



ÉMI NON-PROFIT LIMITED LIABILITY COMPANY FOR
QUALITY CONTROL AND INNOVATION IN BUILDING

H-2000 Szentendre, Dózsa György út 26. Postal address: H-2001 Szentendre, Pf: 180.
Phone: +36 (1) 372-6100 Fax: +36 (1) 386-8794
E-mail: info@emi.hu Website: http://www.emi.hu

ÉMI NON-PROFIT LIMITED LIABILITY COMPANY FOR QUALITY CONTROL AND INNOVATION IN BUILDING
ÉMI SOCIÉTÉ À BUT NON LUCRATIF POUR LE CONTRÔLE DE QUALITÉ ET L'INNOVATION DU BÂTIMENT, RESPONSABILITÉ LIMITÉE
ÉMI NON-PROFIT GESELLSCHAFT FÜR QUALITÄTSKONTROLLE UND INNOVATION IM BAUWESEN MIT BESCHRÄNKTER HAFTUNG

A-22/2018

NMÉ
NATIONAL TECHNICAL ASSESSMENT

Trade name of the product: CELO Apolo-made fixing systems

Intended use of the product: Supporting structures for pipes retaining their function in case of fire or fire-resistant low-voltage and high-voltage lines and the elements and parts used to fix them
Supporting structures for pipes not retaining their function in case of fire and the elements and parts used to fix them

Product area: Fixings (33)

Manufacturer of the product: CELO S.A.
Roselló, 7 - Pol. Ind. La Bruguera
08211 Castellar del Vallès, Barcelona, Spain

Manufacturer's authorized representative: CELO Hungária Csavar-kereskedelmi Kft.
H-2851 Környe, Budai utca 1/C.

NMÉ valid from *: 10.03.2018



Zoltán Budavári
Zoltán Budavári
Head of the
Technical Assessment Office

The National Technical Assessment consists of 34 pages including 2 numbered annexes.

* Validity of the NMÉ is subject to certain conditions. Validity of the NMÉ shall be checked on the website of ÉMI Non-profit Ltd. (www.emi.hu).
This NMÉ is to replace ÉME no. A-132/2008 valid from 28.02.2013.

Project number: É3-M161X-14570-2018

DK-M161X-17658-2019

I LEGAL BASES AND GENERAL CONDITIONS

- 1 This NMÉ has been issued by the ÉMI Non-profit Llc. for Quality Control and Innovation in Building based on
 - Government Decree No. 275/2013 (VII. 16.) on the detailed rules relating to the planning and installation of construction products into construction works and the verification of performance during this process,
 - the designation of the Hungarian Trade Licensing Office (MKEH-128/22/2013/FHÁ), as well as
 - the data detailed in ÉME no. A-132/2008, valid from 28. 02. 2013 and valid until 28. 02. 2018 and in Performance Assessment Report no. A-22/2018 dated on 10.03.2018.
- 2 The holder of the NMÉ is the manufacturer of the construction product.
- 3 The holder of the NMÉ is not allowed to assign the NMÉ to third party. The NMÉ is valid exclusively for products manufactured in the indicated production plants.
- 4 The manufacturer of the product or their authorized representative shall notify if the important characteristics of the product, the quality of its raw materials or the production circumstances change and shall apply for the revision and, if necessary, for the amendment of NMÉ.
- 5 The ÉMI Non-profit Llc. withdraws the NMÉ for the product based on the request of the manufacturer or their authorized representative, based on the decision of the market surveillance authority or at the end of co-existence period, as stipulated in the Regulation No. 305/2011/EU Article 17 (5) of the European Parliament and Council, of the harmonized standard covering the construction product subject of this NMÉ.
- 6 ÉMI Non-profit Llc. shall issue the NMÉ in Hungarian, and on subsequent request of the manufacturer or their authorized representative for an additional fee in English language. The legal basis is the Hungarian version of the NMÉ.
- 7 The NMÉ may only be copied or published by means of other data medium in its entirety. Extracts are only allowed on the prior written approval of ÉMI Non-profit Llc. The fact of publishing extracts shall be indicated. Text and figures of advertising materials cannot be contrary to the content of the National Technical Assessment and cannot give rise to misunderstanding.
- 8 The NMÉ will not replace other permits and certificates (e.g. environment protection and property protection, building authorities' permits) necessary for distribution, installation and use of the product specified by separate provision of law and the documents relating to the constancy of product performance (e.g. product certificate, factory production control certificate, declaration of performance).
- 9 The declaration of performance issued on the basis of the NMÉ shall not entitle either the manufacturer or their authorized representative to use CE conformity marking on the product or on its packaging or accompanying documents.
- 10 The NMÉ does not state the fitness for purpose of the product for the particular use. It provides only performance values for essential characteristic as a basis for the declaration of performance. Based on the performances specified in the declaration of performance issued by the manufacturer the product can be installed into construction works in which it complies with the expected technical performance.

II SPECIFIC CONDITIONS OF THE NATIONAL TECHNICAL ASSESSMENT

1 DATA

1.1 Manufacturing site of the product

CELO S.A.
Roselló, 7 – Pol. Ind. La Bruguera
08211 Castellar del Vallès, Barcelona, Spain

1.2 Description of the product

Modular fixing system for fixing pipes retaining their function in case of fire and for fixing other plumbing fittings, which may consist of the following elements:

- fire-resistant metal pipe clamps: circular threaded "L" and "R" brackets, Grapatrak metal semicircular single (GRAPATRAK F, FT, PFT) and double (DFT) brackets
- fire-resistant fixings: dowels (SAP, MSD), EKA fire-resistant anchor screws for concrete, threaded elements (ATR), Trakit XHA nails, screws (Triafondo, BTS, Torab ST, Torab P), metal plasterboard dowel (GKDZ) threaded rod and extension, screw, nut, washer, trapezoidal clip
- not fire-resistant plastic and steel brackets: Grapatrak plastic single (FP) and double (FPD) brackets, Abranyl (ABT), Multiclip (MC), Utrak (UT) plastic pipe fixing, EPDM rubber core steel brackets (RIFL, RIEL)

Article numbers and sizes are included in Annex no. 1 („CELO Apolo-made fixing systems – product list”).

Main properties of the raw material of the product:

Characteristics	Value	Assessment method
Raw material: Steel		
Steel quality	C1008-C1012, C1015 C1018 C1060 C10B21 5,8 WRCH35K	AISI/SAE J1086 OCT2012*
Raw material: Plastic		
Material quality	PA6 PP HDPE	MSZ EN ISO 16396-1:2015 MSZ EN ISO 19069-1:2015 MSZ EN ISO 17855-1:2015

*AISI/SAE Standard J1086 Oct2012, United Numbering System, SAE International HS-1086/2017, ISBN of 978-0-7680-8421-4

1.3 Description of the intended use the product

Fire-resistant brackets and parts:

For fixing pipes retaining their function in case of fire (fire water or sprinkler) and for fixing fire-resistant low-voltage and high-voltage lines on reinforced concrete walls,

solid or hollow clay or aerated concrete masonry walls, on reinforced concrete ceilings or on steel structures with fire protection coating.

Fire-resistant and not fire-resistant brackets and parts:

For fixing pipes not retaining their function in case of fire on reinforced concrete walls, solid or hollow clay, wood-based or aerated concrete masonry walls, reinforced concrete ceilings or on steel structures.

2 ESSENTIAL CHARACTERISTICS, PERFORMANCE AND ASSESSMENT METHODS

2.1 Mechanical resistance and stability

-

2.2 Safety in case of fire

Essential characteristics	Performance	Assessment method
Product code: CELO Apolo fixing system – fire-resistant metal brackets, fire-resistant parts		
Reaction to fire class (without organic coating)	A1	MSZ EN 13501-1
Resistance to fire limit value	See tables according to Annex no. 2	MSZE 24102 MSZ EN 1363-1
Product code: CELO Apolo fixing system – not fire-resistant plastic and steel brackets		
Fire class	NPD*	MSZ EN 13501-1

* No Performance Determined

2.3 Hygiene, health and the environment

-

2.4 Safety and accessibility in use

Essential characteristics	Performance	Assessment method
Product code: CELO Apolo fixing system		
Tension and shear load bearing capacity of fixing elements, brackets, connecting parts	See tables according to Annex no. 2	EAD 330232-00-0601

2.5 Protection against noise

-

2.6 Energy economy and heat retention

-

2.7 Sustainable use of natural resources

Essential characteristics	Performance	Assessment method
Product code: CELO Apolo fixing system		
Zinc coating thickness [μm]	See tables according to Annex no. 2	MSZ EN ISO 2178

3 REQUIREMENTS FOR THE ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System for the assessment and verification of constancy of performance

On the basis of Commission Decision no. 97/161/EC, and according to Annex V of the European Parliament and Council Regulation no. 305/2011/EU:

system (2+).

