

Smart anchoring
solutions



Heavy Duty Anchors

Mechanical and chemical anchoring solutions
for every installation



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 75 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 Family

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 smarter solutions to the market. We believe in simple, yet intelligent solutions that make a difference.

Walraven
Product Series



⊕ Sanitary Systems

⊕ Fire Protection Systems

⊕ Pipe Fixing Systems

⊕ Heavy Duty Anchors

⊕ Rail Support Systems

Heavy Duty Anchors

A broad range of ETA-approved mechanical and chemical anchors, complemented by dedicated anchor calculation software and Walraven on-demand 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 services, solar and electrotechnical installations.

- 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 of 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.

- 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

Anchor design and selection is a complex process which must ensure that the right anchors are selected and performed installations are safe. 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, natural stone or other.
- 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 and shear load (with or without lever arm).
- *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 an optimal anchoring solution for your project.

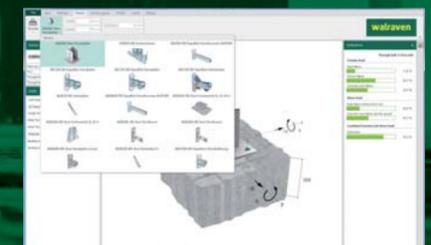


Walraven Anchor Design Software

Walraven Anchor Design Software enables designers and specifiers to carry out post-installed anchor calculations in accordance to European anchor design methods:

- EOTA ETAG001 Annex C, Method A: 2010 for Walraven mechanical anchors
- EOTA TR029: 2010 for Walraven chemical anchors

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



Download Walraven Anchor Design Software for free
For UK customers, please visit [walraven.com/en/anchors](https://www.walraven.com/en/anchors)
If you are an international customer, please visit [walraven.com/int/anchors](https://www.walraven.com/int/anchors)

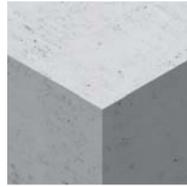
Basics of Anchoring

Base Materials

Anchors may 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 such concrete is known as reinforced concrete.

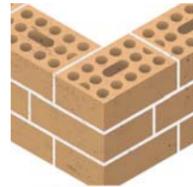
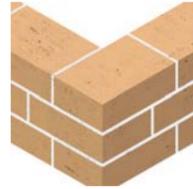


Concrete may be further distinguished as non-cracked or cracked. Concrete zones affected by compressive load, e.g. walls or columns, are generally considered as non-cracked. Zones affected by tensile load, such as lower member parts of ceilings, are considered to be cracked. Cracks develop even in reinforced 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/mm²) 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 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 causes 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 at molecular level. They are a very versatile anchoring solution, and some of the benefits of using chemical anchors are listed below.

- Suitable for a wide range of light to very 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 R_d 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 Failure Modes

Anchorage 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.

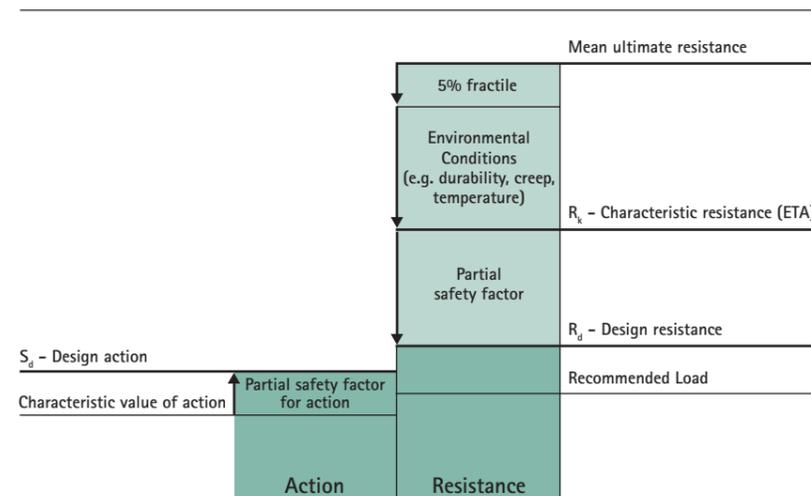
Anchor failure modes under shear load

- **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.

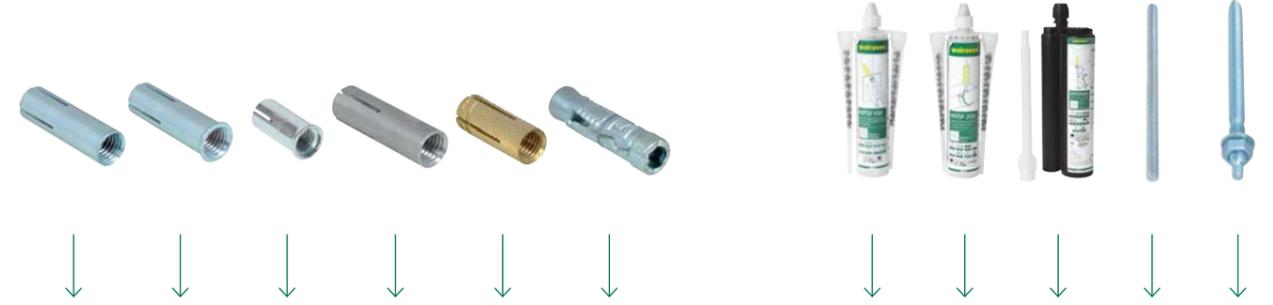
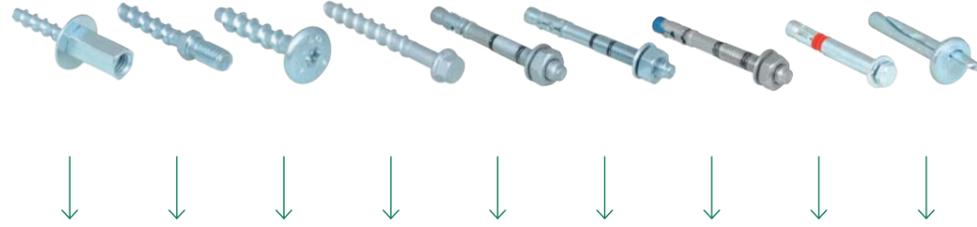
Legend

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 Design / Partial Safety Factor Concept



Anchor selector



Mechanical Anchors		WCS1N	WCS1M	WCS1P	WCS1H	WTB1	WTB7	WTB1 SSt	WHA1	WCA1
Page number		16	18	20	22	26	29	32	36	42
Material	Zinc Plated	✓	✓	✓			✓		✓	✓
	Zinc-flake Coated				✓	✓				
	Stainless Steel (SSt)							✓		

WDI1	WDI1L	WDI1R	WDI1 SSt	WBA1	WSA1	Chemical Anchors	WPSF 100	WPSF 200	WPER 500	WIS-TR	WIS-SB
46	48	50	52	56	58	Page number	62	64	66	70	71
✓	✓	✓			✓	Zinc Plated				✓	✓
						Zinc-flake Coated				✓	
			✓			Stainless Steel (SSt)				✓	

Substrates	Non-cracked Concrete	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Cracked Concrete	✓	✓	✓	✓	✓		✓	✓	✓
	Silicate Brick	✓	✓	✓	✓					
	Solid Brick	✓	✓	✓	✓					
	Hollow Brick	✓	✓	✓	✓					
	Aerated Concrete									
	Stone	✓	✓	✓	✓	✓	✓			

WDI1	WDI1L	WDI1R	WDI1 SSt	WBA1	WSA1	Non-cracked Concrete	WPSF 100	WPSF 200	WPER 500	WIS-TR	WIS-SB
✓	✓	✓	✓	✓	✓	Non-cracked Concrete	✓	✓	✓		
✓	✓	✓	✓			Cracked Concrete		✓	✓		
					✓	Silicate Brick	✓				
					✓	Solid Brick	✓				
					✓	Hollow Brick	✓				
						Aerated Concrete	✓				
					✓	Stone	✓				

✓ Approved ✓ Also suitable for

Certification	ETA	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Seismic				C1				C1 / C2	
	Fire	✓	✓	✓	✓	✓		✓	✓	✓

WDI1	WDI1L	WDI1R	WDI1 SSt	WBA1	WSA1	ETA	WPSF 100	WPSF 200	WPER 500	WIS-TR	WIS-SB
✓	✓	✓	✓			ETA	✓	✓	✓		
						Seismic		C1	C1 / C2		
✓	✓	✓	✓			Fire		✓	✓		

WCS Concrete Screws

Mechanical Anchors



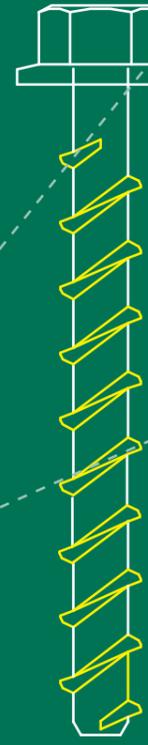
Concrete ⊕
For cracked and non-cracked concrete



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



Seismic ⊕
WCS1H approved for seismic installations



Flexibility ⊕
Up to three embedment depth options

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

WCS1N Concrete Screws

Product overview

The WCS1 concrete screws are characterised by versatility, quick and easy installation and high load capacity in cracked and non-cracked concrete. The WCS1N screw has an SW13 head with a female internal M8/M10 thread and a hexagon drive.



ETA Option 1
ETA-16/0493

ETA ETAG001 Part 6
ETA-16/0516



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

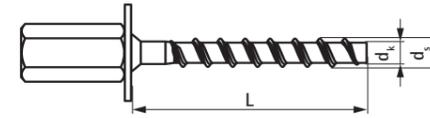
- Non-cracked concrete
- Cracked concrete
- Precast prestressed hollow core slabs



Installation guide



Product information



Part No.	Description	Anchor Size	d_k (mm)	d_s (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
625 3 606	WCS1N 6x35 M8/10	6	5.1	7.5	35	50	800
625 3 696	WCS1N 6x55 M8/10	6	5.1	7.5	55	50	800

Recommended loads*

Option 1 ETA-16/0493 - Single anchors in cracked and non-cracked concrete

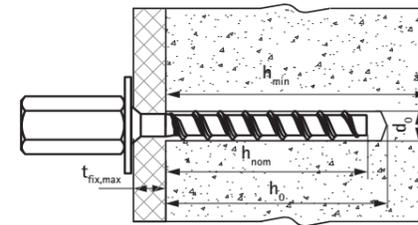
Part No.	Description	Recommended tension load in C20/25 concrete		Partial safety factor γ_{Mc}
		Cracked N_{rec} (kN)	Non-cracked N_{rec} (kN)	
625 3 696	WCS1N 6x55 M8/10	1.90	4.29	1.50

ETAG001 Part 6 ETA-16/0516 - Multiple use for non-structural applications

Part No.	Description	Recommended tension load in C20/25 concrete		Partial safety factor γ_{Mc}
		Cracked N_{rec} (kN)	Non-cracked N_{rec} (kN)	
625 3 606	WCS1N 6x35 M8/10	0.60	0.60	1.80
625 3 696	WCS1N 6x55 M8/10	3.57	3.57	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)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
625 3 606*	WCS1N 6x35 M8/10	6	40	80	h_{nom} 35	35	35	0
625 3 696*	WCS1N 6x55 M8/10	6	40	80	h_{nom} 35	35	35	20
625 3 696**	WCS1N 6x55 M8/10	6	60	100	h_{nom} 55	40	40	0
		6	45	100	h_{nom1} 40	40	40	15
		6	60	100	h_{nom2} 55	40	40	0

Installation data provided according to *ETAG001 Part 6 ETA-16/0516; **Option 1 ETA-16/0493.

