

Lamello

P-System

P-System



Save time daily
Differentiate your product

NEW
Tenso P-10



*A strong
connection.
Inspiring.*

Form-locking, tool-free installation of Lamello P-System connectors



The P-System is based on a groove with an undercut, into which connectors with various functions can be inserted, ensuring form-locking anchorage. During the process, the cutter moves downwards to the maximum depth and moves sideways in order to create the profile groove. There are two options for creating the P-System groove:

Power tool

Quick and easy to handle, with a range of applications

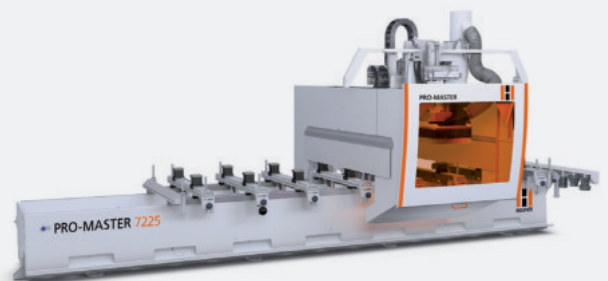


Advantages of the Zeta P2

Any angle can be cut in a very short space of time, as no set-up time, software or programming is required. The cutting depth can be adjusted in next to no time. The machine is therefore ideal for cutting individual parts, smaller series, prototypes or working on site.

CNC technology

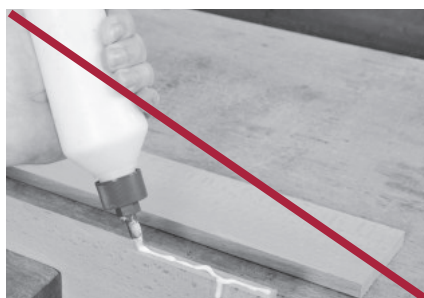
Ideal for series production



Advantages with the CNC machine

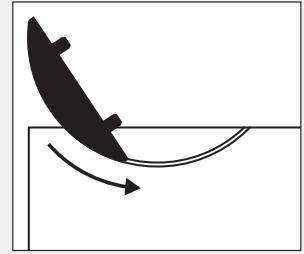
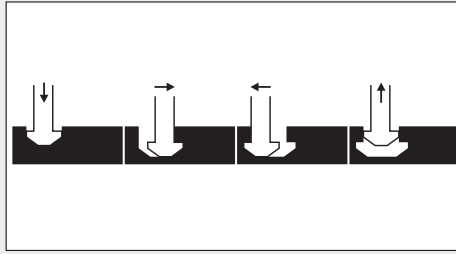
From CAD to the CAM system, direct to the CNC machine – this makes the process faster, reduces the planning time and lowers the risk of errors for repeat orders. The speed when processing larger series on the CNC machine makes the P-System an extremely quick, efficient system, from processing through to assembly.

Quick manual insertion without the need for glue or screws



P-System

Form-locking anchorage
without tools

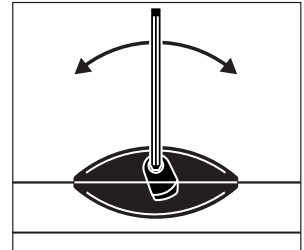
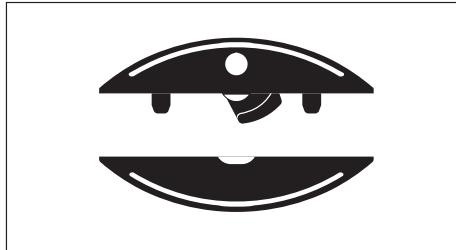


Fast installation

Inserting instead of screwing or
glueing

Clamex P

Detachable connector



Detachable

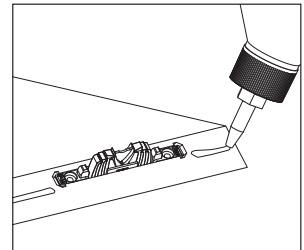
Open the connection time and
time again with the rotating
lever

Page 6

Tenso P

with preload clip

Self-clamping connector as
glueing aid, for all angles



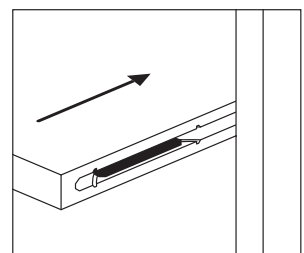
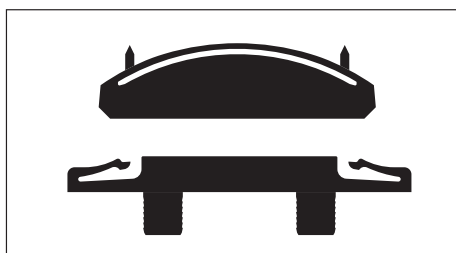
Glueing

Fixed joints of two workpieces

Page 12

Divario P

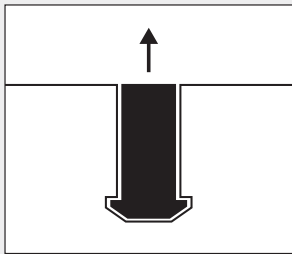
Self-clamping, invisible
connector for slide insertion



Sliding insertion

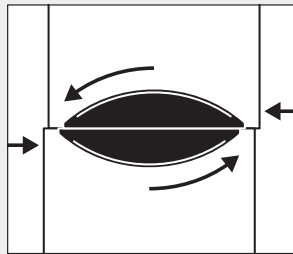
Insertion between two fixed
sides or shelves via a guiding
groove

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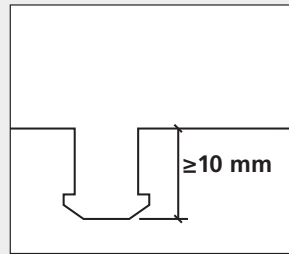
Strong

Form-locking anchorage across large surface areas



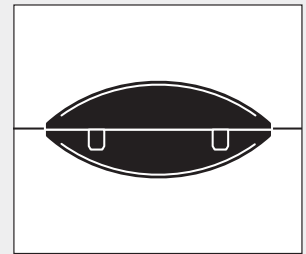
Lateral tolerance

Perfect, flush alignment of both work pieces



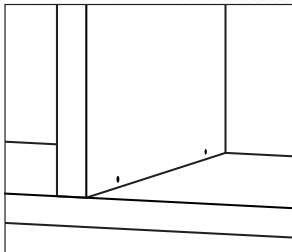
Shallow depth

Minimal cutting depth with maximum tensile strength



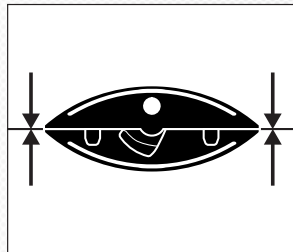
No twisting

The positioning pins prevent twisting without additional dowels



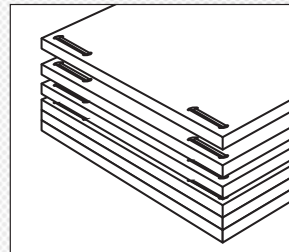
Aesthetic

The small, hardly visible opening (Ø = 6 mm) serves to close and open the connector



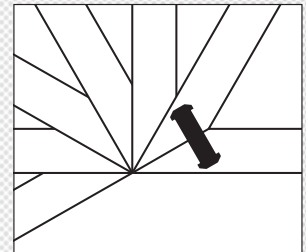
High clamping force

Clamp and glue work pieces at any angle, ~ 80 kg



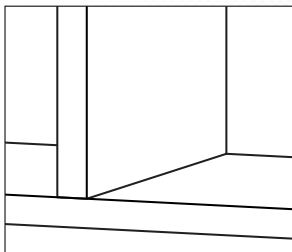
Stackable

Work pieces with pre-installed P-System fittings are stackable for storage and transport



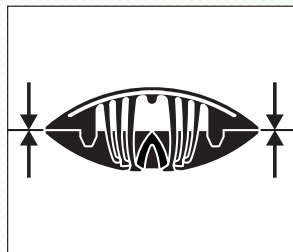
Versatile

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



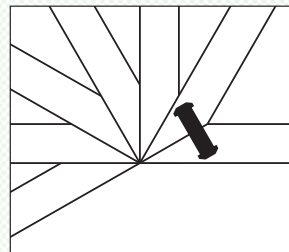
Invisible

No visible connector



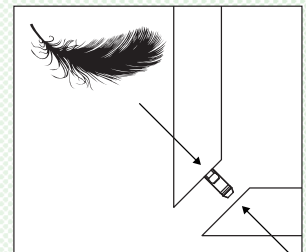
High clamping force

Allows for perfect alignment and clamps the workpieces ~ 15 kg



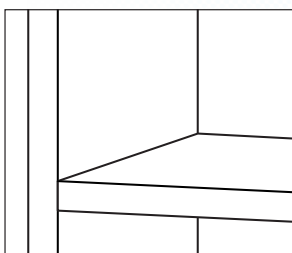
Versatile

Simple glueing of mitre joints



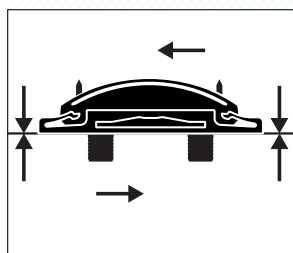
Lower assembly force

Only a short power impulse necessary to join, regardless of the number of connectors



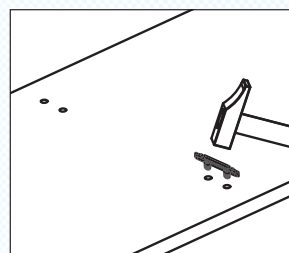
Invisible

Guiding groove covers the connector



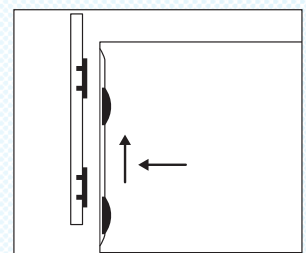
Clamped joint

No resistance while inserting until shortly before building the clamping force



Fast installation

Quick installation of the fittings without glue after transport.