3.2 Tasks of the manufacturer

3.2.1 Factory production control (FPC)

The manufacturer shall develop, document and operate an FPC system that ensures that the performance of the products to be installed meets continuously the values specified in the present NMÉ in a verifiable way.

If the manufacturer's quality management system complies with standard EN ISO 9001 and their system is complemented with the requirements in relation to factory production control stipulated in this NMÉ, this factory production control system can be considered to have met the requirements.

Regarding the product the manufacturer shall develop, operate and control a factory production control system, which ensures the constancy of performance of the product.

The factory production control system shall include:

- the tasks and their responsible persons required in the procedure, including correspondence with the designated certification body and the notifying obligations,
- the rules regarding the review of the qualifications and training of personnel, production and testing equipment, raw materials, supplied products, manufacturing process, handling of emerging non-compliances and complaints and the review of the factory production control system by the manufacturer,
- evaluation of the results of tests made in the framework of factory production control by comparing with the results of the performance assessment,
- tests to be carried out in the scope of the factory production control, according to the control plan of the factory control; requirements concerning the frequency and test methods in accordance with the table below:

Product characteristics	Test method	Minimum test frequency
Shape and size	visual inspection, size control	each batch
Raw material	material control	each batch

Coating thickness	laboratory test	each batch
Connectors	monitoring, visual inspection	each batch
Proper operating function	monitoring, visual inspection	each batch
Pull-out test	Pull-out test parallel with the axis of the fastening element, at the speed of 10 mm/min	twice a year for relevant products
Shear test	Tension and shear test perpendicularly to the axis of the fastening element, at the speed of 10 mm/min	twice a year for relevant products

3.2.2 Assessment of the performance of the product

This NMÉ can be considered as the assessment of the performance of the product in accordance with point 1.6 in Annex V of the European Parliament and Council Regulation No. 305/2011/EU. Therefore, the manufacturer shall not undertake this task.

3.2.3 Issuing the declaration of performance

The declaration to be issued by the manufacturer must contain the following data detailed in points:

- the identification number of the declaration,
- the individual identification code of the product type,
- the intended use(s) of the construction product specified by the manufacturer,
- the name, the registered trade name and the registered trade mark as well as the mailing address of the manufacturer,
- optionally the name and mailing address of the authorized representative,
- system or systems in relation to the assessment and verification of constancy of performance of the construction products,
- the name of the organization issuing the NMÉ and the identification number of the NMÉ,
- the name of the designated body performing the assessment and verification of the constancy of performance of the construction products, the list of the tasks performed by the body and the identification number of the factory production control certificate issued,
- the performance values given in section 2,
- the following sentences:
 - The performance of the product specified in section 1.2 of NMÉ No A-22/2018 complies with the performance specified in the declaration.
 - Exclusively the manufacturer (or the authorized representative) is responsible for issuing this declaration of performance.
- person signing in the name and on behalf of the manufacturer (or the authorized representative) (name/position),
- place/date/signature.

3.3 Tasks of the designated certification body

3.3.1 Initial inspection of the manufacturing plant and factory production control

3.3.1.1 Preliminary survey of documentation describing the factory production control

During this procedure the documents prepared by the manufacturer and describing the operation of production control, manufacturing process and the procedure of related checks and tests will be surveyed.

On the basis of the survey it is evaluated whether the quality control of the products is adequate and whether they meet the requirements given in section 3.2.1.

3.3.1.2 Initial inspection of the manufacturing plant and factory production control on site

During the initial inspection it is checked and evaluated whether the factory carries out its activities in line with the factory production control documentation and whether the checks and inspections performed by the manufacturer are suitable for maintaining the constancy of performance of the products. The initial inspection also evaluates whether the manufacturer has got tools needed for the production of suitable products and whether the personal and material conditions of the factory production control are provided.

3.3.2 Issuing of the certificate of factory production control

The designated certification body, based on the product performance and the initial inspection of the manufacturing plant and factory production control, verifies the conformity of factory production control by issuing the certificate of factory production control.

3.3.3 Keeping the validity of the certificate of factory production control

The designated certification body, based on the continuous surveillance of the factory production control, will keep the validity of the certificate of factory production control issued.

The continuous surveillance of factory production control shall be performed once a year, its content shall be identical to those specified for the initial inspection, provided that only those documents will be reviewed which have been amended or changed since the initial inspection.

4. ANNEXES

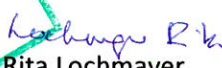
4.1 Annex no. 1: CELO Apollo-made fixing systems – product list (6 pages)

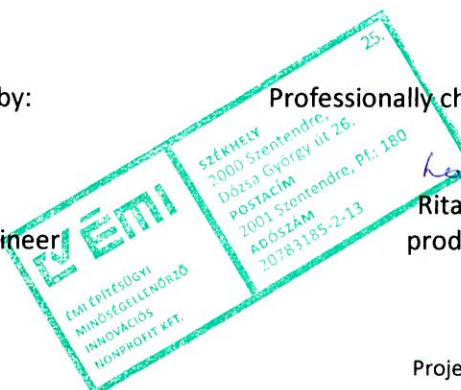
4.2 Annex no. 2: Load capacity of fixing elements (21 pages)








The NMÉ prepared by:










András Pandula
technical assessor engineer







Professionally checked and approved by:








Rita Lochmayer
product manager












BEARING STRUCTURE	PICTURE	MATERIAL	TRADE NAME OF THE PRODUCT	ARTICLE NO.
CONCRETE / ARMOURED CONCRETE		metal	EKA-SELF-TIGHTENING ANCHORING SCREW 6*40	9640EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 6*55	9655EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 6*70	9670EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 6*100	96100EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 8*50	9850EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 8*65	9865EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 8*75	9875EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 8*95	9895EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 8*105	98105EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 10*60	91060EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 10*75	91075EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 10*90	91090EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 10*120	910120EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 10*140	910140EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 12*80	91280EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 12*95	91295EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 12*120	912120EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 12*150	912150EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 16*100	916100EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 16*140	916140EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 16*175	916175EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 16*220	916220EKAZ
			EKA-SELF-TIGHTENING ANCHORING SCREW 20*110	920110EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 20*160	920160EKAZ
			EKA-SELF-TIGHTENING ANCHORING SCREW 20*170	920170EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 20*215	920215EKA
			EKA-SELF-TIGHTENING ANCHORING SCREW 20*300	920300EKAZ
		metal	TORAB CON CONCRETE SCREW M6 WITH EXTERNAL THREAD	9650TRBCM
			TORAB CON CONCRETE SCREW M8 WITH EXTERNAL THREAD	9850TRBCM
			TORAB CON CONCRETE HEXAGON BOLT	9655TRBC
			TORAB CON CONCRETE SCREW M6 WITH INTERNAL THREAD	9650TRBCH
			TORAB CON CONCRETE SCREW M8 WITH INTERNAL THREAD	9850TRBCH
		metal	BTS DIRECT CONCRETE SCREW D HEAD TX25	9ZG530BTSPT
			BTS DIRECT CONCRETE SCREW D HEAD TX25	9ZG545BTSPT
		metal	BTS DIRECT CONCRETE HEXAGON BOLT	9ZG640BTSB
			BTS DIRECT CONCRETE HEXAGON BOLT	9ZG655BTSB
		metal	BTS DIRECT CONCRETE SCREW M6 WITH INTERNAL THREAD	9ZG635M6BTSH
			BTS DIRECT CONCRETE SCREW M8 WITH INTERNAL THREAD	9ZG635M8BTSH
			BTS DIRECT CONCRETE SCREW M10 WITH INTERNAL THREAD	9ZG635M10BTSH
		metal	BTS DIRECT CONCRETE SCREW M6 WITH EXTERNAL THREAD	9ZG635M6BTSE
			BTS DIRECT CONCRETE SCREW M8 WITH EXTERNAL THREAD	9ZG635M8BTSE
		metal	PUNCHING STEEL DOWEL WITHOUT COLLAR, WITH INTERNAL THREAD M6	96SAP
			PUNCHING STEEL DOWEL WITHOUT COLLAR, WITH INTERNAL THREAD M8	98SAP
			PUNCHING STEEL DOWEL WITHOUT COLLAR, WITH INTERNAL THREAD M10	910SAP
			PUNCHING STEEL DOWEL WITHOUT COLLAR, WITH INTERNAL THREAD M12	912SAP
			PUNCHING STEEL DOWEL WITHOUT COLLAR, WITH INTERNAL THREAD M16	916SAP
CELO Apolo-made fixing systems – product list				Annex no. 1

