

SHERPA CONNECTION SYSTEMS

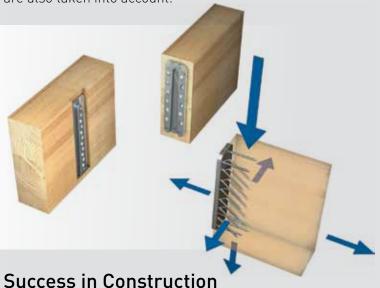


SHERPA FOR WALL, FLOOR AND STRUCTURE

Function

SHERPA-connectors consists of two aluminum parts, which in principle creat a form-fitting connection like a traditional dovetail connection.

This simply ingenious system allows for a safe force transfer in installation direction, opposite the installation direction and perpendicular to the installation direction. Tension and compression forces are also effortlessly handled. Moment effects are also taken into account.



The sophisticated and proven SHERPA-technology allows an efficient and competitive design as well as for the timely completion of sophisticated structures throughout the construction industry.

The applications range from connections in timber engineering through connections to other materials such as steel or concrete, to sunrooms, carports and stairs.

The broad product range allows a customized, safe and efficient solution for every task.

The high degree of pre-fabrication and the fast installation of these standardized connectors ensure the economical completion of a vast range of projects.







CARPORTS











THE ADVANTAGES ARE OBVIOUS:

