

The time-saving joining system with form-locking anchoring

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P-System

The time-saving joining system with form-locking anchoring

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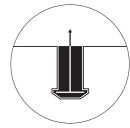


Features



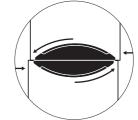
Fast installation

Inserting instead of screwing or glueing



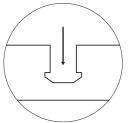
Strong

Form-locking anchorage across large surface areas



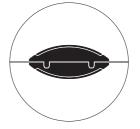
Lateral tolerance

Perfect, flush alignment of both workpieces



Shallow depth

Minimal cutting depth with maximum tensile strength



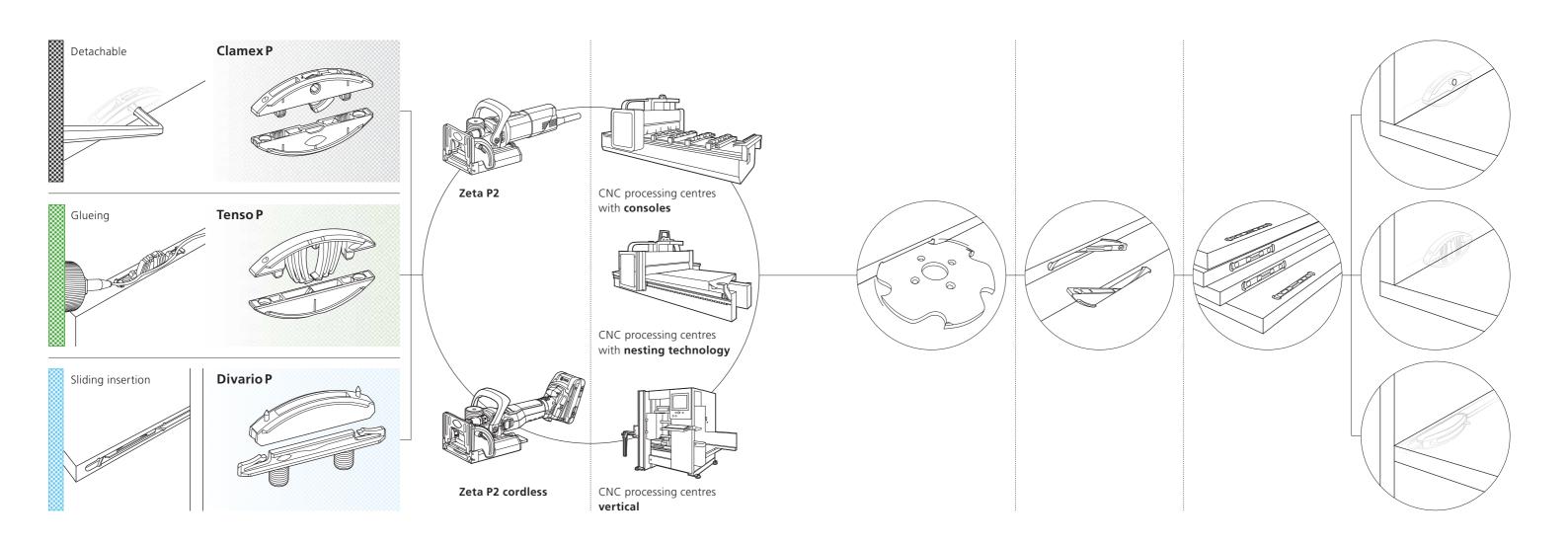
No twisting

The positioning pins prevent twisting without additional dowels

P-System

Overview

Joinir	ng methods	Connector	Machines		Sequence			
			Power tool	CNC machines	1 Cut	2 Insert the connector	3 Deliver flat pack	4 Connect the workpieces



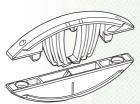
Connectors

Features overview



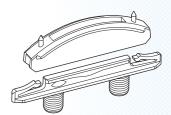
Clamex P

Detachable furniture connector



Tenso P

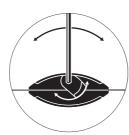
Self-clamping connector for glueing



Divario P

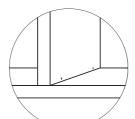
Self-clamping, invisible connector for slide insertion

Features



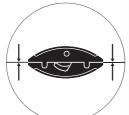
Detachable

Open the connection time and time again with the rotating lever



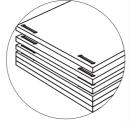
Aesthetic

The small, hardly visible opening ($\emptyset = 6 \,\text{mm}$) serves to close and open the connector



High clamping force

Clamp and glue workpieces at any angle, ~ 80 kg or 170 lb



Stackable

Workpieces with pre-installed P-System connectors are stackable for storage and transport



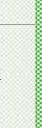
Versatile

The shallow element depth allows for mitres from 22.5 – 180°, surface, corner and dividing panel connections

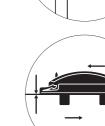


Glueing

Fixed joints of two workpieces



Invisible No visible connector



Invisible

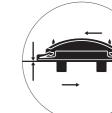
Guiding groove covers the connectors

Sliding insertion

Insertion between two

fixed sides or shelves via a

guiding groove



Clamped joint

No resistance while inserting until shortly before building the clamping force



Fast installation

Quick installation of the connectors without glue after transport



Assemble by sliding

Partially routed guiding groove for completely invisible furniture joints



High clamping force

Allows for perfect alignment and clamps the workpieces ~ 15 kg or 30 lb



Versatile

Simple glueing of mitre joints



Lower assembly force

In combination with the pretension clip, only a short force impulse is required to snap it into place



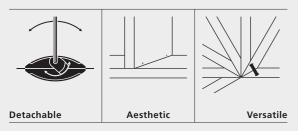


Clamex P-14

Detachable furniture connector



Features



Clamex P-14 is a detachable connector and is anchored in the form-locking P-System groove within seconds.

Through the minimalist 6 mm access hole, Clamex P-14 is firmly connected and disconnected using a lever.

Clamex P-14 eliminates the need for glue, allows aesthetic joints at all angles and is ideal for permanently joined or detachable mitres.

Clamex P-14 is used on mitre joints from 18 mm material thickness and in butt joints from 15 mm.

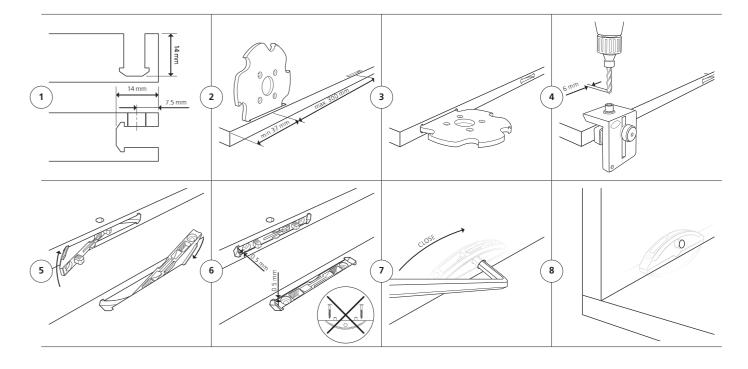


Articles



Clamex P-14	Art. No.
80 pairs	145334
300 pairs	145346
1000 pairs	145356
2000 pieces element with lever	145338
2000 pieces element without lever	145339

Function



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Technical data

Joining methods		Size	64×27>	< 9.7 mm		
			Cutter	Ø 100.4	×7ר 22 mm	
12 mm 18 mm 29 mm		E	Material connector	Fiberglass reinforced plastic		
2 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		Material of lever	Zinc die cast			
≥ 15 mm	≥ 18 mm	0 1 0 0 1 0 ≥ 12 mm	Installation tolerance	Long. ±	1 mm/radial ± 1 mm	
			Tensile strength (N) Up to	MDF 900 ¹	Particle board 800 ¹	Beech 1000¹
			Material range	Particle hardwoo	board, MDF, plywood,	softwood,

90° and 45° cover caps are available in a variety of colours PAGE 69 | See PAGE 64 for technical specifications

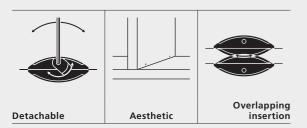
¹ See comment on load limits on **PAGE 75**

Clamex P-14/10 Medius

Detachable connector for centre panels for materials from 16 mm thickness



Features



Clamex P-14/10 Medius is a detachable connector and is anchored in the form-locking P-System groove within seconds.

Through the minimalist 6 mm access hole, Clamex P-14/10 Medius is firmly connected and disconnected using a lever.

The connector for divisions has two installation depths and is used when two shelves are attached to the same dividing panel at the same height. Due to the reduced installation depth of 10 mm, the minimal thickness for the division is 16 mm.

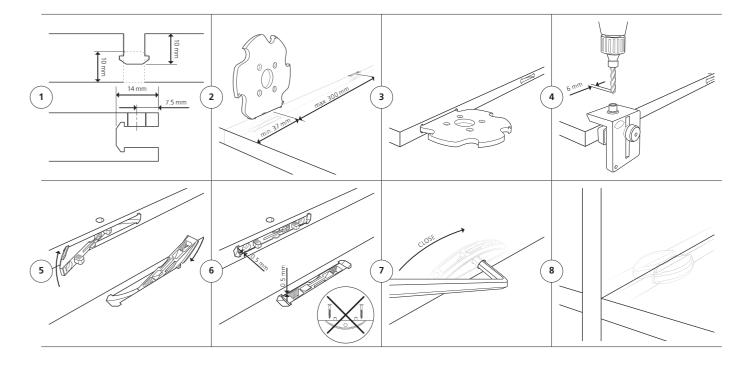


Articles



Clamex P-14/10 Medius	Art. No.
80 pairs	145370
300 pairs	145371
1000 pairs	145357
2000 pieces element with lever	145338
2000 pieces element without lever	145369

Function



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Joining methods	Size		5 × 9.7 mm × 9.7 mm		
	Cutter	Ø 100.4	Ø 100.4×7ר 22 mm		
z 12 mm	Material connector	Fibergla	Fiberglass reinforced plastic		
	Material of lever	Zinc die	Zinc die cast		
≥ 12 mm 18 mm	Installation tolerance	Long. ±	1 mm/radial ± 1 mm		
	Tensile strength (N) Up to	MDF 800 ¹	Particle board 600 ¹	Beech 900 ¹	
	Material range	Particle hardwoo	board, MDF, plywood, od etc.	softwood,	

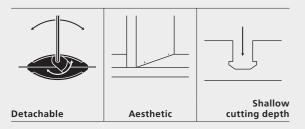
¹ See comment on load limits on **PAGE 75**

Clamex P-10

Detachable connector for materials from 12 mm thickness



Features



Clamex P-10 is a detachable connector and is anchored in the form-locking P-System groove within seconds.