Assemble by sliding

Partially routed guiding groove for completely invisible furniture joints

Clamex P

Detachable connector



P-system configurator on our website



Advantages and properties

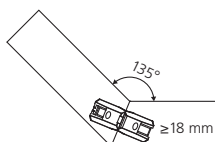
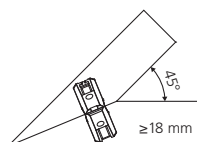
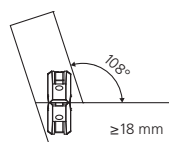
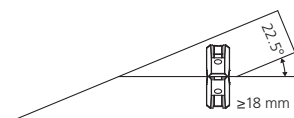
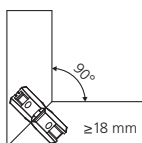
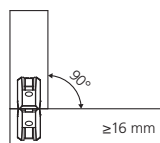
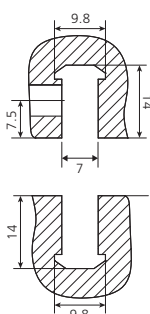
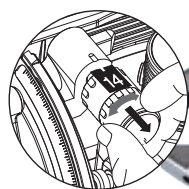
- **Small opening 6mm**, differentiation to furniture standards
- **Stackable with pre-installed connector**, advantages in packaging, transport and logistics
- **Short assembly time on site**, minimal installation cost

- **Versatility for all angles**, same system for all joining situations
- **Freedom of choice during assembly**, detachable or glued construction



Clamex P-14

For panels from 16mm



Technical data

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

Tensile strength (N)

MDF	~ 900
Particle board	~ 800
Beech	~ 1000

Clamex P-14

Part no.

Carton with 80 pairs	145334
Carton with 300 pairs	145346
Carton with 1000 pairs	145356

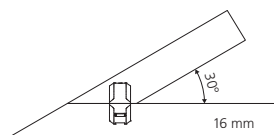
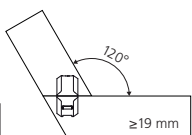
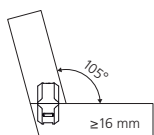
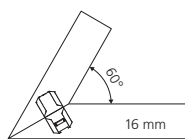
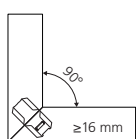
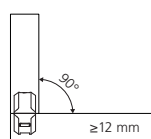
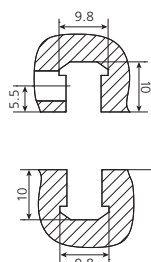
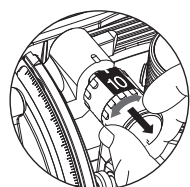
Drill jig P-System	125344
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Accessories starting page 26



Clamex P-10

For panels from 12mm



Technical data

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

Tensile strength (N)

MDF	~ 600
Particle board	~ 600
Beech	~ 900

Clamex P-10

Part no.

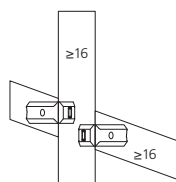
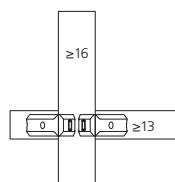
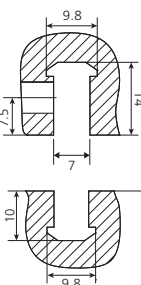
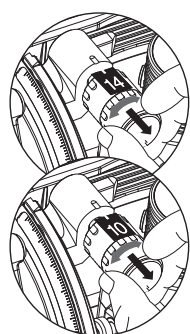
Carton with 80 pairs	145372
Carton with 300 pairs	145373
Carton with 1000 pairs	145374

Drill jig P-System **125344**

Accessories starting page 26

Clamex P-Medius 14/10

For centre panels from 16mm



Technical data

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

Load (N) (19 mm) Tensile strength (N)

MDF	~ 700	~ 800
Particle board	~ 550	~ 600
Beech	~ 2400	~ 900

Clamex P Medius 14/10

Part no.

Carton with 80 pairs	145370
Carton with 300 pairs	145371
Carton with 1000 pairs	145375

Drill jig P-System **125344**

Accessories starting page 26

Bisco P

Aligning element suitable for
the P-System groove

Advantages and properties

- **Ideal addition to Clamex P and Tenso P**, fits into the P-System grooves, **without requiring a different cutter**
- **Bisco P is ideal for dry-assembly before glueing a joint with Tenso P**
- **For aligning P-System grooves**, aligning function without glue

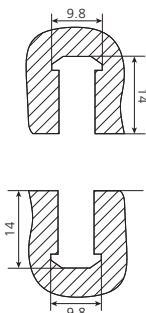
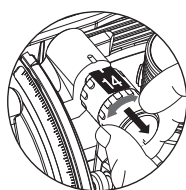
- **Surface structure allows use as a connecting element** when glueing work pieces with PVA glue

Applications of Bisco P

- Separation walls
- Furniture with large depth
- Glueing of work pieces

Bisco P-14

Aligning element suitable for Clamex P-14
and Tenso P-14



Technical data

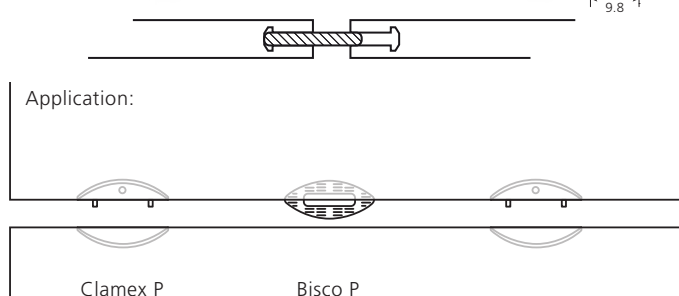
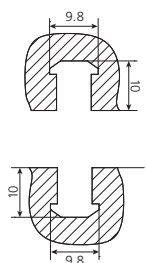
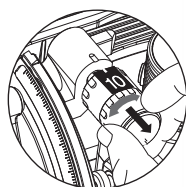
Size Bisco P-14	65 × 27 × 7 mm
Size Bisco P-10	52 × 19 × 7 mm
Cutter	Ø 100.4 × 7 × 22
Material	plastic
Installation tolerance	longitudinal ± 2 mm
Tensile strength with adhesive	~ 400 N ≈ 40 kg

Bisco P-14	Part no.
Carton with 80 pieces	145301
Carton with 300 pieces	145302
Carton with 1000 pieces	145303

Bisco P-10	Part no.
Carton with 80 pieces	145304
Carton with 300 pieces	145305

Bisco P-10

Aligning element suitable for Clamex P-10
and Tenso P-10





Furniture manufacturing / Cabinet making

Your advantages with Clamex P

Aesthetic solution











– Differentiation to furniture standards

Stackable with pre-installed connectors

– Advantages in packaging, transport and logistics

Short assembly time on site

– Minimal installation cost

- | | |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
|  Detachable |  Fast installation |
|  Aesthetic |  Strong |
|  High clamping force |  Lateral tolerance |
|  Stackable |  Shallow cutting |
|  Versatile |  No twisting |

Applications

Cabinetry | shelves | wardrobes | trade show exhibits | kitchen furniture | TV furniture | etc.

Production process

1. P-groove with CNC

- **Same profile groove for both workpieces**
- Short process time
- Direct data transfer from CAD / CAM
- No additional dowels for alignment necessary

2. Storage

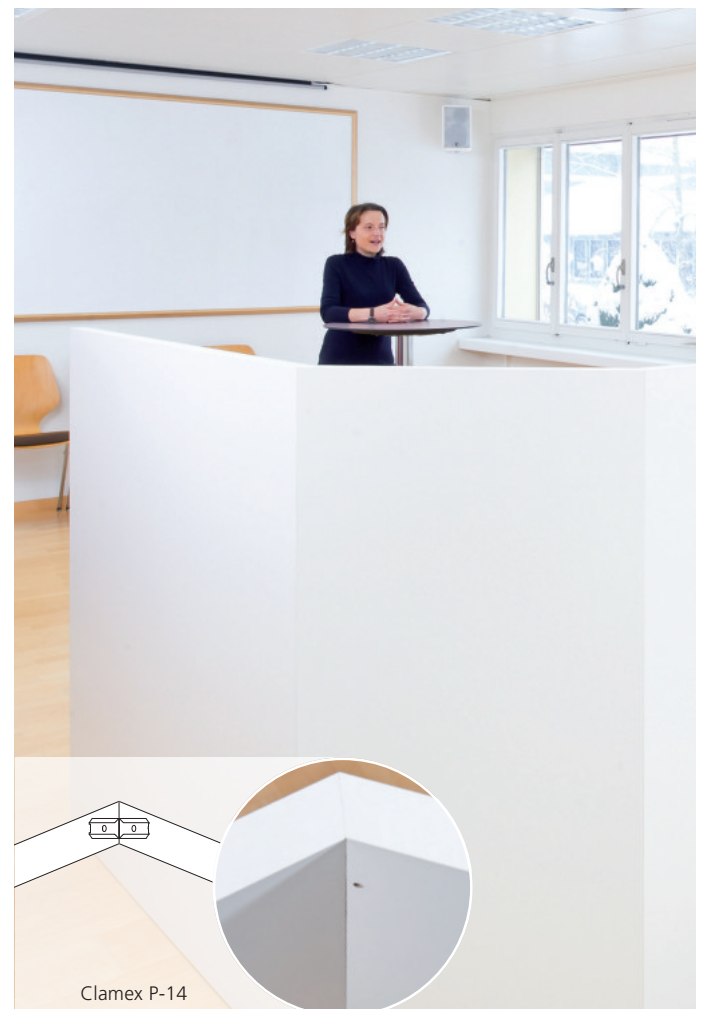
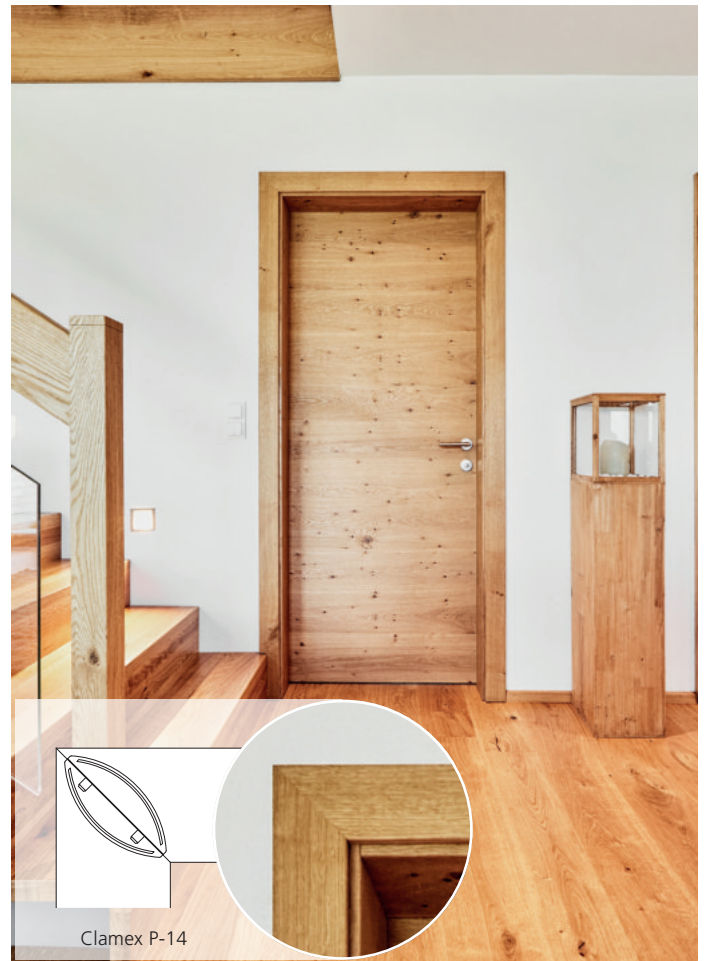
- **Small storage volume when stacking despite installed connector**
- Remove the connector for surface treatment – fast and easy
- Short reaction time for finishing of standard parts