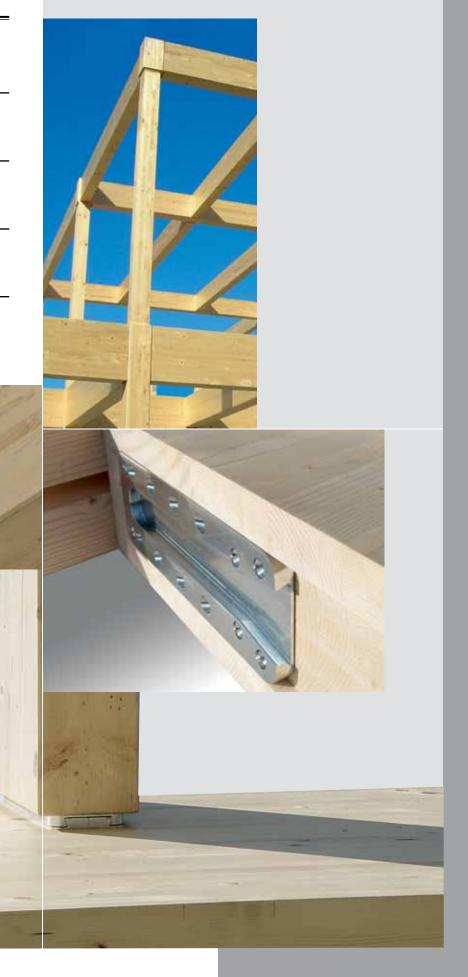
SAFETY THROUGH APPROVED SYSTEM

MULTI-FUNCTIONAL IN STRENGTH & APPLICATION

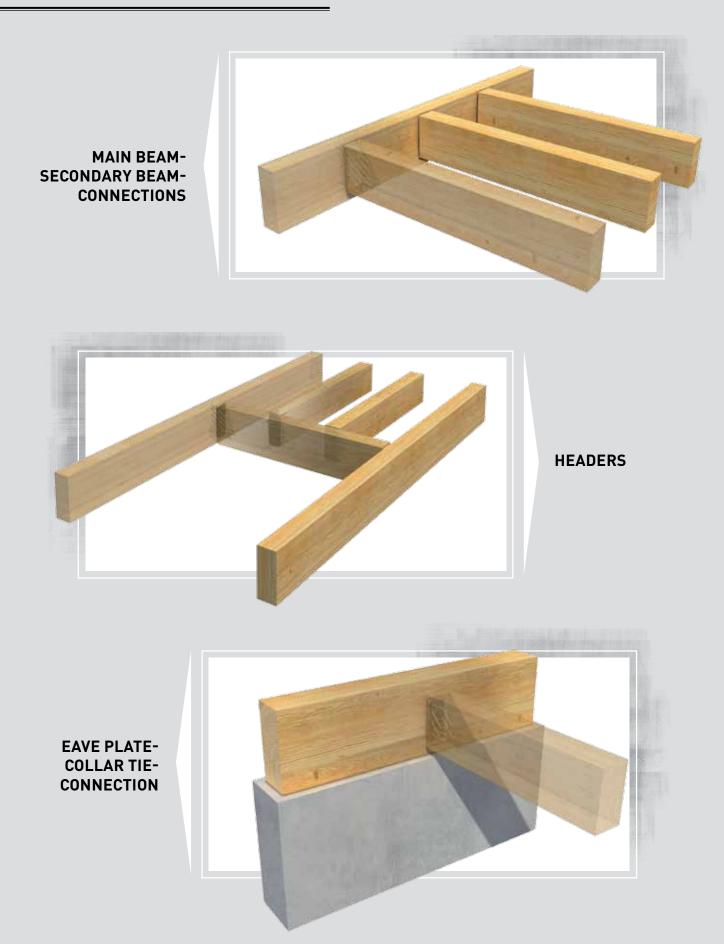
STANDARDIZED AND SIMPLE CALCULATION

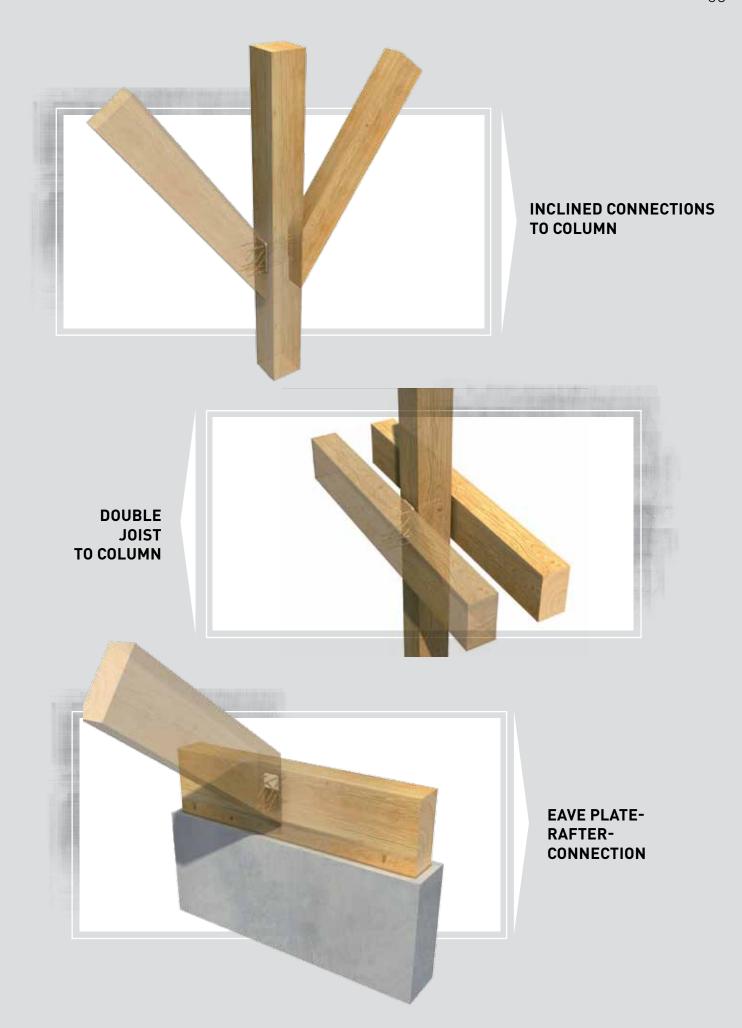
HIGH DEGREE OF PRE-FABRICATION

FAST INSTALLATION



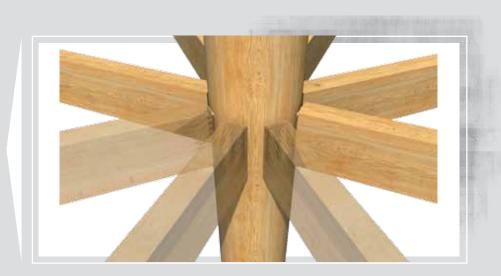
APPLICATION-EXAMPLES





APPLICATION-EXAMPLES

JOIST/BEAM CONNECTIONS TO COLUMN





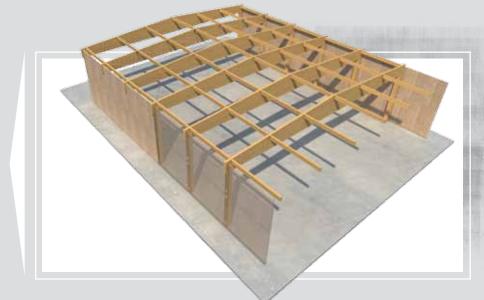
STAR-SHAPED STRUCTURE

CIRCULAR STRUCTURE





FASTENING OF MASSIVE WOOD / X-LAM ELEMENTS



WIDE-SPAN STRUCTURES



RESIDENTIAL AND OFFICE BUILDINGS

TECHNICAL APPROVALS

Approvals ensure the high degree of quality and safety of the products. They include all key provisions for quality assurance, areas of application and material characteristics as well as acurately listing and describing the relevant standards.

The following approvals have been granted so far:

German Institute for Construction Technology (DiBt):

Z-9.1-558 SHERPA "Timber-series" valid through July 31st 2015

Z-9.1-788 SHERPA "XL-series" valid trough June 7th 2016

Austrian Institute for Construction Technology (OIB):

ETA-12/0065 SHERPA "Timber-series" valid through April 17th 2017

ETA-12/0067 SHERPA "XL-series" valid through June 14th 2017

The full approvals can be downloaded on our website **www.sherpa-connector.com** in the download area.





FIRE PROTECTION

Crucial for the fire protection design of a SHERPA-connection are the sufficient covering of the screws by the wood as well as the heating of the aluminum plates. The required minimum screw edge distances should be calculated using the well-known burn-off and charring rates of wood and wood products.

The following three fire protection methods are available for the connector plates:

Gaps can be covered using wood products or mineral materials. In structures with accessible connections, this method could be applied after the structure is finished.

A gap free housing of the connector (concealed) in the main beam or secondary beam is the most effective fire protection method.