WCS1M Concrete Screws

Product overview

The WCS1 concrete screws are characterised by versatility, quick and easy installation and high load capacity in cracked and non-cracked concrete. The WCS1M screw has a male connection thread with an SW10 hexagon drive.



ETA Option 1
ETA-16/0493

ETA ETAG001 Part 6
ETA-16/0516



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



Product information



Part No.	Description	Anchor Size	d_k (mm)	d_s (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
625 3 104	WCS1M 6x35 M8	6	5.1	7.5	35	100	800
625 3 106	WCS1M 6x55 M8	6	5.1	7.5	55	100	800

Recommended loads*

Option 1 ETA-16/0493 - Single anchors in cracked and non-cracked concrete

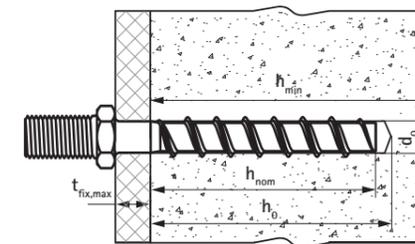
Part No.	Description	Recommended tension load in C20/25 concrete		Partial safety factor γ_{Mc}
		Cracked	Non-cracked	
		N_{rec} (kN)	N_{rec} (kN)	
625 3 106	WCS1M 6x55 M8	1.90	4.29	1.50

ETAG001 Part 6 ETA-16/0516 - Multiple use for non-structural applications

Part No.	Description	Recommended tension load in C20/25 concrete		Partial safety factor γ_{Mc}
		Cracked	Non-cracked	
		N_{rec} (kN)	N_{rec} (kN)	
625 3 104	WCS1M 6x35 M8	0.60	0.60	1.80
625 3 106	WCS1M 6x55 M8	3.57	3.57	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)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
625 3 104*	WCS1M 6x35 M8	6	40	80	h_{nom} 35	35	35	0
625 3 106*	WCS1M 6x55 M8	6	40	80	h_{nom} 35	35	35	20
625 3 106**	WCS1M 6x55 M8	6	60	100	h_{nom} 55	40	40	0
		6	45	100	h_{nom1} 40	40	40	15
		6	60	100	h_{nom2} 55	40	40	0

Installation data provided according to *ETAG001 Part 6 ETA-16/0516; **Option 1 ETA-16/0493.

Installation guide



WCS1P Concrete Screws

Product overview

The WCS1 concrete screws are characterised by versatility, quick and easy installation and high load capacity in cracked and non-cracked concrete. The WCS1P screw has a pan head with T30 torx drive.



ETA ETAG001 Part 6
ETA-16/0516



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



Product information



Part No.	Description	Anchor Size	d_k (mm)	d_s (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
625 3 006	WCS1P 6x40	6	5.1	7.5	40	100	800

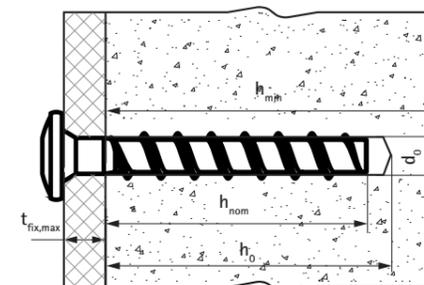
Recommended loads*

ETAG001 Part 6 ETA-16/0516 - Multiple use for non-structural applications

Part No.	Description	Recommended tension load in C20/25 concrete		Partial safety factor γ_{Mc}
		Cracked N_{rec} (kN)	Non-cracked N_{rec} (kN)	
625 3 006	WCS1P 6x40	0.60	0.60	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)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
625 3 006	WCS1P 6x40	6	40	80	35	35	35	5

Installation guide



WCS1H Concrete Screws

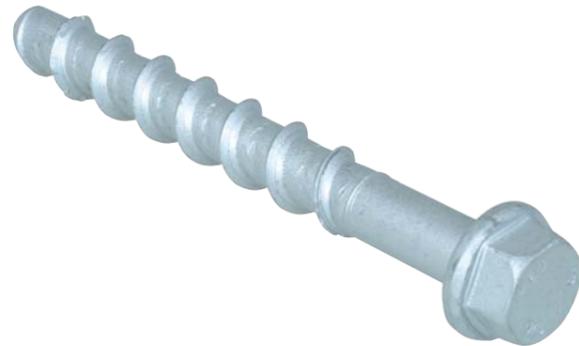
Product overview

The WCS1 concrete screws are characterised by versatility, quick and easy installation and high load capacity in cracked and non-cracked concrete. The WCS1H screw has a hexagon head with a washer. It is zinc-flake coated for improved corrosion resistance.



ETA Option 1
ETA-16/0493

ETA ETAG001 Part 6
ETA-16/0516



Fire Resistance
R120



Seismic
C1

Material
Steel, zinc-flake coated

Features and benefits

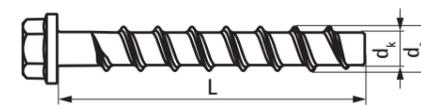
- ETA Option 1 approval for cracked and non-cracked concrete
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Seismic performance category C1 for design of anchorages under seismic action
- Approved for use in precast prestressed hollow core slabs
- Up to 3 anchoring depths 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



Product information



Part No.	Description	Anchor Size	d _k (mm)	d _s (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
625 3 304	WCS1H 6x40	6	5.1	7.5	40	100	800
625 3 306	WCS1H 6x60	6	5.1	7.5	60	100	800
625 3 408	WCS1H 8x70	8	7.1	10.6	70	50	400
625 3 418	WCS1H 8x80	8	7.1	10.6	80	50	400
625 3 428	WCS1H 8x100	8	7.1	10.6	100	50	-
625 3 438	WCS1H 8x120	8	7.1	10.6	120	50	-
625 3 506	WCS1H 10x60	10	9.1	12.6	60	50	-
625 3 509	WCS1H 10x90	10	9.1	12.6	90	50	-
625 3 510	WCS1H 10x100	10	9.1	12.6	100	50	-
625 3 512	WCS1H 10x120	10	9.1	12.6	120	50	-

Recommended loads*

Option 1 ETA-16/0493 - Single anchors in cracked and non-cracked concrete

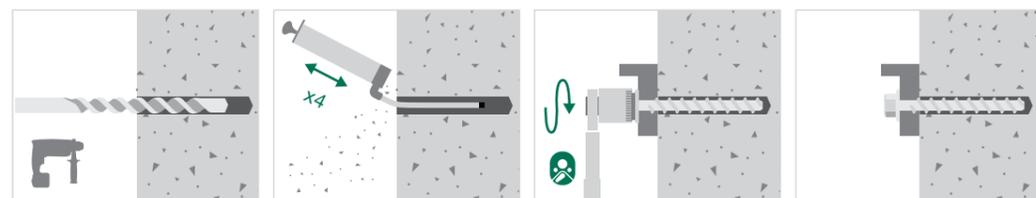
Part No.	Description	Recommended tension load in C20/25 concrete		Partial safety factor
		Cracked	Non-cracked	
		N _{rec} (kN)	N _{rec} (kN)	γ _{Mc}
625 3 306	WCS1H 6x60	1.90	4.29	1.50
625 3 408	WCS1H 8x70	5.71	7.62	1.50
625 3 418	WCS1H 8x80	5.71	7.62	1.50
625 3 428	WCS1H 8x100	5.71	7.62	1.50
625 3 438	WCS1H 8x120	5.71	7.62	1.50
625 3 506	WCS1H 10x60	4.29	5.71	1.50
625 3 509	WCS1H 10x90	9.60	11.90	1.50
625 3 510	WCS1H 10x100	9.60	11.90	1.50
625 3 512	WCS1H 10x120	9.60	11.90	1.50

ETAG001 Part 6 ETA-16/0516 - Multiple use for non-structural applications

Part No.	Description	Recommended tension load in C20/25 concrete		Partial safety factor
		Cracked	Non-cracked	
		N _{rec} (kN)	N _{rec} (kN)	γ _{Mc}
625 3 304	WCS1H 6x40	0.60	0.60	1.80
625 3 306	WCS1H 6x60	3.57	3.57	1.50

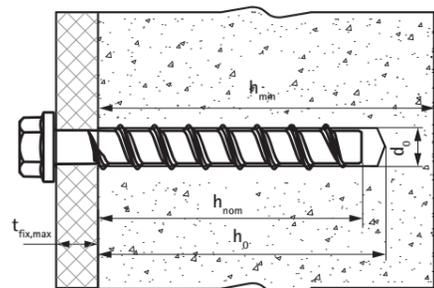
* Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure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

Installation guide



WTB Throughbolt Anchors

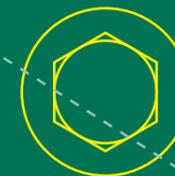
Installation data



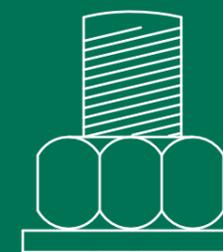
Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	C_{min} (mm)	S_{min} (mm)	$t_{fix,max}$ (mm)
625 3 304*	WCS1H 6x40	6	40	80	h_{nom} 35	35	35	5
625 3 306*	WCS1H 6x60	6	40	80	h_{nom} 35	35	35	25
		6	60	100	h_{nom} 55	40	40	5
625 3 306**	WCS1H 6x60	6	45	100	h_{nom1} 40	40	40	20
		6	60	100	h_{nom2} 55	40	40	5
625 3 408**	WCS1H 8x70	8	55	100	h_{nom1} 45	40	40	$L - h_{nom}$
625 3 418**	WCS1H 8x80	8	65	100	h_{nom2} 55	50	50	$L - h_{nom}$
625 3 428**	WCS1H 8x100							
625 3 438**	WCS1H 8x120	8	75	120	h_{nom3} 65	50	50	$L - h_{nom}$
625 3 506**	WCS1H 10x60	10	65	100	h_{nom1} 55	50	50	5
625 3 509**	WCS1H 10x90	10	65	100	h_{nom1} 55	50	50	$L - h_{nom}$
625 3 510**	WCS1H 10x100				h_{nom2} 75			
625 3 512**	WCS1H 10x120	10	95	130	h_{nom3} 85	50	50	$L - h_{nom}$

Installation data provided according to *ETAG001 Part 6 ETA-16/0516; **Option 1 ETA-16/0493.