3. Delivery in parts

- **Small transport volume** with pre-installed fittings due to stackability
- **Smaller stock volume** for the dealer
- Easy transport of the parts into the building

4. Assembly on site

- **Shorter assembly time at the customer's due to the pre-installed connectors**
- Easy to assemble for a lay person with an allen key
- No second person necessary
- No dowels for lining-up necessary
- Easy to take apart when moving



Clamex P – applications

Furniture manufacturing / Interiors

Your advantages with Clamex P

Aesthetic solution











– Differentiation to furniture standards

Stackable with pre-installed connectors

– Advantages in packaging, transport and logistics

Short assembly time on site

– Minimal installation cost

- | | |
|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
|  Detachable |  Fast installation |
|  Aesthetic |  Strong and form-locking |
|  High clamping force |  Lateral tolerance in P-System groove |
|  Stackable |  Shallow cutting depth |
|  Versatile |  No twisting |

Applications

sideboards | shelves | wardrobes | display cases |
kitchen furniture | TV furniture | etc.



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Shop fitting / kitchen manufacturing

Your advantages with Clamex P

Stackable with pre-installed connectors

– Advantages in packaging, transport and logistics

Versatility for all angles











– Same system for all joining situations

Freedom of choice during assembly

– Detachable or glued construction

Short assembly time on site

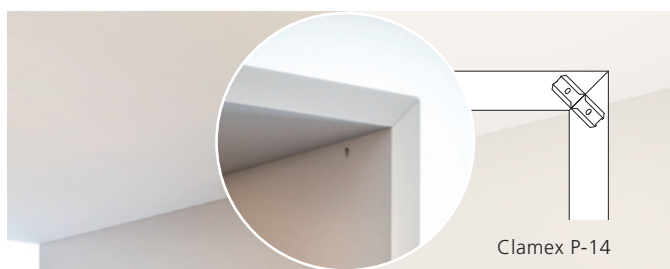
– Minimal installation cost

- | | |
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Applications

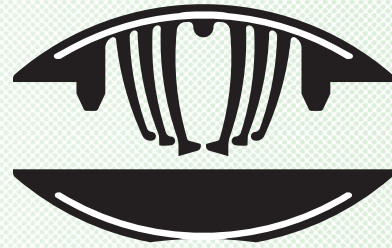
wall elements | furniture | trade show exhibits |
changing rooms | stools | etc.





Tenso P

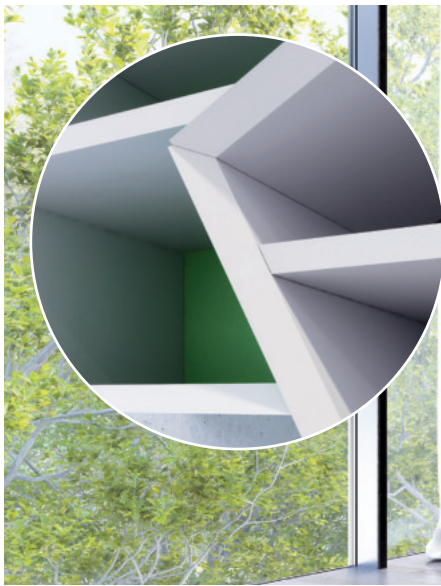
Self-clamping connectors for gluing



P-system configurator on our website

Tenso P, advantages and properties

- **Glue faster**, wipe off excess glue and it's ready
- **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

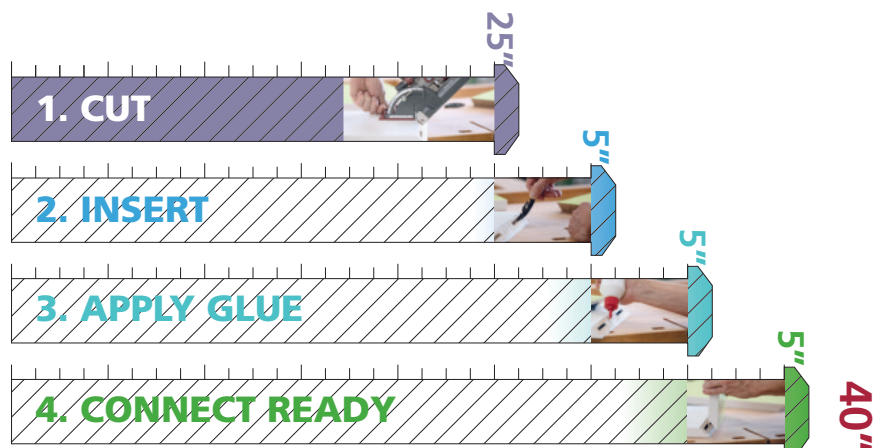


Tenso P is a self-clamping connector with **three functions: alignment, clamping and connecting**

The Tenso P has an exceptionally high clamping force, which enables workpieces to be glued without clamps or presses.

Based on the P-System profile groove, the Tenso P ensures firm anchorage in the workpiece in seconds without tools

Tenso P glued in 40"



Use without preload clip

The Tenso is ideal without preload clip for smaller items of furniture when only one or two connectors are used. Smaller workpieces and 90° connections in particular are easily glued without the preload clip.



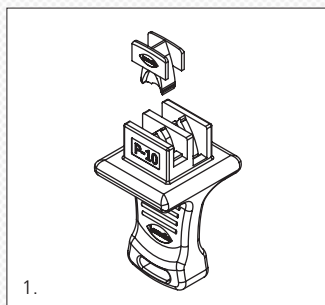
Use with preload clip



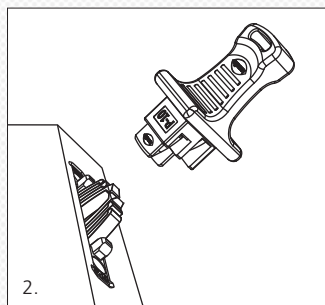
The Tenso with preload clip is ideal for larger elements where several connectors are connected simultaneously as well as for mitres.

Advantages with the preload clip:

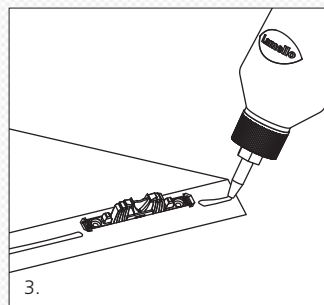
- Greater sliding tolerance during assembly
- Less effort during connection
- Effortless connection with several connectors



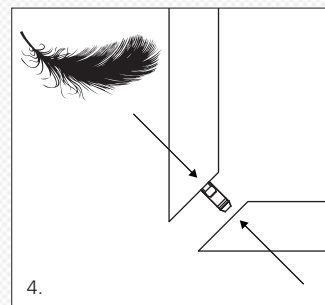
1. Place preload clip on the insertion tool



2. Preload the Tenso P



3. Apply glue



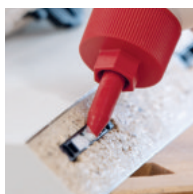
4. Join workpieces



Note:



Dry assembly is possible with Bisco P



Additional adhesive in the connector increases the tensile strength by 30%



The adhesive must be suitable for the workpieces and their specific applications

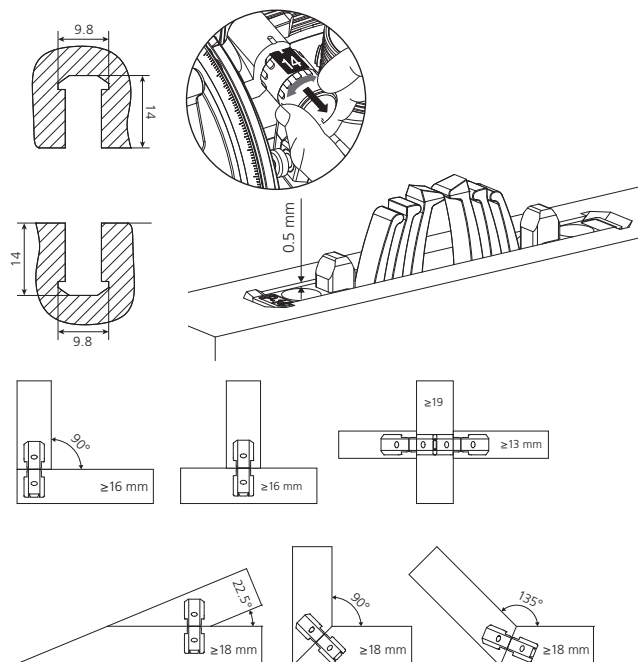
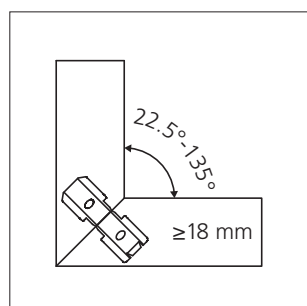
Tenso P-14

Faster gluing at all angles



The Tenso P-14 is a self-clamping connector with a cutting depth of 14 mm for:

- 45° mitres from a panel thickness of 18 mm
- 90° connections for a panel thickness from 15 mm
- Centre panel connections from a panel thickness of 19 mm



Technical data

Size	66 × 27 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22
Material	fiberglass reinforced plastic
Installation tolerance	longitudinal ± 1 mm

Clamping force (N)

