Load (kg)
Light	Skirtings, coat hooks, small light fittings, towel rails, mirrors, picture & painting hangings, pipe brackets, and carpet smooth edge.	< 0.2	< 20
Medium	Mirrors, large light fittings, door & window framing, plasterboard, shelving, lightweight cupboards & fittings, meter box, tool rack, curtain tracks & rods, towel rails.	0.2 to 0.5	20 to 50
Heavy	Grab rails, hand rails, cisterns, clothes dryers, hand basin, sinks, and heavy cupboards.	0.5 to 2.0	50 to 100

Type of Fixing Tables

Light Duty up to 20 kg Door Bell, Light Fittings, Taps etc.			
Product	Diameter	Length	Max. Load
Course Thread Screw	10g to 12g	50mm	25 kg
Mungo Nylon plug – MN4	4mm	20mm	2 kg
Hilti impact anchor - HPS-I	5mm	30mm	3 kg
Mungo Nylon Plug - MN5	5mm	25mm	4 kg
Hilti impact anchor - HPS-I	6mm	40mm	4 kg
Ramset Ramplug - nylon	5mm	25mm	5 kg
Mungo Nylon Plug - MN6	6mm	30mm	6kg
Hilti impact anchor - HPS-I	6mm	50mm	6kg
Mungo Nylon Plug - MN7	7mm	35mm	7 kg
Ramset Ramplug - nylon	6mm	30mm	8 kg
Mungo Nylon Plug - MN8	8mm	40mm	9 kg
Ramset Ramplug - nylon	7mm	35mm	12 kg
Ramset Ramplug - nylon	8mm	40mm	16 kg
Ramset Ramplug - long	6mm	55mm	16 kg
Fischer Aircrete GB	8mm	50mm	20 kg
Mungo Nylon Plug - MN10	10mm	50mm	20 kg
Tox TFS-L fixings	6mm	50mm	20 kg

Medium Duty 20 - 50 kg Large Light Fittings, etc.			
Product	Diameter	Length	Max. Load
Ramset Ramplug - long	8mm	65mm	22 kg
Tox Metal claw plug	6mm	32mm	25 kg
Ramset Ramplug - long	10mm	80mm	27 kg
Ramset Ramplug - long	12mm	95mm	28 kg
Powers Zip-it	6mm	30mm	28 kg
Fischer Aircrete GB	10mm	55mm	30 kg
Hilti Frame anchor - HRD-U	10mm	80mm	30 kg
Hilti Frame anchor - HRD-U	10mm	100mm	30 kg
Tox-VLF Frame fixings	6mm	70mm	30 kg
Ramset Ramplug - nylon	12mm	60mm	35 kg
Tox Metal claw plug	8mm	60mm	35 kg
Mungo Nylon plug - MN12	12mm	60mm	40 kg
Tox TFS-L fixings	8mm	70mm	40 kg
Tox-VLF Frame fixings	8mm	100mm	40 kg
Mungo Nylon plug - MN14	14mm	70mm	50 kg
Tox TFS-L fixings	10mm	70mm	50 kg
Tox TFS-L fixings	6mm	50mm	20 kg
Fischer Aircrete GB	14mm	75mm	50 kg
Tox-VLF Frame fixings	10mm	135mm	50 kg

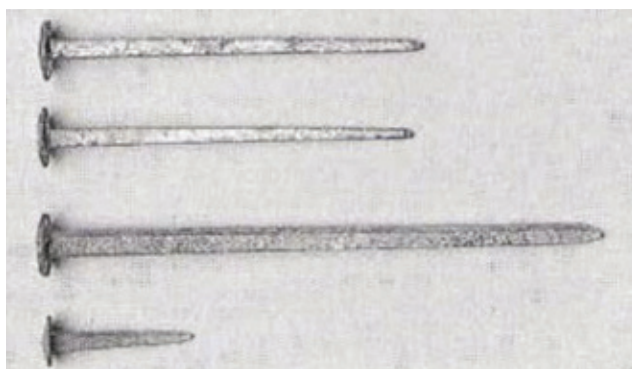
Heavy Duty 50 - 125 kg Grab Rails, Hose Reels, etc.			
Product	Diameter	Length	Max. Load
Hilti-RE500 Injection adhesive	8mm	80mm	50 kg
Hilti-HY150 Injection adhesive	8mm	80mm	50 kg
Mungo Nylon plug - MN16	16mm	80mm	60 kg
Hilti-RE500 Injection adhesive	10mm	90mm	70 kg
Hilti-HY150 Injection adhesive	10mm	90mm	70 kg
Hilti-RE500 Injection adhesive	12mm	110mm	90 kg
Hilti-HY150 Injection adhesive	12mm	110mm	90 kg
Mungo Nylon plug - MN20	20mm	90mm	100 kg
Mungo Nylon Frame anchor	10mm	80mm	110 kg
Mungo Nylon Frame anchor	10mm	100mm	110 kg
Mungo Nylon Frame anchor	10mm	120mm	110 kg
Mungo Nylon Frame anchor	10mm	200mm	110 kg
Ramset Injection Mortar	10mm	130mm	120 kg
Tox-KD-DV Heavy Duty Toggle	10mm	100mm	120 kg
Tox-KD-DV Heavy Duty Toggle	10mm	200mm	120 kg

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Hilti HPS Impact Anchor	Hilti (NZ) Ltd	6
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Hilti HID-HY 150 Injection Anchor	Hilti (NZ) Ltd	10
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Fischer Aircrete GB Anchor	anzor Fasteners	25

Galvanised Clasp Nail

Galvanised clasp nails can be used to fasten many items to Supercrete AAC products. The galvanised clasp nail shall have a minimum penetration depth of 50mm. This will give a working pullout load of 0.1kN with a factor of safety of 5. Nails are hammered directly Supercrete AAC and should not be pre-drilled.



Clasp Nails Load Capacities

Nail Length (mm)	Penetration Depth (mm)	Allowable Pullout (kN)			Recommended Applications
		AAC - 2.5	AAC - 3.5	AAC - 5.0	
100	88	0.12	0.17	0.29	Light Door Frames, Pictures
125	110	0.16	0.27	0.39	Window Frames
150	138	0.26	0.37	0.64	Plasterboard

Superbuild International Ltd recommends using a 10 gauge coarse thread screw and 50mm embedment, with applicable type head, to secure plasterboard sheeting or fixing metal door frames.



Coarse Tread Screws Load Capacities

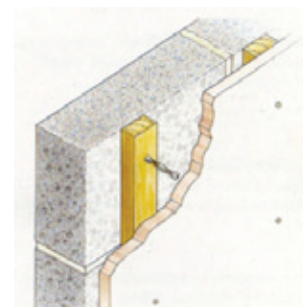
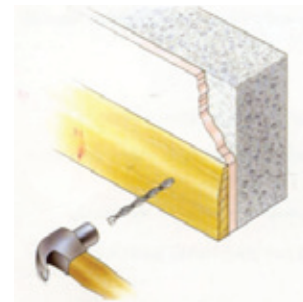
Type	Minimum Embedment (mm)	Pullout Working Load (kN) Safety Factor – 3.0
10-12 x 50mm Type 17	47 ± 1	0.17
14-10 x 50mm large head	35 (assumed)	0.16
14-10 x 65mm Type 17 - 20mm edge dist.	50 (assumed)	0.24
14-10 x 65mm Type 17 - 40mm edge dist.	50 (assumed)	0.31
14-10 x 65mm Type 17 - 50mm edge dist.	50 (assumed)	0.38
14-10 x 150mm Type 17	75	0.28

HELIFIX TurboFast

TurboFast fixings offer a fast, reliable and economical method for securing timber to low density blocks.

Principle benefits of TurboFast fixings are:

- Manufactured from stainless steel, therefore resist corrosion.
- No pre-drilling required.
- No plugs or screws.
- No problems with splitting of blocks or timber.
- Not loosened by over hammering.
- Straight fixing recommended – skew nailing not required.
- Reduced installation cost.
- Power installer available for rapid fixing.
- For fixing timber door and window frames, skirtings, architraves, battens and trims. Also decorative AAC facings and trims to Supercrete.