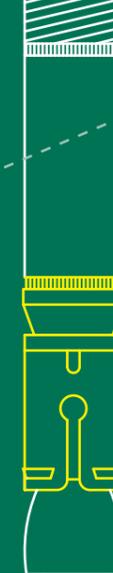
Concrete ⊕
For cracked and non-cracked concrete



⊕ Approved
ETA Option 1 / ETA Option 7



⊕ System
Part of Walraven product system



⊕ Fixing
Possibility of through-fixing

⊕ Flexibility
Two marked embedment depth options

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

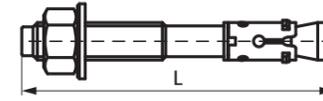
- ETA Option 1 approval for cracked and non-cracked concrete
- Zinc-flake coated for improved corrosion resistance
- Two embedment depths provide installation flexibility
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- High load capacity
- Pre-installation and through-fixing

Substrate type

- Non-cracked concrete
- Cracked concrete
- Stone



Product information



Part No.	Description	Anchor Size	L (mm)	Box qty (pcs)
6098 3 1080	WTB1 8x80	M8	80	100
6098 3 1081	WTB1 8x100	M8	100	50
6098 3 1082	WTB1 8x115	M8	115	50
6098 3 1100	WTB1 10x95	M10	95	50
6098 3 1101	WTB1 10x115	M10	115	50
6098 3 1102	WTB1 10x130	M10	130	50
6098 3 1120	WTB1 12x120	M12	120	50
6098 3 1121	WTB1 12x135	M12	135	50
6098 3 1160	WTB1 16x140	M16	140	25

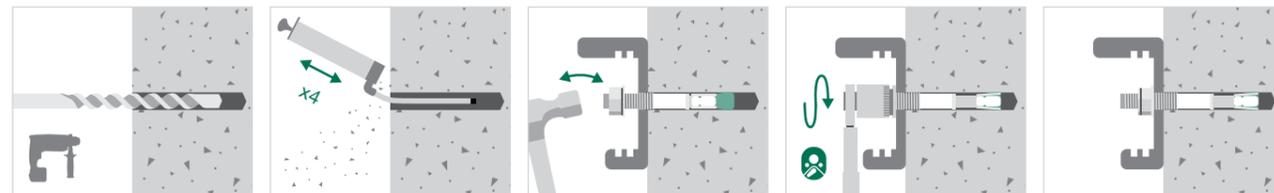
Recommended loads*

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

Part No.	Description	Recommended tension load in C20/25 concrete at standard embedment depth		
		Cracked	Non-cracked	Partial safety factor
		N_{rec} (kN)	N_{rec} (kN)	γ_{Mc}
6098 3 1080	WTB1 8x80	1.98	3.57	1.80
6098 3 1081	WTB1 8x100	1.98	3.57	1.80
6098 3 1082	WTB1 8x115	1.98	3.57	1.80
6098 3 1100	WTB1 10x95	4.29	5.71	1.50
6098 3 1101	WTB1 10x115	4.29	5.71	1.50
6098 3 1102	WTB1 10x130	4.29	5.71	1.50
6098 3 1120	WTB1 12x120	5.71	9.52	1.50
6098 3 1121	WTB1 12x135	5.71	9.52	1.50
6098 3 1160	WTB1 16x140	9.52	16.67	1.50

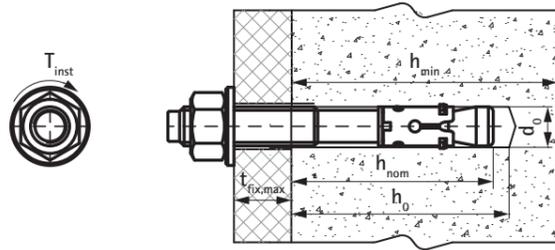
*Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure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

Installation guide



WTB7 Throughbolt Anchors

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)
6098 3 1080	WTB1 8x80	8	55	100	Standard	55	47	15
		8	40	100	Reduced	40	32	30
6098 3 1081	WTB1 8x100	8	55	100	Standard	55	47	35
		8	40	100	Reduced	40	32	50
6098 3 1082	WTB1 8x115	8	55	100	Standard	55	47	50
		8	40	100	Reduced	40	32	65
6098 3 1100	WTB1 10x95	10	69	120	Standard	69	59	15
		10	49	100	Reduced	49	39	35
6098 3 1101	WTB1 10x115	10	69	120	Standard	69	59	35
		10	49	100	Reduced	49	39	55
6098 3 1102	WTB1 10x130	10	69	120	Standard	69	59	50
		10	49	100	Reduced	49	39	70
6098 3 1120	WTB1 12x120	12	80	140	Standard	80	68	25
		12	60	100	Reduced	60	48	45
6098 3 1121	WTB1 12x135	12	80	140	Standard	80	68	40
		12	60	100	Reduced	60	48	60
6098 3 1160	WTB1 16x140	16	100	170	Standard	100	85	20
		16	80	130	Reduced	80	65	40

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

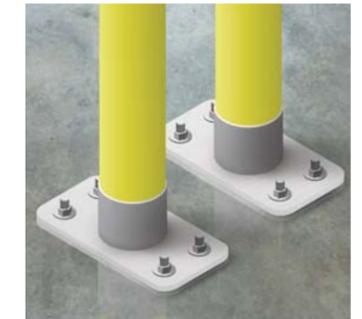


Features and benefits

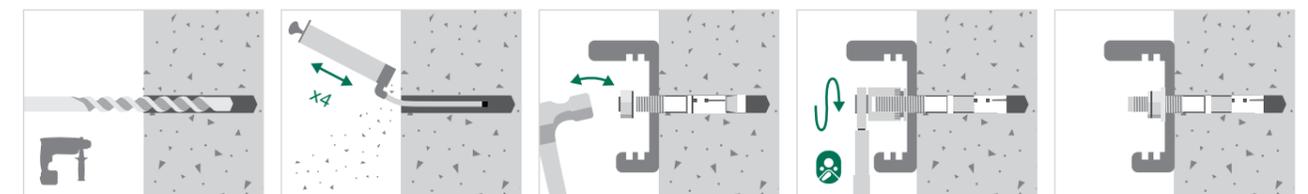
- ETA Option 7 approval for non-cracked concrete
- Two embedment depths provide installation flexibility
- High load capacity
- Pre-installation and through-fixing

Substrate type

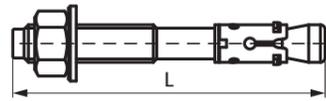
- Non-cracked concrete
- Stone



Installation guide



Product information



Part No.	Description	Anchor Size	L (mm)	Box qty (pcs)
6098 3 7080	WTB7 8x75	M8	75	100
6098 3 7081	WTB7 8x95	M8	95	100
6098 3 7082	WTB7 8x115	M8	115	100
6098 3 7100	WTB7 10x95	M10	95	50
6098 3 7101	WTB7 10x115	M10	115	50
6098 3 7102	WTB7 10x130	M10	130	50
6098 3 7120	WTB7 12x100	M12	100	50
6098 3 7121	WTB7 12x120	M12	120	50
6098 3 7122	WTB7 12x150	M12	150	50
6098 3 7123	WTB7 12x180	M12	180	50
6098 3 7160	WTB7 16x150	M16	150	25

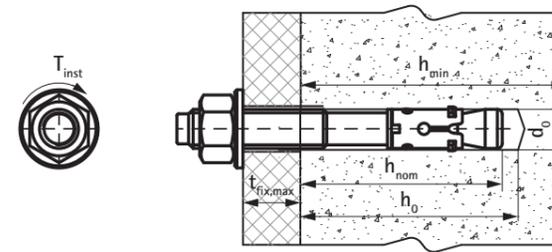
Recommended loads*

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

Part No.	Description	Recommended tension load in C20/25 concrete at standard embedment depth	
		Non-cracked	Partial safety factor
		N_{rec} (kN)	γ_{Mc}
6098 3 7080	WTB7 8x75	4.76	1.80
6098 3 7081	WTB7 8x95	4.76	1.80
6098 3 7082	WTB7 8x115	4.76	1.80
6098 3 7100	WTB7 10x95	4.76	1.80
6098 3 7101	WTB7 10x115	4.76	1.80
6098 3 7102	WTB7 10x130	4.76	1.80
6098 3 7120	WTB7 12x100	9.92	1.80
6098 3 7121	WTB7 12x120	9.92	1.80
6098 3 7122	WTB7 12x150	9.92	1.80
6098 3 7123	WTB7 12x180	9.92	1.80
6098 3 7160	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_o (mm)	$\geq h_o$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	$t_{fix,max}$ (mm)	T_{inst} (mm)	
6098 3 7080	WTB7 8x75	8	55	100	Standard	55	47	10	15
6098 3 7081	WTB7 8x95	8	55	100	Standard	55	47	30	15
6098 3 7082	WTB7 8x115	8	55	100	Standard	55	47	50	15
6098 3 7100	WTB7 10x95	10	59	100	Standard	59	49	25	30
6098 3 7101	WTB7 10x115	10	59	100	Standard	59	49	45	30
6098 3 7102	WTB7 10x130	10	59	100	Standard	59	49	60	30
6098 3 7120	WTB7 12x100	12	80	136	Standard	80	68	5	50
6098 3 7121	WTB7 12x120	12	80	136	Standard	80	68	25	50
6098 3 7122	WTB7 12x150	12	80	136	Standard	80	68	55	50
6098 3 7123	WTB7 12x180	12	80	136	Standard	80	68	85	50
6098 3 7160	WTB7 16x150	12	100	170	Standard	100	85	30	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

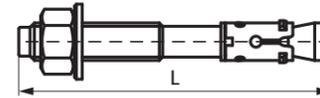
- ETA Option 1 approval for cracked and non-cracked concrete
- Made of stainless steel for use in external atmospheric environment
- Two embedment depths provide installation flexibility
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- High load capacity
- Pre-installation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

Substrate type

- Non-cracked concrete
- Cracked concrete
- Stone



Product information



Part No.	Description	Anchor Size	L (mm)	Box qty (pcs)
6098 7 1080	WTB1 SSt 8x75	M8	75	100
6098 7 1081	WTB1 SSt 8x115	M8	115	100
6098 7 1100	WTB1 SSt 10x95	M10	95	50
6098 7 1101	WTB1 SSt 10x130	M10	130	50
6098 7 1120	WTB1 SSt 12x125	M12	125	50
6098 7 1121	WTB1 SSt 12x150	M12	150	50