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

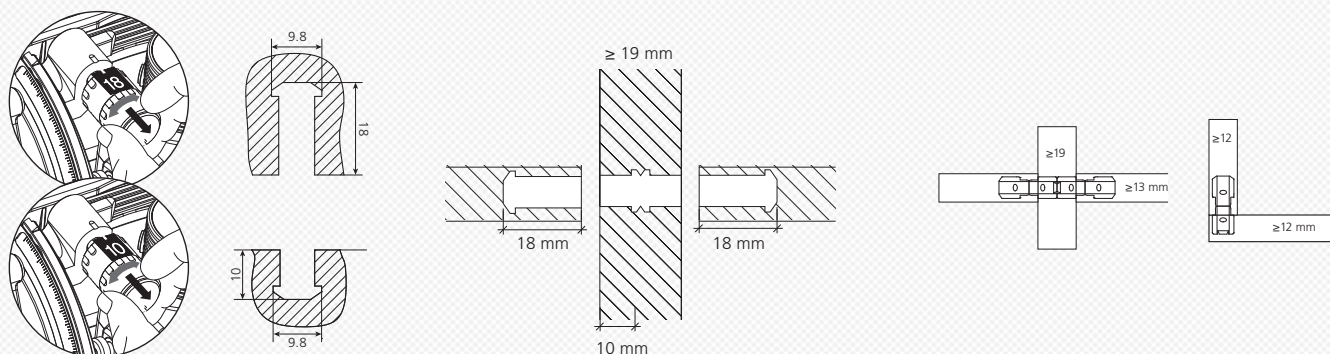
Tenso P-14	Part no.
Box of 80 pairs (without preload clip)	145415
Box of 300 pairs (without preload clip)	145425
Box of 1000 pairs (without preload clip)	145435
Starter-Set – box of 80 pairs (with preload clip)	145415S
Starter-Set – box of 300 pairs (with preload clip)	145425S
Preload clip – box of 300 pieces	145426
Preload clip – box of 1000 pieces	145436

Important:

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

Accessories starting page 27

Offset installation with Tenso P-14



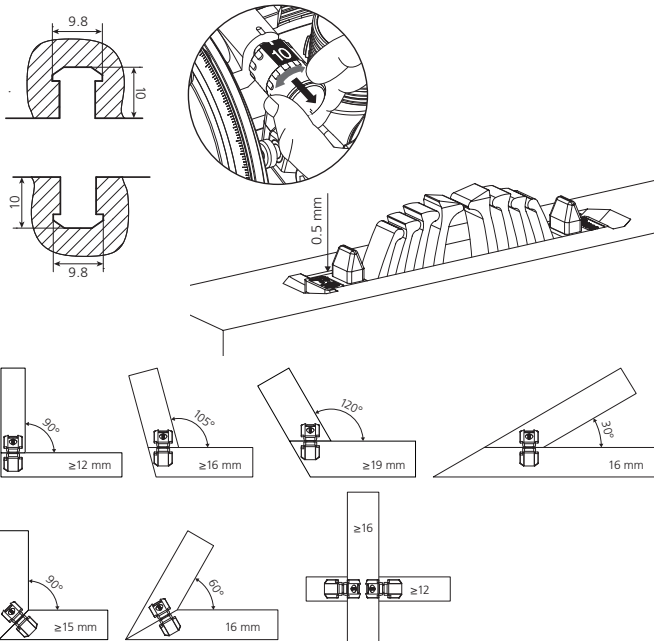
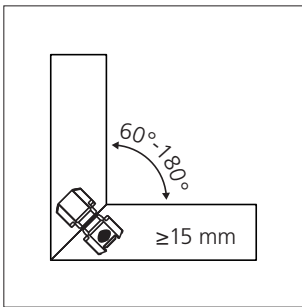
Tenso P-10



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

The Tenso P-10 is a selfclam-
ping connector with a cutting
depth of 10 mm for:

- 45° mitres from a panel
thickness of 15 mm
- 90° connections from a panel
thickness of 12 mm
- Centre panel connections
from a panel thickness of
16 mm



Technical data

Size	52 × 27 × 9.7 mm
Cutter	Ø 100.4 × 7 × 22
Material	fiberglass reinforced plastic
Installation tolerance	longitudinal ± 1 mm

Clamping force (N)

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

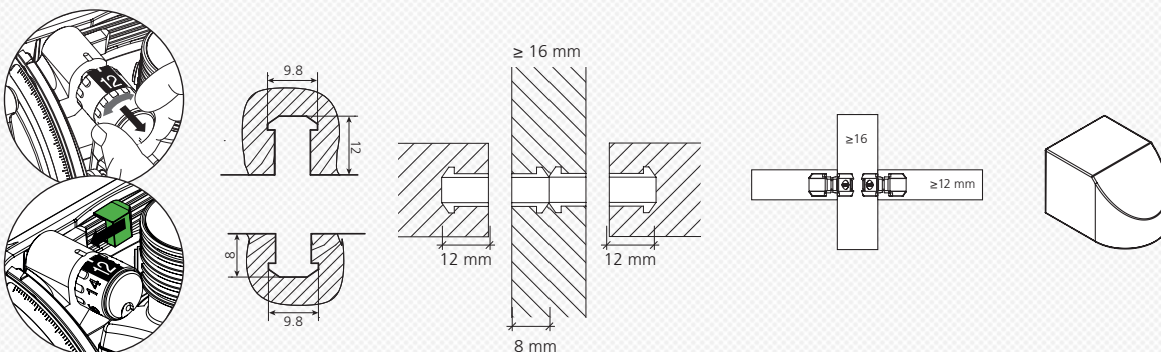
Tenso P-10	Part no.
Box of 80 pairs (with preload clip)	145418
Box of 300 pairs (with preload clip)	145428
Box of 1000 pairs (with preload clip)	145438

Important:

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

Accessories starting
page 27

Offset installation with Tenso P-10



Part no. 145439
P-System 4 mm depth
adjuster attachment
for P-8

Tenso P – applications

Furniture manufacturing / Interiors











Your advantages with Tenso P

Fast glueing process

- Time saving without clamps and protectors
- Ship workpieces immediately after assembly, no waiting time for the glue to dry

Clamps the joint from the inside

- Clamping force perfectly perpendicular to the glue surface
- Glueing of shaped workpieces
- Simultaneously aligns and clamps

- | | |
|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| ✓  Glueing | ✓  Fast installation |
| ✓  Invisible | ✓  Strong |
| ✓  High clamping force | ✓  Lateral tolerance |
| ✓  Versatile | ✓  Shallow cutting |
| ✓  Lower assembly force | ✓  No twisting |

Applications

furniture | shelves | stools | sideboards | wardrobes |
separating walls | cladding | decorative strips | covering panels |
plinths | face frames etc.

Production process

1. Cutting the groove with Zeta P2

- Quick, easy and precise work with the well-known Lamello system
- Quick, easy and precise work with the well-known Lamello system

2. Temporary storage

- Small volume due to stackability with pre-installed fittings
- Remove connectors without tools for the surface treatment

3. Assembly in the factory

- Quick and efficient glueing
- No additional clamping device necessary
- No pressure marks and damage due to protectors or clamps on the work piece
- Excess glue is removed with ease right after assembly
- Furniture is automatically in the correct angle
- No additional person helping with applying the clamps

4. Delivery: product already assembled

- Short assembly time on site with pre-assembled elements / furniture parts



Stores fixtures











Your advantages with Tenso P

Stackable with pre-installed fittings

- Advantages in packaging, transport and logistics

Short assembly time on site

- Quick and easy gluing without additional aids
- Minimal installation cost

- | | | | |
|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|-------------------|
|  | Glueing |  | Fast installation |
|  | Invisible |  | Strong |
|  | High clamping force |  | Lateral tolerance |
|  | Versatile |  | Shallow cutting |
|  | Lower assembly force |  | No twisting |

Applications

furniture | shelves | stools | sideboards | wardrobes | show cases | sales counters | wall panels | cladding | face frames etc.

Production process

1. Cutting the groove with CNC

- Same profile groove for both workpieces
- Direct data transfer from CAD / CAM

2. Temporary storage

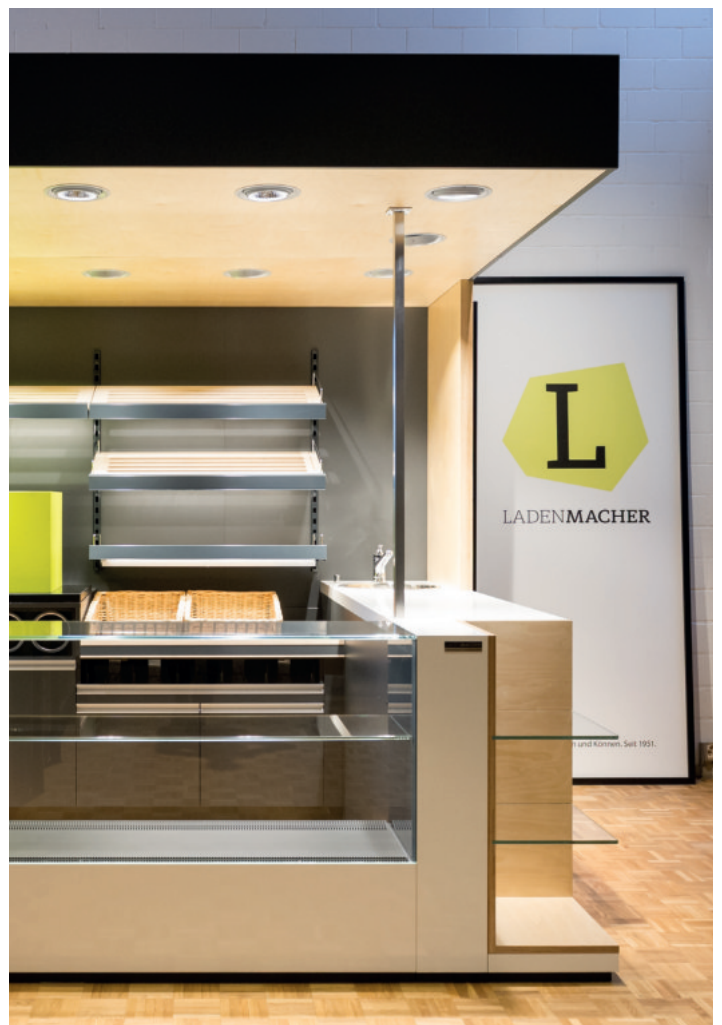
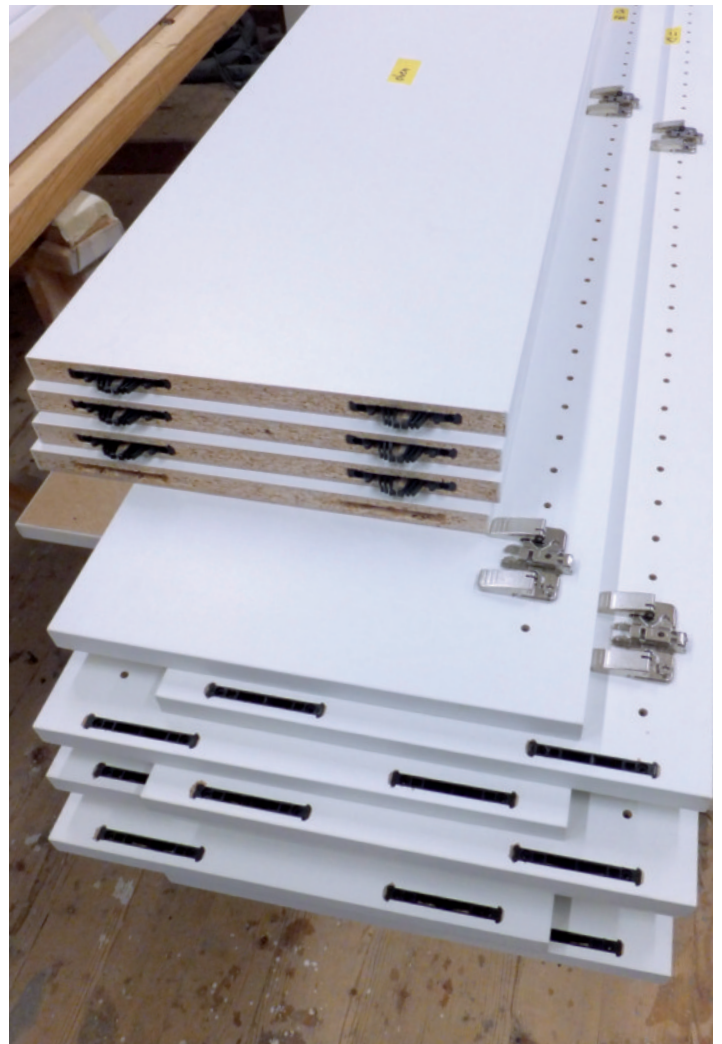
- Small volume with pre-installed fittings due to stackability
- Remove connectors without tools for the surface treatment

