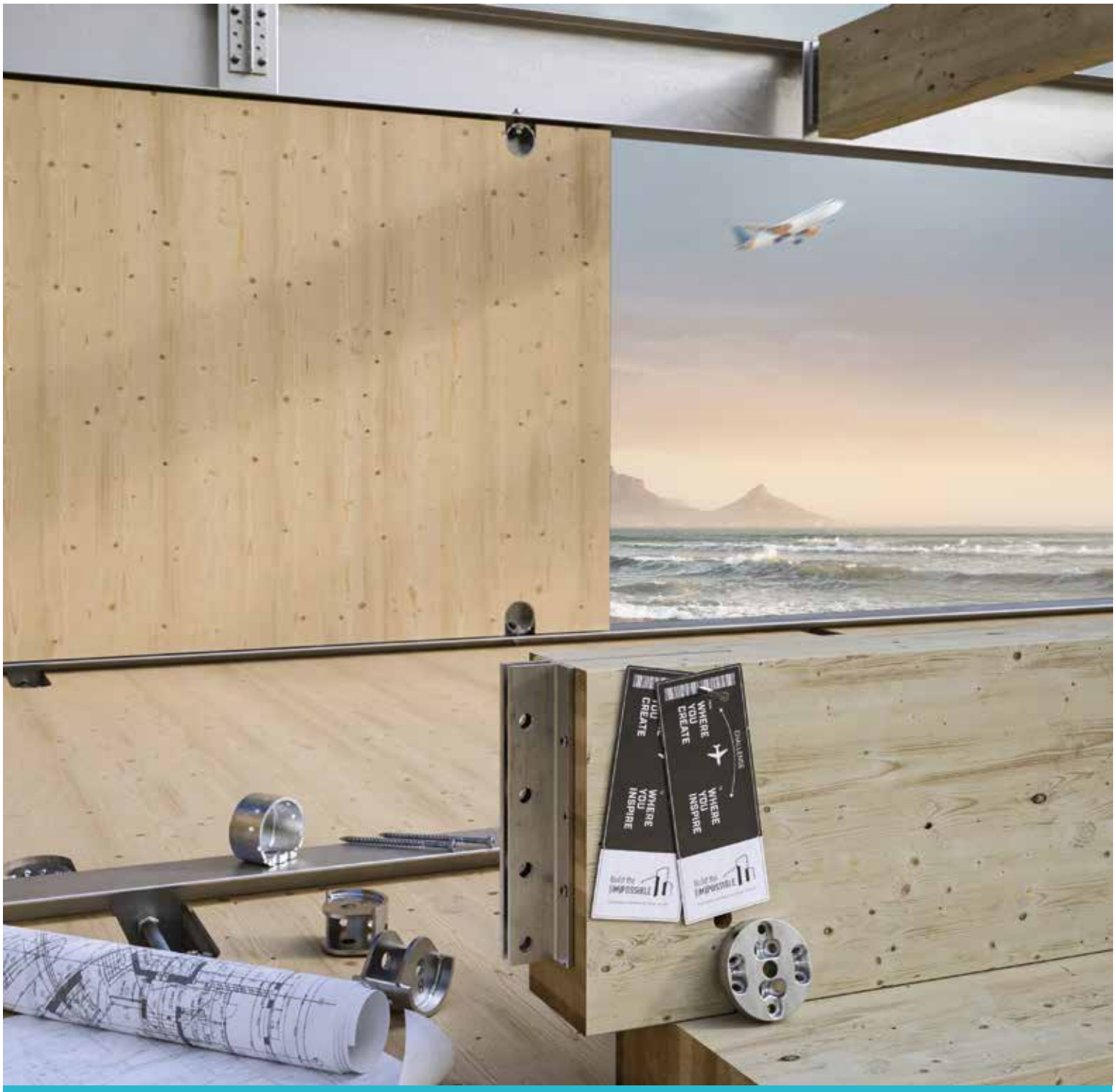
Build the
(IM)POSSIBLE

Rothoblaas' International Design Contest



PRODUCTS FOR HYBRID BUILDINGS

rothoblaas | Solutions for Building Technology

LOCK C CONCRETE

CONCEALED HOOK TIMBER-TO-CONCRETE CONNECTOR

SIMPLE
Quick installation on concrete. Easy to hook system with screw-in anchors on the concrete side and self-drilling screws on the wood side.

REMOVABLE
Thanks to the hooking system, the wooden beams can be easily removed for seasonal requirements.

OUTDOOR
They can be used outdoors in SC3 in the absence of aggressive conditions. The correct choice of screw enables all fastening requirements to be met.

USA, Canada and more design values available online.

