

Connecting Systems

for Modern Timber Frame Construction

Connecting Your Ideas...



CE ETA

KNAPP[®]
connectors.com



Friedrich Knapp
CEO

Welcome to the World of KNAPP®!

As a manufacturer of patented connecting systems, we develop and produce high-quality products that are distributed worldwide. Our connecting systems convince and inspire you with the wide range of applications. The comprehensive service helps find the best, most efficient and innovative solution for the realization of your projects. On the following pages, you will find our connecting systems for modern timber frame construction. Every connector allows a high level of prefabrication and has the CE Marking in accordance with the European standard certification. Regular external inspections guarantee maximum security for contractors, architects, manufacturers and owners.

Our Service

The KNAPP®-Team provides competent advice and excellent service for your projects.

In Germany and Austria we offer full-coverage service by representatives on-site. You will find the right contact person easily and quickly.

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We offer full coverage customer service and technical support, Monday – Thursday 8 a.m. to 4.30 p.m. and Friday 8 a.m. to 12 p.m. Central European Time. Find your nearest representative today.

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Our Planner Service



Planner service

Our online shop is open 24-hours a day. Here you will find comprehensive information about all of our products and services. After a one-time registration, you will also be able to download detailed information about our connecting systems.

www.knapp-connectors.com/downloads

We offer comprehensive planning and engineering services as well as statics pre-dimensioning, which allows to choose the right KNAPP product. You can use the pre-measurement tool on our website or contact us directly and work with our experienced engineers. Contact us today for your next project!

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24/7
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KNAPP® offers the right connection for the areas of:

Mass Timber Construction | Wood Curtain Walls | Modular and Prefab Construction | Timber Frame Construction | Door- and Window Manufacturing | Furniture and Architectural Millwork | Structural Glazing



More information

www.knapp-connectors.com/downloads



RICON® | Connector for main and secondary beams up to 23 kN*

Features & Benefits:

- | Concealed beam hangers for main and secondary beam joints
- | Slim profile – timber width as little as 50 mm
- | Universal – used on all wood materials, steel, and concrete
- | High degree of prefabrication – fast and precise mounting on-site
- | Beams are joined together without screwing or nailing on-site
- | Tight joint – adjustable and compensates tolerances
- | Fire resistance (DIN 4102-2) by 4-sided concealed mounting
- | Application admissible also with interlayer
- | Multiple times de-mounting and re-mounting is possible
- | Available in stainless steel for applications for indoor pools, riding halls, stables and agricultural buildings
- | Updated ETA includes hardwood components



© Photo: Nera Tecnica (GR)

Resistance to corrosion:

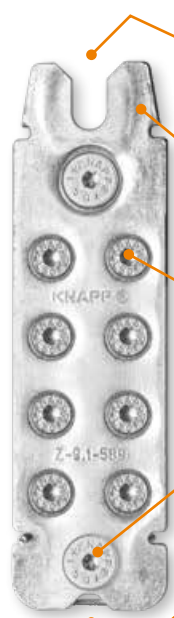
RICON® available in stainless steel for light construction with smaller dimensions. I.e. pergolas, carports, sun rooms, etc.



RICON® for indoor swimming pools. Special coating available upon.



RICON® for riding halls, stables and agricultural buildings.

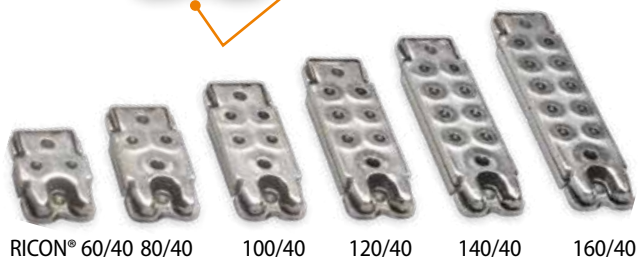


The dovetail receiver makes it very easy to catch the CS-screws, ensuring tightness, while simply engaging the plates.

RICON® consists of two identical parts. It is made in Austria from a premium quality steel and is also available hot-dip galvanized.

Ø = 5 mm and Ø = 8 mm RICON® CS-screws. These adjustable holding screws compensate fabrication tolerances. The reinforced shaft with integrated stop guarantees exact positioning.

Clip in the stainless spring steel locking clip into the locating slots prior to final assembly. It locks the connection against the slide-in direction and can be released again.



RICON is available in premium quality steel as well as stainless steel. See page 10. for ss sizes.

More information:
www.knapp-connectors.com/product/ricon

* Charact. load carrying capacity $F_{2,Rk}$ in insertion direction applies only to the use of original KNAPP® CS-screws according to ETA 10/0189 (2019/10/11) for hardwood D30.

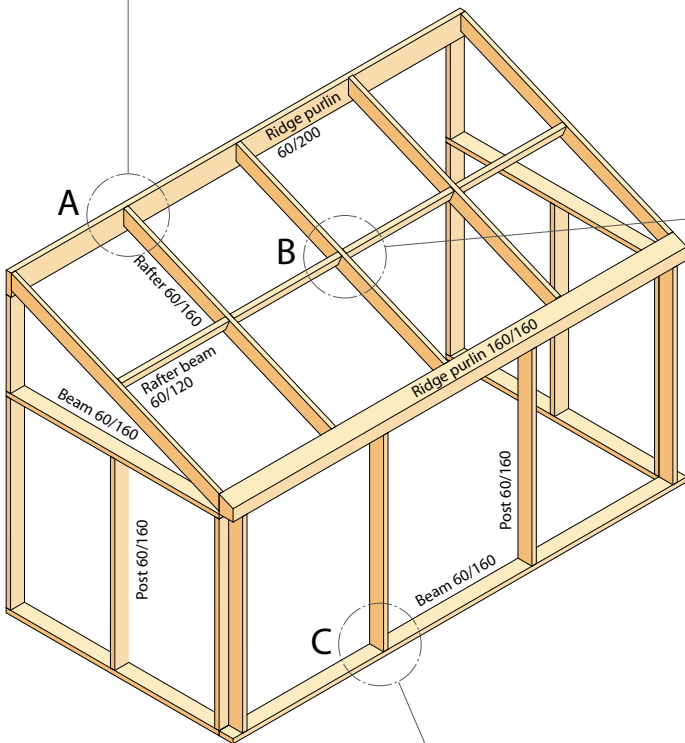
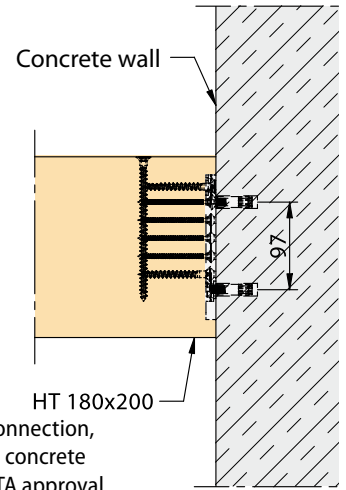
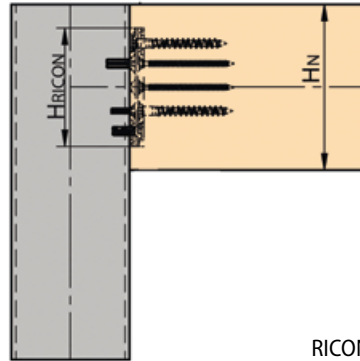
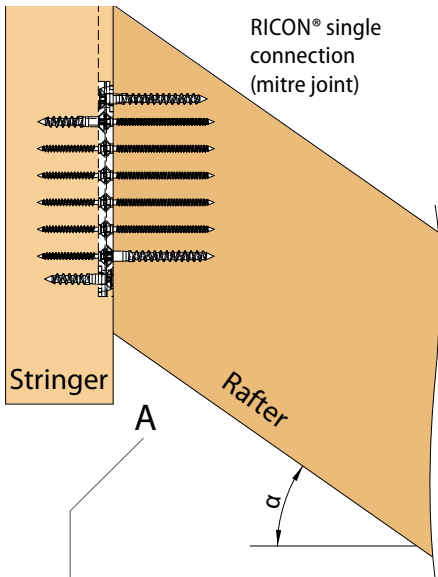
RICON®

Application examples and connection details

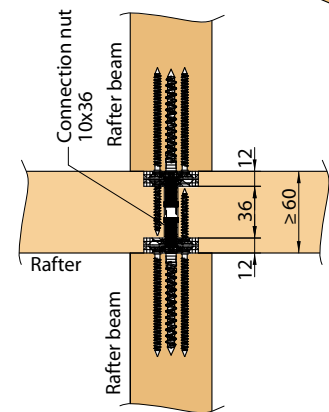
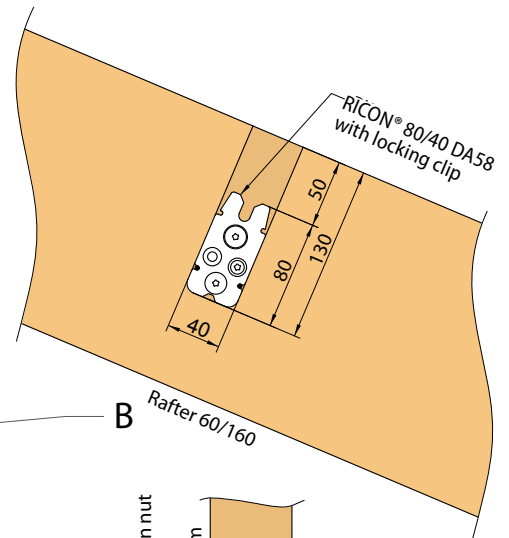
Main / secondary beam connections
e.g. beamed ceilings, roofs and sun rooms.

Wood to steel
connection

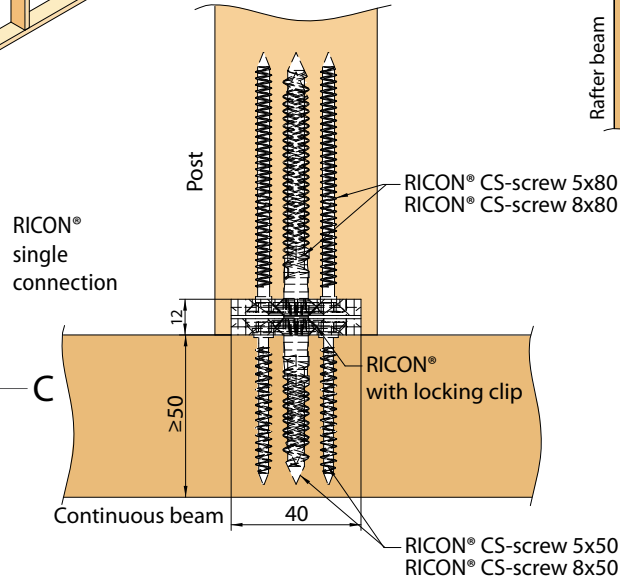
Wood to concrete connection
e.g. with RICON® 140/40



RICON® DA (double connection)



Installation example:
Construction of a sun room.

