



PITZL – Innovative Holzverbindungssysteme
Referent: Herbert Schaffer, Vertriebsleiter



Management of the company Metallbau Pitzl GmbH



- Today leading full-range supplier for innovative timber-construction connections, PITZL can look back at 25 years experience.
- The company started like a lot of others in a garage. Nearly 30 years ago the first post-connectors were manufactured by the today's senior boss.
- After renting a converted vehicle hall, in 1991 the construction of the new building in Altheim was attacked.
- Since 2001 the tried and trusted - from then on continually further developed - HVP-connectors are successful on the market, of course with a comprehensive technical approval like legally required.
- "For each use, a suitable concept" is the credo by PITZL. Important questions are ruled in the new European Technical Approvals for the entire range of CE-products. Beside the core market in the German-speaking area, like Germany, Switzerland and Austria, PITZL exports today among others towards Italia, Canada, Poland, France and Benelux countries.

- We currently employ about 50 employees and some temporary staff.
- We now deliver our goods all over the world - Japan - China - Australia - Canada - New Zealand - USA - Africa - And almost all of Europe

Our product range covers the following articles:

- Post carrier in different versions (rigid, height adjustable, for concreting, tilt, ...)
- connectors (wood-wood, steel-concrete connection, step connector)
- Balcony and fence columns - Various tools (lifting clamp, beam pull, drill, drilling template, etc.)
- special buildings (spiral staircases, terraces roofing, accessories for the installation of photovoltaic systems,)



Post bases



Surface coating

- **Galvanic:** applicable in service classes 1 & 2
- **Hot-Dip galvanized:** applicable in service classes 1, 2 & 3
- **Centrifugal galvanization**
- **ZiNiP coating:** applicable in service classes 1, 2 & 3
- **Stainless steel**



threaded rod



Post bases Right / left
threaded



10930/31



Plug-in system Z



heavy-duty

- adjustment range from 40 to 500 mm
- Load capacity up to 515 kN ($F_{1,Rk,Druck}$: Holz) / lift of value up to 50 kN ($F_{1,Rk,Zug}$: Holz) / horizontal load up to 18,2 kN ($F_{23,Rk}$: Stahl)
- Height adjustable in installed condition

When assembling and installing please pay attention to the following

- All-over and 100% horizontal support surface
- Fixing to the foundation using concrete screws or heavy load anchors
- Fastening to the wood using fully threaded screw (ETA)
- Concreted: Protection of the surface against cement
- Afterwards tile laying: Protection of the surface against high-content silicones or cement-containing jointing compounds.

Connectors



Areas of application:

➤ Wood-to-wood connections



➤ steel or concrete connections



header – joist / columns – joist / straight – inclined
connection /
grain wood – grain wood connections