SUBSTRATE	PICTURE	MATERIAL	TRADE NAME OF THE PRODUCT	ARTICLE NO.
CONCRETE / ARMOURED CONCRETE		metal	PUNCHING STEEL DOWEL, WITH COLLAR, WITH INTERNAL THREAD M6	96SAPK
			PUNCHING STEEL DOWEL, WITH COLLAR, WITH INTERNAL THREAD M8	98SAPK
			PUNCHING STEEL DOWEL, WITH COLLAR, WITH INTERNAL THREAD M10	910SAPK
			PUNCHING STEEL DOWEL, WITH COLLAR, WITH INTERNAL THREAD M12	912SAPK
			PUNCHING STEEL DOWEL, WITH COLLAR, WITH INTERNAL THREAD M16	916SAPK
		metal	THREADED ROD, M6*1000	6975
			THREADED ROD, M8*1000	8975
			THREADED ROD, M10*1000	10975
		metal	TRAKIT XH EXTRA-COATED NAIL 13 MM	9131000XHA
			TRAKIT XH EXTRA-COATED NAIL 17	9171000XHA
			TRAKIT XH EXTRA-COATED NAIL 22 MM	9221000XHA
			TRAKIT XH EXTRA-COATED NAIL 27 MM	9271000XHA
			TRAKIT XH EXTRA-COATED NAIL 32 MM	9321000XHA
			TRAKIT XH EXTRA-COATED NAIL 38 MM	9381000XHA
SANDWICH- PANEL / TRAPEZOIDIAL SHEET / STEEL ≥ 0.4 MM		metal	TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M6*6	96319M6TRB
			TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M8*10	96320M810TRB
			TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M8*15	96320M815TRB
TRAPEZOIDIAL SHEET / STEEL ≥ 0.7 MM		metal	TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M6*6	96319M6TRB
			TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M8*10	96320M810TRB
			TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M8*15	96320M815TRB
STEEL BEAM ≥ 3 MM		metal	TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M6*6	96319M6TRB
			TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M8*10	96320M810TRB
			TORAB SELF-BORING DOUBLE THREADED SHEET SCREW M8*15	96320M815TRB
		metal	TRAKIT XH EXTRA-COATED NAIL 13 MM	9131000XHA
			TRAKIT XH EXTRA-COATED NAIL 17	9171000XHA
			TRAKIT XH EXTRA-COATED NAIL 22 MM	9221000XHA
			TRAKIT XH EXTRA-COATED NAIL 27 MM	9271000XHA
			TRAKIT XH EXTRA-COATED NAIL 32 MM	9321000XHA
		TRAKIT XH EXTRA-COATED NAIL 38 MM	9381000XHA	
Clay masonry		metal	MSD METAL EXPANSION DOWEL 6-32 (FIRE-RESISTANT)	9B632MSD
			MSD METAL EXPANSION DOWEL 8-38 (FIRE-RESISTANT)	9B838MSD
			MSD METAL EXPANSION DOWEL 8-60 (FIRE-RESISTANT)	9B860MSD
CELO Apollo-made fixing systems – product list			Annex no. 1	

SUBSTRATE	PICTURE	MATERIAL	TRADE NAME OF THE PRODUCT	ARTICLE NO.
Clay masonry		metal	DOUBLE THREADED BOLT FOR DOWEL M6*25	9B625TF
			DOUBLE THREADED BOLT FOR DOWEL M6*30	9B630TF
			DOUBLE THREADED BOLT FOR DOWEL M6*44	9B644TF
			DOUBLE THREADED BOLT FOR DOWEL M8*30	9830TF
			DOUBLE THREADED BOLT FOR DOWEL M8*40	9840TF
			DOUBLE THREADED BOLT FOR DOWEL M8*50	9850TF
			DOUBLE THREADED BOLT FOR DOWEL M8*60	9860TF
		metal	TRAKIT XH EXTRA-COATED NAIL 13 MM	9131000XHA
			TRAKIT XH EXTRA-COATED NAIL 17	9171000XHA
			TRAKIT XH EXTRA-COATED NAIL 22 MM	9221000XHA
			TRAKIT XH EXTRA-COATED NAIL 27 MM	9271000XHA
			TRAKIT XH EXTRA-COATED NAIL 32 MM	9321000XHA
			TRAKIT XH EXTRA-COATED NAIL 38 MM	9381000XHA
Aerated masonry		metal	MSD METAL EXPANSION DOWEL 6-32 (FIRE-RESISTANT)	9B632MSD
			MSD METAL EXPANSION DOWEL 8-38 (FIRE-RESISTANT)	9B838MSD
			MSD METAL EXPANSION DOWEL 8-60 (FIRE-RESISTANT)	9B860MSD
		metal	DOUBLE THREADED BOLT FOR DOWEL M6*25	9B625TF
			DOUBLE THREADED BOLT FOR DOWEL M6*30	9B630TF
			DOUBLE THREADED BOLT FOR DOWEL M6*44	9B644TF
			DOUBLE THREADED BOLT FOR DOWEL M8*30	9830TF
			DOUBLE THREADED BOLT FOR DOWEL M8*40	9840TF
			DOUBLE THREADED BOLT FOR DOWEL M8*50	9850TF
			DOUBLE THREADED BOLT FOR DOWEL M8*60	9860TF
		metal	TRAKIT XH EXTRA-COATED NAIL 13 MM	9131000XHA
			TRAKIT XH EXTRA-COATED NAIL 17	9171000XHA
			TRAKIT XH EXTRA-COATED NAIL 22 MM	9221000XHA
			TRAKIT XH EXTRA-COATED NAIL 27 MM	9271000XHA
			TRAKIT XH EXTRA-COATED NAIL 32 MM	9321000XHA
			TRAKIT XH EXTRA-COATED NAIL 38 MM	9381000XHA
Plasterboard masonry		metal	GKDZ metal self-boring plasterboard dowel	9GKDZ50
CELO Apolo-made fixing systems – product list				Annex no. 1