The use of an intumescent fire protection laminate can increase the fire resistance dramatically. This method is feasible for housed (concealed) connectors as well as face mounted (not concealed) connectors.



Research and development work on this topic is close to completion and will be presented shortly. Latest results and information is available and can be found on the website **www.sherpa-connector.com** .

CONNECTIONS TO STEEL OR CONCRETE

The connection to steel or concrete is done with a dovetail-plate (male part) that is 5 mm thicker. Holes to receive concrete screws, expanding metal anchors or steel bolts are provided according the intended use. The dado-plate (female part) remains unchanged for the connections. The calculation of the capacities of concrete screws, expanding metal anchors or steel bolts is done according appendix C of ETAG 001. The secondary beam connection is done using the regular wood screws and calculated accordingly.

Currently two options are available:

Direct connection

The dovetail-plate (male part) is directly connected to the concrete surface using concrete screws or expanding metal anchors. It is permissible to clear an uneven surface with a mortar layer of maximum 5 mm thickness.



Indirect Connection

For this option, first a 12 mm thick steel plate with studs is cast into the concrete and is later used as a base plate. The dovetail-plate (male part) is then bolted into pre-drilled holes using steel bolts.



PRODUCTION

All components of the SHERPA-connector are produced in Austria with the highest precision and diligence. Latest CNC-technology in combination with optimized fabrication processes are being used.



The quality management plays a vital role in the individual fabrication steps. Proven verification mechanisms ensure the accurate fit of thousands of dovetail- (male) and dado- (female) plates of a connector type to one another. With SHERPA it is possible for example to use identical secondary beam connections on the construction site. Therefore, it creates the foundation for efficient and economical connections in the construction industry during the fabrication of the individual aluminum plates already.









