

The background of the advertisement is a close-up photograph of a CNC machine's drill bit positioned over a white laminate board. A small, curved black plastic piece and a thin strip of wood are on the surface. The machine's metal components and the precision of the cut are highlighted.

Lamello

P-System CNC



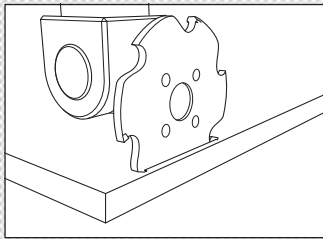
NEW
Clamex P-14 CNC

*A strong
connection. Inspiring.*

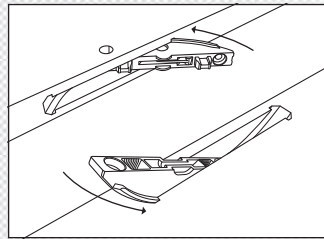
P-System CNC

Simple, Fast and Strong!

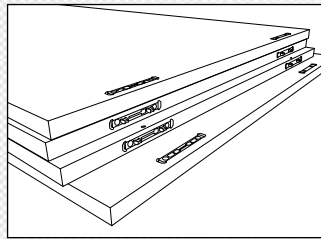
How it works



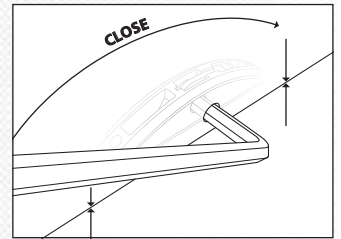
1. Cut



2. Insert the connector

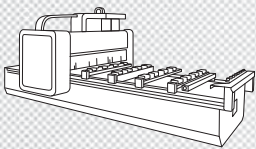


3. Deliver flat-pack

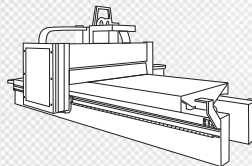


4. Connect the workpieces

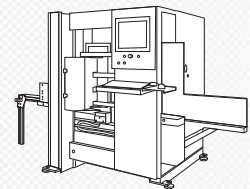
Efficient machining with CNC machines



CNC processing centres
with **consoles**



CNC processing centres
with **nesting technology**

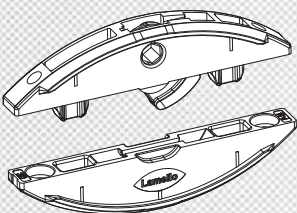


CNC processing centres
vertical

Connector Range

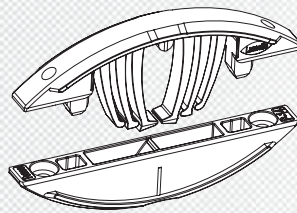
Clamex P

Detachable



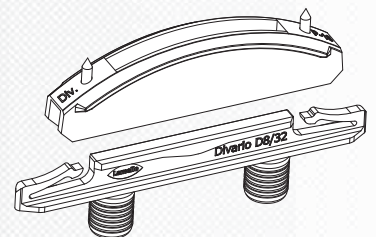
Tenso P

Gluing



Divario P

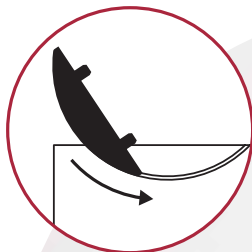
Sliding insertion



P-System features

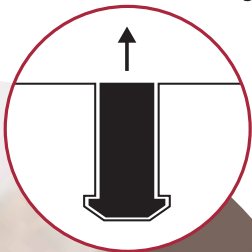
Fast installation

Inserting instead of screwing or gluing



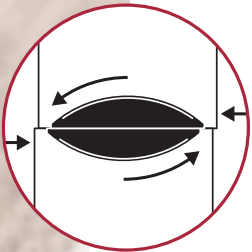
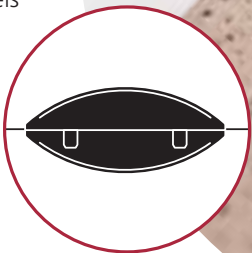
Strong

Form-locking anchorage across large surface areas



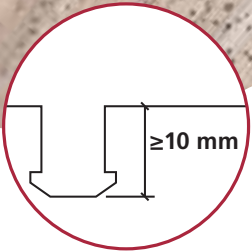
No twisting

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



P-System CNC – Applications

Furniture manufacturing



Interior fitting



P-System CNC – Applications

Kitchen manufacturing





Commercial joinery



Shop fitting

P-System

“For us, investing in the P-System from Lamello proved to be worth it.”

Martin Wegscheider, Managing Director, Spechtenhauser in Innsbruck, Austria





Clamex P-14 CNC

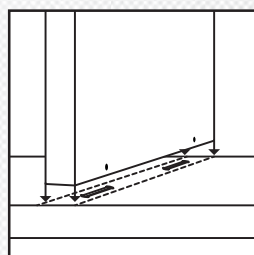
Detachable furniture connector
with precise alignment



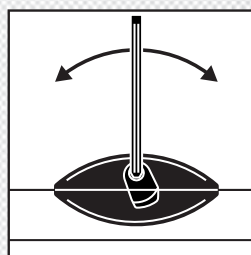
Advantages and features

- **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 programming 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