TurboFast Load Capacities

TurboFast Diameter (mm)	Embedment (mm)	Working Load (kN) Factor of Safety 3.0	
		Pullout	Shear
6	50	0.28	-
6	80	-	0.24
6	90	0.35	0.26
6	120	0.46	-
8	50	0.29	-
8	80	-	0.28
8	90	0.47	0.31
8	120	0.56	-

HPS-1 Impact Anchor



Features

- base material: concrete and solid or hollow brick, aerated lightweight concrete
- ready-to-use anchor for through-fastening
- impact expansion by hammer or screwdriver
- removable and adjustable with a screwdriver

HPS-1 (Zinc plated)

HPS-1 S (Countersunk Head)

HPS-1 R (Stainless Steel)

Material

- PA 6.6 polyamide, contains no heavy metals
- contains no cadmium, lead, halogens, or silicones
- temperature when setting: from $-10\text{ }^{\circ}\text{C}$ to $+40\text{ }^{\circ}\text{C}$

Drive Screw

- steel zinc plated to 5 microns
- stainless steel, A2 grade

Basic Loading Data: HPS-1 * Working Loads; N_{rec} [kN]:

Base Material	Anchor Size		
	HPS-1 5/5 – 5/15	HPS-1 6/5 – 6/40	HPS-1 8/10 – 8/80
Aerated Lightweight Concrete N_{rec} Characteristic Compressive Strength, $f'_c = 4.5\text{ MPa}$	0.03 kN	0.04 kN	0.06kN

*The working load is calculated from the characteristic ultimate load divided by a factor of safety = 5.

*The working load is calculated with no edge distance or spacing influence.

* N_{rec} = recommended working load in tension,

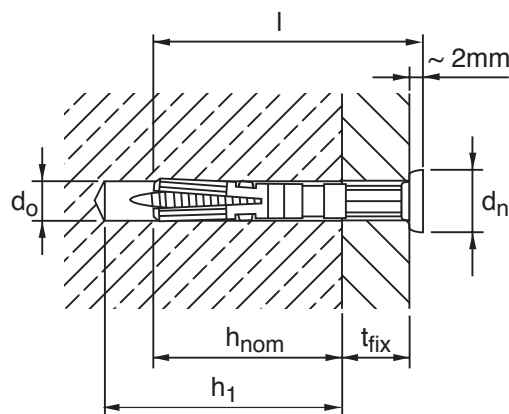
* Holes produced by rotary drilling only.

* At temperatures above $40\text{ }^{\circ}\text{C}$, the recommended figure should be reduced if there is a sustained tensile load.

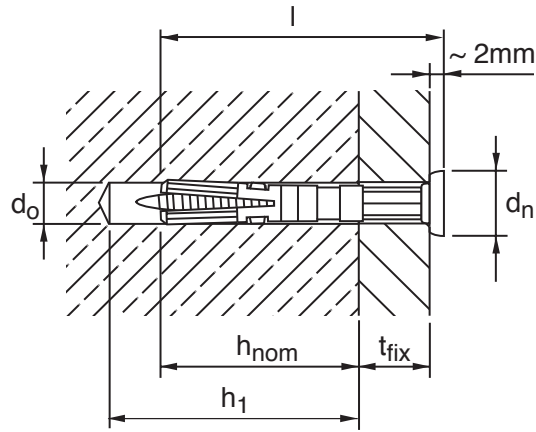
* Dry density of Autoclaved Aerated Concrete is $\leq 525\text{ kg/m}^3$

* NB: 1kN is approximately 100kg.

Setting Details

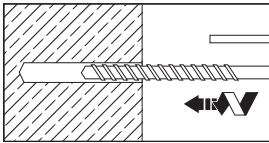


Setting Details			Anchor Size						
			5/5	5/15	6/5	6/10	6/15	6/25	6/40
d_0	[mm]	Drill bit and anchor diameter	5	5	6	6	6	6	6
h_1	[mm]	Min. hole depth	30	30	40	40	40	40	40
h_{nom}	[mm]	Anchorage depth	20	20	25	25	25	25	25
t_{fix}	[mm]	Fixture (fastener) thickness	5	15	5	10	15	25	40
l	[mm]	Anchor length	27	37	32	37	42	52	67
d_n	[mm]	Head diameter	9.5	9.5	11	11	11	11	11
Drill bit			TE-CX 5/12			TE-CX 6/12			

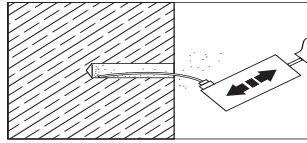


Setting Details			Anchor Size					
			8/10	8/20	8/30	8/40	8/60	8/80
d_0	[mm]	Drill bit and anchor diameter	8					
h_1	[mm]	Min. hole depth	50					
h_{nom}	[mm]	Anchorage depth	30					
t_{fix}	[mm]	Fixture (fastener) thickness	10	20	30	40	60	80
l	[mm]	Anchor length	42.5	52.5	62.5	72.5	92.5	112.5
d_n	[mm]	Head diameter	13					
Drill bit			TE-CX 8/17					

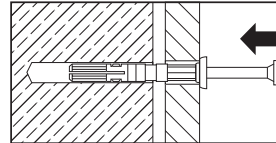
Setting Operations



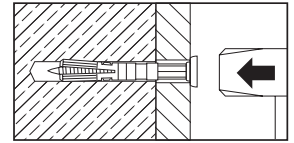
Drill hole with drill bit



Blow out dust



Install anchor.



Hammer in anchor.

HRD- U Frame Anchor

Features

- base material: concrete or solid or hollow brick or aerated lightweight concrete
- ready-to-use anchor (anchor body & matching screw)
- suitable for through-fastening
- impact expansion by hammer or screwdriver
- removable and adjustable with a screwdriver

Material

- PA 6.6 polyamide, contains no heavy metals
- contains no cadmium or lead
- contains no halogens or silicones
- temperature when setting: from -10°C to $+40^{\circ}\text{C}$

Screw

- Zinc plated - with hexagon, hex + integrated washer or countersunk head
- 5 microns yellow chromate 6.8, ISO 898 T1
- Hot dipped galvanised - with hexagon or hex + integrated washer, 45 microns, grey
- Stainless steel - with hexagon, countersunk head, A4



HRD - UGT10 (Countersunk screw, Zinc plated)

HRD - URT10 (Countersunk screw, stainless steel)



HRD - UGS10 (Hex head screw, Zinc plated)

HRD - UFS10 (Hex head screw, hot dipped galvanised)

HRD - URS10 (Hex head screw, stainless steel)

Basic Loading Data: HRD-U10 * Working Loads; N_{rec} & V_{rec} [kN]:

Base Material	Anchor Size				
	HRD-U10		Anchor Spacing Min. (mm)	Edge Distance Min. (mm)	Min. Base Material thickness (mm)
	N_{rec} kN	V_{rec} kN			
Aerated Lightweight Concrete (1) Characteristic Compressive Strength, $f'_c = 4.5 \text{ MPa}$	0.7	0.3	150	150	115
Aerated Lightweight Concrete (2) Characteristic Compressive Strength, $f'_c = 2.25 \text{ MPa}$	0.6	0.3	150	150	115

* The working load is calculated from the characteristic ultimate load divided by a factor of safety = 4.

* N_{rec} = recommended working load in tension, V_{rec} = recommended working load in shear

* Holes produced by rotary drilling only.

* At temperatures above 40°C , the recommended figure should be reduced if there is a sustained tensile load.

* Dry density of Autoclaved Aerated Concrete is $\leq 525 \text{ kg/m}^3$

* NB: 1kN is approximately 100kg.