ASSEMBLY-SERIES

FOR PROFESSIONALS & DO-IT-YOURSELF

EASY TO USE

SAFE & RELIABLE

FOR A FAST ASSEMBLY & PRE-FABRICATION









The practical Assembly-series is perfectly suited for the safe production of sunrooms, carports, stairs, landings and many more.

ASSEMBLY - SERIES



Mini 10

Dimensions: 10 x 40 mm Thickness: 10 mm

9 pcs. 8 x 80

screws 4 pcs. 8 x 80



4 pcs. 3 x 35



Mini 17

Dimensions: 17 x 40 mm Thickness: 10 mm



W 8

Dimensions: 80 x 50 mm Thickness: 20 mm

WTS 6 special

Thickness: 20 mm

2 x locking screws

Dimensions: 110 x 35 mm

screws

4 pcs. 3,5 x 35



WTS 1

Dimensions: 32 x 30 mm Thickness: 17 mm



Multi

Dimensions: 80 x 96 mm Thickness: 20 mm 1 x retaining key

6 pcs. 5 x 60



screws

8 pcs. 8 x 80



WTS 1 special

Dimensions: 32 x 35 mm Thickness: 20 mm 1 x locking screw



A 1

Dimensions: 35 x 55 mm Thickness: 17 mm

screws

6 pcs. 5 x 60



screws

6 pcs. 5 x 60



WTS 3 special

Dimensions: 55 x 35 mm Thickness: 20 mm 1 x locking screw



A 3

Dimensions: 40 x 80 mm Thickness: 20 mm

screws

6 pcs. 5 x 60





WTS 5 special

Dimensions: 110 x 35 mm Thickness: 20 mm 2 x locking screws

screws

9 pcs. 5 x 60

XS - XXL SERIES

SAFETY THROUGH APPROVAL & MONITORING

SIMPLE & FAST CALCULATION

HIGH DEGREE OF PRE-FABRICATION

FAST INSTALLATION













The innovative connector types can be used in various areas of construction.

From connections in timber engineering through roof and wall components to mixed- and specialty structures with steel and concrete, anything is possible.

XS - SERIES¹

S - SERIES¹



XS 5

Dimensions: 30 x 50 mm Thickness: 12 mm Min. - X-Sec. HT: 50 x 80 mm

NT: 50 x 80 mm

screws
12 pcs. 4,5 x 50 fully threaded

characteristic load bearing capacity

approx. 5 kN



S 5

Dimensions: 40 x 50 mm Thickness: 12 mm

Min. - X-Sec. HT: 60 x 80 mm NT: 60 x 80 mm

characteristic load bearing capacity

12 pcs. 4,5 x 50 fully threaded approx. 5 kN



screws

XS 10

Dimensions: 30 x 70 mm Thickness: 12 mm Min. - X-Sec. HT: 50 x 100 mm

characteristic load bearing capacity

NT: 50 x 100 mm

18 pcs. 4,5 x 50 fully threaded approx. 10 kN



S 10

Dimensions: 40 x 70 mm Thickness: 12 mm

Min. - X-Sec. HT: 60 x 100 mm

NT: 60 x 100 mm

screws characteristic load bearing capacity

18 pcs. 4,5 x 50 fully threaded approx. 10 kN



XS 15

Dimensions: 30 x 90 mm Thickness: 12 mm Min. - X-Sec. HT: 50 x 120 r

Min. - X-Sec. HT: 50 x 120 mm NT: 50 x 120 mm

characteristic load bearing capacity
21 pcs. 4,5 x 50 fully threaded approx. 15 kN



S 15

Dimensions: 40 x 90 mm Thickness: 12 mm

Min. - X-Sec. HT: 60 x 120 mm NT: 60 x 120 mm

screws characteristic load bearing capacity
21 pcs. 4,5 x 50 fully threaded approx. 15 kN