VIDEO

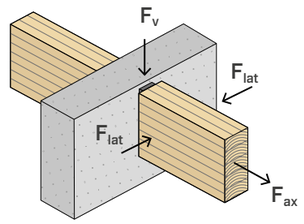
CALCULATION TOOL

CE
ETA-19/0831

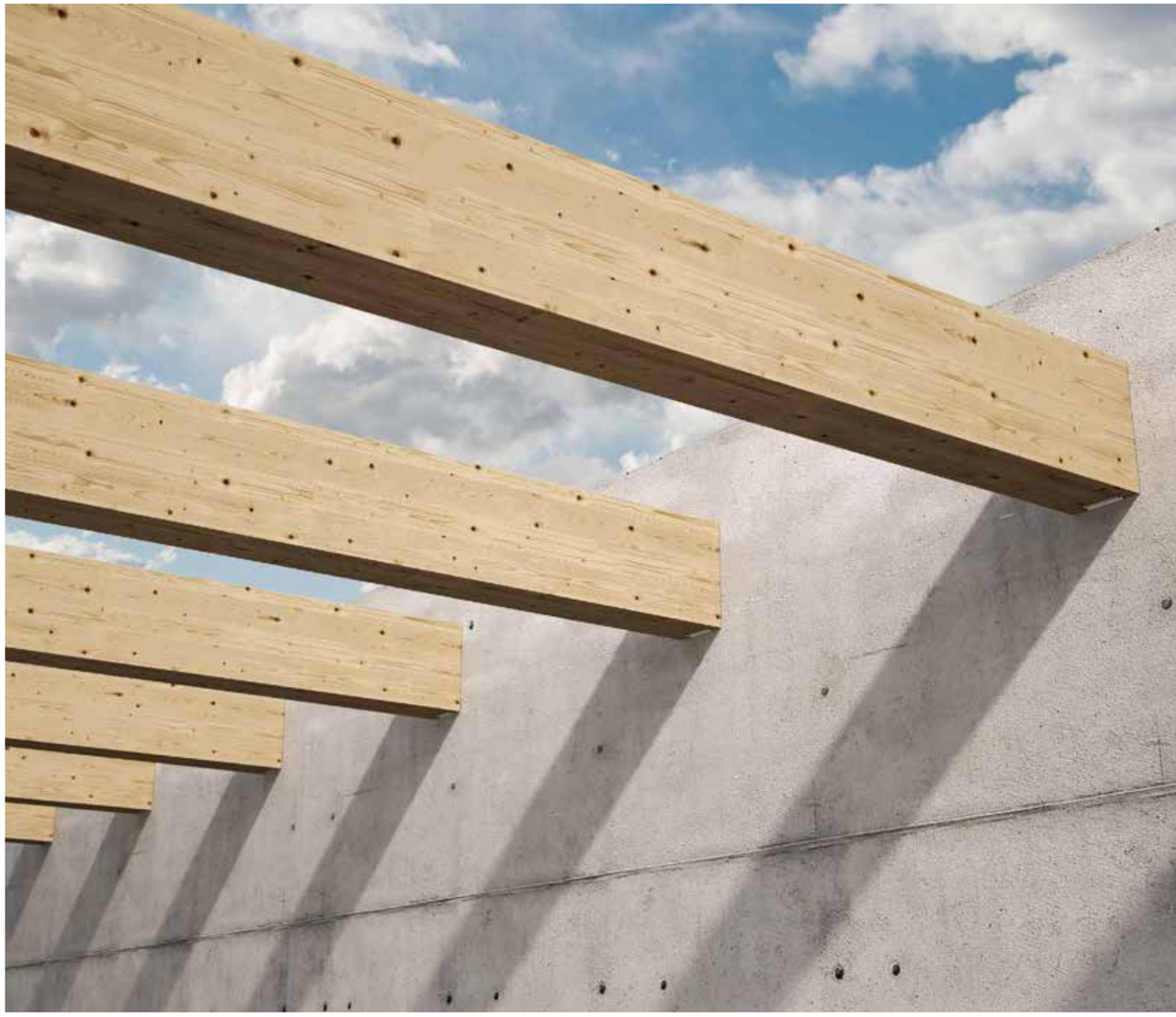
SERVICE CLASS
SC1 SC2 SC3

For information on the application areas of with reference to environment service class, atmospheric corrosivity class and timber corrosion class, refer to the website www.rothoblaas.com.

MATERIAL
alu 6005A EN AW-6005A aluminium alloy

EXTERNAL LOADS


VIDEO
Scan the QR Code and watch the video on our YouTube channel



FIELDS OF USE
Concealed beam joint in timber-to-concrete or timber-to-steel configuration, suitable for gazebos, floors or roofs. Use also outdoors in non aggressive environments.

Can be applied to:
- solid timber softwood and hardwood
- glulam, LVL

HYBRID STRUCTURES
Specially designed for fastening timber beams to concrete or steel supports.
Ideal for hybrid structures.

TIMBER-TO-CONCRETE
Ideal for the construction of roofs or pergolas near concrete supports. Concealed fastening and easy to install.

LOCK FLOOR

JOINT PROFILE FOR PANELS

MULTI-STOREY WALLS

Ideal for connecting floor panels to multi-story walls (concrete or timber). The hooking system enables installation without the use of shoring or temporary support structures.

FAST INSTALLATION

The profiles can be pre-installed on panels and walls, without additional fastening on site during installation.

HYBRID STRUCTURES

The LOCKCFLOOR135 model is ideal for fastening timber floors to steel or timber structures.

USA, Canada and more design values available online.

VIDEO

DESIGN REGISTERED

CE ETA-19/0831

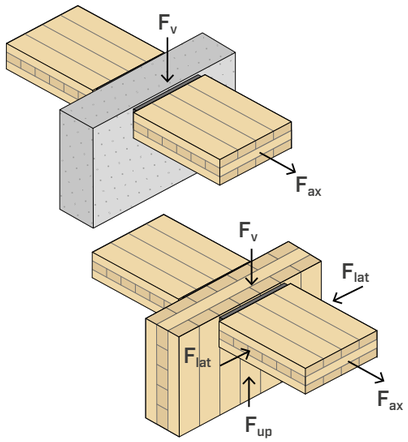
SERVICE CLASS SC1 SC2 SC3

For information on the application areas of with reference to environment service class, atmospheric corrosivity class and timber corrosion class, refer to the website www.rothoblaas.com.

MATERIAL

alu 6005A EN AW-6005A aluminium alloy

EXTERNAL LOADS



FIELDS OF USE

Concealed panel joint in timber-to-timber, timber-to-concrete or timber-to-steel configuration, suitable for panel floors, façades or stairs.

Can be applied to:

- CLT
- LVL
- MPP

PREFABRICATION

The timber-to-timber version is specifically designed for attaching floors to multi-story CLT walls. The hooking system is particularly suitable for prefabricated floors.

STAIRS AND OTHER

The geometry of the connector is also suitable for non-standard applications, as the installation of timber staircases, prefabricated façades and more.

ALUMAXI

CONCEALED BRACKET WITH AND WITHOUT HOLES

POST AND BEAM CONSTRUCTIONS

Standard connection designed for optimum strength for post and beam systems. By using SBD self-drilling dowels, a tolerance of up to 46 mm (± 23 mm) along the beam axis can be accommodated to fit installation tolerances.

NEW GEOMETRY

Optimised shape thanks to the new high-strength aluminium alloy EN AW-6082. Reduced weight and easier insertion of SBD self-drilling dowels.

FAST FASTENING

Certified strengths calculated in all directions: vertical, horizontal and axial. Certified fastening with LBS screws and SBD self-drilling dowels.

USA, Canada and more design values available online.