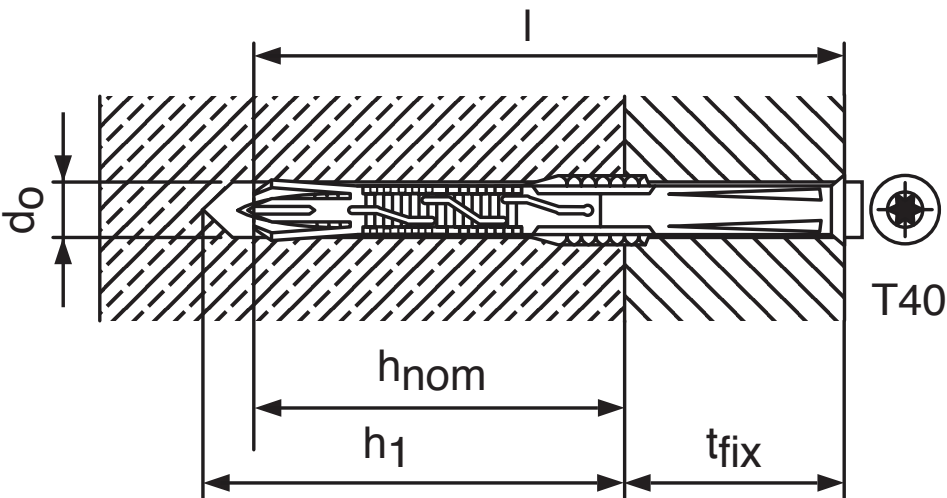
(1) Tests were carried out on AAC having a density of 550 kg/m^3

(2) Tests were carried out on AAC having a density of 470 kg/m^3

Permissible moments on screw; M_d (Nm)

Anchor	HRD-U10
Tensile Load	$N_{\text{rec}} = 0 \text{ kN}$
Zinc plated screw	10.1 Nm
Stainless steel screw	9.5 Nm

Setting Details



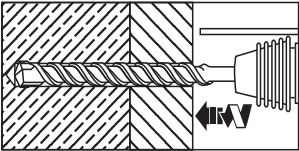
Setting Details		HRD - U10				
		x 80/10	x 100/30	x 120/50	x 140/70+	x 180/110+
d0 [mm]	Drill bit and anchor diameter	10				
h1 [mm]	Min. hole depth	80				
hnom [mm]	Anchorage depth	70				
tfix [mm]	Fixture (fastenable) thickness	10	30	50	70	110
l [mm]	Anchor length	80	100	120	140	180
Drill bit		TE-CX 10/17	TE-CX 10/22			TE-CX 10/27

+ subject to lead time for certain material types

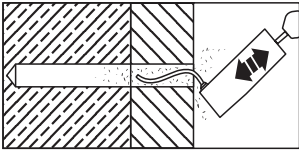
* Anchor holes in aerated lightweight concrete may only be drilled with a rotary action (without hammering).

* Holes in the part to be fastened should be max. 0.5 mm larger than the anchor diameter.

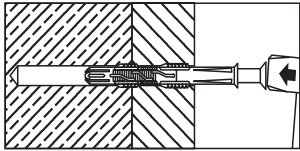
Setting Operations



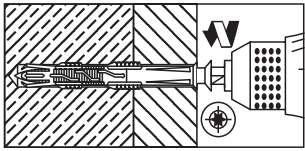
Drill hole with drill bit.



Blow out dust and fragments.



Install anchor.



Drive screw into anchor.



HIT - HY 150 Injection Mortar with HAS rod

Features

- base material: concrete or aerated lightweight concrete
- two component hybrid adhesive
- rapid curing
- no expansion forces in base material
- high loading capacity
- small edge distance & anchor spacing possible
- clean and simple application
- fastening through in-place parts
- special materials available on request



HIY – HY foil pack, mixer



HAS – E, HAS – EF, HAS - ER rods

Material

Mortar - HIT – HY 150 standard size, 330ml

- HIT – HY 150 jumbo size, 1100ml

HAS - E - grade 5.8, ISO 898 T1 zinc plated to min 0.5 microns

HAS - EF - grade 5.8 hot dipped galvanised

HAS - ER - stainless steel A 4-70

Dispenser - MD2000, BD2000, P3000 F, P5000 HY

Basic Loading Data: HIT – HY 150 with HAS – E, HAS – EF, HAS - ER

* Working Loads; N_{rec} & V_{rec} [kN]:

Base Material		Anchor Size		
		M8	M10	M12
Aerated Lightweight Concrete Characteristic Compressive Strength, $f'_c = 4.5 \text{ MPa}$	N_{rec}	1.8 kN	2.3 kN	2.9 kN
	V_{rec}	0.5 kN	0.7 kN	0.9 kN

* The working load is calculated from the characteristic ultimate load divided by a factor of safety = 3.

* The working load is calculated with no edge distance or spacing influence.

* N_{rec} = recommended working load in tension, V_{rec} = recommended working load in shear

* Holes produced by rotary drilling only and then cleaned as per setting operations to remove dust in holes.

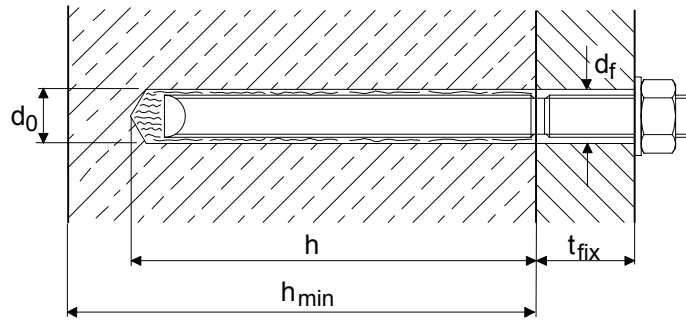
* Dry density of Autoclaved Aerated Concrete is $\leq 525 \text{ kg/m}^3$

* NB: 1kN is approximately 100kg.

Thread size (mm)	Hole Dia. (mm)	Hole Depth (mm)	Edge Distance Min. (mm)	Spacing Min. (mm)	Rod Length (mm)	Max. Fastened Thickness (mm)	Rod Designation
M8	10	80	80	160	110	14	HAS-E M8x80/14
M10	12	90	90	180	130	21	HAS-E M10x90/21
M12	14	110	110	220	160	28	HAS-E M12x110/28

* Edge distance min. and spacing min. refer to the minimum edge distance and spacing to retain full load capacity in tension and shear.

Setting Details



Base Material			Anchor Size		
			M8	M10	M12
Anchor rod (1)HAS –E/ -EF/ -ER			M8x110/14	M10x130/21	M12x160/28
			M8x80/14	M10x90/21	M12x110/28
d ₀	[mm]	Drill bit and anchor diameter	10	12	14
h	[mm]	Min. hole depth	80	90	110
H _{min}	[mm]	Min. Base material thickness	100	120	140
t _{fix}	[mm]	Fixture (fastenable) thickness	14	21	28
d	[mm]	Clearance hole	rec	10	12
			max	11	13
Injected volume (guidance only) ^{(2), (3)} (hole must be at least 2/3 full)			ml	5	8
Drill bit			TE-CX 10/22	TE-CX 12/22	TE-CX 14/22

- 1) The values in the first line describe the old specification for the anchor rod.
- 2) **Note:** To ensure that optimal holding power is obtained, the first two trigger pulls of adhesive after opening a foil pack of Hilti HIT-HY 150 must be thrown away.
- 3) One trigger pull is approx. 8 ml mortar when using the MD 2000.

