walraven

Smart anchoring solutions

UPDATED

Heavy Duty Anchors

Mechanical and chemical anchoring solutions for every installation

The value of smart

Inspired by smart solutions from the start

The Walraven Group was established in 1942. Our founder was an inventor, always seeking out smart solutions. More than 80 years later we have become a globally active company, still continually striving to develop simple, yet smart product systems. With our wide product range and expert advice, we can provide complete solutions for every aspect of any project, no matter how large or complex.

For you.

The value of smart

Walraven Product Families

At Walraven, we think beyond individual products. Our products are designed as systems that combine and support each other. Due to our system thinking and wide range, combined with our expert advice, you can find a solution for every problem.

We are dedicated to making your work easier and more efficient. That is why we continuously work on bringing smart solutions to the market. We believe in simple, yet intelligent solutions that make a difference.

Heavy Duty Anchors

Walraven offers a wide range of ETA-approved mechanical and chemical anchors, a dedicated anchor calculation software and personalised technical advice service.
The Heavy Duty Anchors product range includes:

- WDI1 Drop-in anchors
- WCS1 Concrete screws
- WTB1, WTB7 Throughbolt anchors
- WHA1 Highload anchors
- WSA1 Shield anchors
- WCA1 Ceiling anchors
- WIS Chemical anchors

Electrical and Mechanical Fixings

Fixing Systems for plumbing, mechanical, solar and electrotechnical installations include:

- Pipe Fixing Systems
- Rail Support Systems
- Support Systems for Rooftop Installations
- BIS UltraProtect® 1000: Support system for indoor and outdoor use
- Britclips®: Spring steel clips for fixing conduits, cables and cable trays

Fire Protection Systems

Fire Protection Systems consists of a wide range of sealing products for passive fire protection of mechanical and electrical installations. The strength of the Fire Protection Systems lies in the combined use of certified Pacifyre® products, including:

- Pipe and cable penetrations
- Expansion joints, seams and void spaces
- Penetrations for lighting in fire-rated ceilings
- Penetrations for electrical socket/switches in fire-rated walls
- Various fire tested fixing products

Sanitary Systems

This system contains frames for fixing sanitary products to system walls, pre-walls and solid walls. Our frames have been tested for load capacity and corrosion resistance in accordance with European standards.

- Walkon® WC-elements
- Vario® elements for height adjustable WC

Choosing the Right Anchor

The selection and design of anchor solutions can be complex. To guarantee the safety of installations, selecting the right solution is essential. It is therefore important to understand the wide spectrum of parameters that influence the suitability of an anchoring product for a given application.

Before making a safe anchor choice, consider factors such as:

- *Base material type* in which the anchors will be fixed, such as concrete (cracked, non-cracked), masonry work, or natural stone amongst others.
- Required anchor *load bearing capacity*.
- *Base plate* and its size, material, number of anchors per plate, anchor spacing.
- *Environmental conditions*, such as presence of permanent humidity or particularly aggressive conditions, corrosion resistance requirements, anchor in-service temperature range or fire rating prerequisites.
- *Type of action*, such as static, quasi-static, or dynamic (e.g. fatigue, shock, or seismic).
- *Direction of action*, such as tension or compression load, shear load (with or without lever arm), or combined tension.
- *Influencing parameters*, such as base material strength class and member thickness, presence of reinforcement, presence of cracks, anchorage depth, edge distances.
- *Special requirements*, such as a requirement for a through fixing, anchor removability or immediate loading, or compatibility with extreme temperature during installation.

Our technical support teams are always available for consultation to help you choose the optimal anchoring solution for your project.

Walraven DesignFiX

Walraven DesignFiX is a free anchor design software that enables engineers, designers and specifiers to carry out post-installed anchor calculations in accordance with European anchor design methods:

- EN 1992-4, Method A
- EOTA ETAG001 Annex C, Method A: 2010
- EOTA TR029: 2010

It also provides a facility to design post-installed rebar connections according to Eurocode 2.

The software is an invaluable tool that saves time by performing automatic anchor calculations based on application and load details. It enables you to choose an optimal anchoring product for a given application, generates project reports, and provides quick access to European Technical Assessments for all Walraven heavy duty anchoring products.

Download Walraven DesignFiX software for free
For UK customers, please visit walraven.com/en/anchors
If you are an international customer, please visit walraven.com/int/anchors

Basics of Anchoring

Base Materials

Anchors can be fixed into a wide variety of base materials, and each material provides different conditions for anchoring. Therefore, a careful consideration of the base material and its properties is recommended to make a safe anchor choice.

Concrete

Concrete, in its standard form, is a mixture of cement, aggregates and water, and it is an ideal substrate for anchoring. It has a high compressive strength and a relatively low tensile strength. Concrete can be cast over steel reinforcement bars to improve its tensile strength and, as such, concrete is known as reinforced concrete.

Concrete may be further distinguished as non-cracked or cracked. Concrete zones affected by compressive load, e.g. walls or columns, are generally considered as non-cracked. Zones affected by tensile load, such as lower member parts of ceilings, are considered to be cracked. Cracks develop even in reinforced concrete zones affected by tensile loads. Although concrete cracks have widths of around 0.3mm and may be invisible to the human eye, they can have a significant effect on the loading capacity of an anchor. With this in mind, when anchoring into cracked concrete, only anchors that have been tested and approved for use in cracked concrete should be used. In cases where it is difficult or impossible to confirm that the concrete is non-cracked and will remain non-cracked throughout the service life of an anchor, the rule of thumb is to consider the concrete as cracked.

Concrete strength class is another parameter that can affect anchor performance. It is determined by conducting concrete compressive strength tests and expressed as a letter C followed by two sets of digits, e.g. C20/25. The digits refer to the minimum compressive strength (N/mm^2) of concrete specimens tested in accordance to EN 206 standard. Most anchors installed in higher strength concrete will withstand higher loads than the same anchors installed in lower strength concrete. To make sure whether a load increasing factor based on concrete strength class can be applied for a given anchor, always review its technical documentation.

Masonry

Masonry buildings and structures are built from a combination of two individual materials, bricks and mortar. Bricks exist in a large variety of types, shapes, and sizes, and can be either solid or hollow. Some examples are clay bricks, sand-lime bricks or concrete bricks. Anchors can be installed in masonry structures, but attention must be given to brick type in which the installation will be made. Each brick type has its own unique physical characteristics, such as density and compressive strength, and provides different conditions for anchoring. Installing anchors in brick joints (mortar) is not recommended. Masonry may be more sensitive to expansion forces of mechanical anchors than concrete, therefore, chemical anchors are particularly suitable for use in this substrate.

Other Base Materials

Lightweight concrete, aerated concrete, natural stone, rock and many other building materials are also encountered in practice. Even though anchoring is possible within these materials, further consideration is not given to them in this catalogue.

Substrate Drilling

Holes for anchor installations may be drilled in a number of ways. Rotary drilling, rotary hammer drilling, or diamond core drilling are the most popular drilling methods. Rotary drilling is most suitable for masonry, especially for hollow masonry. Rotary hammer drilling and diamond core drilling methods are used to drill holes in concrete. Most anchors are tested and approved for use in holes drilled by rotary or rotary hammer drilling methods. If diamond core drilling is required for a particular application, an anchoring product specifically approved for installation in diamond core drilled holes should be used, such as Walraven WPER500 chemical anchoring system.

Installation

Incorrect installation is the main cause for a significant portion of anchor failures. When using mechanical or chemical anchors, always ensure you are familiar with the installation procedure of the particular product used. Follow the procedure carefully to ensure that the installed anchor achieves the intended load and is safe. The full installation procedure for every product is provided within the relevant European Technical Assessment or within product's technical documentation.

Mechanical Anchors

Mechanical anchors are used to secure loads to structures. The basic working principles which make mechanical anchors hold in a building material are either friction, mechanical interlock or both.

Expansion Anchors

Expansion anchors are held in place primarily by friction, and two types of expansion anchor types can be distinguished: *torque-controlled* and *displacement-controlled*.

When a certain amount of torque is applied to *torque-controlled anchors* through the tightening of a nut, typically a metal cone at the tip of the anchor is drawn into a metal sleeve. The sleeve then expands, presses against the walls of a hole and locks the anchor in position. Walraven *WTB1* and *WTB7* throughbolts, *WHA1H* highload anchor, and *WSA1* shield anchors are examples of torque-controlled anchors.
Displacement-controlled anchors are typically set by the hammering of a metal cone against the body of an anchor. As the cone is driven in, it expands anchor body elements towards the substrate, which locks the anchor in position. Walraven *WDI1* drop-in anchors and *WCA1* ceiling anchors are examples of displacement-controlled anchors.

It is worth noting that the expansion force of torque- and displacement-controlled anchors cause some permanent deformation to the substrate, and the expanded anchor elements form a degree of mechanical interlock with the base material as well.

Concrete screws

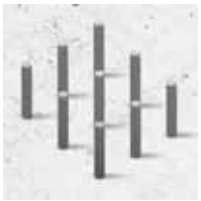
Concrete screws are held in place by mechanical interlock. As they are screwed into pre-drilled holes, the saw-tooth threads cut into the concrete and form the mechanical interlock between the screw and the base material. Walraven *WCS1* concrete screws are available as part of Walraven Heavy Duty Anchors product range.

Undercut anchors

Undercut anchors are held in place by mechanical interlock. During an installation, an undercut hole in the base material is formed using a special drill bit. An undercut anchor is then placed into the hole. When it is set, it expands into the undercut cavity and forms the mechanical interlock with the base material. Undercut anchors can usually be removed without damaging the concrete substrate.

Chemical Anchoring Systems

Chemical anchoring systems have two primary applications. They are used for anchoring threaded bars or rebars as anchors in concrete or other substrates, or for post-installed rebar connections, where a new concrete member is connected to existing concrete by installing rebars into existing concrete and casting new concrete over them.



Basics of Anchoring

Chemical anchors function by bonding to the steel element and the base material a molecular level. They are a very versatile anchoring solution, offering valuable benefits:

- Suitable for a wide range of light to heavy duty applications.
- No expansion forces are exerted on the substrate. This allows installation of anchors with shorter edge distances and reduced anchor spacing if compared with traditional anchors.
- Suitable for use in a wide range of base materials.
- Can be used with a wide range of threaded rod and rebar diameters at flexible embedment depths.
- They protect the bonded-in part of the steel element from corrosion and aggressive chemicals.

A typical chemical anchoring system comprises of a two-component chemical anchoring cartridge, a static mixer nozzle, a steel element (threaded rod or rebar), and installation accessories such as hole-cleaning brush, plastic sleeve, internally threaded socket and a blow pump. As the cartridge is extruded through the static mixing nozzle, the two components are mixed and a chemical hardening reaction is initiated. The threaded rod or rebar should be inserted in the drilled hole within the gelling time of the product, while the load can be applied after curing time has elapsed.

Walraven *WPSF100*, *WVSF200* and *WPER500* chemical anchoring systems are available as part of Walraven Heavy Duty Anchors product range.

Anchor Design

Design Methods

The design method for metal anchors in concrete is given within Annex C of European Technical Approval Guideline ETAG001. Design rules for metal anchors for multiple use for non-structural applications are provided within Part 6 of European Technical Approval Guideline ETAG001. The design method for chemical anchors with variable embedment depth is outlined within EOTA Technical Report TR029.

Safety Concept

At Walraven, partial safety factor concept according to European Technical Guideline ETAG001 is used to design anchorages. This concept requires that anchor design resistance Rd is always greater than or equal to the value of design actions S_d.

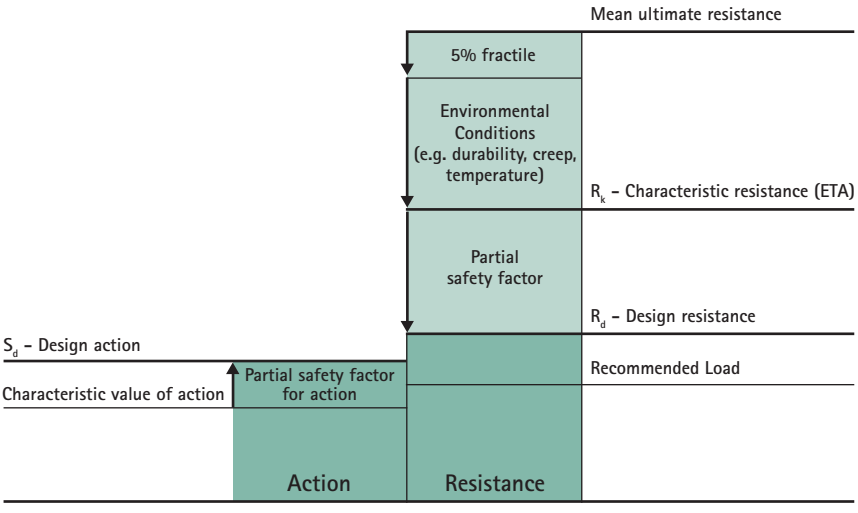
$R_d \geq S_d$

Actions to be used in design and the partial safety factors may be obtained either from a published National Annex to EN 1991 or, in its absence, to national regulations or, in their absence, to EN 1991 itself.

The design resistance is calculated as follows: $R_d = R^k/\gamma_M$
R_k = characteristic resistance of a single anchor or an anchor group
γ_M = partial safety factor for material

For more information about design and safety concept, refer to Annex C of European Technical Approval Guideline ETAG001.

Anchor Design / Partial Safety Factor Concept



Anchor Failure Modes

Anchorages may fail due to a number of reasons. Some examples include incorrect installation, misidentification of base material, its quality or properties, or miscalculation of anchor load bearing capacity. Importance, therefore, is given to understanding anchor failure modes and the parameters that influence them.

Anchor failure modes under axial tension load

- *Pullout failure* occurs when an expansion anchor is pulled out from the substrate while no significant damage to the substrate is caused. Such failure can be observed when the expansion force of an anchor is insufficient to sustain it within the substrate until concrete cone or steel failure occurs.
- *Steel failure* yields a maximum load an anchor may achieve and leads to the failure of the steel element of the anchorage (e.g. failure of an anchor bolt, screw, threaded rod).
- *Concrete cone failure* occurs when an anchor under load breaks out from the concrete together with a conical body of concrete, which typically begins at the area of expansion or undercut. Anchor spacing and edge distances influence concrete cone failure.
- *Splitting failure* occurs when the structural member fails as a result of the expansion force incurred by an anchor. The structural member may split entirely, or cracks may form between the adjacent anchors or between an anchor and the edge of the member. Splitting failure is a result of an installation where the dimensions and strength of the structural member are insufficient to accommodate expansion forces of installed anchors, or when expansion anchors are installed too close to the edges of the member or to each other.
- *Combined concrete cone and pullout failure* typically occurs with chemical anchoring systems, where the anchor pulls out from the concrete and breaks out a conical body of the concrete at 25% to 70% of the anchorage depth.

Anchor failure modes under shear load

- *Steel failure* may occur when a shear load applied on an anchor exceeds its maximum shear strength. Steel failure provides maximum shear load an anchor may achieve and leads to the failure of the steel element of the anchorage (e.g. failure of an anchor bolt, screw, threaded rod).
- *Concrete pryout failure* occurs when concrete breaks out within the opposing side of a shear load applied on an anchor. Such failure typically happens with short and stiff anchors.
- *Concrete edge failure* occurs when concrete is unable to withstand a shear load applied on an anchor, and leads to the anchor breakout at an edge or a corner of the concrete structural member. Concrete edge failure is typically caused by anchors installed at insufficient distance to edge or edges of the structural member.