Through the minimalist 6 mm access hole, Clamex P-10 is firmly connected and disconnected using a lever.

Clamex P-10 eliminates the need for glue, allows aesthetic joints at all angles and is ideal for permanently joined or detachable mitres.

Clamex P-10 is used on mitre joints from 15 mm material thickness and in butt joints from 12 mm.

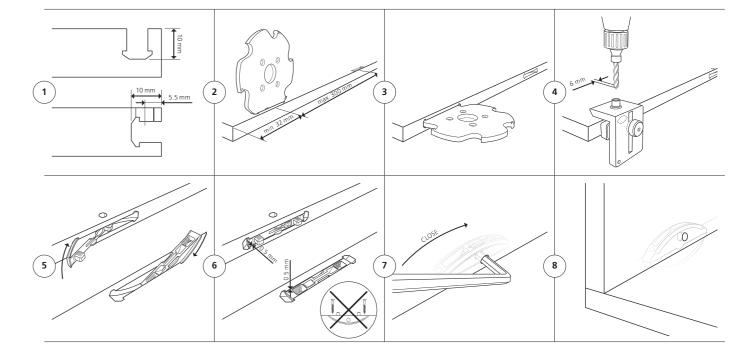


Articles

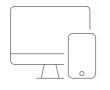


Clamex P-10	Art. No.
80 pairs	145372
300 pairs	145373
1000 pairs	145374
2000 pieces element without lever	145358

Function



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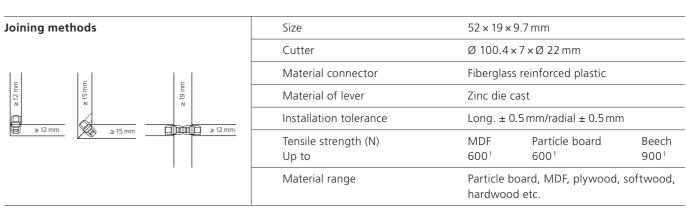










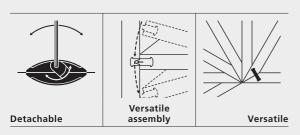


Clamex P-14/10 Flexus

Detachable furniture connector with flexible positioning pins



Features



Clamex P-14/10 Flexus is a detachable connector and is anchored in the form-locking P-System groove within seconds.

Through the minimalist 6 mm access hole, Clamex P-14/10 Flexus is firmly connected and disconnected using a lever.

The flexible positioning pins allow work pieces to be installed in an already assembled cabinet, simplifying the assembly sequence.

Clamex P-14 is used in mitre joints from 18 mm material thickness and in butt joints from 12 mm.

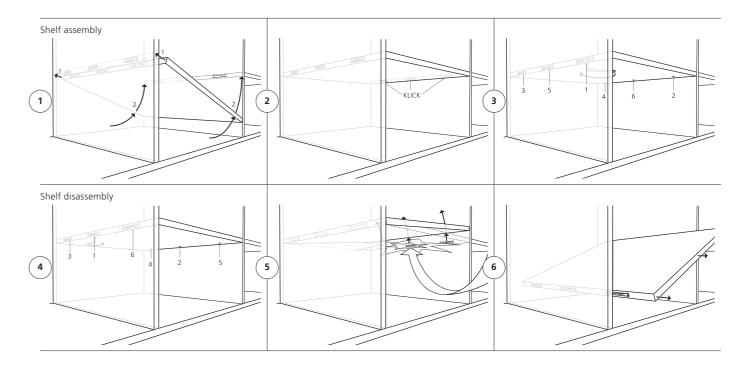


Articles



Clamex P-14/10 Flexus	Art. No.
80 pairs	145315
300 pairs	145316
1000 pairs	145317
2000 pieces element with lever	145318
2000 pieces element without lever	145369

Function



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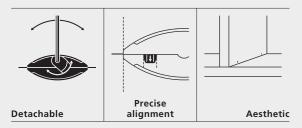
Joining methods	Size		5 × 9.7 mm × 9.7 mm	
	Cutter	Ø 100.4	×7ר 22 mm	
z 12 mm z 16 mm	Material connector	Fibergla	Fiberglass reinforced plastic	
	Material of lever	Zinc die cast		
≥ 12 mm	Installation tolerance	Long. ±	0 mm/radial ± 1 mm	
	Tensile strength (N) Up to	MDF 720 ¹	Particle board 600 ¹	Beech 810¹
	Material range	Particle hardwo	board, MDF, plywood od etc.	, softwood,

Clamex P-14 CNC

Detachable furniture connector with precise alignment



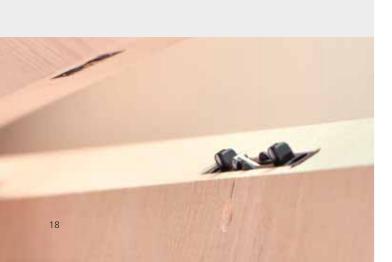
Features



Clamex P-14 CNC is a detachable connector and is anchored in the form-locking P-System groove within seconds. Through the minimalist 5 mm access hole, Clamex P-14 is firmly connected and disconnected using a lever.

Clamex P-14 CNC is ideal for production on CNC machines and, unlike Clamex P-14, is automatically aligned during assembly.

Clamex P-14 CNC is used in mitre joints from 18 mm material thickness and in butt joints from 12 mm.



Articles



Clamex P-14 CNC	Art. No.
2000 pieces element with lever	145388



Clamex P-14	Art. No
2000 pieces element without lever	145339



Clamex P-10	Art. No.
2000 pieces element without lever	145358



Clamex P-10 Medius	Art. No.
2000 pieces element without lever	145369

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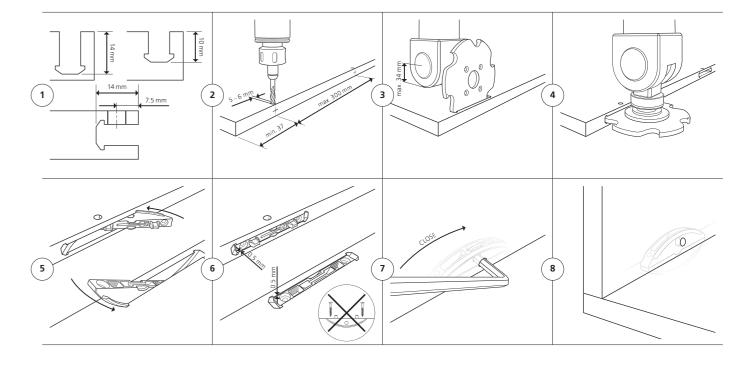








Function



Joining methods	Size	64 × 13.5 × 9.7 mm
E E 90 N N N N N N N N N N N N N N N N N N	Cutter	Ø 100.4×7ר 22 mm
	Material connector	Fiberglass reinforced plastic
	Material of lever	Zinc die cast
	Installation tolerance	Long. ± 0 mm/radial ± 1 mm
	Tensile strength (N)	Depending on the connector combination*
	Material range Up to	Particle board, MDF, plywood, softwood, hardwood etc.

Application examples

Clamex P

Furniture manufacturing/Interior fitting: Sideboards, shelves, wardrobes, trade show exhibits (display cases), kitchen furniture, TV furniture etc.

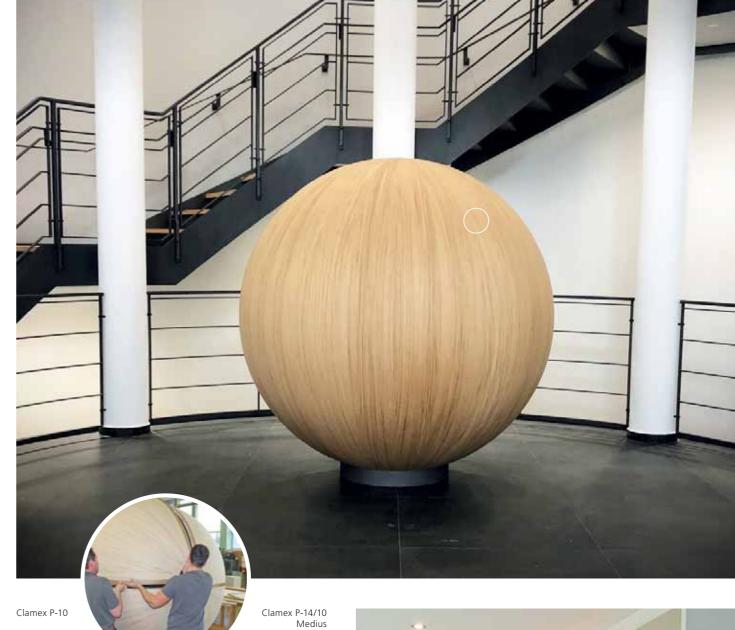
Shop fitting/Kitchen manufacturing: Wall elements, furniture, trade show exhibits (display cases), trade show exhibits, changing rooms, stools etc.



Clamex P-14 CNC



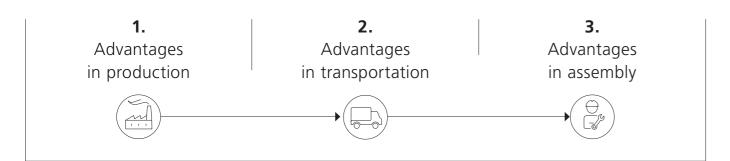






Advantages of the Clamex P

Detachable furniture connector



- Machining possible with Zeta P2 or CNC machinery
- Only one tool change from P-System cutter to 6 mm drill
- Same groove everywhere: whether corner connection, shelf, centre panel or mitres
- Consistently competent partners: from CAD to CAM and CNC

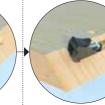
- Tool-free connector installation
- Workpieces with pre-installed
 P-System connectors are stackable for storage and transport
- No extra bags or loose hardware required with furniture shipment
- Tool-free connector disassembly for surface treatment
- Simple positioning of workpieces thanks to positioning pins
- Easy assembly with an Allen key
- Aesthetically small, barely visible hole (Ø = 6 mm)
- Open the connection time and time again with the rotating lever
- Lateral tolerance perfect, flush alignment of both workpieces



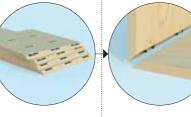
Machining with a Zeta P2 or CNC machine



2.
Only one tool change



Tool-free connector installation



Flat pack

delivery

Versatile for all angles and joining situations



Strong and detachable connection

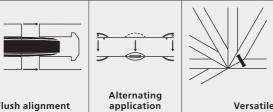


Bisco P

Aligning element, suitable for the P-System groove

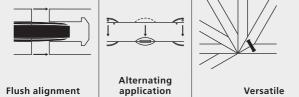


Features



Bisco P is a plastic biscuit which fits into the 7 mm P-System groove and is held in the groove due to its surface structure. Bisco P is used in combination with Clamex or Tenso as a cost-effective alignment element and ensures flushness of the joint. The Bisco can also be used as a dry joint as a test before the work piece is permanently joined with Tenso P and adhesive.