VIDEO

MY PROJECT SOFTWARE

DESIGN REGISTERED

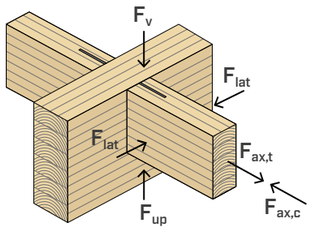
CE ETA-09/0361

SERVICE CLASS SC1 SC2 SC3

MATERIAL

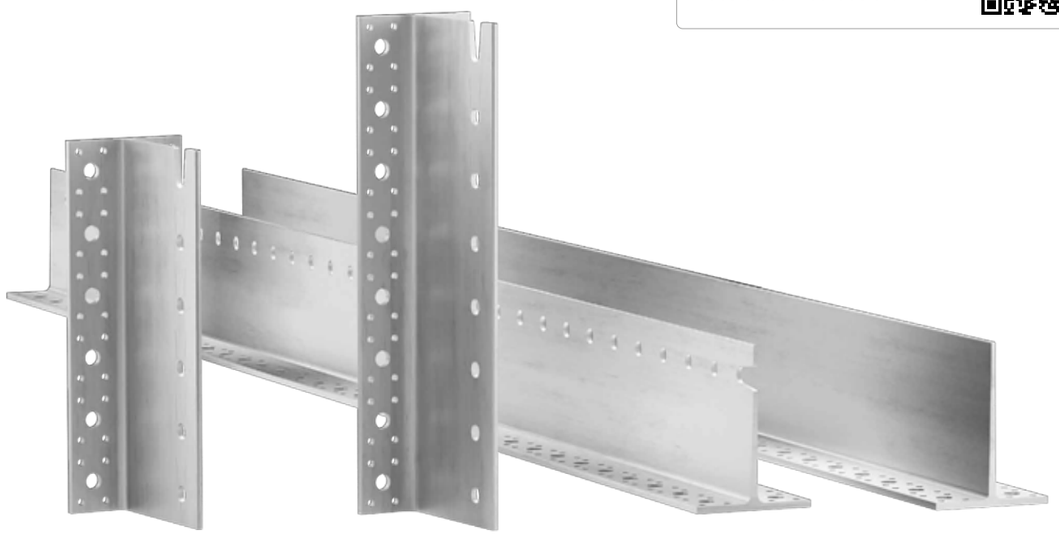
alu 6082 EN AW-6082 aluminium alloy

EXTERNAL LOADS



VIDEO

Scan the QR Code and watch the video on our YouTube channel



FIELDS OF USE

Concealed beam joints in timber-to-timber, timber-to-concrete or timber-to-steel configurations, suitable for large roofs, floors and post-and-beam constructions. Use also outdoors in non aggressive environments.

Can be applied to:

- glulam, softwood and hardwood
- LVL

FIRE RESISTANCE

The low weight of the steel - aluminium alloy facilitates easy transportation and on-site movements, while guaranteeing a very high strength. Being a concealed joint, it satisfies the fire safety requirements.

SIDE-BY-SIDE INSTALLATION

For high stresses or in the case of wide beams, two brackets can be placed side by side and fastened with long SBD dowels.

ALUMEGA

PINNED CONNECTION FOR POST AND BEAM

POST AND BEAM CONSTRUCTIONS

It standardizes the beam-to-beam and beam-to-column connections for post-and-beam systems, even with large spans. Modular components and various fastening possibilities solve all types of connections on timber, concrete or steel.

TOLERANCE AND ASSEMBLY

Axial tolerance up to 8 mm (±4 mm) to accommodate installation inaccuracies. The upper notch allows using a bolt as a positioning aid. The connection can be pre-assembled in the factory and completed on site with bolts.

ROTATIONAL COMPATIBILITY

Slotted holes allow rotation of the connector and ensure hinged structural behaviour. The rotation of the connector is compatible with the inter-story drift caused by earthquake and wind actions, reducing momentum transfer and structural damage.

USA, Canada and more design values available online.

VIDEO

CALCULATION TOOL

DESIGN REGISTERED

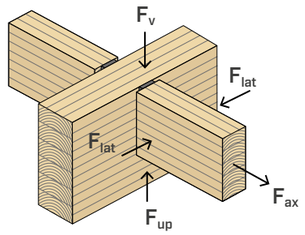
CE ETA-23/0824

SERVICE CLASS SC1 SC2 SC3

MATERIAL

alu 6082 EN AW-6082 aluminium alloy

EXTERNAL LOADS



VIDEO

Scan the QR Code and watch the video on our YouTube channel

HP

HV

JV

JS

FIELDS OF USE

Concealed joint for beam in timber-to-timber, timber-to-concrete or timber-to-steel configuration, suitable for floors and post and beam constructions, even with large spans. Use also outdoors in non aggressive environments.

Can be applied to:

- glulam, softwood and hardwood
- LVL

FIRE

The multiple installation methods allow for concealed installation and fire protection at all times, possibly by inserting FIRE STRIPE GRAPHITE to seal the joist-header interface.

HYBRID STRUCTURES

The HP version can be fixed on timber, concrete or steel. Ideal for hybrid timber-to-concrete or timber-to-steel structures.

DISC FLAT

REMOVABLE CONCEALED CONNECTOR

UNIVERSAL

Resistant to forces in all directions due to clamping of elements by through-rod. It can be installed on any timber surface and attached to any support by means of a bolt.

PREFABRICATION

Simple to install thanks to the possibility of being tightened after the assembly. The connector can be mounted off-site and fastened on-site with a simple bolt.

DISASSEMBLED

Usable for temporary structures, it can be easily removed thanks to the pass-through rod.

USA, Canada and more design values available online.

VIDEO

DESIGN REGISTERED

CE ETA-19/0706

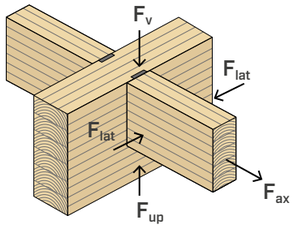
SERVICE CLASS SC1 SC2

MATERIAL

S235 Fe/Zn5c

S235 bright zinc plated Fe/Zn5c carbon steel.