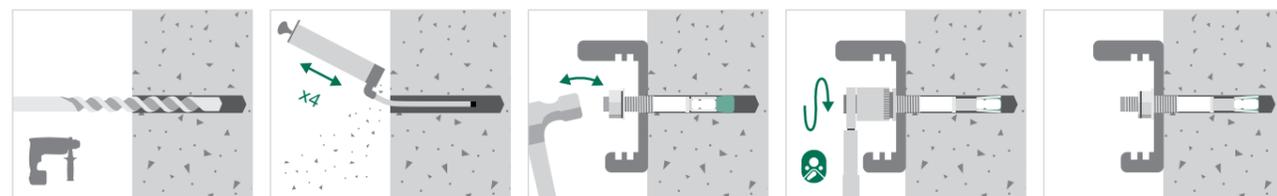
Recommended loads*

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

Part No.	Description	Recommended tension load in C20/25 concrete at standard embedment depth		
		Cracked	Non-cracked	Partial safety factor
		N_{rec} (kN)	N_{rec} (kN)	γ_{Mc}
6098 7 1080	WTB1 SSt 8x75	2.38	3.57	1.80
6098 7 1081	WTB1 SSt 8x115	2.38	3.57	1.80
6098 7 1100	WTB1 SSt 10x95	4.29	7.62	1.50
6098 7 1101	WTB1 SSt 10x130	4.29	7.62	1.50
6098 7 1120	WTB1 SSt 12x125	5.71	11.90	1.50
6098 7 1121	WTB1 SSt 12x150	5.71	11.90	1.50

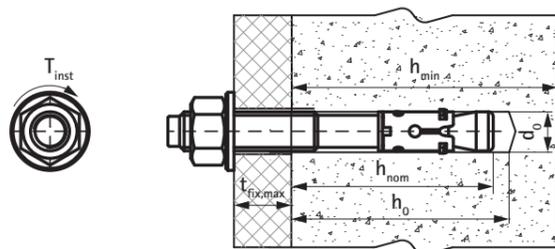
*Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure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

Installation guide



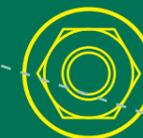
WHA Highload Anchors

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 SSSt 8x75	8	55	100	Standard	55	47	10	15
		8	40	100	Reduced	40	32	25	15
6098 7 1081	WTB1 SSSt 8x115	8	55	100	Standard	55	47	50	15
		8	40	100	Reduced	40	32	65	15
6098 7 1100	WTB1 SSSt 10x95	10	69	100	Standard	69	59	15	30
		10	49	100	Reduced	49	39	35	30
6098 7 1101	WTB1 SSSt 10x130	10	69	100	Standard	69	59	50	30
		10	49	100	Reduced	49	39	70	30
6098 7 1120	WTB1 SSSt 12x125	12	80	140	Standard	80	68	30	50
		12	60	100	Reduced	60	48	50	50
6098 7 1121	WTB1 SSSt 12x150	12	80	140	Standard	80	68	55	50
		12	60	100	Reduced	60	48	75	50

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

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

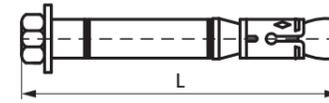
- ETA Option 1 approval for cracked and non-cracked concrete
- Seismic performance categories C1 and C2 for design of anchorages under seismic action
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Very high load capacity

Substrate type

- Non-cracked concrete
- Cracked concrete



Product information



Part No.	Description	Anchor Size	d _{nom} (mm)	L (mm)	Box qty (pcs)
6098 3 2120	WHA1H 12x85	M8	12	85	50
6098 3 2121	WHA1H 12x125	M8	12	125	25
6098 3 2150	WHA1H 15x110	M10	15	110	25
6098 3 2151	WHA1H 15x136	M10	15	136	25
6098 3 2180	WHA1H 18x117	M12	18	117	20

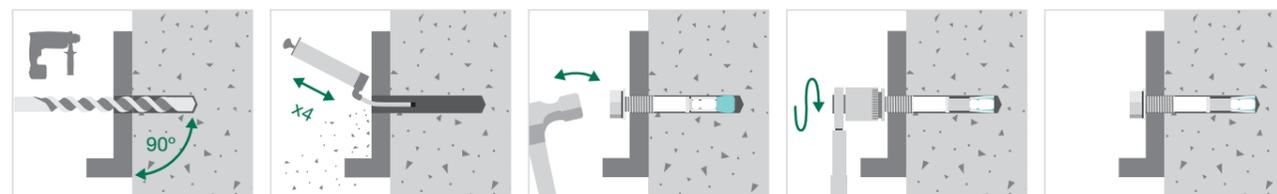
Recommended loads*

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

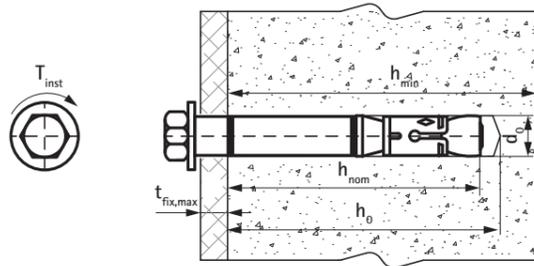
Part No.	Description	Recommended tension loads in C20/25 concrete		Partial safety factor γ _{Mc}
		Cracked N _{rec} (kN)	Non-cracked N _{rec} (kN)	
6098 3 2120	WHA1H 12x85	5.71	9.52	1.50
6098 3 2121	WHA1H 12x125	5.71	9.52	1.50
6098 3 2150	WHA1H 15x110	7.62	14.29	1.50
6098 3 2151	WHA1H 15x136	7.62	14.38	1.50
6098 3 2180	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 guide



Installation data



Part No.	Description	d_o (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	$t_{fix,max}$ (mm)	$T_{inst,max}$ (Nm)
6098 3 2120	WHA1H 12x85	12	80	120	70	60	10	30
6098 3 2121	WHA1H 12x125	12	80	120	70	60	50	30
6098 3 2150	WHA1H 15x110	15	95	140	85	71	15	50
6098 3 2151	WHA1H 15x136	15	95	140	85	71	45	50
6098 3 2180	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.

WCA Ceiling Anchors

Walraven Anchor Design Software

Discover which anchor is the best choice for any given application and load simply by entering the relevant details.

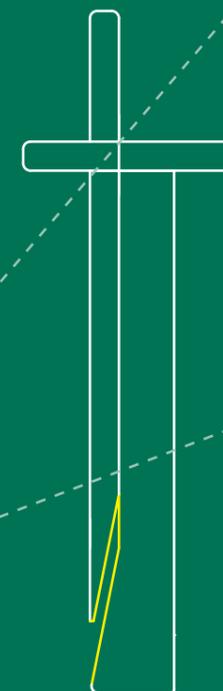
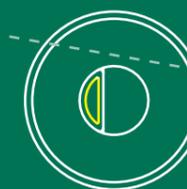
Register and download our calculation software:
For UK customers, please visit walraven.com/en/anchors
If you are an international customer, please visit walraven.com/int/anchors

Easy Installation ⊕
As simple as drill, clean, and hammer-in

Fire resistance ⊕
Approved for anchor design under fire exposure

Economical ⊕
Cost-effective anchoring solution

Safe ⊕
Visually verifiable correct installation



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



Product information



Part No.	Description	Anchor Size	d (mm)	L (mm)	Box qty (pcs)
609 6 3604	WCA1 6x40	6	5.8	36	100
609 6 3665	WCA1 6x65	6	5.8	65	100

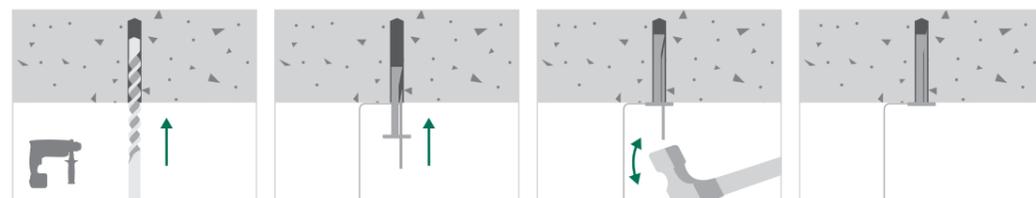
Recommended loads*

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

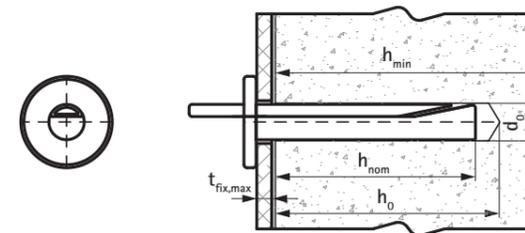
Part No.	Description	Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked	Non-cracked	Partial safety factor
		F _{rec} (kN)	F _{rec} (kN)	γ _M
609 6 3604	WCA1 6x40	1.43	1.43	1.50
609 6 3665	WCA1 6x65	1.43	1.43	1.50

* 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 guide



Installation data



Part No.	Description	d ₀ (mm)	≥ h ₀ (mm)	h _{min} (mm)	≥ h _{nom} (mm)	≥ h _{ef} (mm)	C _{cr} (mm)	S _{cr} (mm)	t _{fix,max} (mm)
609 6 3604	WCA1 6x40	6	40	100	32	32	150	200	4.5
609 6 3665	WCA1 6x65	6	40	100	32	32	150	200	35