APPLICATION	PICTURE	MATERIAL	TRADE NAME OF THE PRODUCT	ARTICLE NO.
FIRE-RESISTANT		metal	METAL FIRE-RESISTANT BRACKET M5-8	96L
			METAL FIRE-RESISTANT BRACKET M7-10	98L
			METAL FIRE-RESISTANT BRACKET M9-12	910L
			METAL FIRE-RESISTANT BRACKET M11-14	912L
			METAL FIRE-RESISTANT BRACKET M13-16	914L
			METAL FIRE-RESISTANT BRACKET M14-17	9B15L
			METAL FIRE-RESISTANT BRACKET M15-18	916L
			METAL FIRE-RESISTANT BRACKET M17-20	9B18L
			METAL FIRE-RESISTANT BRACKET M19-22	920L
			METAL FIRE-RESISTANT BRACKET M21-24	9B22L
			METAL FIRE-RESISTANT BRACKET M24-27	925L
			METAL FIRE-RESISTANT BRACKET M25-28	926L
			METAL FIRE-RESISTANT BRACKET M27-30	9B28L
			METAL FIRE-RESISTANT BRACKET M31-34	932L
			METAL FIRE-RESISTANT BRACKET M34-38	9B35L
			METAL FIRE-RESISTANT BRACKET M39-42	940L
			METAL FIRE-RESISTANT BRACKET M48-52	950L
			METAL FIRE-RESISTANT BRACKET M54-57	9B55L
			METAL FIRE-RESISTANT BRACKET M58-62	960L
			METAL FIRE-RESISTANT BRACKET M62-65	963L
			TRAPEZOID CLIP M8	98TPZF
			TRAPEZOID CLIP M10	910TPZF
		metal	THREADED JOINT M6 FOR BOLT FIRING TOOL	9TR6
			SHOOTING THREADED JOINT, M8*10, FOR BOLT FIRING TOOL	9TR8C
			SHOOTING THREADED JOINT, M8*16, FOR BOLT FIRING TOOL	9TR8L
		metal	FIRE-RESISTANT SEMICIRCULAR METAL BRACKET WITH PRE-FIXING M6 SINGLE	96PFT
			FIRE-RESISTANT SEMICIRCULAR METAL BRACKET WITH PRE-FIXING M8 SINGLE	98PFT
			FIRE-RESISTANT SEMICIRCULAR METAL BRACKET WITH PRE-FIXING M10 SINGLE	910PFT
			FIRE-RESISTANT SEMICIRCULAR METAL BRACKET WITH PRE-FIXING M12 SINGLE	912PFT
		metal	FIRE-RESISTANT SEMICIRCULAR METAL BRACKET WITH PRE-FIXING M6 DOUBLE	96DFT
			FIRE-RESISTANT SEMICIRCULAR METAL BRACKET WITH PRE-FIXING M8 DOUBLE	98DFT
			FIRE-RESISTANT SEMICIRCULAR METAL BRACKET WITH PRE-FIXING M10 DOUBLE	910DFT
			FIRE-RESISTANT SEMICIRCULAR METAL BRACKET WITH PRE-FIXING M12 DOUBLE	912DFT
		metal	GRAPATRAK METAL SEMICIRCULAR BRACKET M16	916FT
			GRAPATRAK METAL SEMICIRCULAR BRACKET M20	920FT
			GRAPATRAK METAL SEMICIRCULAR BRACKET M25	925FT
CELO Apolo-made fixing systems – product list				Annex no. 1

APPLICATION	PICTURE	MATERIAL	TRADE NAME OF THE PRODUCT	ARTICLE NO.
FIRE-RESISTANT		metal	METAL SEMICIRCULAR BRACKET (WITH BORE)	96F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	98F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	910F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	912F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	914F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	916F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	918F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	920F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	922F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	925F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	926F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	928F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	932F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	940F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	942F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	950F
			METAL SEMICIRCULAR BRACKET (WITH BORE)	963F
		metal	GRIP	
	COLD		nylon	ABRANYL-TRAK, COMBINABLE SIZE SHOOTING PLASTIC BRACKET 14-18 GREY
ABRANYL-TRAK, COMBINABLE SIZE SHOOTING PLASTIC BRACKET 20-25 GREY				925ABT
ABRANYL-TRAK, COMBINABLE SIZE SHOOTING PLASTIC BRACKET 26-32 GREY				932ABT
ABRANYL-TRAK , COMBINABLE SIZE SHOOTING PLASTIC BRACKET 35-42 GREY				942ABT
		plastic	UTRAK ADJUSTABLE IN LINE SHOOTING BRACKET M16	916UT
			UTRAK ADJUSTABLE IN LINE SHOOTING BRACKET M20	920UT
			UTRAK ADJUSTABLE IN LINE SHOOTING BRACKET M25	925UT
			UTRAK ADJUSTABLE IN LINE SHOOTING BRACKET M32	932UT
			UTRAK ADJUSTABLE IN LINE SHOOTING BRACKET M40	940UT
		plastic	MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M16	916MC
			MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M20	920MC
			MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M25	925MC
			MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M32	932MC
			MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M40	940MC
		plastic	GRAPATRAK , SEMICIRCULAR PLASTIC PIPE CLIP FP 16	916FP
			GRAPATRAK, SEMICIRCULAR PLASTIC PIPE CLIP FP 20	920FP
			GRAPATRAK , SEMICIRCULAR PLASTIC PIPE CLIP FP 25	925FP
			GRAPATRAK , SEMICIRCULAR PLASTIC PIPE CLIP FP 32	932FP
		plastic	GRAPATRAK, DOUBLE SEMICIRCULAR PLASTIC PIPE CLIP FP16	916FPD
			GRAPATRAK ,DOUBLE SEMICIRCULAR PLASTIC PIPE CLIP FP20	920FPD
			GRAPATRAK, DOUBLE SEMICIRCULAR PLASTIC PIPE CLIP FP25	925FPD
CELO Apolo-made fixing systems – product list				
Annex no. 1				

APPLICATION	PICTURE	MATERIAL	TRADE NAME OF THE PRODUCT	ARTICLE NO.
COLD		metal + EPD	METAL BRACKET RUBBER INSULATED ONE-SIDED M8 15	915RIFL
			METAL BRACKET RUBBER INSULATED ONE-SIDED M8 18 (3/8")	918RIFL
			METAL BRACKET RUBBER INSULATED ONE-SIDED M8 22 (1/2")	922RIFL
			METAL BRACKET RUBBER INSULATED ONE-SIDED M8 28 (3/4")	928RIFL
			METAL BRACKET RUBBER INSULATED ONE-SIDED M8 35 (1")	935RIFL
			METAL BRACKET RUBBER INSULATED ONE-SIDED M8 40 (5/4")	940RIFL
			METAL BRACKET RUBBER INSULATED ONE-SIDED M8 48 (6/4")	948RIFL
			METAL BRACKET RUBBER INSULATED ONE-SIDED M8 60 (2")	960RIFL
		metal + EPD	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 18 (3/8")	918RIEL
			HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 22 (1/2")	922RIEL
			HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 28 (3/4")	928RIEL
			HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 35 (1")	935RIEL
			HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 42 (1 1/4")	940RIEL
			HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 50 (1 1/2")	950RIEL
			HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 54	955RIEL
			HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, (2")	960RIEL
CELO Apolo-made fixing systems – product list				
Annex no. 1				

EKA GALVANIC GALVANIZED STEEL SELF-STRESSED ANCHOR SCREW									
Product group		Trade name of the product		Art. no.		Raw material			
EKA M6		M6*40		9640EKA		WRCH35K steel, zinc layer thickness ≥ 5 µm			
		M6*55		9655EKA					
		M6*70		9670EKA					
		M6*100		96100EKA					
EKA M8		M8*50		9850EKA					
		M8*65		9865EKA					
		M8*75		9875EKA					
		M8*95		9895EKA					
		M8*105		98105EKA					
EKA M10		M10*60		91060EKA					
		M10*75		91075EKA					
		M10*90		91090EKA					
		M10*120		910120EKA					
		M10*140		910140EKA					
EKA M12		M12*80		91280EKA					
		M12*95		91295EKA					
		M12*120		912120EKA					
		M12*150		912150EKA					
EKA M16		M16*100		916100EKA					
		M16*140		916140EKA					
		M16*175		916175EKA					
		M16*220		916220EKAZ					
EKA M20		M20*110		920110EKA					
		M20*160		920160EKAZ					
		M20*170		920170EKA					
		M20*215		920215EKA					
		M20*300		920300EKAZ					
LOAD CAPACITY			Tension load / Shear load [kN]						
PRODUCT GROUP	BEARING STRUCTURE:	C-20/25				C-50/60			
	APPLICATION*:	H	R60	R90	R120	H	R60	R90	R120
EKA M6	M6*40 M6*55 M6*70 M6*95	0.8 / - 1.4 / - 1.4 / - 1.4 / -		0.1 / -	0.05 / -	1.6 / -		0.1 / -	0.05 / -
EKA M8		2.0 / -			0.1 / -	3.2 / -			0.1 / -
EKA M10		2.6 / -			0.1 / -	4.0 / -			0.1 / -
EKA M12 EKA M16		3.2 / -			0.1 / -	5.0 / -			0.1 / -
EKA M20		8.8 / -			0.1 / -	14.0 / -			0.1 / -
* Application:		Applied safety factor:							
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load.							
R60 – fireproof application up to 60 minutes									
R90 – fireproof application up to 90 minutes									
R120 – fireproof application up to 120 minutes		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.							
Load capacity of fixing elements						Annex no. 2			