XS 20

Dimensions: 30 x 110 mm Thickness: 12 mm

Min. - X-Sec. HT: 50 x 140 mm NT: 50 x 140 mm

screws	characteristic load bearing capacity

25 pcs. 4,5 x 50 fully threaded approx. 20 kN $\,$



S 20

Dimensions: 40 x 110 mm Thickness: 12 mm

Min. - X-Sec. HT: 60 x 140 mm NT: 60 x 140 mm

screws characteristic load bearing capacity

25 pcs. 4,5 x 50 fully threaded approx. 20 kN

Min. - X-Sec. ... minimum x-section

HT ... main beam
NT ... secondary beam

1) incl. standard drilling for locking screw

XS - S

M - SERIES¹

L - SERIES¹



M 15

Dimensions: 60 x 90 mm Thickness: 14 mm

Min. - X-Sec. HT: 65 x 120 mm NT: 80 x 120 mm

screws	characteristic load bearing capacity
pcs. 6.5 x 65 fully threaded	approx. 15 kN



M 20

Dimensions: 60 x 110 mm Thickness: 14 mm

Min. - X-Sec. HT: 65 x 140 mm NT: 80 x 140 mm

screws	characteristic load bearing capacity
20 pcs. 6,5 x 65 fully threaded	approx. 20 kN



M 25

Dimensions: 60 x 130 mm Thickness: 14 mm

Min. - X-Sec. HT: 65 x 160 mm NT: 80 x 160 mm

screws	characteristic load bearing capacity
23 pcs. 6,5 x 65 fully threaded	approx. 25 kN



M 30

Dimensions: 60 x 150 mm Thickness: 14 mm

Min. - X-Sec. HT: 65 x 180 mm NT: 80 x 180 mm

screws	characteristic load bearing capacity
26 pcs. 6,5 x 65 fully threaded	approx. 30 kN



M 40

Dimensions: 60 x 170 mm Thickness: 14 mm

Min. - X-Sec. HT: 65 x 200 mm NT: 80 x 200 mm

screws	characteristic load bearing capacity
30 pcs. 6,5 x 65 fully threaded	approx. 40 kN

Min. - X-Sec. ... minimum x-section

HT ... main beam
NT ... secondary beam

1) incl. standard drilling(s) for locking screw(s)



L 30

Dimensions: 80 x 150 mm Thickness: 18 mm

Min. - X-Sec. HT: 100 x 180 mm NT: 100 x 180 mm

screws	characteristic load bearing capacity
15 pcs. 8 x 100 fully threaded	approx. 30 kN



L 40

Dimensions: 80x 170 mm Thickness: 18mm

Min. - X-Sec. HT: 100 x 200 mm NT: 100 x 200 mm

screws	characteristic load bearing capacity
18 pcs. 8 x 100 fully threaded	approx. 40 kN



L 50

Dimensions: 80 x 210 mm Thickness: 18 mm

Min. - X-Sec. HT: 100 x 240 mm NT: 100 x 240 mm

	NT: 100 X 240 HIIII
screws	characteristic load bearing capacity
ocs. 8 x 100 fully threaded	approx. 50 kN



21 p

L 60

Dimensions: 80 x 250 mm Thickness: 18 mm

Min. - X-Sec. HT: 100 x 280 mm NT: 100 x 280 mm

screws	characteristic load bearing capacity
25 pcs. 8 x 100 fully threaded	approx. 60 kN



L 80

Dimensions: 80x 290 mm Thickness: 18 mm

Min. - X-Sec. HT: 100 x 320 mm NT: 100 x 320 mm

screws	characteristic load bearing capacity
29 pcs. 8 x 100 fully threaded	approx. 80 kN



XL - SERIES¹



XL 55

Dimensions: 120 x 250 mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 280 mm NT: 140 x 280 mm

characteristic load bearing capacity

18 pcs. 8 x 160 fully threaded

approx. 55 kN



XL 70

Dimensions: 120 x 290 mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 320 mm

NT: 140 x 320 mm

characteristic load bearing capacity

21 pcs. 8 x 160 fully threaded

approx. 70 kN



XL 80

Dimensions: 120 x 330 mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 360 mm

NT: 140 x 360 mm

characteristic load bearing capacity

24 pcs. 8 x 160 fully threaded

approx. 80 kN



XL 100

Dimensions: 120x 370 mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 400 mm