3. Delivery: product in parts

- Small transport volume (flat pack)
- Easier transport of the workpieces to the job site
- Reduced amount of assembly aids without the need of clamps and protectors

4. Assembly on site

- Quick and efficient assembly on site
- No waiting time before the clamps are removed
- No transporting clamps and protectors to and from the job site
- Customer-friendly, quick and clean installation



Divario P

Self-clamping, invisible connectors
for slide insertion



P-system configurator on our website



Advantages and properties

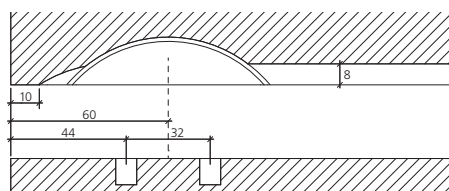
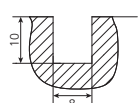
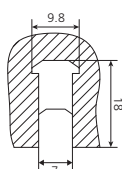
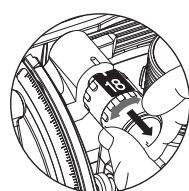
- **Completely invisible joint** for highest quality standards
- **Joins and clamps** during insertion for perfectly closed joints
- **Efficient machining and installation** with a CNC or a Zeta based on the P-System

- 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



Divario P-18

Self-clamping, invisible connectors
for slide insertion



Technical data

Half for P-System groove	65 × 16 × 9.7 mm
Half for drill holes.....	Ø 8 × 9 mm, distance 32 mm
Cutter.....	Ø 100.4 × 7 × 22
Material	fibreglass reinforced plastic
Installation tolerance	longitudinal ± 1 mm

Load per fitting (N)

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

Tensile strength (N)

all materials	600
---------------	-----

Divario P-18

Part no.

Starter-Set 80 pairs incl. Installation tool	145550S
Starter-Set 80 pairs in Systainer Size I, incl. Installation tool and marking jig in metal	145551
Carton with 80 pairs	145550
Carton with 300 pairs	145560
Carton with 1000 pairs	145570
Divario P-18 Installation tool	125500

Accessories starting page 27



Furniture manufacturing / Interiors

Your advantages with Divario P-18

Efficient installation











- Connector to insert by hand or install by hammer
- Fixing pins to drive into the wood for efficient installation
- Drilling into the surface possible with a CNC machine without angle aggregates (e.g. nesting machines)
- Possible in the factory or on site with a CNC or a Zeta P2

Clamped joints

- Joint with high tensile strength
- Reinforcing tall cupboards with fixed shelves
- perfect look with closed joints
- No clamps or presses necessary

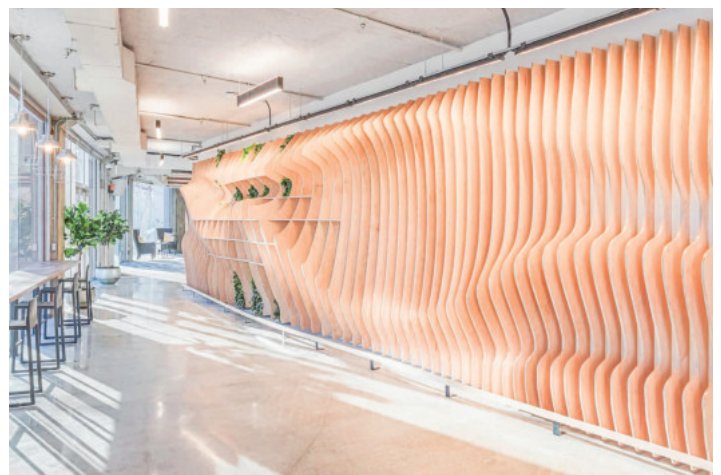
Sliding insertion in a second process

- The outer cabinet can be joined in a first process
- Transport of the empty cabinet to save weight
- Assembly of the complete furniture piece on site possible (flat pack)
- Insertion of the shelves without glue or clamping aids
- Detachable for transport

- | | | | |
|-------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------|-------------------|
|  | Sliding insertion |  | Fast installation |
|  | Invisible |  | Strong |
|  | Clamped joint |  | Lateral tolerance |
|  | Fast installation |  | Shallow cutting |
|  | Assemble by sliding |  | No twisting |

Applications

Cabinets, shelves, open room dividers, wine racks, side boards, cupboards, separating walls, showcases, hanging elements etc.



CWKELLER + ASSOCIATES

P-System

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

Martin Wegscheider, Managing Director, Spechtenhauser in Innsbruck, Austria





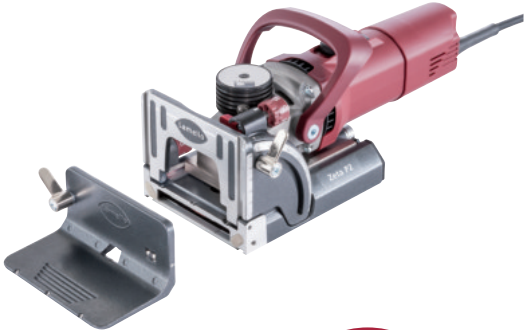
Joining with the **Zeta P2**



Zeta P2

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

More information on our website



Make more with your time!



Sideboard
Ready in 5 minutes

Shelving element
Ready in 6 minutes

Cupboard
Ready in 7 minutes

Increased efficiency with P-System

How many carcasses can you connect in 1 hour?



Without P-System

Fastest joining system with a power tool

Connection is complete within seconds, without waiting time, clamps, or secondary processes

Connected in seconds 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

Connected in seconds with Tenso – glued



1. Cut



2. Insert



3. Apply glue



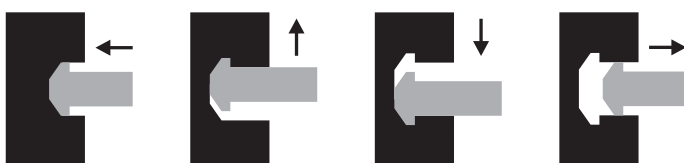
4. Connect – finished!

Time for one connector pair	
1. Cut	25
2. Insert	5
3. Apply glue	5
4. Connect – finished!	5
Ready in	40 s



Advantages and properties

- Zeta P2, the power tool **for fast, form-locking anchorage of all P-System connecting connectors** for wood joints
- The **automatic vertical movement** creates a profile groove enabling manual insertion of the connecting fittings
- **Time saving when installing connectors** due to the innovative profile groove concept which saves labour cost as well as the cost for glue or screws, insertion of the fittings by hand, without using glue or screws, greatly reduces labour time while also negating the need for additional fastening materials

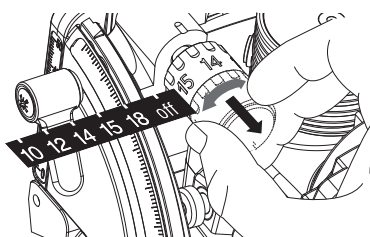


Vertical mechanical drive (VMD)

Profile groove function

The vertical mechanical drive is the core of the machine

- **Fast ~ 1 second**
- **User-friendly** with automatic operation of the cutting process
- **Switch off the VMD** to use the machine as a standard biscuit joiner enabling 11 more applications



- **Depth 18** for Divario P-18
- **Depth 14** for Tenso P-14, Clamex P-14 and Clamex P Medius (larger side), Bisco P-14
- **Depth 10** for Clamex P-10 and Clamex P Medius (smaller side), Bisco P-10
- **Depth «off»** for groove millings without profile groove = for standard biscuit joiner

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

Technical data

Power / Voltage.....	1050 W / 230 V
	800 W / 120 V
Speed	9'000 min ⁻¹
P-System Cutter	Carbide tipped / Diamond tipped
	Ø 100 × 7 × 22 mm
Teeth	Z3
Cutting depth max.....	20 mm
Weight.....	3.7 kg

Kit contains

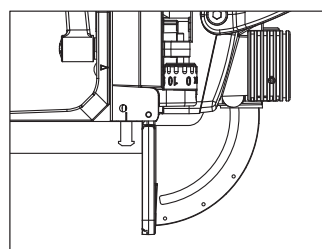
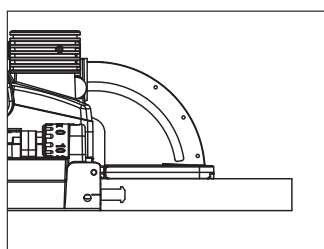
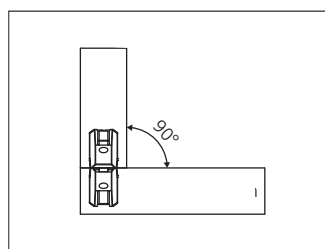
– Zeta P2	– Disc for angles
– P-System cutter 7 mm	– Spacer 2 + 4 mm
– Stop square	– Tools
– Suction stub 23 + 36 mm	– P-System drill jig incl. drill



Accessories starting page 26

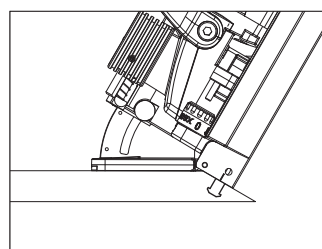
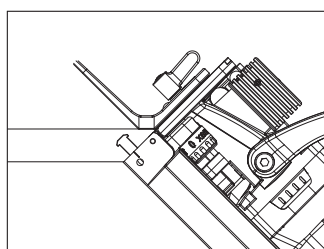
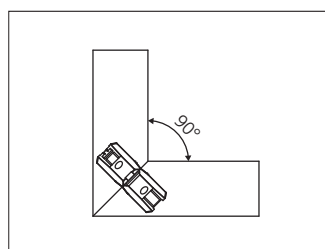
With the Zeta P2, you can quickly and flexibly connect parts with a range of angles and joining situations. Suitable for individual pieces of furniture as well as prototypes and series.

