



# P-System



Save time daily

Differentiate your product



Clamex P-14 Flexus

Clamex P-14 CNC



Clamex P-14

Clamex P-Medius  
14/10

Clamex P-10



Tenso P-14

Tenso P-10

Divario P-18

Bisco P





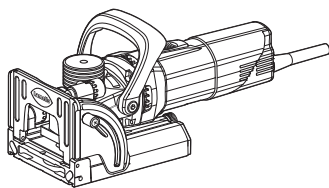
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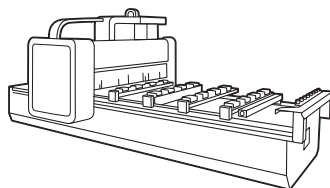


# P-System

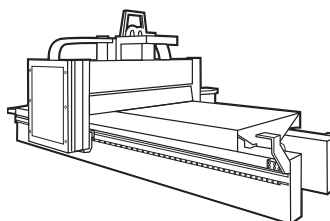
Form-locking anchorage without tools



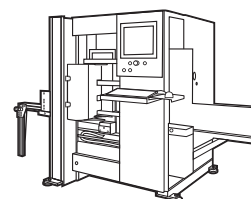
**Zeta P2** – biscuit joiner



CNC processing centres with  
**consoles**



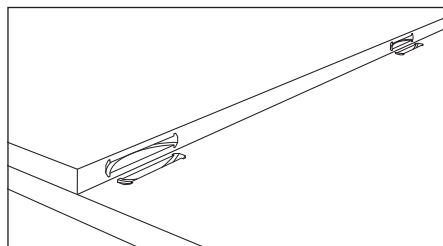
CNC processing centres  
with **nesting technology**



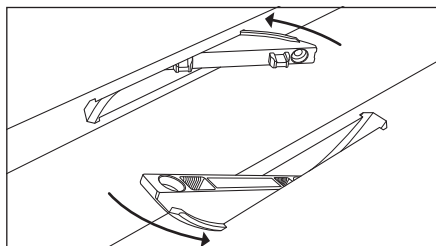
CNC processing centres  
**vertical**

## How it works

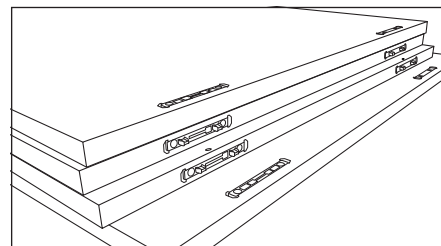
1. Cut



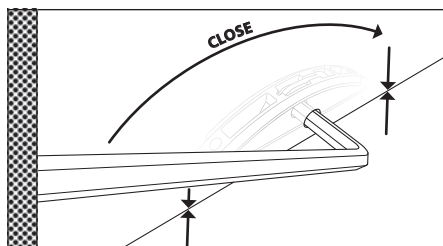
2. Insert the connector



3. Deliver flat-pack

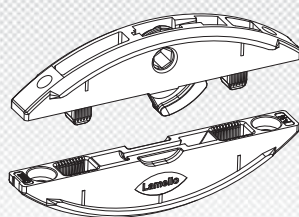


4. Connect the workpieces

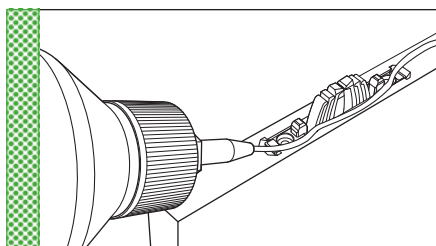


**Clamex P**

Detachable

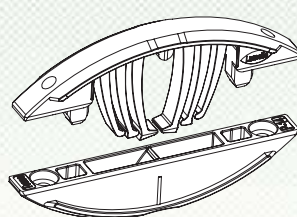


4. Glue workpieces

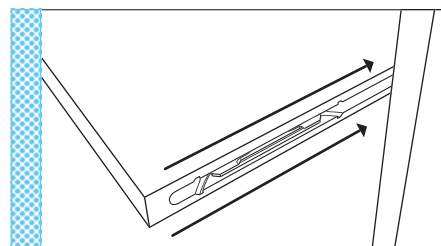


**Tenso P**

Gluing

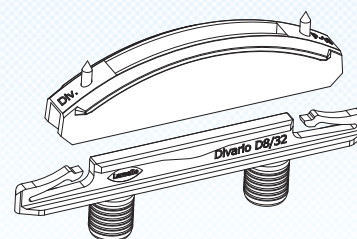


4. Slide insertion of workpiece



**Divario P**

Sliding insertion





# P-System features

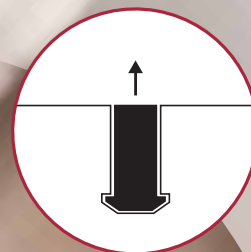
## Fast installation

Inserting instead of screwing or gluing



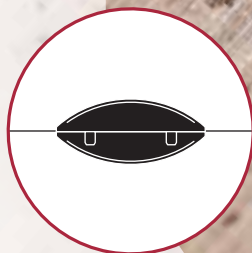
## Strong

Form-locking anchorage across large surface areas



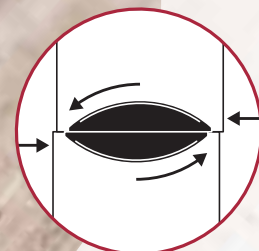
## No twisting

The positioning pins prevent twisting without additional dowels



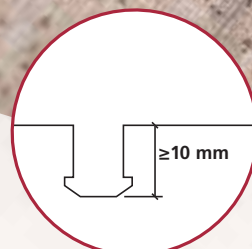
## Lateral tolerance

Perfect, flush alignment of both workpieces



## Shallow depth

Minimal cutting depth with maximum tensile strength

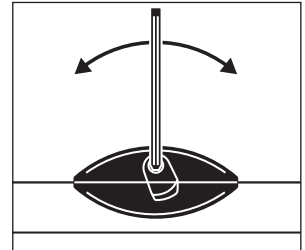
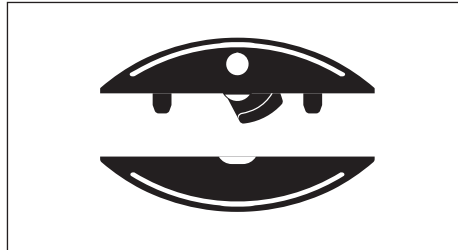




## Advantages of the connectors

### Clamex P

Detachable connector

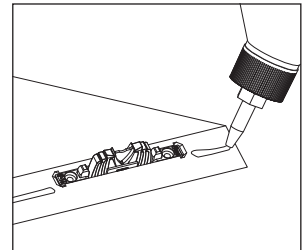


#### Detachable

Open the connection time and  
time again with the rotating lever

### Tenso P

Self-clamping connector as  
gluing aid, for all angles

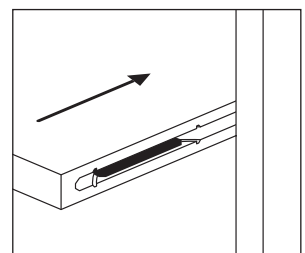
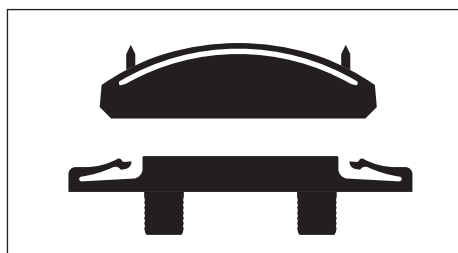