Legend

Parameter	Unit	Description
C_{cr}	(mm)	Characteristic edge distance
S_{cr}	(mm)	Characteristic anchor spacing distance
C_{min}	(mm)	Min. edge distance
d_0	(mm)	Drill hole diameter
d_b	(mm)	Cleaning brush diameter
d_k	(mm)	Shaft diameter
d_{nom}	(mm)	External diameter
d_s	(mm)	Thread diameter
F_{rec}	(kN)	Recommended load for all directions
h	(mm)	Member thickness
h_0	(mm)	Drill hole depth
h_{ef}	(mm)	Effective embedment depth
h_{min}	(mm)	Min. member thickness
h_{nom}	(mm)	Nominal embedment depth
L	(mm)	Length
L_g	(mm)	Inner thread length
$l_{s,min}$	(mm)	Min. screwing depth
LU	(mm)	Useful Length
M	(-)	Thread
N_{rec}	(kN)	Recommended tensile load
S_{min}	(mm)	Min. anchor spacing
$t_{fix,max}$	(mm)	Max. fixture thickness
$T_{inst,max}$	(Nm)	Max. installation torque
γ_M	(-)	Partial safety factor
γ_{Mc}	(-)	Partial safety factor

Anchor selection matrix

	Mechanical Anchors	W-LX-N	W-LX-M	W-LX-P /PX	W-LX-H	WTB1	WTB7	WTB1 SSt	WHA1	WCA1	WDI1
	Page number	*16*	*18*	*20*	*22*	*26*	*29*	*32*	*36*	*42*	*46*
Material	Zinc Plated	✔	✔	✔			✔		✔	✔	✔
	Zinc-flake Coated				✔	✔					
	Stainless Steel (SSt)							✔			
Substrates	Non-cracked Concrete	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	Cracked Concrete	☑	☑	☑	☑	☑		☑	☑	☑	☑
	Hollow core slab	☑	☑	☑	☑						
	Silicate Brick	☑	☑	☑	☑						
	Solid Brick	☑	☑	☑	☑						
	Hollow Brick	☑	☑	☑	☑						
	Aerated Concrete										
	Stone	☑	☑	☑	☑	☑	☑	☑			
Certification	ETA	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Seismic				C1				C1 / C2		
	Fire	✔	✔	✔	✔	✔		✔	✔	✔	✔

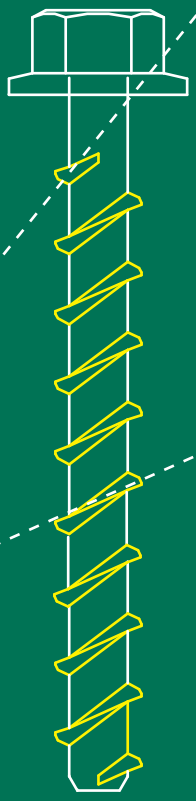
☑ Approved ☑ Also suitable for

WDI1L	WDI1R	WDI1 SSt	WGB M	WHC	WDI	WBA1	WSA1	Chemical Anchors	WPSF 100	WVSF 200	WIS-TR	WIS-SB
48	*50*	*52*	*56*	*58*	*60*	*62*	*67*	*Page number*	*68*	*70*	*72*	*74*
✔	✔		✔	✔			✔	Zinc Plated			✔	✔
								Zinc-flake Coated			✔	
		✔						Stainless Steel (SSt)			✔	
☑	☑	☑				☑	☑	Non-cracked Concrete	☑	☑		
☑	☑	☑						Cracked Concrete		☑		
	☑			☑								
							☑	Silicate Brick	☑			
							☑	Solid Brick	☑			
							☑	Hollow Brick	☑			
			☑					Aerated Concrete	☑			
							☑	Stone	☑			
✔	✔	✔						ETA	✔	✔		
								Seismic		C1		
✔	✔	✔						Fire		✔		

WCS Concrete Screws

Concrete
For cracked and non-cracked concrete

Easy Installation
As simple as drill, clean, and screw-in



Flexibility
Up to three embedment depth options

Seismic
WCS1H approved for seismic installations

Corrosion Resistance
WCS1H is treated with innovative zinc-flake corrosion-resistant coating

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W-LX-N Concrete Screws

Product overview

The W-LX-N concrete screws are characterised by versatility, quick and easy installation and high load capacity in cracked and non-cracked concrete. The W-LX-N screw has an SW13 head with a female internal M8/M10 thread and a hexagon drive.

ETA Option 1
ETA-21/0612

ETA ETAG001 Part 6
ETA-21/0613

Fire Resistance
R120

Material
Steel, zinc plated

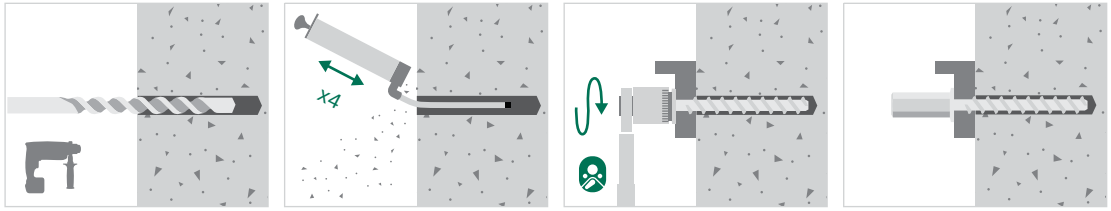
Features and benefits

- ETA Option 1 approval for cracked and non-cracked concrete
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Simple and quick installation procedure
- Approved for use in precast prestressed hollow core slabs
- Up to 3 anchoring depths provide maximum installation flexibility
- Reduced edge and anchor spacing distances
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- High load capacity
- Pre-installation and through-fixing

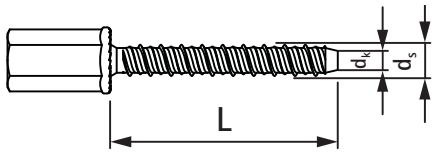
Substrate type

- Non-cracked concrete
- Cracked concrete
- Precast prestressed hollow core slabs

Installation guide



Product information



Part No.	Description	Anchor Size	d_k (mm)	d_s (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
62433304	W-LX-N	6x35	6	7.6	35	100	25600
62433305	W-LX-N	6x35	6	7.6	55	100	25600

Recommended loads*

Option 1 ETA-21/0612 - Single anchors in cracked and non-cracked concrete

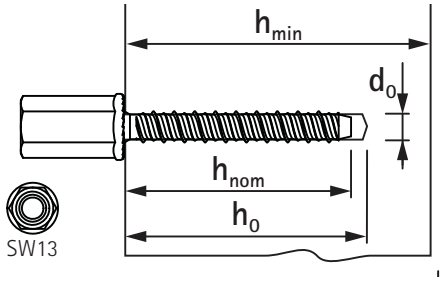
		Recommended tension load in C20/25 concrete	
		Cracked	Non-cracked
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)
62433305	W-LX-N 6x55	3.33	5.71

ETAG001 Part 6 ETA-21/0613 - Multiple use for non-structural applications

		Recommended tension load in C20/25 concrete	
		Cracked	Non-cracked
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)
62433304	W-LX-N 6x35	1.42	1.42
62433305	W-LX-N 6x55	4.28	4.28

**Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
62433305*	W-LX-N 6x55	6	65	100	h_{nom} 55	-	-	-
62433304**	W-LX-N 6x35	6	45	80	h_{nom} 35	45	45	-
62433305***	W-LX-N 6x55	6	65	100	h_{nom} 55	45	40	-

*Installation data provided according to *ETAG001 Part 6 ETA-21/0612; **Option 1 ETA-21/0613, reduced embedment depth. ***Option 1 ETA-21/0613, reduced embedment depth.*

W-LX-M Concrete Screws

Product overview

The W-LX-M concrete screws are characterised by versatility, quick and easy installation and high load capacity in cracked and non-cracked concrete. The W-LX-M screw has a male connection thread with an SW10 hexagon drive.

ETA Option 1
ETA-21/0612

ETA ETAG001 Part 6
ETA-21/0613

Fire Resistance
R120

Material
Steel, zinc plated

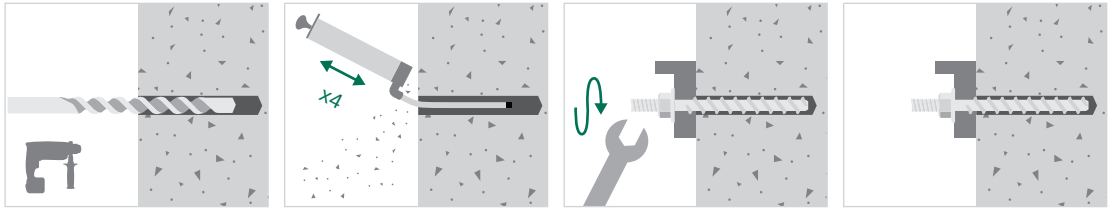
Features and benefits

- ETA Option 1 approval for cracked and non-cracked concrete
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Simple and quick installation procedure
- Approved for use in precast prestressed hollow core slabs
- Up to 3 anchoring depths provide maximum installation flexibility
- Reduced edge and anchor spacing distances
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- High load capacity
- Pre-installation and through-fixing

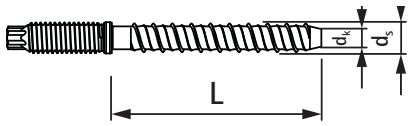
Substrate type

- Non-cracked concrete
- Cracked concrete
- Precast prestressed hollow core slabs

Installation guide



Product information



Part No.	Description	Anchor Size	d_k (mm)	d_s (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
62434304	W-LX-M 6x35	6x35	6	7.6	35	100	25600
62434305	W-LX-M 6x55	6x35	6	7.6	55	100	25600

Recommended loads*

Option 1 ETA-21/0612 - Single anchors in cracked and non-cracked concrete

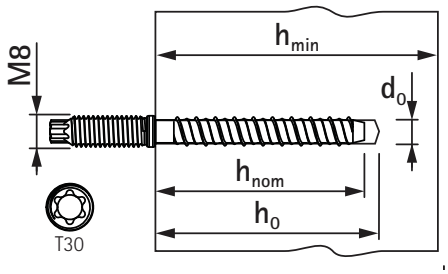
		Recommended tension load in C20/25 concrete	
		Cracked	Non-cracked
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)
62434305	W-LX-M 6x55	3.33	5.71

ETAG001 Part 6 ETA-21/0613 - Multiple use for non-structural applications

		Recommended tension load in C20/25 concrete	
		Cracked	Non-cracked
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)
62434304	W-LX-M 6x35	1.42	1.42
62434305	W-LX-M 6x55	4.28	4.28

**Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
62434305*	W-LX-M 6x55	6	65	100	h_{nom} 55	-	-	-
62434304**	W-LX-M 6x35	6	45	80	h_{nom} 35	45	45	-
62434305***	W-LX-M 6x55	6	65	100	h_{nom} 55	45	40	-

*Installation data provided according to *ETAG001 Part 6 ETA-21/0612; **Option 1 ETA-21/0613, reduced embedment depth. ***Option 1 ETA-21/0613, reduced embedment depth.*

W-LX-P/W-LX-PX Concrete Screws

Product overview

The W-LX-P/W-LX-PX concrete screws are characterised by versatility, quick and easy installation and high load capacity in cracked and non-cracked concrete.
The W-LX-P/W-LX-PX screw has a pan head with T30 Torx drive.

ETA Option 1
ETA-21/0612

ETA ETAG001 Part 6
ETA-21/0613

Fire Resistance
R120

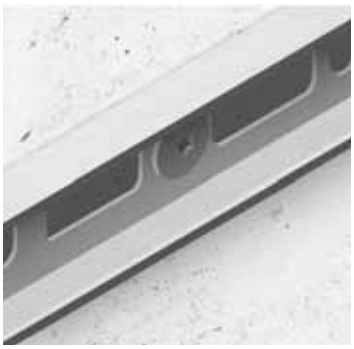
Material
Steel, zinc plated

Features and benefits

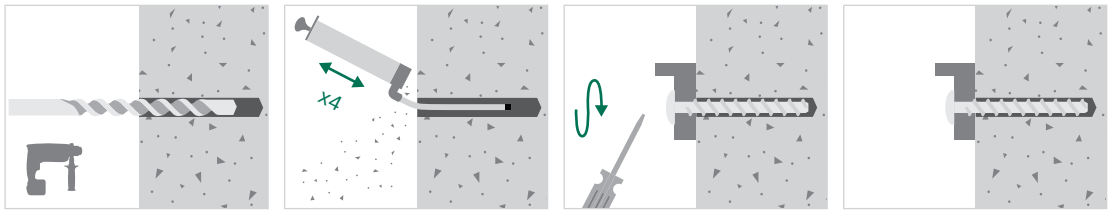
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Simple and quick installation procedure
- Approved for use in precast prestressed hollow core slabs
- Reduced edge and anchor spacing distances
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- High load capacity
- Through-fixing

Substrate type

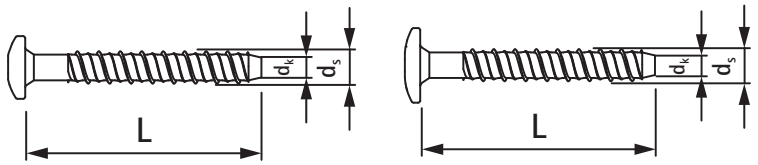
- Non-cracked concrete
- Cracked concrete
- Precast prestressed hollow core slabs



Installation guide



Product information



Part No.	Description	Anchor Size	d_k (mm)	d_s (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
62431304	W-LX-P 6x40	6x40	6	7.6	40	100	38400
62431306	W-LX-P 6x60	6x60	6	7.6	60	100	38400
62432304	W-LX-PX 6x40	6x40	6	7.6	40	100	38400
62432306	W-LX-PX 6x60	6x60	6	7.6	60	100	38400

Recommended loads*

Option 1 ETA-21/0612 - Multiple use for non-structural applications

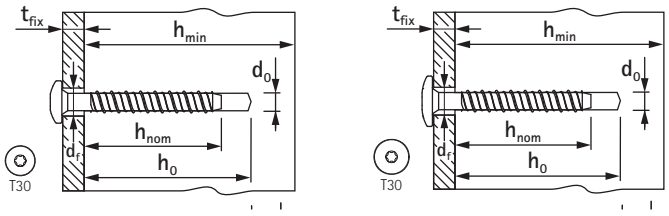
		Recommended tension load in C20/25 concrete	
		Cracked	Non-cracked
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)
62431304	W-LX-P 6x40	-	-
62431306	W-LX-P 6x60	3.33	5.71
62432304	W-LX-PX 6x40	-	-
62432306	W-LX-PX 6x60	3.33	5.71

ETAG001 Part 6 ETA-21/0613 - Multiple use for non-structural applications

		Recommended tension load in C20/25 concrete	
		Cracked	Non-cracked
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)
62431304	W-LX-P 6x40	1.42	1.42
62431306	W-LX-P 6x60	4.28	4.28
62432304	W-LX-PX 6x40	1.42	1.42
62432306	W-LX-PX 6x60	4.28	4.28

**Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
62431306, 62432306*	W-LX-P, W-LX-PX 6x60	6	65	100	h_{nom} 55	45	45	5
62431304, 62432304**	W-LX-P, W-LX-PX 6x40	6	45	80	h_{nom} 35	45	45	5
62431306, 62432306***	W-LX-P, W-LX-PX 6x60	6	65	100	h_{nom} 55	45	45	5

*Installation data provided according to *ETAG001 Part 6 ETA-21/0612; **Option 1 ETA-21/0613, reduced embedment depth. ***Option 1 ETA-21/0613, reduced embedment depth.*

W-LX-H Concrete Screws

Product overview

The W-LX-H concrete screws are characterised by versatility, quick and easy installation and high load capacity in cracked and non-cracked concrete. The W-LX-H screw has a hexagon head with a washer. It is zinc-flake coated for improved corrosion resistance.