Stützenanschluss verdeckt



Beidseitig verdeckter Anschluss von Nebenträgern



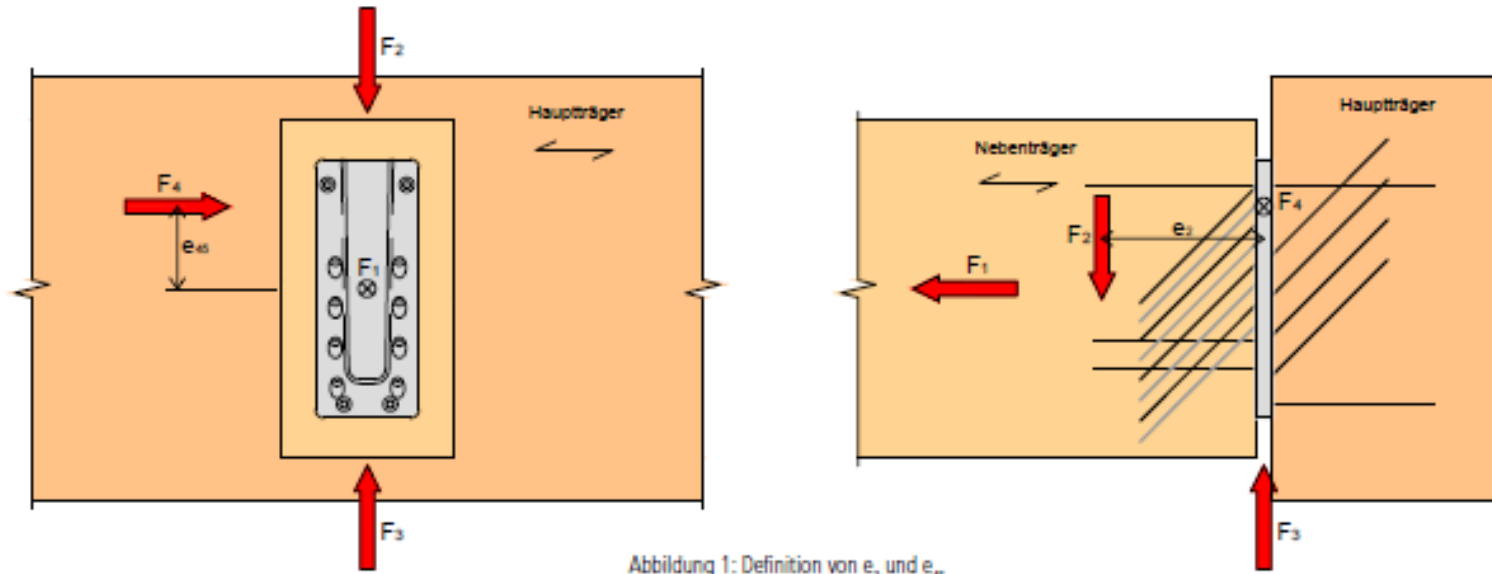


Abbildung 1: Definition von e_2 und e_{45}

Advantages:

- approved system (ETA)
- approved fire protection concept
- absorbing extremely high loads from 3 kN up to 615 kN
- Perfect screw connection concept with screws from different manufacturers and different lengths
- 100% pre-production level in the workshop
- Quick and easy assembly on site (including anodizing)

This must be considered

- edge distances
- screw geometry
- service class

Characteristic load bearing capacity with different screw lengths

Item no.	Dimensions w x h x d (mm)	Number of screws	Screws size	Minimal timber section with screws Ø 5 x 60 (mm)		Characteristic load capacity*		Packing unit	CE
				Header	Joist	Ø 5 x 60	Ø 5 x 100		
88210.0000	60 x 100 x 12	18	Ø 5 x 60 - 100	70 x 120	80 x 120	19.6	32.3	10	*
88214.0000	60 x 140 x 12	24	Ø 5 x 60 - 100	70 x 160	80 x 160	31.4	51.7	10	*
88318.0000	80 x 180 x 12	34	Ø 5 x 60 - 100	70 x 200	100 x 200	47.1	77.5	10	*
88322.0000	80 x 220 x 12	44	Ø 5 x 60 - 100	70 x 240	100 x 240	62.7	103.3	10	*

*F_{2,Rk} (kN) for GL24h with fully threaded screws: Ø 5 x 60 with effective thread length of 54 mm and Ø 5 x 100 with effective thread length of 94 mm.

For other screws and thread lengths or wood based materials: cf. design manual.

Example:



88322.0000

Characteristic load bearing capacity with Ø5x60
mm screws = 62,7 kN

Characteristic load bearing capacity with Ø5x100
mm screws = 103,3 kN



64,75 % Increase the characteristic load bearing
capacity by using longer screws

SPP post-purlin connectors:





- Various construction for machine or handbinding
- The same screwing concept as post – beams (pick-up of traction and horizontal loads)
- Allows easy and fast assembly on site
- Removable an detachable

SPP post-purlin connectors:



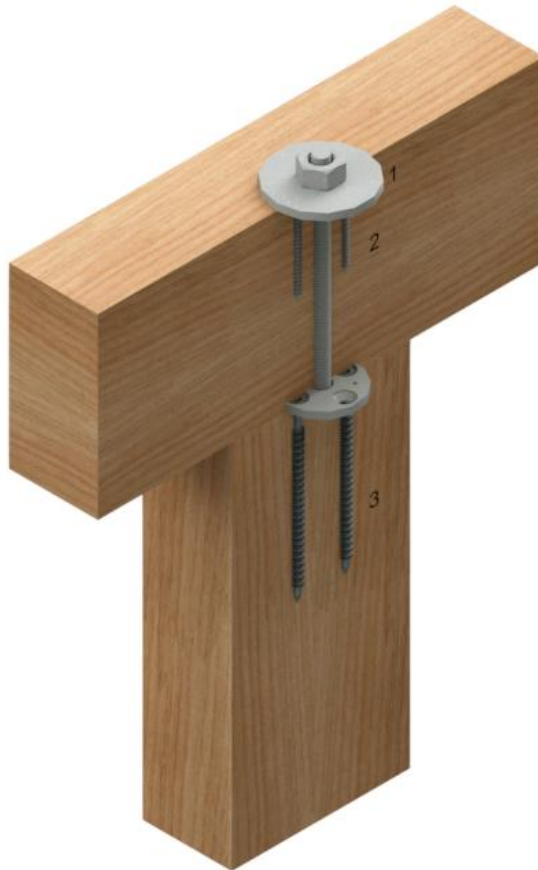
88715.0000

Lifting 62,5 kN
Shearing in the longitudinal
direction of the beam 33 kN



88712.0000

Lifting 16,3 kN
Shearing in the longitudinal
direction of the beam 29 kN



Wall connectors WVP



- For fast and safe positioning of wooden back walls (crane time saving)
- No statically used component – no ETA but assembly aid – with static proof

Item no.	Base plate with suspension hook in mm	Boreholes Ø 6.5 mm	Anchor plate with recess for hook in mm	Boreholes Ø 6.5 mm	Overall thickness when combined in mm	Characteristic value* traction	Characteristic value* shearing to the side
88060.0000	60 x 80 x 5	6	60 x 80 x 3	4	19	9.6 kN	11.4 kN

*tested with fully threaded screws Spax 6 x 60 mm.

Step connectors SVP

The solution for interior and exterior staircases without complex stairs – cheek milling machine



88630.0000



Balcony posts / Fence posts / railing supports



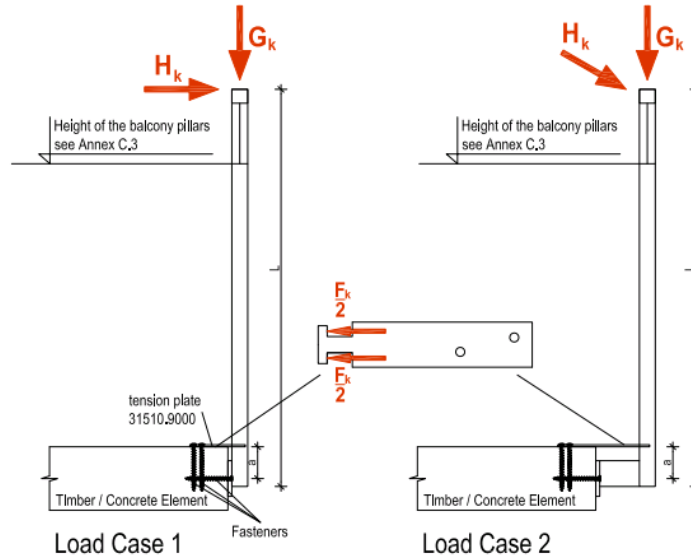
The first balcony support with ETA approval:



Pitzl Balkon- und Zaunsäulen

ETA-10/0413
unbegrenzt

Pitzl Metallbau GmbH & Co.KG,
D-84051 Altheim, Tel.:08703 9346-0,
www.pitzl-connectors.com