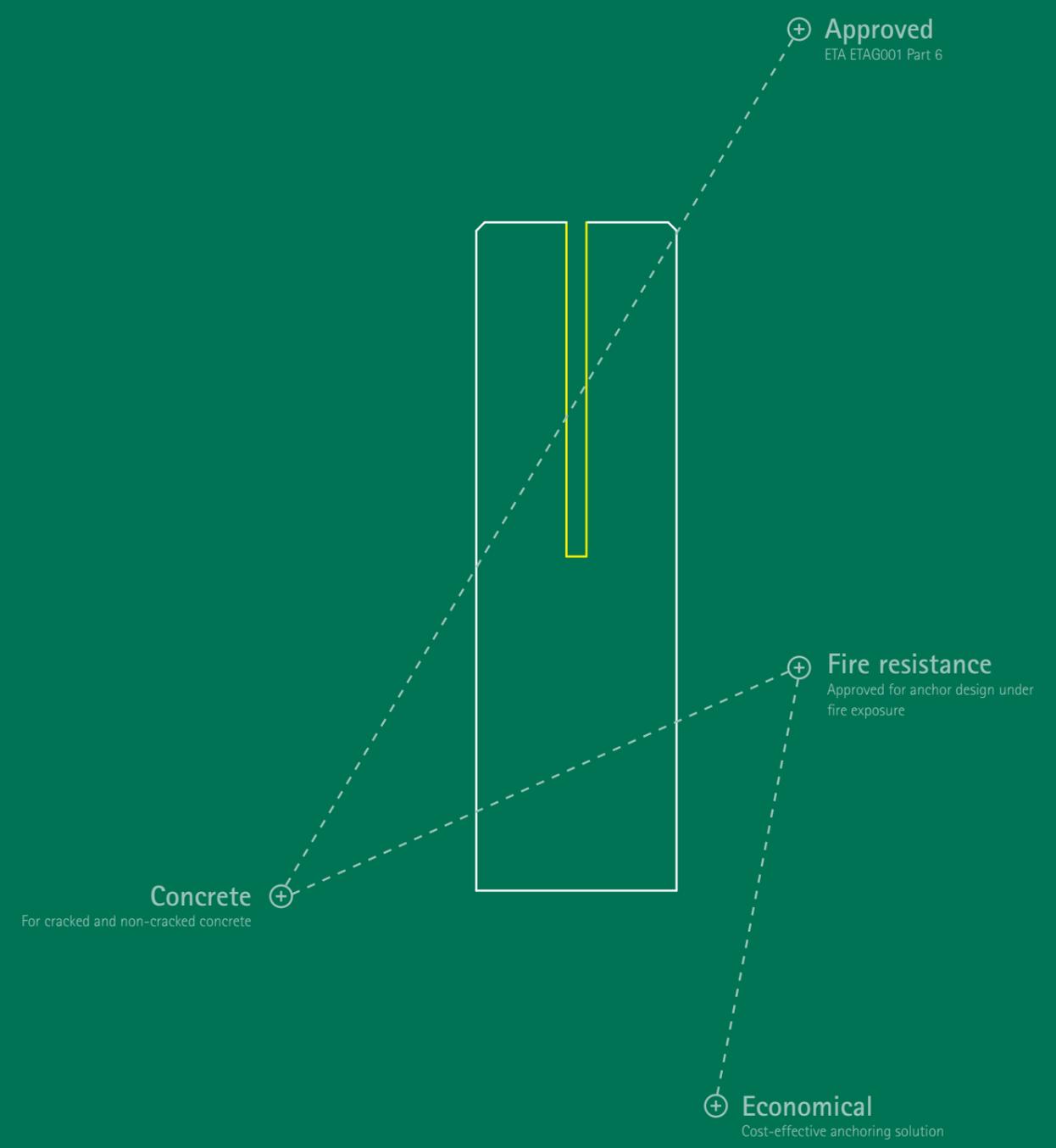
System approach

Our unique system approach, technical support and Walraven Anchor Design Software help you find the ideal solution for every application and every load. What is more, Walraven is one of the very few companies providing ETA certification support. Visit our website to find out more.

walraven.com



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

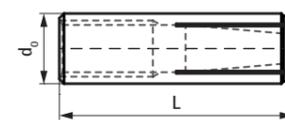
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- No collar for anchor setting at greater hole depth
- Simple and quick installation procedure
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Medium load capacity

Substrate type

- Non-cracked concrete
- Cracked concrete



Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	L_g (mm)	Box qty (pcs)
610 3 006	WDI1 6x25	M6	8	25	11	100
610 3 008	WDI1 8x30	M8	10	30	13	100
610 3 010	WDI1 10x40	M10	12	40	15	50
610 3 012	WDI1 12x50	M12	15	50	20	50
610 3 016	WDI1 16x65	M16	20	65	25	25

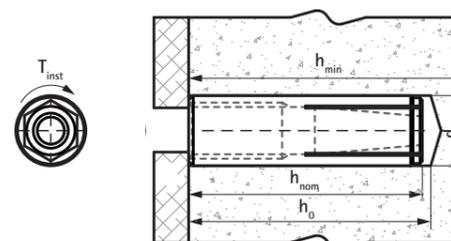
Recommended loads*

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

Part No.	Description	Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked F_{rec} (kN)	Non-cracked F_{rec} (kN)	Partial safety factor γ_M
610 3 006	WDI1 6x25	0.52	0.52	2.10
610 3 008	WDI1 8x30	1.02	1.02	2.10
610 3 010	WDI1 10x40	1.55	1.55	2.10
610 3 012	WDI1 12x50	2.19	2.19	2.10
610 3 016	WDI1 16x65	4.53	4.53	2.10

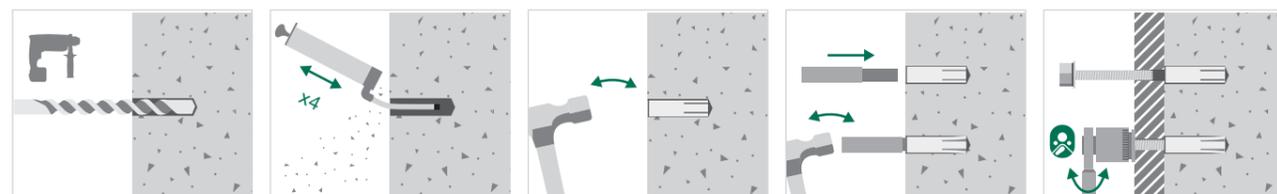
* Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure 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)
610 3 006	WDI1 6x25	8	30	80	25	25	150	200	6	4.5
610 3 008	WDI1 8x30	10	32	80	30	30	150	200	8	11
610 3 010	WDI1 10x40	12	42	80	40	40	150	200	10	22
610 3 012	WDI1 12x50	15	53	100	50	50	150	200	12	38
610 3 016	WDI1 16x65	20	70	130	65	65	195	260	16	98

Installation guide



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

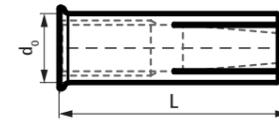
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Collar with a lip for flush anchor setting at any hole depth
- Simple and quick installation procedure
- Fire resistance class R30-R120 for design of anchorages under exposure to fire
- Medium load capacity

Substrate type

- Non-cracked concrete
- Cracked concrete



Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	L_g (mm)	Box qty (pcs)
610 3 106	WDI1L 6x25	M6	8	25	11	100
610 3 108	WDI1L 8x30	M8	10	30	13	100
610 3 110	WDI1L 10x40	M10	12	40	15	50
610 3 112	WDI1L 12x50	M12	15	50	20	50
610 3 116	WDI1L 16x65	M16	20	65	25	25

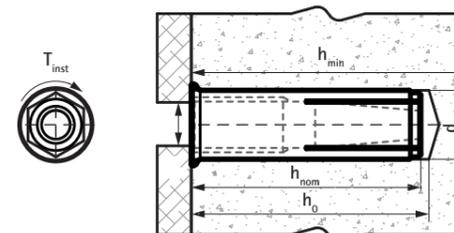
Recommended loads*

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

Part No.	Description	Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked F_{rec} (kN)	Non-cracked F_{rec} (kN)	Partial safety factor γ_M
610 3 106	WDI1L 6x25	0.52	0.52	2.10
610 3 108	WDI1L 8x30	1.02	1.02	2.10
610 3 110	WDI1L 10x40	1.55	1.55	2.10
610 3 112	WDI1L 12x50	2.19	2.19	2.10
610 3 116	WDI1L 16x65	4.53	4.53	2.10

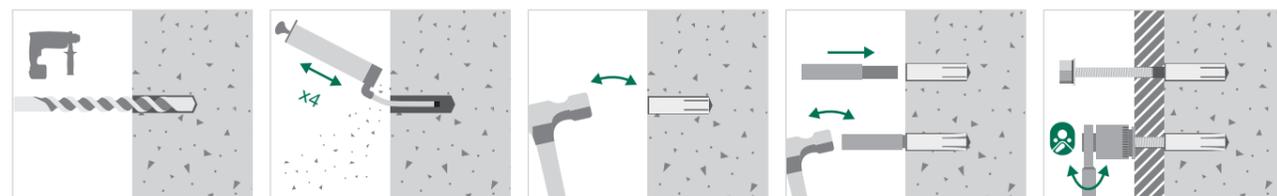
* Recommended loads: apply to correctly installed anchors at maximum embedment depth; include partial safety factor and an overall partial safety factor for action of 1.4. The partial safety factor for action depends on the type of loading and shall be taken from national regulations. All anchor failure 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)
610 3 106	WDI1L 6x25	8	30	80	25	25	150	200	6	4.5
610 3 108	WDI1L 8x30	10	32	80	30	30	150	200	8	11
610 3 110	WDI1L 10x40	12	42	80	40	40	150	200	10	22
610 3 112	WDI1L 12x50	15	53	100	50	50	150	200	12	38
610 3 116	WDI1L 16x65	20	70	130	65	65	195	260	16	98

Installation guide



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

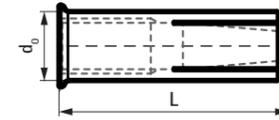
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Reduced 25mm anchor length allows approved applications in precast prestressed hollow core slabs
- Collar with a lip for flush anchor setting at any hole depth
- Simple and quick installation procedure
- Fire resistance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

Substrate type

- Non-cracked concrete
- Cracked concrete



Product information



Part No.	Description	Anchor Size	d _{nom} (mm)	L (mm)	L _g (mm)	Box qty (pcs)
610 3 206	WDI1R 6x25	M6	8	25	12	100
610 3 208	WDI1R 8x25	M8	10	25	12	100
610 3 210	WDI1R 10x25	M10	12	25	12	50
610 3 212	WDI1R 12x25	M12	15	25	12	50

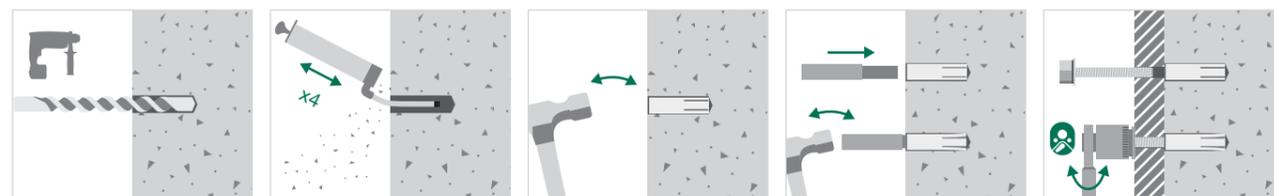
Recommended loads*

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

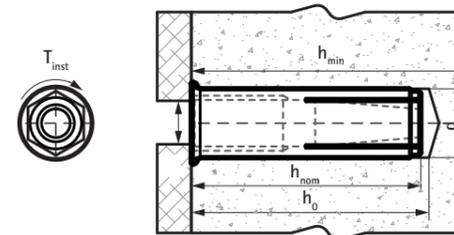
Part No.	Description	Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked F _{rec} (kN)	Non-cracked F _{rec} (kN)	Partial safety factor γ _M
610 3 206	WDI1R 6x25	1.67	1.67	1.50
610 3 208	WDI1R 8x25	1.90	1.90	1.50
610 3 210	WDI1R 10x25	2.14	2.14	1.50
610 3 212	WDI1R 12x25	2.14	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 guide