90° corner or dividing panel connection



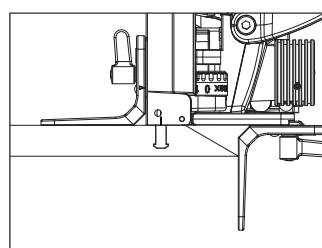
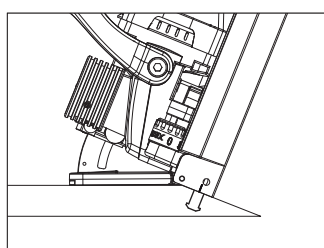
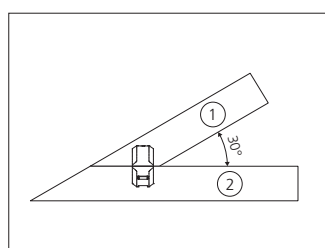
Swivel down the front and apply on the outer sides of the workpieces when cutting. The two workpieces will then fit perfectly together, even when the material thicknesses are different.

Mitre connection 45° – 180°



For 45° or 22.5° angles, slide the stop square onto the front and place it on the outer side of the workpiece. For all other angles, swivel the front stop forward and make the cut applying on the inner side.

Obtuse mitre connection, 22.5° – 120°



Swivel the front stop to the correct angle and place the machine on the inner side. Copy the centre position of the cut onto the other workpiece, slide the stop square onto the front and cut

Working with centre marking



1. Cut and mark the centre of the cut



2. Copy the centre to the second workpiece



3. Align the Zeta P2 with the marking



4. Produce connections at all angles



125344

P-System drill jig	Part no.
P-System drill jig incl drill, from 22.5°	125344
for all Clamex P connectors (P-10, P-14, P Medius 14/10)	
Angle for drill jig	255250
Element insert for size P-10	255251
Element insert for size P-14	255252



125345

P-System drill jig long	Part no.
Drill jig for thick workpieces 100 mm, (P-14, P Medius 14/10)	125345



131506

Drill	Part no.
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



251993

Clamex P assembly tool	Part no.
for all angles, fast and flexible, hex 4 x 30 mm, length 290 mm	251993



271945

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














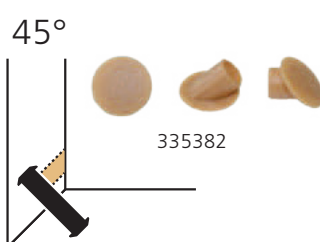
331565E

Systainer T-Loc Size II	Part no.
Systainer II T-loc, empty	331565
Insert with two partitions for systainer II	360016
Insert systainer T-loc II for Zeta P2, Top21, Classic X	360014









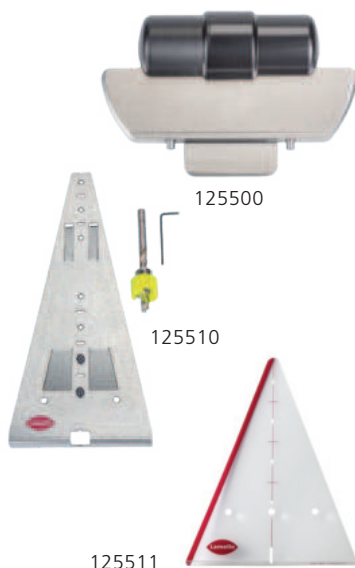
335282

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		



335382

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



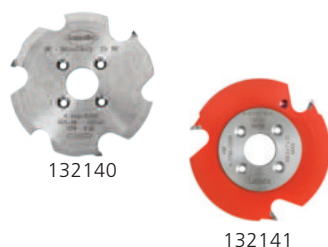
Divario P-18 Installation tool	Part no.
Divario P-18 Installation tool for fixing the Divario in the workpiece	125500

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



Tenso P-10 / P-14 Preload tool	Part no.
Tool to pre-load the Tenso P	145400



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



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



Spacer for biscuit joiner	Part no.
5 mm, Aluminium for 18 mm panels	for Top 21 / Zeta / Classic..... 253027
2 mm, Plastic for 16 mm panels.....	for Top 21 / Zeta / Classic..... 253023
4 mm, Plastic for mitres	for Top 21 / Zeta / Classic..... 253026

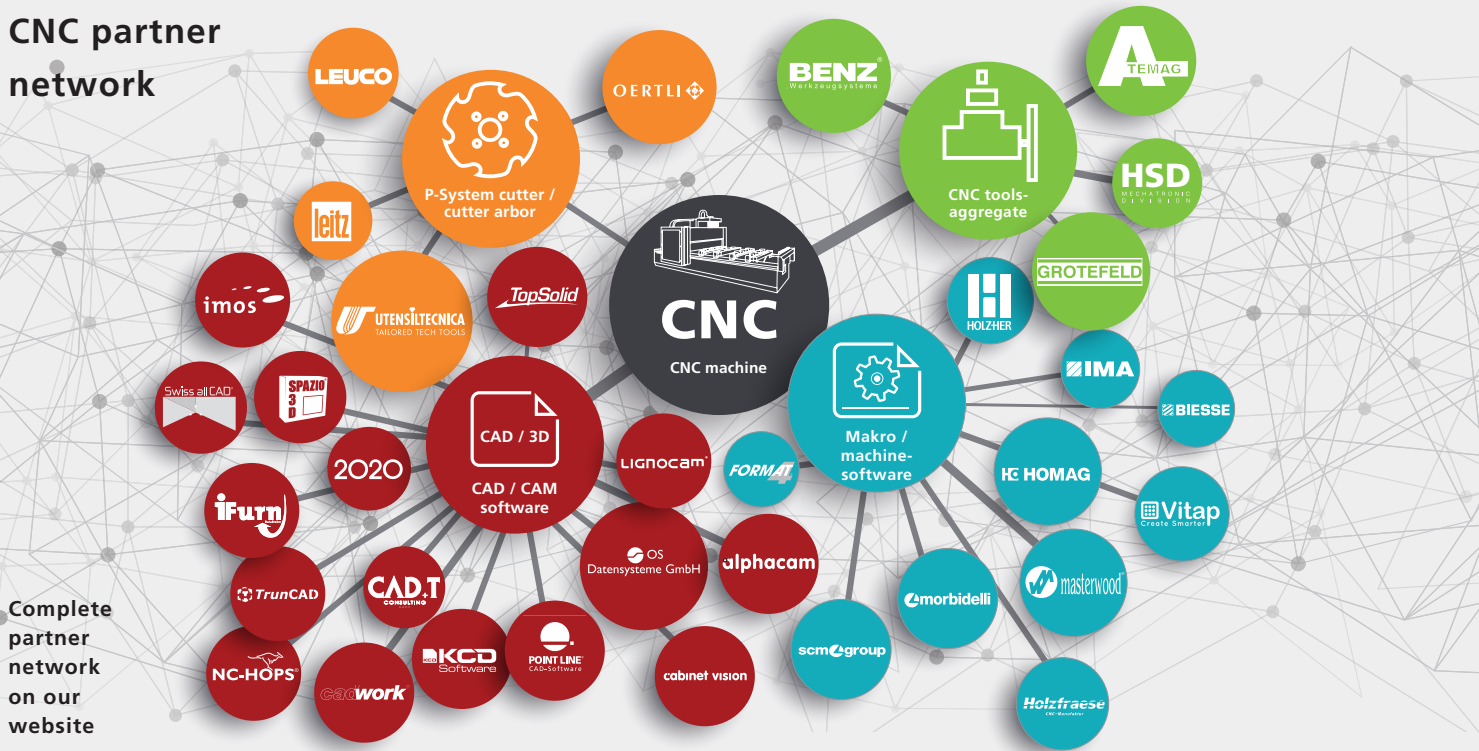
Joining with the **CNC technology**



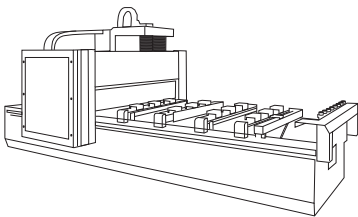
CNC partners

Design and production software, aggregates, cutting tools and CNC machining – these companies assist you with the efficient manufacturing with the P-System:

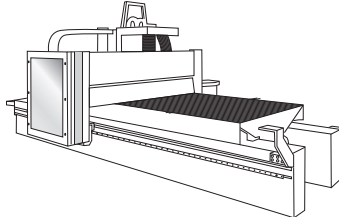
CNC partner network



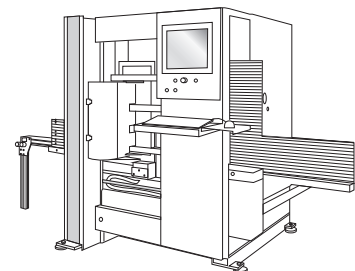
Installation options with CNC



CNC machines with pod and rails



CNC machines with nesting technology



Vertical CNC machines

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



HOMAG

DRILLTEQ 500



HOLZHER

Evolution 7405



BIESSE

Brema Eko 2.2



masterwood

Project TF 100

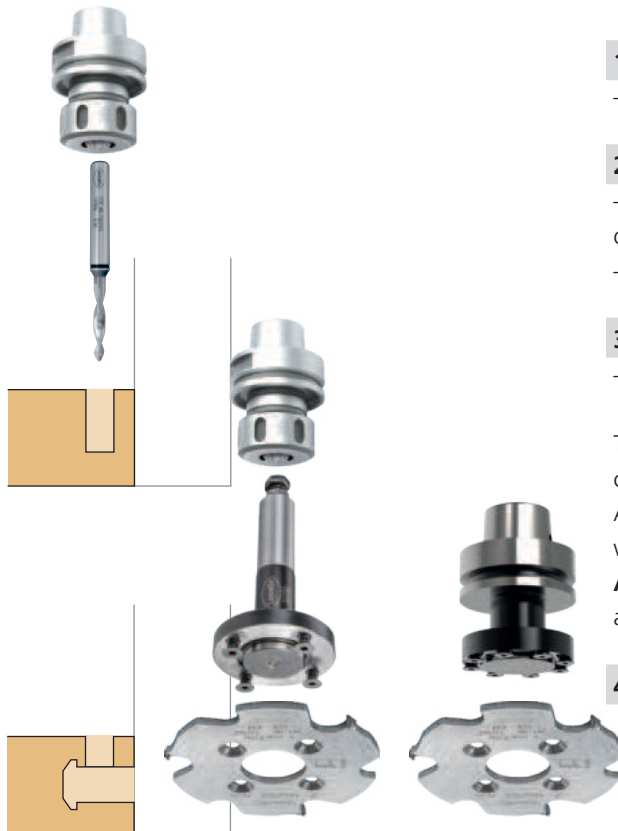
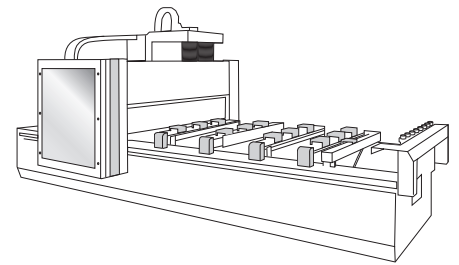


HOLZHER

Nextec 7707

CNC machines

What setup do I need if I want to create P-System grooves with my CNC machine?