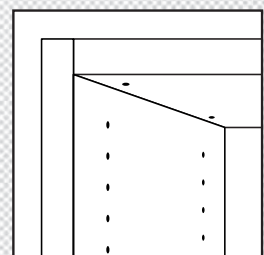
Precise
alignment



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
Material connector.....	fiberglass reinforced plastic
Material of lever.....	zinc die cast
Installation tolerance	long. ± 0 mm / radial ± 1 mm

Clamex P-14 CNC with lever	Part no.
2000 pieces sorted	145388

Clamex P-14

For panels from 16 mm



Technical data

Size.....	64 × 13.5 × 9.7 mm
Cutter.....	Ø 100.4 × 7 × 22
Material connector.....	fiberglass reinforced plastic
Material of lever.....	zinc die cast

Clamex P-14 without lever	Part no.
2000 pieces sorted	145339

Clamex P-10

For panels from 12 mm



Technical data

Size.....	52 × 9.5 × 9.7 mm
Cutter.....	Ø 100.4 × 7 × 22
Material connector.....	fiberglass reinforced plastic
Material of lever.....	zinc die cast

Clamex P-10 without lever	Part no.
2000 pieces sorted	145358

Clamex P-10 Medius

For center panels from 16 mm

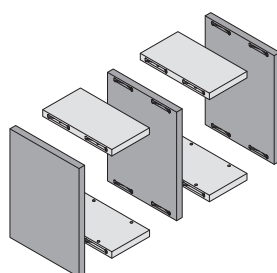


Technical data

Size.....	52 × 7.5 × 9.7 mm
Cutter.....	Ø 100.4 × 7 × 22
Material connector.....	fiberglass reinforced plastic
Material of lever.....	zinc die cast

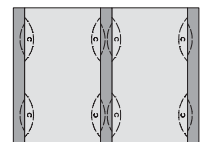
Clamex P-10 Medius without lever	Part no.
2000 pieces sorted	145369

Ideas for standardizing the
 machining on a CNC machine



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

**Depth 14 mm for all P-System
 grooves in the edge**



Part no.

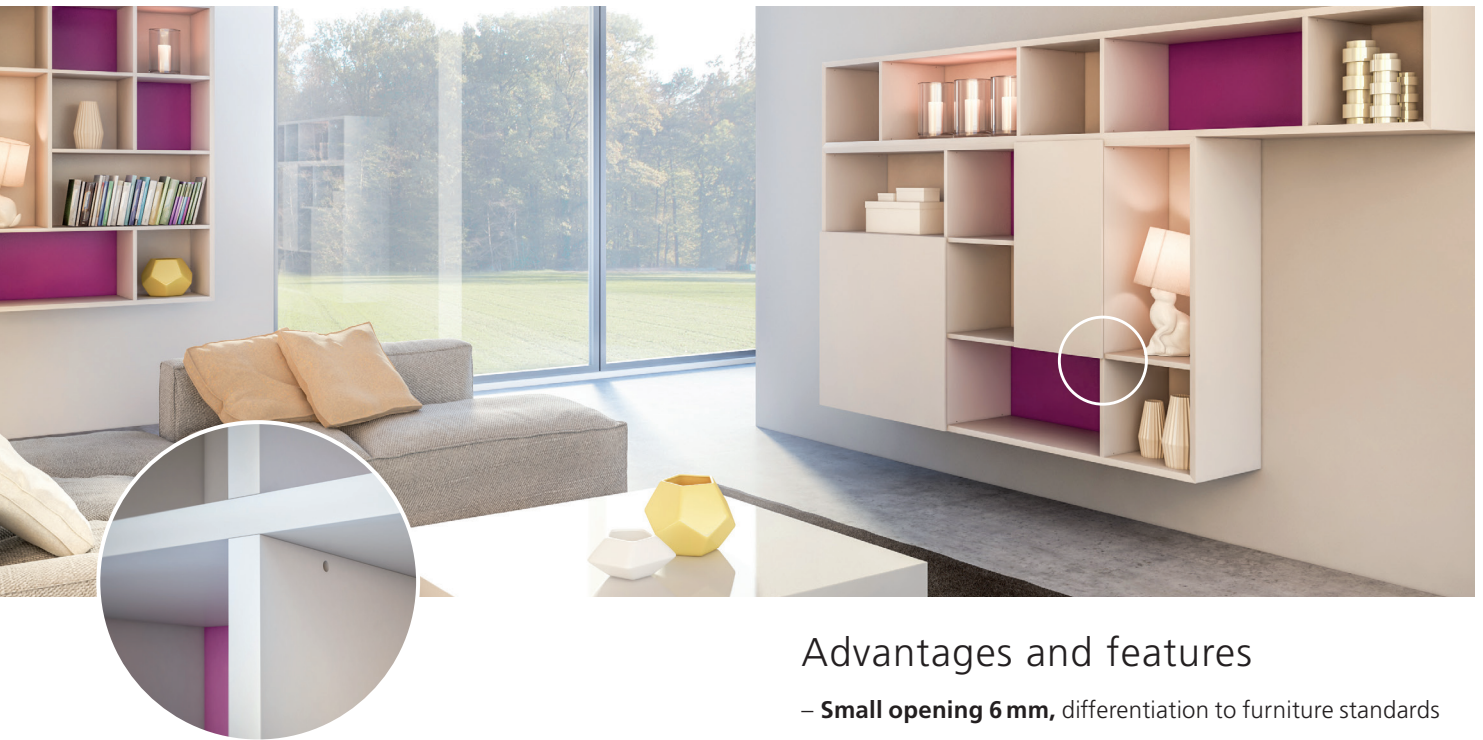
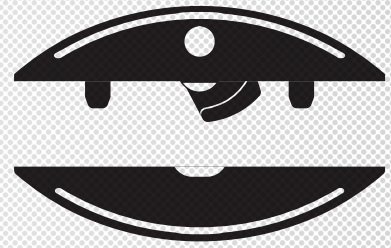
Clamex P-14 CNC with lever	Part no.
2000 pieces sorted	145388