#### Gluing

Fixed joints of two workpieces

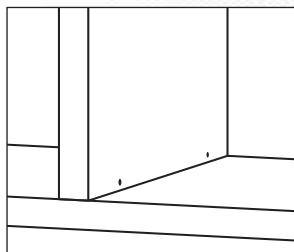
### Divario P

Self-clamping, invisible  
connector for slide insertion



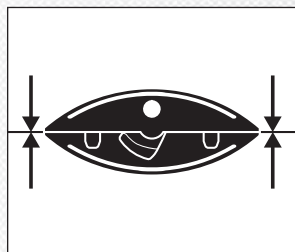
#### Sliding insertion

Insertion between two fixed sides  
or shelves via a guiding groove



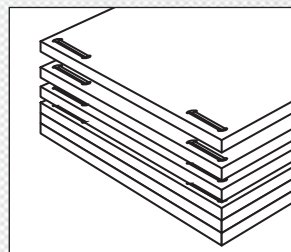
### Aesthetic

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



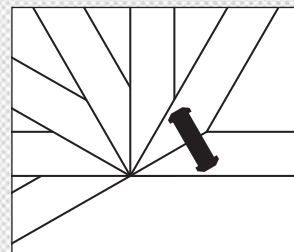
### High clamping force

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



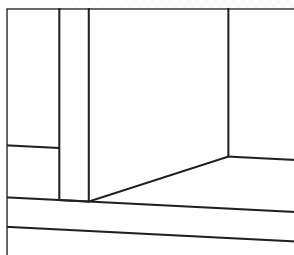
### Stackable

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



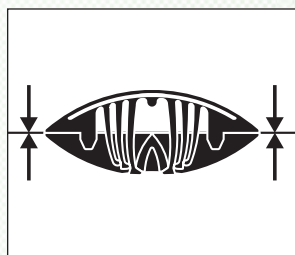
### Versatile

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



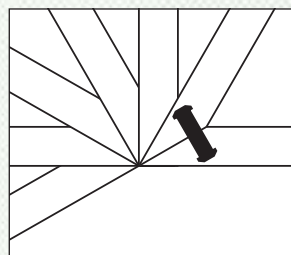
### Invisible

No visible connector



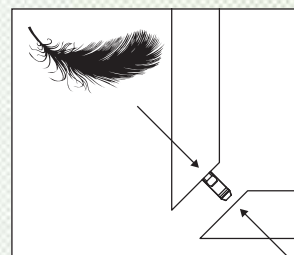
### High clamping force

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



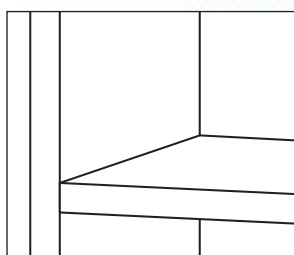
### Versatile

Simple gluing of miter joints



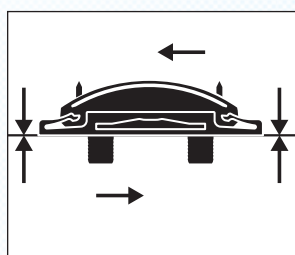
### Lower assembly force

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



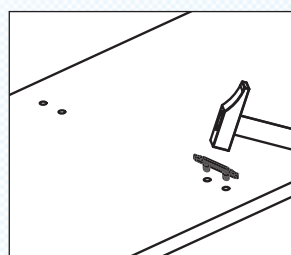
### Invisible

Guiding groove covers the connectors



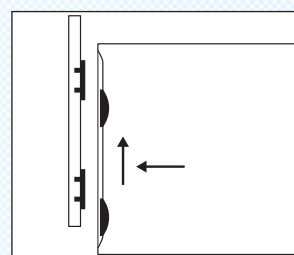
### Clamped joint

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

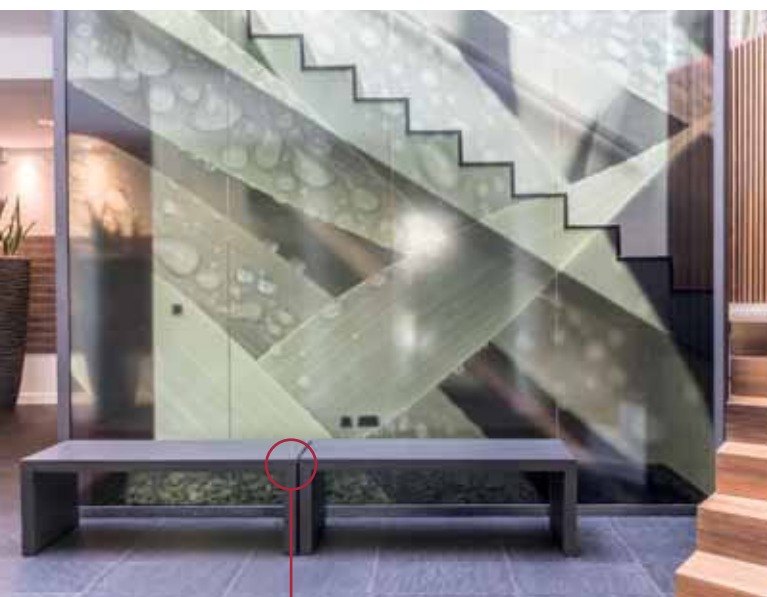
Partially routed guiding groove for completely invisible furniture joints

# P-System – Applications

## Furniture manufacturing



Tenso P-14



Clamex P-14



Divario P-18



## Interior fitting



Clamex P-14



Clamex P-14



Tenso P-10



# P-System – Applications

## Kitchen manufacturing



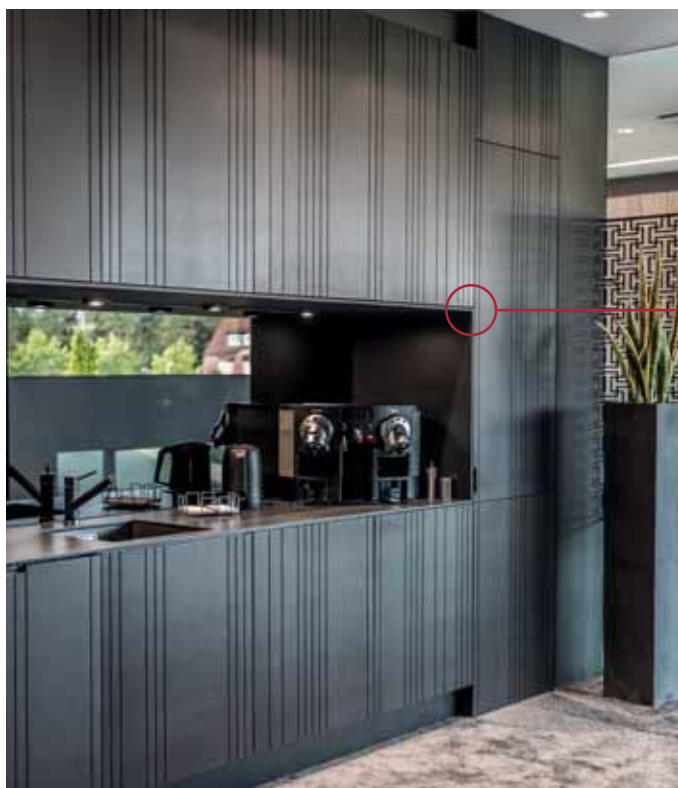
Clamex P-10



Clamex P-14



Clamex P-14



## Commercial joinery



Tenso P-10



Tenso P-14



Clamex P-14



Tenso P-14

## Shop fitting







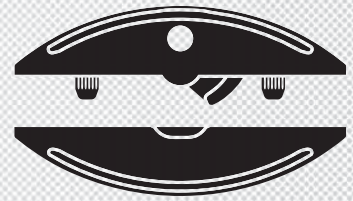
# P-System

*„ The P-System connectors  
are the optimal solution for  
high-quality interior fittings  
and can be installed virtually  
without any tools. “*

Jochen Meier, owner and managing director, Jochen Meier Schreinerei GmbH, Nürnberg, Germany

# Clamex P

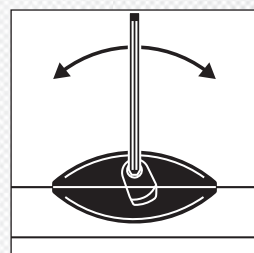
Detachable furniture connector



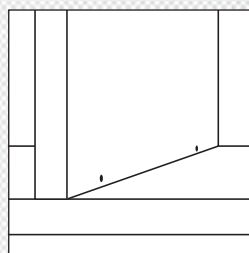
## Advantages and features

- **Small opening 6 mm**, differentiation to furniture standards
- **Stackable with pre-installed connectors**, advantages in packaging, transport and logistics
- **Short assembly time on site**, minimal installation cost
- **Versatility for all angles**, same system for all joining situations
- **Freedom of choice during assembly**, detachable or glued construction
- **Clamex P fixings are compatible with each other**  
Connector halves with levers are compatible with connector halves without lever

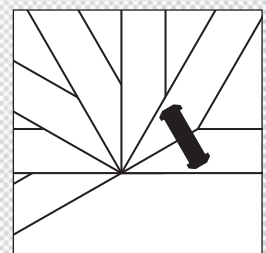
Detachable



Aesthetic



Versatile



# Clamex P-14

For panels from 16 mm



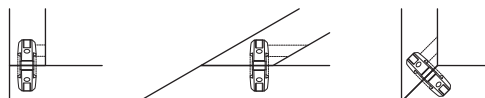
## Technical data

Size	64 × 27 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic
Material of lever	zinc die cast
Installation tolerance	long. ± 1 mm/radial ± 1 mm

## Clamex P-14

## Part no.

80 pairs	<b>145334</b>
300 pairs	<b>145346</b>
1000 pairs	<b>145356</b>
2000 pieces sorted, with lever	<b>145338</b>
2000 pieces sorted, without lever	<b>145339</b>



Experience the  
connector live



# Clamex P-Medius 14/10

For center panels from 16 mm



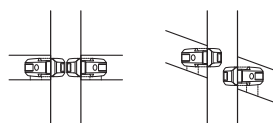
## Technical data

Size	64 × 13.5 × 9.7 mm 52 × 7.5 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic
Material of lever	zinc die cast
Installation tolerance	long. ± 1 mm/radial ± 1 mm

## Clamex P Medius 14/10

## Part no.

80 pairs	<b>145370</b>
300 pairs	<b>145371</b>
1000 pairs	<b>145357</b>
2000 pieces sorted, with lever	<b>145338</b>
2000 pieces sorted, Medius without lever	<b>145369</b>



# Clamex P-10

For panels from 12 mm



## Technical data

Size	52 × 19 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic
Material of lever	zinc die cast
Installation tolerance	long. ± 0.5 mm/radial ± 0.5 mm

## Clamex P-10

## Part no.

80 pairs	<b>145372</b>
300 pairs	<b>145373</b>
1000 pairs	<b>145374</b>
2000 pieces sorted, without lever	<b>145358</b>





# Clamex P-14 Flexus

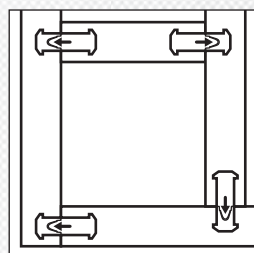
Detachable furniture connector  
with flexible positioning pins



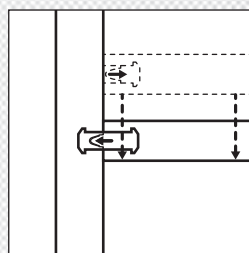
## Advantages and features

- **Flexible assembly sequence** – Flexible positioning pins allow freely selectable assembly sequence
- **Simple alignment** – Flexible positioning pins align the workpiece and keep it in position
- **Versatile assembly** – Bevelled and movable positioning pins enable the tilting of the workpiece in both directions.
- **Installation of fixed shelves** – Fixed shelves or vertical separators can be installed in an assembled cabinet unit.
- **Compatible with all Clamex P connector halves without levers** – P-14 without lever, P-10 without lever and P-10 Medius without lever

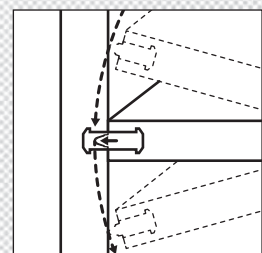
Flexible assembly  
sequence



Simple  
alignment



Versatile  
assembly





# Clamex P-14 Flexus

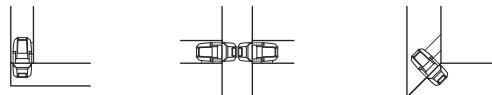
Detachable furniture connector  
with flexible positioning pins



## Technical data

Size	64 × 13.5 × 9.7 mm
	52 × 7.5 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic
Material of lever	zinc die cast
Installation tolerance	long. ± 0 mm/radial ± 1 mm

Clamex P-14 Flexus	Part no.
80 pairs	145315
300 pairs	145316
1000 pairs	145317
2000 pieces sorted, with lever	145318