ETA Option 1
ETA-21/0612

ETA ETAG001 Part 6
ETA-21/0613

Fire Resistance
R120

Seismic
C1

Material
Steel, zinc-flake coated

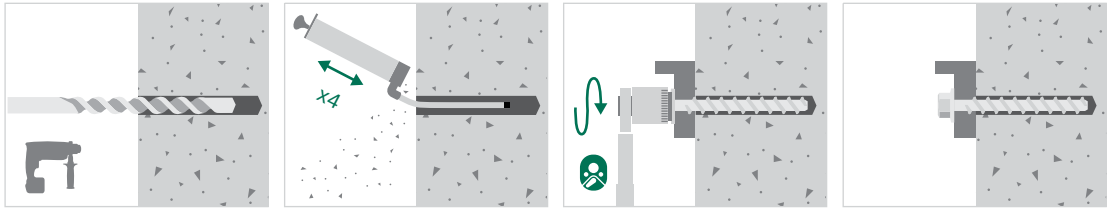
Features and benefits

- ETA Option 1 approval for cracked and non-cracked concrete
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Seismic performance category C1 for design of anchorages under seismic action
- Approved for use in precast prestressed hollow core slabs
- Up to 3 anchoring depths provide maximum installation flexibility
- Reduced edge and anchor spacing distances
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- High load capacity
- Through-fixing

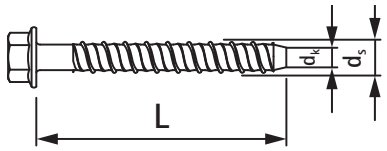
Substrate type

- Non-cracked concrete
- Cracked concrete
- Precast prestressed hollow core slabs

Installation guide



Product information



Part No.	Description	Anchor Size	d_k (mm)	d_s (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
62430304	W-LX-H	6x40	6	7.5	40	100	38400
62430306	W-LX-H	6x60	6	7.5	60	100	38400
62430308	W-LX-H	6x75	6	7.5	75	100	38400
62430406	W-LX-H	8x60	8	9.9	60	100	25600
62430408	W-LX-H	8x75	8	9.9	75	100	25600
62430409	W-LX-H	8x90	8	9.9	90	100	19200
62430410	W-LX-H	8x100	8	9.9	100	100	19200
62430412	W-LX-H	8x120	8	9.9	120	50	12800
62430507	W-LX-H	10x65	10	12.4	65	50	14400
62430509	W-LX-H	10x90	10	12.4	90	50	12800
62430510	W-LX-H	10x100	10	12.4	100	50	12800
62430512	W-LX-H	10x120	10	12.4	120	25	6400
62430514	W-LX-H	10x140	10	12.4	140	25	7200
62430608	W-LX-H	12x75	12	14.9	75	50	9600
62430610	W-LX-H	12x100	12	14.9	100	50	6400
62430711	W-LX-H	14x115	14	17.4	115	20	5120
62430713	W-LX-H	14x135	14	17.4	135	20	5120

Recommended loads*

Option 1 ETA-21/0612 - Single anchors in cracked and non-cracked concrete

		Recommended tension load in C20/25 concrete		
			Cracked	Non-cracked
Part No.	Description	h_{nom} (mm)	N_{rec} (kN)	N_{rec} (kN)
62430304	W-LX-H 6x40	-	-	-
62430306	W-LX-H 6x60	55	3.33	5.71
62430308	W-LX-H 6x75	55	3.33	5.71
62430406	W-LX-H 8x60	50	3.33	5.06
62430408	W-LX-H 8x75	70	6.19	9.04
62430409	W-LX-H 8x90	70	6.19	9.04
62430410	W-LX-H 8x100	70	6.19	9.04
62430412	W-LX-H 8x120	70	6.19	9.04
62430507	W-LX-H 10x65	55	3.80	5.93
62430509	W-LX-H 10x90	85	8.59	12.28
62430510	W-LX-H 10x100	85	8.59	12.28
62430512	W-LX-H 10x120	85	8.59	12.28
62430514	W-LX-H 10x140	85	8.59	12.28
62430608	W-LX-H 12x75	60	3.33	6.38
62430610	W-LX-H 12x100	100	10.86	15.52
62430711	W-LX-H 14x115	75	6.19	9.30
62430713	W-LX-H 14x135	120	14.47	20.67

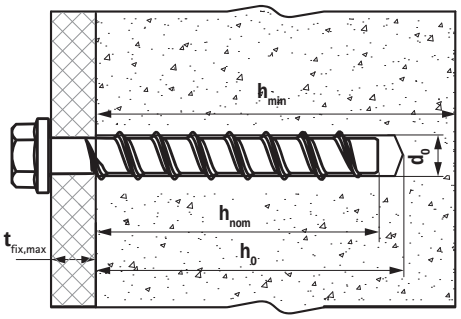
Recommended loads*

Option 1 ETA-21/0613 – Single anchors in cracked and non-cracked concrete

		Recommended tension load in C20/25 concrete		
			Cracked	Non-cracked
Part No.	Description	h_{nom} (mm)	N_{rec} (kN)	N_{rec} (kN)
62430304	W-LX-H 6x40	35	1.42	1.42
62430306	W-LX-H 6x60	39	2.85	2.85
62430308	W-LX-H 6x75	55	4.28	4.28
62430406	W-LX-H 8x60	50	3.57	3.57
62430408	W-LX-H 8x75	70	5.71	5.71
62430409	W-LX-H 8x90	70	5.71	5.71
62430410	W-LX-H 8x100	70	5.71	5.71
62430412	W-LX-H 8x120	70	5.71	5.71
62430507	W-LX-H 10x65	55	4.28	4.28
62430509	W-LX-H 10x90	85	9.52	9.52
62430510	W-LX-H 10x100	85	9.52	9.52
62430512	W-LX-H 10x120	85	9.52	9.52
62430514	W-LX-H 10x140	85	9.52	9.52
62430608	W-LX-H 12x75	60	-	-
62430610	W-LX-H 12x100	100	-	-
62430711	W-LX-H 14x115	75	5.71	5.71
62430713	W-LX-H 14x135	120	14.28	14.28

** Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
62430304	W-LX-H 6x40	6	50	100	h_{nom} -	45	45	40
62430306	W-LX-H 6x60	6	65	100	h_{nom} 55	45	45	5
62430308	W-LX-H 6x75	6	65	100	h_{nom} 55	45	45	20
62430406	W-LX-H 8x60	8	60	110	h_{nom} 50	50	50	10
62430408	W-LX-H 8x75	8	80	110	h_{nom} 70	50	50	5
62430409	W-LX-H 8x90	8	80	110	h_{nom} 70	50	50	20
62430410	W-LX-H 8x100	8	80	110	h_{nom} 70	50	50	30
62430412	W-LX-H 8x120	8	80	110	h_{nom} 70	50	50	50
62430507	W-LX-H 10x65	10	65	100	h_{nom} 55	60	60	10
62430509	W-LX-H 10x90	10	95	130	h_{nom} 85	60	60	5
62430510	W-LX-H 10x100	10	95	130	h_{nom} 85	60	60	15
62430512	W-LX-H 10x120	10	95	130	h_{nom} 85	60	60	35
62430514	W-LX-H 10x140	10	95	130	h_{nom} 85	60	60	55
62430608	W-LX-H 12x75	12	70	110	h_{nom} 60	80	80	15
62430610	W-LX-H 12x100	12	110	155	h_{nom} 100	80	80	0
62430711	W-LX-H 14x115	14	85	110	h_{nom} 75	100	100	40
62430713	W-LX-H 14x135	14	130	190	h_{nom} 120	100	100	15

Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
62430304	W-LX-H 6x40	6	45	100	h_{nom} 35	45	45	5
62430306	W-LX-H 6x60	6	45	100	h_{nom} 55	45	45	5
62430308	W-LX-H 6x75	6	45	100	h_{nom} 55	45	45	20
62430406	W-LX-H 8x60	8	50	110	h_{nom} 50	50	50	10
62430408	W-LX-H 8x75	8	50	110	h_{nom} 70	50	50	5
62430409	W-LX-H 8x90	8	50	110	h_{nom} 70	50	50	20
62430410	W-LX-H 8x100	8	50	110	h_{nom} 70	50	50	30
62430412	W-LX-H 8x120	8	50	110	h_{nom} 70	50	50	50
62430507	W-LX-H 10x65	10	60	100	h_{nom} 55	60	60	10
62430509	W-LX-H 10x90	10	60	130	h_{nom} 85	60	60	5
62430510	W-LX-H 10x100	10	60	130	h_{nom} 85	60	60	15
62430512	W-LX-H 10x120	10	60	130	h_{nom} 85	60	60	35
62430514	W-LX-H 10x140	10	60	130	h_{nom} 85	60	60	55
62430711	W-LX-H 14x115	14	100	110	h_{nom} 75	100	100	40
62430713	W-LX-H 14x135	14	100	190	h_{nom} 120	100	100	15

*Installation data provided according to *ETAG001 Part 6 ETA-21/00612; **Option 1 ETA-21/0613.*

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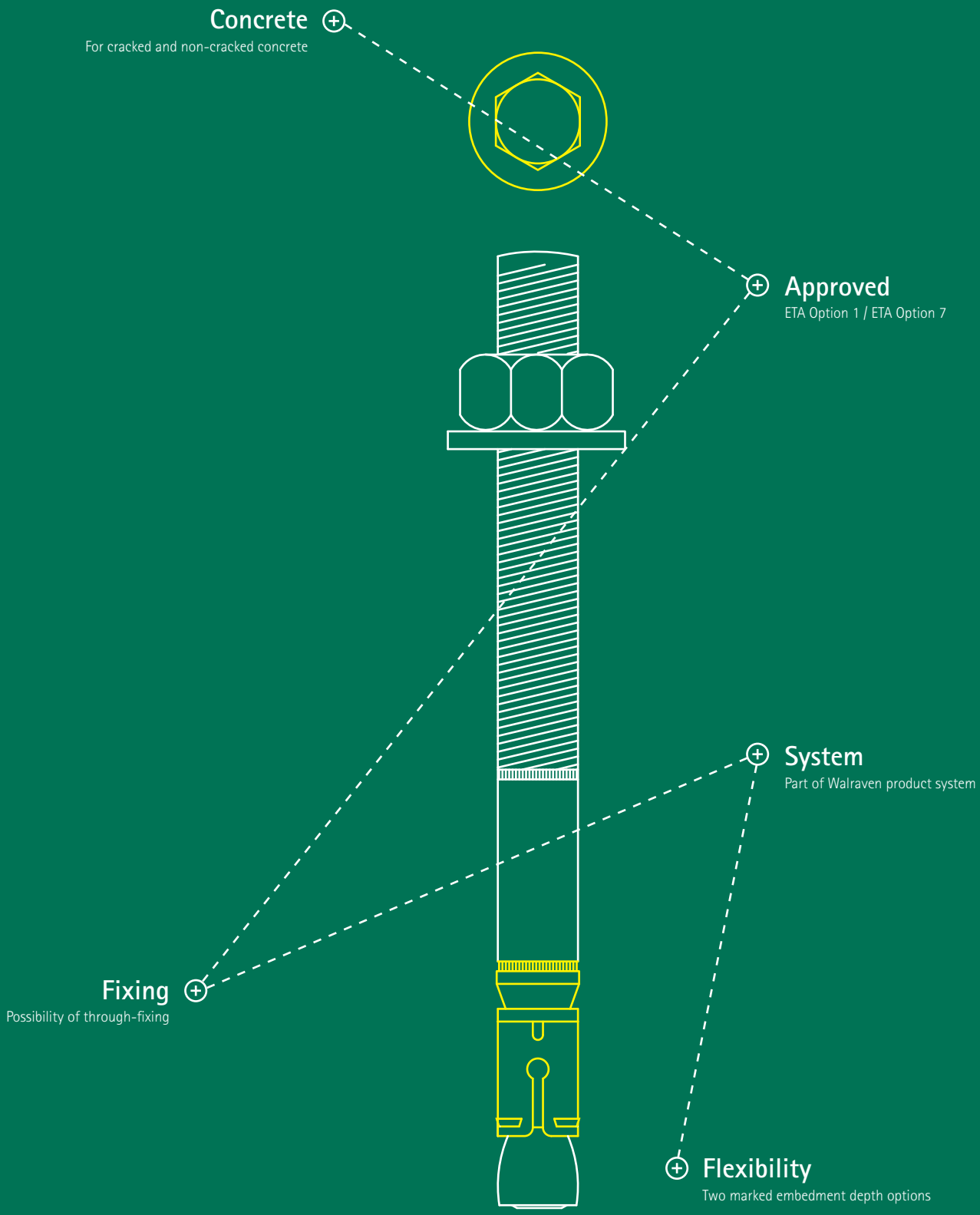
WTB Throughbolt Anchors



walraven

WTB1 Throughbolt Anchors

Product overview

The WTB1 throughbolts are torque-controlled corrosion-resistant through-fixings for medium to heavy loads. They are approved for use in cracked and non-cracked concrete.

ETA Option 1
ETA-17/0345

Fire Resistance
R120

Material
Steel, zinc-flake coated

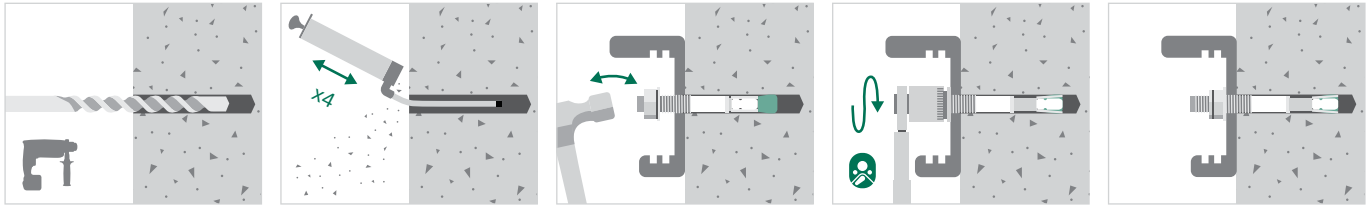
Features and benefits

- ETA Option 1 approval for cracked and non-cracked concrete
- Zinc-flake coated for improved corrosion resistance
- Two embedment depths provide installation flexibility
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- High load capacity
- Pre-installation and through-fixing

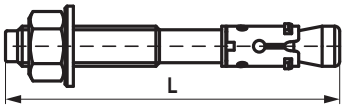
Substrate type

- Non-cracked concrete
- Cracked concrete
- Stone

Installation guide



Product information



Part No.	Description	Anchor Size	L (mm)	Box qty (pcs)
609831080	WTB1 8x80	M8	80	100
609831081	WTB1 8x100	M8	100	50
609831082	WTB1 8x115	M8	115	50
609831100	WTB1 10x95	M10	95	50
609831101	WTB1 10x115	M10	115	50
609831102	WTB1 10x130	M10	130	50
609831120	WTB1 12x120	M12	120	50
609831121	WTB1 12x135	M12	135	50
609831160	WTB1 16x140	M16	140	25

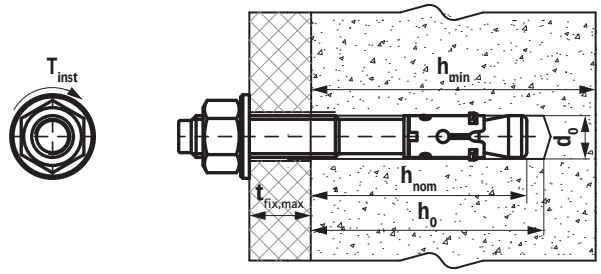
Recommended loads*

Option 1 ETA-17/0345 - Single anchors in cracked and non-cracked concrete

		Recommended tension load in C20/25 concrete at standard embedment depth		
		Cracked	Non-cracked	Partial safety factor
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)	γ_{Mc}
609831080	WTB1 8x80	1.98	3.57	1.80
609831081	WTB1 8x100	1.98	3.57	1.80
609831082	WTB1 8x115	1.98	3.57	1.80
609831100	WTB1 10x95	4.29	5.71	1.50
609831101	WTB1 10x115	4.29	5.71	1.50
609831102	WTB1 10x130	4.29	5.71	1.50
609831120	WTB1 12x120	5.71	9.52	1.50
609831121	WTB1 12x135	5.71	9.52	1.50
609831160	WTB1 16x140	9.52	16.67	1.50

** Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)		h_{ef} (mm)	$t_{fix,max}$ (mm)	T_{inst} (Nm)
609831080	WTB1 8x80	8	55	100	Standard	55	47	15	10
		8	40	100	Reduced	40	32	30	10
609831081	WTB1 8x100	8	55	100	Standard	55	47	35	10
		8	40	100	Reduced	40	32	50	10
609831082	WTB1 8x115	8	55	100	Standard	55	47	50	10
		8	40	100	Reduced	40	32	65	10
609831100	WTB1 10x95	10	69	120	Standard	69	59	15	20
		10	49	100	Reduced	49	39	35	20
609831101	WTB1 10x115	10	69	120	Standard	69	59	35	20
		10	49	100	Reduced	49	39	55	20
609831102	WTB1 10x130	10	69	120	Standard	69	59	50	20
		10	49	100	Reduced	49	39	70	20
609831120	WTB1 12x120	12	80	140	Standard	80	68	25	40
		12	60	100	Reduced	60	48	45	40
609831121	WTB1 12x135	12	80	140	Standard	80	68	40	40
		12	60	100	Reduced	60	48	60	40
609831160	WTB1 16x140	16	100	170	Standard	100	85	20	100
		16	80	130	Reduced	80	65	40	100

WTB7 Throughbolt Anchors

Product overview

The WTB7 throughbolts are torque-controlled through-fixings for medium to heavy loads. They are approved for use in non-cracked concrete.