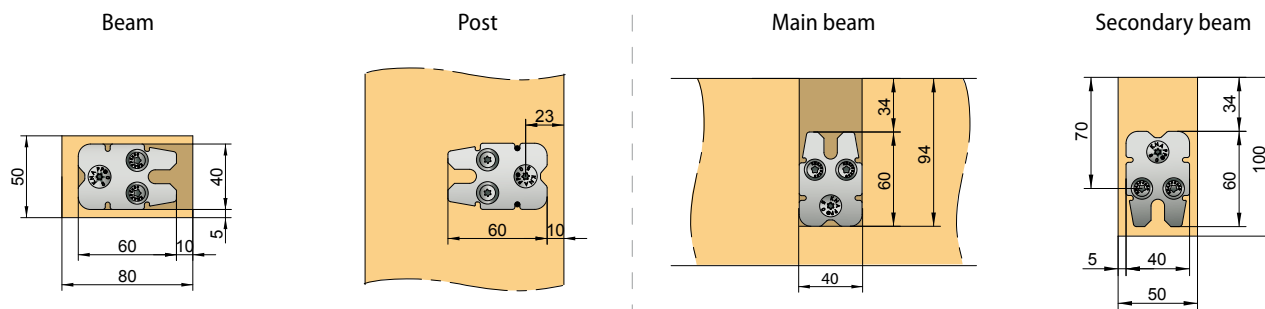


(All dimensions in mm)

RICON® 60/40

Characteristic values for dimensioning can be taken from our Website.

Minimum timber cross section

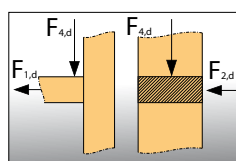


Minimum width of beam and post: 50 mm

Minimum width of main beam: 60mm

Single connection (EA) with RICON® CS-screws

Art.-No. K360



Single connection for post and beam connection with a minimum timber cross section of 50 mm (stress at mid to the axis of beam)

Connector	Connection	Screwing		Charact. values [GL24h]*	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
60/40	EA	2 x CS 5x80 1 x CS 8x80	2 x CS 5x50 1 x CS 8x50	4,4	5,0
1 stirrup: F _{3,Rk} = 2,7 kN			2 stirrups: F _{3,Rk} = 5,15 kN		

Minimum timber dimensions: 50 x 80 mm

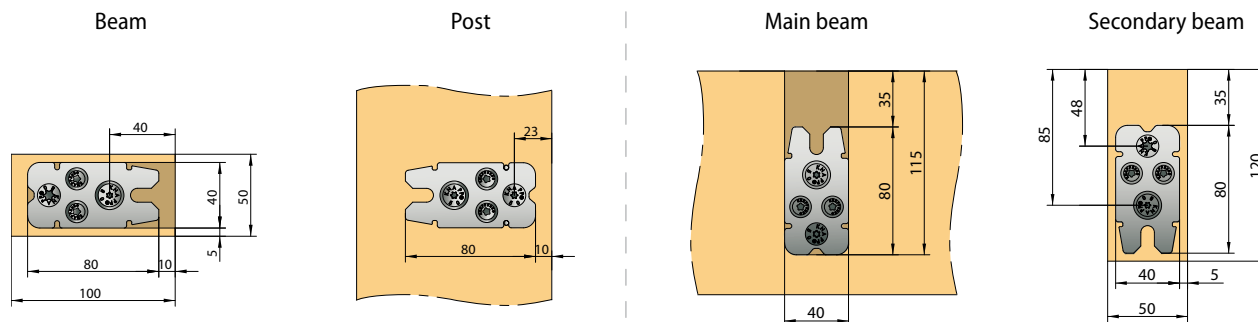
*alternatively, longer screws can be used in end grain.

1 piece CS 8x160 secondary beam F_{2,Rk} = 6,3 kN

RICON® 80/40

Characteristic values for dimensioning can be taken from our Website.

Minimum timber cross section

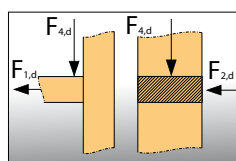


Minimum width of beam and post: 50 mm

Minimum width of main beam: 60 mm

Single connection (EA) with RICON® CS-screws

Art.-No. K361



Single connection for post and beam connection with a minimum timber cross section of 50 mm (stress at mid to the axis of beam)

Connector	Connection	Screwing		Charact. values [GL24h]*	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
80/40	EA	2 x CS 5x80 2 x CS 8x80	2 x CS 5x50 2 x CS 8x50	4,4	7,3
1 stirrup: F _{3,Rk} = 2,7 kN			2 stirrups: F _{3,Rk} = 5,4 kN		

Minimum timber dimensions: 50 x 100 mm

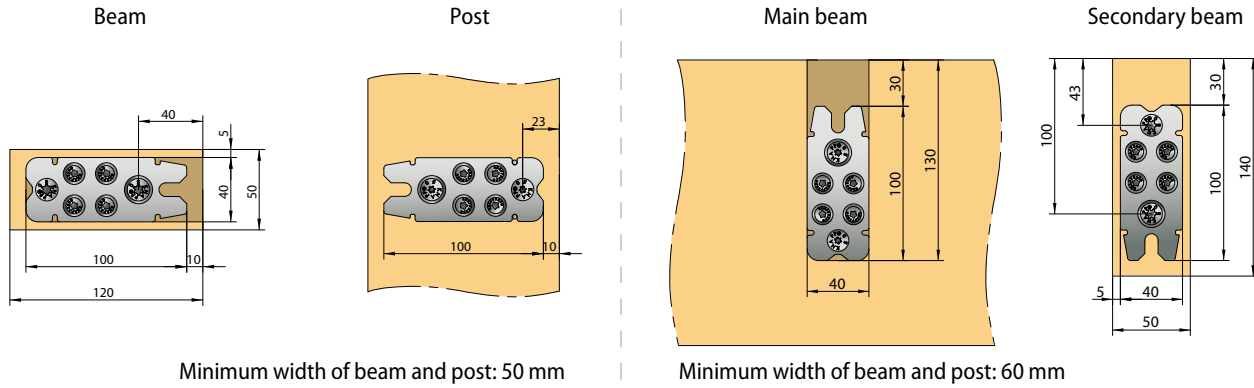
*alternatively, longer screws can be used in end grain.

2 pieces CS 8x160 secondary beam F_{2,Rk} = 10,3 kN

RICON® 100/40

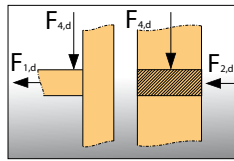
Characteristic values for dimensioning can be taken from our Website.

Minimum timber cross section



Single connection (EA) with RICON® CS-screws

Art.-No. K362



Single connection for post and beam connection with a minimum timber cross section of 50 mm (stress at mid to the axis of beam)

Connector	Connection	Screwing		Charact. values [GL24h]*	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
100/40	EA	4 x CS 5x80 2 x CS 8x80	4 x CS 5x50 2 x CS 8x50	4,4	10,0
1 stirrup: F _{3,Rk} = 2,7 kN			2 stirrups: F _{3,Rk} = 5,4 kN		

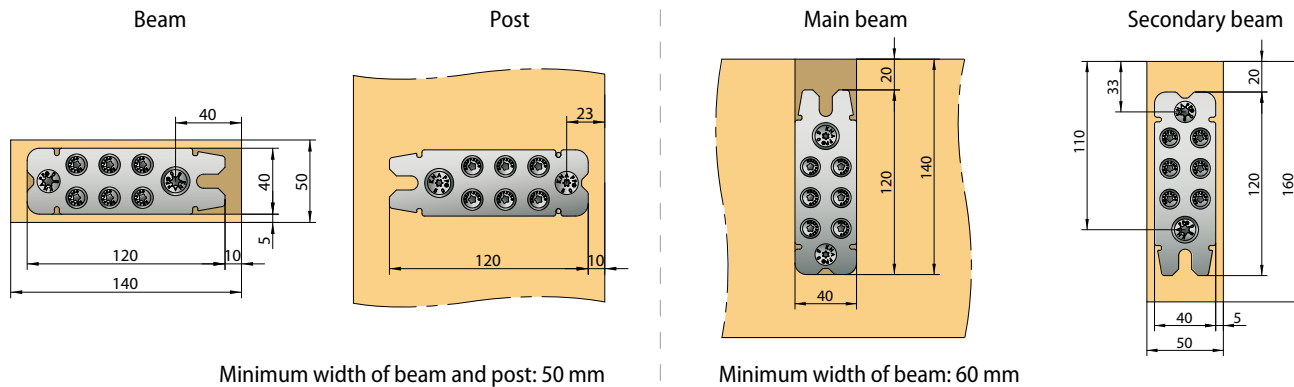
Minimum timber dimensions: 50 x 120 mm

*alternatively, longer screws can be used in end grain.
2 pieces CS 8x160 secondary beam F_{2,Rk} = 13,9 kN

RICON® 120/40

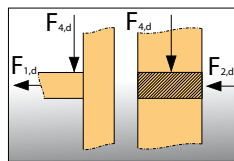
Characteristic values for dimensioning can be taken from our Website.

Minimum timber cross section



Single connection (EA) with RICON® CS-screws

Art.-No. K363



Single connection for post and beam connection with a minimum timber cross section of 50 mm (stress at mid to the axis of beam)

Connector	Connection	Screwing		Charact. values [GL24h]*	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
120/40	EA	6 x CS 5x80 2 x CS 8x80	6 x CS 5x50 2 x CS 8x50	4,4	12,8
1 stirrup: F _{3,Rk} = 2,7 kN			2 stirrups: F _{3,Rk} = 5,4 kN		

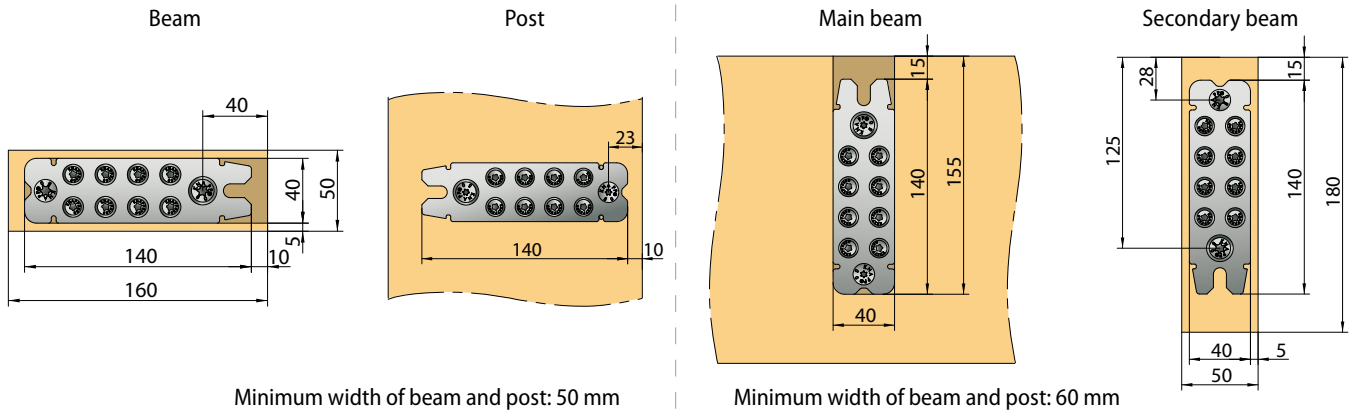
Minimum timber dimensions: 50 x 140 mm

*alternatively, longer screws can be used in end grain.
2 pieces CS 8x160 secondary beam F_{2,Rk} = 16,6 kN

RICON® 140/40

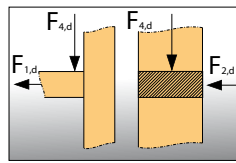
Characteristic values for dimensioning can be taken from our Website.