Bisco P-14 is used in combination with Clamex P-14 or Tenso P-14; and Bisco P-10 with the same connectors in size P-10.



Articles

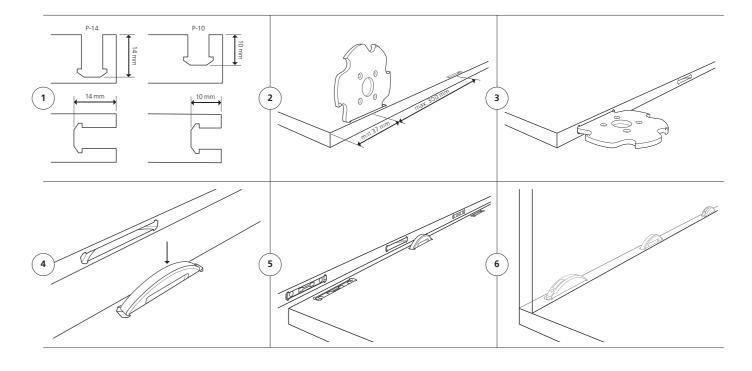


Bisco P-14	Art. No.
80 pieces	145301
300 pieces	145302
1000 pieces	145303



Bisco P-10	Art. No.
80 pieces	145304
300 pieces	145305

Function



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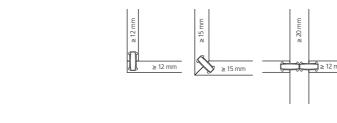












Joining methods

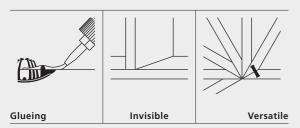
		Bisco P-14	
	29 mm	Size	$65 \times 27 \times 7 \text{ mm}$
	≥ 29	Cutter	Ø 100.4×7ר 22 mm
≥ 18 mm	≥ 12 mm	Material connector	Plastic
		Installation tolerance	Long. ± 2 mm
	1 1	Tensile strength (N)	Depending on the connector combination*
		Bisco P-10	
	E	Size	52 × 19 × 7 mm
	≥ 20 mm	Cutter	Ø 100.4×7ר 22 mm
≥ 15 mm	≥ 12 mm	Material connector	Plastic
		Installation tolerance	Long. ± 2 mm
	1 1	Tensile strength (N)	Depending on the connector combination*
		Material range	Particle board, MDF, plywood, softwood, hardwood etc.

Tenso P-14

Self-clamping connector for glueing materials from 16 mm thickness



Features



Tenso P-14 is a self-clamping glueing aid and is anchored in the form-locking P-System groove within seconds.

The high clamping force of Tenso leads to perfectly clamped joints without the need for clamps or presses, regardless of the angle of the work pieces.

Aesthetic joining is possible without visible connectors, with short assembly times and without the need to wait for the glue to dry.

Tenso P-14 is used on mitre joints from 18 mm material thickness and in butt joints from 15 mm.



Articles



Tenso P-14	Art. No.
80 pairs	145415
80 pairs, with preload clip	145415S
300 pairs	145425
300 pairs, with preload clip	145425S
1000 pairs	145435
2000 pieces element with spring	145440
2000 pieces element without spring	145441



Tenso P-14 preload clip	Art. No.
300 pieces	145426
1000 pieces	145436

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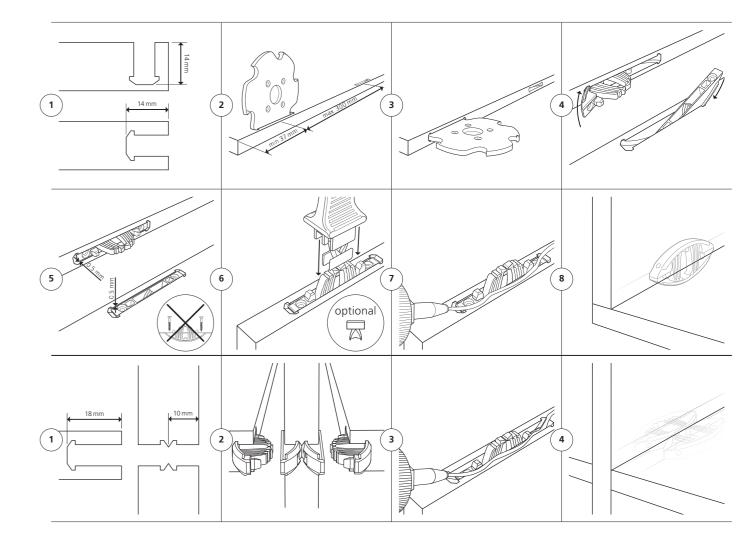




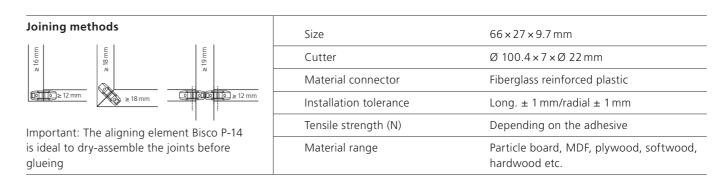




Function



Technical data

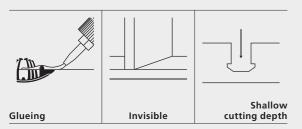


Tenso P-10

Self-clamping connector for glueing thin materials from 12 mm thickness



Features



Tenso P-10 is a self-clamping connector to glue and is anchored in the form-locking P-System groove within seconds.

The high clamping force of Tenso leads to perfectly clamped joints without clamps or presses, regardless of the angle of the work pieces.

Aesthetic joining is possible without visible connectors, with short assembly times and without having to wait or the glue to dry.

Tenso P-10 is used on mitre joints from 15 mm material thickness and in butt joints from 12 mm.



Articles



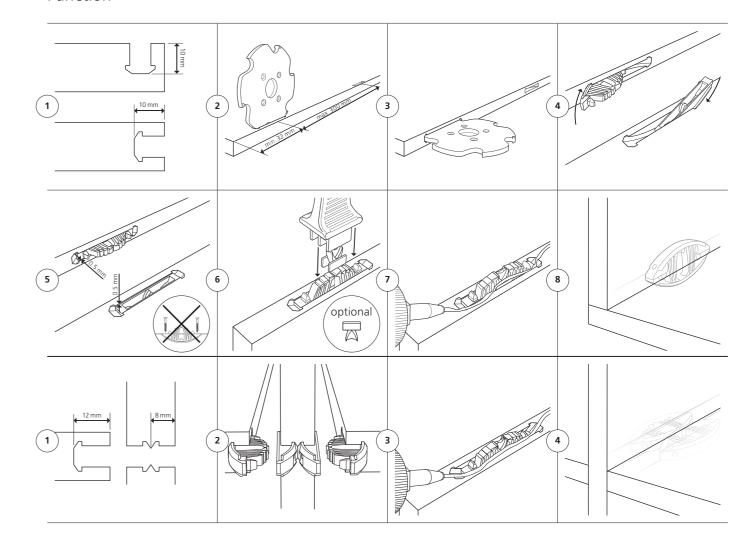


Tenso P-10	Art. No.	
80 pairs, with preload clip	145418	
300 pairs, with preload clip	145428	
1000 pairs, with preload clip	145438	
2000 pieces element with spring	145442	
2000 Spieces element without spring	145443	



Tenso P-10 preload clip	Art. No.
2000 pieces	145445

Function



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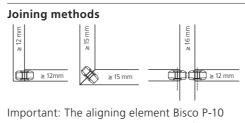








Technical data



Important: The aligning element Bisco P-10
is ideal to dry-assemble the joints before
glueing

Size	52 × 19 × 9.7 mm
Cutter	Ø 100.4×7ר 22 mm
Material connector	Fiberglass reinforced plastic
Installation tolerance	Long. ± 1 mm/radial ± 1 mm
Tensile strength (N)	Depending on the adhesive
Material range	Particle board, MDF, plywood, softwood, hardwood etc.

See PAGE 67 for technical specifications

Application examples

Tenso P

Furniture manufacturing/Interior fitting: Furniture, shelves, stools, sideboards, wardrobes, wall panels, cladding, decorative strips, covering panels, plinths, face frames etc.

Shop fitting/Kitchen manufacturing: Furniture, shelves, stools, sideboards, wardrobes, show cases, sales counters, wall panels, cladding etc.

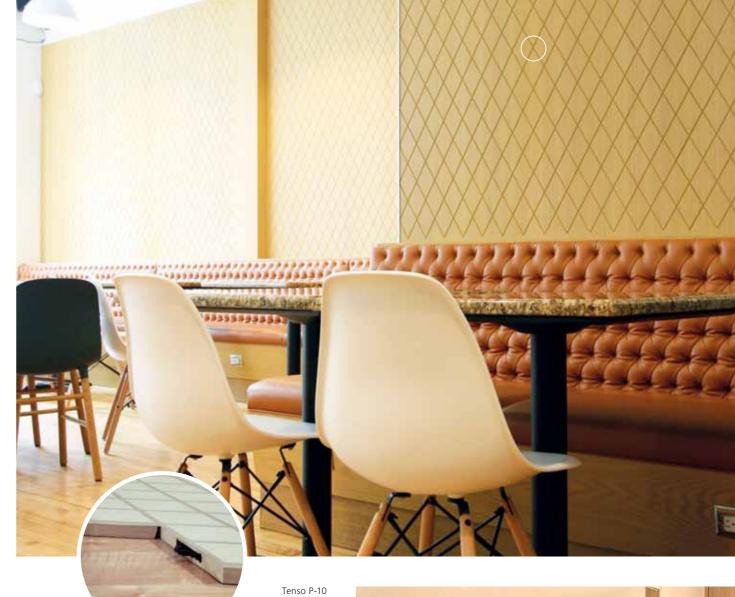
Tenso P-14



Tenso P-14







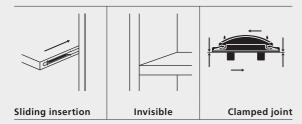


Divario P-18

Self-clamping, invisible connector for slide insertion



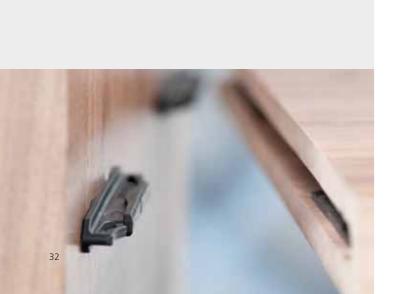
Features



Divario P-18 is a detachable connector for slide-in insertion and is anchored in the form-locking P-System groove within seconds.

