Deutsches Institut für Bautechnik

DIBt

Public-law institution jointly founded by the federal states and the Federation

Technical authority granting approvals and permits for construction products and construction techniques

Date: 26 July 2024

Reference number: I 26-1.21.8-11/21

National technical approval / General construction technique permit

Number:
Z-21.8-2088

Validity
from: **26 July 2024**
to: **26 July 2029**

Applicant:
isorocket GmbH
Wilhelm-Bunsen-Straße 5
49685 Emstek, Germany

Subject of decision:
ISOrocket® scaffold anchor for the temporary anchorage of service and facade scaffolds

The subject named above is herewith granted a national technical approval (*allgemeine bauaufsichtliche Zulassung*) / general construction technique permit (*allgemeine Bauartgenehmigung*).
This decision contains seven pages and six annexes.
The subject concerned was granted the first national technical approval on 7 January 2019.

Translation authorised by DIBt

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I GENERAL PROVISIONS

1 This decision confirms the fitness for use and application of the subject concerned within the meaning of the Building Codes of the federal states (*Landesbauordnungen*).

2 This decision does not replace the permits, approvals and certificates required by law for carrying out construction projects.

3 This decision is granted without prejudice to the rights of third parties, in particular private property rights.

4 Notwithstanding further provisions in the 'Special Provisions', copies of this decision shall be made available to the user and installer of the subject concerned. The user and installer of the subject concerned shall also be made aware that this decision must be made available at the place of use or place of application. Upon request, copies of the decision shall be provided to the authorities involved.

5 This decision shall be reproduced in full only. Partial publication requires the consent of DIBt. Texts and drawings in promotional material shall not contradict this decision. In the event of a discrepancy between the German original and this authorised translation, the German version shall prevail.

6 This decision may be revoked. The provisions contained herein may subsequently be supplemented and amended, in particular if this is required by new technical findings.

7 This decision is based on the information and documents provided by the applicant. Alterations to this basis are not covered by this decision and shall be notified to DIBt without delay.

II SPECIAL PROVISIONS

1 Subject concerned and field of use and application

1.1 Subject of approval and field of use

The subject of this approval is the ISOrocket® scaffold anchor in sizes mini, medi, maxi and mega (hereinafter referred to as 'anchor'). The anchor consists of an anchor body/'rocketbody' made of steel coated with glass fibre-reinforced polyamide and of a connecting plate/'rocketbase concrete' (for concrete substrates) or a connecting plate/'rocketbase masonry' (for masonry substrates) made of galvanised steel with an M18 connecting thread on to which the anchor body is screwed.

The anchor body consists of a sleeve with an internal thread for fastening the associated eyebolt/'rocketbolt' made of steel with a zinc flake coating and an organic topcoat. After removing the eyebolt, the opening is sealed with the plastic sealing plug/'rocketseal'.

The anchor is a thermal separating element for temporary scaffold anchorages, which remains permanently on the structure (permanent anchor).

The installed anchor is shown in Annex 1.

1.2 Subject of the permit and field of application

The subject of the permit is the planning, design and execution of single anchorages for the temporary anchorage of service and facade scaffolds in accordance with DIN 4426:2017-01 using the ISOrocket® scaffold anchor.

The 'rocketbase concrete' is fastened to the concrete by means of an anchorage system with an internal thread in accordance with a European Technical Assessment (ETA). The 'rocketbase masonry' is fastened to the masonry or concrete base material with four anchors covered by a national technical approval (abZ) or a European Technical Assessment (ETA).

The national technical approval included in this decision does not cover anchoring in masonry or concrete. Anchoring in masonry or concrete shall be verified based on the national technical approval (abZ) or European Technical Assessment (ETA) of the selected anchor.

The fastening may be applied under static and quasi-static loads.

After the scaffold has been dismantled and the eyebolt has been unscrewed and removed, the cone is sealed with the supplied sealing plug. The anchor remains in the base material.

This national technical approval does not cover the scaffolding structures to be suspended.

The anchor shall only be applied when there are no fire resistance requirements to be met by the entire structure including the anchor.