Installation data



Part No.	Description	d ₀ (mm)	≥ h ₀ (mm)	h _{min} (mm)	h _{nom} (mm)	h _{ef} (mm)	C _{cr} (mm)	S _{cr} (mm)	I _{s, min} (mm)	T _{inst, max} (Nm)
610 3 206	WDI1R 6x25	8	25	80	25	25	60	30	6	4
610 3 208	WDI1R 8x25	10	25	80	25	25	100	70	8	8
610 3 210	WDI1R 10x25	12	25	80	25	25	100	70	10	15
610 3 212	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

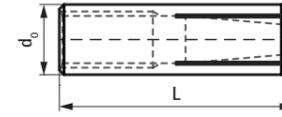
- ETA ETAG001 Part 6 approval for multiple use for non-structural applications
- Made of stainless steel for use in external atmospheric environment
- No collar for anchor setting at greater hole depth
- Simple and quick installation procedure
- Fire resistance class R30-R120 for design of anchorages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

Substrate type

- Non-cracked concrete
- Cracked concrete



Product information



Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	L_g (mm)	Box qty (pcs)
610 3 708	WDI1 SSt 8x30	M8	10	30	13	100
610 3 710	WDI1 SSt 10x40	M10	12	40	15	100
610 3 712	WDI1 SSt 12x50	M12	15	50	20	50
610 3 716	WDI1 SSt 16x65	M16	20	65	25	50

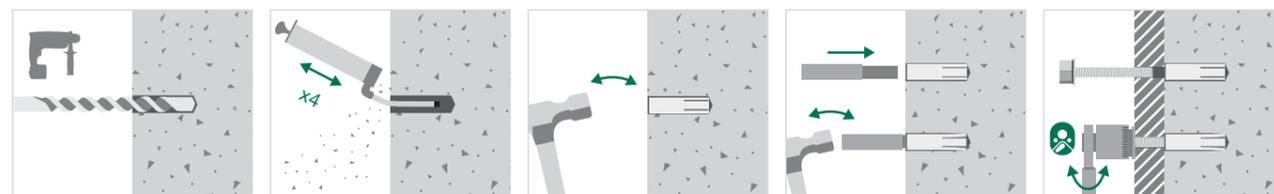
Recommended loads*

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

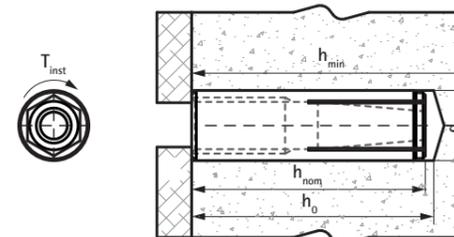
Part No.	Description	Recommended load for all directions in C20/25 to C50/60 concrete		
		Cracked F_{rec} (kN)	Non-cracked F_{rec} (kN)	Partial safety factor γ_M
610 3 708	WDI1 SSt 8x30	0.68	0.68	2.10
610 3 710	WDI1 SSt 10x40	1.09	1.09	2.10
610 3 712	WDI1 SSt 12x50	1.56	1.56	2.10
610 3 716	WDI1 SSt 16x65	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 guide



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)	$I_{s, min}$ (mm)	$T_{inst, max}$ (Nm)
610 3 708	WDI1 SSt 8x30	10	32	80	30	30	150	200	8	11
610 3 710	WDI1 SSt 10x40	12	42	80	40	40	150	200	10	22
610 3 712	WDI1 SSt 12x50	15	53	100	50	50	150	200	12	38
610 3 716	WDI1 SSt 16x65	20	70	130	65	65	195	200	16	98

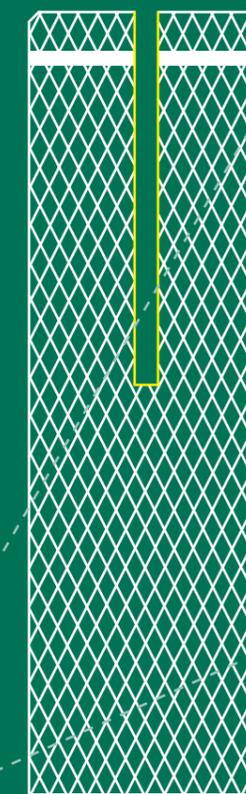
WBA Brass Anchors



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 know more about how we can support you? Get in touch today!

walraven.com



⊕ Easy installation

⊕ Light applications

For use in solid base materials ⊕

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

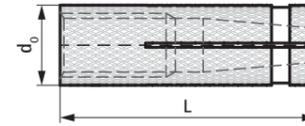
- Reduced anchor length requires less drilling
- Simple and quick installation procedure
- Corrosion resistant
- For use with standard metric bolts and threaded rods.
- Knurled external surface provides improved grip and resists rotation in the hole
- Does not require a setting tool

Substrate type

- Non-cracked concrete
- Natural stone
- Solid bricks

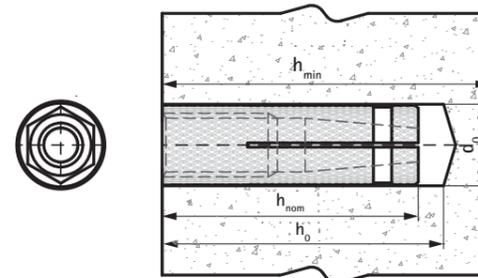


Product information



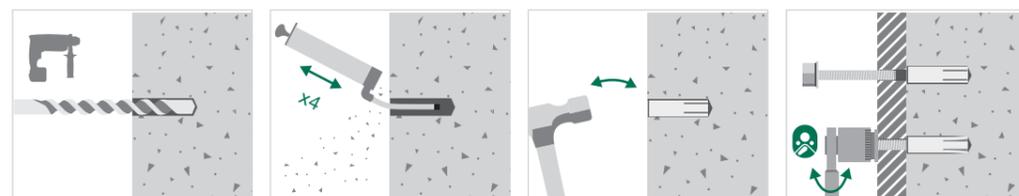
Part No.	Description	Anchor Size	d_{nom} (mm)	L (mm)	Box qty (pcs)	Outer box qty (pcs)
610 7 006	WBA 6x22	M6	8	22	100	1600
610 7 008	WBA 8x28	M8	10	28	100	1600
610 7 010	WBA 10x32	M10	12	32	100	800
610 7 012	WBA 12x38	M12	15	38	50	400

Installation data



Part No.	Description	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)
610 7 006	WBA 6x22	8	27	100	22	22
610 7 008	WBA 8x28	10	32	100	28	28
610 7 010	WBA 10x32	12	35	100	32	32
610 7 012	WBA 12x38	15	40	100	38	38

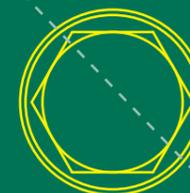
Installation guide



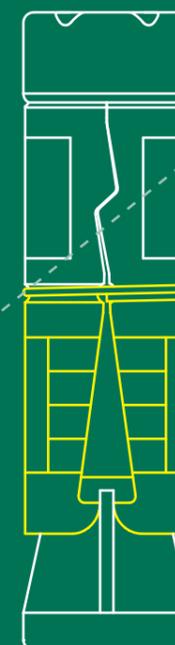
WSA Shield Anchors



Versatile ⊕
 Suitable for many substrates



Flexible ⊕
 Use with any metric threaded rod or bolt



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

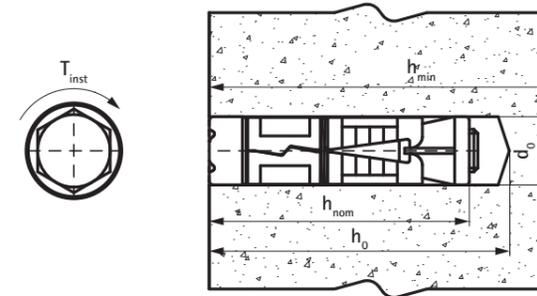


Product information



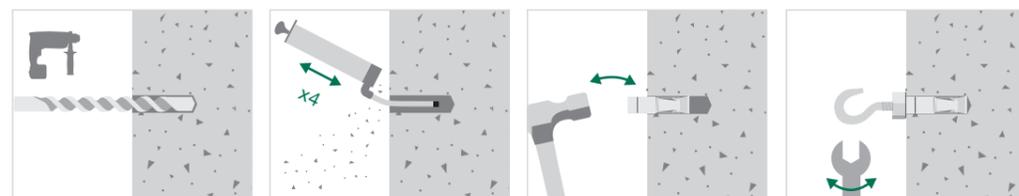
Part No.	Description	Anchor Size	d _{nom} (mm)	L (mm)	Box qty (pcs)
610 3 608	WSA1 8x50	M8	14	50	100
610 3 610	WSA1 10x60	M10	16	60	100
610 3 612	WSA1 12x75	M12	20	75	50
610 3 616	WSA1 16x115	M16	25	115	25

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)	T _{inst,max} (Nm)
610 3 608	WSA1 8x50	14	55	100	50	40	60	40	15
610 3 610	WSA1 10x60	16	65	100	60	50	75	50	27
610 3 612	WSA1 12x75	20	85	100	80	60	90	60	50
610 3 616	WSA1 16x115	25	125	142.5	120	95	142.5	95	120

Installation guide



WIS Chemical Anchors

Chemical Anchors



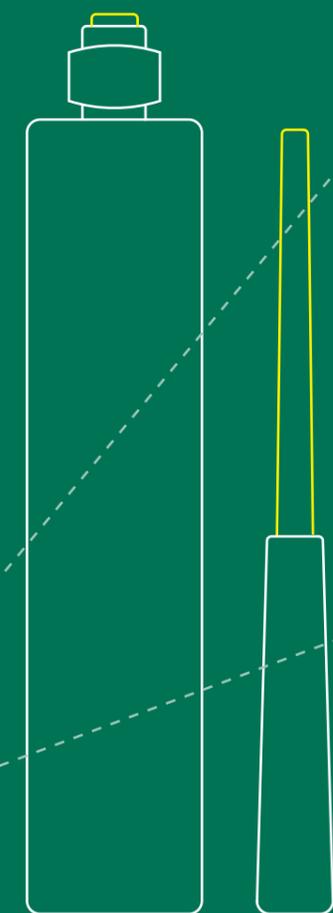
WPER500 ⊕
For ultimate performance in concrete and seismic C1/C2 applications