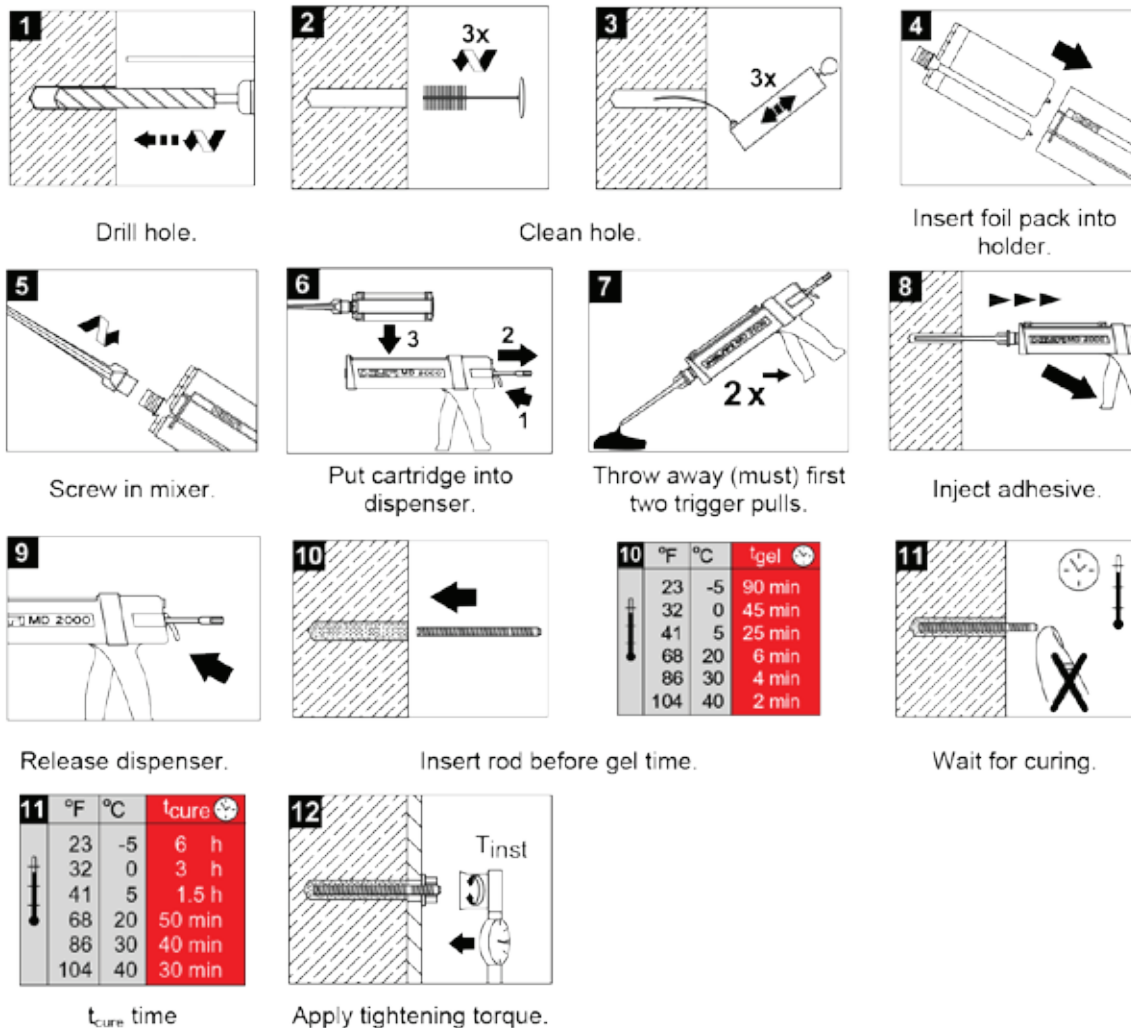
Building Material Temperature °C	Working time in which rod can be inserted and adjusted t _{gel}	Curing time before anchor can be fully loaded t _{cure}
-5	90 min	6 hours
0	45 min	3 hours
5	25 min	1.5 hours
20	6 min	50 min
30	4 min	40 min
40	2 min	30 min

Foil pack temperature must be at least +5°C

Installation Equipment

Rotary hammer (TE1, TE 2, TE5, TE6A, TE15, TE15-C), a drill bit, the dispensing gun (MD 2000, BD 2000, P3000 F, P5000 HY), blow-out pump, a brush & a wrench.

Setting Operations



Anchor Geometry & Mechanical Properties



Anchor Size			M8	M10	M12
A_s [mm ²]	Stressed cross section		32.8	52.3	76.2
f_{uk} [N/mm ²]	Nominal tensile strength	HAS-E, HAS-EF	500	500	500
		HAS-ER	700	700	700
f_{yk} [N/mm ²]	Nominal yield strength	HAS-E, HAS-EF	400	400	400
		HAS-ER	450	450	450
Z [mm ³]	Section modulus		26.5	53.3	93.9
M_{Rds} [Nm]	Design bending Resistance	HAS-E, HAS-EF	12.7	25.6	45.1
		HAS-ER	14.3	28.7	50.6
S_w [mm]	Width across flats		13	17	19
d_w [mm]	Washer diameter		16	20	24

1) The design bending resistance of the anchor rod was calculated from $M_{Rds} = (1.2 \times W \times f_{uk}) / Y_{Ms,b}$, where the partial safety factor for steel of grade 5.8 is $Y_{Ms,b} = 1.25$, for A4-70 and HCR is $Y_{Ms,b} = 1.56$. Verification of the safety level is then $M_{Sk} \times Y_F \leq M_{Rds}$.

HIT – RE 500 Injection Adhesive with HAS rod

Features

- base material: concrete or aerated lightweight concrete
- two component hybrid adhesive
- long working time at elevated temperatures
- no expansion forces in base material
- high loading capacity
- small edge distance & anchor spacing possible
- clean and simple application
- fastening through in-place parts
- special materials available on request



HIT – RE 500 foil pack, mixer



HAS – E, HAS – EF, HAS – ER rods

Material

Mortar - HIT – RE 500 standard size, 330ml
- HIT – RE 500 jumbo size, 1100ml

HAS - E - grade 5.8, ISO 898 T1 zinc plated to min 0.5 microns

HAS - EF - grade 5.8 hot dipped galvanised

HAS - ER - stainless steel A 4-70

Dispenser - MD2000, BD2000, P3000 F, P5000 HY

Basic Loading Data: HIT – RE 500 with HAS – E, HAS – EF, HAS – ER

* Working Loads; N_{rec} & V_{rec} [kN]:

Base Material		Anchor Size		
		M8	M10	M12
Aerated Lightweight Concrete Characteristic Compressive Strength, $f'_c = 4.5 \text{ MPa}$	N_{rec}	2.1 kN	2.7 kN	3.0 kN
	V_{rec}	0.5 kN	0.7 kN	0.9 kN

*The working load is calculated from the characteristic ultimate load divided by a factor of safety = 3.

*The working load is calculated with no edge distance or spacing influence.

* N_{rec} = recommended working load in tension, V_{rec} = recommended working load in shear

* Holes produced by rotary drilling only and then cleaned as per setting operations to remove dust in holes.

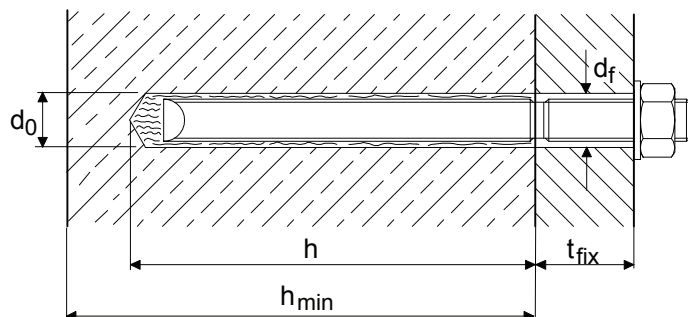
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* NB: 1kN is approximately 100kg.

Thread size (mm)	Hole Dia. (mm)	Hole Depth (mm)	Edge Distance Min. (mm)	Spacing Min. (mm)	Rod Length (mm)	Max. Fastened Thickness (mm)	Rod Designation
M8	10	80	80	160	110	14	HAS-E M8x80/14
M10	12	90	90	180	130	21	HAS-E M10x90/21
M12	14	110	110	220	160	28	HAS-E M12x110/28

* Edge distance min. and spacing min. refer to the minimum edge distance and spacing to retain full load capacity in tension and shear.