ETA Option 7
ETA-17/0344

Material
Steel, zinc plated

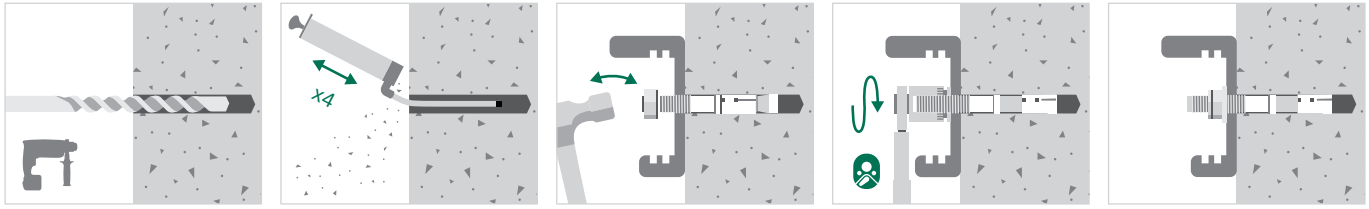
Features and benefits

- ETA Option 7 approval for non-cracked concrete
- Two embedment depths provide installation flexibility
- High load capacity
- Pre-installation and through-fixing

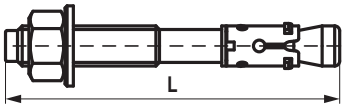
Substrate type

- Non-cracked concrete
- Stone

Installation guide



Product information



Part No.	Description	Anchor Size	L (mm)	Box qty (pcs)
609837080	WTB7 8x75	M8	75	100
609837081	WTB7 8x95	M8	95	100
609837082	WTB7 8x115	M8	115	100
609837100	WTB7 10x95	M10	95	50
609837101	WTB7 10x115	M10	115	50
609837102	WTB7 10x130	M10	130	50
609837120	WTB7 12x100	M12	100	50
609837121	WTB7 12x120	M12	120	50
609837122	WTB7 12x150	M12	150	50
609837123	WTB7 12x180	M12	180	50
609837160	WTB7 16x150	M16	150	25

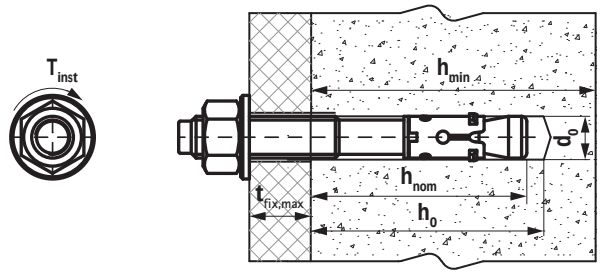
Recommended loads*

Option 7 ETA-17/0344 - Single anchors in non-cracked concrete

		Recommended tension load in C20/25 concrete at standard embedment depth	
		Non-cracked	Partial safety factor
Part No.	Description	N_{rec} (kN)	γ_{Mc}
609837080	WTB7 8x75	4.76	1.80
609837081	WTB7 8x95	4.76	1.80
609837082	WTB7 8x115	4.76	1.80
609837100	WTB7 10x95	4.76	1.80
609837101	WTB7 10x115	4.76	1.80
609837102	WTB7 10x130	4.76	1.80
609837120	WTB7 12x100	9.92	1.80
609837121	WTB7 12x120	9.92	1.80
609837122	WTB7 12x150	9.92	1.80
609837123	WTB7 12x180	9.92	1.80
609837160	WTB7 16x150	15.71	1.80

** Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)		h_{ef} (mm)	$t_{fix,max}$ (mm)	T_{inst} (mm)
609837080	WTB7 8x75	8	55	100	Standard	55	47	10	15
		8	40	100	Reduced	40	32	25	15
609837081	WTB7 8x95	8	55	100	Standard	55	47	30	15
		8	40	100	Reduced	40	32	45	15
609837082	WTB7 8x115	8	55	100	Standard	55	47	50	15
		8	40	100	Reduced	40	32	65	15
609837100	WTB7 10x95	10	59	100	Standard	59	49	25	30
		10	49	100	Reduced	49	39	35	30
609837101	WTB7 10x115	10	59	100	Standard	59	49	45	30
		10	49	100	Reduced	49	39	55	30
609837102	WTB7 10x130	10	59	100	Standard	59	49	60	30
		10	49	100	Reduced	49	39	70	30
609837120	WTB7 12x100	12	80	136	Standard	80	68	5	50
		12	60	100	Reduced	60	48	25	50
609837121	WTB7 12x120	12	80	136	Standard	80	68	25	50
		12	60	100	Reduced	60	48	45	50
609837122	WTB7 12x150	12	80	136	Standard	80	68	55	50
		12	60	100	Reduced	60	48	75	50
609837123	WTB7 12x180	12	80	136	Standard	80	68	85	50
		12	60	100	Reduced	60	48	105	50
609837160	WTB7 16x150	12	100	170	Standard	100	85	30	100
		12	60	130	Reduced	60	65	50	100

WTB1 SSt Throughbolt Anchors

Product overview

The WTB1 SSt throughbolts are torque-controlled stainless steel through-fixings for medium to heavy loads. They are approved for use in cracked and non-cracked concrete.

ETA Option 1
ETA-17/0343

Fire Resistance
R120

Material
Stainless steel

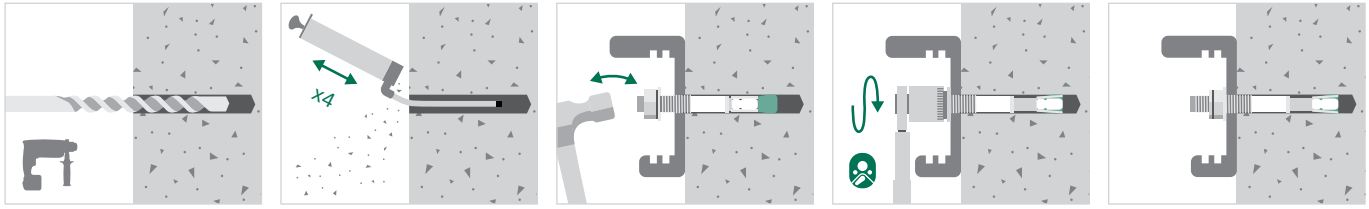
Features and benefits

- ETA Option 1 approval for cracked and non-cracked concrete
- Made of stainless steel for use in external atmospheric environment
- Two embedment depths provide installation flexibility
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- High load capacity
- Pre-installation and through-fixing

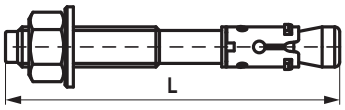
Substrate type

- Non-cracked concrete
- Cracked concrete
- Stone

Installation guide



Product information



Part No.	Description	Anchor Size	L (mm)	Box qty (pcs)
609871080	WTB1 SSt 8x75	M8	75	100
609871081	WTB1 SSt 8x115	M8	115	100
609871100	WTB1 SSt 10x95	M10	95	50
609871101	WTB1 SSt 10x130	M10	130	50
609871120	WTB1 SSt 12x125	M12	125	50
609871121	WTB1 SSt 12x150	M12	150	50

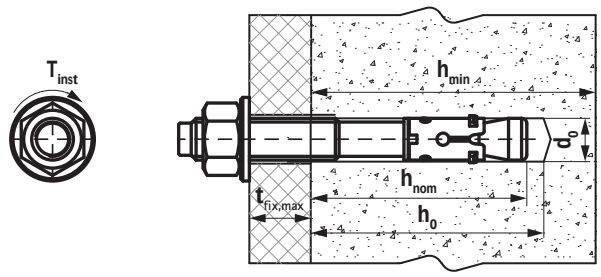
Recommended loads*

Option 1 ETA-17/0343 - Single anchors in cracked and non-cracked concrete

		Recommended tension load in C20/25 concrete at standard embedment depth		
		Cracked	Non-cracked	Partial safety factor
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)	γ_{Mc}
609871080	WTB1 SSt 8x75	2.38	3.57	1.80
609871081	WTB1 SSt 8x115	2.38	3.57	1.80
609871100	WTB1 SSt 10x95	4.29	7.62	1.50
609871101	WTB1 SSt 10x130	4.29	7.62	1.50
609871120	WTB1 SSt 12x125	5.71	11.90	1.50
609871121	WTB1 SSt 12x150	5.71	11.90	1.50

** Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)		h_{ef} (mm)	$t_{fix,max}$ (mm)	$T_{inst,\ max}$ (Nm)
6098 7 1080	WTB1 SSt 8x75	8	55	100	Standard	55	47	10	15
		8	40	100	Reduced	40	32	25	15
6098 7 1081	WTB1 SSt 8x115	8	55	100	Standard	55	47	50	15
		8	40	100	Reduced	40	32	65	15
6098 7 1100	WTB1 SSt 10x95	10	69	100	Standard	69	59	15	30
		10	49	100	Reduced	49	39	35	30
6098 7 1101	WTB1 SSt 10x130	10	69	100	Standard	69	59	50	30
		10	49	100	Reduced	49	39	70	30
6098 7 1120	WTB1 SSt 12x125	12	80	140	Standard	80	68	30	50
		12	60	100	Reduced	60	48	50	50
6098 7 1121	WTB1 SSt 12x150	12	80	140	Standard	80	68	55	50
		12	60	100	Reduced	60	48	75	50

WHA Highload Anchors

Concrete
For cracked and non-cracked concrete

Maxx
Ideal for use with Walraven Maxx heavy frame modular support system

Ultimate performance
High tension and shear loads

Fire resistance
Approved for anchor design under fire exposure

Seismic
Approved for seismic C1/C2 applications

walraven

WHA1H Highload Anchors

Product overview

The WHA1 highload anchors are the ultimate torque-controlled anchors for heavy to very heavy loads. They are approved for use in cracked and non-cracked concrete under normal and seismic conditions. The WHA1H anchors have a hexagon bolt head.

ETA Option 1
ETA-16/0562

Fire resistance
R120

Seismic
C1 + C2

Material
Steel, zinc plated

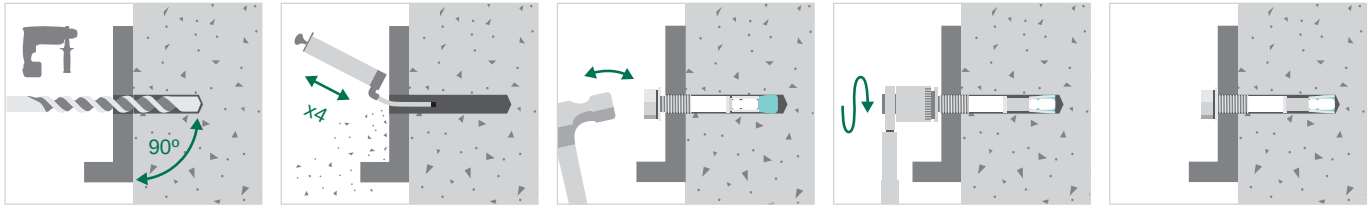
Features and benefits

- ETA Option 1 approval for cracked and non-cracked concrete
- Seismic performance categories C1 and C2 for design of anchorages under seismic action
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Very high load capacity

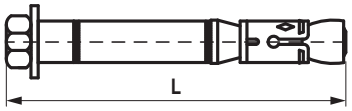
Substrate type

- Non-cracked concrete
- Cracked concrete

Installation guide



Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	Box qty (pcs)
609832120	WHA1H 12x85	M8	12	85	50
609832121	WHA1H 12x125	M8	12	125	25
609832150	WHA1H 15x110	M10	15	110	25
609832151	WHA1H 15x136	M10	15	136	25
609832180	WHA1H 18x117	M12	18	117	20

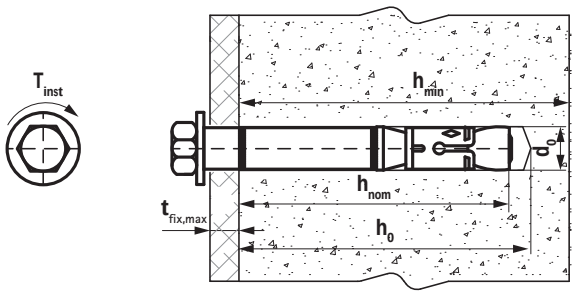
Recommended loads*

Option 1 ETA-16/0562 - Single anchors in cracked and non-cracked concrete

		Recommended tension loads in C20/25 concrete		
		Cracked	Non-cracked	Partial safety factor
Part No.	Description	N_{rec} (kN)	N_{rec} (kN)	γ_{Mc}
609832120	WHA1H 12x85	5.71	9.52	1.50
609832121	WHA1H 12x125	5.71	9.52	1.50
609832150	WHA1H 15x110	7.62	14.29	1.50
609832151	WHA1H 15x136	7.62	14.38	1.50
609832180	WHA1H 18x117	12.26	17.20	1.50

** Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	$t_{fix,max}$ (mm)	$T_{inst,\ max}$ (Nm)
609832120	WHA1H 12x85	12	80	120	70	60	10	30
609832121	WHA1H 12x125	12	80	120	70	60	50	30
609832150	WHA1H 15x110	15	95	140	85	71	15	50
609832151	WHA1H 15x136	15	95	140	85	71	45	50
609832180	WHA1H 18x117	18	105	160	95	80	10	80

Stronger together

Walraven Heavy Duty Anchors complete a winning team

Stronger together from wall to pipe

From the first anchor to the last clamp, you can now rely on a complete system from Walraven. And that means you can be confident that every part of your installation is strong and reliable - from start to finish.

If you are a UK customer, to find out more visit walraven.com/en/anchors or call +44 (0)1295 753400.
If you are an international customer, visit walraven.com/int/anchors or call +31 (0)297 23 30 00.

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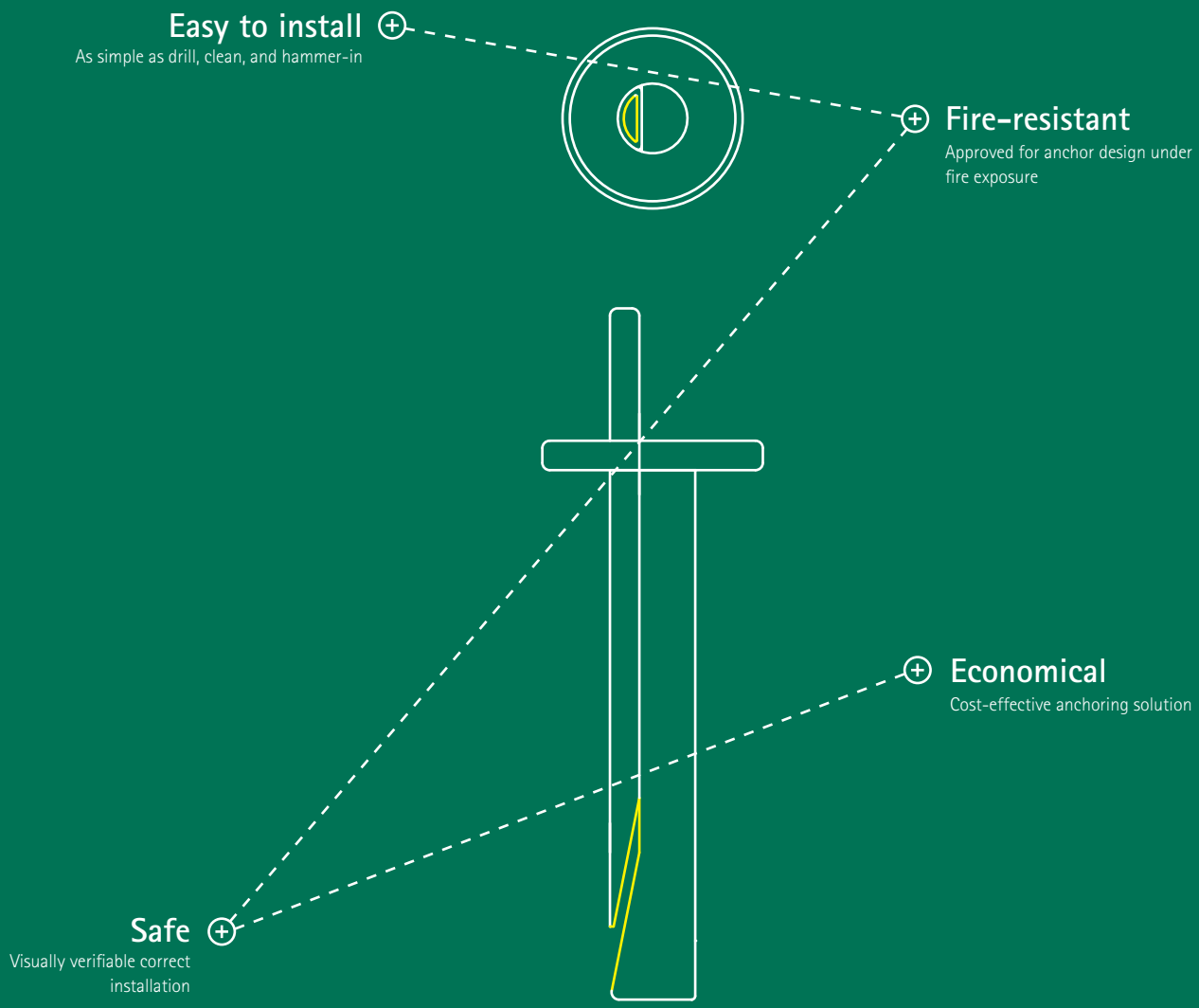
WCA Ceiling Anchors



WCA1 Ceiling Anchors

Product overview

The WCA1 ceiling anchors are easy to install deformation-controlled anchors for medium loads. They are approved for multiple use for non-structural applications in cracked and non-cracked concrete.

