

# P-System

Save time daily Differentiate your product





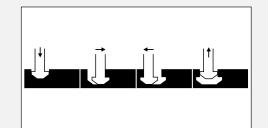


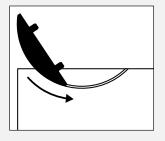




# **P-System**

Form-locking anchorage without tools



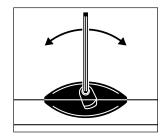


Fast installation
Inserting instead of screwing or alueing

# Clamex P

Detachable connecting fitting





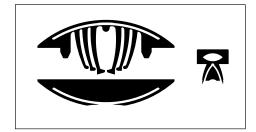
Detachable

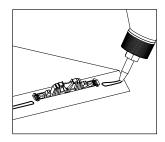
Open the connection time and time again with the rotating lever

# Tenso P

with preload clip

Self-clamping fitting as glueing aid, for all angles

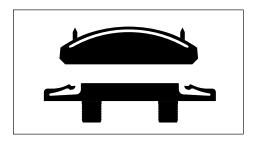


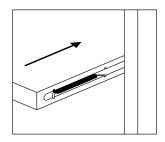


Glueing
Fixed joints of two workpieces

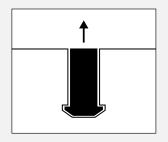
# **Divario P**

Self-clamping, invisible fitting for slide insertion



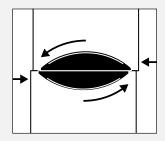


Sliding insertion
Insertion between two fixed sides or shelves via a guiding groove



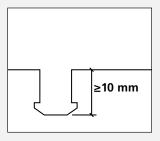
Strong

Form-locking anchorage across large surface areas



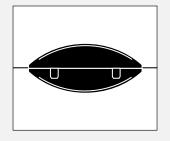
Lateral tolerance

Perfect, flush alignment of both work pieces



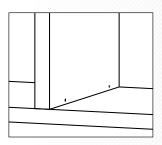
Shallow depth

Minimal cutting depth with maximum tensile strength



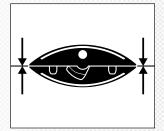
No twisting

The positioning pins prevent twisting without additional dowels



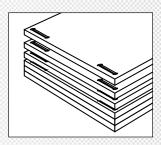
#### Aesthetic

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



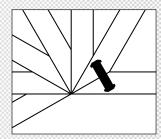
### High clamping force

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



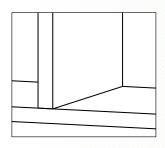
#### Stackable

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



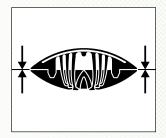
#### Versatile

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



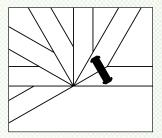
#### Invisible

No visible fitting



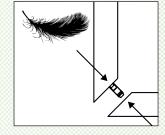
#### High clamping force

Allows for perfect alignment and clamps the workpieces ~ 15 kg



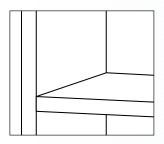
#### Versatile

Simple glueing of mitre joints



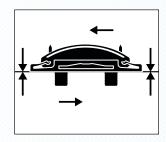
#### Lower assembly force

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



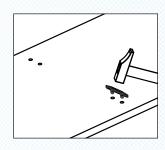
#### Invisible

Guiding groove covers the fittings



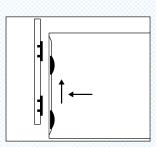
#### Clamped joint

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 connecting fitting



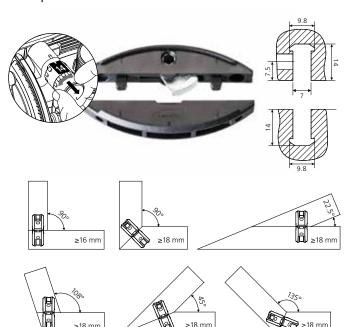
#### **Advantages and properties**

- Small opening 6 mm, differentiation to furniture standards
- Stackable with pre-installed fittings, 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	. 66×27×9.7 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	~ 1′000