Minimum timber cross section



Single connection (EA) with RICON® CS-screws

Art.-No. K365



Single connection for post and beam connection with a minimum timber cross section of 50 mm (stress at mid to the axis of beam)

Connector	Connection	Screwing		Charact. values [GL24h]	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
140/40	EA	8 x CS 5x80 2 x CS 8x80	8 x CS 5x50 2 x CS 8x50	4,4	15,6
1 stirrup: F _{3,Rk} = 2,7 kN			2 stirrups: F _{3,Rk} = 5,4 kN		

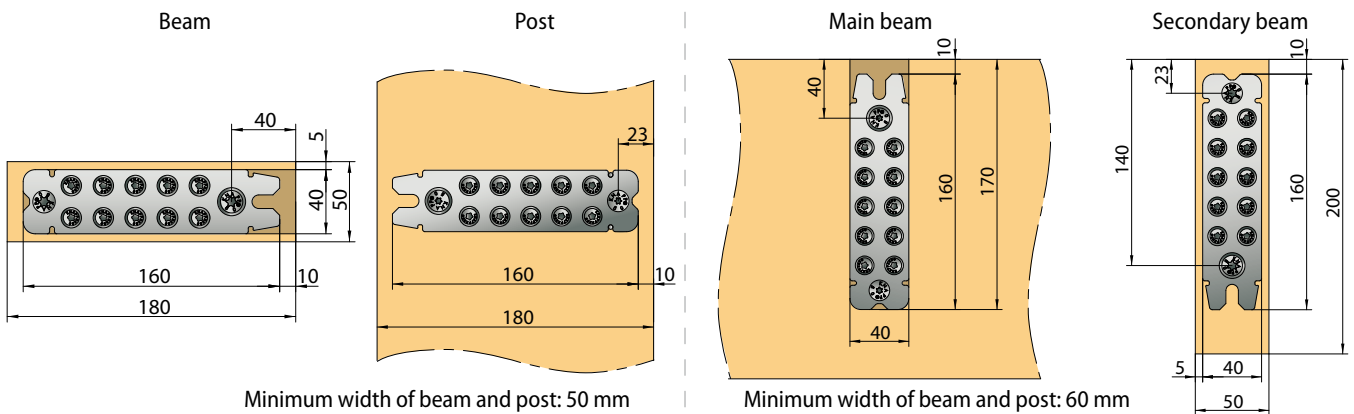
Minimum timber dimensions: 50 x 160 mm

*alternatively, longer screws can be used in end grain.
2 pieces CS 8x160 secondary beam F_{2,Rk} = 19,3 kN

RICON® 160/40

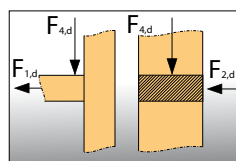
Characteristic values for dimensioning can be taken from our Website.

Minimum timber cross section



Single connection (EA) with RICON® CS-screws

Art.-No. K364



Single connection for post and beam connection with a minimum timber cross section of 50 mm (stress at mid to the axis of beam)

Connector	Connection	Screwing		Charact. values [GL24h]	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
160/40	EA	10 x CS 5x80 2 x CS 8x80	10 x CS 5x50 2 x CS 8x50	4,4	18,2
1 stirrup: F _{3,Rk} = 2,7 kN			2 stirrups: F _{3,Rk} = 5,4 kN		

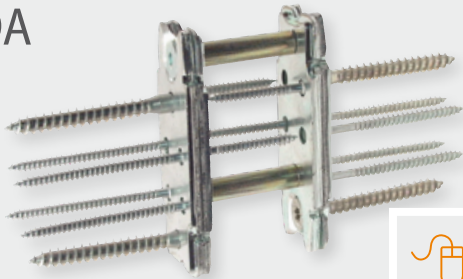
Minimum timber dimensions: 50 x 180 mm

*alternatively, longer screws can be used in end grain.
2 pieces CS 8x160 secondary beam F_{2,Rk} = 22,0 kN

RICON® DA / EAR for all sizes

Double connection with connecting nuts and RICON® CS-screws

DA



Single- or dual connection with insert and RICON® CS-screws

EAR



More Information:

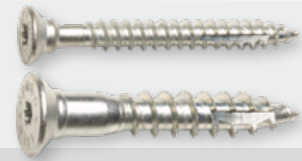
www.knapp-connectors.com/product/ricon

RICON® screws

RICON® Self-tapping CS-screws with reinforced shaft
(CS-screws are included with all RICON® connectors)

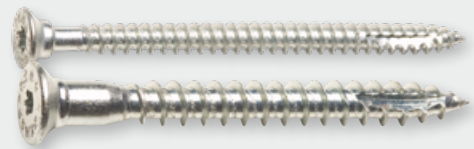
Art.-No. Z533	CS-screws 5x50
Art.-No. Z531	CS-screws 8x50
Art.-No. Z950	CS-screws EA 5x50 stainless steel
Art.-No. Z953	CS-screws EA 8x50 stainless steel

Application: CS-screws to mount RICON plate into the side grain of main beam/post.



Art.-No. Z534	CS-screws 5x80
Art.-No. Z532	CS-screws 8x80
Art.-No. Z581	CS-screws 8x160
Art.-No. Z952	CS-screws EA 5x80 stainless steel
Art.-No. Z954	CS-screws EA 8x80 stainless steel

Application: CS-screws to mount RICON plate into the end grain of secondary beam.



RICON DA CS-screws

Art.-No. Z545	CS-screw M5x20 (for RICON® 60/40 DA)
Art.-No. Z548	CS-screw M8x25
Art.-No. Z955	CS-screw EA M5x16 stainless steel
Art.-No. Z956	CS-screw EA M8x18 stainless steel

Application: Machined screws to mount RICON plate in a cross joint double connector application.



Connecting nuts RICON® DA

(Connecting nuts are included with all RICON DA connectors)

Art.-No. K540	Connecting nut M5 8x48	50 mm post thickness
Art.-No. K541	Connecting nut M5 8x53	55 mm post thickness
Art.-No. K542	Connecting nut M5 8x58	60 mm post thickness
Art.-No. K543	Connecting nut M5 8x78	80 mm post thickness

Utilisation : Connecting nut to mount RICON 60/40 double connector.



Art.-No. K544	Connecting nut M8 10x36	<50 mm post thickness
Art.-No. K545	Connecting nut M8 10x48	50 mm post thickness
Art.-No. K546	Connecting nut M8 10x53	55 mm post thickness
Art.-No. K547	Connecting nut M8 10x58	60 mm post thickness
Art.-No. K548	Connecting nut M8 10x68	70 mm post thickness
Art.-No. K549	Connecting nut M8 10x78	80 mm post thickness

Application: Connecting nut to mount RICON 80/40 and bigger sizes double connectors.



Inserts RICON® EAR

(Inserts are included)

Art.-No. Z540	Insert M5x14 for RICON® 60/40
Art.-No. Z541	Insert M8x18 for all other RICON® sizes

Application: For unique applications and post sizes.



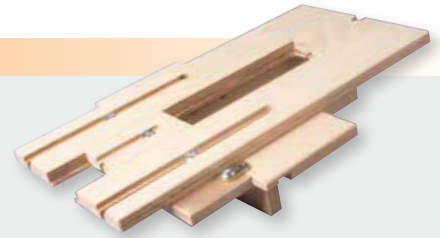
RICON® Accessories

Routing-jig for all RICON® sizes

Art.-No. K502 Routing-jig MULTI F40 (plywood)

Advice: The routing-jig MULTI F is suitable for a $\varnothing = 30$ mm bushing guide (for plunge router) and a $\varnothing = 15$ mm TCT router cutter.

Application: For milling the pocket to recess connector for concealed mounting.



Drilling-jig RICON® EA/DA (galvanized steel)

Art.-Nr.	K621	K622	K623	K624	K629	K630
	60/40	80/40	100/40	120/40	140/40	160/40

Application: For installation into the drilling-jig and exact pre-drilling of the positioning screws.



HM router cutter

Art.-No. Zo66 HM router cutter $\varnothing = 15$, length = 25 mm with $\varnothing = 8$ mm shank

Application: To recess the rebate for RICON® and GIGANT.



Locking clip RICON® (stainless spring steel locking clip)

Art.-No. Ko64	RICON® Locking clip 40mm (stainless steel)
Art.-No. Ko64/1601	RICON® Locking clip 16mm
Art.-No. Ko64/2001	RICON® Locking clip 20mm (stainless steel)
Art.-No. Ko64/3001	RICON® Locking clip 30mm (stainless steel)

Application: To lock the connectors against slide-in direction. Can be disassembled if needed.



Drilling-jig RICON® EA/DA for post-Beam connections

Art.-No.	K634	K635	K636	K637	K638	K639
	60/40 Set	80/40	100/40	120/40	140/40	160/40

Drilling-jig RICON® EA/DA for header-joint connections

Art.-No.	K634	K642	K643	K644	K645	K646
	60/40 Set	80/40	100/40	120/40	140/40	160/40

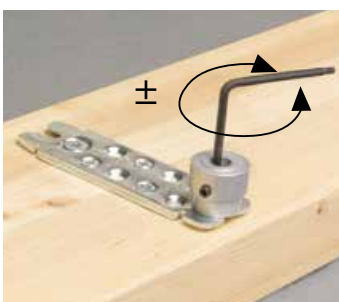
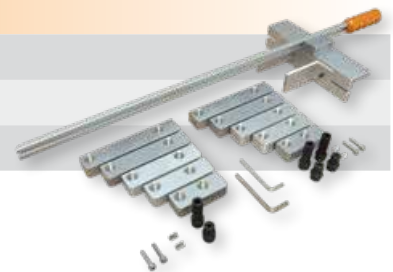
Application: Guide for pre-drilling holes of all RICON® connectors.



Drilling-jig RICON® with adjustable drilling blocks

Art.-No.	-	K647	K647	K647	K647	K647
Drilling blocks:	-	80/40	100/40	120/40	140/40	160/40

Application: Guide for pre-drilling holes of all RICON® connectors



RICON® mounting set

Art.-No. Ko65 Consisting of: 1 RICON®-depth gauge
incl. 1 Torx wrench T25 combined with Allen key SW5

Application: For fine tuning of RICON® CS-screws





RICON® | Universal wooden connector made of A2 stainless steel up to 17,4 kN with usage classification 3

Materials and applications

- Special types of wood, including oak, douglas fir, larch and impregnated woods, such as Accoya, etc.
- Indoor and outdoor: furniture, balcony, deck, carport, playground and sports equipment, pergola and other buildings with usage classification 3

Features and Benefits

- Slim profile - timber width from 20 mm upwards
- Universal connection to all wood materials, indoor and outdoor, steel, concrete for sizes 100x40 and 100x30
- Versatile – can be used for single joint and double joint connection
- Flexible – assembly can be from the outside and inside
- Multiple disassembly and reassembly is possible
- Safe - can be locked in place with a locking clip
- Adjustable – by simply adjusting screw depth
- Tested, patented and registered for approval



The dovetail receiver easily catches the CS-screws, ensuring tightness while engaging the plates.