Characteristic horizontal forces, cf. Figure 7													
L ⁽¹⁾ =1,00 m, Steel S355 in [kN] ⁽¹⁾													
Distance a [mm]		0		60		80		100		120		140	
Load Case		1	2	1	2	1	2	1	2	1	2	1	2
Type	Code												
31510.	0000 ⁽⁵⁾	-	-	0,75	0,88	1,04	1,20	1,33	1,54	1,63	1,88	1,83	2,12
31510.	1060	-	-	0,75	0,88	1,04	1,20	1,33	1,54	1,63	1,88	1,83	2,12
31510.	0110	-	-	0,75									
⁽²⁾ Safety factors: $\gamma_{M,i}$		γ_{M0}											
31512.	0000 ⁽⁵⁾	-	-	0,75	0,88	1,04	1,20	1,33	1,54	1,63	1,88	1,83	2,12
31512.	1060	-	-	0,75	0,88	1,04	1,20	1,33	1,54	1,63	1,88	1,83	2,12
31512.	0110	-	-	0,75									
⁽²⁾ Safety factors: $\gamma_{M,i}$		γ_{M0}											
31610. ⁽³⁾	0000	1,5	1,65	-									
⁽²⁾ Safety factors: $\gamma_{M,i}$		γ_{M0}											