Clamex P-10 without lever	Part no.
2000 pieces sorted	145358

Clamex P-10 Medius without lever	Part no.
2000 pieces sorted	145369

Clamex P

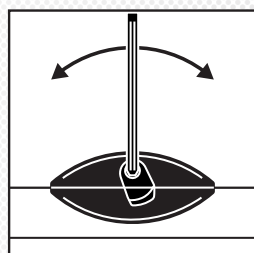
Detachable furniture connector



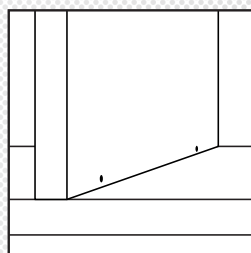
Advantages and features

- **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

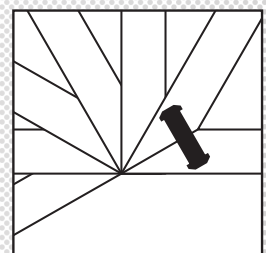
Detachable



Aesthetic



Versatile





Clamex P-14

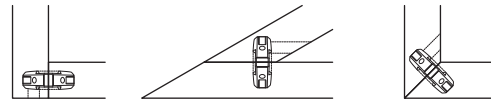
For panels from 16 mm



Technical data

Size.....	64 × 27 × 9.7 mm
Cutter.....	Ø 100.4 × 7 × 22
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	145334
300 pairs	145346
1000 pairs	145356
2000 pieces sorted, with lever	145338
2000 pieces sorted, without lever	145339



Clamex P-Medius 14/10

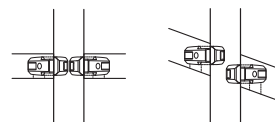
For center panels from 16 mm



Technical data

Size.....	64 × 13.5 × 9.7 mm
.....	52 × 7.5 × 9.7 mm
Cutter.....	Ø 100.4 × 7 × 22
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	145370
300 pairs	145371
1000 pairs	145357
2000 pieces sorted, with lever	145338
2000 pieces sorted, Medius without lever	145369



Clamex P-10

For panels from 12 mm



Technical data

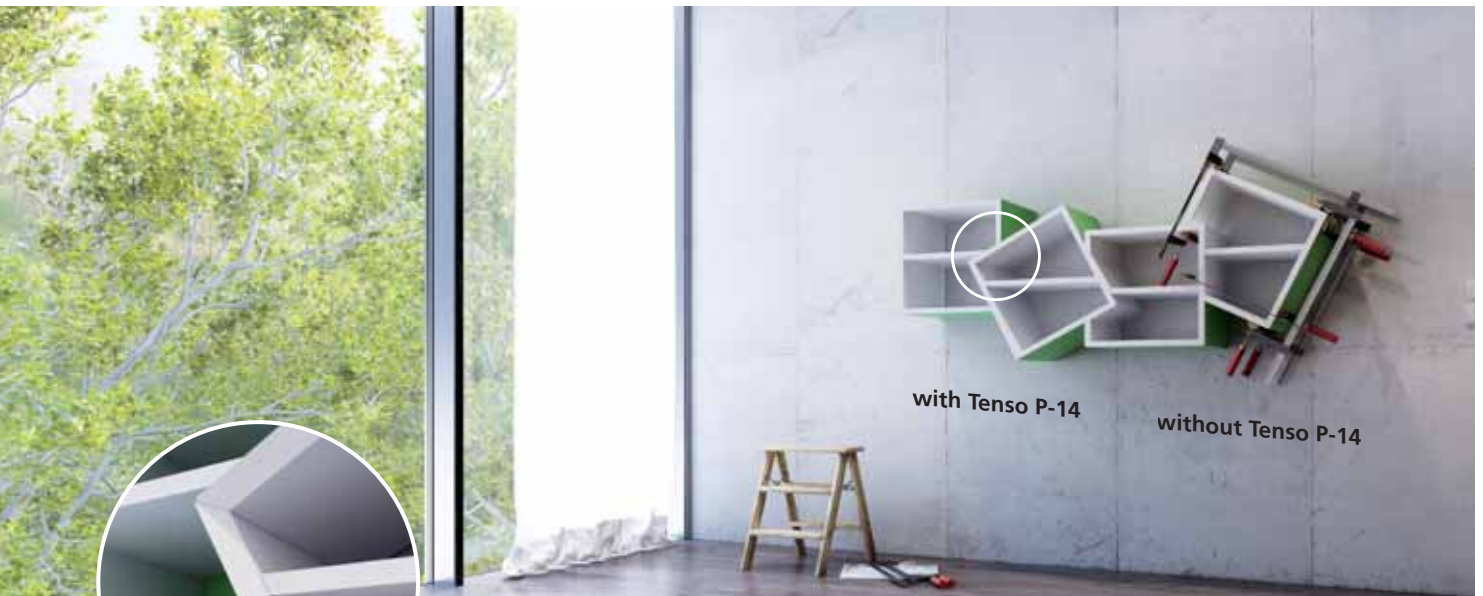
Size.....	52 × 19 × 9.7 mm
Cutter.....	Ø 100.4 × 7 × 22
Material connector.....	fiberglass reinforced plastic
Material of lever.....	zinc die cast
Installation tolerance.....	long. ± 0.5 mm/radial ± 0.5 mm