The connector is used to slide shelves or partitions into an already assembed cabinet. In the process, the Divario P-18 clamps the workpieces together firmly and ensures perfectly closed joints without visible connectors.

Divario P-18 is used for joining shelves to divisions from 18 mm panel thickness or in butt joints from 12 mm.



Articles



Divario P-18	Art. No.
80 pairs	145550
300 pairs	145560
1000 pairs	145570
2000 pieces, element	145520
for P-System groove	
2000 pieces, element	145540
for drill holes	



Divario P-18 Installation tool	Art. No.
For fixing the Divario in the workpiece	125500

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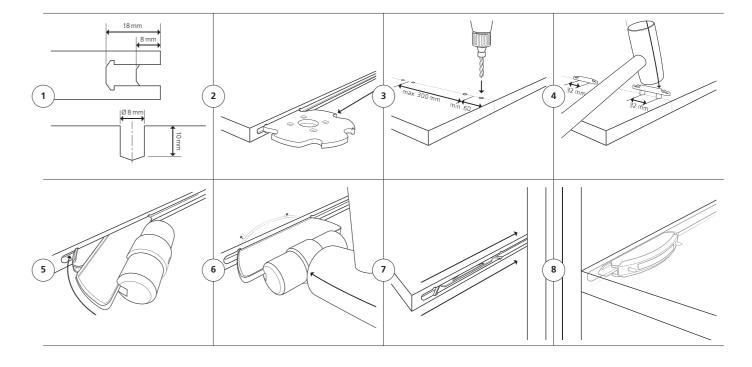


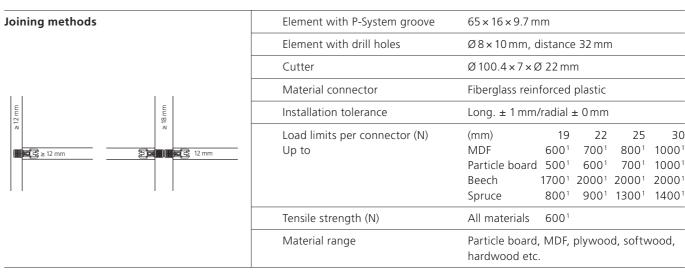






Function





Application examples

Divario P-18

Furniture manufacturing/Interior fitting: Furniture, shelves, open room dividers, wine racks, sideboards, wardrobes, separating walls, showcases, hanging elements etc.







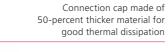




LiHD: The world's most powerful battery system in the industry

A unique interplay of:

- Intelligent battery management for long-lasting high capacity
- Patented AIR-COOLED system for short charging times with hot batteries
- High-quality cell structure with 50-percent reduced internal resistance ensures full Zeta power even with a small battery pack





Multiple power connectors for internal wiring provide continuously high power output

Reinforced current collectors for low heat losses

More active material in reactive surface for high capacity in a compact size

Powerful 18 V LiHD battery pack either as 4.0 Ah or 5.5 Ah

18 V LiHD 4.0 Ah

- Included as standard battery in the set
- Compact, lightweight and powerful
- Suitable for all applications



18 V LiHD 5.5 Ah

Available as an option for even longer working periods



More flexible in the workshop

The ready-to-hand battery-powered biscuit joiner ensures greater efficiency and flexibility in the workshop.

- No tangling of the cable or the suction hose when machining large workpieces
- Cutting directly on the workpiece reduces the handling of bulky parts.
 There is also no need to disconnect and plug in the cable



- Quick production of furniture with different angles without complicated programming on the CNC
- Create prototypes without timeconsuming machine setup. Unrestricted design freedom thanks to the wide variety of joining elements



- The cordless power tool can be used to easily adapt or add grooves in no time
- Corner connections are quickly and precisely cut directly at the work bench



Mobile working on the construction site

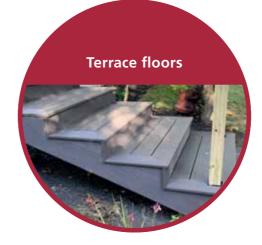
The cordless biscuit joiner makes work on the construction site much easier – there is no need to search for sockets and roll out the cable reel.



- Easily and flexibly cut grooves in fitted panels on site, even if the furniture has been completely machined on the CNC
- Additional grooves on the longitudinal joint for fillers or pillar cladding are created extremely efficiently after fitting



- For renovation work, the grooves are only cut directly on site after fitting
- Cable-free work facilitates handling overhead and in hard-to-reach niches



- Join components outdoors without access to a power connection
- No walkways between the processing site and the installation site, and no additional handling of the cable reel



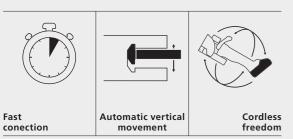


Zeta P2 cordless

The powerful P-System biscuit joiner for cordless freedom



Features



The Zeta P2 cordless is the battery-powered biscuit joiner for even faster joining, suitable for use with P-System connectors. It is used to create the form-locking P-System groove within seconds, and is even more flexible to use due to its cordless freedom. The integrated vertical mechanical drive is automatically triggered at the maximum cutting depth and performs a lateral cutter movement for the P-System groove. Connectors with various functions and different sizes can now be inserted into the form-locking P-System groove without the need for any tools.



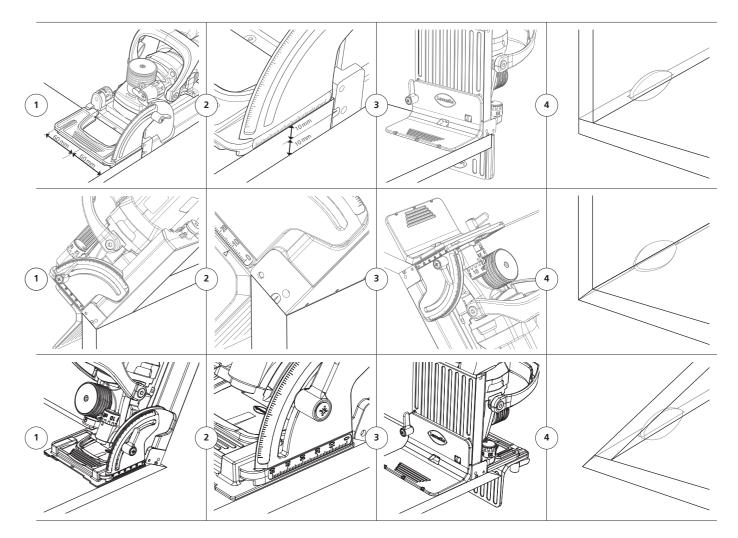


Zeta P2 cordless biscuit joiner, DP (diamond)Art. No.In systainer, incl. 2 batteries and charger101801SDIn systainer, without batteries, without charger101800SD



Zeta P2 cordless biscuit joiner, DP, $2 \times battery\ pack\ 18\ V$, LiHD 4.0 Ah*, battery charger ASC 55*, P-System drill jig incl. drill, suction stub 36 mm, spacer 2 and 4 mm, dust bag, tool set, stop square

Function



www.lamello



Experience Zeta P2 cordless live and receive comprehensive product information!













Battery voltage	18 V	Groove width	7/10 mm
Speed	9 000 min ⁻¹	Groove depth max.	20 mm
P-System Cutter	Ø 100.4×7×22 mm	Weight	3.7 kg incl. battery



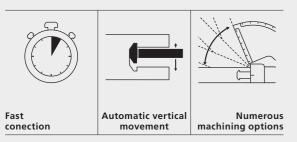
^{*} Only included in art. No. 101801SD

Zeta P2

The machine for the evolving P-System, saving you time daily! Differentiate your products from the standard!



Features



The Zeta P2 is the biscuit joiner for P-System connectors and is used to create the formlocking P-System goove within seconds. The integrated vertical mechanical drive is automatically triggered at the maximum cutting depth and performs a lateral cutter movement for the P-System groove. Connectors with various functions and different sizes can now be inserted into the form-locking P-System groove. The insertion into the groove is quick and without tools.

Articles



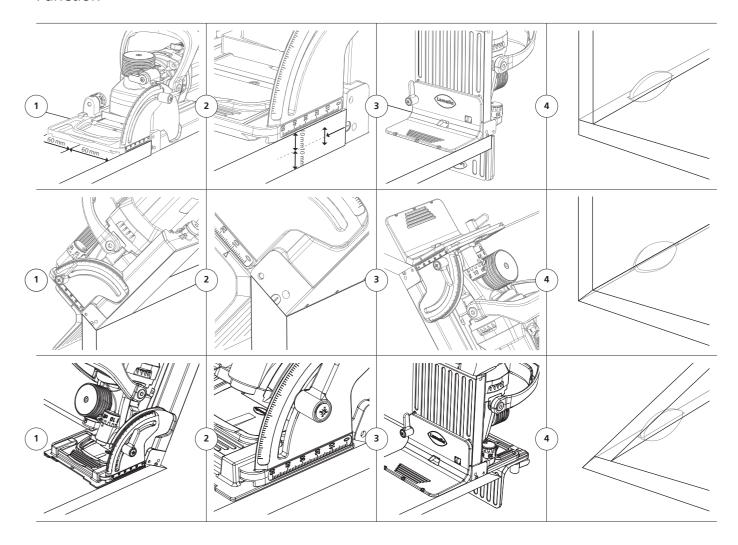
Zeta P2 Art. No. With P-System groove cutter HW (carbide) 1014025 in Systainer With P-System groove cutter DP (diamond) 101402DS in Systainer



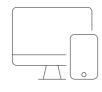
Kit contains

Zeta P2, P-System groove cutter, stop square, suction stub 23 + 36 mm, disc for angles, spacer 2 + 4 mm, tools, Clamex P drill jig incl. drill

Function



www.lamello



Experience Zeta P2 live and receive comprehensive product information!

