Experience the  
connector live

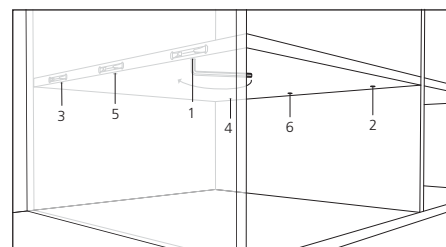
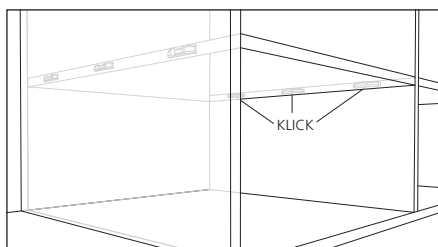
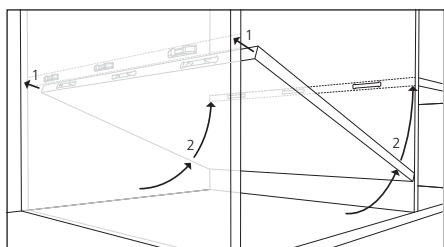


## Applications

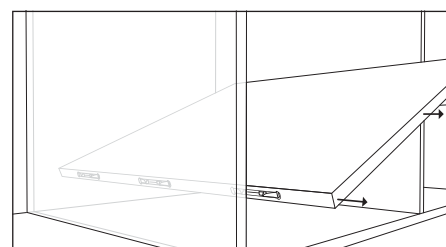
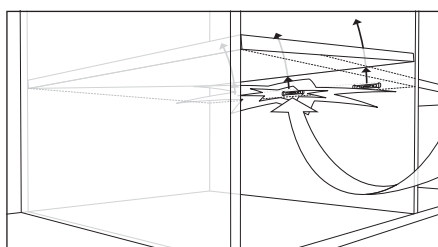
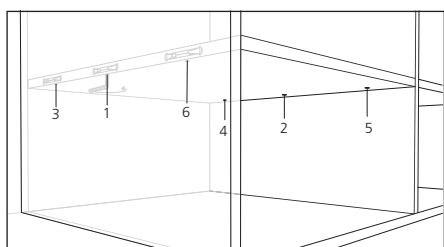
- **Furniture:** Fixed shelf, separation wall, inspection cover, rear wall, niche cabinet, furniture with 90° miters (e.g. closed cube on a miter) and much more
- **Furniture joints:** Corner connections, dividing panel joints, various angles
- **Material:** Particle board, MDF, plywood, hardwood etc.



## Shelf assembly



## Shelf disassembly



# Clamex P-14 CNC

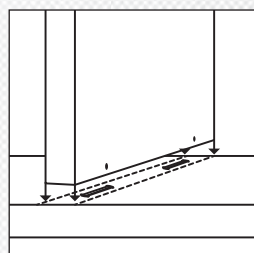
Detachable furniture connector  
with precise alignment



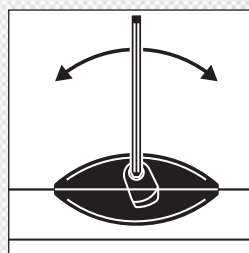
## Advantages and features

- **Precise alignment** – The profile of the positioning pins allows for precise alignment of the two connector halves. No need to use alignment dowels.
- **Detachable** – Open the connector multiple times with the rotating lever.
- **Small opening for lever** – A choice between a 6 mm hole for cover caps or a 5 mm hole for the use without cover caps.
- **Same processing as Clamex P-14** – No new tools or program-ming costs and no need for new expertise – easy to handle
- **Compatible with any Clamex P connector half without lever**  
P-14 without lever, P-10 without lever, and the P-10 Medius without lever

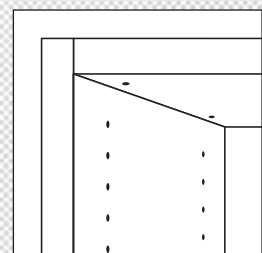
Precise  
alignment



Detachable



Small opening  
for lever



# Clamex P-14 CNC

Detachable furniture connector  
with precise alignment



## Technical data

Size	64 × 13.5 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic
Material of lever	zinc die cast
Installation tolerance	long. ± 0 mm/radial ± 1 mm

## Clamex P-14 CNC

## Part no.

2000 pieces sorted, with lever

**145388**



Experience the  
connector live



# Clamex P-14

For panels from 16 mm



## Technical data

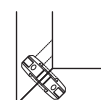
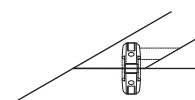
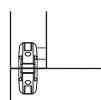
Size	64 × 13.5 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic

## Clamex P-14

## Part no.

2000 pieces sorted, without lever

**145339**



# Clamex P-10

For panels from 12 mm



## Technical data

Size	52 × 9.5 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic

## Clamex P-10

## Part no.

2000 pieces sorted, without lever

**145358**



# Clamex P-10

## Medius

For center panels from 16 mm



## Technical data

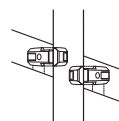
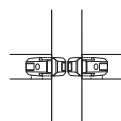
Size	52 × 7.5 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic

## Clamex P-10 Medius

## Part no.

2000 pieces sorted, without lever

**145369**





# Bisco P



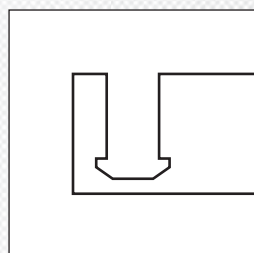
Aligning element suitable for  
the P-System groove



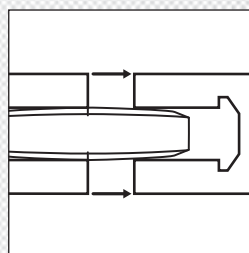
## Advantages and features

- **Ideal addition to Clamex P and Tenso P**, fits into the P-System grooves, **without requiring a different cutter**
- **Bisco P-14 is ideal for dry-assembly before gluing a joint with Tenso P-14**
- **For aligning P-System grooves**, aligning function without glue
- **Surface structure allows use as a connecting element** when gluing workpieces

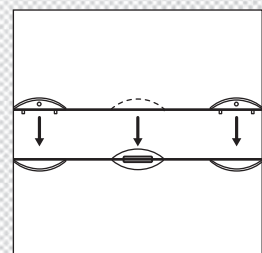
Base  
P-System groove



Align flush



Compatibility





# Bisco P-14

Aligning element suitable  
for P-14 groove



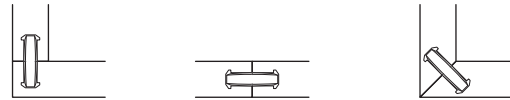
## Technical data

Size	65 × 27 × 7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	plastic
Installation tolerance	long. ± 2 mm

## Bisco P-14

## Part no.

80 pieces	<b>145301</b>
300 pieces	<b>145302</b>
1000 pieces	<b>145303</b>



# Bisco P-10

Aligning element suitable  
for P-10 groove



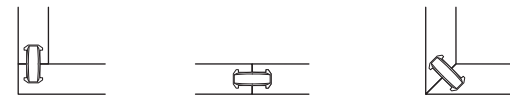
## Technical data

Size	52 × 19 × 7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	plastic
Installation tolerance	long. ± 2 mm

## Bisco P-10

## Part no.

80 pieces	<b>145304</b>
300 pieces	<b>145305</b>



Experience the  
connector live



# Tenso P

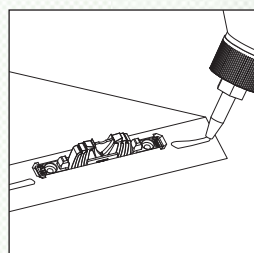
Self-clamping connector for gluing



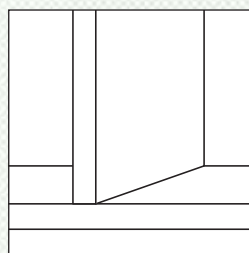
## Advantages and features

- **Glue faster**, without additional tools
- **High clamping force**, without clamps or presses
- **Perfect aesthetics**, completely invisible
- **Versatile**, simple gluing at various angles
- **Tool-free connector installation**, quick and easy without screws or adhesive
- **Effortless connection** of large workpieces on site

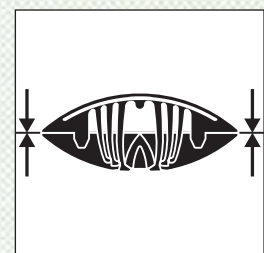
Gluing



Invisible



High clamping force



# Tenso P-14

Self-clamping connector for gluing  
a thickness from 16 mm



## Technical data

Size	66 × 27 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic
Installation tolerance	long. ± 1 mm/radial ± 1 mm

## Tenso P-14

## Part no.

80 pairs, without preload clip	<b>145415</b>
300 pairs, without preload clip	<b>145425</b>
1000 pairs, without preload clip	<b>145435</b>

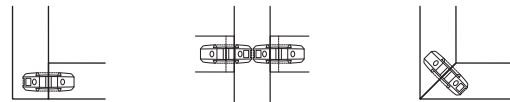
Starter-Set – 80 pairs, with preload clip	<b>145415S</b>
Starter-Set – 300 pairs, with preload clip	<b>145425S</b>

300 pairs preload clip	<b>145426</b>
1000 pairs preload clip	<b>145436</b>

2000 pieces sorted, connector half with spring	<b>145440</b>
2000 pieces sorted, connector half without spring	<b>145441</b>

## Important:

The aligning element Bisco P-14 is ideal  
to dry-assemble the joints before gluing



Experience the  
connector live



# Tenso P-10

Self-clamping connector  
for gluing thin materials from  
a thickness of 12 mm



## Technical data

Size	52 × 19 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic
Installation tolerance	long. ± 1 mm/radial ± 1 mm

## Tenso P-10

## Part no.

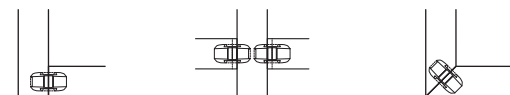
80 pairs, with preload clip	<b>145418</b>
300 pairs, with preload clip	<b>145428</b>
1000 pairs, with preload clip	<b>145438</b>

2000 pieces sorted, connector half with spring	<b>145442</b>
2000 pieces sorted, connector half without spring	<b>145443</b>

2000 pieces preload clip	<b>145445</b>
--------------------------	---------------

## Important:

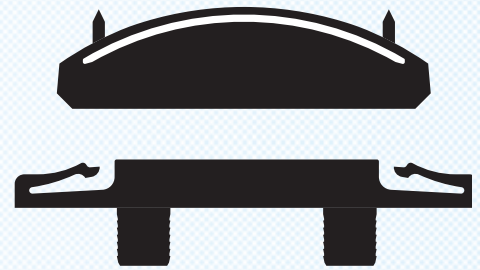
The aligning element Bisco P-10 is ideal  
to dry-assemble the joints before gluing