Clamex P-10	Part no.
80 pairs	145372
300 pairs	145373
1000 pairs	145374



Tenso P

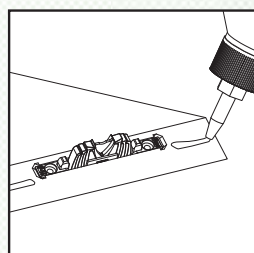
Self-clamping connector for gluing



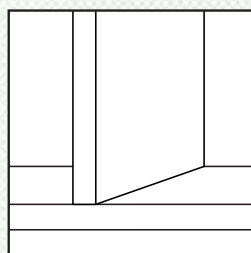
Advantages and features

- **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

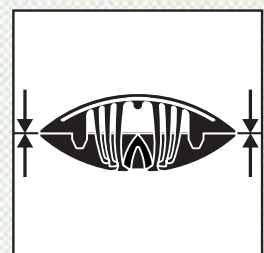
Gluing



Invisible



High clamping force





Tenso P-14

Faster gluing at all angles



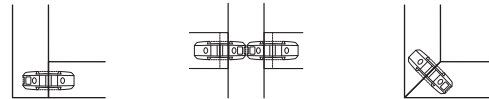
Technical data

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

Tenso P-14	Part no.
80 pairs, without preload clip.....	145415
300 pairs, without preload clip.....	145425
1000 pairs, without preload clip.....	145435
300 pieces preload clip.....	145426
1000 pieces preload clip.....	145436
2000 pieces sorted, connector half with spring.....	145440
2000 pieces sorted, connector half without spring.....	145441

Important:

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



Tenso P-10

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



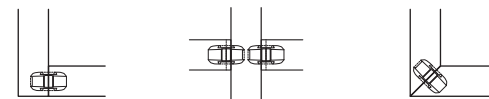
Technical data

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

Tenso P-10	Part no.
80 pairs, without preload clip.....	145418
300 pairs, without preload clip.....	145428
1000 pairs, without preload clip.....	145438
2000 pieces sorted, connector half with spring.....	145442
2000 pieces sorted, connector half without spring.....	145443
2000 pieces preload clip.....	145445

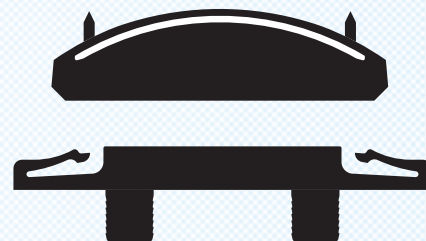
Important:

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



Divario P

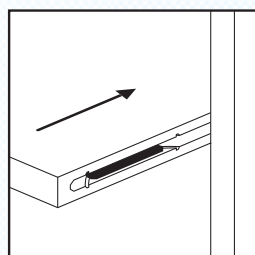
Self-clamping, invisible connector
for slide insertion



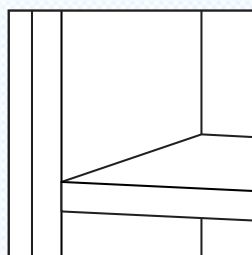
Advantages and features

- **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

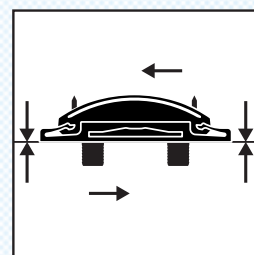
Sliding insertion



Invisible



Clamped joint





Divario P-18

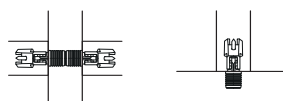
Self-clamping, invisible connector
 for slide insertion



Technical data

Element with P-System groove 65 × 16 × 9.7 mm
 Element with drill holes Ø8 × 9 mm, distance 32 mm
 Cutter Ø100.4 × 7 × 22
 Material connector fiberglass reinforced plastic
 Installation tolerance long. ± 1 mm / radial ± 0 mm

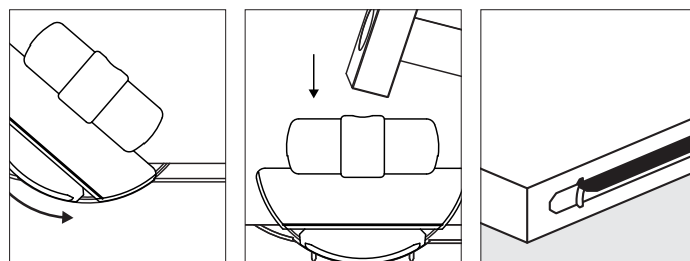
Divario P-18	Part no.
80 pairs	145550
300 pairs	145560
1000 pairs	145570
2000 pieces sorted, for P-System groove	145520
2000 pieces sorted, for drill holes	145540



Divario P-18 Installation tool

Part no.