After installation, the anchor body and the connecting plate with the connecting thread shall permanently remain in the thermal insulation (see Annex 1).

2 Provisions for the construction product

2.1 Properties and composition

The anchor, the eyebolt and the sealing plug shall correspond to the specifications in the annexes in terms of their dimensions and material properties.

The material characteristics, dimensions and tolerances that are not specified in this decision shall comply with the specifications deposited with DIBt, the certification body and the external surveillance body.

2.2 Packaging, storage and marking

2.2.1 Packaging and storage

The fastening system is supplied in a packaging unit containing the anchor body, the eyebolt with the required length, the sealing plug, the connecting plates for masonry and concrete, and the anchorage system in accordance with the national technical approval or ETA.

The anchor shall be stored under normal climate conditions. The anchor shall not be extremely dry or frozen prior to installation.

2.2.2 Marking

The packaging, instruction sheet or delivery note for the anchor, the eyebolt and the sealing plug shall be marked by the manufacturer with the national conformity mark (*Ü-Zeichen*) in accordance with the Conformity Marking Ordinances (*Übereinstimmungszeichen-Verordnungen*) of the federal states. The factory identifying mark, the approval number and the complete designation of the anchor shall also be stated on the packaging.

The mark shall only be applied if the requirements given in Section 2.3 are met.

The anchor's designation is made up of the product name and the size of the plastic cone, e.g. 'ISOrocket® medi'.

The manufacturer's mark, the size and the number of the national technical approval in accordance with Annex 2 shall be stamped on to each cone. The sealing plug shall be stamped with the manufacturer's mark and the approval number in accordance with Annex 3.

2.3 Confirmation of conformity

2.3.1 General

The manufacturer shall confirm for each manufacturing plant that the anchor, the eyebolt and the sealing plug comply with the provisions of this national technical approval by way of a declaration of conformity based on factory production control and a certificate of conformity issued by a certification body recognised for these purposes as well as on regular external surveillance carried out by a recognised inspection body in accordance with the following provisions.

To issue the certificate of conformity and for external surveillance including the associated product testing, the manufacturer of the anchor shall use a certification body and an inspection body recognised for these purposes.

The declaration of conformity shall be submitted by the manufacturer through marking of the construction product with the national conformity mark including statement of the intended use.

The certification body shall send a copy of the certificate of conformity issued by it to DIBt.

2.3.2 Factory production control

A factory production control system shall be set up and implemented in each manufacturing plant. Factory production control shall be understood to be continuous surveillance of production by the manufacturer to ensure that the manufactured construction products satisfy the provisions of the national technical approval included in this decision.

The factory production control shall at least include the measures listed below.

Scope, type and frequency of factory production control shall be in accordance with the test plan deposited with DIBt and the external surveillance body.

The results of factory production control shall be recorded and evaluated. The records shall include at least the following information:

- designation of the construction product or the starting material and the components,
- type of check or test,
- date of manufacture and testing of the construction product or the starting material or the components,
- results of check and tests and, where applicable, comparison with requirements,
- signature of the person responsible for factory production control.

The records shall be kept for at least five years and submitted to the inspection body used for external surveillance. They shall be submitted to DIBt and the competent supreme building authority upon request.

If the test result is unsatisfactory, the manufacturer shall immediately take the necessary measures to resolve the defect. Construction products which do not meet the requirements shall be handled in such a way that they cannot be confused with compliant products. After the defect has been remedied, the relevant test shall be repeated immediately – where technically feasible and necessary to show that the defect has been eliminated.

2.3.3 External surveillance

The factory production control system shall be inspected regularly, i.e. at least once a year, by means of external surveillance at each manufacturing plant.

Initial type-testing of the anchor shall be carried out within the scope of external surveillance. Samples for random testing shall also be taken. Sampling and testing shall be the responsibility of the recognised inspection body.

Scope, type and frequency of external surveillance shall be in accordance with the test plan deposited with DIBt and the external surveillance body.

The results of certification and external surveillance shall be kept for at least five years. They shall be presented by the certification or inspection body to DIBt and the competent supreme building authority upon request.