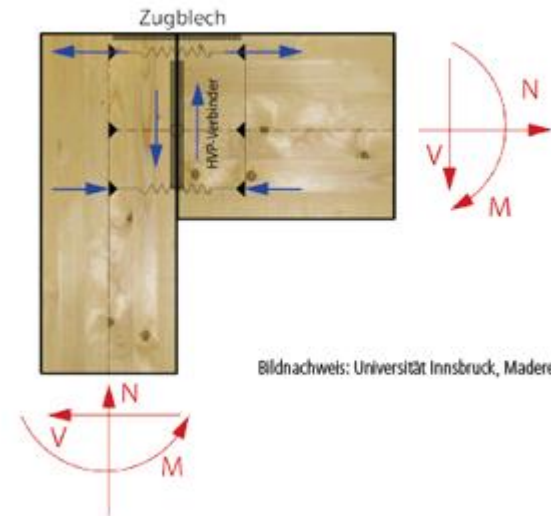


DIN EN 1090-2



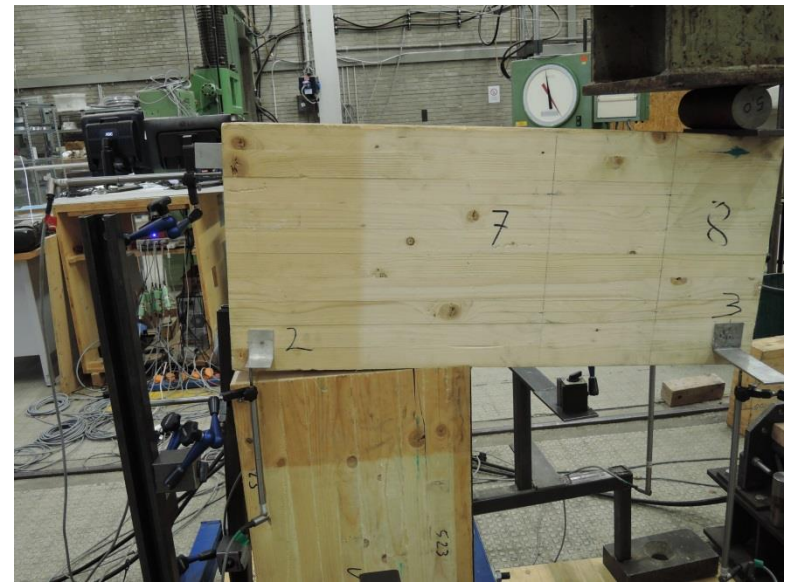
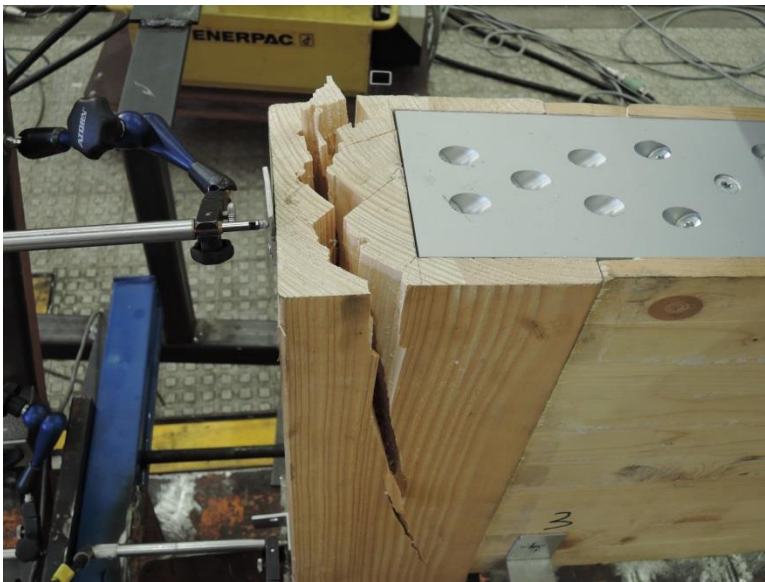
Infos, Download, technische Informationen und hilfreiche Montagevideos: www.pitzl-connectors.com
Oder lassen Sie sich von unseren kompetenten Mitarbeitern beraten: +49 (0) 8703 9346-0

Band – resistand corners



Bildnachweis: Universität Innsbruck, Maderebner

Test Band – resistand corners



Standard torsionally rigid stiff-jointed framework.

The system-connector Pitzl-RIGID simplifies the practicability of torsionally rigid stiff-jointed framework (connection post-beam) to consultancy and building firms.

The combination of the common HVP-connector and an optimally matched pull plate replaces the cappings of a carport construction without difficulty.

After extensive investigations the university of Innsbruck (workspace for timber construction) attested the use for hall construction as well.

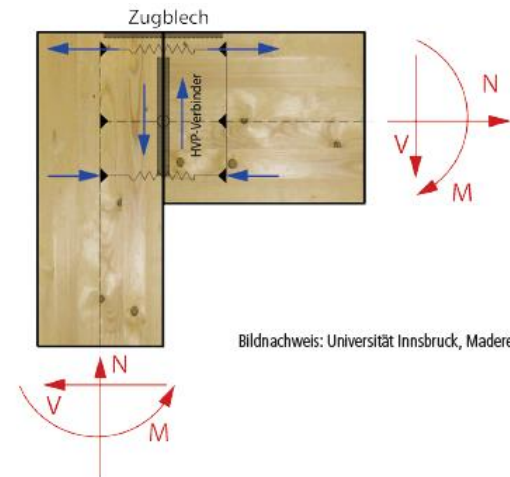
With the Pitzl-RIGID, joint formations with high torsion spring stiffness of almost 100 percent are possible.

Experimental studies confirm in addition to the bearing load also a comfortable installation of the connector concept.