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

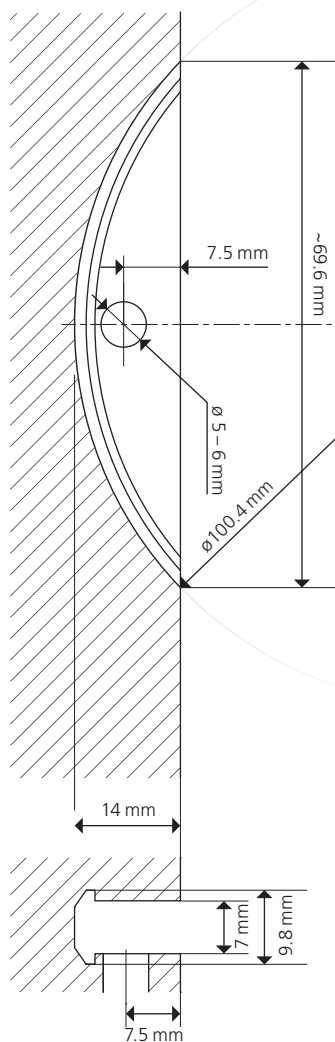
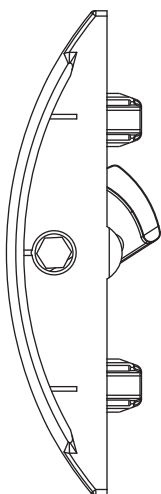