BTS GALVANIC GALVANIZED STEEL CONCRETE SCREW							
Product group	Trade name of the product			Art. no.	Raw material		
BTS**	BTS CONCRETE HEXAGON BOLT			9ZG640BTSB 9ZG655BTSB (9655TRBC)	C10B21 steel		
	BTS CONCRETE SCREW D HEAD TX25			9ZG530BTSPT 9ZG545BTSPT			
	BTS CONCRETE SCREW M6 WITH EXTERNAL THREAD			9ZG635M6BTSE (9650TRBCM)			
	BTS CONCRETE SCREW M8 WITH EXTERNAL THREAD			9ZG635M8BTSE (9850TRBCM)			
	BTS CONCRETE SCREW M6 WITH INTERNAL THREAD			9ZG635M6BTSH (9650TRBCH)			
	BTS CONCRETE SCREW M8 WITH INTERNAL THREAD			9ZG635M8BTSH (9850TRBCH)			
	BTS CONCRETE SCREW M10 WITH INTERNAL THREAD			9ZG635M10BTSH			
LOAD CAPACITY			Tension load / Shear load R _k [kN]				
PRODUCT GROUP	BEARING STRUCTURE :	C-20/25		C-50/60		Clay masonry	
	APPLICATION *:	H	R120	H	R120	H	R120
BTS							
30 mm fixing length		2.5 / 6.0	0.1 / -	4.0 / 7.5	0.1 / -		- / 0.02
50 mm fixing length		3.0 / 7.5	0.1 / -	6.0 / 9.0	0.1 / -		- / 0.02
<div>* Application :<div>H – Not fireproof application</div><div>R60 – fireproof application up to 60 minutes</div><div>R90 – fireproof application up to 90 minutes</div><div>R120 – fireproof application up to 120 minutes</div></div> <div>Applied safety factor :<div>In case of not fireproof use the safety factors specified by the structural design and control rules of MSZ EN 1990 are as follows:<div>ultimate limit state $R_k/g_m = R_k/1.8$</div>serviceability limit state $R_k/g_m * \gamma = R_k/(1.8 * 1.35) = R_k/2.43$</div></div> <div>In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.</div>							
<div>** The previous name of BTS direct concrete screws is TORAB CON direct concrete screws, the previous article numbers of TORAB CON direct concrete screws are indicated in parentheses.</div>							
Load capacity of fixing elements					Annex no. 2		

SAP GALVANIZED STEEL PUNCHING DOWELS

Product group	Trade name of the product	Art. no.	Raw material
SAP M6	WITHOUT COLLAR, WITH INTERNAL THREAD M6	96SAP	C1008-C1012, C1015 steel, zinc layer thickness ≥ 7 µm
	WITH COLLAR, WITH INTERNAL THREAD M6	96SAPK	
SAP M8	WITHOUT COLLAR, WITH INTERNAL THREAD M8	98SAP	
	WITH COLLAR, WITH INTERNAL THREAD M8	98SAPK	
SAP M10	WITHOUT COLLAR, WITH INTERNAL THREAD M10	910SAP	
	WITH COLLAR, WITH INTERNAL THREAD M10	910SAPK	
SAP M12	WITHOUT COLLAR, WITH INTERNAL THREAD M12	912SAP	
	WITH COLLAR, WITH INTERNAL THREAD M12	912SAPK	
SAP M16	WITHOUT COLLAR, WITH INTERNAL THREAD M16	916SAP	
	WITH COLLAR, WITH INTERNAL THREAD M16	916SAPK	

LOAD CAPACITY		Tension load / Shear load, R _k [kN]							
PRODUCT GROUP	BEARING STRUCTURE:	C-20/25				C-50/60			
	APPLICATION*:	H	R60	R90	R120	H	R60	R90	R120
SAP M6		6.0 / 5.0			0,1 /-	12.0 / 5.0			0.1 /-
SAP M8		12.0 / 6.0				16.0 / 6.0			
SAP M10		16.0 / 6.0				20.0 / 6.0			
SAP M12		20.0 / 9.0				35.0 / 20.0			
SAP M16		25.0 / 30.0				40.0 / 35.0			

* Application :

H – Not fireproof application

R60 – fireproof application up to 60 minutes

R90 – fireproof application up to 90 minutes

R120 – fireproof application up to 120 minutes

Applied safety factor :

In case of not fireproof use the safety factors specified by the structural design and control rules of MSZ EN 1990 are as follows :

ultimate limit state $R_k/g_m = R_k/1.8$

serviceability limit state $R_k/g_m \cdot \gamma = R_k/(1.8 \cdot 1.35) = R_k/2.43$

In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.

Load capacity of fixing elements
Annex no. 2

GALVANIZED STEEL THREADED ROD, EXTENSION, NUT, WASHER, EYE-NUT

Product group	Trade name of the product	Art. no.	Raw material	
M6	M6*1000	6975	5.8 steel, zinc layer thickness ≥ 7 µm	
M8	M8*1000	8975		
M10	M10*1000	10975		

LOAD CAPACITY		Tension load [kN]	
PRODUCT GROUP	APPLICATION *:	H	R120
M6		-	-
M8		4,0	0,1
M10		6,0	0,1

* Application :

H – Not fireproof application
R60 – fireproof application up to 60 minutes
R90 – fireproof application up to 90 minutes
R120 – – fireproof application up to 120 minutes

Applied safety factor :

In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is **5.0** for both tension and shear load

In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.

Load capacity of fixing elements
Annex no. 2

TRAKIT XHA EXTRA-COATED NAIL										
Product group	Trade name of the product				Art. no.	Raw material				
13 XHA	TRAKIT XHA EXTRA-COATED NAIL -13 MM				9131000XHA	C1060 steel				
17 XHA	TRAKIT XHA EXTRA-COATED NAIL -17 MM				9171000XHA					
22 XHA	TRAKIT XHA EXTRA-COATED NAIL - 22 MM				9221000XHA					
27 XHA	TRAKIT XHA EXTRA-COATED NAIL - 27 MM				9271000XHA					
32 XHA	TRAKIT XHA EXTRA-COATED NAIL - 32 MM				9321000XHA					
38 XHA	TRAKIT XHA EXTRA-COATED NAIL - 38 MM				9381000XHA					
LOAD CAPACITY			Tension load / Shear load [N]							
PRODUCT GROUP	BEARING STRUCTURE:	Steel**			(Reinforced)concrete***			Aerated concrete****		
	APPLICATION *:	H	R60	R90	H	R60	R90	H	R60	R120
13 XHA		160 / 160			80 / 80					
17 XHA		160 / 160	100 / -	50 / 50	160 / 160					
22 XHA					160 / 160	50 / 50	50 / 20			
27 XHA										
32 XHA								50 / 60	- / 50	- / 50
* Application:		Applied safety factor:								
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and								
R60 – fireproof application up to 60 minutes		the maximum permissible operating loads indicated in the table is 5.0 for								
R90 – fireproof application up to 90 minutes		both tension and shear load								
R120 – fireproof application up to 120 minutes		In case of fireproof use there is no safety factor, the load capacity data								
		were determined directly on the basis of the tests of each item.								
** In case of 3.0 mm sheet thickness at least										
*** Concrete of minimum C-16/20 strength										
**** Masonry built of aerated concrete of										
400-500 kg/m ³ strength class at least, and of										
3 N/mm ² compressive strength at least										
Load capacity of fixing elements						Annex no. 2				

TORAB ST SELF-BORING DOUBLE THREADED SHEET SCREW										
Product group		Trade name of the product			Art. no.		Raw material			
M6		TORAB ST SELF-BORING DOUBLE THREADED SHEET SCREW M6*6			96319M6TRB		C1018 steel			
M8		TORAB ST SELF-BORING DOUBLE THREADED SHEET SCREW M8*10			96320M810TRB					
		TORAB ST SELF-BORING DOUBLE THREADED SHEET SCREW M8*15			96320M815TRB					
LOAD CAPACITY			Tension load / Shear load [N]							
PRODUCT GROUP	BEARING STRUCTURE:		Steel structure d≥3 mm				Steel structure d≥0.7 mm			
	APPLICATION *:		H	R60	R90	R120	H	R60	R90	R120
M6			120 / 120			100 / -	100 / 100		50 / -	
M8										100 / -
* Application:			Applied safety factor:							
H – Not fireproof application			In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load							
R60 – fireproof application up to 60 minutes										
R90 – fireproof application up to 90 minutes										
R120 – fireproof application up to 120 minutes			In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.							
Load capacity of fixing elements						Annex no. 2				