3 Provisions for planning, design and execution

3.1 Planning and design

3.1.1 General

The anchorages shall be planned in line with good engineering practice. Verifiable calculations and design drawings shall be prepared in consideration of the loads to be anchored, the dimensions of the member and the tolerances.

The design drawings shall contain the exact positions of the anchors.

3.1.2 Design

The resistance of the anchor (anchor components described in 1.1) is given in Annexes 5 and 6.

The transfer of the loads to be anchored in the anchorage system and in the member shall be provided in each individual case.

The anchorage system shall be designed in accordance with the applicable national technical approval or ETA.

The anchor may be regularly subjected to tension and shear loads.

The installation conditions (embedment depth, minimum thickness of member, minimum spacing and edge distances) for the anchorage system used in the base material shall be observed.

The scaffold anchorage shall be dimensioned with partial safety factors in line with good engineering practice in accordance with the method described below.

For all possible load combinations, it shall be verified that the design value of the action effects E_d does not exceed the design value of resistance R_d.

$$\mathbf{E_d} \quad \leq \quad \mathbf{R_d} \tag{3.1}$$

E_d = design value of the action effects (actions N_{Ed}, V_{Ed})

R_d = design value of resistance (resistance N_{Rd}, V_{Rd} in accordance with Annexes 5 and 6)

$$\mathbf{E_d} \quad = \quad \mathbf{\gamma_F \cdot E_k} \tag{3.2}$$

E_k = characteristic value of the actions

γ_F = partial safety factor of the actions

The required verification of the resistance under tension load is:

$$\mathbf{N_{Ed}} \quad \leq \quad \mathbf{N_{Rd}}. \tag{3.3}$$

The required verifications of resistance under shear load are:

$$\mathbf{V_{Ed}} \quad \leq \quad \mathbf{V_{Rd}}. \tag{3.4}$$

With the simultaneous action of tension and shear loads, the action of the shear load shall be converted to a tension load via the factor k (Annex 5, Table 3 and Annex 6, Table 5) and added to the action of the tension load. The following verifications shall be provided:

anchorage with 'rocketbase concrete':

$$\mathbf{N_{Ed} + V_{Ed} \times k} \quad \leq \quad \mathbf{N_{Rd}} \tag{3.5}$$

anchorage with 'rocketbase masonry':

$$\mathbf{0.25\ N_{Ed} + (0.5\ V_{Ed}) \times k} \quad \leq \quad \mathbf{N_{Rd}}. \tag{3.6}$$

3.1.3 Displacements

Under the given tension and shear loads, the following displacements should be expected for short-term loading (δ_{F0}):

Axial tension: see national technical approval or ETA for the anchorage system used in the base material.

Shear load: see Annexes 5 and 6; the deformations of the employed anchorage system in accordance with the national technical approval or ETA shall additionally be taken into account.

A linear relationship between the displacements and the applied load can be assumed. For combined tension and shear loads, the displacements for the tension and shear components of the resultant load shall be determined separately and superimposed.

3.2 Provisions for execution

3.2.1 General

The anchor shall only be used as a mass-produced fastening unit (as described in Section 2.2.1).

The anchor shall remain in the base material and may be used as an anchor point several times. If the eyebolt is reused at a new attachment point, it shall be treated with particular care during installation, disassembly and storage. Before it is used for a new attachment point, the eyebolt shall be checked for the purposes of ensuring it is in good condition; this also includes checking of the corrosion protection. Damaged, rusty or bent bolts shall not be (re)used. An example of damage is thread galling.

After the eyebolt has been unscrewed and removed, the cone shall be sealed with the supplied sealing plug.

The executing company shall provide a declaration of conformity in accordance with Sections 16a(5) and 21(2) of the Model Building Code to confirm the conformity of the construction technique with the general construction technique permit included in this decision.

3.2.2 Installation

Hole drilling, cleaning and installation of the anchorage system shall be carried out in accordance with the national technical approval or ETA.

The installation of the anchor shall be carried out in accordance with the design drawings prepared in accordance with Section 3.1.1 and the manufacturer's installation instructions (see Annex 4).