Technical information

P-System connectors – Overview of connectors + grooves

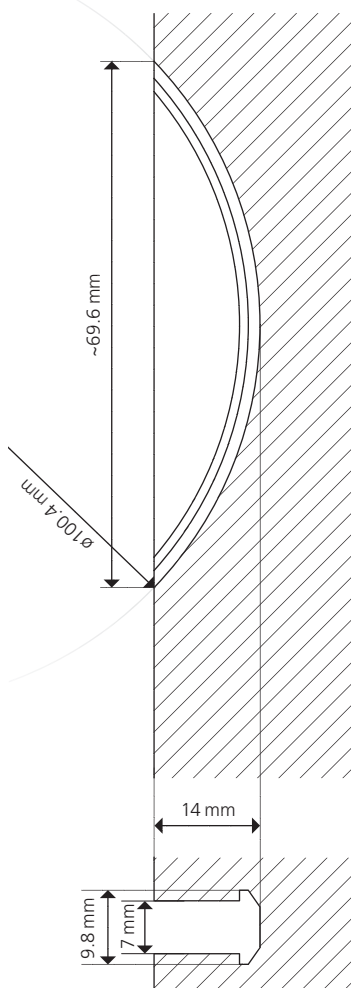
Clamex P-14 CNC

with lever



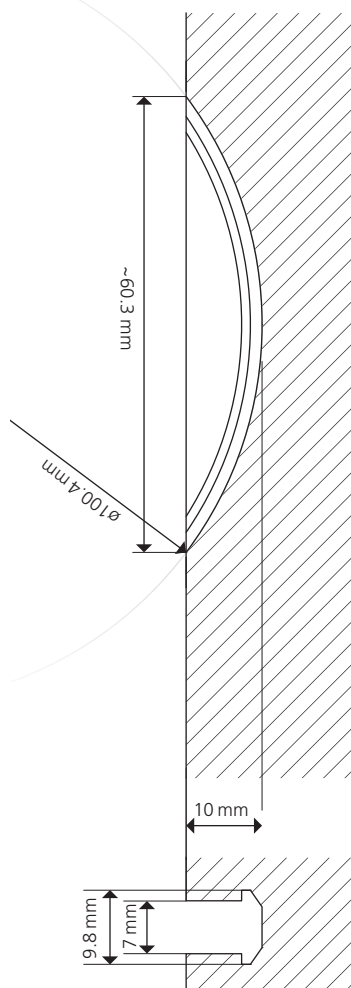
Clamex P-14

without lever



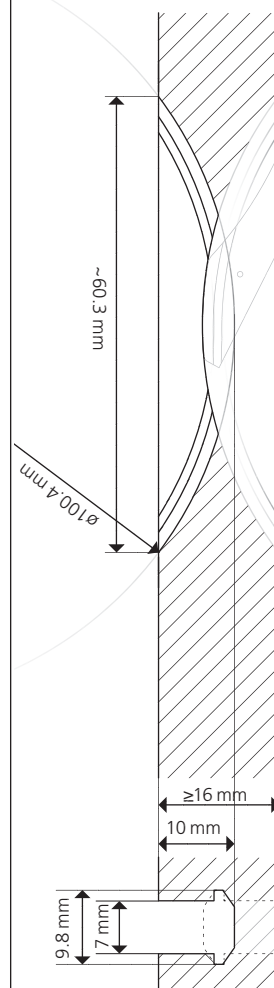
Clamex P-10

without lever



Clamex P-10 Medius

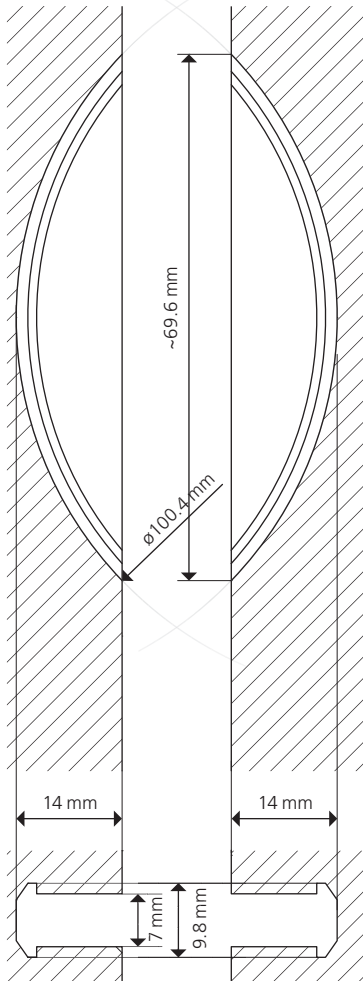
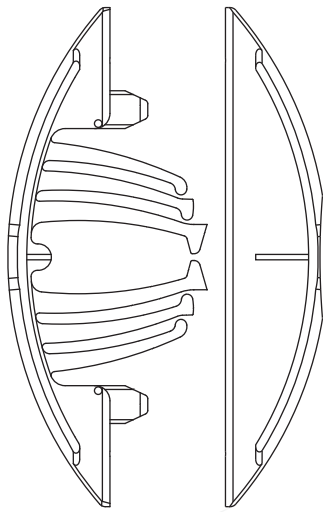
without lever



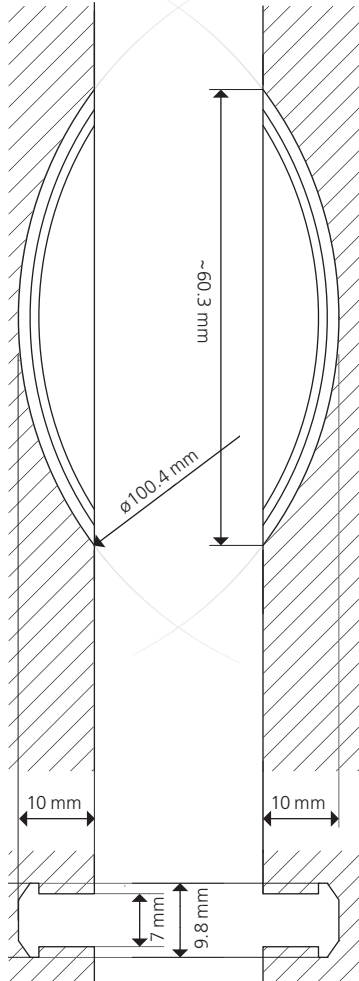
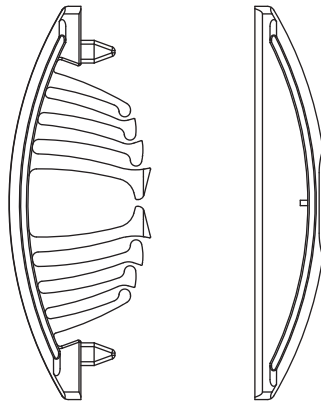
Tensile strength (N)

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

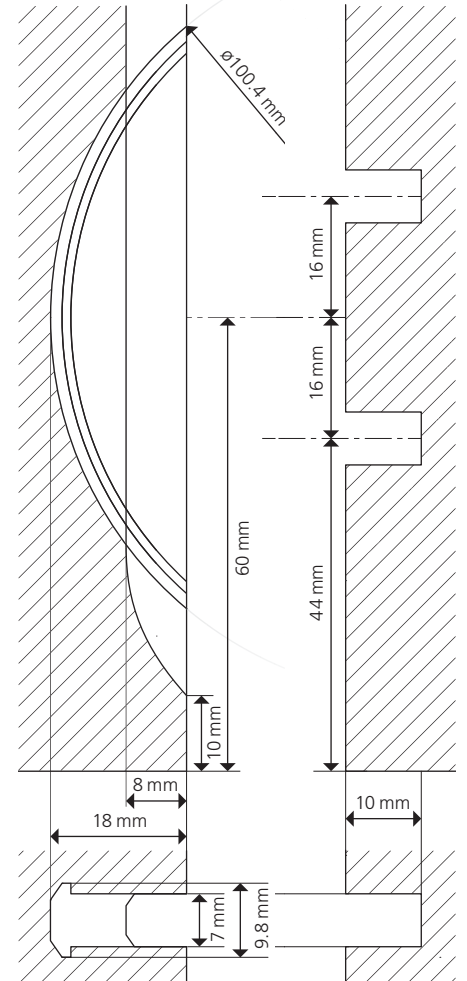
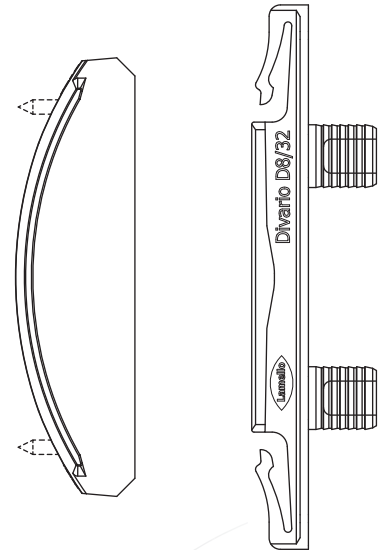
Tenso P-14



Tenso P-10



Divario P-18



Clamping force (N)

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

Networked production



CAD / ERP / CAM software



CNC machines



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



CNC processing centres
with **consoles**

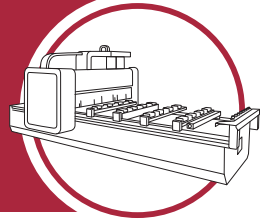
CNC processing centres
with **nesting technology**

CNC processing centres
vertical



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

CNC machine



»

- Machine with 3/4/5 axes
- **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**

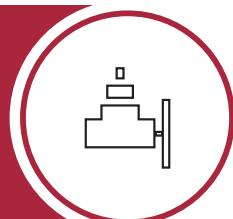
The P-System tools



»

- 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 cutter on the aggregate from the CNC machine manufacturer.