# Divario P

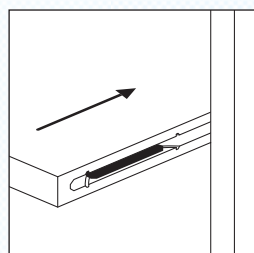
Self-clamping, invisible connector  
for slide insertion



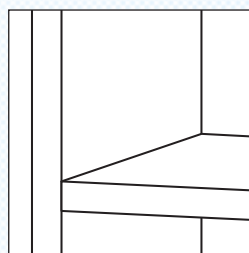
## Advantages and features

- **Completely invisible joint** for highest quality standards
- **Joins and clamps** during insertion for perfectly closed joints
- **Efficient machining and installation** with a CNC or a Zeta based on the P-System
- Narrow element for the use in **shelves from 18 mm**
- **No resistance** while inserting until shortly before building the clamping force
- **Insertion of shelves** after transport for lower transport weight

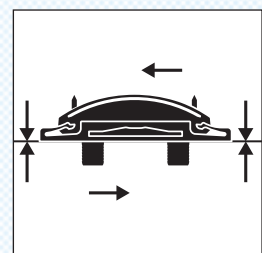
Sliding insertion



Invisible



Clamped joint





# Divario P-18

Self-clamping, invisible connector  
for slide insertion



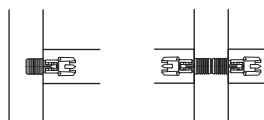
## Technical data

Element with P-System groove	65 × 16 × 9.7 mm
Element with drill holes	Ø 8 × 9 mm, distance 32 mm
Cutter	Ø 100.4 × 7 × 22 mm
Material connector	fiberglass reinforced plastic
Installation tolerance	long. ± 1 mm/radial ± 0 mm

## Divario P-18

## Part no.

80 pairs	<b>145550</b>
300 pairs	<b>145560</b>
1000 pairs	<b>145570</b>
2000 pieces sorted, for P-System groove	<b>145520</b>
2000 pieces sorted, for drill holes	<b>145540</b>



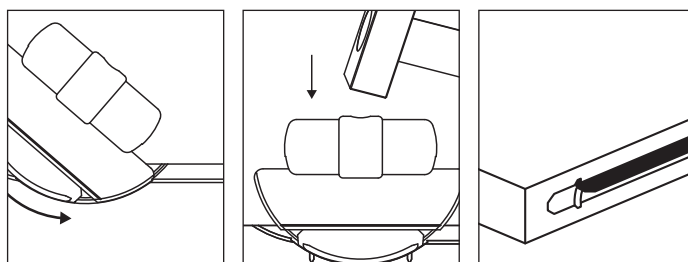
Experience the  
connector live



## Divario P-18 Installation tool

## Part no.

Divario P-18 Installation tool for fixing the Divario in the workpiece	<b>125500</b>
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# Zeta P2

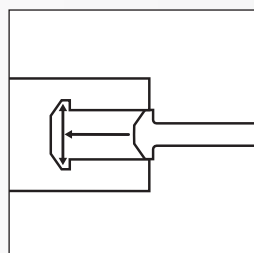
The machine for the evolving P-System, saving you time daily! Differentiate your products from the standard!



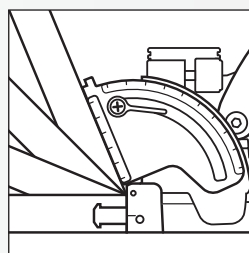
## Advantages and features

- Zeta P2, the power tool **for fast, form-locking anchorage of all P-System connectors** for wood joints
- **Automatic lifting movement** for a profile groove into which the connecting fittings are inserted
- **Time saving to mount the fittings** by the innovative P-System groove technology. The insertion of the fittings by hand without glue or screws means that much work and additional mounting hardware can be saved
- **Versatile attachment option**  
By pivoting stop a variety of angles can be machined
- **Versatile uses for both P-System and Lamello System** by way of changing of the cutter

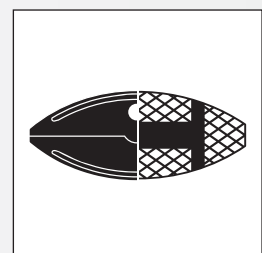
Automatic lifting movement



Versatile attachment option



Versatile use



# Zeta P2



## Technical data

Power/Voltage	1 050 W / 230 V 800 W / 120 V
Speed	9 000 min <sup>-1</sup>
P-System Cutter	Carbide tipped / Diamond tipped Ø 100 × 7 × 22 mm
Teeth	Z3
Cutting depth max.	20 mm
Weight	3.7 kg

## Zeta P2-Set

## Part no.

with carbide tipped profile groove cutter in Systainer	101402S
cutter supplied	132141
with diamond tipped profile groove cutter in Systainer	101402DS
cutter supplied	132140

## Kit contains

- Zeta P2
- P-System cutter 7 mm
- Stop square
- Suction stub 23 + 36 mm
- Disc for angles
- Spacer 2 + 4 mm
- Tools
- P-System drill jig incl. drill



Experience  
Zeta P2 live



## Connected in seconds ...

Without waiting time, clamps, or secondary processes

...with Clamex – detachable



1. Cut



2. Drill



3. Insert



4. Connect – finished!

### Time for one connector pair

1. Cut	25
2. Drill	15
3. Insert	5
4. Connect – finished!	5

Ready in

50 s

...with Tenso – glued



1. Cut



2. Insert



3. Apply glue



4. Connect – finished!

### Time for one connector pair

1. Cut	25
2. Insert	5
3. Apply glue	5
4. Connect – finished!	5

Ready in

40 s



# 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 cutter

Clamex P-14 Flexus



Clamex P-14



Bisco P-14



Clamex P-Medius 14/10



Clamex P-10



Bisco P-10



Tenso P-10



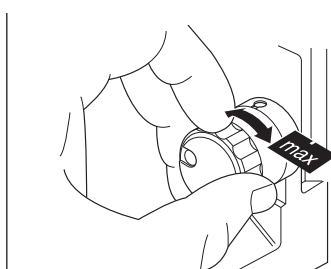
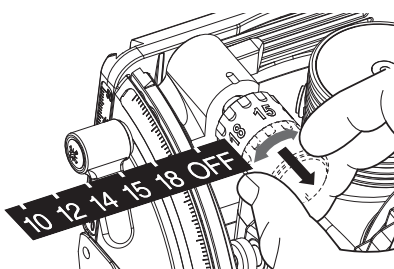
Tenso P-14



Divario P-18



## P-System depth adjustment



10	<b>Depth 10</b> Clamex P-10, Tenso P-10 and Clamex P-10 Medius, Bisco P-10
12	<b>Depth 12</b>
14	<b>Depth 14</b> Tenso P-14, Clamex P-14 and Clamex P Medius 14/10, Bisco P-14
15	<b>Depth 15</b>
18	<b>Depth 18</b> Divario P-18
OFF	Groove millings without profile groove = for standard



With 4 mm Lamello System groove cutter



20



E20-L



C20



10



E20-H



C10



0



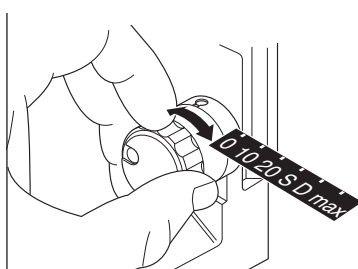
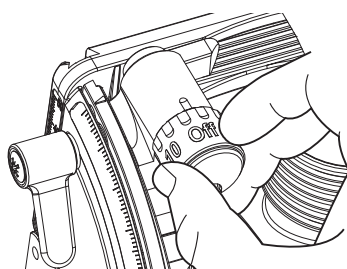
K20



Simplex



## Lamello depth adjustment system



0	Depth 0 no. 0
10	Depth 10 no. 10, C10
20	Depth 20 no. 20, E20-L, K20, C20
S	Depth S Simplex, E20-H
D	Depth D Duplex, E20-L
max	Depth max S6, E20-L

# CNC technology / networked production



## CAD / ERP / CAM software



## CNC machines



Design and production software, aggregates,  
cutting tools and CNC machining



CNC processing centres  
with **consoles**

CNC processing centres  
with **nesting technology**

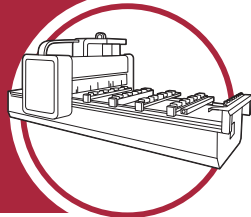
CNC processing centres  
**vertical**





What do you need to create P-System grooves on your CNC machine?

#### CNC machine



»

- Machine with 3 / 4 / 5-axis
- **The number of axes and equipment options influence the processing possibilities**

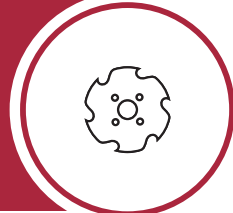
#### CNC software



»

- Purchase software for machine / macro / component from the manufacturer
- or
- Program the machining process yourself
- **The macro / component determines / affects the processing possibilities**

#### The P-System tools



»

- Purchase tools from Lamello or a P-System tool partner

#### Suitable angle aggregate









»

- Aggregate sub-program
- The angle aggregate enables the P-System groove to be cut in the surface and the centre of the surface

**Note: Obtain application approval of the P-System CNC groove cutter on the aggregate from the CNC machine manufacturer.**

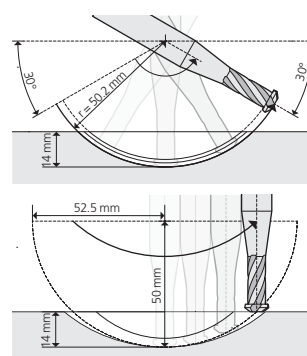
# Requirements for CNC machines:

- Either the macro and component software for the desired angle are provided or you have programmed these yourself
- Aggregate sub program is available

Machines	Axes	Aggregates	Equipment (Varies depending on machine and aggregate)	Surface 180°	Corner 90°	Center wall 90°	Miter 22.5° – 180°
Portal	3/4	—	1 x P-System CNC groove cutter 1 x P-System CNC cutter arbor 1 x drill Ø 6 mm 1 x P-System CNC shaft tool cutter				
		<b>Possible angle aggregates</b> <ul style="list-style-type: none"> <li>– One to four spindle angle aggregates</li> <li>– Corner notching aggregate</li> <li>– Aggregate for door locks</li> </ul>  	2 x P-System CNC groove cutters 1 x P-System CNC cutter arbor 1 x drill Ø 6 mm				
	4	<b>FLEX5C</b> Automatically adjustable swivelling aggregate with automatic tool changer. <b>Note:</b> The profile groove is restricted to 10 mm in the center of the surface  	1 x P-System CNC groove cutter + adaptor 1 x P-System drill Ø 6 mm + adaptor				
	5	—	1 x P-System CNC groove cutter 1 x P-System CNC cutter arbor 1 x P-System drill Ø 6 mm 1 x P-System CNC shaft tool cutter				
		 	2 x P-System CNC groove cutters 1 x P-System CNC cutter arbor 1 x P-System drill Ø 6 mm				
Nesting	3/4	— —	1 x drill Ø 5 mm 1 x drill Ø 6 mm 1 x P-System CNC shaft tool cutter				
	5	—	1 x P-System CNC groove cutter 1 x P-System CNC cutter arbor 1 x P-System drill Ø 6 mm 1 x P-System CNC shaft tool cutter	*	*	*	

\*possible with Nextec

- Possible
- Only possible with Zeta P2 and positioning pins, more on page 39
- Possible with P-System CNC shaft tool cutter and **5-axis movement**
- Possible with P-System CNC shaft tool cutter and **3-axis movement**
- Not possible



More about the tool on pages 36–37.