1. CNC machine

– Machine with 3/4/5 axes + angle aggregate

2. CNC software

– Purchase software/macro/component from the manufacturer or
– Program the macro yourself

3. Suitable angle aggregate

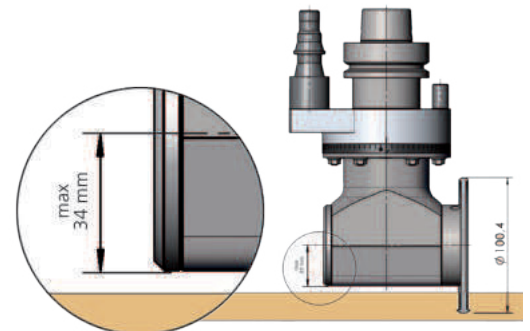
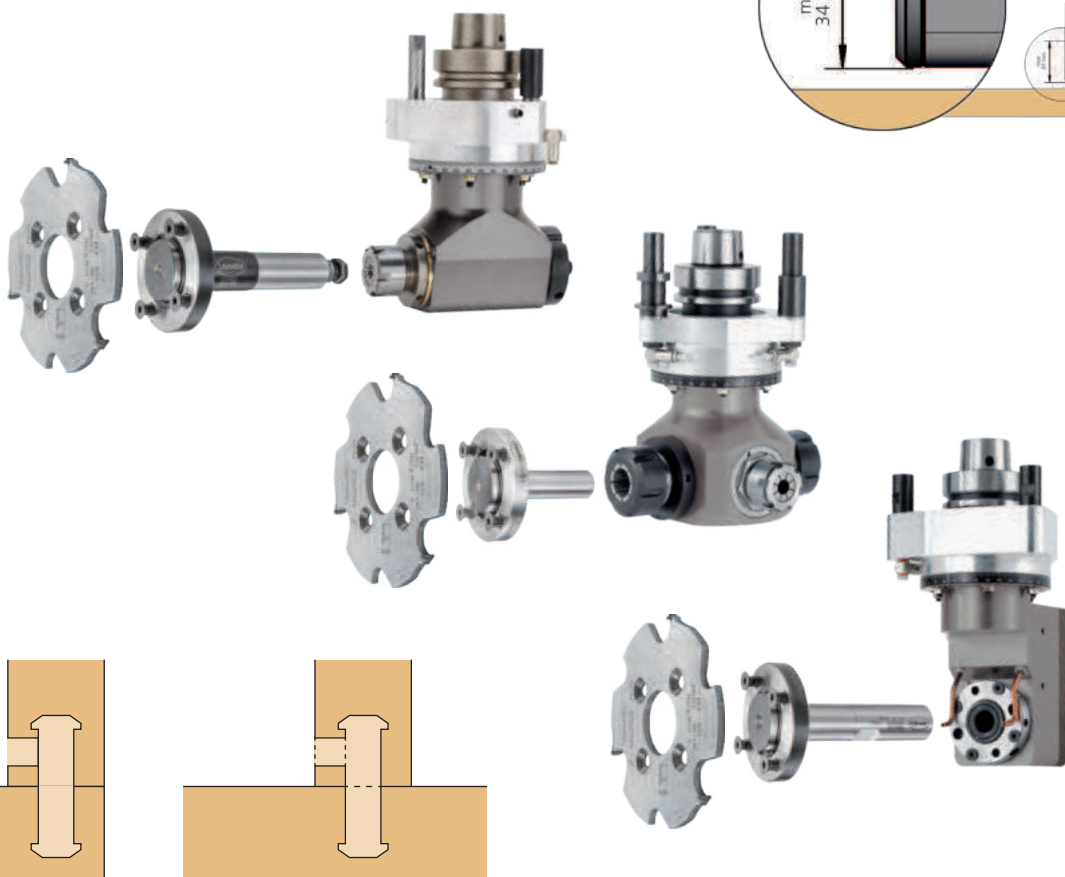
– Aggregate sub program

The angle aggregate also enables the P-System groove to be cut in the centre of the surface

An overview of other aggregates is available on our website:
www.lamello.com

Attention: Get the approval to use the P-System cutter on the aggregate from the CNC manufacturer

4. P-System cutting tool





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	






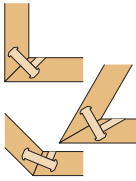







































Positioning pins for Zeta P2	Part no.
Ø 5 mm, 1 pairs	251048
Ø 8 mm, 1 pairs	251066
For positioning in holes with a diameter of Ø 5 mm or 8 mm	



Positioning clip for Zeta P	Part no.
Ø 6 mm	251067
For positioning in the Clamex access hole (6 mm)	

Requirements for CNC machines:

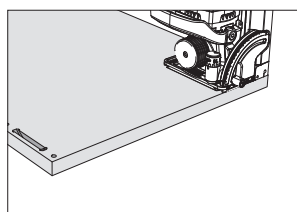
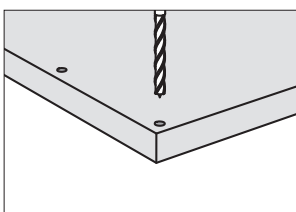
- Either the macro and component software for the desired angle are provided or you have programmed these yourself
- Aggregate sub program is available


Machines	Axes	Equipment (Varies depending on machine and aggregate)		Surface 180°	Corner 90°	Centre wall 90°	Mitre 22.5° – 180°
							
Portal	3/4	—	1 x P-System cutter 1 x cutter arbor 1 x drill Ø 6 mm				
			2 x P-System cutter (2) x cutter arbor 1 x drill Ø 6 mm				
			1 x P-System cutter 1 x cutter arbor 1 x P-System drill Ø 6 mm				
	4		1 x P-System cutter + adaptor 1 x P-System drill Ø 6 mm + adaptor				
	5	—	1 x P-System cutter 1 x cutter arbor 1 x P-System drill Ø 6 mm			  	
			2 x P-System cutter (2) x P-System 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				
	5	—	1 x P-System cutter 1 x cutter arbor 1 x P-System drill Ø 6 mm			 	

 Possible

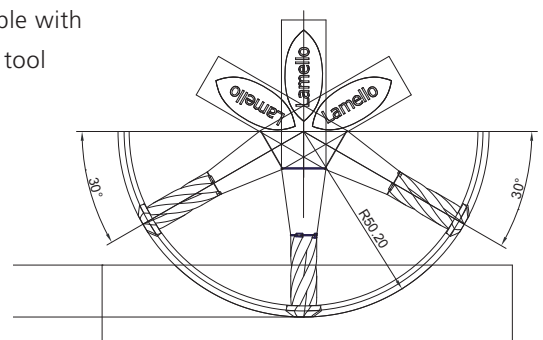
 Only possible with Zeta P2 and positioning pins

Tip: Instead of using an angle aggregate, the Zeta P2 power tool can be used to cut the P-System groove in the centre of the surface. To do so, drill two 5 mm positioning holes spaced at 101 mm in the work piece surface using the CNC machine. These are required to align the Zeta P2 on the work piece.



 Possible with shaft tool

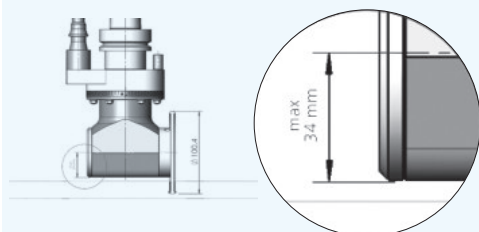
 Not possible



Please see our website for more information

Aggregates

A Angle aggregate

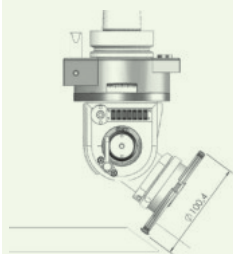


Possible angle aggregates

- One to four spindle angle aggregates
- Corner notching aggregate
- Aggregate for door locks

An aggregate overview can be found on the Lamello website: www.lamello.com

B Manually adjustable swivelling aggregates



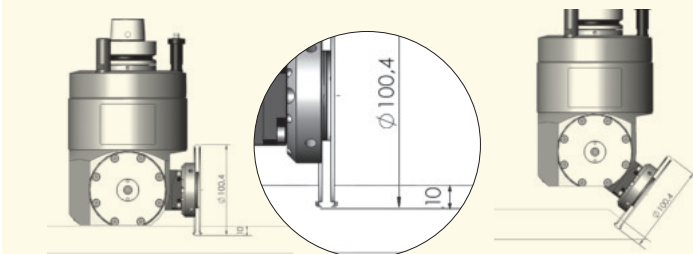
Information: The use of several aggregates is required. Several tool changes required for angle cuts, drilling and P-System grooves

Information: The cutting depth in the centre of the

surface may be restricted depending on the model

Tip: For mitres, spare yourself a tool change and drill the hole using a manual drill jig!