The concrete or masonry surface shall be flat at the attachment point. The anchor shall be lying flat against the base material following installation. The employed rocketglue bonding adhesive ensures the transfer of the compressive forces into the structure.

3.2.3 Inspection of execution

During the installation of the anchorage system and the anchor as well as during the attachment of a scaffold, the contractor commissioned to do so or the site manager assigned by the contractor or a competent representative of the site manager shall be present on the construction site. They shall ensure that the work is carried out properly.

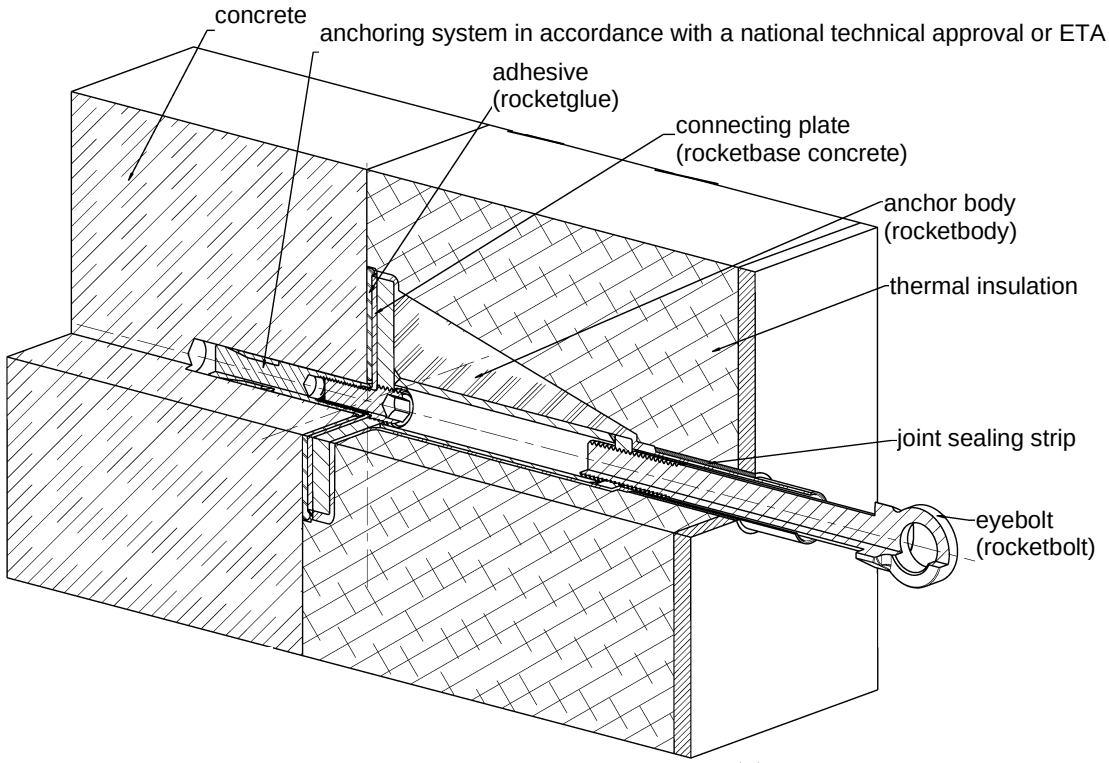
Records of the verification of the existing concrete strength, of the temperature in the base material and the proper installation of the anchorages shall be kept by the site manager or the site manager's representative.

The records shall be available at the construction site during the construction period and shall be handed over to the construction site supervisor upon request.