NT: 140 x 400 mm

screws

characteristic load bearing capacity

25 pcs. 8 x 160 fully threaded

approx. 100 kN



XL 120

Dimensions: 120x 410 mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 440 mm

NT: 140 x 440 mm

characteristic load bearing capacity

29 pcs. 8 x 160 fully threaded

approx. 120 kN

Min. - X-Sec. ... minimum x-section

HT ... main beam

NT ... secondary beam

1) incl. standard drillings for 2 locking screws



XL 140

Dimensions: 120 x 450mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 480 mm

NT: 140 x 480 mm

characteristic load bearing capacity

32 pcs. 8 x 160 fully threaded

approx. 140 kN



XL 170

Dimensions: 120 x 490 mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 520 mm

NT: 140 x 520 mm

screws

characteristic load bearing capacity

36 pcs. 8 x 160 fully threaded

approx. 170 kN



XL 190

Dimensions: 120 x 530 mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 560 mm

NT: 140 x 560 mm

screws

characteristic load bearing capacity

40 pcs. 8 x 160 fully threaded

approx. 190 kN



screws

48 pcs. 8 x 160 fully threaded

XL 250

Dimensions: 120x 610 mm

Thickness: 20 mm

Min. - X-Sec. HT: 160 x 640 mm

NT: 140 x 640 mm

characteristic load bearing capacity

approx. 250 kN



XXL - SERIES¹











Min. - X-Sec. ... minimum x-section

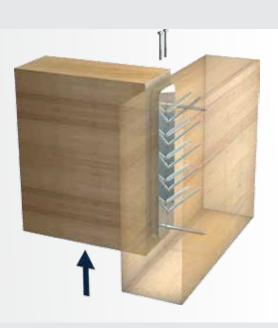
HT ... main beam
NT ... secondary beam

Locking Screws

If the connection requires a protection against uplift, the two connector parts can be held together with specially designed locking screws.

Since thread-forming screws are used, the result is an optimal form fit between the aluminum and the flanks of the thread. Thus, a greater level of safety against a self-loosening is achieved even at relatively high loads.

The installation of the locking screws is effortlessly possible. The connector can thus be loaded in an additional direction. Tailor-made locking screws are available depending on the connector series. The respective dimensions and number of locking screws can be found in the technical documentation.



¹⁾ incl. standard drillings for 2 locking screws

SHERPA - SPECIAL SCREWS

Depending on the connector type, the special screws which are stated in the respective approvals, have to be used in order to ensure the listed characteristic load carrying capacities.

These system-screws are in two coating options as either yellow zinc plated or Zinc-Nickel -coated and feature a **reinforced screw head.** A control of the screws can be done even after the installation of the screws, due to the stamped head.

Furthermore the special screws with a nominal diameter of 8 mm feature a **patented half-tip**, making them self-tapping and thus reduce the risk of splitting and ensure an optimal bite of the screws.

Designation	Dimensions [mm]	Drive
	3,5 x 35	T10
Screws Assembly - connector	5 x 60	T25
	8 x 80	T40

Special Screws	Dimensions [mm]	Drive		
XS - S - Series	4,5 x 50	T20		
M - Series	6,5 x 65	T25		
L - Series	8,0 x 100	T30		
XL - XXL - Series	8,0 x 160	T40		
(XS - XXL series: special screws with two coating options in yellow zinc plated or zinc-nickel-coated)				

Thread-forming uplift protection screws	Dimensions [mm]	Drive
XS - Series	1 pcs. 3 x 12	T10
S - Series	1 pcs. 3 x 20/9	T10
M - Series	1 pcs. 4 x 20/12	T20
L - Series	2 pcs. 5 x 47,8/20	T25
XL - XXL - Series	2 pcs. 6 x 100/55	T40



ASSEMBLY INSTRUCTION XS - THROUGH XXL - SERIES

Following three installation options for the SHERPA-connectors are explained. Considering the relevant minimum end and edge distances, the connector part with the larger number of holes has to be mounted to the end-grain member of the connection. The load carrying capacities stated in the approvals are ensured only with the use of SHERPA- special screws exclusively.