C Automatically adjustable swivelling aggregates (Flex 5+C, from manufacturing year 2015)



Note: Automatically adjustable swivelling aggregate with automatic tool changer. The profile groove is restricted to 10 mm in the centre of the surface

Advantages in the production process

1. P-System groove with CNC



- Same profile groove for both work pieces
- Short process time
- Less processing than for other connection methods
- Direct data transfer from CAD / CAM

2. Storage



- Small storage volume due to stacking despite installed connector
- Shorter reaction time for the continuation of the next process

3. Delivery: in parts



- Smaller transport volume without damaging the parts
- Easy transport of the parts into the building (stairs, elevator)

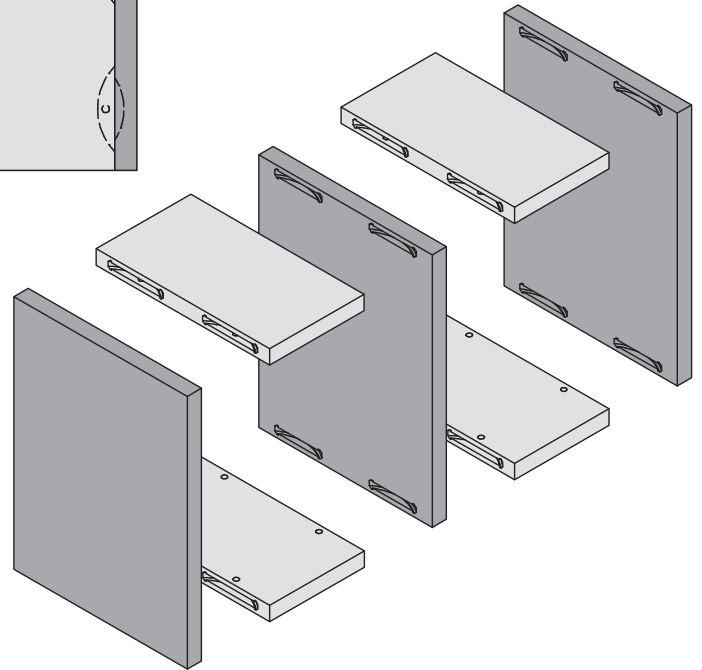
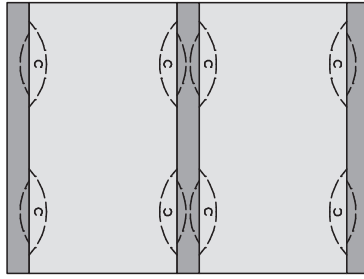
4. Assembly on site

1. Easy assembly by customer possible
 2. Assembly by sales personnel or tradesman
- Shorter assembly time on site

Ideas for standardising the machining on a CNC machine

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

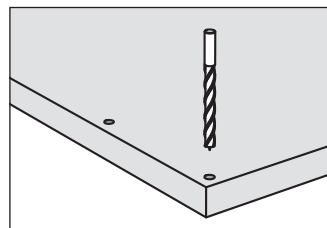
Depth 14 mm for all P-System grooves **in the edge**



	Part no.
Clamex P-14, element with the lever	
box with 2'000 pcs	145338
Clamex P-10, element without lever	
box with 2'000 pcs	145358
Clamex P-10, element Medius	
box with 2'000 pcs	145369

Ideal combination of CNC machines and Zeta P2

Positioning drill holes on a CNC



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 anymore.

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.



Positioning pin Zeta P2	Part no.
Ø 5 mm.....	251048
Ø 8 mm.....	251066

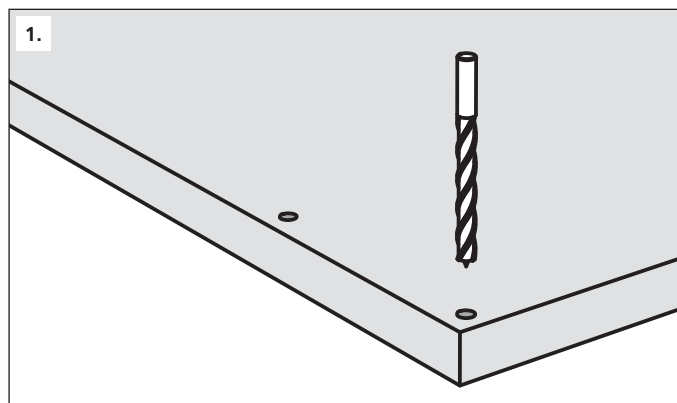


Positioning clip for Zeta P2	Part no.
Ø 6 mm.....	251067
For positioning in the Clamex access hole (6 mm)	

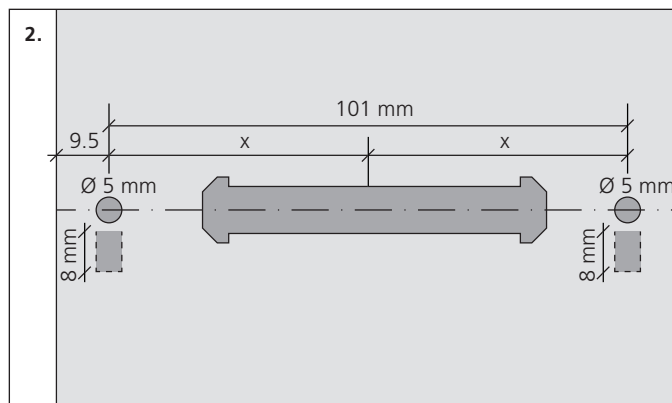
Advantages and properties

- 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

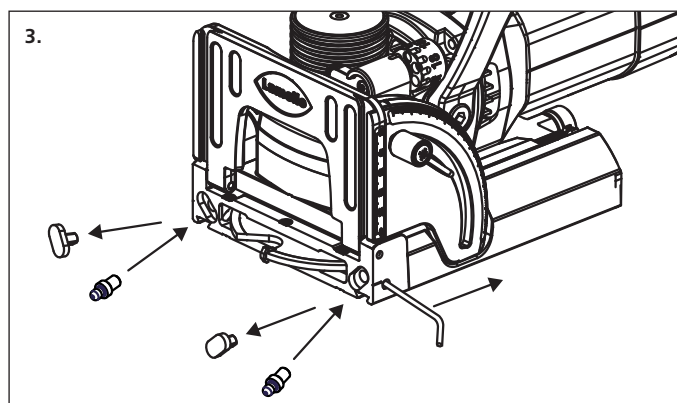
Cutting the groove in the surface



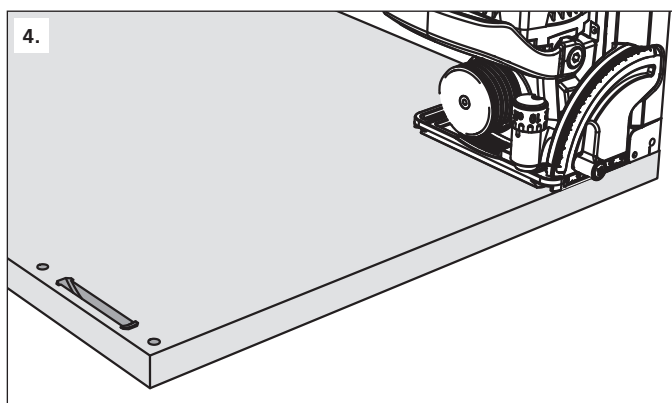
Drill the positioning holes with the CNC, $\varnothing 5 \text{ mm}$ / $\varnothing 8 \text{ mm}$



Hole pattern of the positioning drill holes

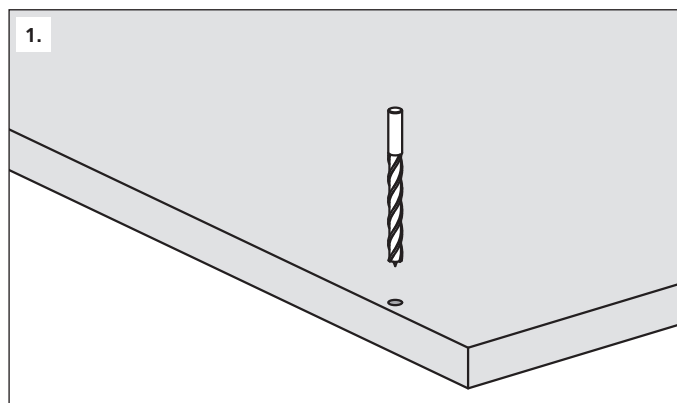


Insert the positioning pins in the Zeta P2

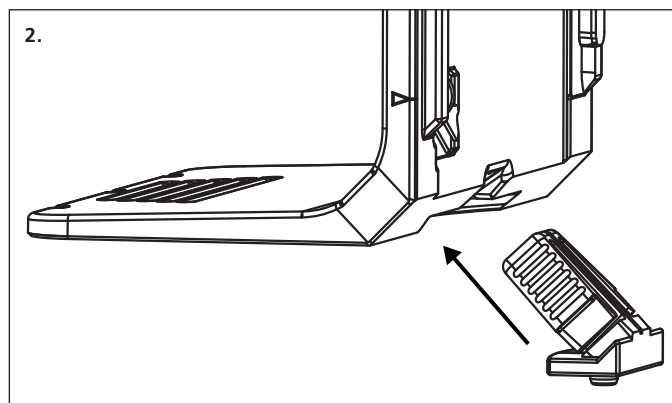


Position the machine in the drill holes

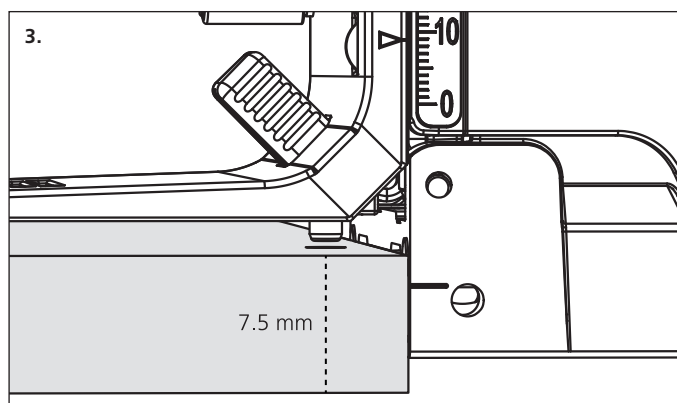
Cutting the groove in the edge



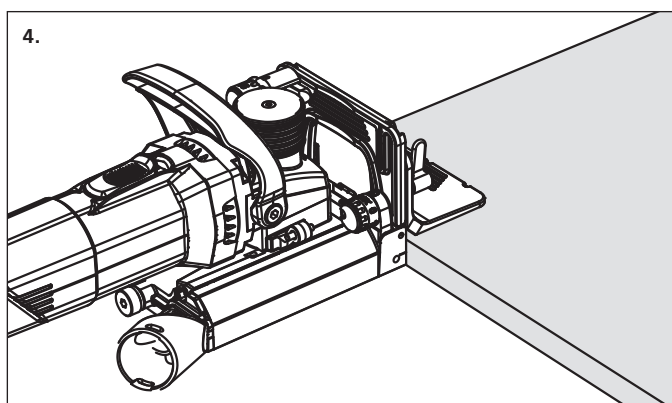
Drill the positioning hole with the CNC, $\varnothing 6 \text{ mm}$



Insert the positioning clip



Insert the positioning clip in the drill hole $\varnothing 6 \text{ mm}$



Cut the groove with the positioned machine



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