RICON® consists of two identical plates made of A2 stainless steel. Stainless steel screws and locking clip are included.

The reinforced shaft with integrated stop guarantees precise positioning.

The stainless spring steel locking clip is mounted into the locating slots prior to final assembly. It locks the joint against the slide-in direction and can be disassembled if needed.

The RICON® is available in the following sizes in our online store:

160/40, 160/30, 140/30, 120/30, 100/30, 80/40, 80/30, 70/20, 66/30, 66/16



© Photo: Jens Krichner, Solarlux (DE), Nova Technica (GR), Montafoner Krisbergbahn GmbH, Silberthal (A)



Resistance to corrosion category II outdoor. Suitable for pergolas, balconies and specific woods.

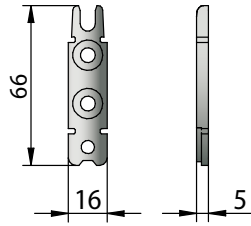


For concealed and visible connections.

Characteristic values for dimensioning can be taken from our Website.

RICON® 66/16 EA stainless steel ($F_{2,Rk}$ 4,8 kN*)

Art.-No. K267



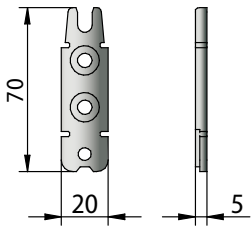
Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
66/16	EA	3 x CS 5x80	3 x CS 5x50	3,5	4,8
1 locking clip: $F_{3,Rk} = 1,0$ kN			2 locking clips: $F_{3,Rk} = 2,0$ kN		

Minimum timber dimensions: 30 x 86 mm

*Interior Glulam

RICON® 70/20 EA stainless steel ($F_{2,Rk}$ 4,8 kN*)

Art.-No. K271



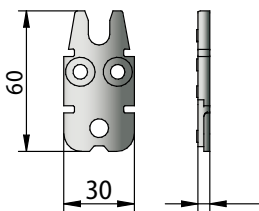
Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
70/20	EA	3 x CS 5x80	3 x CS 5x50	3,5	4,8
1 locking clip: $F_{3,Rk} = 1,0$ kN			2 locking clips: $F_{3,Rk} = 2,0$ kN		

Minimum timber dimensions: 30 x 90 mm

*Interior Glulam

RICON® 60/30 EA stainless steel ($F_{2,Rk}$ 5,2 kN*)

Art.-No. K274



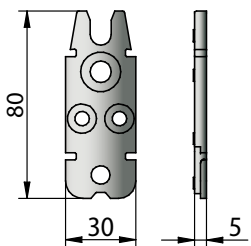
Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
60/30	EA	3 x CS 10x120	3 x CS 10x80	4,4	5,2
1 locking clip: $F_{3,Rk} = 1,9$ kN			2 locking clips: $F_{3,Rk} = 3,8$ kN		

Minimum timber dimensions: 50 x 80 mm

*Interior Glulam

RICON® 80/30 EA stainless steel ($F_{2,Rk}$ 7,5 kN*)

Art.-No. K275



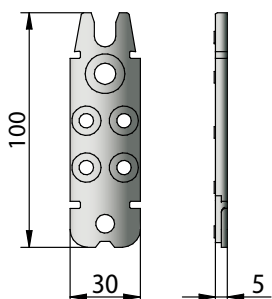
Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
80/30	EA	2 x CS 8x80 2 x CS 5x80	2 x CS 8x50 2 x CS 5x50	4,4	7,5
1 locking clip: $F_{3,Rk} = 1,9$ kN			2 locking clips: $F_{3,Rk} = 3,8$ kN		

Minimum timber dimensions: 50 x 100 mm

*Interior Glulam

RICON® 100/30 EA stainless steel ($F_{2,Rk}$ 10,4 kN*)

Art.-No. K276



Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
100/30	EA	2 x CS 8x80 2 x CS 5x80	2 x CS 8x50 4 x CS 5x50	4,4	10,4
1 locking clip: $F_{3,Rk} = 1,9$ kN			2 locking clips: $F_{3,Rk} = 3,8$ kN		

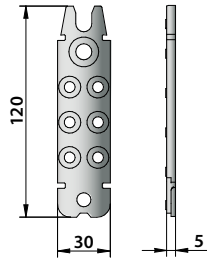
Minimum timber dimensions: 50 x 120 mm

*Interior Glulam

Characteristic values for dimensioning can be taken from our Website.

RICON® 120/30 EA stainless steel ($F_{2,Rk}$ 13,2 kN*)

Art.-No. K277



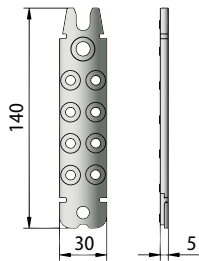
Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
120/30	EA	2 x CS 8x80 6 x CS 5x80	2 x CS 8x50 6 x CS 5x50	4,4	13,2
1 locking clip: $F_{3,Rk} = 1,9$ kN			2 locking clips: $F_{3,Rk} = 3,8$ kN		

Minimum timber dimensions: 50 x 140 mm

*Interior Glulam

RICON® 140/30 EA stainless steel ($F_{2,Rk}$ 16,1 kN*)

Art.-No. K278



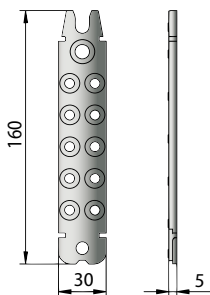
Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
140/30	EA	2 x CS 8x80 8 x CS 5x80	2 x CS 8x50 8 x CS 5x50	4,4	16,1
1 locking clip: $F_{3,Rk} = 1,9$ kN			2 locking clips: $F_{3,Rk} = 3,8$ kN		

Minimum timber dimensions: 50 x 160 mm

*Interior Glulam

RICON® 160/30 EA stainless steel ($F_{2,Rk}$ 17,4 kN*)

Art.-No. K279



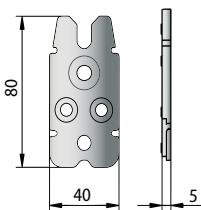
Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
160/30	EA	2 x CS 8x80 10 x CS 5x80	2 x CS 8x50 10 x CS 5x80	4,4	17,4
1 locking clip: $F_{3,Rk} = 1,9$ kN			2 locking clips: $F_{3,Rk} = 3,8$ kN		

Minimum timber dimensions: 50 x 180 mm

*Interior Glulam

RICON® 80/40 EA stainless steel ($F_{2,Rk}$ 7,5 kN*)

Art.-No. K372



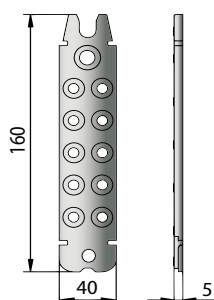
Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{2,Rk}$ [kN]
80/40	EA	2 x CS 8x80 2 x CS 5x80	2 x CS 8x50 2 x CS 5x50	4,4	7,5
1 locking clip: $F_{3,Rk} = 2,7$ kN			2 locking clips: $F_{3,Rk} = 5,4$ kN		

Minimum timber dimensions: 50 x 100 mm

*Interior Glulam

RICON® 160/40 EA stainless steel ($F_{2,Rk}$ 17,4 kN*)

Art.-No. K376



Connector	Connection	Screwing		Charact. values [GL24h] NKL1*	
		Joint	Header	$F_{1,Rk}$ [kN]	$F_{45,Rk}$ [kN]
160/40	EA	2 x CS 8x80 10 x CS 5x80	2 x CS 8x50 10 x CS 5x50	4,4	17,4
1 locking clip: $F_{3,Rk} = 2,7$ kN			2 locking clips: $F_{3,Rk} = 5,4$ kN		

Minimum timber dimensions: 50 x 180mm

*Interior Glulam

RICON®

Installation

- Simple and fast installation with spindle moulder or routing machine and optional KNAPP® template.
- Installation with CNC joinery machine possible – all data for the standard CNC joinery machine programs are included.



CNC joinery machine



1) Make the recess with routing-jig and plunge router according to installation instruction of RICON size used.



2) Pre-drill using the drilling jig.



3) Connector plates mounted with CS-screws.



4) The retaining screw will be screwed in, up to the built-in stop. Adjust with the depth gauge. Re-adjustment can still be done during installation and tolerances can be compensated.



5) Assemble is done through simple sliding together and dovetail socket engages with the screw head. The locking clip latches the joint.

Locking clip: Depending on load requirements, the locking clip can be inserted on one or on both sides. If the connection is accessible, it can be unlocked (6).



6) To unlock the connection, it is necessary to bend up the locking clip in its center e.g. with a screwdriver.

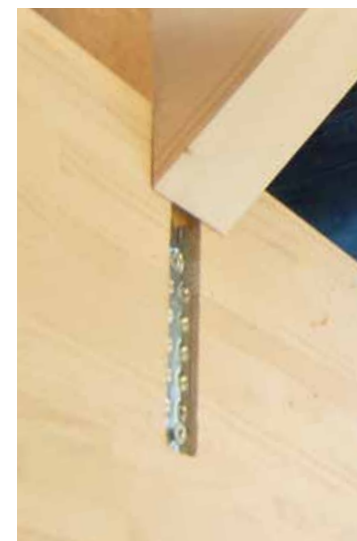
Routing dimension RICON® stainless steel

Width	Length	Depth
40,5 mm	variable	11,5 ^{+0,5} mm
30,5 mm	variable	11,5 ^{+0,5} mm
20,0 mm	80 mm	11,0 ^{+0,5} mm
16,0 mm	66 mm	11,0 ^{+0,5} mm

Routing dimension RICON®

Width	Length	Depth
40 mm	variable	12 mm

The recess can be routed on either side depending on the application. In this case (left picture), the connector plate is recessed into the beam/latch.





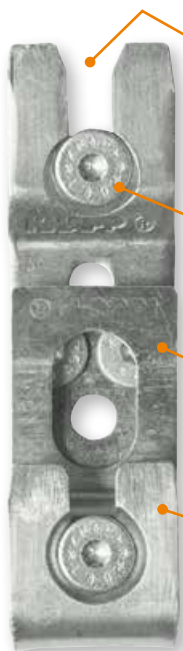
GIGANT | Connector for main and secondary beams up to 39 kN*

Features & Benefits

- Highly loadable – in all directions
- Timber width starting at 60 mm
- Short hooking way – applications for porch, pergola, sunroom, timber frame and mass timber construction
- Tight joint – adjustable and can compensate tolerances
- Fire resistance (DIN 4102-2) by 4-sided concealed mounting ($R_{30} \geq 28$ mm, $R_{60} \geq 49$ mm)
- Optional locking clip – latches connection against slide-in direction
- Can be assembled and disassembled multiple times
- Updated ETA including now hardwood components and beech gluelam.



Installation example:
Mounted on main and secondary beam



The dovetail receiving bracket catches the counter bracket and CS-screw with ease, while the angle on the dovetail ensures a self-tightening connection.