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



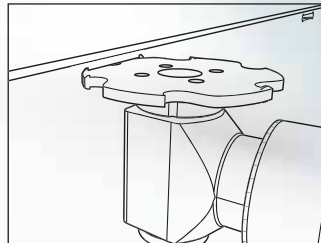
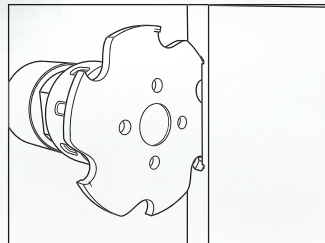
# P-System

*„The extensive and flexible  
P-System is indispensable for  
the company.“*

*Bernd Ahlers, Managing Director, Carpentry Bernd Ahlers, Edeweicht, Germany*



# Equipment options for processing with the P-System



CNC machines with optional equipment for particularly efficient processing using the Lamello P-System



**HOMAG**

**DRILLTEQ V-500**

25-spindle +  
1 x aggregate (VKNR 1549)  
1 x tool set (VKNR 9763)

1 · 2 · 3



New Holzher  
video on P-System  
installation



**EVOLUTION 7405  
Connect**

1 · 2 · 3



**BIESSE**

**Brema Eko 2.1**

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

1 · 2 · 3



**BIESSE**

**Brema Eko 2.2**

1 x aggregate for 90°  
1 x aggregate 45° for 2 x 45°  
2 x P-System CNC  
groove cutters  
1 x P-System CNC cutter arbor  
1 x drill Ø 6 mm

1 · 2 · 3 · 4



**Project TF 100 / TF 100 2.0**

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

1 · 2 · 3



**cx 210**

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

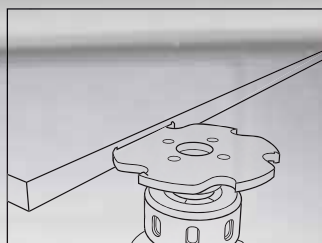
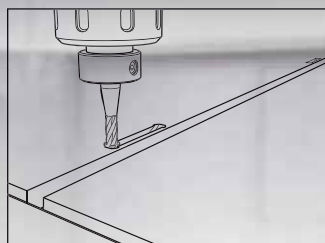
1 · 2 · 3



**Nextec 7707**

1 x tool set

1 · 2 · 3 · 4



## «Compact class» CNC

New Format4  
video on P-System  
installation



New Gannomat  
video on P-System  
installation



**FORMAT4**

### Creator 950

1 × P-System CNC  
groove cutter in HSK63F  
1 × 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

1 · 2 · 3

**GANNOMAT**

### 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

1 · 2 · 3





**HE HOMAG**














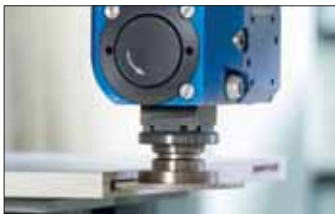






### DRILLTEQ V-200

woodWOP "Lamello P-System"  
component  
1 × P-System tool set

1 · 2 · 3

## Connectivity

Surface 180°	Corner 90°	Center wall 90°	Miter 2 × 45°
			
1	2	3	4

Access drill hole for Clamex P	Processing of the profile groove in the edge		Processing of the profile groove on the surface
<div></div> <div>Edge 90° deg/Other angles Drill hole is parallel to the cut</div>	<div></div> <div>Edge 90°</div>	<div></div> <div>Other angles/Groove is always 90° deg to the surface</div>	<div></div> <div>Groove is always 90° deg to the surface</div>
			
<div></div> <div>Drill with HSK spindle</div>	<div></div> <div>P-System CNC groove cutter with P-System CNC cutter arbor in HSK spindle</div>		<div></div> <div>P-System CNC groove cutter with P-System CNC cutter arbor in angle aggregate</div>
<div></div> <div>Verticle drill spindle</div>	<div></div> <div>P-System CNC groove cutter on tool holder (Benz)</div>		<div></div> <div>P-System CNC groove cutter with P-System CNC cutter arbor in multi-spindle aggregate</div>
			
<div></div> <div>Drill with FLEX5C</div>	<div></div> <div>P-System CNC groove cutter with FLEX5C</div>	<div></div> <div>P-System CNC groove cutter with FLEX5C</div>	<div></div> <div>P-System CNC groove cutter with FLEX5C (max. 10 mm)</div>
<div></div> <div>Drill in main spindle (5-axis)</div>	<div></div> <div>P-System CNC groove cutter in main spindle (5-axis)</div>	<div></div> <div>P-System CNC groove cutter in main spindle (5-axis)</div>	<div></div> <div>P-System CNC shaft tool cutter in main spindle (5-axis)</div>



# CNC tool accessories



P-System CNC drill bit	Part no.
6 mm, solid carbide, for miters, L = 100/35 mm, shaft = 10 mm	131556



P-System CNC groove cutter, Ø 100.4 × 7 mm	Part no.
× 30 mm, 4/6.6/DTK 48 mm, Z3, suitable for all P-System CNC cutter arbors listed below	132142
× 30 mm, 4/6.6/DTK 48 mm, Z6, suitable for all P-System CNC cutter arbors listed below	132145

× 40 mm, 4/5.5/DTK 52 mm, Z3 E.g. for angle aggregates, Flex 5, Flex 5+	132143
--	--------

× 16 mm, 4/5.5/DTK 28 mm, Z3 E.g. for corner notching aggregate	132144
--	--------

× 35 mm, 4/5.5/DTK 50 mm, Z3 e.g. for Brema Eko 2.1 and for Masterwood Project TF 100	132148
--	--------



P-System CNC cutter arbors 30 / DTK 48 mm	Part no.
Shaft Ø 20 × 50 mm, L = 102 mm	132150

Shaft Ø 25 × 60 mm, L = 102 mm	132151
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Shaft Ø 16 × 50 mm, L = 85 mm	132152
-------------------------------	--------

Shaft Ø 16 × 55 mm, L = 68 mm	132153
-------------------------------	--------

Shaft Ø 16 × 50 mm, L = 85 mm, with clamping surface (2°- angle) E.g. for aggregate for door locks	132154
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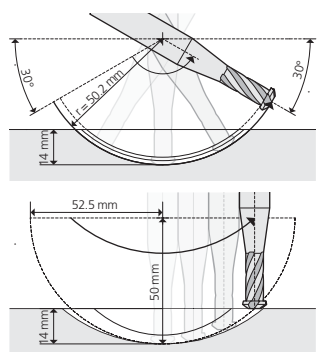
Shaft Ø 20 × 50 mm, L = 85 mm, with clamping surface (2°- angle) E.g. for aggregate for door locks	132155
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M6 × 16 mm Torx countersunk bolt, 4 pcs, suitable for P-System CNC cutter arbors	132159
--	--------

Screwdriver with cross-grip, Torx T20 × 100 mm	271919
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P-System CNC shaft tool cutter	Part no.
Solid carbide, shaft Ø 12 × 40 mm, L = 80 mm	131342



**P-System CNC shaft tool cutter with 5-axis**



Lamello recommends making all profile grooves with a disc cutter, primarily for reasons of precision, service life, milling time and thus economic efficiency. A P-System CNC shaft tool cutter or contour mill cutter should only be used for the milling of surfaces if no angle aggregate is available.

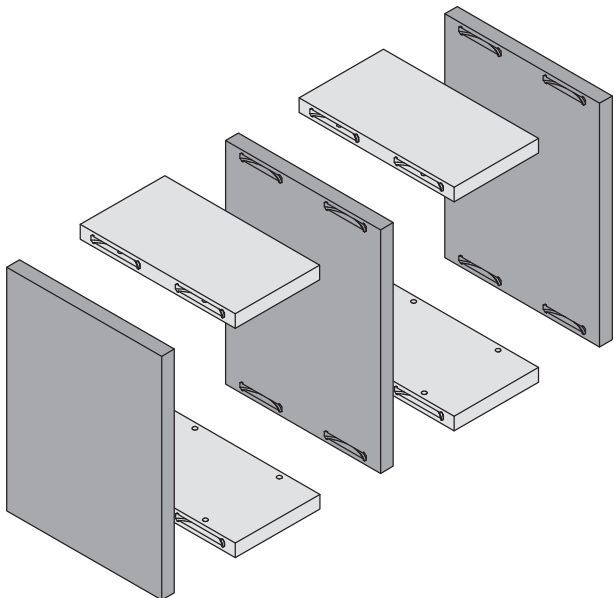
**P-System CNC shaft tool cutter with 3-axis**



# Ideas for standardizing the machining on a CNC machine

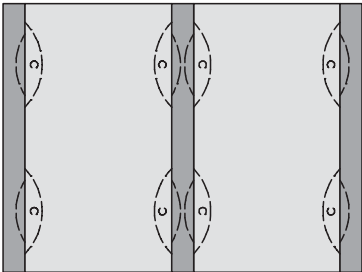
Clamex P-14 CNC with lever, Clamex P-14 with lever and Clamex P-14 Flexus with lever are compatible with all Clamex P connector halves without lever.

This means that standardized processing logic can be implemented for all side parts and the floor or intermediate floor.