EXTERNAL LOADS



VIDEO

Scan the QR Code and watch the video on our YouTube channel

DISCF120

DISCF80

DISCF55

FIELDS OF USE

Concealed joints for beams and columns in timber-to-timber, timber-to-steel or timber-to-concrete configuration, suitable for hybrid structures, non-standard situations or special requirements.

Can be applied to:

- solid timber softwood and hardwood
- glulam, LVL

DISASSEMBLED

Completely concealed joint to ensure a pleasant aesthetic appearance. It can be disassembled by removing the bolt.

OUTDOOR

On special request and depending on quantities, available in a painted version or with increased zinc thickness for better corrosion resistance for outdoor applications.

RADIAL

REMOVABLE CONNECTOR FOR BEAMS AND PANELS

PREFABRICATION AND DISASSEMBLY
By pre-installing the connectors at the factory, fastening on site is reduced to a few simple steel bolts for maximum installation reliability. Disassembling the connection is quick and easy.

TOLERANCE
By using RADIALKIT components, it is possible to have a tensile connection with exceptional installation tolerance. The connection remains concealed in the wall thickness.

BEAMS, WALLS AND COLUMNS
Ideal for making connections for either walls, beams and columns (gerber saddles, hinge joints, etc.). Ideal for hybrid timber-to-steel structures.

MODULAR BUILDINGS
The concealed connection is ideal for prefabricated buildings with volumetric modules.

USA, Canada and more design values available online.

VIDEO

CALCULATION TOOL

DESIGN REGISTERED

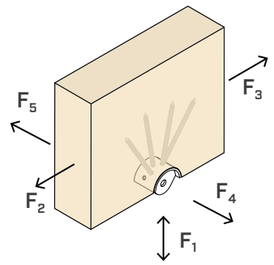
CE ETA-24/0062

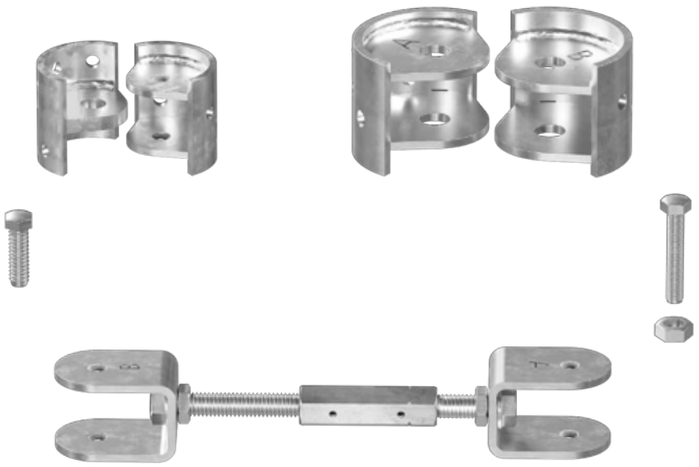
SERVICE CLASS SC1 SC2

MATERIAL

S355 Fe/Zn12c S355 + Fe/Zn12c carbon steel

EXTERNAL LOADS





FIELDS OF USE
Connections between CLT or LVL panels resistant in all directions.
Hinge connections between glulam beams.
Highly prefabricated and demountable construction systems.

Can be applied to:
- CLT or LVL walls and floors
- solid timber, glulam or LVL beams or columns

RADIALKIT
It makes it possible to create tensile connections for walls, without the need to fix screws on site. The connection is completed by inserting the bolts from inside the building without the need for external scaffolding.

BRACINGS
The RADIAL60S connector is ideal for fastening steel bracing to timber beams or columns.

RING

REMOVABLE CONNECTOR FOR STRUCTURAL PANELS

DOUBLE INCLINATION

Thanks to the double inclination of the screws, the connectors can be pre-installed in the factory or inserted on site. The installation of inclined screws is facilitated by the special geometry of the connector.

TIMBER-TO-TIMBER VERSION

The version with screws (RING60T) is ideal for connections between CLT panels as a floor-to-floor, floor-to-wall or wall-to-wall joint system. Installable on site, it allows positioning the panels according to any inclination and tolerances.

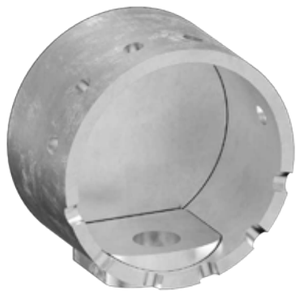
TIMBER-TO-STEEL VERSION

The bolted version (RING90C) is ideal for timber-to-steel connections in hybrid structures, or timber-to-timber connections using two connectors. No additional components required, simple bolting with M16.

EFFICIENT

The high strength of the connector makes it possible to reduce the number of fastenings. In the factory, simple processing of the panel is required, resulting in easy transport and installation, speeded up by operations performed only on one side of the wall.

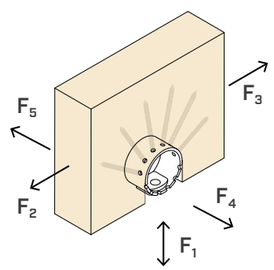
USA, Canada and more design values available online.



VIDEO

CALCULATION TOOL

SERVICE CLASS	SC1 SC2
MATERIAL	S355 Fe/Zn12c — S355 + Fe/Zn12c carbon steel
EXTERNAL LOADS	



UNIVERSAL

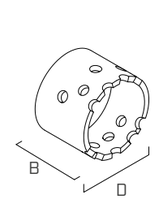
The **RING60T** connector can be used for all connections between CLT panels such as wall-to-wall, wall-to-floor or floor-to-floor.

DISASSEMBLED

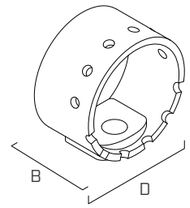
The **RING90C** model can be used for timber-to-steel connections in hybrid structures. Easy to disassemble thanks to the M16 bolt.