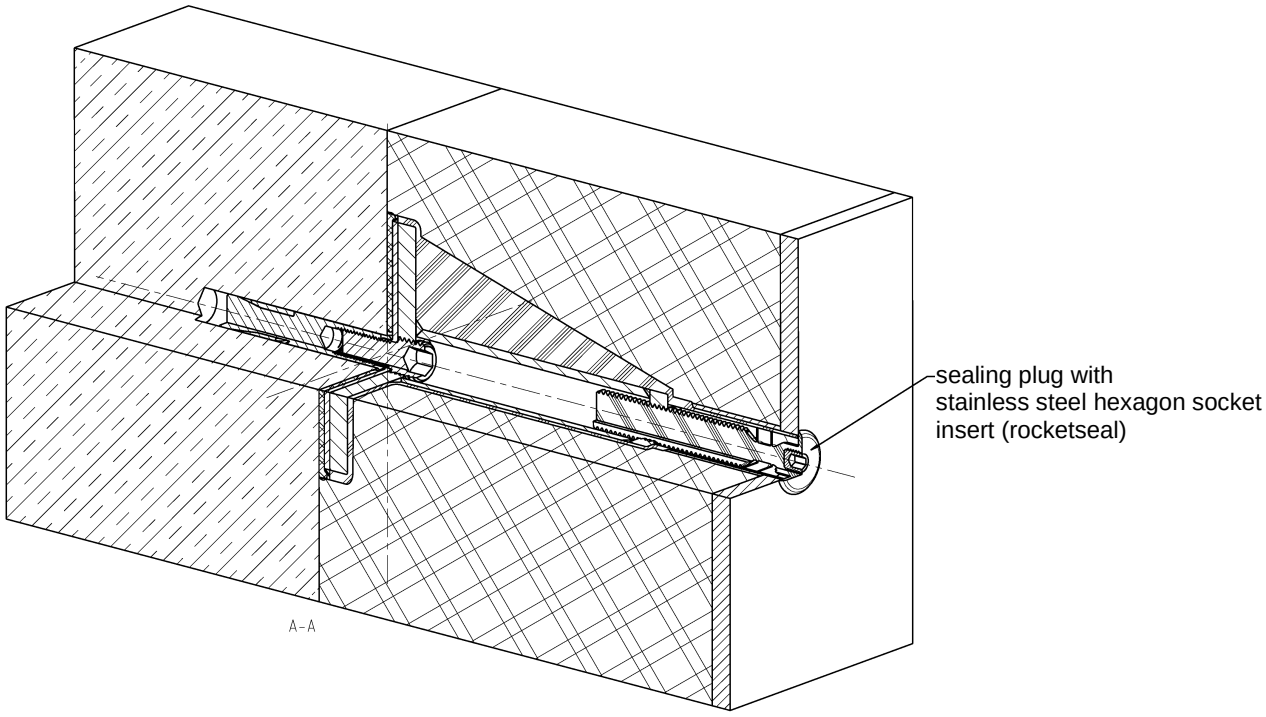
Beatrix Wittstock
Head of Section

Drawn up by
Ziegler

<u>Installed condition with eyebolt</u> (ISOrocket® Medi for concrete shown in figure)



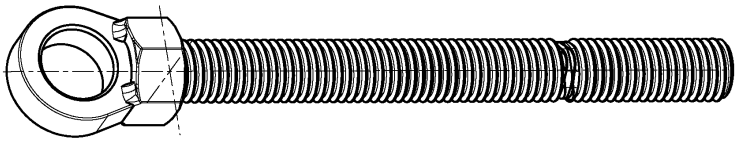
<u>Installed condition without eyebolt</u>
(with rocketseal)



ISOrocket® scaffold anchor for the temporary anchorage of service and facade scaffolds	Annex 1
Installed condition	

Components of the ISOrocket® scaffold anchor

Eyebolt (rocketbolt)



Anchor body (rocketbody) with connecting plate for concrete (rocketbase concrete) or masonry (rocketbase masonry)