ETA ETAG001 Part 6
ETA-16/0971

Fire Resistance
R120

Material
Steel, zinc plated

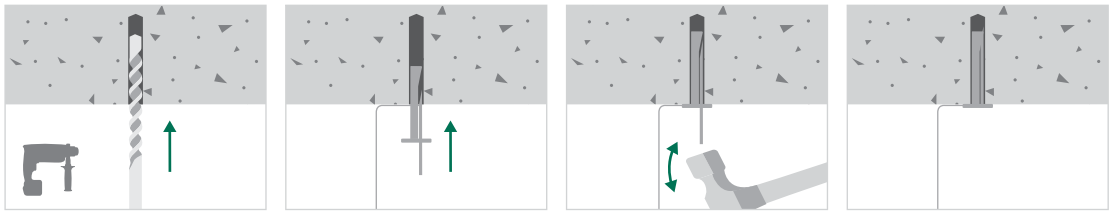
Features and benefits

- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Simple and quick installation procedure
- Correct anchor installation can be verified by simple visual check
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Medium load capacity
- Through fixing

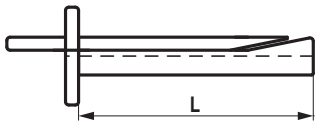
Substrate type

- Non-cracked concrete
- Cracked concrete

Installation guide



Product information



Part No.	Description	Anchor Size	d (mm)	L (mm)	Box qty (pcs)
60963604	WCA1 6x40	6	5.8	36	100
60963665	WCA1 6x65	6	5.8	65	100

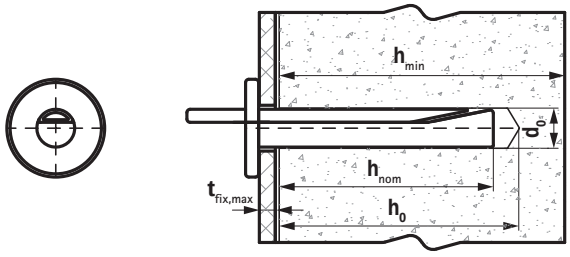
Recommended loads*

Option 1 ETA-16/0971 - Multiple use for non-structural applications

		Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked	Non-cracked	Partial safety factor
Part No.	Description	F_{rec} (kN)	F_{rec} (kN)	γ_M
60963604	WCA1 6x40	1.43	1.43	1.50
60963665	WCA1 6x65	1.43	1.43	1.50

** Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	$\geq h_{nom}$ (mm)	$\geq h_{ef}$ (mm)	C_{cr} (mm)	S_{cr} (mm)	$t_{fix,max}$ (mm)
60963604	WCA1 6x40	6	40	100	32	32	150	200	4.5
60963665	WCA1 6x65	6	40	100	32	32	150	200	35

System approach

Our unique product system approach, calculation software, and technical support ensure that you will find the ideal solution for every application and load. In addition, Walraven is one of the few companies that provides ETA certification support. Visit our website to find out more.

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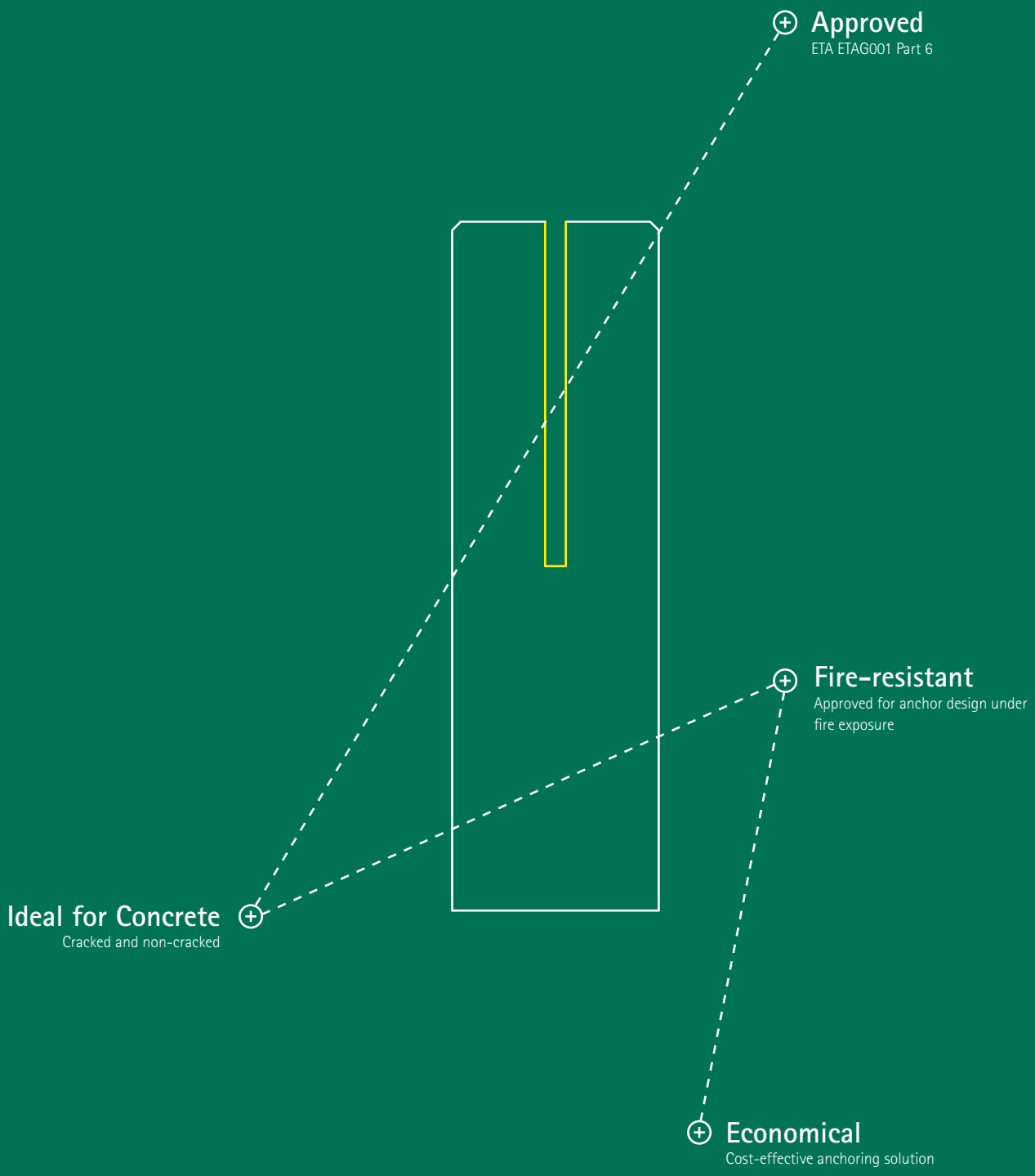
WDI Drop-in Anchors



WDI1 Drop-in Anchors

Product overview

The WDI1 drop-in anchors are easy to install and versatile deformation-controlled anchors for medium loads. They are approved for multiple use for non-structural applications in cracked and non-cracked concrete.

ETA ETAG001 Part 6
ETA-16/0783

Fire Resistance
R120

Material
Steel, zinc plated

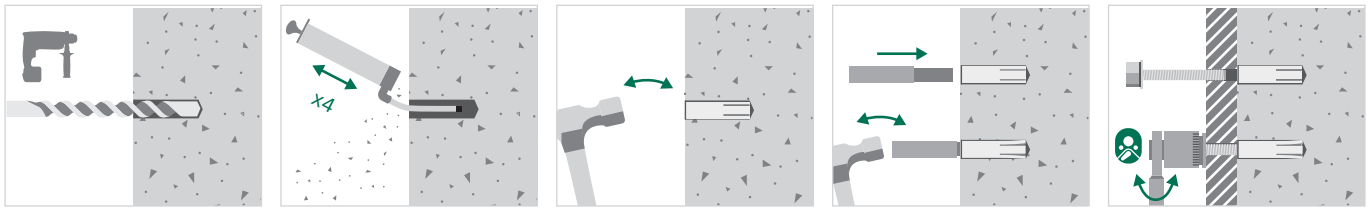
Features and benefits

- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- No collar for anchor setting at greater hole depth
- Simple and quick installation procedure
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Medium load capacity

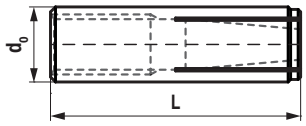
Substrate type

- Non-cracked concrete
- Cracked concrete

Installation guide



Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	L_g (mm)	Box qty (pcs)
6103006	WDI1 6x25	M6	8	25	11	100
6103008	WDI1 8x30	M8	10	30	13	100
6103010	WDI1 10x40	M10	12	40	15	50
6103012	WDI1 12x50	M12	15	50	20	50
6103016	WDI1 16x65	M16	20	65	25	25

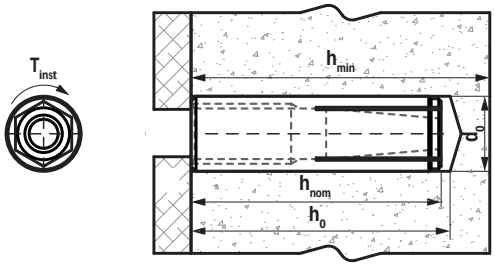
Recommended loads*

ETAG001 Part 6 ETA-16/0783 - Multiple use for non-structural applications

		Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked	Non-cracked	Partial safety factor
Part No.	Description	F_{rec} (kN)	F_{rec} (kN)	γ_M
6103006	WDI1 6x25	0.52	0.52	2.10
6103008	WDI1 8x30	1.02	1.02	2.10
6103010	WDI1 10x40	1.55	1.55	2.10
6103012	WDI1 12x50	2.19	2.19	2.10
6103016	WDI1 16x65	4.53	4.53	2.10

**Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{cr} (mm)	S_{cr} (mm)	$l_{s,\,min}$ (mm)	$T_{inst,max}$ (Nm)
6103006	WDI1 6x25	8	30	80	25	25	150	200	6	4.5
6103008	WDI1 8x30	10	32	80	30	30	150	200	8	11
6103010	WDI1 10x40	12	42	80	40	40	150	200	10	22
6103012	WDI1 12x50	15	53	100	50	50	150	200	12	38
6103016	WDI1 16x65	20	70	130	65	65	195	260	16	98

WDI1L Drop-in Anchors

Product overview

The WDI1L lipped drop-in anchors are easy to install and versatile deformation-controlled anchors for medium loads. They are approved for multiple use for non-structural applications in cracked and non-cracked concrete.

ETA ETAG001 Part 6
ETA-16/0783

Fire Resistance
R120

Material
Steel, zinc plated

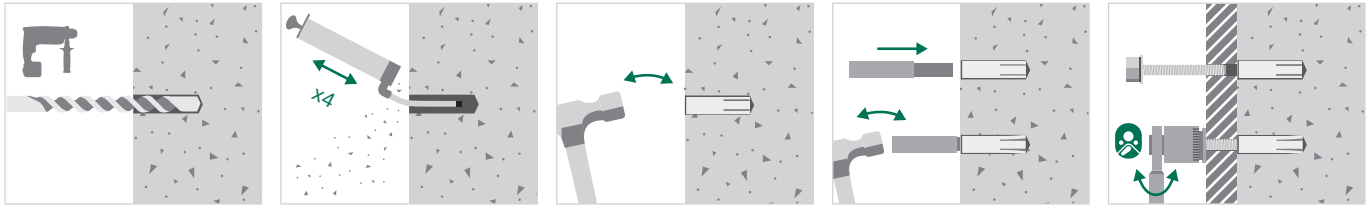
Features and benefits

- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Collar with a lip for flush anchor setting at any hole depth
- Simple and quick installation procedure
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Medium load capacity

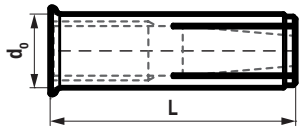
Substrate type

- Non-cracked concrete
- Cracked concrete

Installation guide



Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	L_g (mm)	Box qty (pcs)
6103106	WDI1L 6x25	M6	8	25	11	100
6103108	WDI1L 8x30	M8	10	30	13	100
6103110	WDI1L 10x40	M10	12	40	15	50
6103112	WDI1L 12x50	M12	15	50	20	50
6103116	WDI1L 16x65	M16	20	65	25	25

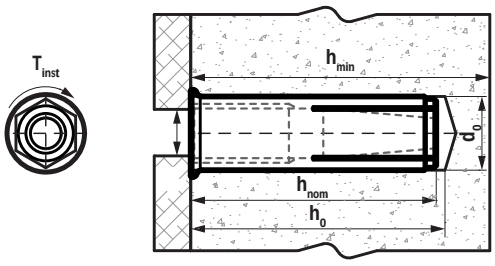
Recommended loads*

ETAG001 Part 6 ETA-16/0783 - Multiple use for non-structural applications

		Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked	Non-cracked	Partial safety factor
Part No.	Description	F_{rec} (kN)	F_{rec} (kN)	γ_M
6103106	WDI1L 6x25	0.52	0.52	2.10
6103108	WDI1L 8x30	1.02	1.02	2.10
6103110	WDI1L 10x40	1.55	1.55	2.10
6103112	WDI1L 12x50	2.19	2.19	2.10
6103116	WDI1L 16x65	4.53	4.53	2.10

**Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{cr} (mm)	S_{cr} (mm)	$l_{s,\,min}$ (mm)	$T_{inst,max}$ (Nm)
6103106	WDI1L 6x25	8	30	80	25	25	150	200	6	4.5
6103108	WDI1L 8x30	10	32	80	30	30	150	200	8	11
6103110	WDI1L 10x40	12	42	80	40	40	150	200	10	22
6103112	WDI1L 12x50	15	53	100	50	50	150	200	12	38
6103116	WDI1L 16x65	20	70	130	65	65	195	260	16	98

WDI1R Drop-in Anchors

Product overview

The WDI1R reduced-length drop-in anchors are easy to install deformation-controlled anchors for medium loads. They are approved for multiple use for non-structural applications in cracked and non-cracked concrete and in precast prestressed hollow core slabs.

ETA ETAG001 Part 6
ETA-17/0623

Fire Resistance
R120

Material
Steel, zinc plated

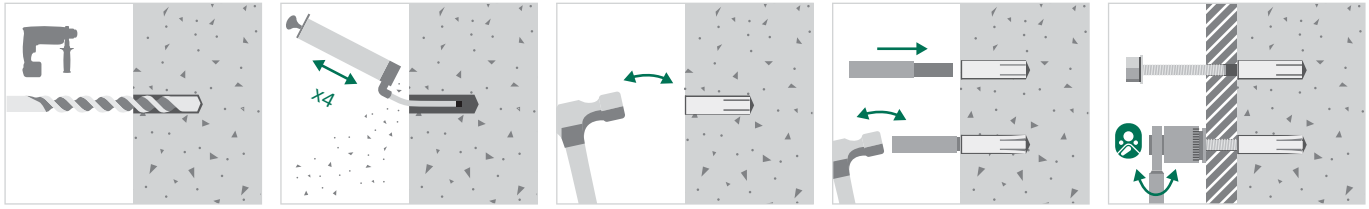
Features and benefits

- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Reduced 25mm anchor length allows approved applications in precast prestressed hollow core slabs
- Collar with a lip for flush anchor setting at any hole depth
- Simple and quick installation procedure
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Medium load capacity

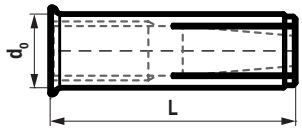
Substrate type

- Non-cracked concrete
- Cracked concrete

Installation guide



Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	L_g (mm)	Box qty (pcs)
6103206	WDI1R 6x25	M6	8	25	12	100
6103208	WDI1R 8x25	M8	10	25	12	100
6103210	WDI1R 10x25	M10	12	25	12	50
6103212	WDI1R 12x25	M12	15	25	12	50

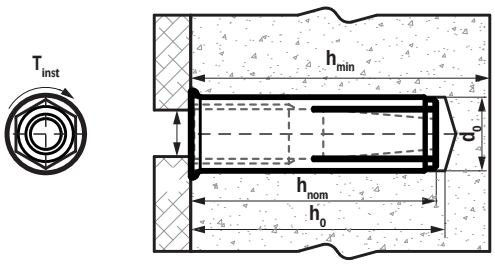
Recommended loads*

Option 1 ETA-17/0623 - Multiple use for non-structural applications

		Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked	Non-cracked	Partial safety factor
Part No.	Description	F_{rec} (kN)	F_{rec} (kN)	γ_M
6103206	WDI1R 6x25	1.67	1.67	1.50
6103208	WDI1R 8x25	1.90	1.90	1.50
6103210	WDI1R 10x25	2.14	2.14	1.50
6103212	WDI1R 12x25	2.14	2.14	1.50

**Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{cr} (mm)	S_{cr} (mm)	$l_{s,\,min}$ (mm)	$T_{inst,max}$ (Nm)
6103206	WDI1R 6x25	8	25	80	25	25	60	30	6	4
6103208	WDI1R 8x25	10	25	80	25	25	100	70	8	8
6103210	WDI1R 10x25	12	25	80	25	25	100	70	10	15
6103212	WDI1R 12x25	15	25	80	25	25	130	100	12	35

WDI1 SSt Drop-in Anchors

Product overview

The WDI1 SSt stainless steel drop-in anchors are easy to install corrosion-resistant deformation-controlled anchors for medium loads. They are approved for multiple use for non-structural applications in cracked and non-cracked concrete.