CODES AND DIMENSIONS

	CODE	D [mm]	B [mm]	*D [in]*	*B [in]*	n Ø8 *n Ø0.30* [pcs]	n Ø18 *n Ø0.71* [pcs]	pcs
1	**RING60T**	60	45	*2 3/8*	*1 3/4*	4+5	-	5
2	**RING90C**	90	50	*3 1/2*	*1 15/16*	6	1	5



1



2

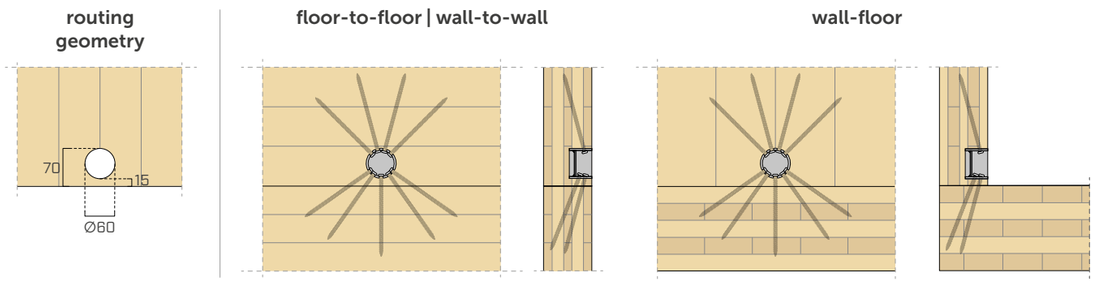
FASTENERS

type	description		d [mm]	support	page
LBS HARDWOOD EVO	C4 EVO round head screw on hardwoods		7		572
KOS	hexagonal head bolt		16		168

For further details please see the "TIMBER SCREWS AND DECK FASTENING" catalogue.

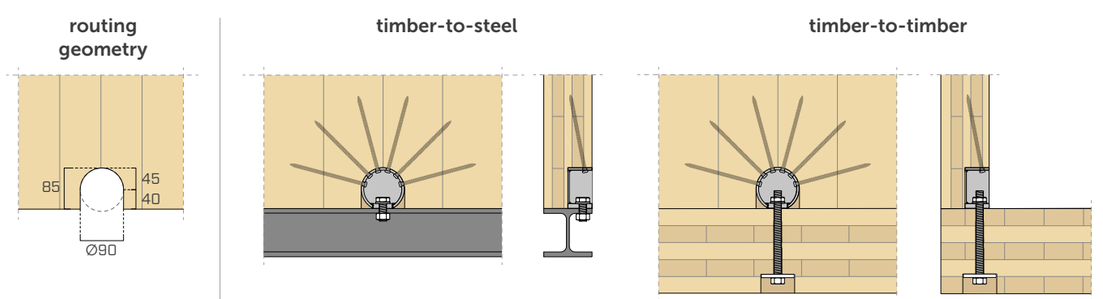
INSTALLATION

RING60T



RING60T enables timber-to-timber connections to be made. The connector is fastened to the first timber component inside a simple circular hole 60 mm in diameter and 45 mm deep. It is fastened to the first timber component with 4 LBS HARDWOOD EVO Ø7 screws; the timber-to-timber connection is completed by inserting further 5 LBS HARDWOOD EVO Ø7 screws. It can be pre-installed in the factory or, in the case of a floor-to-ceiling or wall-to-wall connection, it can be installed after the panels have been installed, thanks to the double inclination of the screws.

RING90C



RING90C is fastened to the timber component with 6 LBS HARDWOOD EVO Ø7screws. It has a hole for inserting an M16 bolt, which can be fastened to other structural components made of steel, concrete or timber. The main application is within hybrid timber-to-steel structures but it is possible to make timber-to-timber connections using two opposing connectors or a timber bolt. The connector is easily disassembled by undoing the bolt.

X-RAD

X-RAD CONNECTION SYSTEM

REVOLUTIONARY
A radical innovation in timber constructions, It redefines the standard for shear, resistance, transportation the assembling and resistance of CLT panels. X-RAD offers excellent static and seismic performance.

PATENTED
Handling and assembly of ultra-rapid CLT walls and floors. Drastic reduction of assembly time, construction site errors and risk of injury.

STRUCTURAL SAFETY
Ideal connection system for seismic design with tested and certified ductility values (CE - ETA-15/0632).