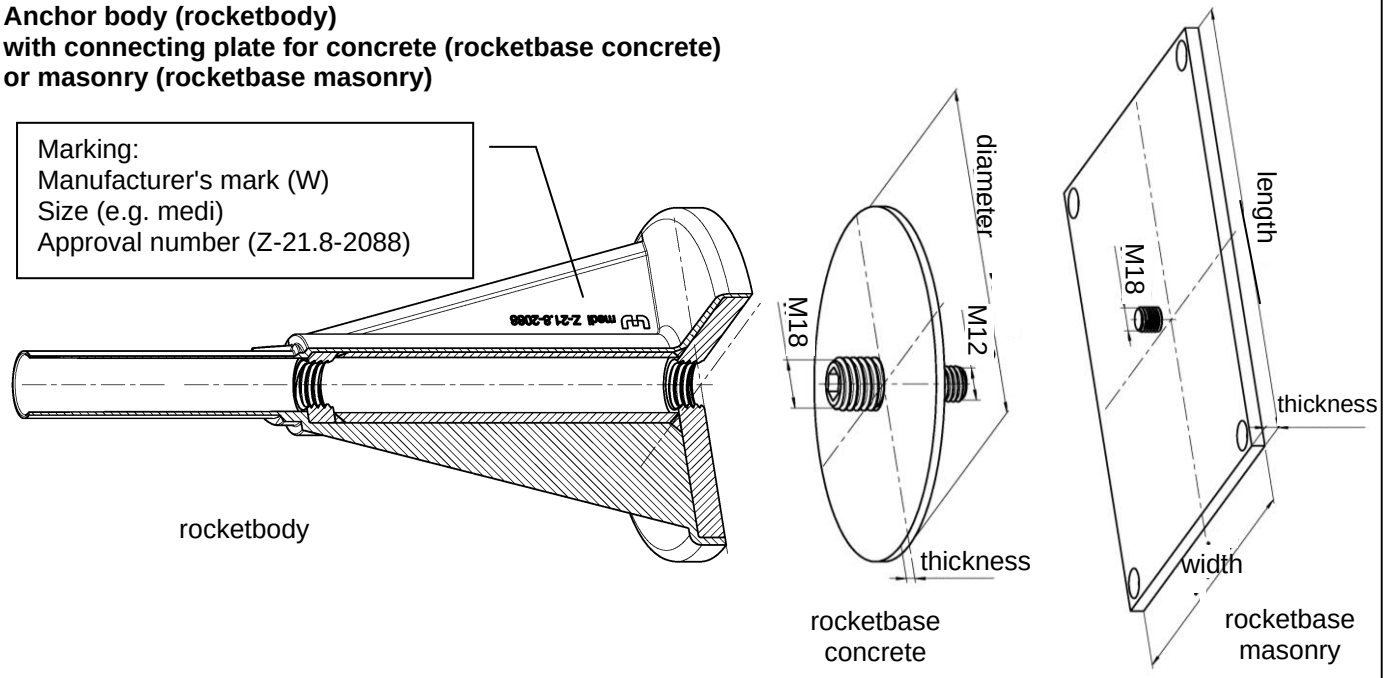
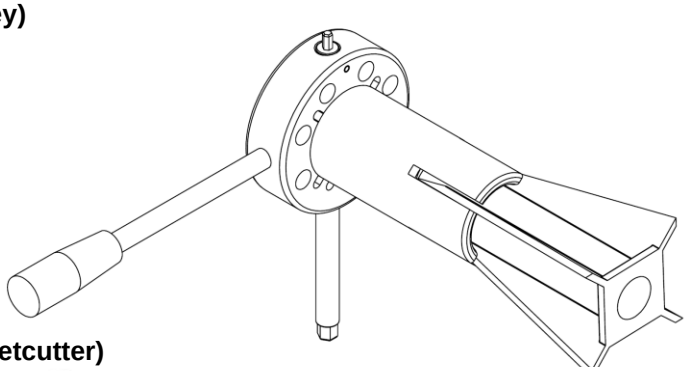