Ø 10 mm self-tapping CS-screws guarantee fast installation and additional strength with its reinforced shaft.

Locking clip latches the connector against the slide-in direction.

GIGANT is made of premium quality steel and blue galvanized and produced in Austria. Hot-dip galvanizing is available upon request.



Two variations

Blue galvanized or hot-dipped galvanized



Corrosion resistant:

GIGANT is available in hot-dip galvanized upon request, achieving higher corrosion resistance for applications such as coastal areas, indoor pools, etc.

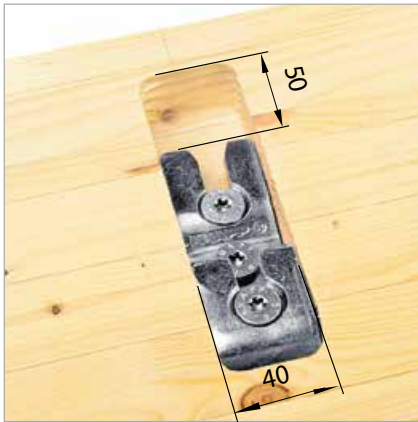
More information:
<http://www.knapp-connectors.com/product/gigant>

*Charact. load carrying capacity $F_{2,Rk}$ in insertion direction applies only to the use of original KNAPP® CS-screws according to ETA-10/0189 (2019/10/11) for hardwood D30.

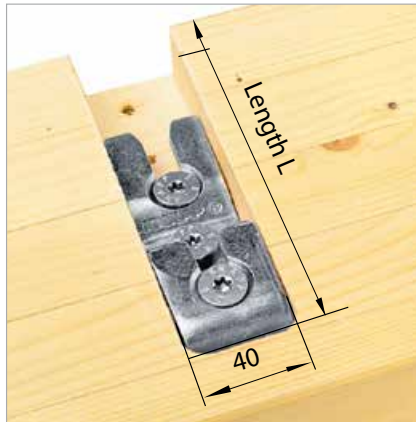
GIGANT

Mounting Options

The GIGANT offers three different mounting options, for both end-grain and side-grain.



Fully concealed



Open pocket



Visible



Position



Screw on



Locking clip latches when beam is inserted



Recommended software partners for machine processing:

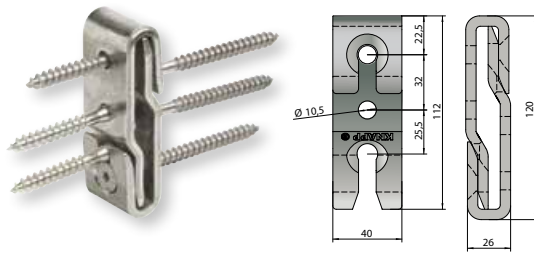


GIGANT 120/40

Characteristic values for dimensioning can be taken from our Website.

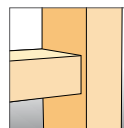
Application examples and connection details

Art.-No. K051

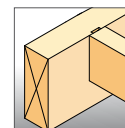


Connector	Connection	Screwing		Charact. values [GL24h]	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
120/40	without locking clip	3 x CS 10x120	3 x CS 10x80	12,5	12,5
120/40	without locking clip	3 x CS 10x200	3 x CS 10x80	14,0	12,5
120/40	with locking clip	3 x CS 10x120	3 x CS 10x80	12,5	12,5
locking clip: F _{3,Rk} = 10,2 kN					

Minimum timber dimensions **with/without locking clip**: 60 x 150 mm



Single connection for post-latch connections



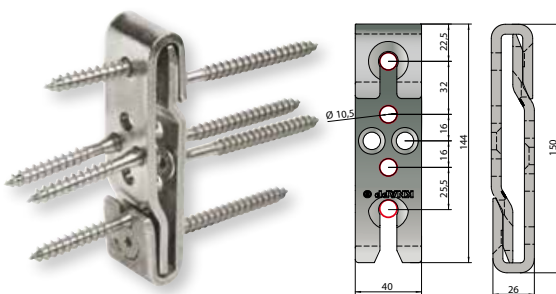
Single connection:
Header thickness from 100 mm;
Joint thickness from 60 mm
with cliplock (80 mm without)

GIGANT 150/40

Characteristic values for dimensioning can be taken from our Website.

Application examples and connection details

Art.-No. K050



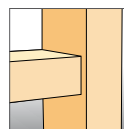
Standard screwing
without locking clip.

Screw vertically in center
when using locking clip.

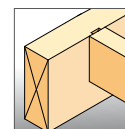
Connector	Connection	Screwing		Charact. values [GL24h]	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
150/40	without locking clip	4 x CS 10x120	4 x CS 10x80	12,5	16,7
150/40	without locking clip	4 x CS 10x200	4 x CS 10x80	14,0	19,2
150/40	with locking clip	4 x CS 10x120	4 x CS 10x80	12,5	16,7
locking clip: F _{3,Rk} = 12,0 kN					

Minimum timber dimensions **without locking clip**: 80 x 200 mm

Minimum timber dimensions **with locking clip**: 60 x 200 mm



Single connection for post-latch connections



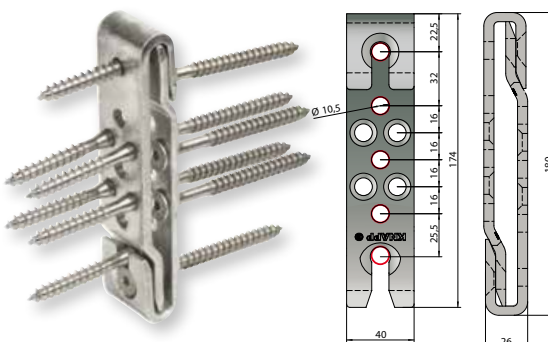
Single connection:
Header thickness from 100 mm;
Joint thickness from 60 mm
with cliplock (80 mm without)

GIGANT 180/40

Characteristic values for dimensioning can be taken from our Website.

Application examples and connection details

Art.-No. K052



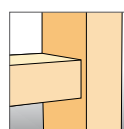
Standard screwing
without locking clip.

Screwing in the middle
by using the locking clip.

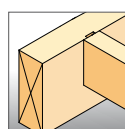
Connector	Connection	Screwing		Charact. values [GL24h]	
		Joint	Header	F _{1,Rk} [kN]	F _{2,Rk} [kN]
180/40	without locking clip	6 x CS 10x120	6 x CS 10x80	12,5	20,3
180/40	without locking clip	5 x CS 10x200	6 x CS 10x80	14,0	30,7
180/40	with locking clip	6 x CS 10x120	6 x CS 10x80	12,5	20,8
locking clip: F _{3,Rk} = 12,0 kN					

Minimum timber dimensions **without locking clip**: 80 x 220 mm

Minimum timber dimensions **with locking clip**: 60 x 220 mm



Single connection for post and beam joint



Single connection:
Main beam thickness from ≥ 100 mm;
Secondary thickness from ≥ 60 mm
with locking clip (≥ 80 mm without)

GIGANT screws

KNAPP® CS-screws (with reinforced shaft and self-tapping)
(GIGANT comes in a set including CS-screws)

- Art.-No. Z523 CS-screw 10x80
- Art.-No. Z524 CS-screw 10x120 (Plywood)
- Art.-No. Z528 CS-screw 10x200



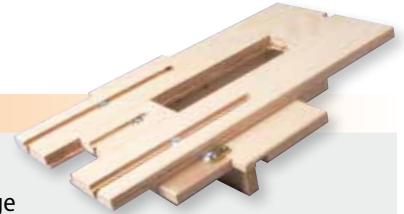
Application: To install GIGANT to main and secondary beams, etc.

GIGANT Accessories

Routing-jig for all GIGANT sizes

- Art.-No. K502 MULTI F40 Routing-jig (plywood)

Tip: The MULTI F routing-jig is suitable for a $\varnothing = 30$ mm guide bushing (for plunge router) and $\varnothing = 15$ mm TCT straight router bit. MULTI F is adjustable depending on wood dimensions.



Application: For milling the pocket to recess GIGANT.

GIGANT

TCT router cutter

- Art.-No. Zo68 TCT Straight Router Bit $\varnothing = 15$ mm, Length = 40 mm with $\varnothing = 12$ mm shank

Application: For milling the pocket to recess GIGANT.



GIGANT

Drilling-jig GIGANT (galvanized steel)

- Art.-No. K631 Drilling-jig GIGANT 120
- Art.-No. K632 Drilling-jig GIGANT 150
- Art.-No. K633 Drilling-jig GIGANT 180



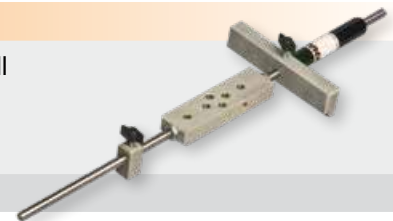
Application: Place into MULTI F routing jig for exact positioning and pre-drilling of GIGANT CS-screws.

GIGANT

Drilling-jig GIGANT (adjustable)

- Art.-No. K463 Drilling-jig GIGANT 120
- Art.-No. K464 Drilling-jig GIGANT 150
- Art.-No. K465 Drilling-jig GIGANT 180

Jig with hardened drill bushes for $\varnothing = 6$ mm



Application: For pre-drilling of GIGANT CS-screws.

GIGANT

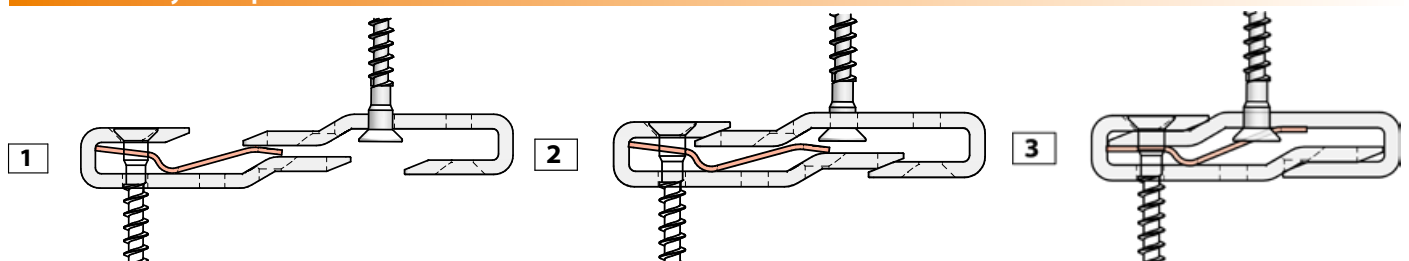
GIGANT Locking Clip (galvanized steel plate)

- Art.-No. Z525 GIGANT Locking Clip



Application: To latch the connection against the slide-in direction.

Functionality of clip lock



GIGANT

Installation

- Installation with CNC joinery machine possible – details for machining can be found in all the most common CNC machining softwares.
- Plunge router with KNAPP® Routing-jig.



1) Routing



2) Pre-drilling header



3) Screw on



4) Pre-drilling secondary beam



5a) Screw on



5b) Optionally installed with locking clip

Routing dimension GIGANT

Width	Length	Depth
40 mm	variabel	26,5 mm



6) Assemble

For instruction manuals, .DXF drawings for GIGANT®-System or to find a KNAPP® personal consultant in your area, please visit:
www.knapp-connectors.com/downloads

Recommended software partners for machine processing:

cadwork

Dispositive
HOLZBAU
PROGRAMME

Dietrich's

hsbcad
CAD/CAM für den Holzbat.