Visible Connection

The connector plates are face-mounted to the main and secondary member and therefore visible. To ensure a proper fit, it is recommended to pre-drill the positioning screws (straight screws).

Invisible (concealed) Connection

HOUSED INTO THE MAIN MEMBER

OPTION 1



Housing depth:

XS- through M-connectors, the housing depth has to be 1 mm less than the thickness of the connector. L- through XXL-connectors, the housing depth has to be 3 mm less than the thickness of the connector.

FACE-MOUNTED ON THE SECONDARY MEMBER



Pre-drill diameters:

4,5 x 50	max. 2,5 mm
5,0 x 60	max. 3,0 mm
6,5 x 65	max. 3,5 mm
8 0 x 100/120/160	max 50 mm

FACE-MOUNTED ON THE MAIN MEMBER





15.

HOUSED INTO THE SECONDARY MEMBER

Max. screw torque:

XS through S	1_ =	1.5	Nm
M			
LM			
XL through XXL			

Min.: Screw head is in contact with counter sink

Please note:

Housing the connector into the main member or the post/column reduces the capacity of these members. Is the connector housed into the secondary members, the housing channel may need to be covered for aesthetic reasons.

APPLICATION - NOTES

- The surfaces, on which the connector plates are mounted, have to be planar. The optimal wood material should be free of twisting and cupping and should be protected against cross-sectional distortions due to swelling and shrinkage after cutting.
- 2 The connector plate with the larger number of holes must be installed onto the end-grain.
- It is not admissible to install either of the connector plates flush with either the bottom edge of the main beam or the top edge of the secondary beam respectively.
- The maximum housing depth for concealed connections must not be deeper than the thickness of the installed connector itself. Tolerances in the housing depth should be adapted to the connection situation and geometry/complexity as well as the overall specified tolerances.
- Housing the connector into the main beam or the post/column reduces the capacity of these members. Is the connector housed into the secondary beam, the housing channel may need to be covered for aesthetic reasons.
- SHERPA-special screws are to be used without exception in combination with SHERPA-connectors. The load carrying capacities can only be ensured with this system.



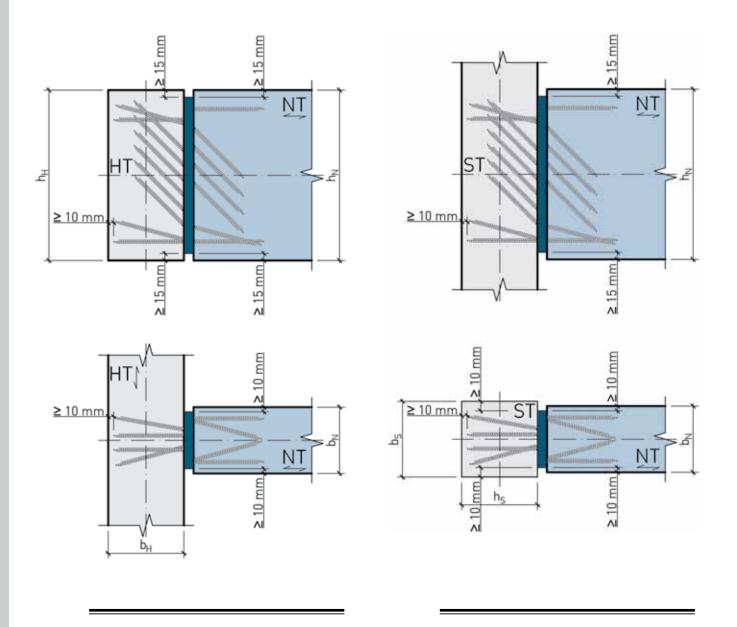
- 7 The screws are to be tightened in such way, that it doesn't lead to any distortion. To ensure the proper positioning of the connector plates, the positioning screws in the 90°-holes have to be installed first.
- After delivery to the site or immediately before final assembly on site, the connector plates should be visually inspected and any debris or dirt should be removed from the sliding surfaces prior to installation.
- The members to be installed should be rigged and lifted as level as possible. Before sliding the two connector plates together, the application of a lubricant like a silicon spray is suggested to facilitate the process. Please note that the wood surface may get dirty due to the leaking of lubricant residues after installation.
- After careful consideration of all the suggestions above, the members can be slowly and equally lowered at both supports. A good communication between the skilled workers is crucial.