Set consisting of connector and pull plate

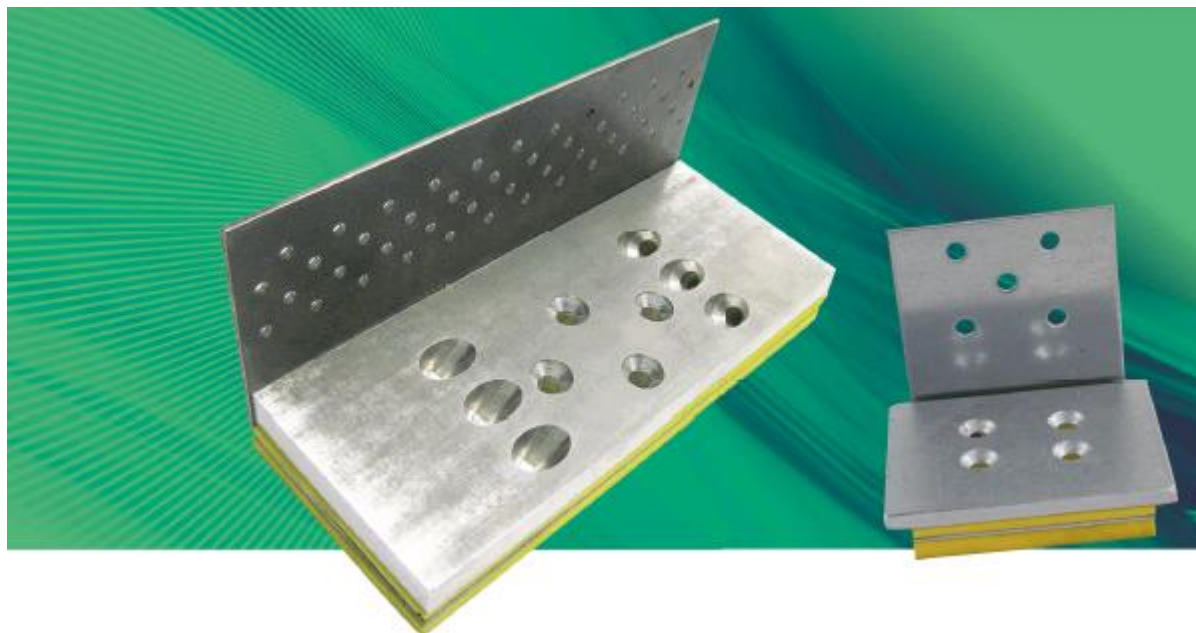
Type	Pull plate	Connector		Screws				N_{rk} [kN]	V_{rk} [kN]	$M_{t, rk}^{*1}$ [kNm]	K_{ϕ}^{*1} [kNm/rad]
		b [mm]	h [mm]	n_{90} [St.]	n_{45} [St.]	d [mm]	Länge [mm]				
88318.4000	80 x 215 x 15	80	180	10	24	5	100	31,4	72,6	6,5	249
88430.4000	120 x 325 x 15	120	300	8	16	8	160	48,3	93,2	10,9	415
88555.4000	120 x 325 x 15	140	550	8	48	8	200	59,8	345,9	18,2	692

*1 The stated values are advanced results from experimental studies



Bildnachweis: Universität Innsbruck, Maderebner

GePi Connect



Sound protection angle with power

In cooperation with the company Getzner GmbH and Roland Maderebner from the University of Innsbruck workspace for timber construction, the company Pitzl GmbH & Co. KG has developed a powerful, acoustic perfectly decoupled angle for the CLT construction.

In the course of this cooperation, the so-called GePi angle was created which, thanks to the new screw concept, shows a multiple increase in load capacity than comperable angles. Based on test results of the TVFA Innsbruck, characteristic shear and tensile forces of 40 kN are confirmed for the new angle. An additional advantage of this system is the energy dissipation in the case of earthquake. Cyclical stresses impressively confirm the efficiency of dynamic loads of the revolutionary GePi angle.

Application

Angle connector for shear removal on decoupled flanks

- Wood-wood connection
- High wind loads
- Earthquake resistant (GePi 40)
- Lifting forces
- Connection free of acoustical bridges

Advantages and benefits

- High strength against shear and tension forces
- No sound transmission via bypass
- Acoustically tested
- Earthquake resistant (GePi 40)
- Security for planners and users



DIN EN 1090-2



Infos, Download, technische Informationen und hilfreiche Montagevideos: www.pitzl-connectors.com
Oder lassen Sie sich von unseren kompetenten Mitarbeitern beraten: +49 (0) 8703 9346-0