Setting Details



Base Material		Anchor Size		
		M8	M10	M12
Anchor rod (1)	HAS -E/ -EF/ -ER	M8x110/14 M8x80/14	M10x130/21 M10x90/21	M12x160/28 M12x110/28
d ₀	[mm] Drill bit and anchor diameter	10	12	14
h	[mm] Min. hole depth	80	90	110
H _{min}	[mm] Min. Base material thickness	100	120	140
t _{fix}	[mm] Fixture (fastener) thickness	14	21	28
d	[mm] Clearance hole	10 11	12 13	14 15
Injected volume (guidance only) ^{(2), (3)} (hole must be at least 2/3 full)		5	8	12
Drill bit		TE-CX 10/22	TE-CX 12/22	TE-CX 14/22

- 1) The values in the first line describe the old specification for the anchor rod.
- 2) **Note:** To ensure that optimal holding power is obtained, the first two trigger pulls of adhesive after opening a foil pack of Hilti HIT-RE 500 must be thrown away.
- 3) One trigger pull is approx. 8 ml mortar when using the MD 2000.

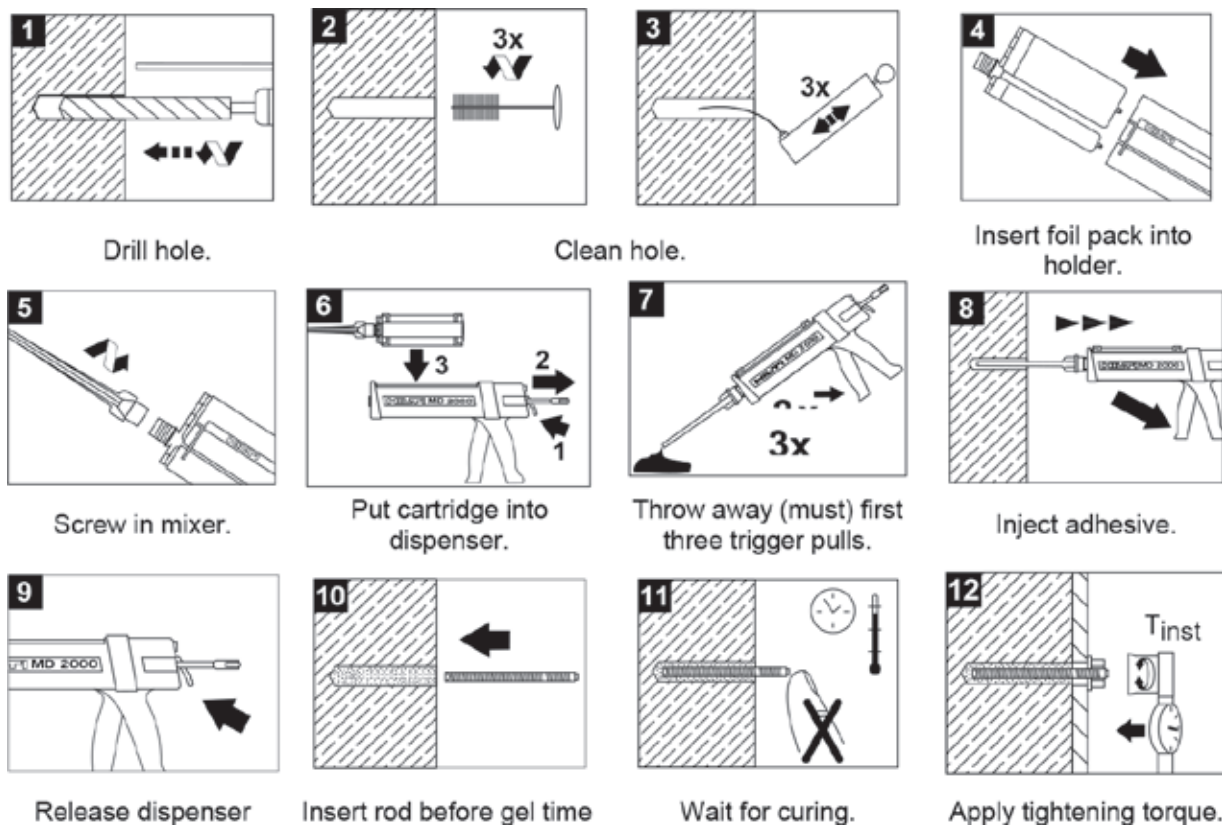
Building Material Temperature °C	Working time in which rod can be inserted and adjusted t _{gel}	Curing time before anchor can be fully loaded t _{cure}
-5	4 hours	72 hours
0	3 hours	50 hours
10	2 hours	24 hours
20	30 min	12 hours
30	20 min	8 hours
40	12 min	4 hours

Foil pack temperature must be at least +5°C

Installation Equipment

Rotary hammer (TE1, TE 2, TE5, TE6A, TE15, TE15-C.), a drill bit, the dispensing gun (MD 2000, BD 2000, P3000 F, P5000 HY), blow-out pump, a brush & a wrench.

Setting Operations



Anchor Geometry & Mechanical Properties



Anchor Size			M8	M10	M12
A_s [mm ²]	Stressed cross section		32.8	52.3	76.2
f_{uk} [N/mm ²]	Nominal tensile strength	HAS-E, HAS-EF	500	500	500
		HAS-ER	700	700	700
f_{yk} [N/mm ²]	Nominal yield strength	HAS-E, HAS-EF	400	400	400
		HAS-ER	450	450	450
Z [mm ³]	Section modulus		26.5	53.3	93.9
M_{Rds} [Nm]	Design bending Resistance	HAS-E, HAS-EF	12.7	25.6	45.1
		HAS-ER	14.3	28.7	50.6
S_w [mm]	Width across flats		13	17	19
d_w [mm]	Washer diameter		16	20	24

1) The design bending resistance of the anchor rod was calculated from $M_{Rds} = (1.2 \times W \times f_{uk}) / Y_{Ms,b}$, where the partial safety factor for steel of grade 5.8 is $Y_{Ms,b} = 1.25$, for A4-70 and HCR is $Y_{Ms,b} = 1.56$. Verification of the safety level is then $M_{Sk} \times Y_F \leq M_{Rds}$.

POWER-FAST PLUS® Epoxy injection gel

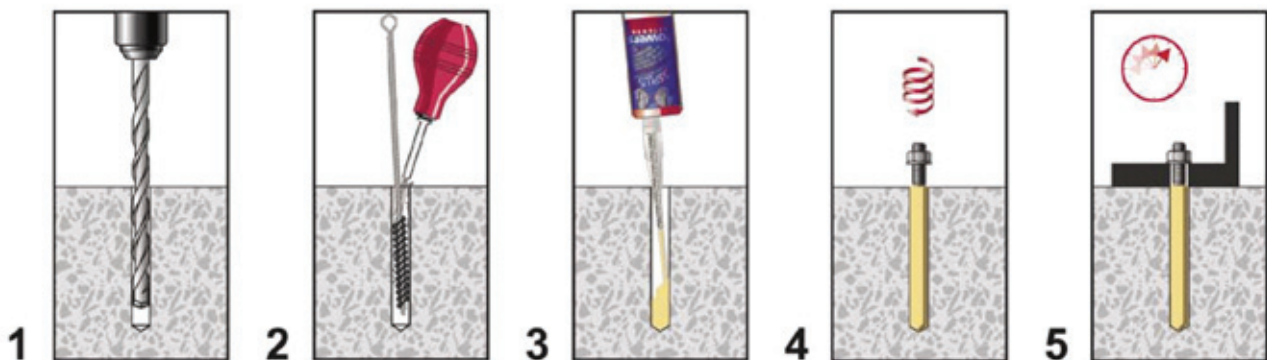


KF2 Polyester injection gel



Adhesive Type	Bar Dia. (mm)	Drill Dia. (mm)	Depth (mm)	Edge Distance (mm)		Spacing (mm)		Recommended Working Load Safety Factor 4:1 AAC Density 525 kg/m³ kN							
								Block		CIWS		Panel Cladding		Structural Floor Panel	
				Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear	Tension	Shear
Power-fast Plus	10	12	90	75	100	75	100	1.98	1.03	2.11	1.16	0.61	0.34	2.29	1.26
	12	14	110					2.34	1.22	2.74	1.5	0.68	0.37	2.88	1.58
KF2	10	12	90					1.34	0.76	0.78	0.47	0.26	0.14	0.69	0.41
	12	14	110					1.48	0.84	1.13	0.68	0.41	0.22	1.43	0.86

Installation of POWER-FAST PLUS® Epoxy & KF2 polyester injection gels



1 Drill a hole to the size and embedment required.

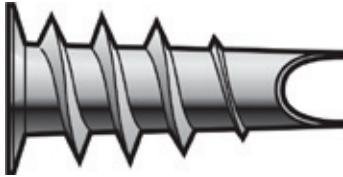
2 Blow the hole clean with compressed air; brush the hole, and blow it clean again.