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



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

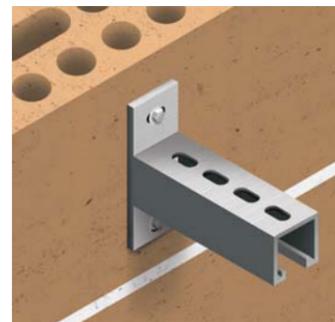


Features and benefits

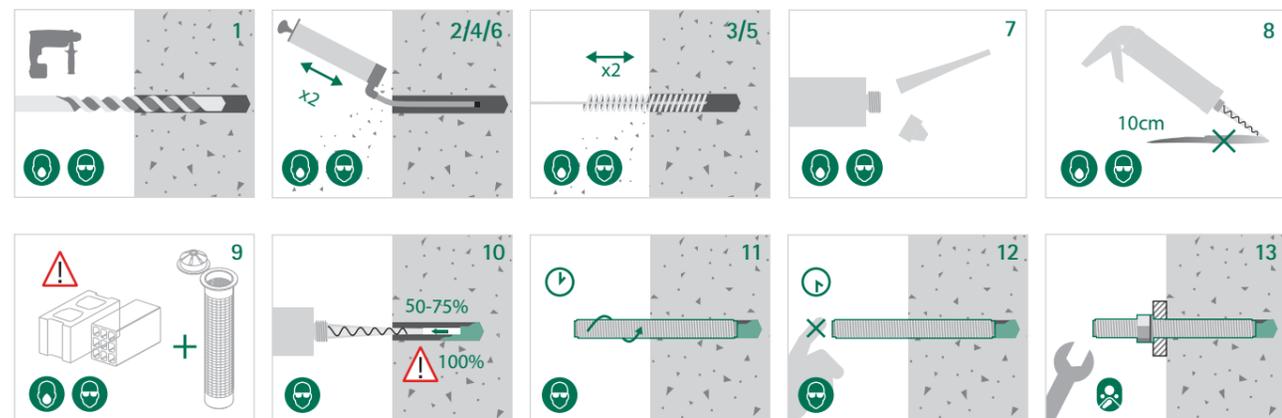
- ETA Option 7 approval for non-cracked concrete
- ETA ETAG029 approval for hollow and solid masonry
- Installations in wet and flooded holes without loss of load capacity
- Reduced edge and anchor spacing distances
- For use with industry-standard silicone dispensing guns
- Cartridge may be used up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

Substrate type

- Non-cracked concrete
- Solid masonry
- Hollow masonry



Installation guide



Product information

Part No.	Description	Packaging type	Content (ml)	Box qty (pcs)	Related dispenser gun
609 9 113	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	$h_{ef} + 30 \geq 100$	64 - 96	64 - 96	35/40/50	35/40/50	14	10
		M10	12	80 - 120	$h_{ef} + 30 \geq 100$	80 - 120	80 - 120	40/50/60	40/50/60	14	20
		M12	14	96 - 144	$h_{ef} + 30 \geq 100$	96 - 144	96 - 144	50/60/70	50/60/70	20	40
		M16	18	128 - 192	$h_{ef} + 30 \geq 100$	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

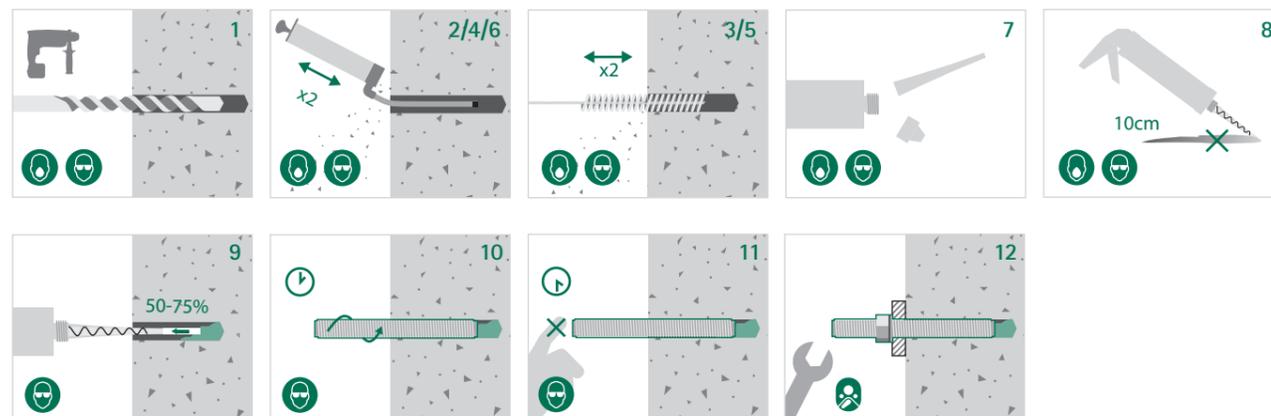
- ETA Option 1 approval for cracked and non-cracked concrete
- ETA TR023 for post-installed rebar connections
- Seismic performance category C1 for design of anchorages under seismic action
- Approved for use with rebars as anchors in non-cracked concrete
- Reduced edge and anchor spacing distances
- 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



Product information

Part No.	Description	Packaging type	Content (ml)	Box qty (pcs)	Related dispenser gun
609 9 123	WVSF200	Foil pack system	300	12	609 9 986
609 9 124	WVSF200	Side by side cartridge	345	12	609 9 987
609 9 125	WVSF200	Coaxial cartridge	410	12	609 9 988
609 9 126	WVSF200W (Winter)	Foil pack system	300	12	609 9 986
609 9 127	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	Partial safety factor	Y _{MC}	(-)	M8	M10	M12	M16
				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)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{min}^* (mm)	S_{min}^* (mm)	d_b (mm)	$T_{inst,max}$ (mm)
609 9 123	WVSF200	M8	10	64 - 160	$h_{ef} + 30 \geq 100$	64 - 160	64 - 160	35/50/80	35/50/80	14	10
609 9 124	WVSF200	M10	12	80 - 200	$h_{ef} + 30 \geq 100$	80 - 200	80 - 200	40/60/100	40/60/100	14	20
609 9 125	WVSF200	M12	14	96 - 244	$h_{ef} + 30 \geq 100$	96 - 244	96 - 244	50/75/120	50/75/120	20	40
609 9 126	WVSF200W (Winter)	M12	14	96 - 244	$h_{ef} + 30 \geq 100$	96 - 244	96 - 244	50/75/120	50/75/120	20	40
609 9 127	WVSF200T (Tropical)	M16	18	128 - 320	$h_{ef} + 30 \geq 100$	128 - 320	128 - 320	65/100/160	65/100/160	20	80

* 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.

WPER500 Chemical Anchor

Product overview

The WPER500 is an ultimate performance pure epoxy based chemical anchoring system for heavy and very 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-16/0461

ETA TR023
ETA-16/0459

ETA Option 7
Diamond core drilling
ETA-16/0458



Fire Resistance
R120 and R240



Seismic
C1 and C2



Features and benefits

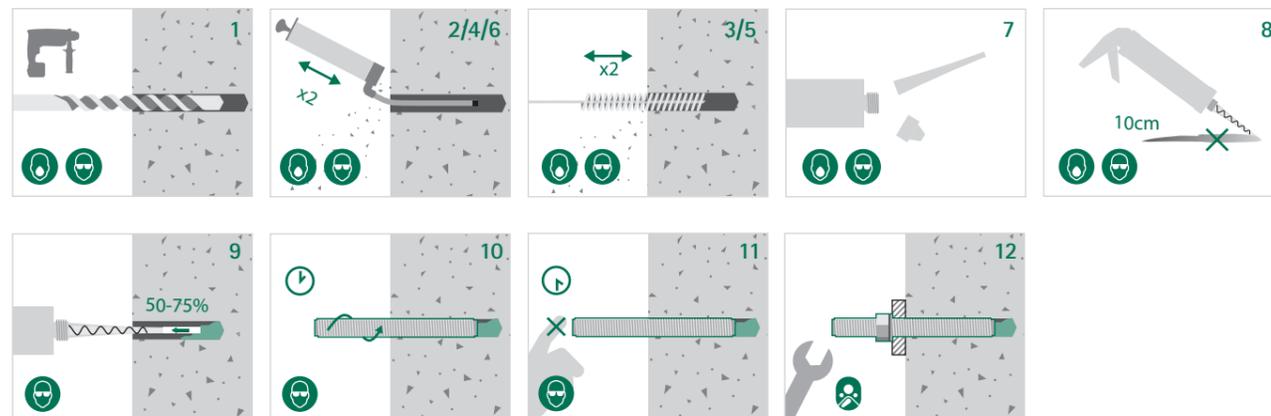
- ETA Option 1 approval for cracked and non-cracked concrete
- ETA TR023 for post-installed rebar connections
- Seismic performance categories C1 and C2 for design of anchorages under seismic action
- Approved for use with rebars as anchors in cracked and non-cracked concrete
- Reduced edge and anchor spacing distances
- Cartridge may be used up over several times; new nozzle required after each break.

Substrate type

- Non-cracked concrete
- Cracked concrete



Installation guide



Product information

Part No.	Description	Packaging type	Content (ml)	Box qty (pcs)	Related dispenser gun
609 9 154	WPER500	Side by side cartridge	385	12	609 9 989
609 9 156	WPER500	Side by side cartridge	585	12	609 9 989

Recommended loads*

Option 1 ETA-16/0461 - Single anchors in cracked and non-cracked concrete

WIS Stud Bolt 8.8	Partial safety factor	γ_{MC}	(-)	M8	M10	M12	M16	M20	M24
				1,8	1,8	1,8	1,8	2,1	2,1
Embedment depth	$h_{ef,8d}$	(mm)		64	80	96	128	160	192
Member thickness	h	(mm)		100	110	126	158	200	240
Recommended tension load, non-cracked concrete	N_{rec}	(kN)		9.58	14.32	18.84	29.02	34.75	45.68
Recommended tension load, cracked concrete	N_{rec}	(kN)		-	-	10.77	16.60	20.51	27.08
Embedment depth	$h_{ef,10d}$	(mm)		80	100	120	160	200	240
Member thickness	h	(mm)		110	130	150	190	240	288
Recommended tension load, non-cracked concrete	N_{rec}	(kN)		11.97	18.70	26.33	40.55	48.56	63.86
Recommended tension load, cracked concrete	N_{rec}	(kN)		-	-	13.46	20.75	25.64	33.85
Embedment depth	$h_{ef,12d}$	(mm)		96	120	144	192	240	288
Member thickness	h	(mm)		120	150	174	222	280	336
Recommended tension load, non-cracked concrete	$N_{rec,p}$	(kN)		13.80	21.90	31.90	53.30	63.84	83.95
Recommended tension load, cracked concrete	$N_{rec,p}$	(kN)		-	-	16.16	24.89	30.78	40.62

* 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 +40°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