ETA ETAG001 Part 6
ETA-16/0783

Fire Resistance
R120

Material
Stainless steel, zinc plated

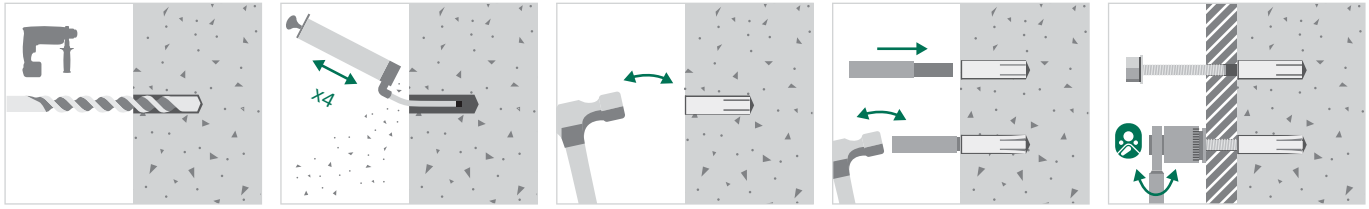
Features and benefits

- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Made of stainless steel for use in external atmospheric environment
- No collar for anchor setting at greater hole depth
- Simple and quick installation procedure
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Medium load capacity

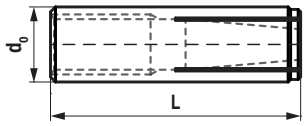
Substrate type

- Non-cracked concrete
- Cracked concrete

Installation guide



Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	L_g (mm)	Box qty (pcs)
6103708	WDI1 SSt 8x30	M8	10	30	13	100
6103710	WDI1 SSt 10x40	M10	12	40	15	100
6103712	WDI1 SSt 12x50	M12	15	50	20	50
6103716	WDI1 SSt 16x65	M16	20	65	25	50

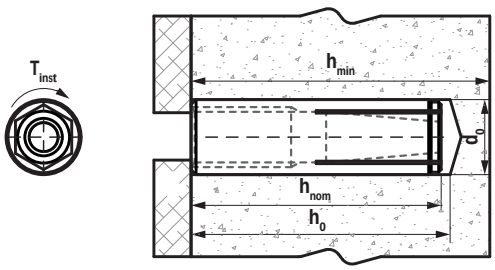
Recommended loads*

ETAG001 Part 6 ETA-16/0783 - Multiple use for non-structural applications

		Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked	Non-cracked	Partial safety factor
Part No.	Description	F_{rec} (kN)	F_{rec} (kN)	γ_M
6103708	WDI1 SSt 8x30	0.68	0.68	2.10
6103710	WDI1 SSt 10x40	1.09	1.09	2.10
6103712	WDI1 SSt 12x50	1.56	1.56	2.10
6103716	WDI1 SSt 16x65	2.81	2.81	2.10

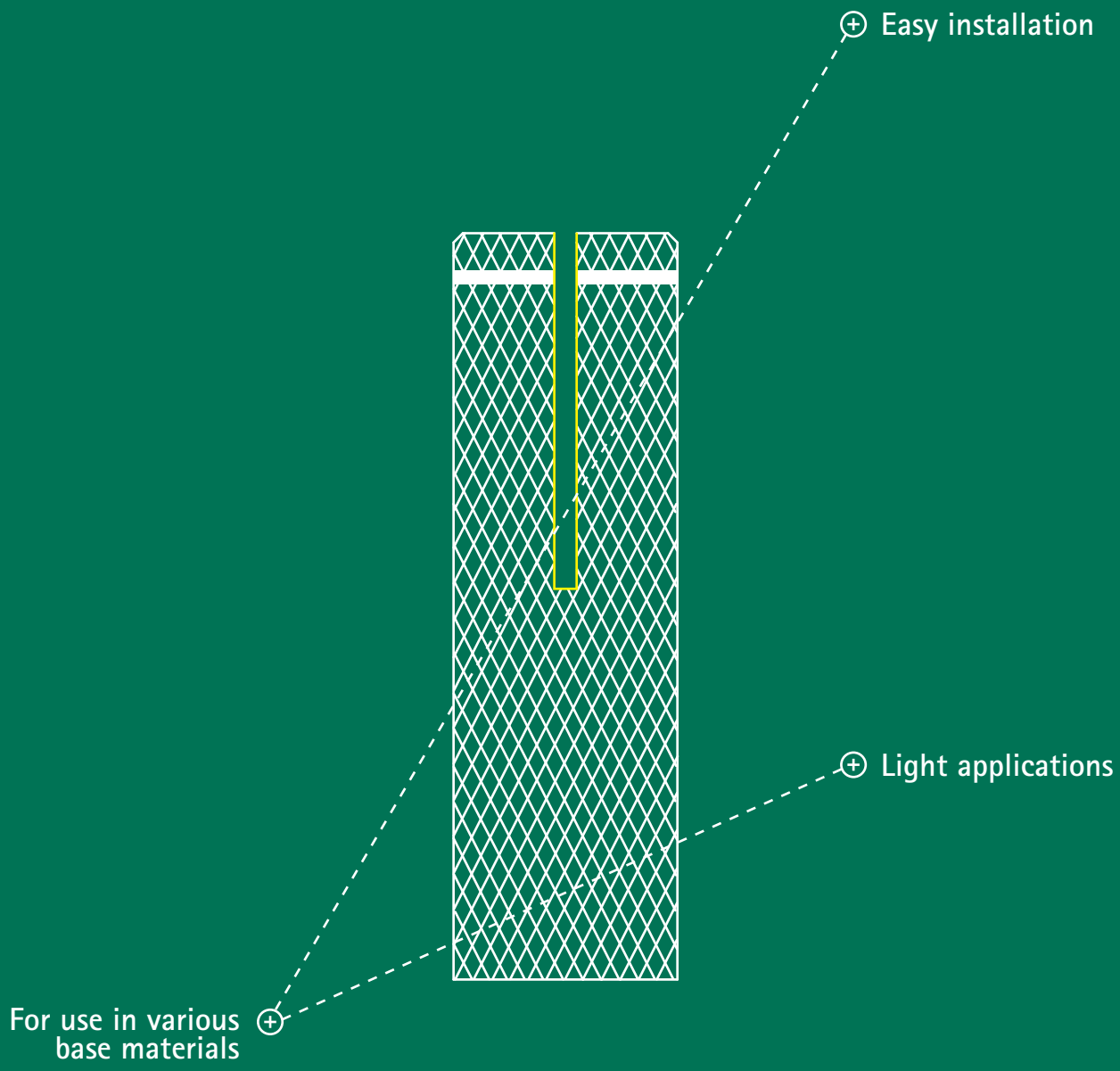
** Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data



Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{min} (mm)	S_{min} (mm)	$l_{s,\,min}$ (mm)	$T_{inst,max}$ (Nm)
6103708	WDI1 SSt 8x30	10	32	80	30	30	150	200	8	11
6103710	WDI1 SSt 10x40	12	42	80	40	40	150	200	10	22
6103712	WDI1 SSt 12x50	15	53	100	50	50	150	200	12	38
6103716	WDI1 SSt 16x65	20	70	130	65	65	195	200	16	98

Other Anchors



WGB-M Aerated Concrete Anchor

Product overview

WGB-M is a deformation-controlled metal anchor for autoclaved aerated concrete with DIBt technical approval and VdS certificate for installation of stationary fire extinguishing systems. It is made of galvanized steel and the installation does not require drilling. WGB-M has a fire resistance class R90-R120.

Technical Approval

Fire Resistance
R120

Material
Steel, zinc plated

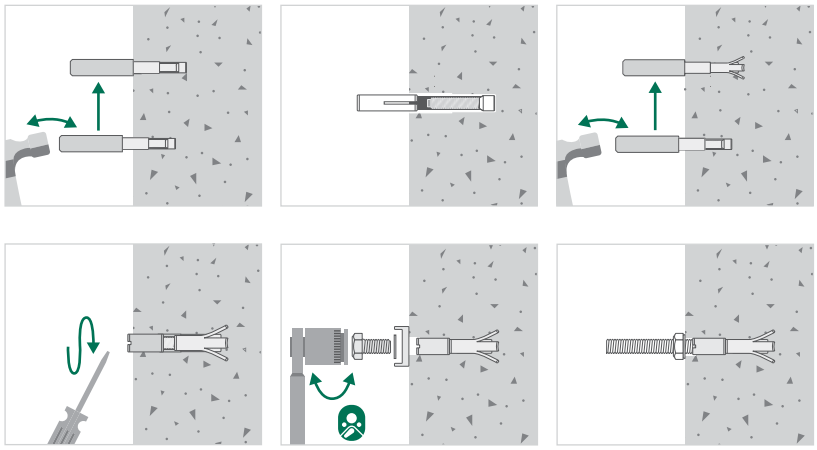
Features and benefits

- Internal thread connection allows flexible distance from the anchor to the fixture
- Load can be applied immediately after the installation
- Four-way expansion provides high permissible loads, even in tensile areas of roofs and ceilings
- VdS certificate for applications in stationary water extinguishing systems for dry inner rooms
- High load safety due to undercutting expansion
- Designed specifically for use aerated concrete
- Very high load capacity
- Installation does not require drilling
- Fire resistance class R90-R120 for design of anchorages under exposure to fire
- Easy installation

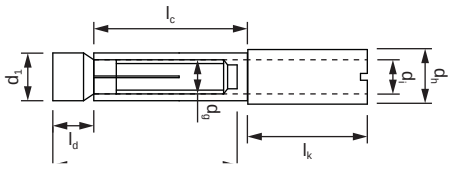
Substrate type

- Aerated concrete blocks and elements

Installation guide



Product information



		Cone bolt			Expansion sleeve		Connection sleeve		
		Cone diameter	Cone Length	Length	Length	Thread	Length	Thread	Diameter
Part No.	Description	d_1 (mm)	l_d (mm)	l_b (mm)	l_c (mm)	d_g (mm)	l_k (mm)	d_i (mm)	d_h (mm)
6103510	WGB-M M10	14	12	55	45	M10	35	M10	16
6103512	WGB-M M12	14	12	55	45	M10	35	M12	16

Recommended loads

Refer to the product data sheet available on walraven.com for complete details on performance recommended loads of WGB-M anchor.

Setting tool Information

Part No.	Description	Size	For WGB-M
6103510	WGB-M ST	M10/M12	WGB-M M10
			WGB-M M12

Installation data

Anchor Type			WGB-M	
Anchor Size			M10	M12
Setting depth, expansion pin	h_{ef}	(mm)	67	67
Diameter of clearing hole in the fixture	d_f	(mm)	12	14
Installation torque	T_{inst}	(Nm)	8	8
Min. fastening screw engagement distance	$l_{s,min}$	(mm)	10	12
Max. fastening screw engagement distance	$l_{s,max}$	(mm)	18	18
Allowed bending moment for fastening screw	M	(Nm)	21.4	37.4
Min. fastening screw property classaccording to DIN 898-1			Class ≥ 5.8	

Refer to the product data sheet available on walraven.com for complete details on installation of WHC anchor.

WHC Hollow Core Anchor

Product overview

WCH is a torque-controlled expansion anchor made of galvanized steel for use in precast pre-stressed hollow core concrete slabs.

Technical Approval

Fire Resistance
R120

Material
Steel, zinc plated

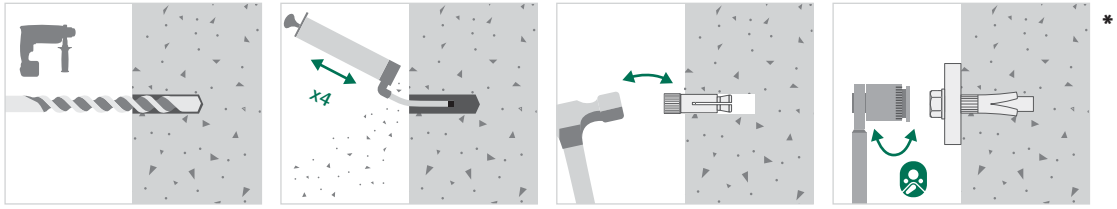
Features and benefits

- DIBt Technical Approval
- Designed specifically for use in precast pre-stressed hollow core concrete slabs
- Very high load capacity
- VdS certificate for applications in stationary water extinguishing systems
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Easy installation

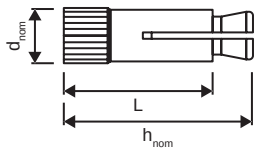
Substrate type

- Precast pre-stressed hollow core concrete slabs

Installation guide



Product information



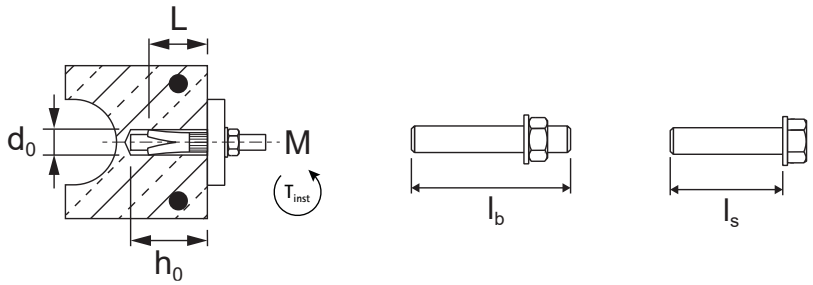
Part No.	Description	Anchor Size	L (mm)	d_{nom} (mm)
6096408	WHC	M8	35	12
6096410	WHC	M10	40	16
6096412	WHC	M12	45	18

Refer to the product data sheet available on walraven.com for complete details on performance recommended loads of WHC anchor

Recommended loads

Refer to the product data sheet available on walraven.com for complete details on performance recommended loads of WHC anchor.

Installation data



Anchor Type			WHC		
Anchor Size			M10	M12	M12
Nominal drill hole diameter	d_0	(mm)	12	16	18
Cutting diameter of drill bit	d_{cut}	(mm)	12.5	16.5	18.5
Depth of drill hole	h_0	(mm)	55	60	70
Diameter of clearing hole in the fixture	d_r	(mm)	9	12	15
Screw length	$l_{s,min}$	(mm)	47 + t_{fix}	55 + t_{fix}	61 + t_{fix}
(in solid material)	$l_{s,max}$	(mm)	55 + t_{fix}	50 + t_{fix}	70 + t_{fix}
Threaded rod length	$l_{b,max}$	(mm)	53 + t_{fix}	63 + t_{fix}	71 + t_{fix}
Min. Property class of screw / stud			5.8	5.8	5.8
Max fixture thickness	$t_{fix,max}$	(mm)	According to screw or threade rod length		
Installation torque	T_{inst}	(Nm)	20	30	40

Refer to the product data sheet available on walraven.com for complete details on installation of WHC anchor.

* Refer to the WHC product data sheet available on walraven.com for complete installation details.

WDI Drop-in anchor

Product overview

The WBI brass anchors are cost-effective for everyday applications (without approval).

Material
Zinc plated

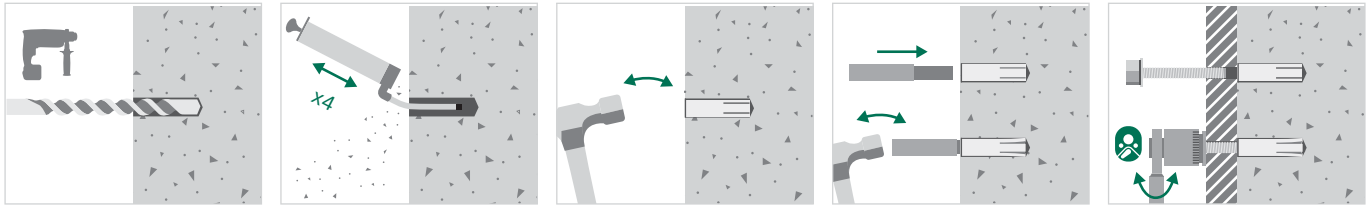
Features and benefits

- Simple and quick installation procedure
- Medium load capacity
- For use with screw strength class of ≥ 4.6

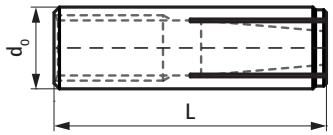
Substrate type

- Non-cracked concrete

Installation guide

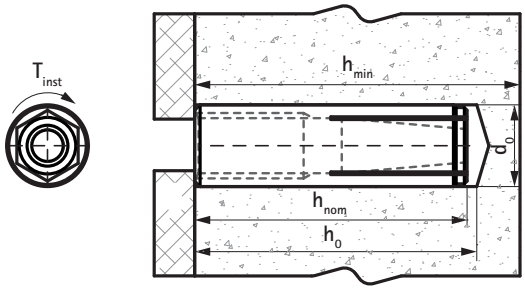


Product information



Part No.	Description	Anchor Size	L (mm)	Box qty (pcs)	Outer box qty (pcs)
61030006	WDI 6x25	M6	25	100	600
61030008	WDI 8x30	M8	30	100	600
61030010	WDI 10x40	M10	40	100	500
61030012	WDI 12x50	M12	50	50	300
61030016	WDI 16x65	M16	65	25	150

Installation data



Part No.	Description	Size	L	d_0 (mm)	$\geq h_0$ (mm)	Rec. Tension Load C20/25 Concrete (kN)	Pack 1	Pack 2
61030006	WDI 6x25	M6	25 mm	6	25	0.50	100	600
61030008	WDI 8x30	M8	30 mm	10	30	1.00	100	600
61030010	WDI 10x40	M10	40 mm	12	40	1.50	50	500
61030012	WDI 12x50	M12	50 mm	15	50	2.00	50	300
61030016	WDI 16x65	M16	65 mm	20	65	4.00	25	150

WBA Brass Anchors

Product overview

The WBA brass anchors are easy to install reduced-length deformation-controlled anchors for light to medium loads.