3 Fill the hole approximately half way with adhesive starting from the rear of the hole. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets within the hole.

4 Push the threaded rod or rebar into the hole while turning slightly to insure full distribution of the adhesive. The rod or rebar should be free of dirt, grease, oil, or other foreign material.

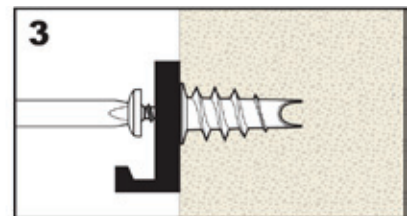
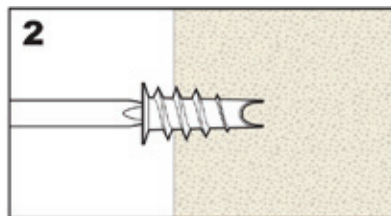
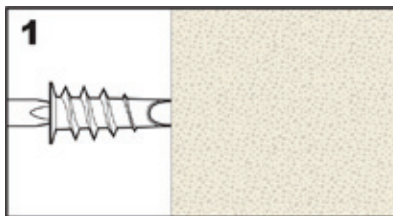
5 Allow the adhesive mortar to cure for the specified time prior to applying any load.

ZiP-It® Metal Hollow Body Self Drilling Metal Anchor



Anchor Length (mm)	Screw Size No.	Recommended Working Load Tension/Shear – kN(kg)
30	#6 - 8	0.28 (28) Incorporating Safety Factor = 5

Installation of ZiP-It® Anchor

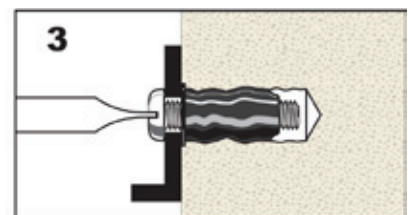
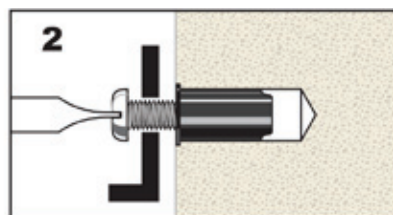
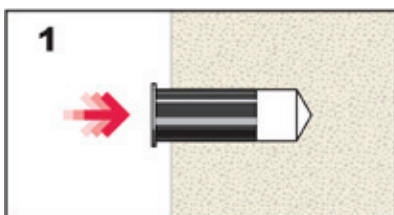


Rubber Nut Multi-purpose Anchor



Description	Anchor Length (mm)	Thread	Screw Length (mm)	Hole Dia. (mm)	Recommended Working Load Tension/Shear – kN(kg)
M5 x 38	38	M5	50	10	0.41 (41) Incorporating Safety Factor = 5

Installation of Rubber Nut Anchor



MUNGO Nylon Plug (MN)



Description	Plug & Drill Dia. (mm)	Length (mm)	Screw Type		Recommended Working Load Tension/Shear	
			Gauge	mm	kN	kg
MN 4	4	20	2 - 5		0.02	2
MN 5	5	25	3 - 8	M3	0.04	4
MN 6	6	30	6 - 10	M4	0.06	6
MN 7	7	35	9 - 10	M4	0.07	7
MN 8	8	40	9 - 14	M5	0.09	9
MN 10	10	50	14 - 20	M6	0.20	20
MN 12	12	60	20 - 24	M8	0.40	40
MN 14	14	70	-	M10	0.50	50
MN 16	16	80	-	M12	0.60	60
MN 20	20	90	-	M14	1.00	100

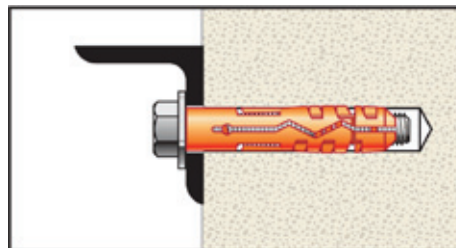
Tested in block. Reached with max. diameter wood screw Safety Factor = 5

Method of Installation

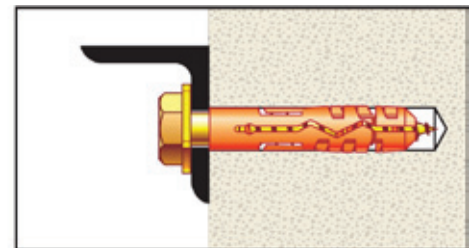
Through and pre-assembly fixing

Applications

Skirtings, coat hangers, small light fittings, towel rails, mirrors, pictures, pipe brackets, shelves, light cupboards, etc.



Fixing with MN and metric screw - through fixing



Fixing with MN and wood/chipboard screw - pre-assembly fixing

MUNGO Nylon Plug Long (MNL)



Description	Plug & Drill Dia. (mm)	Length (mm)	Screw Size (Gauge)	Recommended Working Load Tension/Shear – kN(kg)	
				kN	kg
MNL 6	6	50	6 - 10	0.06	6
MNL 8	8	60	9 - 14	0.09	9

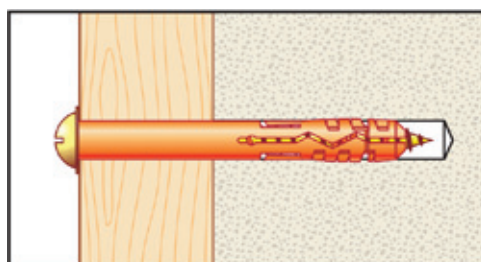
Tested in block. Reached with max. diameter wood screw Safety Factor = 5

Method of Installation

Through and pre-assembly fixing

Applications

Timber door frames, timber window frames



Suitable for Frame fixing

MUNGO Multi- plug Nylon (MU)



Description	Plug & Drill Dia. (mm)	Length (mm)	Screw Type		Recommended Working Load Tension/Shear	
			Gauge	mm	kN	kg
MU 6	6	35	6 - 8	M4	0.30	30*
					0.15	15**
MU 8	8	50	9 - 14	M6	0.50	50*
					0.30	30**
MU 10	10	60	14 - 20	M8	0.50	50*
					0.40	40**
MU 12	12	70	10 - 24	M10	1.20	120*
MU 14	14	75	24	M12	1.30	130*

Tested in block.

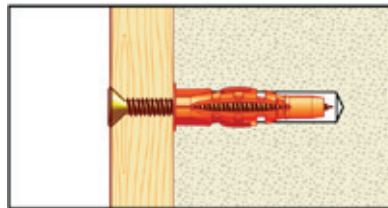
Safety Factor = 5:

*Wood screw max. diameter:

** Chipboard screw max. diameter

Applications

Mirrors, light fittings, plasterboard, shelving, lightweight cupboards, meter boxes, tool racks, curtain rails, towel rails, communication systems, etc.