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

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



	Part no.
<b>Clamex P-14 CNC</b> 2000 pieces sorted, with lever	<b>145388</b>
<b>Clamex P-14</b> 2000 pieces sorted, with lever	<b>145338</b>
<b>Clamex P-14 Flexus</b> 2000 pieces sorted, with lever	<b>145338</b>
<b>Clamex P-10</b> 2000 pieces sorted, without lever	<b>145358</b>
<b>Clamex P-10 Medius</b> 2000 pieces sorted, without lever	<b>145369</b>



# Possible combination of CNC machines with Zeta P2

Combining strengths: Precise drilling on a CNC machine; use these drill holes to position the Zeta P2 to cut the P-System grooves.

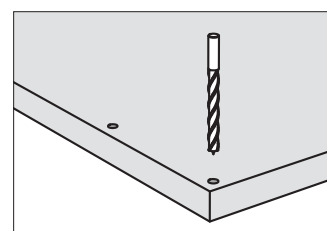
This application is especially ideal for nesting machines, when the cost for an additional aggregate can't be justified or the machine cannot be upgraded.

This method combines the precision and efficiency of a CNC machine and uses the simple and fast machining of a P-System groove with a Zeta P2.



## Advantages and properties

- Save time and money!
- Short setup time with a Zeta P2
- No specific angle aggregates, software or CNC tools necessary
- Precise positioning for center panels



Positioning drill holes for grooves in the surface



Positioning drill holes for grooves in the edge (for Clamex P)



### Positioning pin Zeta P2

### Part no.

Ø 5 mm

**251048**

Ø 8 mm

**251066**

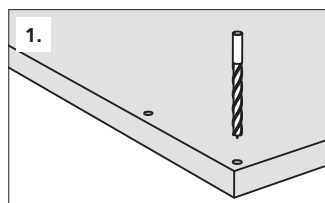
### Positioning clip for Zeta P2

### Part no.

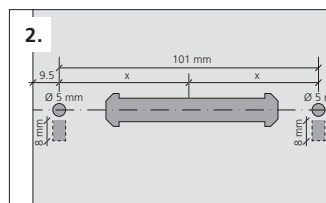
Ø 6 mm

**251067**

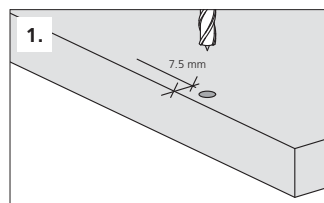
For positioning in the Clamex P access hole (6 mm)



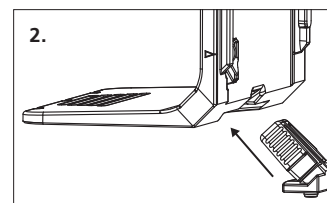
1. Drill the positioning holes with the CNC, Ø 5 mm / Ø 8 mm



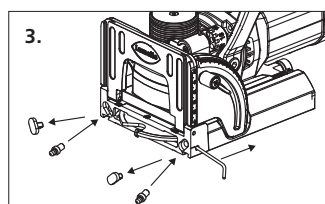
2. Hole pattern of the positioning drill holes



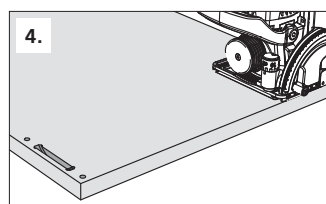
1. Drill the positioning hole with the CNC, Ø 6 mm



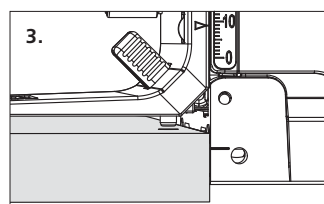
2. Insert the positioning clip



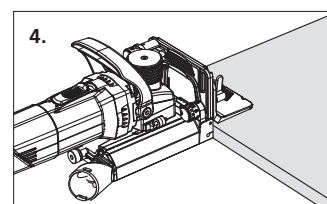
3. Insert the positioning pins in the Zeta P2



4. Position the machine in the drill holes



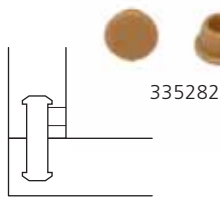
3. Insert the positioning clip in the drill hole Ø 6 mm













4. Cut the groove with the positioned machine

# Accessories

90°



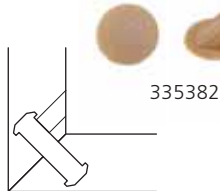
## Cover caps, 100 pieces

90°	Part no.		Part no.		
RAL 9010, White		335280	RAL 9002, Grey white		335285
RAL 9011, Black		335281	RAL 7035, Light grey		335286
RAL 1014, Ivory		335282	RAL 7040, Window grey		335287
RAL 1011, Brown beige		335283	RAL 7031, Blue grey		335288
RAL 8007, Brown		335284	RAL 7022, Umbra grey		335298
RAL 8017, Dark brown		335289			







## Cover caps, 500 pieces

90°	Part no.
RAL 9010, White	<b>335362</b>
RAL 9011, Black	<b>335363</b>
RAL 1014, Ivory	<b>335364</b>
RAL 1011, Brown beige	<b>335365</b>

45°



## Cover caps, 100 pieces

45°	Part no.	Part no.	
RAL 9010, White	 <b>335380</b>	RAL 1011, Brown beige	 <b>335383</b>
RAL 9011, Black	 <b>335381</b>	RAL 8017, Dark brown	 <b>335384</b>
RAL 1014, Ivory	 <b>335382</b>	RAL 7022, Umbra grey	 <b>335388</b>



## P-System drill jig

P-System drill jig incl drill, from 22.5° for all Clamex P connectors (P-10, P-14, P Medius 14/10)	<b>125344</b>
Angle for drill jig	<b>255250</b>
Element insert for size P-10	<b>255251</b>
Element insert for size P-14	<b>255252</b>



## P-System drill jig long

Drill jig for thick workpieces 100 mm, (P-14, P Medius 14/10)	<b>125345</b>
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## Drill

Spiral drill Ø 6 mm with centering point, for standard drill jig	131506
Spiral drill Ø 6 mm with centering point, for long drill jig	131508
Depth adjuster for drill, 6 mm diameter	255243



## Clamex P assembly tool

for all angles, fast and flexible, hex 4 x 30 mm, length 290 mm	<b>251993</b>
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## Allen key

Allen key	Part no.
4 mm, 75 x 55 mm	271945
4 mm, 120 x 50 mm	271945A





145400



145439



125510



125511



145551



125500



145312



145314



251044



253026



132140



132141



132000

#### **Tenso P-10 / P-14 Preload tool** **Part no.**

Tool to pre-load the Tenso P **145400**

P-System 4mm depth adjuster attachment for P-8 **145439**

#### **Divario P-18 Marking jig in metal with marking points** **Part no.**

Marking jig incl. drill with centering point and rotating depth collar  
for the precise drilling of Divario drill holes by hand **125510**

#### **Divario P-18 Marking jig in plastic, to mark with a pencil** **Part no.**

Marking jig to mark the Divario holes with a pencil **125511**

#### **Divario P-18 Installation tool** **Part no.**

Divario P-18 Installation tool for fixing the Divario in the workpiece **125500**

#### **Divario P-18 Starter-Set** **Part no.**

80 pairs in Systainer Size I, incl. installation tool and marking jig in metal **145551**

#### **P-System connector assortment professional** **Part no.**

120 pairs Clamex P-14, 30 pairs Clamex P-Medius 14/10,  
30 pairs Clamex P-10, 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-10/P-14 Preload tool, Sortainer T-Loc **145312**

#### **P-System connector assortment basic** **Part no.**

80 pairs Clamex P-14, 80 pairs Tenso P-14 incl. clip, 60 pairs Clamex P-Medius 14/10, 20 pieces  
Bisco P-14, Tenso P-10/P-14 Preload tool, Systainer T-Loc Gr. II incl. compartment dividers **145314**

#### **Stop square for Zeta P2, Top 21, Classic X** **Part no.**

For stabilising the biscuit joiner in the vertical position,  
ideal for obtuse miter joints **251044**

#### **Spacer for biscuit joiner** **Part no.**

5 mm, aluminium for 18mm panels **for Top 21 / Zeta / Classic 253027**

2 mm, plastic for 16 mm panels **for Top 21 / Zeta / Classic 253023**

4 mm, plastic for miters **for Top 21 / Zeta / Classic 253026**

#### **P-System groove cutter, Ø 100.4 x 7 x 22 mm** **Part no.**

Z3, diamond dipped **for Zeta (P-System) 132140**

#### **P-System groove cutter, Ø 100.9 x 7 x 22 mm** **Part no.**

Z3, carbide tipped **for Zeta (P-System) 132141**

#### **Lamello-System**

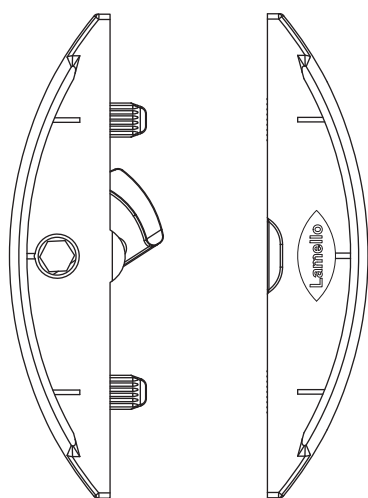
#### **Carbide tipped groove cutter, Ø 100 x 4 x 22 mm** **Part no.**

Z2 + V4 scoring teeth, 4 screw holes, hub **for Zeta, Top 20, Top 21, Classic 132000**