Power/Voltage	1 050 W/230 V	Teeth	Z3		
	800 W/120 V	Cutting depth max.	20 mm		
Speed	9 000 min ⁻¹	Weight	3.7 kg		
P-System Cutter	HW: Ø100.9×7ר22 mm DP: Ø100.4×7ר22 mm	Weight	3.7 Ng		

Accessories

Zeta P2 cordless and Zeta P2

Connected in seconds

Without waiting time, clamps, or secondary processes, glued and clamped in 40 seconds

Accessories



Stop square for Zeta P2, Top 21, Classic X Art. No.

For stabilising the biscuit joiner in the vertical 251044

position, ideal for obtuse mitre joints







Spacer for Zeta P2, Top 21, Classic X	Art. No.			
5 mm, aluminium for 18 mm panels	253027			
2 mm, plastic for 16 mm panels	253023			
4 mm, plastic for mitres	253026			



P-System groove cutter DP (diamond),

Ø 100.4×7ר 22 mm	Art. No.
Z3, 4 NL for Zeta P2	132140



P-System groove cutter HW (carbide),

Ø 100.9×7ר 22 mm	Art. No.
Z3, 4 NL for Zeta P2	132141



Groove cutter HW (carbide),

Ø 100×4ר 22 mm	Art. No.
Z2 + V4 scoring teeth, 4 screw holes, hub	132000
for Zeta P2/Top 21/Classic X	

Batteries



Battery pack 18 V, LiHD 4.0 Ah

Art. No. 313013



Art. No.

Battery pack 18 V, LiHD 5.5 Ah

313015

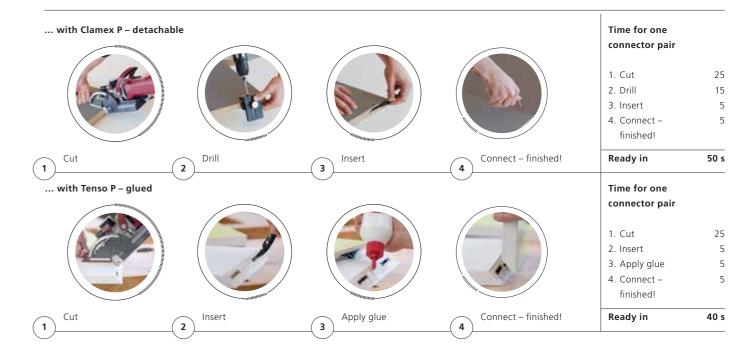


Art. No.
Battery charger ASC 55 123100



Dust bag	Art. No.
For Zeta P2/Top 21/Classic X	257532

Advantage





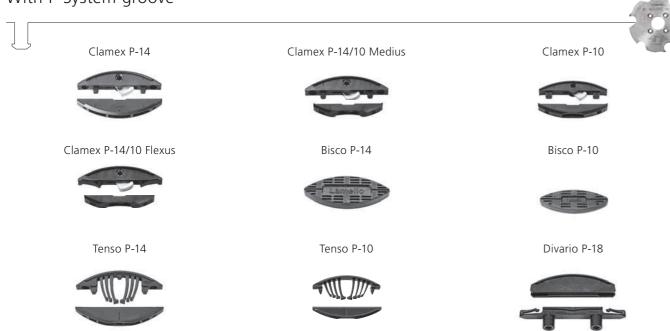
Please find the complete accessories range starting PAGE 68

Versatile use with many different connecting elements.

With the Zeta P2, you can quickly and easily connect parts with a range of angles and joining situations. Suitable for individual pieces of furniture as well as prototypes and line production.



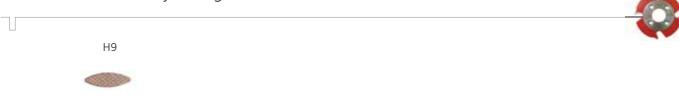
With P-System groove



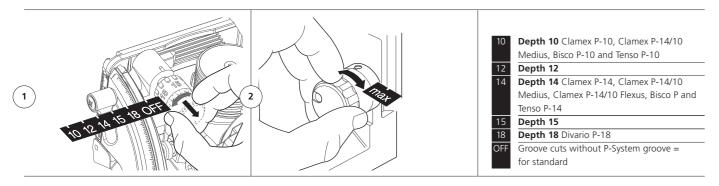
With 4 mm Lamello System groove cutter



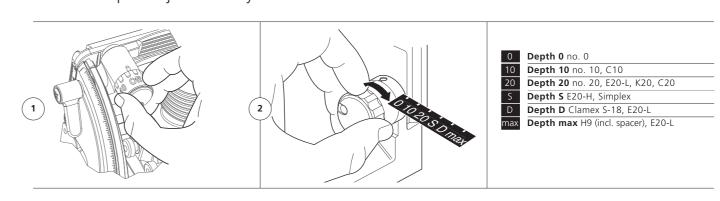
With 3 mm Lamello System groove cutter



P-System depth adjustment



Lamello depth adjustment system



Changing the cutter position

Using spacers

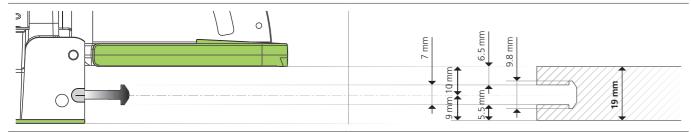
Joints in various angles

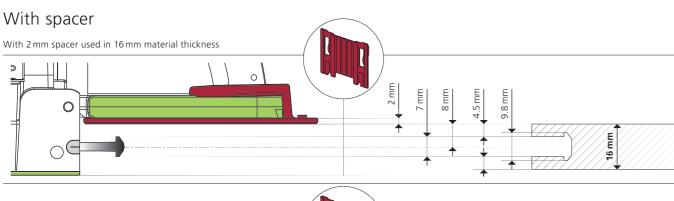
P-System grooves on edges cut to an angle

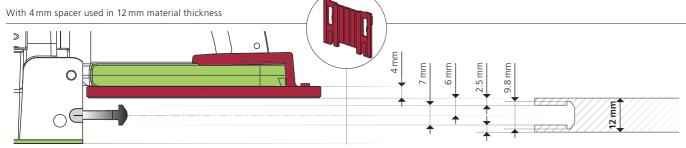


- The underside of the base plate and the swivelling front are reference surfaces with which the Zeta P2 is positioned on a work piece.
- The position of the **cutter** lies precicely in the centre between these two surfaces, so that the distance from the centre of the cutter to the edge will always be 10 mm.
- This distance can altered by using a **spacer** clilpped to the swivelling front.

Without spacer

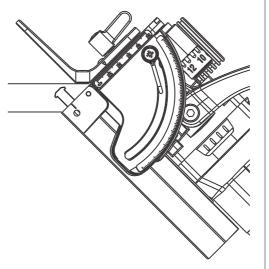






To create **joints in various angles**, at least one of the two workpieces needs to have one of its edges cut to an angle. There are **two possibilities** to cut a groove into an edge: Applying the Zeta P2 either on the outer side or the inner side of the work piece as the reference surface.

A. Positioning the Zeta P2 on the face of the workpiece:



Using this method, the multifunctional stop square is attached to the swivellig front and fixed at the desired position.

The machine is then applied on the work piece in such a manner, that the stop square rests on the outer side (green surface) of the workpiece.

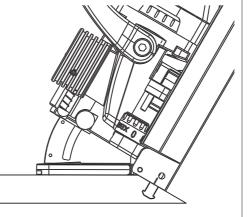
Advantages

- Perfectly flush on the visible work piece outer side. Material tolerances cannot lead to misalignment with this method
- Steplessly adjustable stop square, allowing for perfect positioning of the groove in every board thickness
- Thick work pieces with two rows of grooves (see picture above) with varying groove positions to increase strength
- No mistakes due to sliding during cutting because the machine sits very tightly in its position

Only angles 45° oder 67.5° are possible with this method



B. Positioning the Zeta P2 on the **inner side** of the workpiece:



Using this method, the swivelling front is adjusted to the angle of the workpieces edge and then fixed in that position.

The machine now lies on the inner side (green surface) of the work piece, due to which material tolerances can show on the outer side of the workpieces.

Advantages

- The groove position is fixed, however, to two more positions are available using the 2 mm or 4 mm spacers
- The advantage of this method is that all angles from 0-180 degrees are possible

Networked production

From planning and design to procurement, programming and machining with CNC.

Our planning and processing partners support you with integrating Lamello connecting elements into your production process, from A to Z.

CAD/ERP/CAM software



CNC machines/Aggregates/CNC tools







HSD







Components for the successful integration of Lamello connection systems into your networked production





CAD/ERP/Configurator software

- Design and planning software with integrated Lamello connectors
- Also download CAD data:
- from the Lamello website
- from iFurn
- from specialist retailers (ComNorm)

The degree of integration of the data and the parameterised position rules influence planning efficiency.



CAM software

- Software for generating CNC programming data
- Post-processor

Data transfer between CAD and CNC, and in particular the control of the macros/component, must be individually coordinated.



CNC machine

- Machine with 3/4/5-axis

The number of axes and equipment options influence the processing possibilities



CNC software

- Purchase software for machine/macro/component from the manufacturer or
- Program the machining process yourself

The macro/component determines/affects the processing possibilities



Suitable aggregate

- Aggregate sub-program
- The angle aggregate makes it easier to cut the P-System groove in the surface and the centre
 of the surface

The right unit can significantly increase efficiency when cutting connectors.



Purchase tools from Lamello or a P-System tool partner
 You can find the tools recommended by Lamello on PAGES 62-63.

The right cutting tool can significantly increase precision and efficiency when cutting the connectors

Note: These are planning and machining tips, please contact your system providers/specialists if necessary.