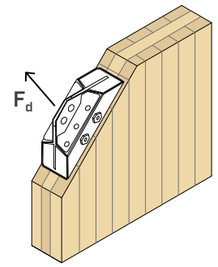
VIDEO

SOFTWARE

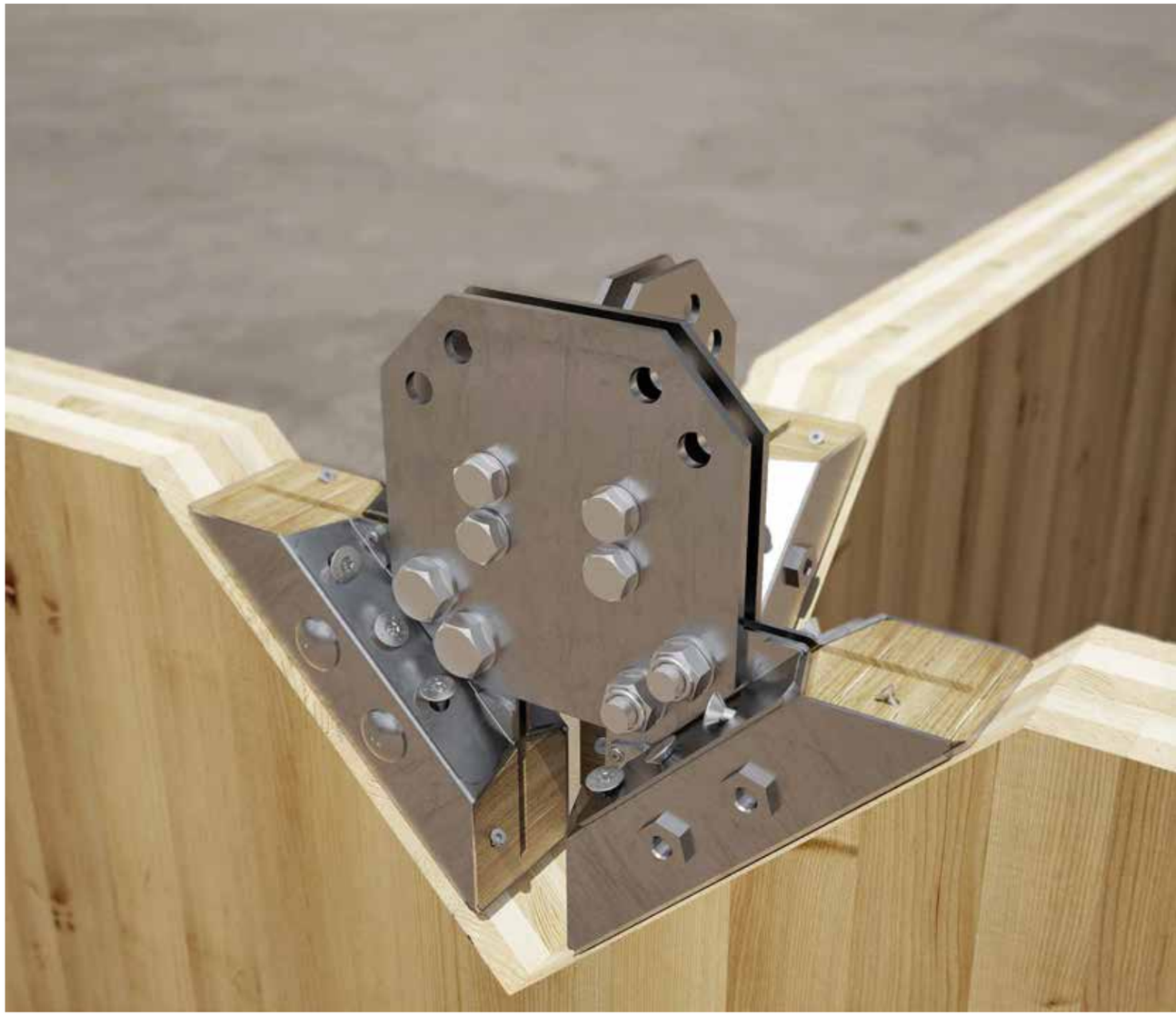
PATENTED

ETA-15/0632

SERVICE CLASS	SC1	SC2
EXTERNAL LOADS		



VIDEO
Scan the QR Code and watch the video on our YouTube channel



The complete **technical data sheet** is available at **www.rothoblaas.com**

FIELDS OF USE
Transportation, assembling and realization of timber buildings with CLT (Cross Laminated Timber) structure.

INNOVATION
The metal box element incorporates a multi-layer beechwood profile which is connected to the angles of the CLT walls with full thread screws.

PROTECTION
The use of insulating panels and self-adhesive protection membranes for CLT walls at the ground connection ensures the structure durability.

TC FUSION TIMBER-CONCRETE FUSION

VIDEO CALCULATION TOOL

CE ETA-22/0806

TIMBER-TO-CONCRETE JOINT SYSTEM

HYBRID STRUCTURES

The VGS, VGZ and RTR full-thread connectors are now certified for any type of application where a timber element (wall, ceiling, etc.) must transmit stresses to a concrete element (bracing core, foundation, etc.).

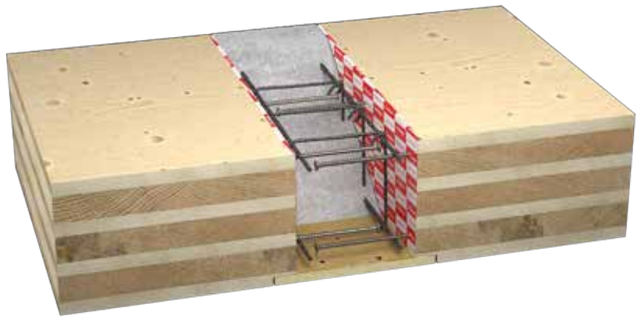
PREFABRICATION

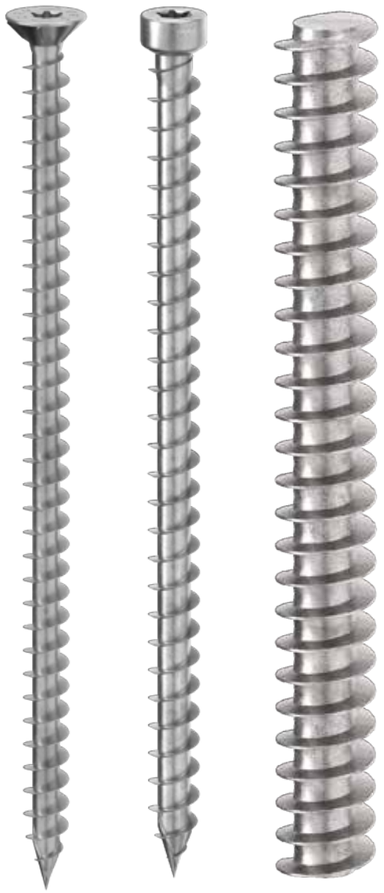
The concrete prefabrication combines with timber prefabrication: the reinforcing bars inserted into the concrete casting accommodate the full thread timber connectors; the supplementary casting carried out after installing the timber components completes the connection.

POST AND SLAB SYSTEMS

It allows connections between CLT panels with exceptional strength and stiffness for shear, bending moment and axial stress. It is the natural complement to the SPIDER and PILLAR systems.

USA, Canada and more design values available online.



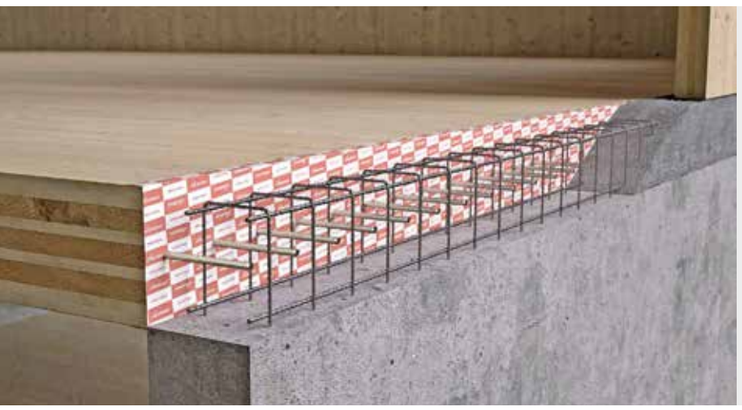


VGS VGZ RTR

CHARACTERISTICS

FOCUS	timber-to-concrete joints with resistance in all directions
DIAMETER	screws Ø9 mm, Ø11 mm, Ø13 mm, Ø16 mm
FASTENERS	VGS, VGZ and RTR
CERTIFICATION	CE marking in accordance with ETA-22/0806

VIDEO
Scan the QR Code and watch the video on our YouTube channel



FIELDS OF USE

Moment, shear and axial load resistant connections for CLT panels.
The high stiffness of reinforced concrete allows for strong resistant connections in all directions with high stiffness.