SEMA
SOFTWARE

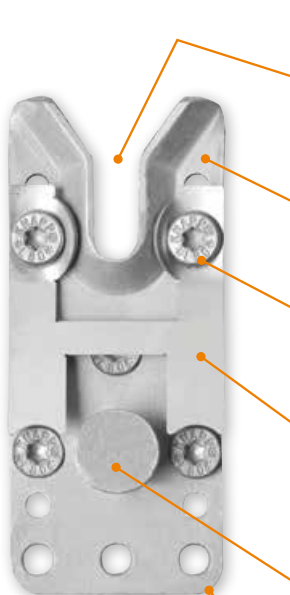
WETO AG
technologies



RICON® S | Connector for main and secondary beams up to 230 kN*

Features & Benefits

- | Connector for timber frame and mass timber construction
- | Timber width from 100 mm upwards
- | Universally applicable to timber, steel or concrete
- | Simple screwing without predrilling
- | Easy hooking by large V-shaping – only 3,5 cm hooking way
- | Three- and four-sided concealed connection
- | High fire resistance (EN 1995-1-2) through three- and four-sided concealed mounting (R₃₀ ≥ 28 mm, R₆₀ ≥ 49 mm)
- | Optional locking clip – latches connection against slide-in direction (e.g. wind suction)
- | Can be assembled and disassembled multiple times
- | Updated ETA now including hardwood components and beech gluelam.



- The V-shape sloped receiver provides a perfect catch for the collar bolt when hooking the connector plates into each other. The short hook way engages the plates in a dovetail like manner simply and fast, guaranteeing a self-tightening joint.
- RICON® S is made of premium quality steel, hot-dip galvanized and is manufactured in Germany.
- The self-tapping CS-screws allow for a fast and secure installation of the RICON® plate.
- RICON®S Locking Clip is made from stainless spring steel and can optionally be used to latch the connector against the slide-in direction.
- RICON® S is available in three versions:
VS - welded collar bolt
VK - screwed collar bolt
EK - adjustable collar bolt (available upon request)
- NEW SIZE RICON® S 390/80 VS ZP 170,9 kN resp. 198,9 kN (Art.Nr. K191)



RICON® S60 VS 140x60x25 RICON® S60 VS 200x60x25

RICON® S80 VS 200x80x25 RICON® S80 VS 290x80x25 RICON® S80 VS 390x80x25

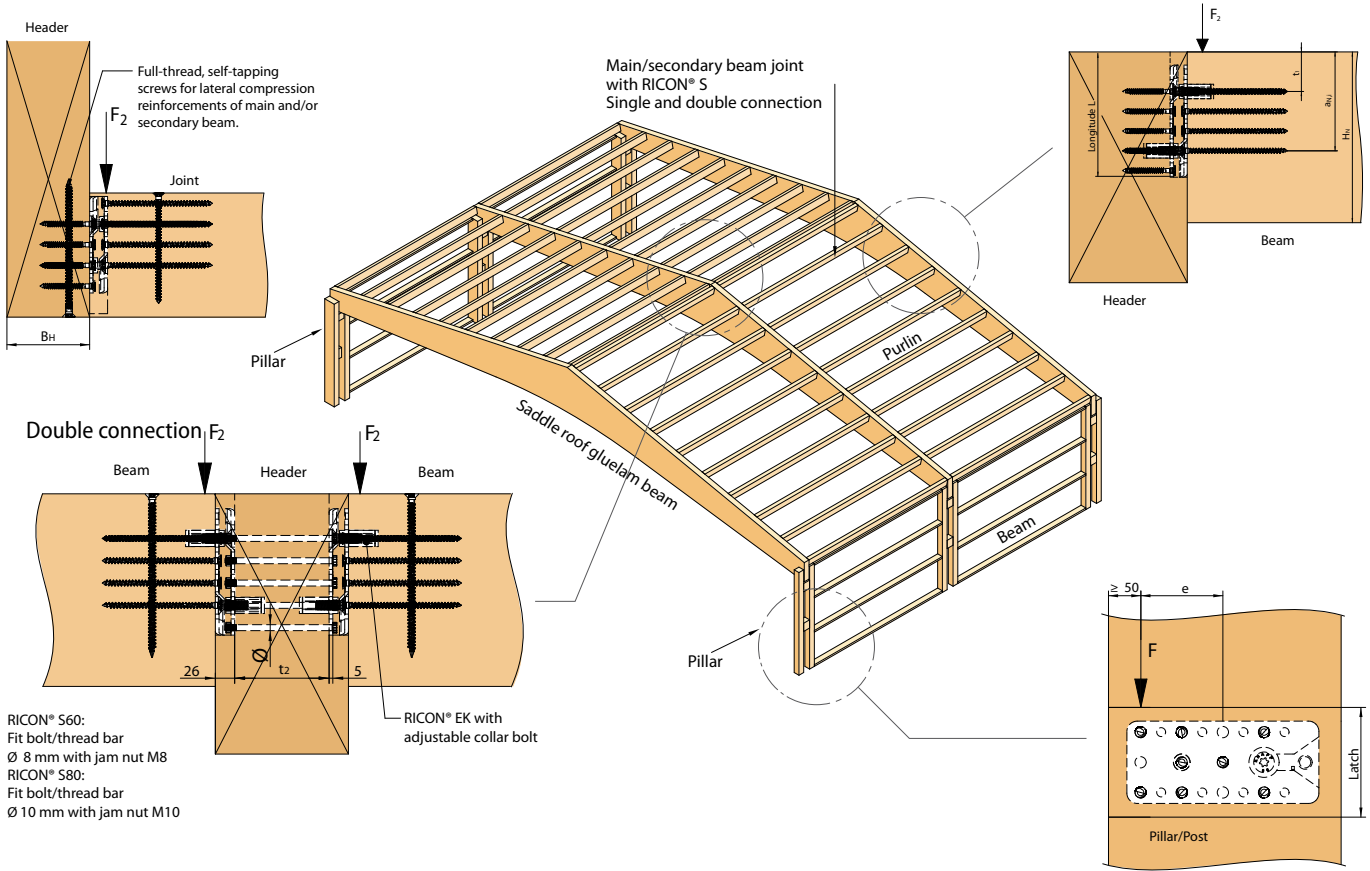
More information: www.knapp-connectors.com/product/ricon-s

*Charact. load carrying capacity F_{2,Rk} in insertion direction applies only to the use of original KNAPP® CS-screws according to ETA 10/0189 (2019/10/11) for hardwood D30.

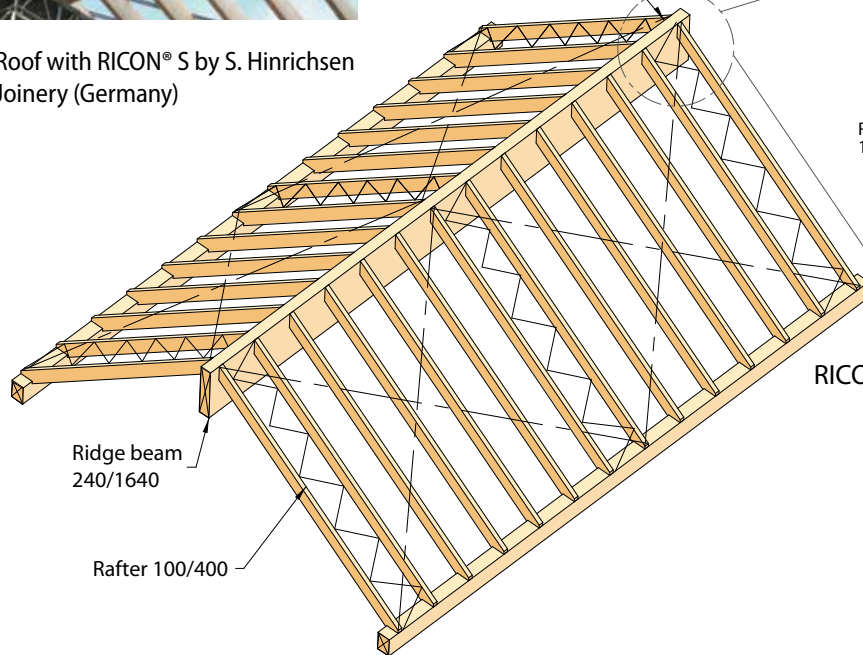
RICON® S

Application examples and connection details

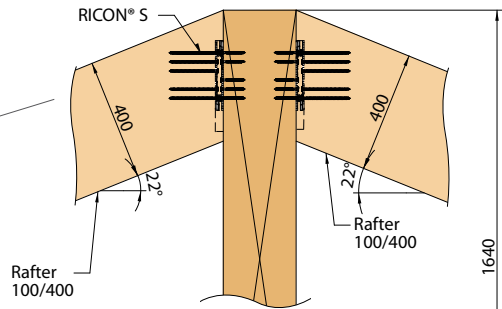
Ridged roof with purlins and post and beam connections



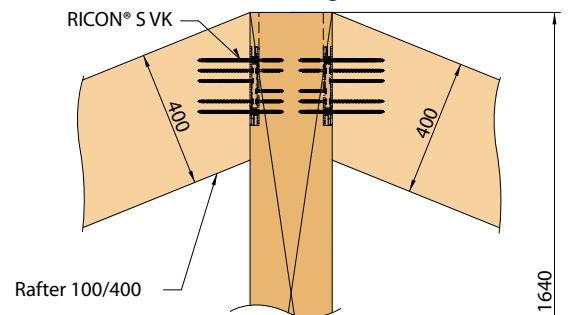
Roof with RICON® S by S. Hinrichsen Joinery (Germany)



RICON® S embedded in the rafter



RICON® S housed into the ridge beam

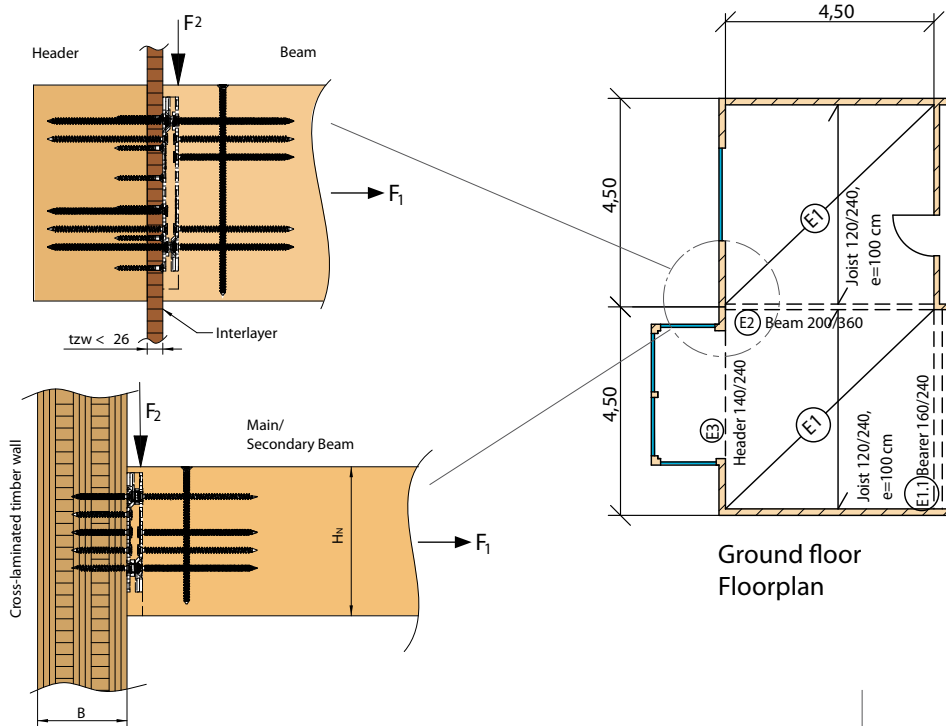


(All dimensions in mm)