MSD METAL EXPANSION DOWEL TIRAFONDÓ WITH DOUBLE THREADED SCREW							
Product group	Trade name of the product		Art. no.	Raw material			
MSD	MSD METAL EXPANSION DOWEL 6-32		9B632MSD	C1010 steel			
	MSD METAL EXPANSION DOWEL 8-38		9B838MSD				
	MSD METAL EXPANSION DOWEL 8-60		9B860MSD				
M6	DOUBLE THREADED SCREW FOR DOWEL M6*25		9B625TF				
	DOUBLE THREADED SCREW FOR DOWEL M6*30		9B630TF				
	DOUBLE THREADED SCREW FOR DOWEL M6*44		9B644TF				
M8	DOUBLE THREADED SCREW FOR DOWEL M8*30		9830TF				
	DOUBLE THREADED SCREW FOR DOWEL M8*40		9840TF				
	DOUBLE THREADED SCREW FOR DOWEL M8*50		9850TF				
	DOUBLE THREADED SCREW FOR DOWEL M8*60		9860TF				
LOAD CAPACITY		Tension load / Shear load [N]					
PRODUCT GROUP	BEARING STRUCTURE:	Clay masonry					
	APPLICATION *:	H	R60	R90	R120		
MSD + M6 with M6*44 screw		160 / 800			- / 30		
MSD + M8		160 / 800			- / 30		
* Application:		Applied safety factor:					
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load.					
R60 – fireproof application up to 60 minutes							
R90 – fireproof application up to 90 minutes		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.					
R120 – fireproof application up to 120 minutes							
Load capacity of fixing elements				Annex no. 2			

MSD METAL EXPANSION DOWEL WITH TORAB P SCREW

Product group	Trade name of the product	Art. no.	Raw material	
MSD	MSD METAL EXPANSION DOWEL 6-32	9B632MSD	C1010 steel	
	MSD METAL EXPANSION DOWEL 8-38	9B838MSD		
	MSD METAL EXPANSION DOWEL 8-60	9B860MSD		
M6	TORAB P THREADED SCREW M6*35	9635TRBP		
M8	TORAB P THREADED SCREW M8*45	9845TRBP		

LOAD CAPACITY		Tension load / Shear load [N]			
PRODUCT GROUP	BEARING STRUCTURE:	Clay masonry			
	APPLICATION *:	H	R60	R90	R120
MSD + M6					
MSD + M8		240 / 1000			- / 50

*** Application:**

H – Not fireproof application
R60 – fireproof application up to 60 minutes
R90 – fireproof application up to 90 minutes
R120 – fireproof application up to 120 minutes

Applied safety factor:

In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is **5.0** for both tension and shear load.

In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.

Load capacity of fixing elements
Annex no. 2

GKDZ METAL SELF-BORING PLASTERBOARD DOWEL WITH TIRAFONDÓ DOUBLE THREADED SCREW					
Product group	Trade name of the product		Art. no.	Raw material	
GKDZ	GKDZ METAL PLASTERBOARD DOWEL		9GKDZ	Galvanized steel, zinc layer thickness ≥ 7 μm	
M6	DOUBLE THREADED SCREW FOR DOWEL M6*25		9B625TF		
	DOUBLE THREADED SCREW FOR DOWEL M6*30		9B630TF		
	DOUBLE THREADED SCREW FOR DOWEL M6*44		9B644TF		
LOAD CAPACITY		Tension load / Shear load [N]			
PRODUCT GROUP	BEARING STRUCTURE:	Plasterboard			
	APPLICATION *:	H	R60	R90	R120
MSD + M6 with M6*44 screw		50 / -			
* Application:		Applied safety factor:			
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load.			
R60 – fireproof application up to 60 minutes					
R90 – fireproof application up to 90 minutes					
R120 – fireproof application up to 120 minutes		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.			
Load capacity of fixing elements			Annex no. 2		

„L” STEEL BRACKET M6 WITH INTERNAL THREAD					
Product group	Trade name of the product	Art. no.	Raw material		
L6	METAL FIREPROOF BRACKET M5-8	96L	C1018 steel, zinc layer thickness ≥ 7 μm		
L8	METAL FIREPROOF BRACKET M7-10	98L			
L10	METAL FIREPROOF BRACKET M9-12	910L			
L12	METAL FIREPROOF BRACKET M11-14	912L			
L14	METAL FIREPROOF BRACKET M13-16	914L			
L15	METAL FIREPROOF BRACKET M14-17	9B15L			
L16	METAL FIREPROOF BRACKET M15-18	916L			
L18	METAL FIREPROOF BRACKET M17-20	9B18L			
L20	METAL FIREPROOF BRACKET M19-22	920L			
L22	METAL FIREPROOF BRACKET M21-24	9B22L			
L25	METAL FIREPROOF BRACKET M24-27	925L			
L26	METAL FIREPROOF BRACKET M25-28	926L			
L28	METAL FIREPROOF BRACKET M27-30	9B28L			
L32	METAL FIREPROOF BRACKET M31-34	932L			
L35	METAL FIREPROOF BRACKET M34-38	9B35L			
L40	METAL FIREPROOF BRACKET M39-42	940L			
L50	METAL FIREPROOF BRACKET M48-52	950L			
L55	METAL FIREPROOF BRACKET M54-57	9B55L			
L60	METAL FIREPROOF BRACKET M58-62	960L			
L63	METAL FIREPROOF BRACKET M62-65	963L			
LOAD CAPACITY		Tension load / Shear load [N]			
PRODUCT GROUP	APPLICATION *:	H	R60	R90	R120
L6 – L63		240 / 1000	100 / 50	100 / 20	100 / 50
* Application:		Applied safety factor:			
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load.			
R60 – fireproof application up to 60 minutes					
R90 – fireproof application up to 90 minutes		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.			
R120 – fireproof application up to 120 minutes					
Load capacity of fixing elements				Annex no. 2	

TRAPEZOID CLIP					
Product group	Trade name of the product		Art. no.		Raw material
M8	TRAPEZOID CLIP M8		98TPZF		C1018 steel, zinc layer thickness $\geq 7 \mu\text{m}$
M6	TRAPEZOID CLIP M10		910TPZF		
LOAD CAPACITY		Tension load / Shear load [kN]			
PRODUCT GROUP	BEARING STRUCTURE:	Steel trapezoid sheet $d \geq 0.7 \text{ mm}$			
	APPLICATION *:	H	R60	R90	R120
M6		1.0 / -			0.1 / -
M8					
* Application:		Applied safety factor:			
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load.			
R60 – fireproof application up to 60 minutes					
R90 – fireproof application up to 90 minutes					
R120 – fireproof application up to 120 minutes		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.			
Load capacity of fixing elements			Annex no. 2		

ATR M6 AND M8 THREADED FIXING ELEMENTS FOR TRAKIT BOLT FIRING TOOL									
Product group	Trade name of the product				Art. no.		Raw material		
ATR M6	SHOOTING THREADED JOINT M6				9TR6		C1018 steel, zinc layer thickness ≥ 7 μm		
ATR M8	SHOOTING THREADED JOINT, M8*10				9TR8C				
	SHOOTING THREADED JOINT, M8*16				9TR8L				
LOAD CAPACITY			Tension load / Shear load [N]						
PRODUCT GROUP	BEARING STRUCTURE:	Reinforced concrete structure**				Steel structure			
	APPLICATION *:	H	R60	R90	R120	H	R60	R90	R120
ATR M6		160 / 160	50 / 50	20 / 20		160 / -	100 / -	20 / -	
ATR M8		200 / -		100 / -		300 / -		100 / -	
* Application:		Applied safety factor:							
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load.							
R60 – fireproof application up to 60 minutes									
R90 – fireproof application up to 90 minutes									
R120 – fireproof application up to 120 minutes									
** Concrete of minimum C-16/20 strength.		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.							
In concrete of lower strength than above the application of 27 XHA or 32 XHA nails is required.									
Load capacity of fixing elements						Annex no. 2			