Can be applied to:
- floors or walls with CLT or LVL panels.

SPIDER AND PILLAR

TC FUSION complements the SPIDER and PILLAR systems, allowing the implementation of moment connections between panels. Rothoblaas waterproofing systems make it possible to separate timber and concrete.

CONSTRUCTION JOINTS

TC FUSION can be used in conjunction with construction joint systems to connect panel floors and the bracing core with a small addition to the casting.

HBS PLATE

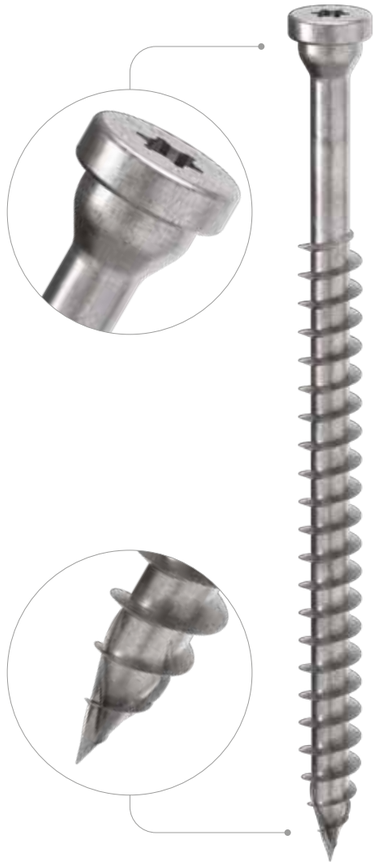
PAN HEAD SCREW FOR PLATES

ICC-ES AC233 ESR-4645 · CE ETA-11/0030

NEW GEOMETRY
The inner core diameter of the Ø8, Ø10 and Ø12 mm screws has been increased to ensure higher performance in thick plate applications. In steel-timber connections, the new geometry achieves a strength increase of more than 15%.

PLATE FASTENING
The under-head shoulder achieves an interlocking effect with the circular hole in the plate, thus guaranteeing excellent static performance. The edgeless geometry of the head reduces stress concentration points and gives the screw strength.

3 THORNS TIP
Thanks to the 3 THORNS tip, minimum installation distances are reduced. More screws can be used in less space and larger screws in smaller elements. Costs and time for project implementation are reduced.



MY PROJECT SOFTWARE · MANUALS

BIT INCLUDED

DIAMETER [mm]	3	8 – 12	12
LENGTH [mm]	25	60 – 200	200
SERVICE CLASS	SC1 SC2		
ATMOSPHERIC CORROSIVITY	C1 C2		
WOOD CORROSIVITY	T1 T2		
MATERIAL	Zn ELECTRO PLATED	electrogalvanized carbon steel	

METAL-to-TIMBER recommended use:

NO IMPACT · TORQUE LIMITER · $M_{ins,rec}$

FIELDS OF USE

- timber based panels
- solid timber
- glulam (Glued Laminated Timber)
- CLT and LVL
- high density woods

SBD

SPINOTTO AUTOFORANTE

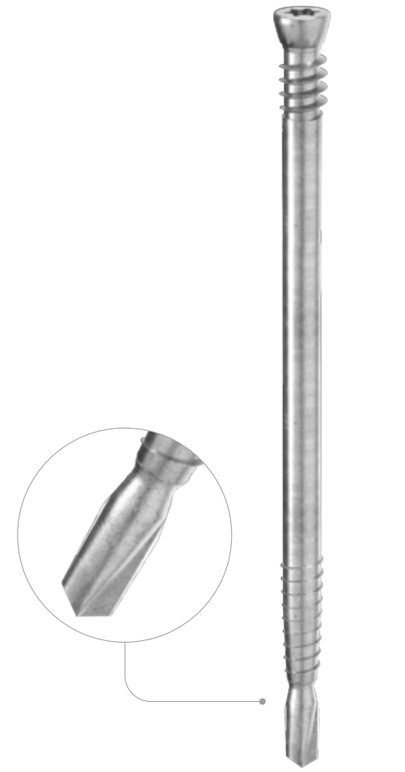
CE EN 14592

PUNTA AFFUSOLATA
La nuova punta autoforante affusolata riduce al minimo i tempi di inserimento in sistemi di connessione legno-metallo e garantisce applicazioni in posizioni difficili da raggiungere (forza di applicazione ridotta).

MAGGIOR RESISTENZA
Resistenze a taglio superiori rispetto alla versione precedente.
Il diametro di 7,5 mm garantisce resistenze a taglio superiori rispetto ad altre soluzioni sul mercato e consente di ottimizzare il numero dei fissaggi.

DOPPIO FILETTO
Il filetto a ridosso della punta (b_1) agevola l'avvitamento. Il filetto sottotesta (b_2) di lunghezza maggiorata consente una chiusura rapida e precisa del giunto.

TESTA CILINDRICA
Permette di far penetrare lo spinotto oltre la superficie del substrato in legno. Garantisce una resa estetica ottimale e permette di soddisfare i requisiti di resistenza al fuoco.