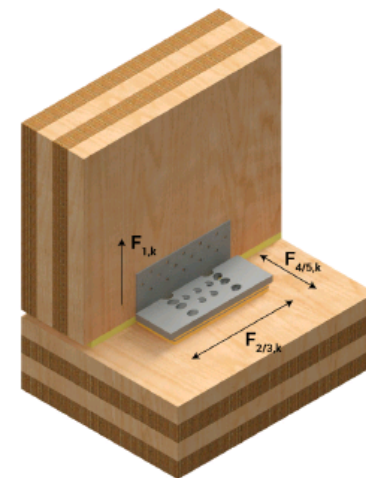
Characteristic load capacity approx. 60 kN

acc. to EN 1995:2008

Item no.	Description	Dimensions				Screws 8 mm		Characteristic load capacities [kN]*		
		A	B	H	s	horizontal	vertical	F1,k	F2/3,k	F4/5,k
81000.0100	GePi 100	100 mm	100 mm	100 mm	3	5	4	16	12	7,5
81000.0240	GePi 240	100 mm	240 mm	100 mm	3	16	11	50	60	12

*From pilot tests of the university of Innsbruck workspace for timber construction, Roland Maderebner

Item no.	Description	Material		
		Angle	Sylodyn	Load distribution plate
81000.0100	GePi 100	Steel S250GD + Z275	Closed-cell PUR	Steel S235
81000.0240	GePi 240	Steel S250GD + Z275	Closed-cell PUR	Aluminium EN AW 6082



Most elastomers show a non-linear material behaviour.

This leads to different material properties like static and dynamic stiffness in respect to the specific loading. To use the GEPI Connect with the material Sylodyn® in the most efficient way, we recommend to use an assembling aid to apply a defined loading on the elastomer.

Assembly tool

Item no.	Description
81010.0000	Assembling tool 2-parts for GePi angle

Screws

Item no.	Description	d	l	lg	dk	Drive
99200.0880	Truss head screw	8	80	60	18,0	T-40
99211.0816	Countersunk screw	8	160	150	14,8	T-40

Tools



Beam puller



55850.0000



55851.0000



55850.1000



55850.2000



55850.2100

Beam puller with turn-adaptor

Convenient work Lay the turn-adaptor on the object and screw. Differently arranged boreholes allow a smoothly fastening on timber or masonry. The mounted to the adaptor butt strap serves for the fastening in grooves or to edges

Fix-tighten-done

Other tools:





Milling and assembly templates

Milling and assembly templates for all connector sizes of HVP series.

The flexible and easily adjustable templates enable a quick adjustment of connector width.

Following correct adjustment, milling and assembly works can begin without any further adaptation being required.



Milling template to mill in our HVP connectors

Easy handling, precise and fast.

Thanks to its compact build, the milling device can be applied in all main and secondary joist connections for all HVP sizes with 12 mm thickness. It ensures accurate milling for the connectors through harmonised components. Linear guides enable an absolutely clean and accurate milling cut-out. The eccentric clamping device allows for fast and precise fastening. The ergonomic design makes for comfortable and time-saving work.

Lifting clamps PowerClamp

The lifting clamps - the latest innovation in timber construction.

Enables you easily to raise wooden beams and massive edge glued panels through a simple and quick fastening of the lifting clamps.

drill-apply-lift

Advantages of PowerClamp II

- Major time savings
- No other lifting gear needed
- No damage of wood surface
- No soiling



Website

www.pitzl-connectors.com

- Downloads:
- Catalogs, statics manuals, ETA, etc.
- Pitzl DC-Statics
- Assembly videos
- Sales Partner
- Fair
- Contacts



DIN EN 1090-2



Thank you for your
attention!



Schnell, einfach und präzise zum besten Ergebnis

- Holzverbinder
- Pfostenträger
- Balkensäulen
- Zaunsäulen
- immer aktuell auf www.pitzl-connectors.com