Material
Brass

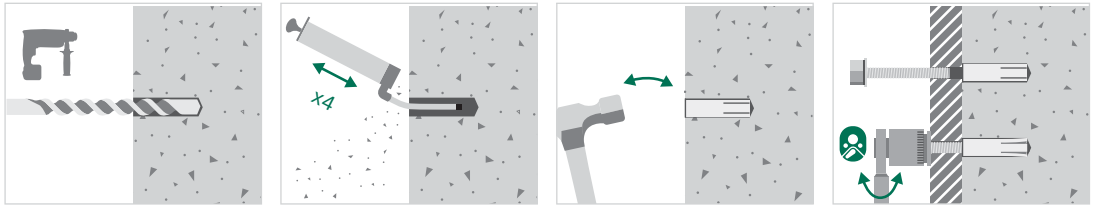
Features and benefits

- Reduced anchor length requires less drilling
- Simple and quick installation procedure
- Corrosion resistant
- For use with standard metric bolts and threaded rods.
- Knurled external surface provides improved grip and resists rotation in the hole
- Does not require a setting tool

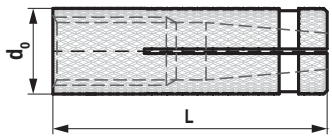
Substrate type

- Non-cracked concrete
- Natural stone
- Solid bricks

Installation guide

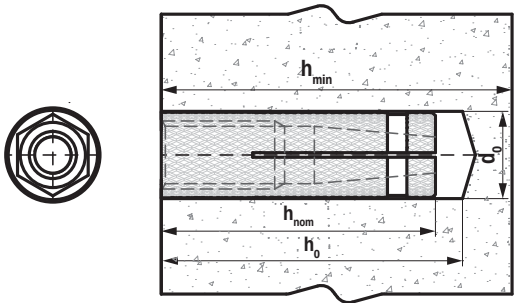


Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
6107006	WBA 6x22	M6	8	22	100	1600
6107008	WBA 8x28	M8	10	28	100	1600
6107010	WBA 10x32	M10	12	32	100	800
6107012	WBA 12x38	M12	15	38	50	400

Installation data



Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)
6107006	WBA 6x22	8	27	100	22	22
6107008	WBA 8x28	10	32	100	28	28
6107010	WBA 10x32	12	35	100	32	32
6107012	WBA 12x38	15	40	100	38	38

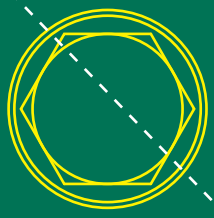
Customer support

Whatever your needs, Walraven can provide a solution. Our product and sales experts are ready to help, and have up-to-date local knowledge and expertise. Want to learn more about how we can support you? Get in touch today!

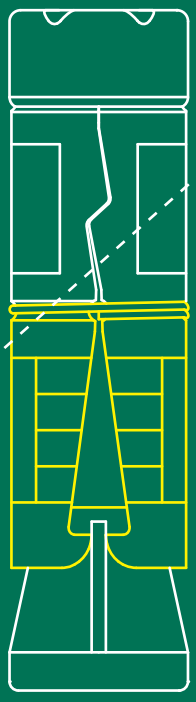
walraven.com

WSA Shield Anchors

Versatile
Suitable for many substrates



Flexible
Use with any metric threaded rod or bolt



Guaranteed performance
Designed and manufactured for maximum performance

WSA1 Shield Anchors

Product overview

The WSA1 shield anchors are torque-controlled pre-installed fixings for medium to heavy loads.

Material
Steel, zinc plated

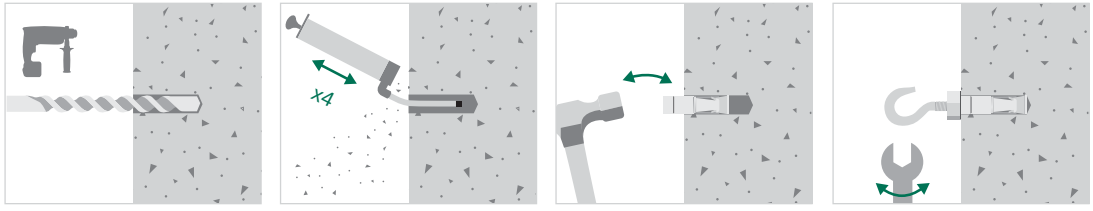
Features and benefits

- Three-part expanding sleeve provides optimal load and safety of use in many substrates
- Suitable for use in multiple base materials
- For use with metric threaded rods or bolts

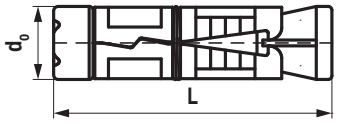
Substrate type

- Concrete
- Natural stone
- Hollow masonry

Installation guide

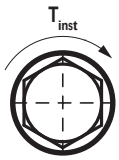


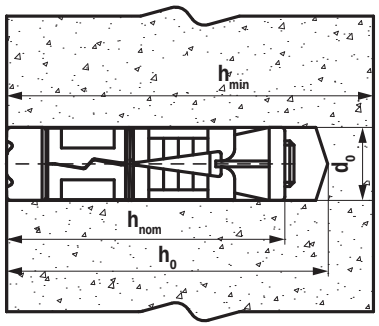
Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	Box qty (pcs)
6103608	WSA1 8x50	M8	14	50	100
6103610	WSA1 10x60	M10	16	60	100
6103612	WSA1 12x75	M12	20	75	50
6103616	WSA1 16x115	M16	25	115	25

Installation data





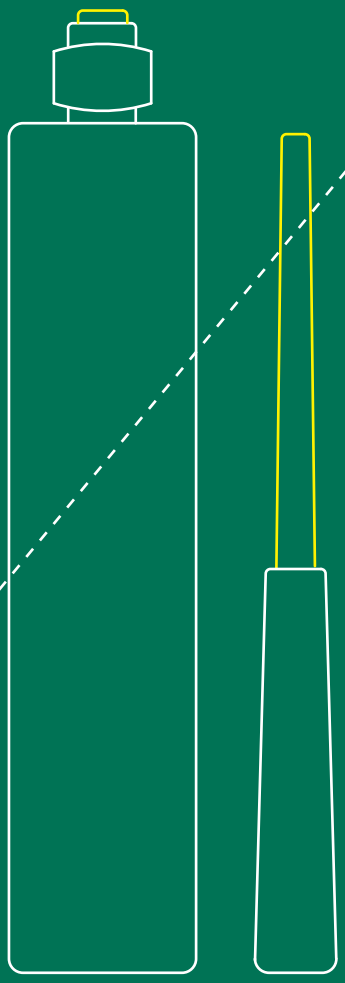
Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{min} (mm)	S_{min} (mm)	$T_{inst,max}$ (Nm)
6103608	WSA1 8x50	14	55	100	50	40	60	40	15
6103610	WSA1 10x60	16	65	100	60	50	75	50	27
6103612	WSA1 12x75	20	85	100	80	60	90	60	50
6103616	WSA1 16x115	25	125	142.5	120	95	142.5	95	120


WVSF 200

WIS Chemical Anchors

WVSF200
For medium to heavy loads in concrete and seismic C1 applications

WPSF100
Universal chemical anchor for concrete and masonry



Certified
Specific products are LEED, VOC, ICC, NSF certified

WIS (Walraven Injection System)
Complete system with accessories

walraven

WPSF100 Chemical Anchor

Product overview

The WPSF100 is a universal styrene-free chemical anchoring system for medium to heavy loads. It is approved for installations in non-cracked concrete, solid masonry and hollow masonry.

ETA Option 7
ETA-16/0542

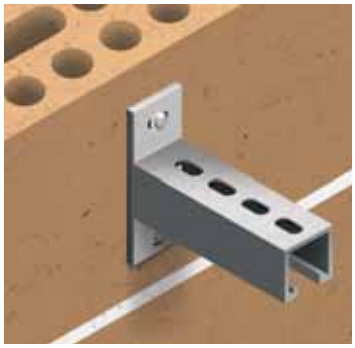
ETA ETAG029
ETA 16/0541

Features and benefits

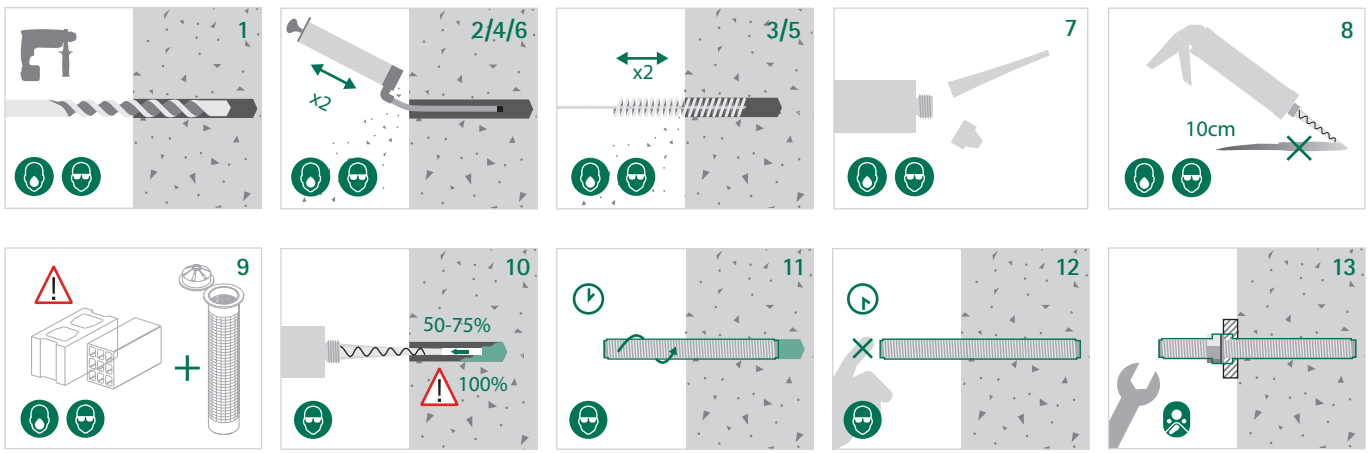
- ETA Option 7 approval for non-cracked concrete
- ETA ETAG029 approval for hollow and solid masonry
- Installations in wet and flooded holes without loss of load capacity
- Reduced edge and anchor spacing distances
- For use with industry-standard silicone dispensing guns
- Cartridge may be used up over several times; new nozzle required after each break.

Substrate type

- Non-cracked concrete
- Solid masonry
- Hollow masonry



Installation guide



The value of smart

Product information

Part No.	Description	Packaging type	Content (ml)	Box qty (pcs)	Related dispenser gun
6099113	WPSF100	Foil pack system	300	12	609 9 986

Recommended loads*

Option 7 ETA-16/0542 - Single anchors in non-cracked concrete

WIS Stud Bolt 5.8			M8	M10	M12	M16
Partial safety factor	γ_{MC}	(-)	1.8	1.8	1.8	1.8
Embedment depth	$h_{ef,8d}$	(mm)	64	80	96	128
Member thickness	h	(mm)	100	110	126	158
Recommended tension load	N_{rec}	(kN)	5.42	7.97	12.92	22.98
Embedment depth	$h_{ef,10d}$	(mm)	80	100	120	160
Member thickness	h	(mm)	110	130	150	190
Recommended tension load	N_{rec}	(kN)	6.78	9.97	16.16	28.72
Embedment depth	$h_{ef,12d}$	(mm)	96	120	144	192
Member thickness	h	(mm)	126	150	174	222
Recommended tension load	N_{rec}	(kN)	8.14	11.97	19.39	34.47

** Recommended loads apply to: correctly installed single anchors; non-cracked C20/25 concrete; anchors not affected by spacing or edge influence; service temperature range of -40°C to +80°C. Recommended loads include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*

Installation data

Part No.	Description	(-)	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{min}* (mm)	S_{min}* (mm)	d_b (mm)	$T_{inst,max}$ (mm)
609 9 113	WPSF100	M8	10	64 - 96	h_{ef} + 30 ≥ 100	64 - 96	64 - 96	35/40/50	35/40/50	14	10
		M10	12	80 - 120	h_{ef} + 30 ≥ 100	80 - 120	80 - 120	40/50/60	40/50/60	14	20
		M12	14	96 - 144	h_{ef} + 30 ≥ 100	96 - 144	96 - 144	50/60/70	50/60/70	20	40
		M16	18	128 - 192	h_{ef} + 30 ≥ 100	128 - 192	128 - 192	65/80/95	65/80/95	20	80

** at h_{ef} 8d/10d/12d*

Temperature (°C)	Processing Time (min)	Curing Time (min)
5	18	145
5 – 10	10	145
10 – 20	6	85
20 – 25	5	50
25 – 30	4	35

Processing time refers to the highest temperature in the range. Curing time refers to the lowest temperature in the range.
Cartridge must be conditioned to a minimum of +5 °C before use.

WVSF200 Chemical Anchor

Product overview

The WVSF200 is a high performance styrene-free chemical anchoring system for medium to heavy loads. It is approved for use in cracked and non-cracked concrete under normal and seismic conditions, and for post-installed rebar connections.