RICON® S

Mass Timber Construction

Connecting header with timber frame construction or cross-laminated timber wall

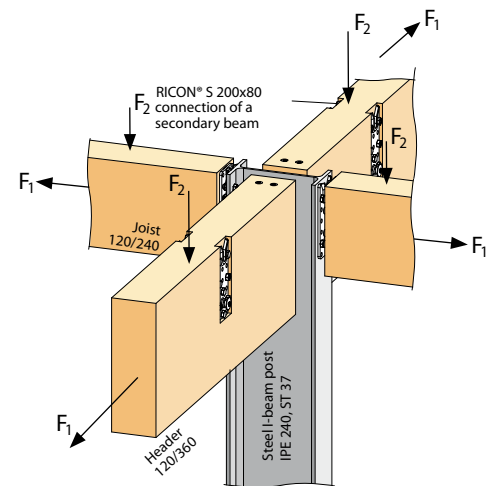


Wood to steel connection

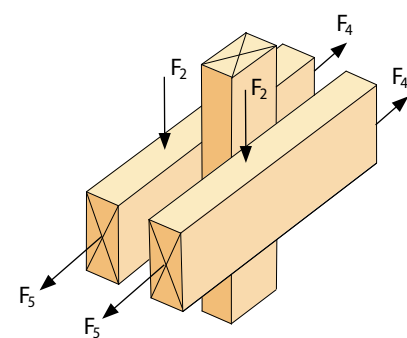
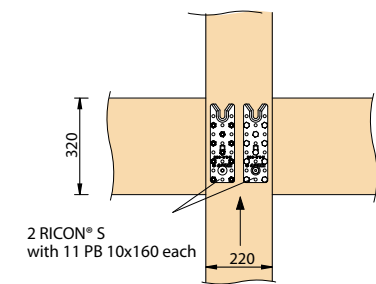
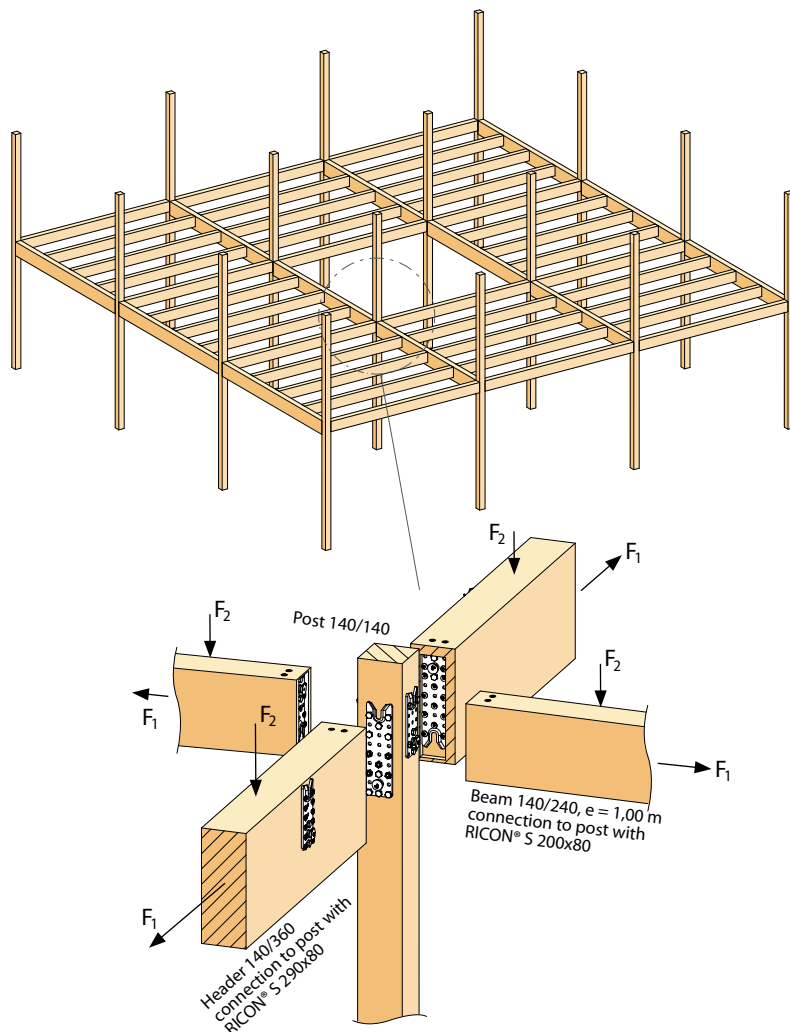


Ridge node for dome roof

Timber beam to metal I-beam joint



Ceiling of a timber frame construction



Alternative ways to connect

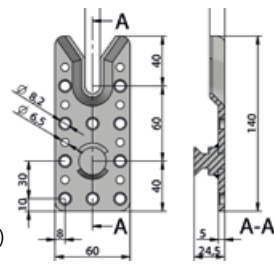
RICON® S60

Characteristic values for dimensioning can be taken from our Website.

RICON® S 140/60

Art.-No. VS: K126 / EK: K146

Main Beam Secondary Beam



VS

EK



in the sense of that the (minimum) amount of screws that are used with the connector plate: n = 10

Connector	Collar bolt	Screwing		Charact. values [GL24h] F _{2,Rk} [kN]
		Joint	Header	
140/60	VS	10 x CS 8x160	10 x CS 8x80	37,1

Available on request:

140/60	EK M12	10 x CS 8x160	10 x CS 8x80	37,1
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Locking clip: F_{3,Rk} = 18,0 kN

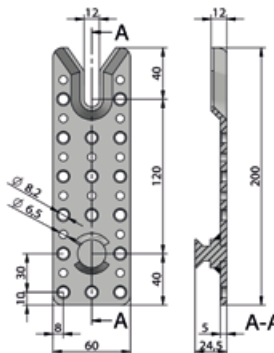
Minimum timber dimensions: 100 x 160 mm

Longer screws for end-grain available upon request:RICON® CS-screws 8x240 mm (F_{2,Rk} 40,2 kN*)

RICON® S 200/60

Art.-No. VS: K127 / EK: K148

Main Beam Secondary Beam



VS

EK



Screw amount: n = 16

Connector	Collar bolt	Screwing		Charact. values [GL24h] F _{2,Rk} [kN]
		Joint	Header	
200/60	VS	16 x CS 8x160	16 x CS 8x80	56,7

Available on request:

200/60	EK M12	16 x CS 8x160	16 x CS 8x80	44,2
--------	--------	---------------	--------------	------

Locking clip: F_{3,Rk} = 18,0 kN

Minimum timber dimensions: 100 x 220 mm

Longer screws for end-grain are available upon request:RICON® CS-screws 8x240 mm (F_{2,Rk} 66,5 kN*)

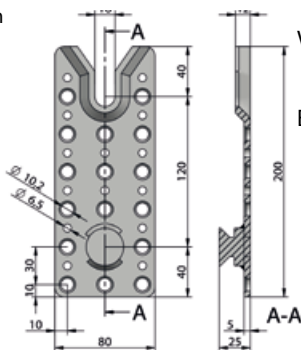
RICON® S80

Characteristic values for dimensioning can be taken from our Website.

RICON® S 200/80

Art.-No. VS: K128 / EK: K153

Main Beam Secondary Beam



VS

EK



Screw amount: n = 16

Connector	Collar bolt	Screwing		Charact. values [GL24h] F _{2,Rk} [kN]
		Joint	Header	
200/80	VS	16 x CS 10x200	16 x CS 10x100	79,1

Available on request:

200/80	EK M16	16 x CS 10x200	16 x CS 10x100	65,0
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Locking clip: F_{3,Rk} = 18,0 kN

Minimum timber dimensions: 120 x 230 mm

Longer screws for end-grain available upon request:RICON® CS-screws 10x300mm (F_{2,Rk} 92,4 kN*)

RICON® S installed in end grain, concealed on three sides.

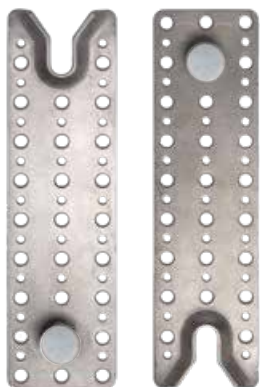


Installation of the secondary beam using RICON® S.

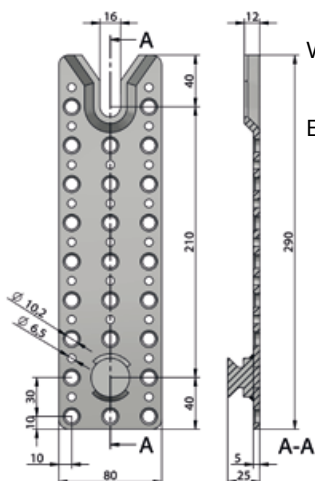
RICON® S 290/80

Art.-No. VS: K129 / EK: K156

Main Beam Secondary Beam



Screw amount: n = 25



Connector	Collar bolt	Screwing		Charact. values [GL24h] F _{2,Rk} [kN]
		Joint	Header	
290/80	VS	25 x CS 10x200	25 x CS 10x100	118,2

Available on request:

290/80	EK M16	20 x CS 10x200	20 x CS 10x100	72,2
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Locking clip: F_{3,Rk} = 18,0 kN

Minimum timber dimensions: 120 x 320 mm

Longer screws for end-grain available upon request:
RICON® CS-screws 10x300 mm (F_{2,Rk} 128,7 kN*)

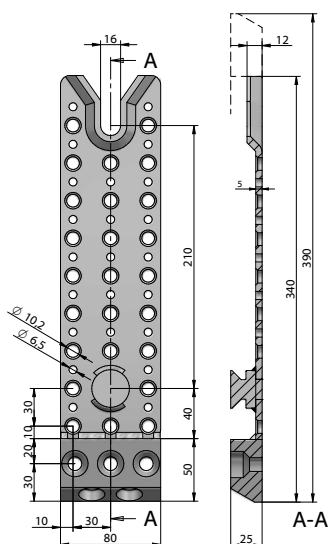
RICON® S390/80

Art.-No. VS: K191

Main Beam Secondary Beam



Screw amount: n = 28



Connector	Collar bolt	Screwing		Charact. values [GL24h] F _{2,Rk} [kN]
		Joint	Header	
390/80	VS ZP	28 x CS 10x200	28 x CS 10x100	170,9
		2 x CS 10x450	2 x CS 10x400	

Available on request:

Locking clip: F_{3,Rk} = 18,0 kN

Minimum timber dimensions: 120 x 720 mm
160 x 520 mm

Longer screws for end-grain available upon request:
RICON® CS-screws 10x300 mm (F_{2,Rk} 195,9 kN*)



RICON® S and MEGANT® connectors used in the project Aide et Soins à Domicile, Belgium by joinery: www.petermueller.be, Architect: www.atelierlanotte.be. Details: www.knapp-connectors.com/products/engineering-holzbau/

RICON® S screws

Self-tapping CS-screws RICON® S60 (RICON® S comes a set with CS-screws included)

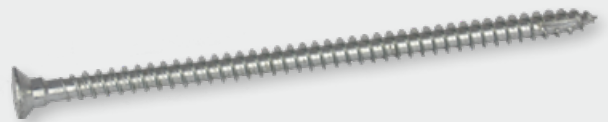
- Art.-No. Z580 CS-screw 8x80, self-tapping
 Art.-No. Z581 CS-screw 8x160, self-tapping
 Art.-No. Z530 CS-screw 8x240, self-tapping



Application: Installation of the RICON S plate onto a main and secondary beam.