Table 1: ISOrocket® scaffold anchor dimensions

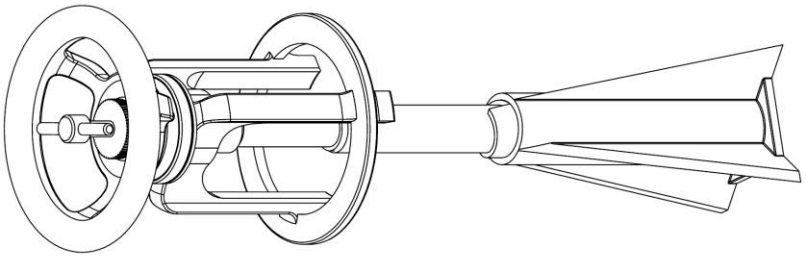
Name	Description	Size			
		mini	medi	maxi	mega
Colour		green	yellow	red	blue
rocketbase concrete	Diameter	90 mm	120 mm	150 mm	180 mm
	Thickness	3 mm	3 mm	3 mm	3 mm
	Connecting thread	M12 / M18			
rocketbase masonry	Length x width	280 x 280	330 x 280	420 x 280	500 x 280
	Thickness	10 mm	10 mm	10 mm	10 mm
	Connecting thread	M18	M18	M18	M18
rocketbody	Diameter at base	90 mm	120 mm	150 mm	180 mm
	Thickness at base	10 mm	10 mm	10 mm	10 mm
rocketbolt	Length of eyebolt	224 mm			
	Size	M18			

ISOrocket® scaffold anchor for the temporary anchorage of service and facade scaffolds	Annex 2
Scaffold anchor components and dimensions	

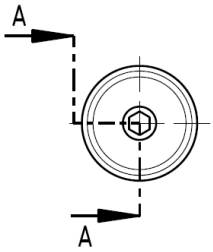
Assembly tool (rocketkey)

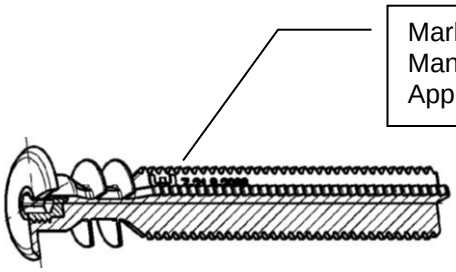


Shortening device (rocketcutter)



Sealing plug (rocketseal)





Marking:
Manufacturer's mark (W)
Approval number (Z-21.8-2088)

Table 2: Material characteristics

Name	Description	Material
rocketbase concrete	Connecting plate	sheet metal DC01 in accordance with DIN EN 10130:2007-02, galvanised ≥ 5 µm
	Connecting thread	steel, strength class 8.8, galvanised ≥ 5 µm
rocketbase masonry	Connecting plate	steel S235JR in accordance with DIN EN 10025-2:2005-04, galvanised ≥ 5 µm
	Connecting thread	steel, strength class 4.6, galvanised ≥ 5 µm
rocketbody	Connecting plate	steel S355MC in accordance with DIN EN 10149-2:2013-12
	Sleeve with internal thread	steel, S355
	Anchor body	glass fibre-reinforced polyamide PA6 GF30; colour: green, yellow, red or blue
rocketbolt	Eyebolt	steel, strength class 10.9, zinc flake coating with organic topcoat
rocketseal	Sealing plug	polyamide PA6.6 colour: natural
	Socket insert	stainless steel in accordance with EN 10088-3:2014

ISOrocket® scaffold anchor for the temporary anchorage of service and facade scaffolds	Annex 3
Accessories, materials	

Installation instructions

Concrete

Drill and clean the borehole and insert the anchorage system in accordance with the national technical approval or ETA.

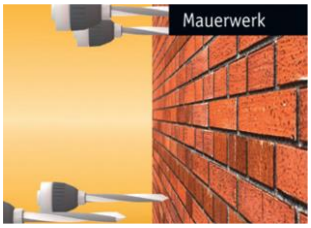
Take the conditions from the national technical approval or ETA into account.

Install the internally threaded anchor (see approval) such that it is flush with the base material.

Completely wet the 'rocketbase concrete' connecting plate on the rear side with rocketglue bonding adhesive to saturation until the adhesive exits again from the side and ensures the full support of the connecting plate.

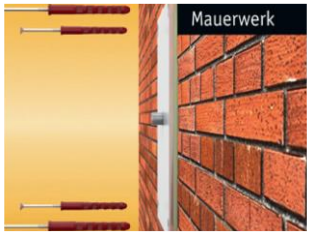
Screw the rocketbase concrete into the anchor and tighten using the rocketkey assembly key.