PFT FIRE-RESISTANT METAL SEMICIRCULAR SINGLE BRACKET WITH PRE-FASTENER FOR TRAKIT BOLT FIRING TOOL							
Product group	Trade name of the product	Art. no.	Raw material				
PFT M6	FIREPROOF SEMICIRCULAR METAL BRACKET WITH PRE-FASTENER M6 SINGLE	96PFT	C1018 steel, zinc layer thickness ≥ 7 μm				
PFT M8	FIREPROOF SEMICIRCULAR METAL BRACKET WITH PRE-FASTENER M8 SINGLE	98PFT					
PFT M10	FIREPROOF SEMICIRCULAR METAL BRACKET WITH PRE-FASTENER M10 SINGLE	910PFT					
PFT M12	FIREPROOF SEMICIRCULAR METAL BRACKET WITH PRE-FASTENER M12 SINGLE	912PFT					
LOAD CAPACITY		Tension load / Shear load [N]					
PRODUCT GROUP	BEARING STRUCTURE:	Steel		(Reinforced) concrete **		Aerated concrete ***	
	APPLICATION *:	H	R90	H	R60	H	R120
PFT M6		50 / 60 ^{1, 2}	50 / 50 ¹	20 / 20 ² 50 / 60 ^{3, 4}	50 / 50 ⁴	30 / 60 ^{5, 6}	- / 50 ^{5, 6}
PFT M8							
PFT M10							
PFT M12							
* Application:		Applied safety factor:					
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load					
R60 – fireproof application up to 60 minutes							
R90 – fireproof application up to 90 minutes		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.					
R120 – fireproof application up to 120 minutes							
** Concrete of minimum C-16/20 strength. In concrete of lower strength than above the application of 27 XHA or 32 XHA nails is required.							
*** Masonry built of aerated concrete of 400-500 kg/m ³ strength class at least, and of 3 N/mm ² compressive strength at least							
¹ fixed with 13 XHA nail							
² fixed with 17 XHA nail							
³ fixed with 19 XHA nail							
⁴ fixed with 22 XHA nail							
⁵ fixed with 27 XHA nail							
⁶ fixed with 32 XHA nail							
Load capacity of fixing elements				Annex no. 2			

DFT FIRE-RESISTANT METAL SEMICIRCULAR SINGLE BRACKET WITH PRE-FASTENER FOR TRAKIT BOLT FIRING TOOL							
Product group	Trade name of the product			Art. no.	Raw material		
DFT M6	FIREPROOF SEMICIRCULAR METAL BRACKET WITH PRE-FASTENER M6 DOUBLE			96DFT	C1018 steel, zinc layer thickness ≥ 7 μm		
DFT M8	FIREPROOF SEMICIRCULAR METAL BRACKET WITH PRE-FASTENER M8 DOUBLE			98DFT			
DFT M10	FIREPROOF SEMICIRCULAR METAL BRACKET WITH PRE-FASTENER M10 DOUBLE			910DFT			
DFT M12	FIREPROOF SEMICIRCULAR METAL BRACKET WITH PRE-FASTENER M12 DOUBLE			912DFT			
LOAD CAPACITY		Tension load / Shear load [N]					
PRODUCT GROUP	BEARING STRUCTURE:	Steel		(Reinforced) concrete **		Aerated concrete ***	
	APPLICATION *:	H	R90	H	R60	H	R120
DFT M6		50 / 60 ^{1,2}	50 / 50 ¹	20 / 20 ² 50 / 60 ^{3,4}	50 / 50 ⁴	30 / 60 ^{5,6}	- / 50 ^{5,6}
DFT M8							
DFT M10							
DFT M12							
* Application:		Applied safety factor:					
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load					
R60 – fireproof application up to 60 minutes		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.					
R90 – fireproof application up to 90 minutes							
R120 – fireproof application up to 120 minutes							
** Concrete of minimum C-16/20 strength. In concrete of lower strength than above the application of 27 XHA or 32 XHA nails is required.							
*** Masonry built of aerated concrete of 400-500 kg/m ³ strength class at least, and of 3 N/mm ² compressive strength at least							
¹ fixed with 13 XHA nail							
² fixed with 17 XHA nail							
³ fixed with 19 XHA nail							
⁴ fixed with 22 XHA nail							
⁵ fixed with 27 XHA nail							
⁶ fixed with 32 XHA nail							
Load capacity of fixing elements					Annex no. 2		

FT FIRE-RESISTANT METAL SEMICIRCULAR SINGLE BRACKET FOR TRAKIT BOLT FIRING TOOL

Product group	Trade name of the product	Art. no.	Raw material
FT 16	GRAPATRAK METAL SEMICIRCULAR BRACKET M16	916FT	C1018 steel, zinc layer thickness $\geq 7 \mu\text{m}$
FT 20	GRAPATRAK METAL SEMICIRCULAR BRACKET M20	920FT	
FT 25	GRAPATRAK METAL SEMICIRCULAR BRACKET M25	925FT	

LOAD CAPACITY		Tension load / Shear load [N]					
PRODUCT GROUP	BEARING STRUCTURE:	Steel		(Reinforced) concrete **		Aerated concrete ***	
	APPLICATION *:	H	R90	H	R60	H	R120
FT 16		50 / 60 ^{1,2}	50 / 50 ¹	20 / 20 ²	50 / 50 ⁴	30 / 60 ^{5,6}	- / 50 ^{5,6}
FT 20				50 / 60 ^{3,4}			
FT 25							

* Application :

H – Not fireproof application

R60 – fireproof application up to 60 minutes

R90 – fireproof application up to 90 minutes

R120 – fireproof application up to 120 minute

Applied safety factor :

In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is **5.0** for both tension and shear load

In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.

** Concrete of minimum C-16/20 strength.

In concrete of lower strength than above the application of 27 XHA or 32 XHA nails is required.

*** Masonry built of aerated concrete of 400-500 kg/m³ strength class at least, and of 3 N/mm² compressive strength at least

¹ fixed with 13 XHA nail

² fixed with 17 XHA nail

³ fixed with 19 XHA nail

⁴ fixed with 22 XHA nail

⁵ fixed with 27 XHA nail

⁶ fixed with 32 XHA nail

Load capacity of fixing elements
Annex no. 2

GRAPATRAK „F” SEMICIRCULAR STEEL BRACKET WITH BORE**					
Product group	Trade name of the product		Art. no.	Raw material	
F6	METAL SEMICIRCULAR BRACKET (WITH BORE)		96F	C1018 steel, zinc layer thickness ≥ 7 μm	
F8	METAL SEMICIRCULAR BRACKET (WITH BORE)		98F		
F10	METAL SEMICIRCULAR BRACKET (WITH BORE)		910F		
F12	METAL SEMICIRCULAR BRACKET (WITH BORE)		912F		
F14	METAL SEMICIRCULAR BRACKET (WITH BORE)		914F		
F16	METAL SEMICIRCULAR BRACKET (WITH BORE)		916F		
F18	METAL SEMICIRCULAR BRACKET (WITH BORE)		918F		
F20	METAL SEMICIRCULAR BRACKET (WITH BORE)		920F		
F22	METAL SEMICIRCULAR BRACKET (WITH BORE)		922F		
F25	METAL SEMICIRCULAR BRACKET (WITH BORE)		925F		
F26	METAL SEMICIRCULAR BRACKET (WITH BORE)		926F		
F28	METAL SEMICIRCULAR BRACKET (WITH BORE)		928F		
F32	METAL SEMICIRCULAR BRACKET (WITH BORE)		932F		
F40	METAL SEMICIRCULAR BRACKET (WITH BORE)		940F		
F42	METAL SEMICIRCULAR BRACKET (WITH BORE)		942F		
F50	METAL SEMICIRCULAR BRACKET (WITH BORE)		950F		
F63	METAL SEMICIRCULAR BRACKET (WITH BORE)		963F		
LOAD CAPACITY		Tension load / Shear load [N]			
PRODUCT GROUP	APPLICATION *:	H	R60	R90	R120
F6 – F18		20 / -		3 / -	
F20 – F63		NPD***			
* Application:		Applied safety factor:			
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load			
R60 – fireproof application up to 60 minutes					
R90 – fireproof application up to 90 minutes		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.			
R120 – fireproof application up to 120 minute					
** Fixed on reinforced concrete structure with EKA M6 anchor screw					
*** NPD – No Performance Determined					
Load capacity of fixing elements				Annex no. 2	