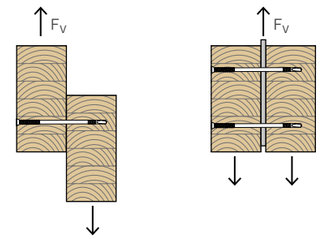


MY PROJECT SOFTWARE · VIDEO

BIT INCLUDED

DIAMETRO [mm]	7,5	7,5	20
LUNGHEZZA [mm]	55	235	1000
CLASSE DI SERVIZIO	SC1 SC2		
CORROSIVITÀ ATMOSFERICA	C1 C2		
CORROSIVITÀ DEL LEGNO	T1 T2		
MATERIALE	Zn ELECTRO PLATED	acciaio al carbonio elettrozincato	

SOLLECITAZIONI



CAMPI DI IMPIEGO

Sistema autoforante per giunzioni a scomparsa legno-acciaio e legno-alluminio.
Utilizzabile con avvitatori da 600-2100 rpm, forza applicata minima 25 kg, con:

- acciaio S235 ≤ 10,0 mm
- acciaio S275 ≤ 10,0 mm
- acciaio S355 ≤ 10,0 mm
- staffe ALUMINI, ALUMIDI e ALUMAXI

COMPLEMETARY PRODUCTS

HUS

TURNED WASHER

UKTA-0836 22/6195 | AC233 | AC257 ESR-4645 | AC233 ESR-4645 | ETA-11/0030

COMPATIBILITY
It is the ideal coupling for countersunk screws (HBS, VGS, SBS-SPP, SCI, etc.) when the axial strength of the connection is to be increased.

TIMBER-TO-METAL
It is the optimal choice for connections on metal plates with cylindrical holes.

HUS EVO
The HUS EVO version increases the washer's corrosion resistance due to the special surface treatment. This allows it to be used in service class 3 and atmospheric corrosion class C4.

HUS 15°
The 15° angled washer is specifically designed for particular timber-to-metal applications where just a small angle is needed for screw insertion. The HUS BAND double-sided adhesive tape holds the washer in place during overhead applications.

MY PROJECT SOFTWARE

MATERIAL

HUS 15°

alu — aluminium alloy EN AW 6082-T6 — SC3 C2 T3

HUS

Zn ELECTRO PLATED — electrogalvanized carbon steel — SC2 C2 T2

HUS EVO

C4 EVO COATING — carbon steel with C4 EVO coating — SC3 C4 T3

HUS A4

A4 AISI 316 — A4 | AISI316 austenitic stainless steel — SC4 C5 T5

HUS

HUS 15°

HUS EVO

HUS A4

FIELDS OF USE

- thin, thick metal plates with cylindrical holes
- timber based panels
- solid timber and glulam
- CLT and LVL
- high density woods

VGU

45° WASHER FOR VGS

UKTA-0836 22/6195 | AC233 ESR-4645 | ETA-11/0030

SAFETY
The VGU washer makes possible to install VGS screws at a 45° angle on steel plates. Washer marked CE as per ETA-11/0030.

PRACTICALITY
The ergonomic shape ensures a firm, precise grip during installation. Three versions of washer, compatible with VGS in diameter 9, 11 and 13 mm, are available for plates of variable thickness.
The use of the VGU allows the use of inclined screws on plate without re-sorting to countersunk holes on the plate, which is generally a time-consuming and costly operation.

C4 EVO COATING
VGU EVO is coated with a surface treatment resistant to high atmospheric corrosivity.
Compatible with VGS EVO diameter 9, 11 and 13 mm.

VGU

VGU EVO

VIDEO | MANUALS

DIAMETER [mm] — 9 | 13 | 15

MATERIAL

Zn ELECTRO PLATED — electrogalvanized carbon steel — SC2 C2 T2

C4 EVO COATING — carbon steel with C4 EVO coating — SC3 C4 T3

METAL-to-TIMBER recommended use:

NO IMPACT | TORQUE LIMITER | $M_{ins,rec}$

VIDEO
Scan the QR Code and watch the video on our YouTube channel

FIELDS OF USE

- timber based panels
- solid timber
- glulam (Glued Laminated Timber)
- CLT and LVL
- high density woods
- steel construction
- metal plates and profiles

COMPLEMETARY PRODUCTS

LBS HARDWOOD

ROUND HEAD SCREW FOR PLATES ON HARDWOODS

HARDWOOD CERTIFICATION
Special tip with embossed slit elements. ETA-11/0030 certification allows for use with high density timber without any pre-drill. Approved for structural applications subject to stresses in any direction vs the grain.

LARGER DIAMETER
Internal thread diameter increased compared to the LBS version to ensure tightening in the highest density woods. In steel-timber connections, an increase in strength of more than 15 % can be achieved.

SCREW FOR PERFORATED PLATES
Cylindrical shoulder designed for fastening metal elements. Achieves an interlocking effect with the hole in the plate, thus guaranteeing excellent static performance.

UKTA-0836 22/6195 | ETA-11/0030

MY PROJECT SOFTWARE | BIT INCLUDED

DIAMETER [mm]
3,5 — (5) — 12

LENGTH [mm]
25 — (40) (70) — 200

SERVICE CLASS
SC1 SC2

ATMOSPHERIC CORROSIVITY
C1 C2

WOOD CORROSIVITY
T1 T2

MATERIAL
Zn ELECTRO PLATED — electrogalvanized carbon steel

FIELDS OF USE
- timber based panels
- solid timber and glulam
- CLT and LVL
- high density woods
- beech, oak, cypress, ash, eucalyptus, bamboo

KOS

HEXAGONAL HEAD BOLT

CE MARKING
Metal connector with cylindrical shank with CE marking to EN 14592 to guarantee suitability for use.

HIGH RESISTANCE
Hexagonal head bolt in strength class 8.8 supplied with an incorporated nut (for the carbon steel version).

STAINLESS STEEL VERSION
Also available in A2 | AISI 304.austenitic stainless steel. Suitable for outdoor applications (SC3) up to 1 km from the sea and on class T4 acid wood.

EN 14592

KOS

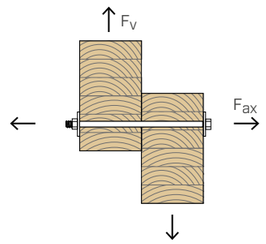
KOS A2

DIAMETER [mm)
7,5 — 12 — 20

LENGTH [mm]
55 — (100) (500) — 1000

MATERIAL
Zn ELECTRO PLATED — electro-galvanised carbon steel class 8.8 — SC2 C2 T2
A2 AISI 304 — A2 stainless steel — SC3 C4 T4

EXTERNAL LOADS



FIELDS OF USE
Assembly and structural connection of timber components for timber-to-timber and timber-to-steel shear connections
- solid timber and glulam
- CLT, LVL
- timber based panels

COMPLEMETARY PRODUCTS