Service overview

Lamello's planning and machining partners



		Ma	chini	ng Į	artn	ers	CNC	. ma	chin	es/A	\ggr	egat	tes/	CNC	too	ls			
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	CAD 2D software		•		•		•	•											
	CAD 3D software		•		•		•	•						•				•	•
	Configurator				•					1		•		•	•				•
	Interface with CNC		•	•	•		•	•			•	•		•	•			•	•
	CAD/CAM software		•	•	•		•	•			•	•		•	•			•	
	WOP programming software		•	•	•		•	•		•	•	•		•	•			•	•
	ISO programming software				•		•							•					
	CNC with consoles	•				•				•							•		
	CNC vertical/horizontal (compact)	•				•			•	•							•		
	CNC nesting	•				•				•					•		•		
	Aggregates	•				•				•							•		

P-System with CNC

Joining methods and requirements for CNC machines/machining options



								1		4,17				
CNC machines			With consolovertical or h	es/ orizontal			With nesting technology							
Number of axes			3				4	5		3		5		
				Machining option	Machining option				Machining option		Machining option			
Joining methods	Machining									•				
	Access drill hole	U		100000000000000000000000000000000000000										
	Profile groove in the edge						C				G		G	
	Profile groove on the surface (close to the edge)		A	E	F		C			E	F	D	A	F
	Profile groove on the surface (centre of the surface)*		A	E	F		C	A		E	F	D	A	F
	Access drill hole 45°						C							
	Access drill hole 45°		B				C							
	Access drill hole 22 – 108°						C							
	Access drill hole 22 – 108°						C							

^{*} The Divario P-18 can also be used as an alternative connecting element in the middle of the surface. (2 × 8 mm holes without profile groove)

Additional explanations for the requirements of the CNC machines/machining options



Detailed information on machining	Detailed information	on on machining	Possible setup of	f aggregates and tools	Comments
				Integrated CNC Z-axis with drill (5/6mm) or with collet chuck for clamping Ø 10mm and drill 131556	P-System CNC drill bit on PAGE 62
				Saw blade clamp Ø 40/DTK 52 mm and cutter 132143 or with collet chuck and cutter arbor	You can find dimensions for cutters and clamping Ø and lengths of cutter arbors on PAGE 62/63
A James and the state of the st				Angle aggregate One to four spindle angle aggregates Floating trimming unit for P-System Corner notching aggregate Aggregate for door locks	A unit overview can be found on the Lamello website: www.lamello.com under planning and machining partners
B		-1		Manually adjustable swivelling aggregates Information: Several tool changes required for angle cuts, drilling and P-System grooves	Note: The cutting depth in the centre of the surface may be restricted depending on the model. Tip: For a mitre, the drill hole could be made with the manual drill
C TO TO TO THE T	6 6			Automatically adjustable swivelling aggregates with automatic tool changer (FLEX5+C/5-MOTION PLUS/Flex5+C, from year of manufacture 2015) – Tool holder WFC 40-25 clamping Ø 10 mm for drill – Drill shaft Ø 10 mm, tool protrusion max. 50 mm – Tool holder WFC 40-25 with flange and cutter 132143	Note: In the centre of the surface, the profile groove depth is limited to 10 mm
D				Shrink chuck for clamping Ø 12 × 40 mm and shaft tool 131342 or collet chuck for clamping Ø 12 × 40 mm and shaft tool 131342	P-System CNC shaft tool cutter on PAGE 63.
E					

Positioning drill holes for the Zeta P2





Positioning pin CNC for Zeta P2*,

2 pieces	Art. No.
Ø 5 mm	251048
Ø8mm	251066



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	100	9		
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ositioning clip CNC for Zeta P2*
6mm
or positioning in the Clamex P access h

Drill the positioning holes with the CNC, Ø 5 mm/Ø 8 mm





Hole pattern of the positioning drill holes axis spacing 101 mm

positioning



Machining steps

Insert the positioning pins in the Zeta P2



Position the machine in the drill holes



positioning clip in the drill hole Ø6mm



Cut the groove with the positioned

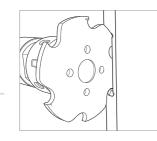
57

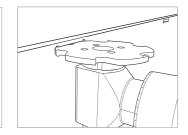
Art. No.

P-System equipment options

For CNC machines for particularly efficient machining







Vertical and horizontal CNC machining centres «CNC compact class»









IE HOMAG

DRILLTEQ V-500 25-spindle + 1× aggregate (VKNR 1549) 1× tool set (VKNR 9763)



EVOLUTION 7405 Connect

BIESSE

Brema Eko 2.1 1× aggregate 2× P-System CNC groove cutters 1x P-System CNC cutter arbor 1× drill Ø 6 mm

BIESSE

Brema Eko 2.2 1× aggregate for 90°

1× aggregate 45° for 2× 45° 2× P-System CNC groove cutters 1× P-System CNC cutter arbor 1× drill Ø 6 mm













4morbidelli

cx 210

1 · **2** · **3**



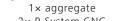




Project TF 100/TF 100 2.0

1× aggregate 2× P-System CNC groove cutters 1× P-System CNC cutter arbor 1x drill Ø 6 mm





1× aggregate 2× P-System CNC groove cutters 1x P-System CNC cutter arbor 1× drill Ø 6 mm







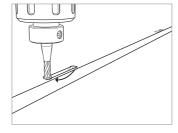
Nextec 7707 1x tool set

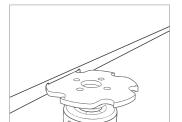
1× aggregate 2× P-System CNC groove cutters 1x P-System CNC cutter arbor 1× drill Ø 6 mm

■Vitap

Vitap K2 2.0



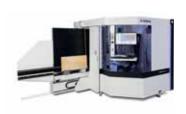












FORM AT

Creator 950

1× P-System CNC groove cutter in HSK63F 1x P-System CNC shaft tool cutter* in HSK63F 1× drill Ø 6 mm

*optional for P-System CNC shaft tool cutter: 1× aggregate for 90° 1× P-System CNC groove cutter

0 . 2 . 8

GANNO*mat*

ProTec + P-System add-on package

Editor with Lamello P-System macro 1× P-System CNC groove cutter in HSK63F 1× P-System CNC cutter arbor 1× P-System CNC shaft tool cutter 1× drill Ø 6 mm

0 . 2 . 3

HE HOMAG

DRILLTEQ V-200

woodWOP «Lamello P-System» component 1x P-System tool set

HE HOMAG

DRILLTEQ V-310

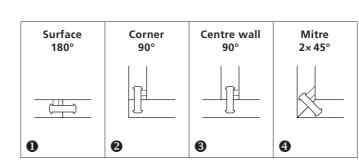
for 180° + 90° joints: woodWOP component «Lamello P-System» 1× P-System tool set

additionally for 45° joints: 1× aggregate 45° 1× tool set for 45°

0 . 2 . 3



Connectivity



www.lamello



Experience CNC live and receive comprehensive product information!





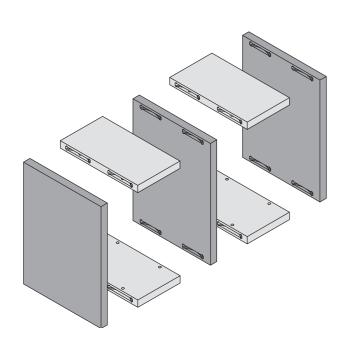






Ideas for standardising

The machining on a CNC machine

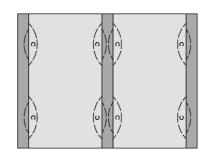


Clamex P-14 CNC with lever, Clamex P-14 with lever and Clamex P-14/10 Flexus with lever are compatible with all Clamex P elements without lever.

This allows for a standardised construction method.

Depth 14 mm for all P-System grooves **in the panel edge** (with the access hole)

Depth 10 mm for all P-System grooves in the surface



Art. No.

145388
145338
145318

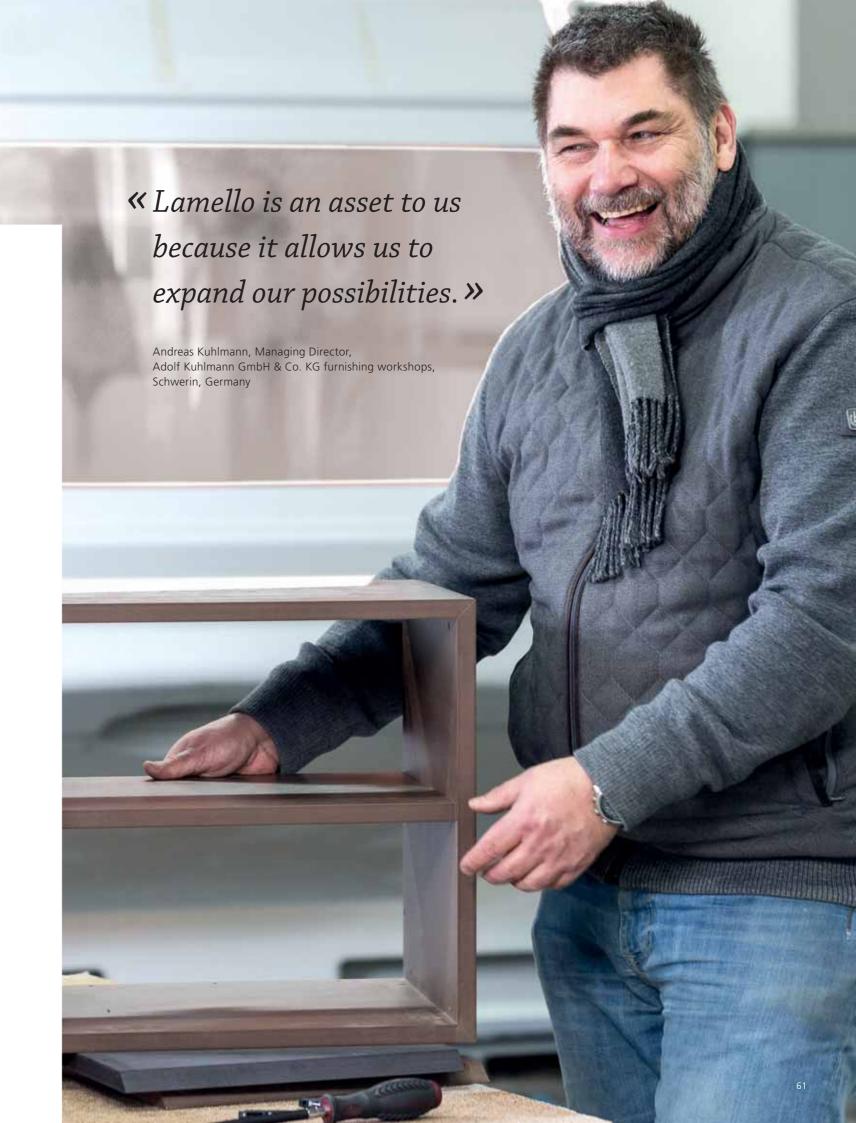
Clamex P-10	
2000 pieces element without lever	145358
Clamex P-10 Medius	
2000 pieces element without lever	145369











CNC tools

For the P-System



P-System CNC tools



P-System CNC drill bit Art. No. $6 \, \text{mm}$, solid carbide, for mitres, $131556 \, \text{L} = 100/35 \, \text{mm}$, shaft = Ø 10 mm



P-System groove cutter CNC DP (diamond),

Ø 100.4×7 mm	Art. No.
Ø 100.4×7ר 30 mm, Z3, NL 4ר 6.6ר 48 mm	132142
suitable for all P-System CNC cutter arbor listed	
on the right	
Ø 100.4×7ר 30 mm, Z3, NL 4ר 6.6ר 48 mm	132149
LH for Weeke BHX 200 / DRILLTEQ V-500	
(left hand rotation)	



Art. No.