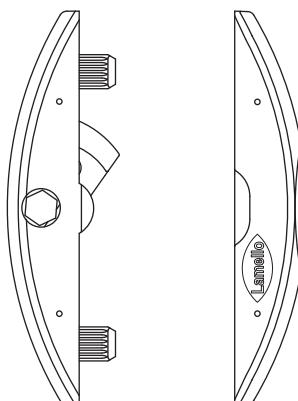
# Technical information

## Overview of connectors + grooves

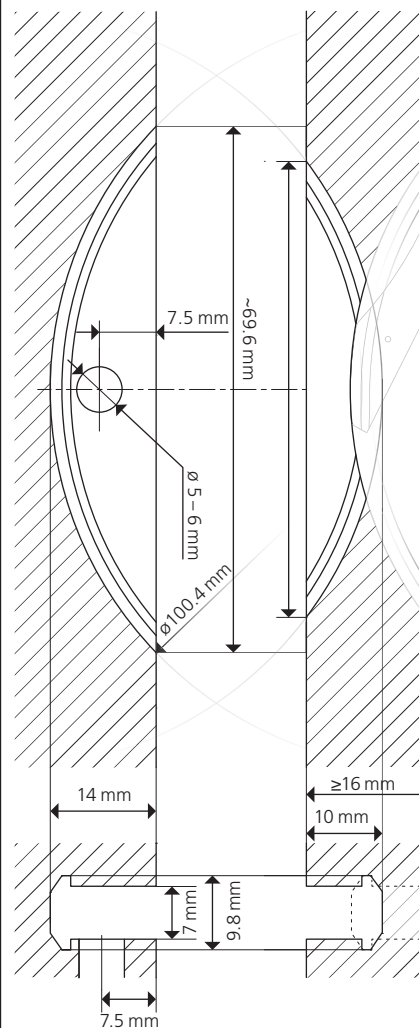
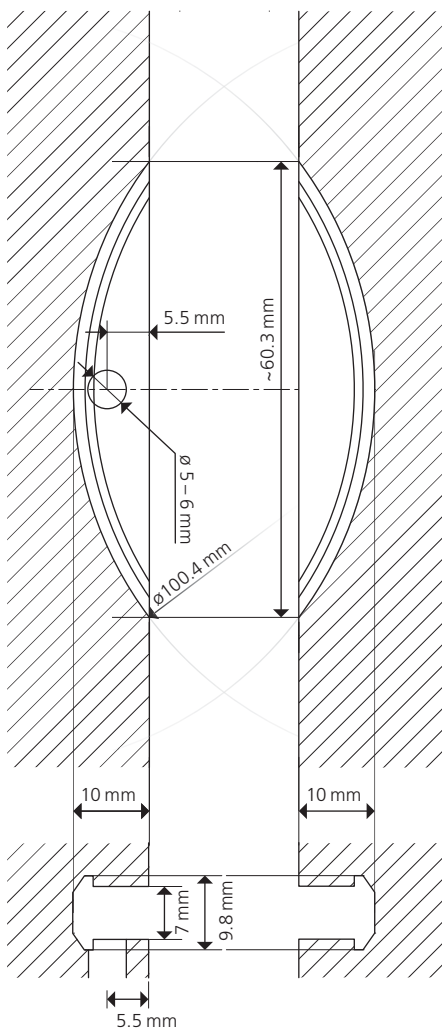
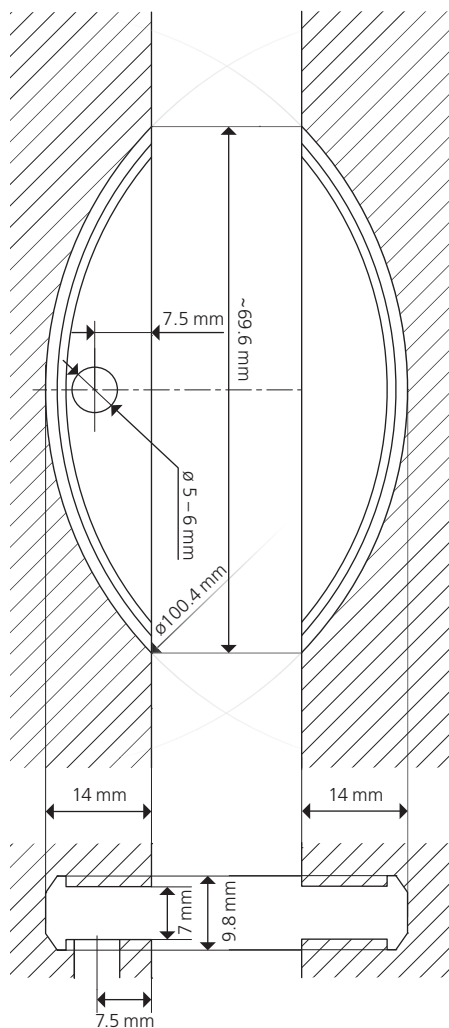
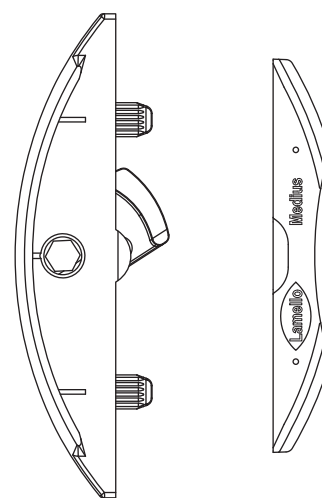
Clamex P-14



Clamex P-10



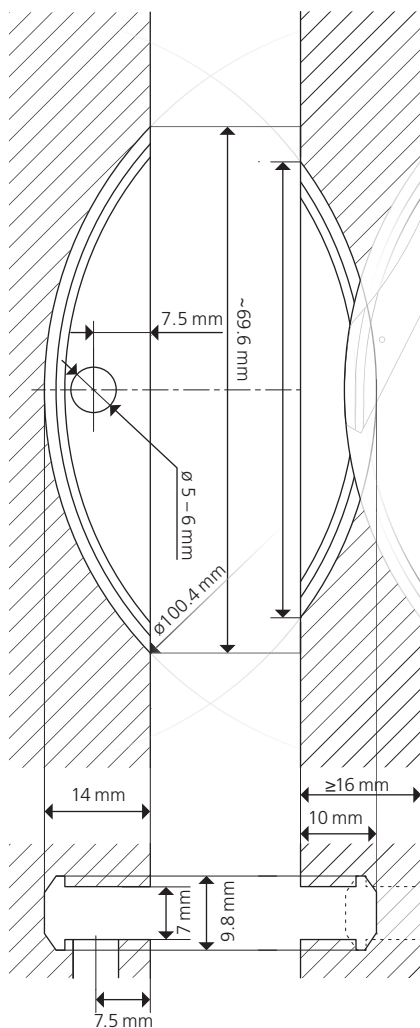
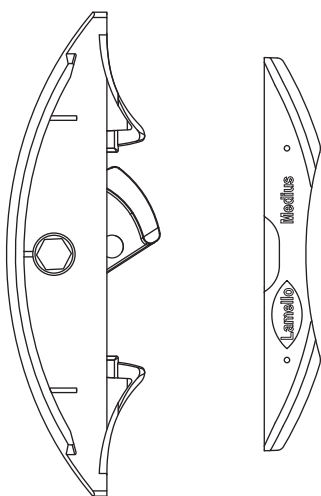
Clamex P-Medius 14/10



### Tensile strength (N)

MDF	~ 900	MDF	~ 600	MDF	~ 800
Particle board	~ 800	Particle board	~ 600	Particle board	~ 600
Beech	~ 1000	Beech	~ 900	Beech	~ 900

**Clamex P-14 Flexus**

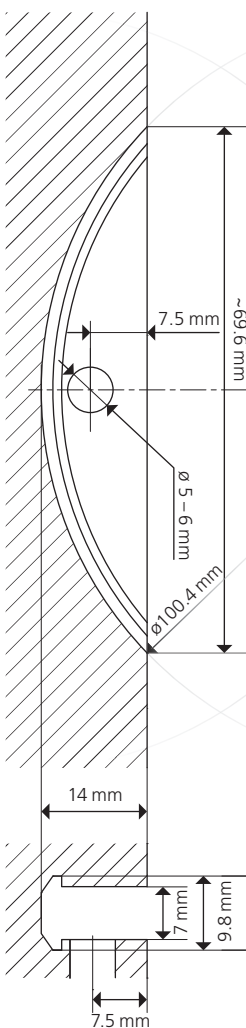
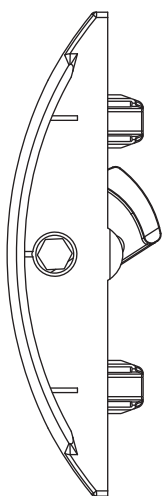