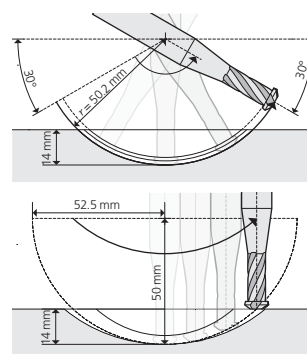
Requirements for CNC machines:

- 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 × P-System cutter 1 × cutter arbor 1 × drill Ø 6 mm 1 × shaft tool	●	●	●	●
		Possible angle aggregates <ul style="list-style-type: none"> – One to four spindle angle aggregates – Corner notching aggregate – Aggregate for door locks  	2 × P-System cutter (2) × cutter arbor 1 × drill Ø 6° mm	●	●	●	●
	4	FLEX5C Automatically adjustable swivelling aggregate with automatic tool changer. Note: The profile groove is restricted to 10 mm in the center of the surface  	1 × P-System cutter + adaptor 1 × P-System drill Ø 6 mm + adaptor	●	●	●	●
	5	—	1 × P-System cutter 1 × cutter arbor 1 × P-System drill Ø 6 mm 1 × shaft tool	●	●	● ● ●	●
		 	2 × P-System cutter (2) × cutter arbor 1 × P-System drill Ø 6 mm	●	●	●	●
Nesting	3/4	—	1 × drill Ø 5 mm 1 × drill Ø 6 mm 1 × shaft tool	●	● ●	● ●	●
	5	—	1 × P-System cutter 1 × cutter arbor 1 × P-System drill Ø 6 mm 1 × shaft tool	● *	● ● *	● ● *	●

*possible with Nextec

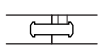



- Possible
- Only possible with Zeta P2 and positioning pins, more on page 26
- Possible with shaft tool and **5-axis movement**
- Possible with shaft tool and **3-axis movement**
- Not possible



More about the tool on page 25.

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

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

Surface 180°	Corner 90°	Center wall 90°	Miter 22.5° – 180°
			
①	②	③	④



HOMAG

DRILLTEQ V-500

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

① · ② · ③



**EVOLUTION 7405
Connect**

① · ② · ③



BIESSE

Brema Eko 2.1

1 × aggregate
2 × P-System cutter
1 × cutter arbor

① · ② · ③



BIESSE

Brema Eko 2.2

1 × aggregate for 90°
1 × aggregate 45° for 2 × 45°
2 × P-System cutter
1 × cutter arbor

① · ② · ③ · ④



Project TF 100 / TF 100 2.0

1 × aggregate
2 × P-System cutter
1 × cutter arbor

① · ② · ③



cx 210

1 × aggregate
2 × P-System cutter
1 × cutter arbor

① · ② · ③



Nextec 7707

1 × tool set

① · ② · ③ · ④

New Holzher
video on P-System
installation



Access drill hole for Clamex P



Edge 90° deg/Other angles
Drill hole is parallel to the cut



Drill with HSK spindle



Verticle drill spindle



Drill with FLEX5C

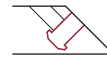


Drill in main spindle (5-axis)

Processing of the profile groove in the edge



Edge 90°



Other angles/Groove is always
90° deg to the surface



P-System cutter with arbor in HSK spindle



P-System cutter on tool holder (Benz)



P-System cutter with FLEX5C



P-System cutter in main
spindle (5-axis)



P-System cutter with FLEX5C



P-System cutter in main
spindle (5-axis)

Processing of the profile groove on the surface



Groove is always 90° deg to
the surface



P-System cutter with arbor
in angle aggregate



P-System cutter with
arbor in multi-spindle
aggregate



P-System cutter with FLEX5C
(max. 10 mm)



P-System
Shaft tool in main spindle
(5-axis)

CNC tool accessories



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



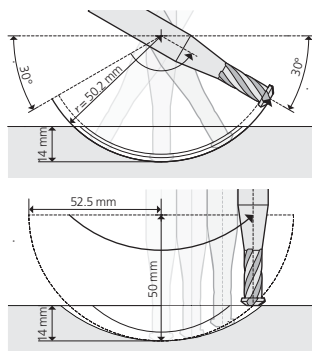
P-System CNC groove cutter, Ø 100.4 × 7	Part no.
× 30 mm, 4/6.6/DTK 48 mm, Z3, suitable for all cutter arbors listed below	132142
× 30 mm, 4/6.6/DTK 48 mm, Z6, suitable for all cutter arbors listed below	132145
× 40 mm, 4/5.5/DTK 52 mm, Z3	132143
E.g. for angle aggregates, Flex 5, Flex 5+	
× 16 mm, 4/5.5/DTK 28 mm, Z3	132144
E.g. for corner notching aggregate	
× 35 mm, 4/5.5/DTK 50 mm, Z3	132148
e.g. for Brema Eko 2.1 and for Masterwood Project TF 100	