 \emptyset 100.4 × 7 × \emptyset 30 mm, Z6, NL 4 × \emptyset 6.6 × \emptyset 48 mm **132145** suitable for all all P-System CNC cutter arbor listed on the right



Art. No.

Ø 100.4 \times 7 \times Ø 40 mm, Z3, NL 4 \times Ø 5.5 \times Ø 52 mm **132143** E.g. for angle aggregates and FLEX5+C/5-MOTION PLUS



Art. No.

 \varnothing 100.4×7× \varnothing 16 mm, Z3, NL 4× \varnothing 5.5× \varnothing 28 mm **13214**4 E.g. for corner notching aggregate



Art. No.

 \varnothing 100.4×7× \varnothing 35 mm, Z3, NL 4× \varnothing 5.5× \varnothing 50 mm **132148** e.g. for Brema Eko 2.1, Masterwood Project TF 100, Format4 D-Jet



CNC cutter arbors for P-System groove

cutter, Ø 30, NL 4×M4ר 48mm	Art. No.
Shaft Ø 20 × 50 mm, L = 102 mm	132150



Art. No. Shaft Ø 25 × 60 mm, L = 102 mm 132151



Art. No. Shaft Ø $16 \times 50 \text{ mm}$, L = 85 mm 132152



Art. No. Shaft Ø 16×55 mm, L = 68 mm 132153



Art. No. Shaft \emptyset 16 × 50 mm, L = 85 mm, with clamping 132154 surface (2°- angle) e.g. for aggregate for door locks



Art. No.

Shaft Ø 20 × 50 mm, L = 85 mm,

with clamping surface (2°- angle)

e.g. for aggregate for door locks

M6 × 16 mm Torx countersunk bolt, 4 pieces,

suitable for cutter arbors

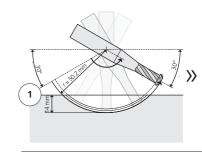
Screwdriver with cross-grip, Torx T20 × 100 mm

271919

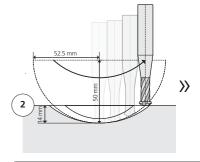


P-System CNC shaft tool cutter	Art. No.
HW solid (carbide), shaft Ø 12×40 mm, L = 80 mm	131342

One tool with 2 functions



P-System CNC shaft tool cutter with 5-axis

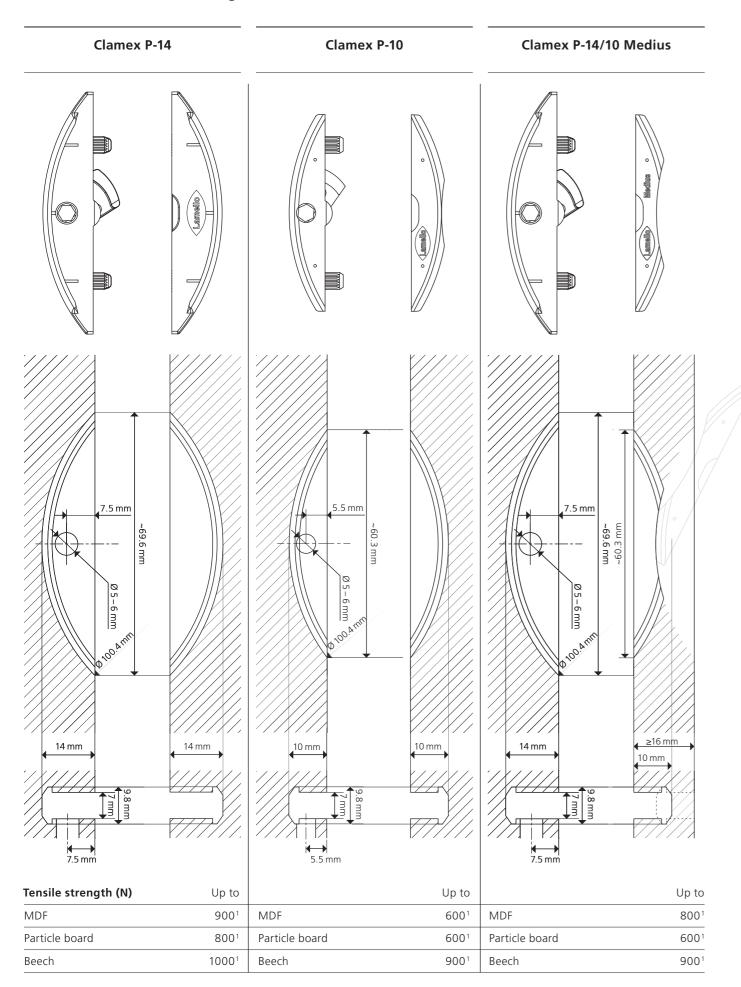


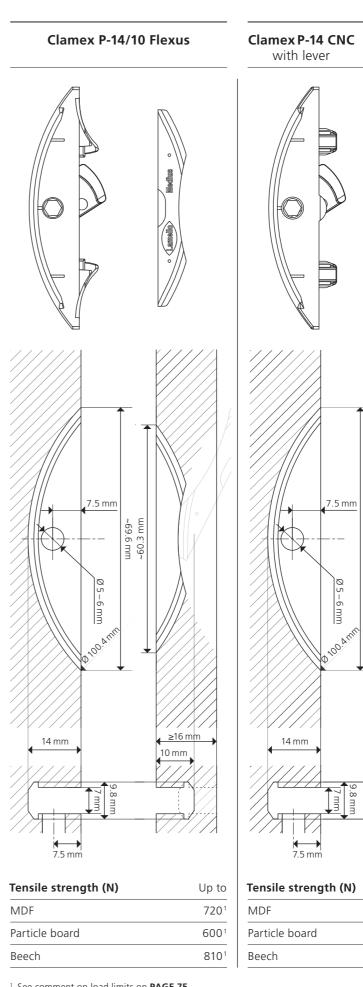
P-System CNC shaft tool cutter with 3-axis

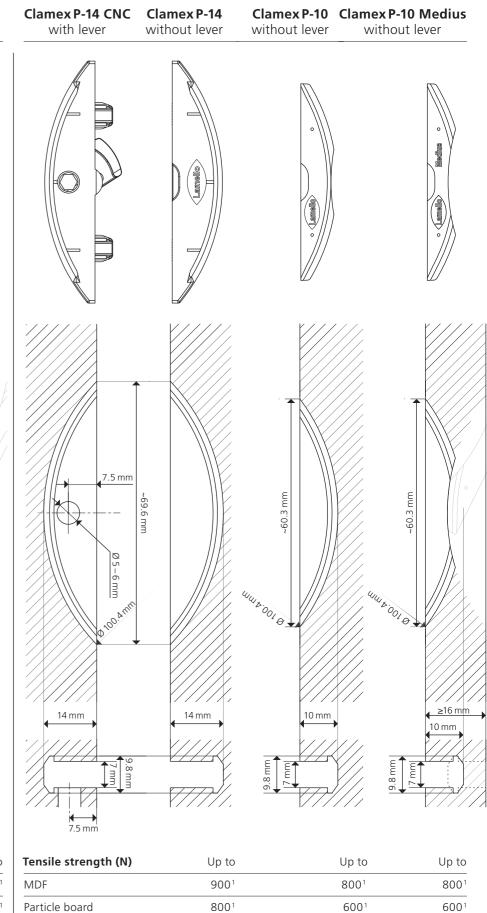
Lamello recommends making all profile grooves with a disc cutter, primarily for reasons of precision, service life, machining time and thus economic efficiency.

A P-System CNC shaft tool cutter or contour cutter should only be used for the machining of surfaces if no angle aggregate is available.

Overview of connectors + grooves (scale 1:1)