MUNGO Nylon Frame Plug (MB-S), zinc plated screw





Important

Fixing into Supercrete block by rotational drilling only. DO NOT HAMMER DRILL.

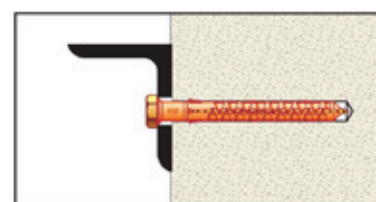
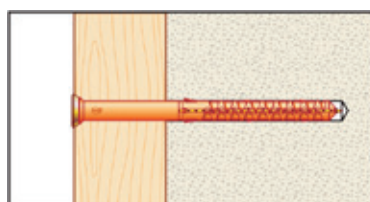
Tested on

Supercrete block

Description	Plug & Drill Dia. (mm)	Length (mm)	Usable Length (Gauge)	Recommended Working Load Tension/Shear – kN(kg)	
				kN	kg
MBSH 1080		80	10	1.1	110
MBSH 10100		100	30		
MBSH 10120		120	50		
MBSH 10140		140	70		
MBSH 10160		160	90		
MBSH 10200		200	130		
MBSH 10240		240	170		
MBSH 10280		280	210		
MBSH 10300		300	230		
MBSH 1080		80	10	1.1	110
MBSH 10100		100	30		
MBSH 10120		120	50		
MBSH 10140		140	70		
MBSH 10160		160	90		
MBSH 10200		200	130		

Applications

Window frames, door frames, grab rails, hand rails, cisterns, clothes dryers, hand basins, sinks, kitchen cupboards, etc



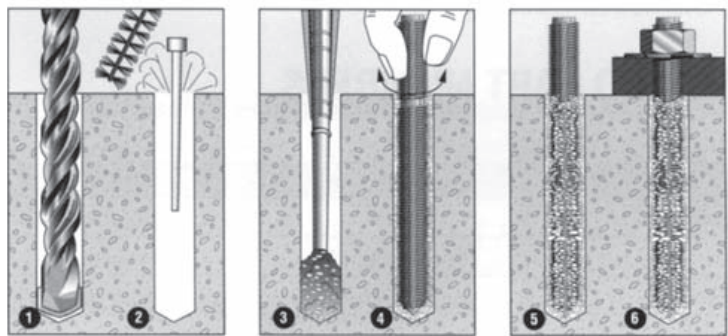
Chemset Injection 101 series



Anchor Part No.	Anchor Size		Twist Drill		Recommended Working Loads (Safety Factor 3:1)				Edge Distance (mm)		Spacing (mm)	
	Dia. (mm)	Length (mm)	Dia. (mm)	Length (mm)	Tensile Load (kN)		Shear Load (kN)					
					AAC Compressive Strength (MPa)		AAC Compressive Strength (MPa)		Shear	Tension	Shear	Tension
					2.5	4.5	2.5	4.5				
					M10I30	10	130	12				
M12I60	12	160	13	110	2.3	2.9	1.3	1.6	72	100	72	100

Installation Procedure

1. Drill recommended diameter and depth hole
2. Clean hole with hole cleaning brush. Remove all debris using hole blower. Hole may be damp but no water present.
3. Insert mixing nozzle to bottom of hole. Fill hole to $\frac{3}{4}$ hole depth slowly, ensuring no air pockets form.
4. Insert Ramset anchor stud/rebar to bottom of hole while turning.
5. Leave Chemset Injection to cure as per setting times
6. Attach fixture



Installation Temperature Limits

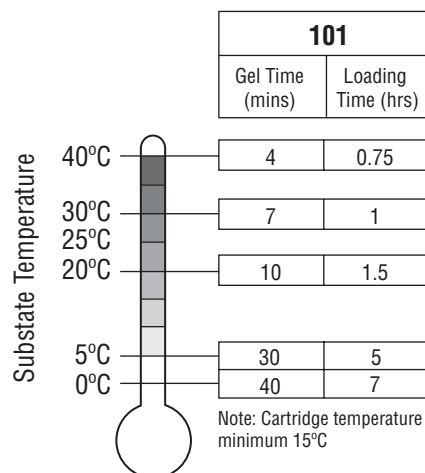
Substrate: 10°C to 43°C

Mortar: 15°C to 30°C

Load should not be applied to anchor until the chemical has sufficiently cured as specified opposite

Service Temperature Limits

-10°C to 80°C



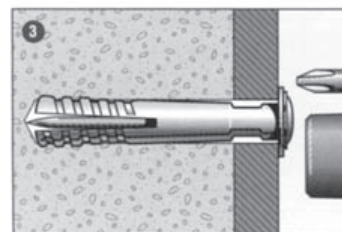
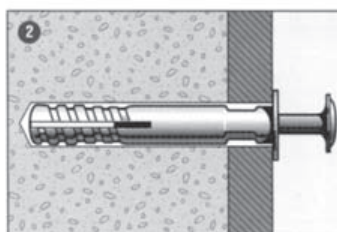
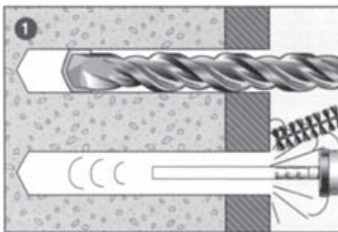
EasyDrive Nylon Anchors



Anchor Part No.	Anchor Size		Twist Drill		Recommended Working Loads (Safety Factor 3:1)				Edge Distance (mm)		Spacing (mm)	
					Tensile Load (kN)		Shear Load (kN)					
	Dia. (mm)	Length (mm)	Dia. (mm)	Length (mm)	AAC Compressive Strength (MPa)		AAC Compressive Strength (MPa)		Shear	Tension	Shear	Tension
					2.5	4.5	2.5	4.5				
ED05033	5	33	5	27	50	60	105	160	35	70	50	50
ED06042	6	42	6	30	60	70	140	200	35	70	50	50
ED06055	6	55	6	30	60	70	140	200	35	70	50	50
ED06075	6	75	6	30	60	70	90	130	35	70	50	50
ED08120	8	120	8	40	125	150	140	170	40	80	60	60

Installation Procedure

1. Drill hole to correct diameter and depth using the fixture as template. Clean thoroughly with brush. Remove debris by way of vacuum or hand pump, compressed air, etc.
2. Insert nylon anchor into hole through fixture until head is tight against fixture.
3. Screw, or tap home with hammer, expansion nail. Expansion nail is easily removed with screwdriver.



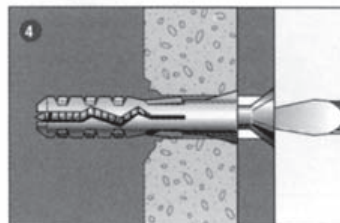
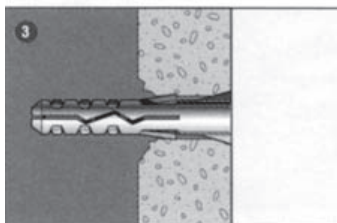
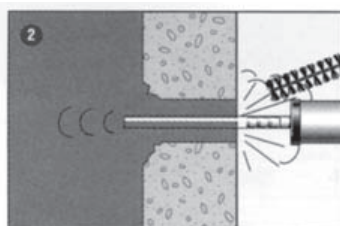
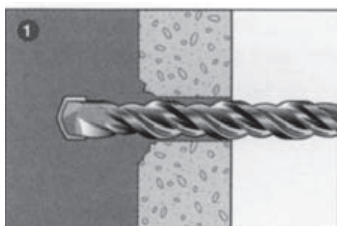
RamPlug Masonry Anchors