Masonry



Drill and clean the borehole in accordance with the national technical approval or ETA.

Take the conditions from the national technical approval or ETA into account.



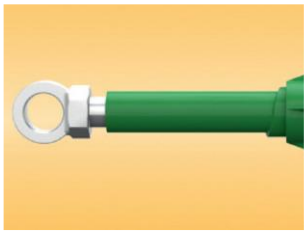
Completely wet the 'rocketbase masonry' connecting plate on the rear side with rocketglue bonding adhesive to saturation until the adhesive exits again from the side and ensures the full support of the connecting plate.

Install the anchor in accordance with the national technical approval or ETA.

Installation of the anchor body

Apply the thread-locking fluid rocketfix to the connecting thread.

Screw on the rocketbody anchor body using the rocketkey assembly key.



Screw the rocketbolt eyebolt all the way into the rocketbody plastic body and tighten hand-tight.

When dismantling the scaffold, shorten the plastic sleeve of the anchor body to the upper edge of the final facade (e.g. render, facade panel, clinker) using the rocketcutter shortening device.

ISOrocket® scaffold anchor for the temporary anchorage of service and facade scaffolds	Annex 4
Installation instructions	

Deutsches Institut für Bautechnik DIBt

Design resistances for ISOrocket® permanent scaffold anchor with eyebolt

Table 3: Resistance for use of 'rocketbase concrete'

ISOrocket® size			mini	medi	maxi	mega
Tension resistance						
ISOrocket®	N_{Rd}[1)]	[kN]	43.4			
Shear resistance						
ISOrocket®	V_{Rd}[1)]	[kN]	2.56	2.56	2.07	1.71
Interaction for tension and shear loads						
ISOrocket® size			mini	medi	maxi	mega
Factor for ISOrocket®	k	[-]	5.11	5.17	5.20	5.22

1) The resistance of the anchorage system used in the concrete shall additionally be verified.

Table 4: Displacements δ_{F0} [mm] under service loads for use in concrete

ISOrocket® size		mini	medi	maxi	mega
Tension load F	[kN]	27.6	27.6	27.6	27.6
Displacements under tension load	[mm]	1)	1)	1)	1)
Shear load F	[kN]	1.83	1.83	1.48	1.22
Displacements under shear load	[mm]	7.2[2)]	9.1[2)]	9.5[2)]	9.9[2)]

1) The displacements of the anchorage system used in the base material are the relevant values.
2) The displacements of the anchorage system used in the base material shall additionally be taken into account.

ISOrocket® scaffold anchor for the temporary anchorage of service and facade scaffolds	Annex 5
Resistance and displacements of the anchor in concrete	

Design resistances for ISOrocket® permanent scaffold anchor with eyebolt

Table 5: Resistance for use of 'rocketbase masonry'

ISOrocket® size			mini	medi	maxi	mega
Tension resistance						
ISOrocket®	N_{Rd}[1)]	[kN]	11.00	9.70	8.00	6.80
Shear resistance						
ISOrocket®	V_{Rd}[1)]	[kN]	2.56	2.56	2.07	1.71
Interaction for tension and shear loads						
Factor for ISOrocket®	k	[-]	0.86	0.97	0.96	0.96

1) The resistance of the anchorage system used in the masonry shall additionally be verified.

Table 6: Displacements δ_{F0} [mm] under service loads for use in masonry

ISOrocket® size		mini	medi	maxi	mega
Tension load F	[kN]	7.9	6.9	5.7	4.9
Displacements under tension load	[mm]	1)	1)	1)	1)
Shear load F	[kN]	1.83	1.83	1.48	1.22
Displacements under shear load	[mm]	7.2[2)]	9.1[2)]	9.5[2)]	9.9[2)]

1) The displacements of the anchorage system used in the base material are the relevant values.
2) The displacements of the anchorage system used in the base material shall additionally be taken into account.

ISOrocket® scaffold anchor for the temporary anchorage of service and facade scaffolds	Annex 6
Resistance and displacements of the anchor in masonry	