ABT NYLON BRACKET COMBINABLE SIZE FOR TRAKIT BOLT FIRING TOOL				
Product group	Trade name of the product	Art. no.	Raw material	
ABT 14/18	ABRANYL-TRAK,COMBINABLE SIZE, SHOOTING PLASTIC BRACKET 14-18 GREY	918ABT	PA 6 / nylon	
ABT 20/25	ABRANYL-TRAK, COMBINABLE SIZE, SHOOTING PLASTIC BRACKET 20-25 GREY	925ABT		
ABT 26/32	ABRANYL-TRAK, COMBINABLE SIZE, SHOOTING PLASTIC BRACKET 26-32 GREY	932ABT		
ABT 35/42	ABRANYL-TRAK , COMBINABLE SIZE, SHOOTING PLASTIC BRACKET 35-42 GREY	942ABT		
LOAD CAPACITY		Tension load / Shear load [N]		
PRODUCT GROUP	BEARING STRUCTURE:	Steel	(Reinforced)concrete**	Aerated concrete***
	APPLICATION *:	H	H	H
ABT 14/18		160 / 160 ^{1, 2}	80 / 80 ² 160 / 160 ^{3, 4}	50 / 60 ^{5, 6}
ABT 20/25				
ABT 26/32				
ABT 35/42				
* Application: H – Not fireproof application		Applied safety factor: In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load		
** Concrete of minimum C-16/20 strength. In concrete of lower strength than above the application of 27 XHA or 32 XHA nails is required.				
*** Masonry built of aerated concrete of 400-500 kg/m ³ strength class at least, and of 3 N/mm ² compressive strength at least				
¹ fixed with 13 XHA nail ² fixed with 17 XHA nail ³ fixed with 19 XHA nail ⁴ fixed with 22 XHA nail ⁵ fixed with 27 XHA nail ⁶ fixed with 32 XHA nail				
Load capacity of fixing elements			Annex no. 2	

MC CLAMP ADJUSTABLE IN LINE PLASTIC BRACKET				
Product group	Trade name of the product	Art. no.	Raw material	
MC 16	MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M16	916MC	PP	
MC 20	MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M20	920MC		
MC 25	MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M25	925MC		
MC 32	MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M32	932MC		
MC 40	MULTICLIP PLASTIC CLAMP ADJUSTABLE IN LINE BRACKET M40	940MC		
LOAD CAPACITY		Tension load / Shear load [N]		
PRODUCT GROUP	BEARING STRUCTURE:	(Reinforced)concrete **	Solid brick**	Chipboard ***
	APPLICATION *:	H	H	H
MC 16		20 / 20	20 / 20	20 / 20
MC 20				
MC 25				
MC 32				
MC 40				
* Application: H – Not fireproof application		Applied safety factor: In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load		
** Mounted with M6 or M8 plastic dowel with collar and chipboard screws.				
*** Mounted with chipboard screws.				
Load capacity of fixing elements			Annex no. 2	

UT CLAMP ADJUSTABLE IN LINE PLASTIC BRACKET				
Product group	Trade name of the product	Art. no.	Raw material	
UT 16	UTRAK ADJUSTABLE IN LINE, SHOOTING BRACKET M16	916UT	HDPE	
UT 20	UTRAK ADJUSTABLE IN LINE, SHOOTING BRACKET M20	920UT		
UT 25	UTRAK ADJUSTABLE IN LINE, SHOOTING BRACKET M25	925UT		
UT 32	UTRAK ADJUSTABLE IN LINE, SHOOTING BRACKET M32	932UT		
UT 40	UTRAK ADJUSTABLE IN LINE, SHOOTING BRACKET M40	940UT		
LOAD CAPACITY		Tension load / Shear load [N]		
PRODUCT GROUP	BEARING STRUCTURE:	(Reinforced) concrete **	Solid brick **	Chipboard **
	APPLICATION *:	H	H	H
UT 16		20 / 20	20 / 20	20 / 20
UT 20				
UT 25				
UT 32				
UT 40				
* Application: H – Not fireproof application		Applied safety factor: In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load		
** Mounted with TRAKIT nail.				
Load capacity of fixing elements			Annex no. 2	

GRAPATRAK „FP” SINGLE AND „FPD” DOUBLE PLASTIC SEMICIRCULAR BRACKET FOR TRAKIT BOLT FIRING TOOL

Product group	Trade name of the product	Art. no.	Raw material	
FP 16	GRAPATRAK ,SEMICIRCULAR PLASTIC PIPE FASTENER FP 16	916FP	HDPE	
FP 20	GRAPATRAK, SEMICIRCULAR PLASTIC PIPE FASTENER FP 20	920FP		
FP 25	GRAPATRAK , SEMICIRCULAR PLASTIC PIPE FASTENER FP 25	925FP		
FP 32	GRAPATRAK , SEMICIRCULAR PLASTIC PIPE FASTENER FP 32	932FP		
FPD 16	GRAPATRAK, DOUBLE SEMICIRCULAR PLASTIC PIPE FASTENER FPD16	916FPD		
FPD 20	GRAPATRAK , DOUBLE SEMICIRCULAR PLASTIC PIPE FASTENER FPD20	920FPD		
FPD 25	GRAPATRAK, DOUBLE SEMICIRCULAR PLASTIC PIPE FASTENER FPD25	925FPD		

LOAD CAPACITY		Tension load / Shear load [N]		
PRODUCT GROUP	BEARING STRUCTURE:	(Reinforced) concrete **	Steel**	Aerated concrete**
	APPLICATION *:	H	H	H
FP 16 - FP 32		15 / 15	15 / 15	15 / 15
FPD 16 - FPD 25		10 / 10	10 / 10	10 / 10

* Application:

H – Not fireproof application

Applied safety factor:

In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is **5.0** for both tension and shear load

** Mounted with TRAKIT.

Load capacity of fixing elements

Annex no. 2

„RIFL” AND „RIEL” STEEL BRACKET WITH EPDM RUBBER INSULATION M8 WITH INTERNAL THREAD				
Product group	Trade name of the product	Art. no.	Raw material	C1018 steel, zinc layer thickness ≥ 7 μm
RIFL 15	METAL BRACKET WITH RUBBER INSULATION ONE-SIDED M8 15	915RIFL		
RIFL 18	METAL BRACKET WITH RUBBER INSULATION ONE-SIDED M8 18 (3/8")	918RIFL		
RIFL 122	METAL BRACKET WITH RUBBER INSULATION ONE-SIDED M8 22 (1/2")	922RIFL		
RIFL 28	METAL BRACKET WITH RUBBER INSULATION ONE-SIDED M8 28 (3/4")	928RIFL		
RIFL 35	METAL BRACKET WITH RUBBER INSULATION ONE-SIDED M8 35 (1")	935RIFL		
RIFL 40	METAL BRACKET WITH RUBBER INSULATION ONE-SIDED M8 40 (5/4")	940RIFL		
RIFL 48	METAL BRACKET WITH RUBBER INSULATION ONE-SIDED M8 48 (6/4")	948RIFL		
RIFL 60	METAL BRACKET WITH RUBBER INSULATION ONE-SIDED M8 60 (2")	960RIFL		
RIEL 15	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 18 (3/8")	918RIEL		
RIEL 22	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 22 (1/2")	922RIEL		
RIEL 28	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 28 (3/4")	928RIEL		
RIEL 35	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 35 (1")	935RIEL		
RIEL 40	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 42 (1 1/4")	940RIEL		
RIEL 50	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 50 (1 1/2")	950RIEL		
RIEL 55	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, 54	955RIEL		
RIEL 60	HIGH LOAD CAPACITY RUBBERED BRACKET M8 WITH THREAD, (2")	960RIEL		
LOAD CAPACITY		Tension load / Shear load [N]		
PRODUCT GROUP	APPLICATION *:	H		
RIFL 15 – RIFL 60 RIEL 15 – RIEL 60		240 / 1000		
* Application:		Applied safety factor:		
H – Not fireproof application		In case of not fireproof use the ratio of the minimum damage loads and the maximum permissible operating loads indicated in the table is 5.0 for both tension and shear load		
		In case of fireproof use there is no safety factor, the load capacity data were determined directly on the basis of the tests of each item.		
Load capacity of fixing elements			Annex no. 2	