**Tensile strength (N)**

MDF	~ 720
Particle board	~ 600
Beech	~ 810

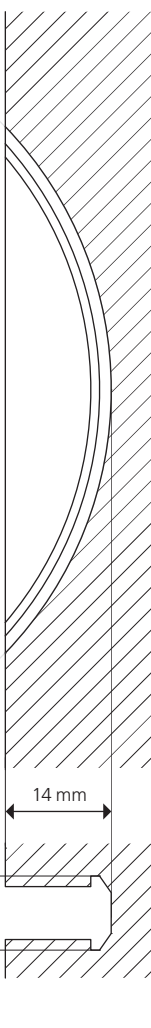
**Clamex P-14 CNC**

with lever



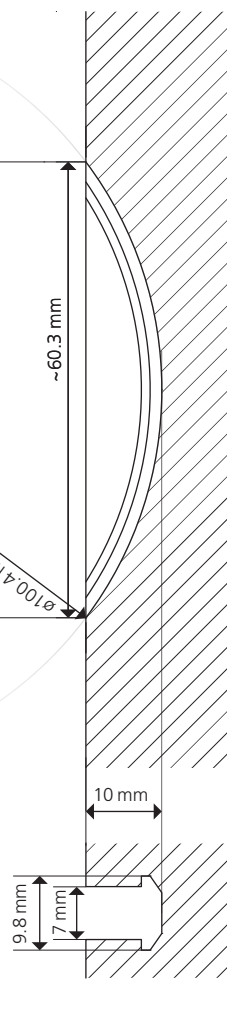
**Clamex P-14**

without lever



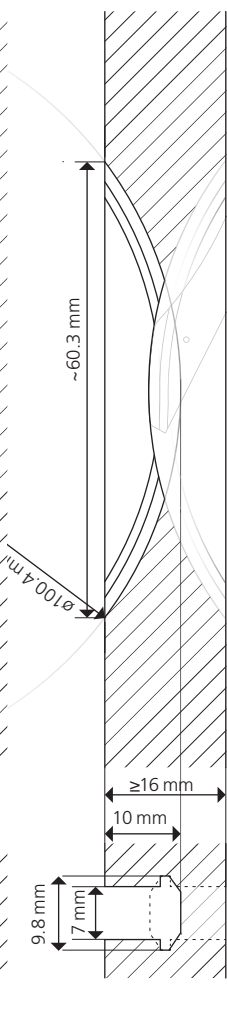
**Clamex P-10**

without lever



**Clamex P-10 Medius**

without lever



**Tensile strength (N)**

MDF	~ 900	~ 800	~ 800
Particle board	~ 800	~ 600	~ 600
Beech	~ 1000	~ 900	~ 900

# Technical information

## Overview of connectors + grooves

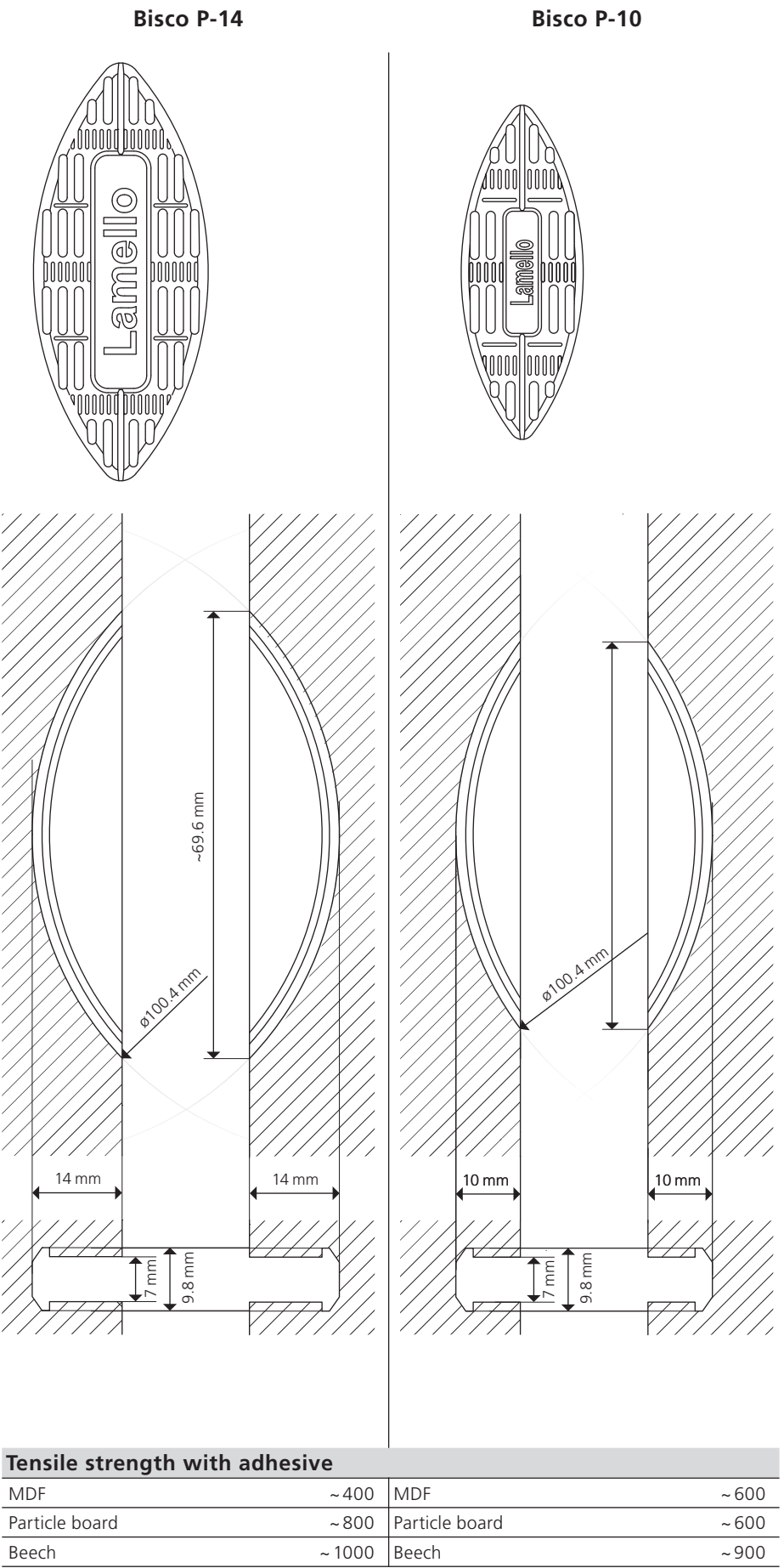
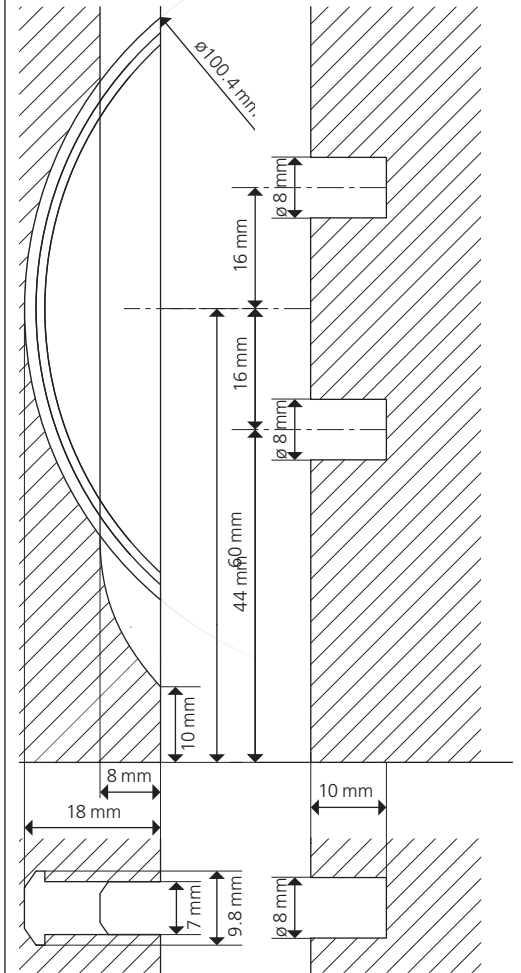
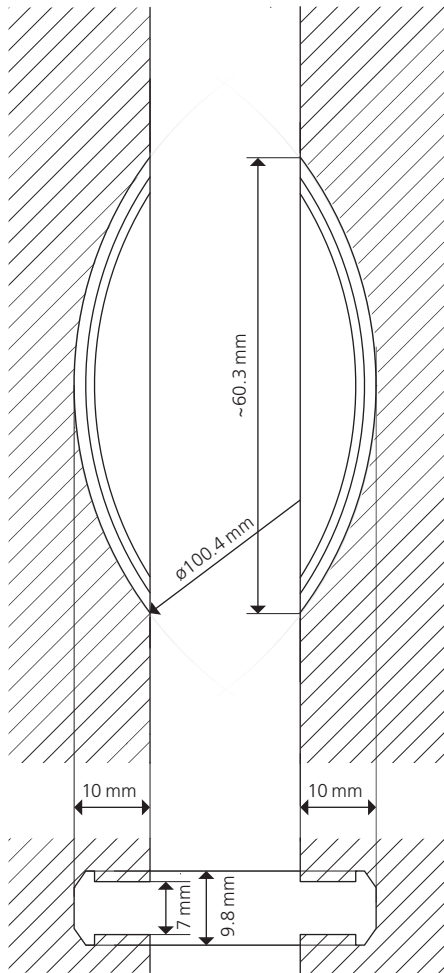
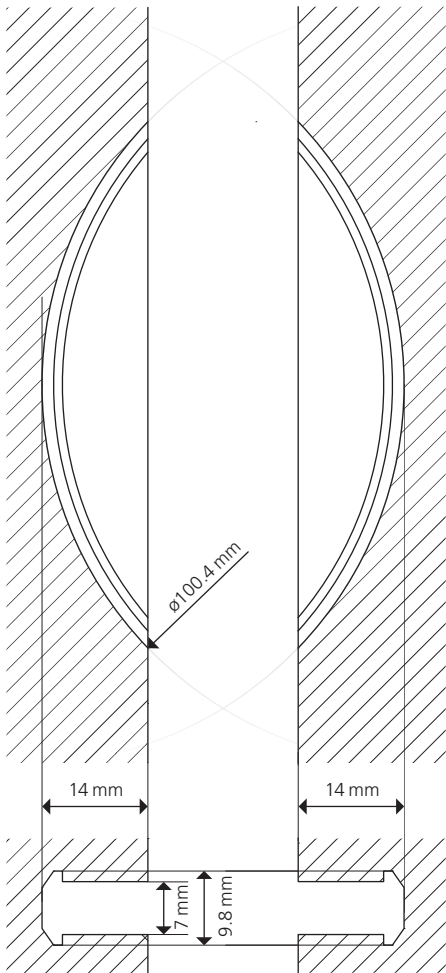




Figure 1 consists of two schematic diagrams of a scallop shell. The left diagram is a cross-section showing the internal anatomy, including the mantle edge, the siphon, the adductor muscle scar, and the arrangement of the lamellae. The right diagram is a longitudinal section showing the internal structure of the lamellae, with the word 'Lamello' written inside a central oval.



Per connector	~ 150
The tensile or shear strength depends on the adhesive	

Per connector	~ 100
The tensile or shear strength depends on the adhesive	

**Load capacity per connector (N)**

(mm)	19	22	25	30
MDF	600	700	800	1000
Particle board	500	600	700	1000
Beech	1700	2000	2000	2000
Spruce	800	900	1300	1400

## Tensile strength (N)

All materials	600
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# Service Tools



## Advice on site

We will be happy to advise you personally on site by appointment.



## Consultation by phone

Do you have any questions concerning our products or a certain application? Simply talk to us to get quick and competent support.



## Online consultation

Are you interested in an online product demonstration or personal product training? We will present our system solutions to you during a personal web conference.

## Connector search

The finder displays the right connection solutions for you based on your specifications (material thickness, detachable, invisible etc.).

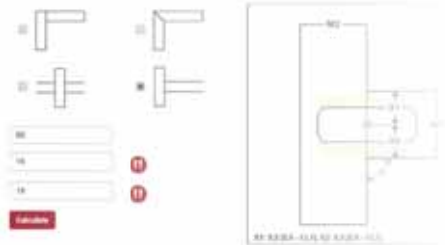


## P-System configurator

Are you looking for the right connector? The configurator will help you find the right connector and tell you how to position it.

### P-System configurator

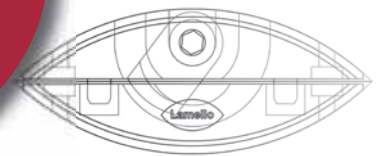
Find the right connector for your application



## Clamex P-14

### CAD data

Download your 2D/3D data in the desired format.



### Videos / tutorials

Discover a wide range of tutorial videos on the website and the Lamello YouTube channel.



Clamex P-14  
Schlitz Metall

## Tips and tricks

Learn tips and tricks for our connection elements from our professionals and get the most out of our products.

### Tips tricks

Use the P-System configurator to determine connector positions in workplaces



Are you looking for a connector for an unusual joining situation? With just a few clicks, the P-System configurator on our website



Manufacturer:

**Lamello AG**  
**Joining technology**  
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CH-4416 Bubendorf  
Tel. +41 61 935 36 36  
Fax +41 61 935 36 06  
info@lamello.com  
www.lamello.com