CS-screws RICON® S80 with cut point (RICON® S will supplied with the appropriate CS-screws)

- Art.-No. Z582 CS-screw 10x100, self-tapping
 Art.-No. Z583 CS-screw 10x200, self-tapping
 Art.-No. Z651 CS-screw 10x300, self-tapping



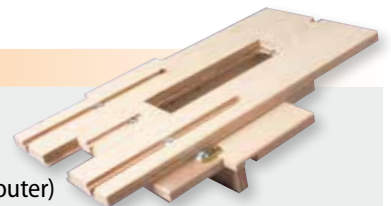
Application: Installation of the RICON® S plate onto a main and secondary beam.

RICON® S Accessories

Routing-jig RICON® S S60/S80

- Art.-No. K510 Routing-jig MULTI F60 (plywood) for all RICON® S60 sizes
 Art.-No. K511 Routing-jig MULTI F80 (plywood) for all RICON® S80 sizes

Tip: The MULTI F routing-jig is suitable for a $\varnothing = 30$ mm guide bushing (for plunge router) and $\varnothing = 15$ mm TCT straight router bit. MULTI F is adjustable depending on wood dimensions.



Application: For milling in concealed mounting.

TCT router cutter

- Art.-No. Z068 TCT Straight Router Bit $\varnothing = 15$, Length = 40 mm and $\varnothing = 12$ mm shaft



Application: For milling the pocket to recess the RICON® S

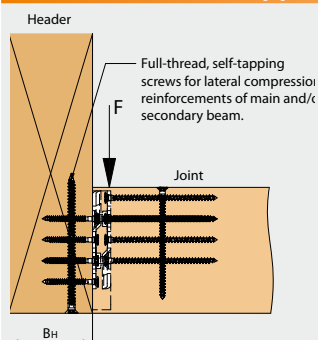
Pan head screws RICON® S80

- Art.-No. Z521 PH-screw 10x80
 Art.-No. Z522 PH-screw 10x120



Application: Full threaded countersunk screws for lateral compression reinforcements of main and/or secondary beam.

Full threaded self-tapping CS-screws available upon request

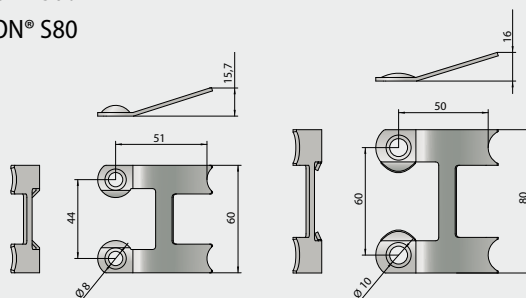


Diameter (d1)	Length (mm)													
$\varnothing = 8$ mm	160	180	200	220	240	260	280	300	350	400	450	500	550	600
$\varnothing = 10$ mm	160	180	200	220	240	260	280	300	350	400	450	500	550	600

Application: Full-thread, self-tapping screws for lateral compression reinforcements of main and/or secondary beam.

RICON® S locking clip (made of stainless spring steel)

- Art.-No. K157 Locking clip RICON® S60
 Art.-No. K158 Locking clip RICON® S80



Application: To lock the connection against the slide-in direction.

RICON® S collar bolt

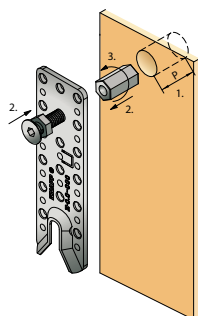
Adjustable collar bolt (EK) - available upon request.

Art.-No. Z558 S60: EK M12

Art.-No. Z559 S80: EK M16

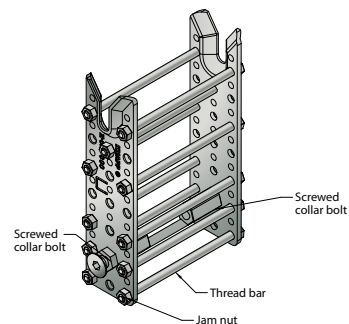
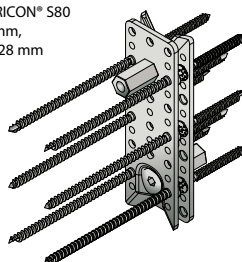


1. Bore blind hole
2. Fasten socket head screw with coupling nut and jam nut to the connector
3. Adjust height and tighten up
4. Plug connectors in blind hole and fasten with RICON® S CS-screws



Blind hole for RICON® S60
Depth: t = 40 mm,
Diameter: D = 22 mm

Blind hole for RICON® S80
Depth: t = 50 mm,
Diameter: D = 28 mm



Application: Tip: Connections to threaded rods, concrete anchors, and composite screws are possible..

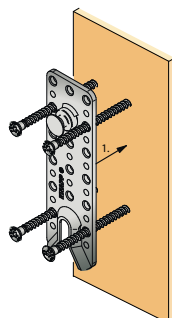
Welded collar bolt (VS) - Standard

RICON® S60 : VS M12

RICON® S80 : VS M16

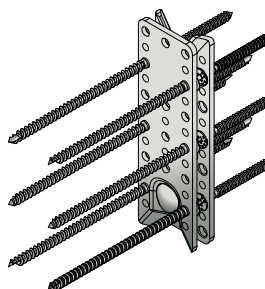


1. Position the plate and install RICON® S screws.



Screws used:
RICON® S60:
HT: 8x80
NT: 8x160

RICON® S80:
HT: 10x100
NT: 10x200



Application: For maximum load transfer of wood, steel and concrete connections. Different screw length for the end-grain are available depending on the load capacity that has to be carried. In the case of joint to concrete you have also the options to glue-in threaded rods or concrete anchors.

RICON® S

Fire resistance

- If an invisible connection is required or there are particular requirements for fire protection, RICON® S can be fully concealed on all 4 or 3 sides. thus giving maximum fire protection.
- Due to the self-tightening feature of the RICON® S, no additional fire protection covers or tape is required.
- According to EN 1995-1-2, 28 mm of wood is required to achieve 30 minutes fire resistance (R30). Higher fire resistance (i.e. R60) is also possible.
- Fire safety tests are available and can be requested.
- Fire protection Firestrip Interdens type 15 to protect the connector in case of fire resistance of R90 available on request.



RICON® S connector after fire testing for 90 minutes. The wood is charred all around. During the fire test the connector consistently held the applied vertical load.

RICON® S

Installation

- Plunge router with KNAPP® routing-jig.
- Installation with CNC joinery machine possible – details for machining can be found in all the most common CNC machining softwares.



CNC joinery machine



- Milling the pocket with the plunge router and routing jig. 60 mm or 80 mm wide and 25 mm deep. The length is cut according to RICON® S instruction manual.

Routing dimensions for RICON® S60 / S80

Width	Length	Depth (VK, EK, VS)
60 mm / 80 mm	var.	25 mm

Installation RICON® S VS



- Position the screws



- Screw on

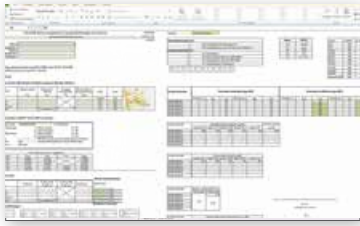


- Screw on counter part

Connections to beech gluelam and steel.



Our dimensioning tool for planners and structural engineers



We provide a pre-dimensioning tool, making fast pre-dimensioning of the selected connectors possible. The tool is used to calculate main and secondary beam joints for RICON® and RICON® S. It is a work aid and offers the planner and structural engineer a basis for the static engineering calculations of the project.

After a one time registration and agreeing to the terms and conditions, the program can be downloaded free of charge.



For more information:

<http://www.knapp-connectors.com/service/dimensioning-tool>



▶▶▶ Planner service

Our Software partners

Recommended software partners for machine processing:



The timber and wall connectors are implemented and available in SEMA's DataStore. The SEMA user can download the master data to the KNAPP® connection systems in the SEMA program. The master data of the KNAPP® connectors can be easily accessed via the DataStore button in the SEMA DataStore. These are available in German, English and French.

The connectors are also available in the Dietrich's software, including a static-software and other software partners.



2D and 3D structural components and their connection joints are calculated using the static software from DLUBAL. The connection joints can be dimensioned with the KNAPP® connectors RICON®, GIGANT®, RICON®S and MEGANT®. The KNAPP® connectors are included in the DLUBAL as an additional tool.



The KNAPP® connectors RICON®, GIGANT®, RICON®S and MEGANT® have also been implemented in the Wallner Mild software.



More information:

<http://www.knapp-connectors.com/service/links>



▶▶▶ Planner service



Object: French Pavillon Expo 2015; Connector: RICON® S and MEGANT®, Joinery: Simonin, www.simonin.com/en, Architect: x-tu, Paris (FR), Planner: Design-to-production, year of construction: 2015, Developer: France Agri Mer, Construction method: timber-frame construction, Project details: The inspiration for the French pavilion on the Expo in 2015 in Milan was the covered market as a symbol for the French food culture. The three floors high construction mainly consists of wood, including the nearly 1500 square metre wide vault in its core.



Contact

+43 (0)7474 / 799 10
 +49 (0)8106 / 99 55 99 0
 info@knapp-connectors.com
 +1 877-888-7773
 info@KNAPPconnectors.com
 knapp-connectors.com/contact



Service

Are you looking for the right connector for your next project? Find your sales representative easily on our website:
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Downloads

All brochures, data sheets, technical details can be downloaded from our website.
 knapp-connectors.com/downloads



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Knapp GmbH | Wassergasse 31 | A-3324 Euratsfeld | Tel.: +43 (0)7474 / 799 10 | Fax: +43 (0)7474 / 799 10 99

Knapp GmbH | Germany | Foehrenweg 1 | D-85591 Vaterstetten
 Tel.: +49 (0)8106 / 99 55 99 0 | Fax: +49 (0)8106 / 99 55 99 20 | E-Mail: info@knapp-connectors.com

www.knapp-connectors.com



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