Anchor Part No.	Anchor Size		Twist Drill		Recommended Working Loads (Safety Factor 3:1)				Edge Distance (mm)		Spacing (mm)	
	Dia. (mm)	Length (mm)	Dia. (mm)	Length (mm)	Tensile Load (kN)		Shear Load (kN)					
					AAC Compressive Strength (MPa)		AAC Compressive Strength (MPa)		Shear	Tension	Shear	Tension
					2.5	4.5	2.5	4.5				
DNP 05	5	25	5	35	55	85	55	90	35	70	50	50
DNP 06	6	30	6	40	85	135	85	125	35	70	50	50
DNP 07	7	35	7	50	120	170	100	140	40	80	60	60
DNP 08	8	40	8	55	160	215	140	200	40	80	60	60
DNP 10	10	50	10	65	255	370	165	245	75	100	75	75

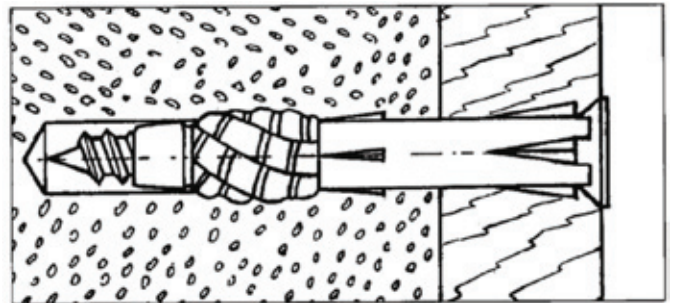
Installation Procedure

1. Drill hole to correct diameter and depth.
2. Clean thoroughly with brush. Remove debris by way of vacuum or hand pump or compressed air, etc.
3. Insert the RamPlug into hole until flush with the surface.
4. Pass wood screw through fixture and into the RamPlug. Tighten with screwdriver.



TFS – L: All Purpose Long Plug

The TFS-L All purpose Long Plug is designed to knot up inside Supercrete™ blocks as the screw is tightened, providing a deep seated grip. The appropriate hole size must be drilled first and then use of a screw long enough to protrude through the end of the plug.

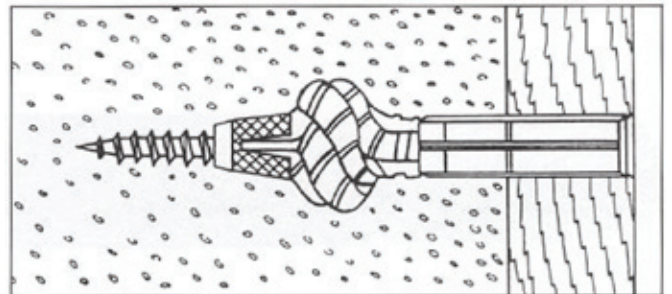


Anchor Type	Hole Diameter (mm)	Screw Diameter (mm)	Minimum Anchorage (mm)	Working Load Tension/Shear – kN(kg)
TFS-L 6/65	6	4.5	50	0.2 (20)
TFS-L 8/80	8	6.0	70	0.3 (30)
TFS-L 10/100	10	7.0	70	0.4 (40)

Tested in block; Safety Factor = 5

VLF Frame Fixings

The pre-assembled VLF Frame Fixing is used for piercing as a stable item and can be hammered like a nail without pre-drilling into the Supercrete™ AAC. The anchor is set by tightening the screw a maximum of 6 turns, when the expansion section of the plug is drawn axially outwards and knots up deep within the concrete to provide optimum holding strength.



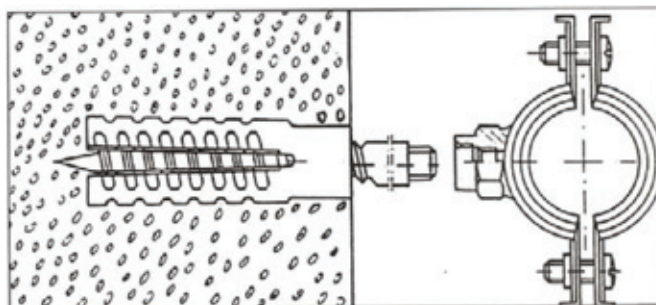
Anchor Type	Hole Diameter (mm)	Screw Diameter (mm)	Minimum Anchorage (mm)	Working Load Tension/Shear – kN(kg)
VLF 6 (csk)	6	70	70	0.3 (30)
VLF 8 (csk)	8	80, 100, 115, 135	70	0.4 (40)
VLF 10 (hex & csk)	10	100, 115, 135, 160	70	0.5 (50)

Tested in block; Safety Factor = 5

MKD Metal Claw Plug

The MKD claw anchor is a four part steel expansion plug with up to 22 double sided claws per segment for maximum grip. They are suitable for coach, wood, and chipboard screws and can also be used with headless metric screws for installation of pipe fittings.

The MKD anchors can be hammer driven direct into Supercrete™ blocks without pre-drilling, but a 5mm pilot hole is recommended for accurate placement or near the edges of blocks.

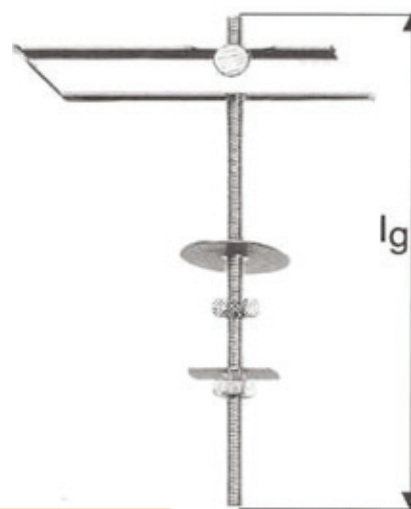


Anchor Type	Hole Diameter (mm)	Screw Diameter (mm)	Minimum Anchorage (mm)	Working Load Tension/Shear – kN(kg)
MKD 6/32	6	5 - 6	32	0.25 (25)
MKD 8/38	8	7 - 8	38	0.35 (35)
MKD 8/60	8	7 - 8	60	0.40 (40)
MKD 10/60	10	8 - 10	60	0.55 (55)

Tested in block; Safety Factor = 5

KD – DV Heavy Load Toggle

The KD-DV Heavy Load Gravity Toggle is available in M8 and M10 thread sizes and comes standard in 100mm and 200mm lengths and can also be supplied longer to order. The toggle is used for fixing through Supercrete™ blocks and panels in situations where only a blind fixing can be used and heavy loads are required.



Anchor Type	Hole Diameter (mm)	Anchor Length (mm)	Working Load Tension/Shear – kN(kg)
KD M8	22	100/200+	1.2 (120)
KD M10	22	100/200+	1.2 (120)

Tested in 75mm thick Panel; Safety Factor = 3

Aircrete Anchor Type - GB

The Fischer Aircrete Anchor Type – GB is suitable for use in aerated concrete.

The anchor is hammered into a clean hole, formed by drilling or a metal punch. The helical stabilisers rotate into the aerated concrete and effectively distribute the load over their greater surface area. When the screw fastener is installed, the base of the fastener expands. The wide surface area provides excellent support for the screw and assures a high resistance to shear load.



Anchor Type	Hole Dia. (mm)	Plug Length (mm)	Screw Diameter (mm)	Min. Hole Depth (mm)	Screw Embedment (mm)	Max. Wall Thickness (mm)	Recommended Tensile Load kN	
							Block	Panel
GB 8	8	50	5	60	55	100	0.2	0.4
GB 10	10	55	7	65	62	100	0.3	0.8
GB 14	14	75	10	90	85	200	0.5	1.2

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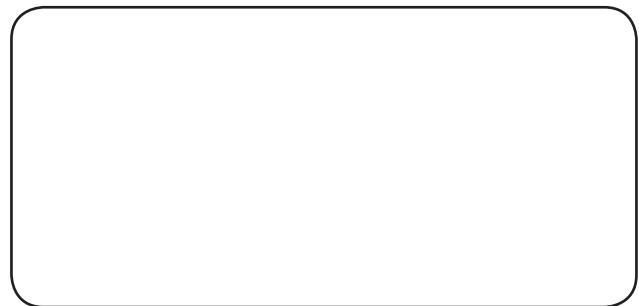
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