MINIMUM EDGE DISTANCES FOR CONNECTORS

Following the minimum required edge distances for SHERPA-connectors are shown and illustrated. The sketches are created for the XL-series and are valid for the entire product range analogously. The only exception here is the assembly-series.

Minimum edge distances for a PERPENDICULAR main beam-secondary beam-connection

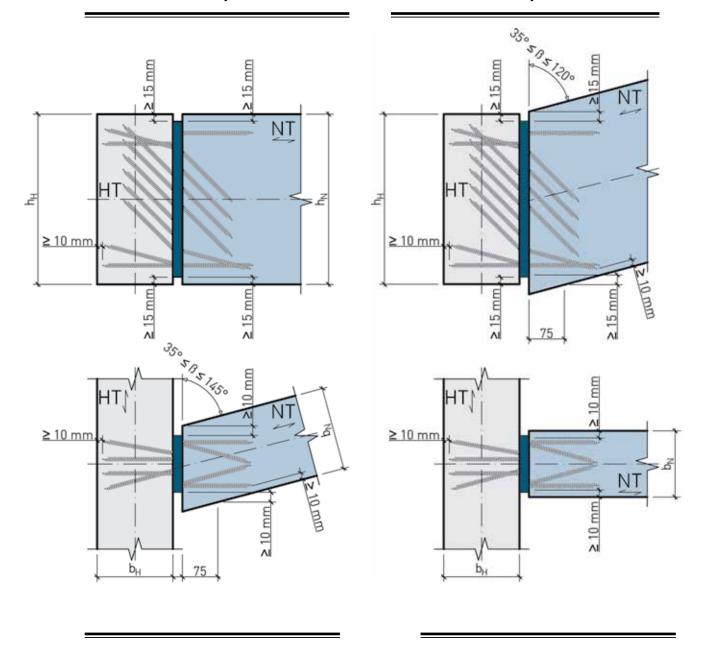
Minimum edge distances for a PERPENDICULAR column-secondary beam-connection



Especially for connection situations with oblique and/or inclined secondary beams, it is recommended to double check the compliance with the minimum edge distances using the 3D geometry data available in the download section of the SHERPA website (www.sherpa-connector.com). The technical support is available to check compliance.

Minimum edge distances for an OBLIQUE main beam-secondary beam-connection

Minimum edge distancesfor an INCLINED main beam-secondary beam-connection



HOTLINE, INFO, TECHNICAL SUPPORT

Do you have questions? No problem - contact us. Sustainable solutions are only created through expert advice and partnerships.



www.sherpa-verbinder.com/en/sherpa-calculationtool



WEBSITE

www.sherpa-connector.com

Use our download area where we provide numerous documents. Through the news ticker you get all noteworthy information on the latest developments and projects.



SOCIAL MEDIA

www.facebook.com/SHERPAConnector www.youtube.com/SHERPAConnector www.twitter.com/SHERPAConnector Use our Facebook fanpage and follow our tweets about current topics in timber construction. Interesting clips about application and use are available for you on our YouTube channel.







INFO - SERVICE



Tel +43 (0) 3127 20945 - 41 Fax +43 (0) 3127 20945 - 23 office@sherpa-connector.com The Info-Service is the personal and direct path, when it comes to questions about SHERPA-products. We are glad to send you further documents and information.



The SHERPA-product range is available through qualified dealers. Perfect logistics ensures short delivery times.

Orders received by 12:00 o'clock usually ship the same day and arrive where they are needed quickly - often the very next day.

In urgent cases you can call on our Express-Delivery service.

TECHNICAL SUPPORT



Tel +43 (0) 3127 20945 - 43 Fax +43 (0) 3127 20945 - 23 support@sherpa-connector.com Our team of experienced engineers is glad to support you and together with you find efficient and economical solutions.

MAILING ADDRESS



SHERPA Connection Systems GmbH Badl 31 A-8130 Frohnleiten