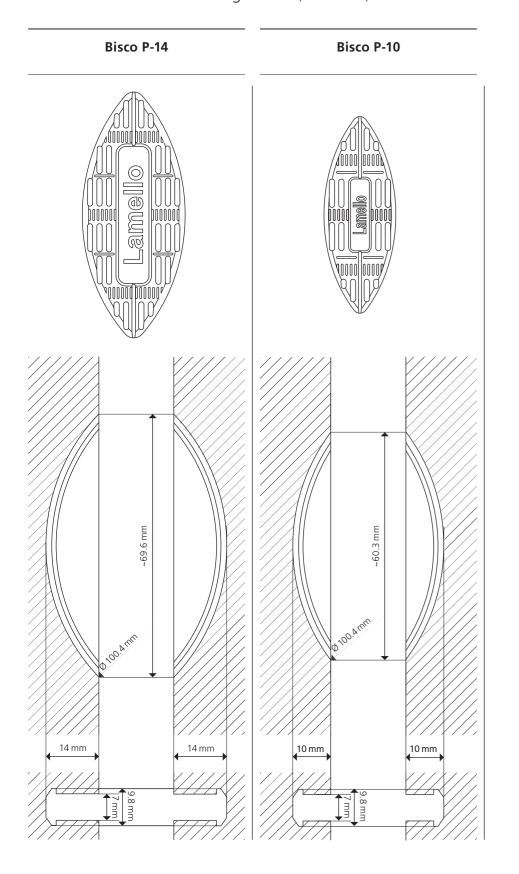
1000¹

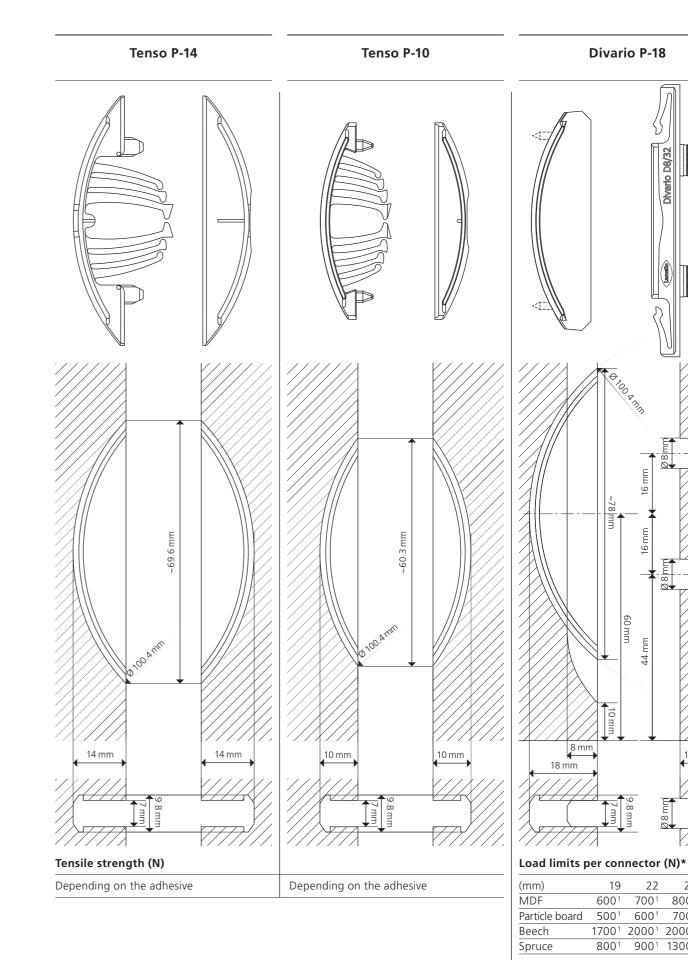
900¹

900¹

¹ See comment on load limits on **PAGE 75**

Overview of connectors + grooves (scale 1:1)





¹ See comment on load limits on **PAGE 75** I * Up to

8001 10001

1000¹

700¹

19

600¹

Tensile strength (N)

22

1700¹ 2000¹ 2000¹ 2000¹ 800¹ 900¹ 1300¹ 1400¹

700¹

600¹

Divario P-18

Accessories/ Spare Parts

P-System



P-System



P-System connector assortment

professional	Art. No.
Scope of delivery: 120 pairs Clamex P-14,	145312
30 pairs Clamex P-14/10 Flexus, 30 pairs Clamex P-1	0,
80 pairs Tenso P-14 incl. clip, 30 pairs Tenso P-10	
incl. clip, 20 pieces Bisco P-14, 20 pieces Bisco P-10,	
80 pairs Divario P-18, Divario installation tool/drill/	
marking gauge, Clamex P installation tool, Tenso P-1	4/10
preload tool, Sortainer T-loc	



P-System connector assortment

basic	Art. No.
Scope of delivery: 80 pairs Clamex P-14,	145314
80 pairs Tenso P-14 incl. clip, 60 pairs Clamex F	P-14/10
Medius, 20 pieces Bisco P-14, Tenso P-14/10 pr	eload tool,
Systainer II T-Loc incl. compartment dividers	

Clamex P





Allen key	Art. No.
4 mm, 75 × 55 mm	271945
4 mm, 120 × 50 mm	271945A
≥7	335282 Art. No.
RAL 9010 pure white	335280
RAL 9011 graphite black	335281
RAL 1014 ivory, pine	335282
RAL 1011 brown beige, beech	335283
RAL 8007 fawn brown	335284
RAL 8017 chocoloate brown	335289
RAL 9002 grey white	335285
RAL 7035 light grey	335286
RAL 7040 window grey	335287
RAL 7031 blue grey	335288
RAL 7022 umbra grey	335298
Cover cap, 500 pieces, 90°	Art. No.
RAL 9010 pure white	335362
RAL 9011 graphite black	335363
RAL 1014 ivory, pine	335364
RAL 1011 brown beige, beech	335365
45°	335282
Cover cap, 100 pieces, 45°	Art. No.
RAL 9010 pure white	335380
RAL 9011 graphite black	335381
RAL 1014 ivory, pine	335382
RAL 1011 brown beige, beech	335383
RAL 8017 chocoloate brown	335384
RAL 7035 light grey	335386
RAL 7022 umbra grey	335388



Clamex P drill jig	Art. No.
Incl. drill, from 22.5° for all	125344
Clamex P connectors (P-10, P-14)	
Angle for drill jig	255250
Element insert for size P-10	255251
Element insert for size P-14	255252



Clamex P drill jig long	Art. No.
Drill jig for thick workpieces 100 mm,	125345
(P-14), incl. drill	



Accessories/ Spare Parts

P-System



Combination CNC and Zeta P2



Positioning pin CNC for Zeta P2*,

2 pieces	Art. No.
Ø 5 mm	251048
Ø 8 mm	251066



Positioning clip CNC for Zeta P2*	Art. No.
Ø 6 mm	251067
for positioning in the Clamey P access hole (6 mm)	

Tenso P



Tenso P-14/10 preload tool	Art. No.
Tool to pre-load the Tenso P	145400

P-System 4 mm depth

adjuster attachment for P-8 Art. No. For offset installation on dividing panels 16 mm with Tenso P-10

Divario P



Divario P-18 Marking jig metal with

marking points	Art. No.
Marking jig incl. drill with centering point and	125510
rotating depth collar for the precise drilling of	
Divario drill holes by hand	



Divario P-18 Marking jig plastic,

to mark with a pencil	Art. No.
Marking jig to mark the Divario holes	125511
with a pencil	



Divario P-18 Installation tool	Art. No.
Divario P-18 Installation tool for fixing	125500
the Divario in the workpiece	



Divario P-18 Starter set	Art. No.
80 pairs in Systainer Size I, incl. installation	145551
tool and marking jig in metal	

Zeta P2



Stop square for Zeta P2, Top 21, Classic X	Art. No.
For stabilising the biscuit joiner in the	251044
vertical position, ideal for obtuse mitre joints	







Spacer for Zeta P2, Top 21, Classic X	Art. No.
5 mm, aluminium for 18 mm panels	253027
2 mm, plastic for 16 mm panels	253023
4 mm, plastic for mitres	253026



P-System groove cutter DP (diamond),

Ø 100.4×7ר 22 mm	Art. No.
Z3, 4 NL for Zeta P2	132140



P-System groove cutter HW (carbide),

Ø 100.9×7ר 22 mm	Art. No.
Z3, 4 NL for Zeta P2	132141

* For detailed information, see PAGE 56

We are here for you!

Personal consultation

Do you have any questions concerning our products or a certain application? Would you like to learn more about the process benefits for your business? Our qualified employees and sales partners will be happy to help you quickly and competently, whether by telephone, online or during a personal consultation on site.



Stay up-to-date and sign up for our Lamello News and e-newsletter. Become part of the Lamello community on social media and be inspired, or visit our stand at one of the numerous trade fairs. We are always happy to hear from you.



Support in your planning

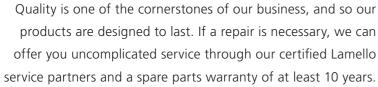
With the connector search and the P-System configurator on our website, you can quickly find the right connector for your design and requirements. With CAD data for our connectors, tips and tricks, as well as videos about the wide range of applications, we can guide and support you in your planning on our website and on the Lamello YouTube channel.

Qualified sales partners

Our professional and committed sales partners provide you with qualified advice, always keeping you informed about new products. This way, you can see the benefits of our products first hand.

Competent planning and machining partners

efficient use and integration of our products into your production.



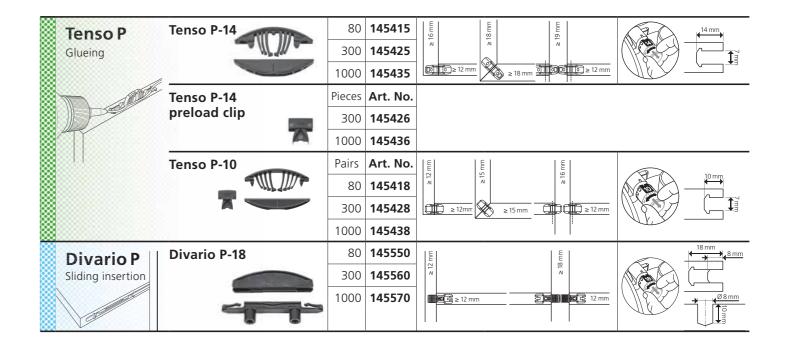
From planning and design to the right tool to machine with the CNC machine: more than 40 industry-leading partner companies support the

P-System configurator

Overview of connectors

P-System

Clamex P Detachable	Clamex P-14	Pairs	Art. No.	2 2 9 mm 2 1 8 mm 2 2 2 mm 2 2 2 mm 2 2 2 2
	2	80	145334	14 mm
		300	145346	
		1000	145356	
	Clamex P-14/10 Medius	80	145370	
		300	145371	N N N N N N N N N
		1000	145357	
	Clamex P-10	80	145372	
		300	145373	
		1000	145374	≥ 12 mm ≥ 15 mm
	Clamex P-14/10 Flexus	80	145315	1 1 1 1 1 1 1 1 1 1
		300	145316	N 16 mm N 18 M 18
		1000	145317	
	Bisco P-14	80	145301	E
	Lawello	300	145302	
		1000	145303	
	Bisco P-10	80	145304	
		300	145305	
				≥ 12 mm ≥ 12 mm



Disclaimer regarding load limits

Wherever we list information on material strength or loads for our products, they are empirical values of load limits, based on specifically defined test conditions similar to DIN 68501:2016-11. Specific characteristics, in particular to the effect that the products will reach the listed loads in the actual used case, are not thereby guaranteed. Rather, it is the responsibility of the respective user to check and ensure the suitability of the products for each specific used case. Since actual load limits substantially depend on circumstances unrelated to the products themselves, e.g. the properties of the carrier materials used, the assembly or the installation environment, any advice provided by us in the form of a product recommendation with regard to a specific suitability is always non-binding and does not release the user from his or her own examination. To the maximum extent possible under the law, all warranties, express or implied are DISCLAIMED. This includes, but is not limited to, any warranty of fitness for a particular purpose or merchantability. We undertake no responsibility that the goods except as may be included in any contract, and we assume no responsibility that the goods will be fit for any particular purpose, except as may be provided in any contract.

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