ETA Option 1
ETA 16/0544

ETA TR023
ETA-16/0543

Fire Resistance
R120

Seismic
C1

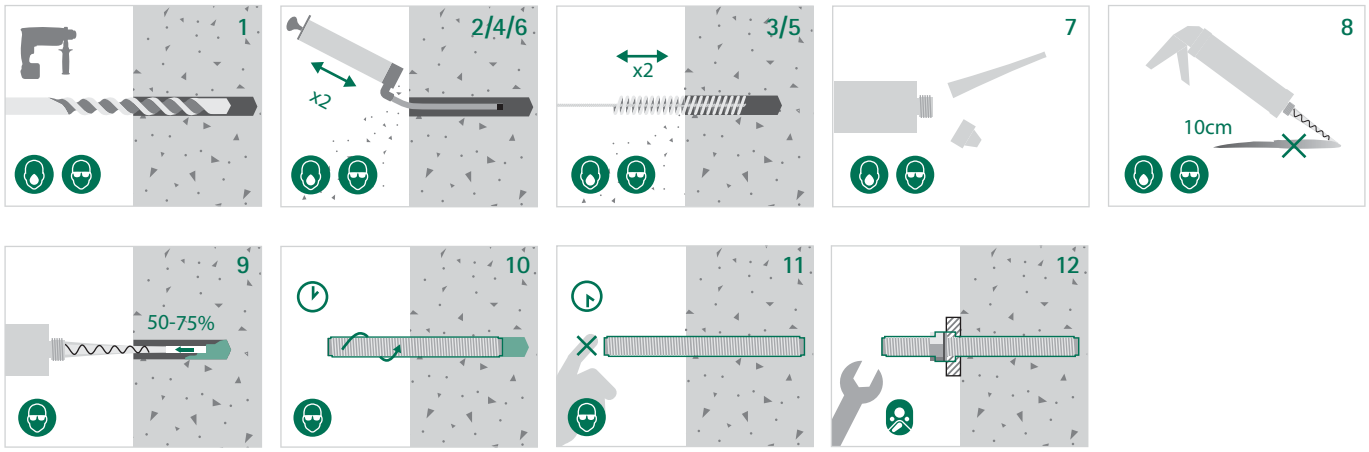
Features and benefits

- ETA Option 1 approval for cracked and non-cracked concrete
- ETA TR023 for post-installed rebar connections
- Seismic performance category C1 for design of anchorages under seismic action
- Approved for use with rebars as anchors in non-cracked concrete
- Reduced edge and anchor spacing distances
- Cartridge may be used up over several times; new nozzle required after each break.
- For use in dry, wet and flooded holes

Substrate type

- Non-cracked concrete
- Cracked concrete

Installation guide



The value of smart

Product information

Part No.	Description	Packaging type	Content (ml)	Box qty (pcs)	Related dispenser gun
6099123	WVSF200	Foil pack system	300	12	609 9 986
6099124	WVSF200	Side by side cartridge	345	12	609 9 987
6099125	WVSF200	Coaxial cartridge	410	12	609 9 988
6099126	WVSF200W (Winter)	Foil pack system	300	12	609 9 986
6099127	WVSF200T (Tropical)	Foil pack system	300	12	609 9 986

Recommended loads*

Option 1 ETA-16/0544 - Single anchors in cracked and non-cracked concrete

WIS Stud Bolt 5.8			M8	M10	M12	M16
Partial safety factor	γ_{MC}	(-)	1,8	1,8	1,8	1,8
Embedment depth	$h_{ef,8d}$	(mm)	64	80	96	128
Member thickness	h	(mm)	100	110	126	158
Recommended tensile load, non-cracked concrete	N_{rec}	(kN)	6.38	9.48	13.64	22.98
Recommended tensile load, cracked concrete	N_{rec}	(kN)	-	4.49	6.46	11.49
Embedment depth	$h_{ef,12d}$	(mm)	96	120	144	192
Member thickness	h	(mm)	126	150	174	222
Recommended tensile load, non-cracked concrete	N_{rec}	(kN)	9.58**	14.21**	20.46**	34.47
Recommended tensile load, cracked concrete	N_{rec}	(kN)	-	6.73	9.69	17.23
Embedment depth	$h_{ef,20d}$	(mm)	160	200	240	320
Member thickness	h	(mm)	190	230	270	350
Recommended tensile load, non-cracked concrete	N_{rec}	(kN)	13.80**	21.90**	31.91*	57.44**
Recommended tensile load, cracked concrete	N_{rec}	(kN)	-	11.22	16.16	28.72

** Recommended loads apply to: correctly installed single anchors; C20/25 concrete; anchors not affected by spacing or edge influence; service temperature range of -40°C to +80°C. Recommended loads include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure modes and the entire relevant product European Technical Assessment must be considered for anchor design.*
*** Must use WIS Stud Bolt grade 8.8 or higher.*

Installation data

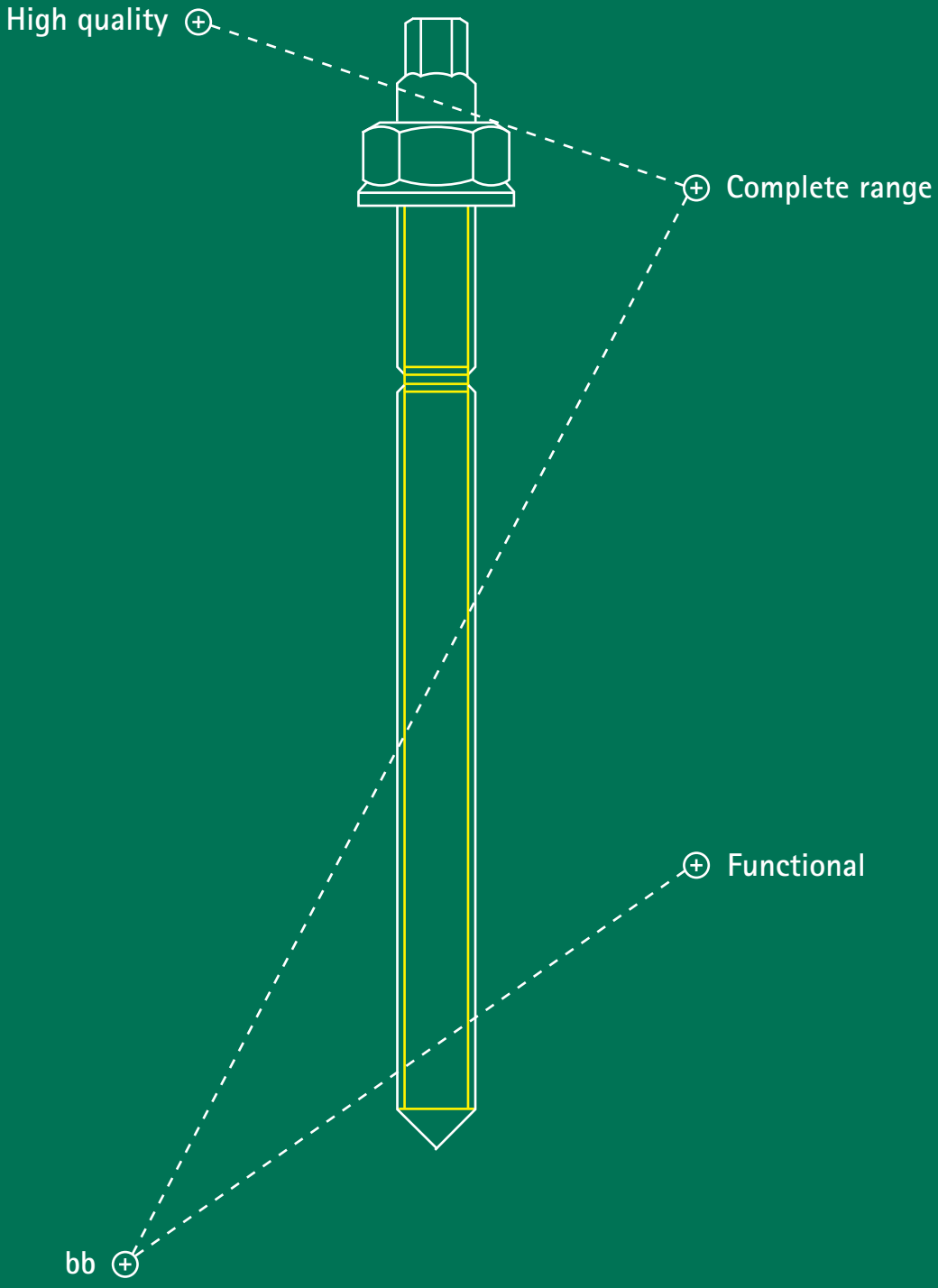
Part No.	Description	(-)	d_0 (mm)	≥ h_0 (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{min}* (mm)	S_{min}* (mm)	d_b (mm)	$T_{inst,max}$ (mm)
6099123	WVSF200	M8	10	64 - 160	h_{ef} + 30 ≥ 100	64 - 160	64 - 160	35/50/80	35/50/80	14	10
6099124	WVSF200	M10	12	80 - 200	h_{ef} + 30 ≥ 100	80 - 200	80 - 200	40/60/100	40/60/100	14	20
6099125	WVSF200	M12	14	96 - 244	h_{ef} + 30 ≥ 100	96 - 244	96 - 244	50/75/120	50/75/120	20	40
6099126	WVSF200W (Winter)	M16	18	128 - 320	h_{ef} + 30 ≥ 100	128 - 320	128 - 320	65/100/160	65/100/160	20	80
6099127	WVSF200T (Tropical)										

** at h_{ef} 8d/12d/20d*

WVSF200			WVSF200W			WVSF200T		
Temperature (°C)	Processing Time (min)	Curing Time (min)	Temperature (°C)	Processing Time (min)	Curing Time (min)	Temperature (°C)	Processing Time (min)	Curing Time (min)
5 – 10	10	145	-10 – -5	50	720	15 – 20	15	300
10 – 15	8	85	-5 – 0	15	100	20 – 25	10	145
15 – 20	6	75	0 – 5	10	75	25 – 30	7.5	85
20 – 25	5	50	5 – 20	5	50	30 – 35	5	50
20 – 30	4	40	20	1.5	20	35 – 40	3.5	40

Processing time refers to the highest temperature in the range. Curing time refers to the lowest temperature in the range. WVSF200 / WVSF200W / WVSF200T cartridges must be conditioned to a minimum of +5°C / 0°C / +15°C respectively before use.

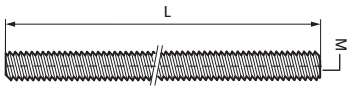
Accessories



Accessories

WIS Threaded Rods BUP 1000

Material
Steel, class 4.8



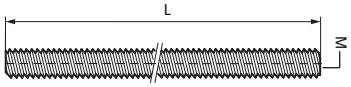
Features and benefits

- According to DIN 976-1
- Surface protection: product is part of the BIS UltraProtect® 1000 system
- Suitable for in- and outdoor applications, stands min. 1,000 hours salt spray test, (max. 5% red rust), according to ISO 9227

Part No.	Description	M	L (m)	Bundle (pcs)
63081008	WIS BUP M8x1000	M8	1	50
63081010	WIS BUP M10x1000	M10	1	25
63081012	WIS BUP M12x1000	M12	1	20
63081016	WIS BUP M16x1000	M16	1	20

WIS Threaded Rods

Material
Steel, class 8.8, zinc plated



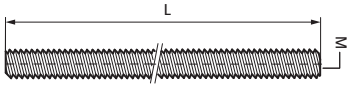
Features and benefits

- According to DIN 976-1
- Thread with 60° angle provides best performance

Part No.	Description	M	L (m)	Bundle (pcs)
63039108	WIS TR M8x1000	M8	1	50
63039110	WIS TR M10x1000	M10	1	25
63039112	WIS TR M12x1000	M12	1	20
63039116	WIS TR M16x1000	M16	1	20

WIS Threaded Rods SSt A4

Material
Stainless steel, A4

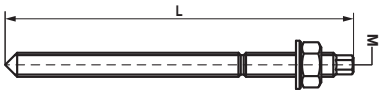


Features and benefits

- According to DIN 976-1
- Thread with 60° angle provides best performance

Part No.	Description	M	L (m)	Bundle (pcs)
63079108	WIS TR SSt M8x1000	M8	1	50
63079110	WIS TR SSt M10x1000	M10	1	25
63079112	WIS TR SSt M12x1000	M12	1	20
63079116	WIS TR SSt M16x1000	M16	1	20

WIS Stud Bolts



Material
Steel, class 5.8, zinc plated

Features and benefits

- Pre-assembled nut and washer allow faster installation

Part No.	Description	M	L (mm)	Box qty (pcs)	Outer box qty (pcs)
60990811	WIS SB M8x110	M8	110	10	160
60991013	WIS SB M10x130	M10	130	10	160
60991016	WIS SB M10x160	M10	160	10	80
60991219	WIS SB M12x190	M12	190	10	80
60991622	WIS SB M16x220	M16	220	10	80

WIS Dispenser Gun

Features and benefits

- The 26:1 thrust ratio makes dispensing tools easy to use
- No free-play allows dispensing with precision
- Thick 5mm chamfered push plate with rubber pads improves tool durability
- Metal trigger (not aluminum) improves tool durability
- Metal piston pushers extrude cartridges at correct angle
- Metal backplate improves tool durability

Part No.	Description	For	Box qty (pcs)
6099986	WIS DG 300ml	300ml Foil pack cartridge	1
6099987	WIS DG 345ml	345ml Side by side cartridge	1
6099988	WIS DG 410ml	410ml Coaxial cartridge	1
6099989	WIS DG 585ml	385/585ml Side by side cartridge	1

WIS EF Mixer Nozzle

Features and benefits

- For use with chemical anchoring systems
- Provides easier extrusion
- Especially at lower temperatures
- Ensures consistent component mixing

Part No.	Description	Bag qty (pcs)
6099363	WIS EF	12

Accessories

WIS Extension Pipe 185 mm

Features and benefits

- Fits standard and epoxy nozzles

Part No.	Description	L (mm)	Bag qty (pcs)
6099992	WIS EP	185	12

WIS Brush

Features and benefits

- Hybrid brush (steel and natural bristle)
- Each brush suitable for cleaning two hole diameters

Part No.	Description	For	Bag qty (pcs)
6099980	WIS BR M8/10	M8/M10 hole	1
6099981	WIS BR M12/16	M12/M16 hole	1
6099982	WIS BR M20/24	M20/M24 hole	1

WIS Blow Pump

Features and benefits

- High blowing capacity

Part No.	Description	Bag qty (pcs)
6099985	WIS BP	1

WIS Plastic Sleeve

Features and benefits

- For use with WPSF100 & WVSF200 chemical anchoring systems in hollow substrates
- End cap prevents resin leaking out of the sleeve in overhead installations

Part No.	Description	d (mm)	L (mm)	For	Box qty (pcs)
6097017	WIS PS 16x85	16	85	M8, M10	10
6097018	WIS PS 16x130	16	130	M8, M10	10
6097020	WIS PS 20x85	20	85	M12	10

WDI1 Setting Tool

Features and benefits

- For setting Walraven WDI1 drop-in anchors

Part No.	Description	For	Box qty (pcs)
6902106	WDI1ST 6	WDI1 6x25	1
6902108	WDI1ST 8	WDI1 8x30	1
6902110	WDI1ST 10	WDI1 10x40	1
6902112	WDI1ST 12	WDI1 12x50	1
6902116	WDI1ST 16	WDI1 16x65	1

Accessories

WDI1R Setting Tool Set

Features and benefits

- Combined tool for drilling and setting WDI1R drop-in anchors
- 50% faster installation than with traditional methods
- No uncomfortable hammering in overhead installations

Part No.	Description	d_0 (mm)	LU (mm)	For	Box qty (pcs)	Outer box qty (pcs)
6902206	WDI1R STS 6	8	25	WDI1R M6	1	20
6902208	WDI1R STS 8	10	25	WDI1R M8	1	20
6902210	WDI1R STS 10	12	25	WDI1R M10	1	20

WDI1R SD Stop Drill Bit

Features and benefits

- Designed for drilling all concrete at controlled depth
- Particularly suitable for high volume installations WDI1R drop-in anchors
- Can be used as a replacement drill bit for WDI1R STS Setting Tool Set

Part No.	Description	d_0 (mm)	LU (mm)	For	Box qty (pcs)	Outer box qty (pcs)
6902306	WDI1R SD 6	8	25	WDI1R M6	1	20
6902308	WDI1R SD 8	10	25	WDI1R M8	1	20
6902310	WDI1R SD 10	12	25	WDI1R M10	1	20

WSDS+ Drill for Hollow Blocks

Features and benefits

- Designed for drilling hollow bricks and blocks
- Minimises damage done to the substrate
- Long drill length allows drilling deep holes
- Round part of the drill ensures straight holes

Part No.	Description	d_0 (mm)	L (mm)	LU (mm)	Pack qty (pcs)	Box qty (pcs)
69530826	WSDS+8x260/HB	8	260	200	1	100
69531026	WSDS+10x260/HB	10	260	200	1	100
69531226	WSDS+12x260/HB	12	260	200	1	100
69531626	WSDS+16x260/HB	16	260	200	1	80

WSDS+ Drill with 3 Cutting Edges for Concrete

Features and benefits

- Designed for drilling all concrete
- Drills through rebar without getting stuck
- Three cutting edges increase drilling speed
- Carbide tip with precision centering point resists overheating and provides trajectory control
- Three flute zone for fast dust evacuation, accelleration, and extraction

Part No.	Description	d_0 (mm)	L (mm)	LU (mm)	Pack qty (pcs)	Box qty (pcs)
69520611	WSDS+6x110/3CE	6	110	50	1	250
69520616	WSDS+6x160/3CE	6	160	100	1	200
69520621	WSDS+6x210/3CE	6	210	150	1	150
69520816	WSDS+8x160/3CE	8	160	100	1	200
69520821	WSDS+8x210/3CE	8	210	150	1	150
69521021	WSDS+10x210/3CE	10	210	150	1	100
69521026	WSDS+10x260/3CE	10	260	200	1	100
69521216	WSDS+12x160/3CE	12	160	100	1	150
69521221	WSDS+12x210/3CE	12	210	150	1	100
69521226	WSDS+12x260/3CE	12	260	200	1	100
69521621	WSDS+16x210/3CE	16	210	150	1	100
69521626	WSDS+16x260/3CE	16	260	200	1	100

WSDS+ Drill with Stopper for Concrete

Features and benefits

- Designed for drilling all concrete at controlled depth
- Particularly suitable for high volume installations of anchors such as WDI1
- Three cutting edges increase drilling speed
- Carbide tip with precision centering point resists overheating and provides trajectory control

Part No.	Description	d_0 (mm)	L (mm)	LU (mm)	For	Pack qty (pcs)	Box qty (pcs)
6951010	WSDS+10x110/S	10	110	32	WDI1 8x25	1	150
6951012	WSDS+12x130/S	12	130	42	WDI1 10x30	1	150

walraven

Find out how we can support you

Would you like to find out more about any of the solutions described in this brochure?
Or would you like to discuss how we could help you find the best possible solution for your project? Get in touch today!

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