P-System CNC cutter arbors 30 / DTK 48 mm	Part no.
Shaft Ø 20 × 50, L = 102 mm	132150
Shaft Ø 25 × 60, L = 102 mm	132151
Shaft Ø 16 × 50, L = 85 mm	132152
Shaft Ø 16 × 55, L = 68 mm	132153
Shaft Ø 16 × 50, L = 85 mm, with clamping surface (2°- angle)	132154
E.g. for aggregate for door locks	
Shaft Ø 20 × 50, L = 85 mm, with clamping surface (2°- angle)	132155
E.g. for aggregate for door locks	
M6 × 16 mm Torx countersunk bolt, 4 pcs, suitable for cutter arbors	132159
Screwdriver with cross-grip, Torx T20 × 100	271919



P-System CNC shaft tool cutter	Part no.
Solid carbide, shaft Ø 12 × 40, L = 80 mm	131342
Only for machining panel centers with 5 axis CNC machines	



**Shaft tool
with 5 axes**



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

**Shaft tool
with 3 axes**



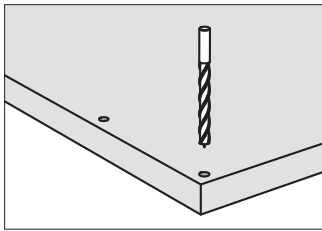
Possible combination of CNC machines with Zeta P2



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

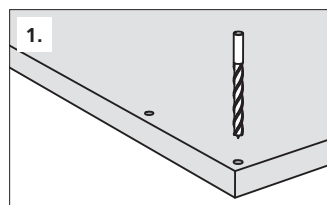
Positioning drill holes for grooves in the surface



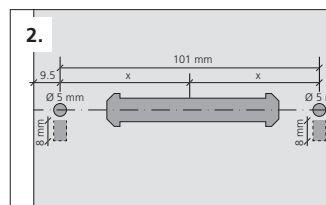
Positioning pin Zeta P2

Part no.

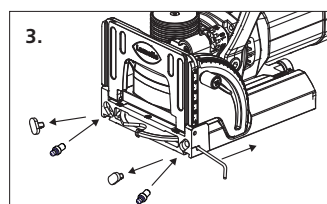
Ø 5 mm.....	251048
Ø 8 mm.....	251066



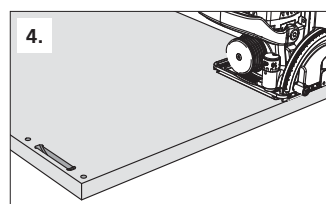
Drill the positioning holes with the CNC, Ø 5 mm/Ø 8 mm



Hole pattern of the positioning drill holes



Insert the positioning pins in the Zeta P2



Position the machine in the drill holes

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

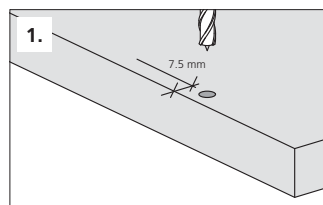


Positioning clip for Zeta P2

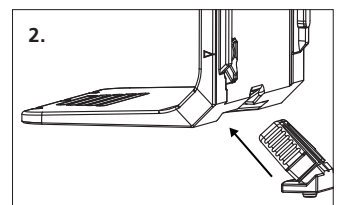
Part no.

Ø 6 mm.....	251067
-------------	---------------

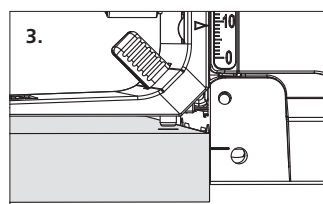
For positioning in the Clamex access hole (6 mm)



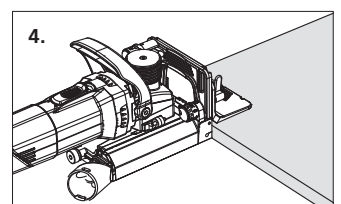
Drill the positioning hole with the CNC, Ø 6 mm



Insert the positioning clip



Insert the positioning clip in the drill hole Ø 6 mm



Cut the groove with the positioned machine

P-System accessories



251993

Clamex P assembly tool

Part no.

for all angles, fast and flexible,

hex 4 × 30 mm, length 290 mm **251993**



271945

Allen key

Part no.

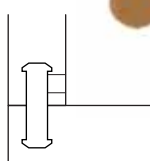
4 mm, 75 × 55 mm

271945

4 mm, 120 × 50 mm

271945A

90°



335282

Cover caps, 100 pieces

90°

Part no.

Part no.

RAL 9010, White..... **335280**

RAL 9002, Grey white **5285**

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**

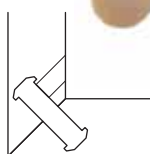
RAL 8007, Brown..... **335284**

RAL 7022, Umbra grey **335298**

RAL 8017, Dark brown..... **335289**

NEW

45°



335382

Cover caps, 100 pieces

45°

Part no.

Part no.

RAL 9010, White..... **335380**

RAL 1011, Brown beige..... **335383**

RAL 9011, Black..... **335381**

RAL 8017, Dark brown..... **335384**

RAL 1014, Ivory..... **335382**

RAL 7022, Umbra grey **335388**



145400

Tenso P-10 / P-14 Preload tool

Part no.

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



125500

Divario P-18 Installation tool

Part no.

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



Bisco P-14

Part no.

80 pieces **145301**

300 pieces **145302**

1000 pieces **145303**



Bisco P-10

Part no.

80 pieces **145304**

300 pieces **145305**



Manufacturer:

Lamello AG
Joining technology
Hauptstrasse 149
CH-4416 Bubendorf
Tel. +41 61 935 36 36
Fax +41 61 935 36 06
info@lamello.com
www.lamello.com