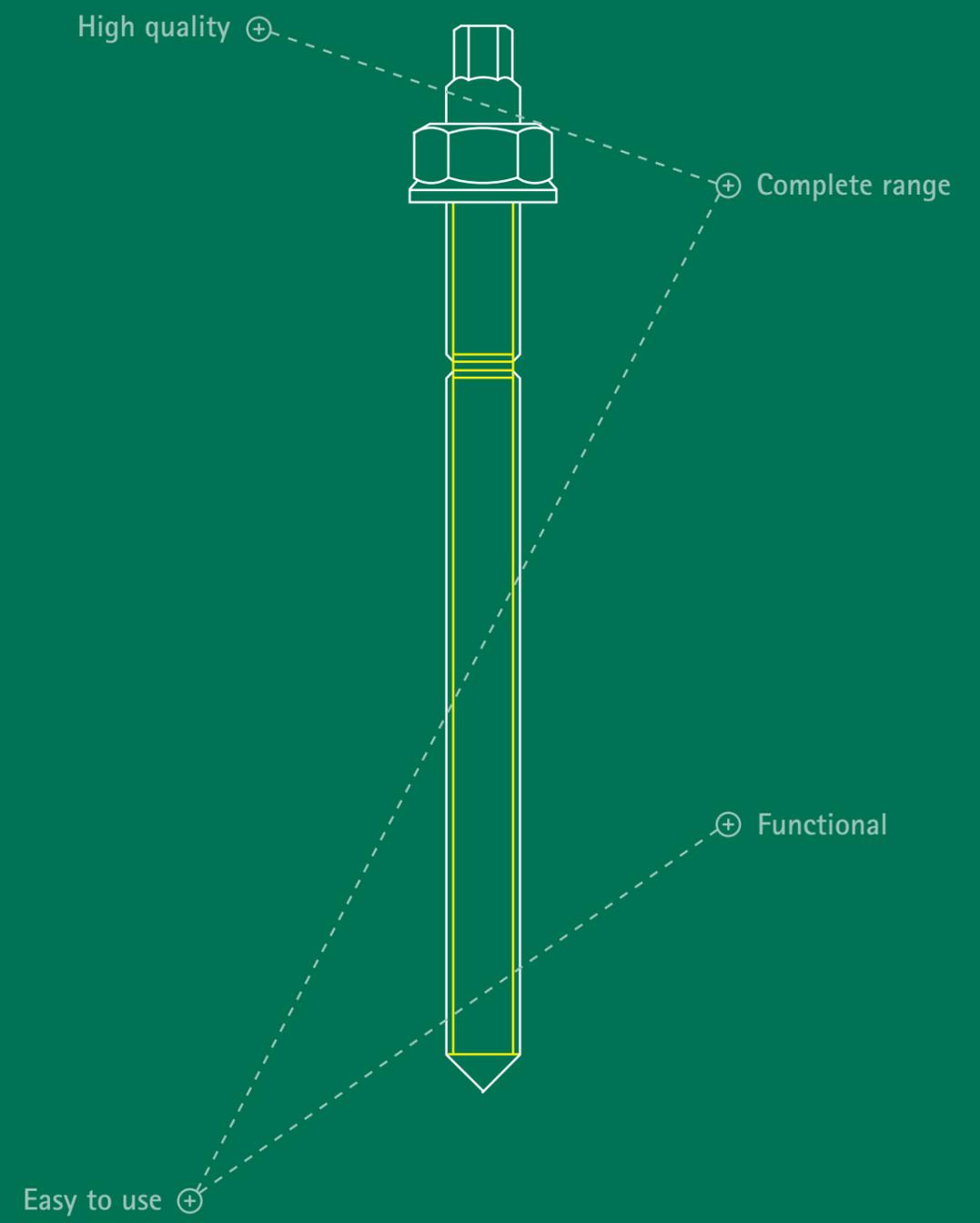
Part No.	Description	(-)	d_0 (mm)	$\geq h_0$ (mm)	h_{min} (mm)	h_{nom} (mm)	h_{ef} (mm)	C_{min}^* (mm)	S_{min}^* (mm)	d_b (mm)	$T_{inst,max}$ (mm)
609 9 154 609 9 156	WPER500 WPER500	M8	10	60 - 96	$h_{ef} + 30 \geq 100$	60 - 96	60 - 96	40	40	12	10
		M10	12	60 - 120	$h_{ef} + 30 \geq 100$	60 - 120	60 - 120	50	50	14	20
		M12	14	70 - 144	$h_{ef} + 30 \geq 100$	70 - 144	70 - 144	60	60	16	40
		M16	18	80 - 192	$h_{ef} + 30 \geq 100$	80 - 192	80 - 192	80	80	20	80
		M20	24	90 - 240	$h_{ef} + 2d_0$	90 - 240	90 - 240	80	80	26	120
		M24	28	96 - 288	$h_{ef} + 2d_0$	96 - 288	96 - 288	100	100	30	160

* at $h_{ef,min}$

Temperature (°C)	Processing Time (min)	Curing Time (h)
≥ 5	120	50
≥ 10	90	30
≥ 20	30	10
≥ 30	20	6
≥ 40	12	4

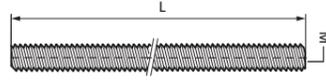
Minimum curing time in wet concrete must be doubled.

Accessories



Accessories

WIS Threaded Rods BUP 1000

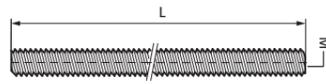


Material
Steel, class 4.8

- 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)
630 8 1008	WIS BUP M8x1000	M8	1	50
630 8 1010	WIS BUP M10x1000	M10	1	25
630 8 1012	WIS BUP M12x1000	M12	1	20
630 8 1016	WIS BUP M16x1000	M16	1	20

WIS Threaded Rods

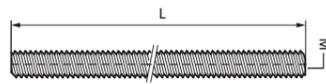


Material
Steel, class 8.8, zinc plated

- Features and benefits**
- According to DIN 976-1
 - Thread with 60° angle provides best performance

Part No.	Description	M	L (m)	Bundle (pcs)
630 3 9108	WIS TR M8x1000	M8	1	50
630 3 9110	WIS TR M10x1000	M10	1	25
630 3 9112	WIS TR M12x1000	M12	1	20
630 3 9116	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)
630 7 9108	WIS TR SSt M8x1000	M8	1	50
630 7 9110	WIS TR SSt M10x1000	M10	1	25
630 7 9112	WIS TR SSt M12x1000	M12	1	20
630 7 9116	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)
609 9 0811	WIS SB M8x110	M8	110	10	160
609 9 1013	WIS SB M10x130	M10	130	10	160
609 9 1016	WIS SB M10x160	M10	160	10	80
609 9 1219	WIS SB M12x190	M12	190	10	80
609 9 1622	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 pushes extrude cartridges at correct angle
 - Metal backplate improves tool durability

Part No.	Description	For	Box qty (pcs)
609 9 986	WIS DG 300ml	300ml Foil pack cartridge	1
609 9 987	WIS DG 345ml	345ml Side by side cartridge	1
609 9 988	WIS DG 410ml	410ml Coaxial cartridge	1
609 9 989	WIS DG 585ml	385/585ml Side by side cartridge	1

WIS Standard Nozzle



- Features and benefits**
- Always correct mixing
 - 12 mixing elements

Part No.	Description	Bag qty (pcs)
609 9 990	WIS NZZL S	12

Accessories

WIS Epoxy Nozzle

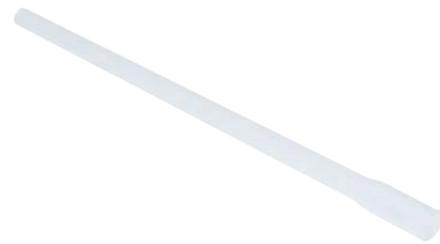


Features and benefits

- Always correct mixing
- Advanced mixing elements

Part No.	Description	Box qty (pcs)
609 9 991	WIS NZZL E	12

WIS Extension Pipe 185 mm



Features and benefits

- Fits standard and epoxy nozzles

Part No.	Description	L (mm)	Bag qty (pcs)
609 9 992	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)
609 9 980	WIS BR M8/10	M8/M10 hole	1
609 9 981	WIS BR M12/16	M12/M16 hole	1
609 9 982	WIS BR M20/24	M20/M24 hole	1

WIS Blow Pump



Features and benefits

- High blowing capacity

Part No.	Description	Bag qty (pcs)
609 9 985	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)
609 7 017	WIS PS 16x85	16	85	M8, M10	10
609 7 018	WIS PS 16x130	16	130	M8, M10	10
609 7 020	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)
690 2 106	WDI1ST 6	WDI1 6x25	1
690 2 108	WDI1ST 8	WDI1 8x30	1
690 2 110	WDI1ST 10	WDI1 10x40	1
690 2 112	WDI1ST 12	WDI1 12x50	1
690 2 116	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 _o (mm)	LU (mm)	For	Box qty (pcs)	Outer box qty (pcs)
690 2 206	WDI1R STS 6	8	25	WDI1R M6	1	20
690 2 208	WDI1R STS 8	10	25	WDI1R M8	1	20
690 2 210	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 _o (mm)	LU (mm)	For	Box qty (pcs)	Outer box qty (pcs)
690 2 306	WDI1R SD 6	8	25	WDI1R M6	1	20
690 2 308	WDI1R SD 8	10	25	WDI1R M8	1	20
690 2 310	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 _o (mm)	L (mm)	LU (mm)	Pack qty (pcs)	Box qty (pcs)
695 3 0826	WSDS+8x260/HB	8	260	200	1	100
695 3 1026	WSDS+10x260/HB	10	260	200	1	100
695 3 1226	WSDS+12x260/HB	12	260	200	1	100
695 3 1626	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, acceleration, and extraction

Part No.	Description	d _o (mm)	L (mm)	LU (mm)	Pack qty (pcs)	Box qty (pcs)
695 2 0611	WSDS+6x110/3CE	6	110	50	1	250
695 2 0616	WSDS+6x160/3CE	6	160	100	1	200
695 2 0621	WSDS+6x210/3CE	6	210	150	1	150
695 2 0816	WSDS+8x160/3CE	8	160	100	1	200
695 2 0821	WSDS+8x210/3CE	8	210	150	1	150
695 2 1021	WSDS+10x210/3CE	10	210	150	1	100
695 2 1026	WSDS+10x260/3CE	10	260	200	1	100
695 2 1216	WSDS+12x160/3CE	12	160	100	1	150
695 2 1221	WSDS+12x210/3CE	12	210	150	1	100
695 2 1226	WSDS+12x260/3CE	12	260	200	1	100
695 2 1621	WSDS+16x210/3CE	16	210	150	1	100
695 2 1626	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 _o (mm)	L (mm)	LU (mm)	For	Pack qty (pcs)	Box qty (pcs)
695 1 010	WSDS+10x110/S	10	110	32	WDI1 8x25	1	150
695 1 012	WSDS+12x130/S	12	130	42	WDI1 10x30	1	150

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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