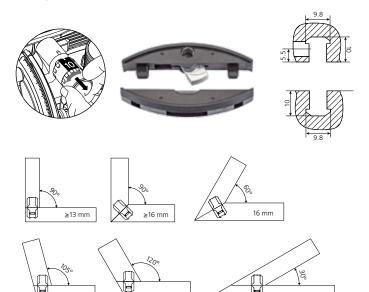
Clamex P-14	Art.No.
Carton with 80 pairs	145334
Carton with 300 pairs	145346
Carton with 1000 pairs	145356
Drill jig P-System	125344





## Clamex P-10

For panels from 13mm



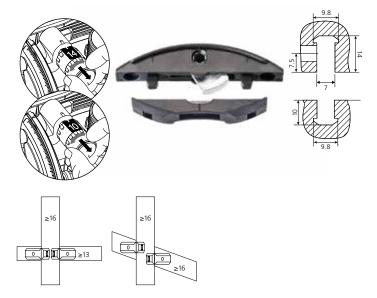
Technical data	
Size	.52×19×9.7 mm
Cutter	.Ø 100.4 × 7 × 22
Material of connector	. fibreglass reinforced plastic
Material of lever	. zinc die cast
Installation tolerance	.longitudinal ± 0.5 mm

Tensile strength (N)	
MDF	~ 600
Particle board	~ 600
Beech	~ 900

Clamex P-10	Art.No.
Carton with 80 pairs	145372
Carton with 300 pairs	145373
Carton with 1000 pairs	145374
Drill jig P-System	125344

# Clamex P-Medius 14/10

For centre panels from 16mm



Technical data	
Size	66 × 13.5 × 9.7 mm
	52×7.5×9.7mm
Cutter	Ø 100.4 × 7 × 22
Material of connector	fibreglass reinforced plastic
Material of lever	zinc die cast
Installation tolerance	longitudinal ± 1 mm

	<b>Load (N)</b> (19 mm)	Tensile strength (N)
MDF	~ 700	~ 800
Particle board	~ 550	~ 600
Beech	~ 2400	~ 900

Clamex P Medius 14/10	Art.No.
Carton with 80 pairs	145370
Carton with 300 pairs	145371
Carton with 1000 pairs	145357
Drill jig P-System	125344

# Bisco P

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

#### **Advantages and properties**

- Ideal addition to Clamex P and Tenso P, fits into the
   P-System grooves, without requiring a different cutter
- Bisco P-14 is ideal for dry-assembly before glueing a joint with Tenso P-14
- 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**

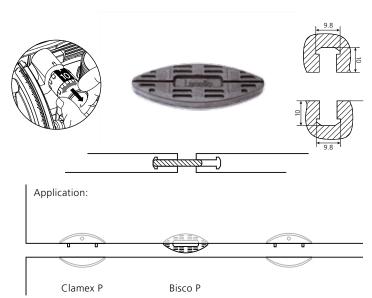
Size Bisco P-14	65×27×7 mm
Size Bisco P-10	52 × 19 × 7 mm
Cutter	Ø 100.4 × 7 × 22
Material	plastic
Installation tolerance	longitudinal ± 2 mm
Tensile strength with adhesis	ve ~ 400 N ≈ 40 kg

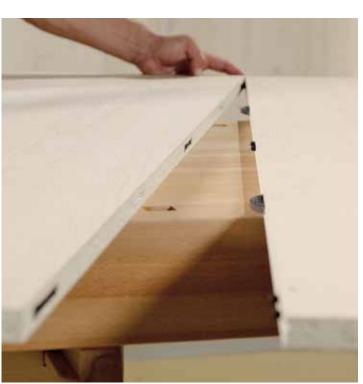
Bisco P-14	Art.No.
Carton with 80 pieces	145301
Carton with 300 pieces	145302
Carton with 1000 pieces	145303

I	Bisco P-10	Art.No.
(	Carton with 80 pieces	. 145304
(	Carton with 300 pieces	145305

## Bisco P-10

Aligning element suitable for Clamex P-10





# Individual production



## Your advantages with Clamex P

#### Versatility for all angles

– Same system for all joining situations

#### **Aesthetic solution**

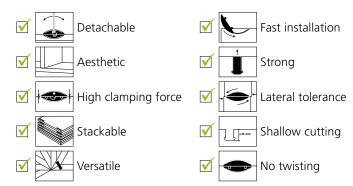
- Differentiation to furniture standards

#### Freedom of choice during assembly

- Detachable or glued construction

#### Glueing all angles

– High clamping force



#### **Applications**

interior fitting | cupboards | door frames 45° | tables | beds | boat interiors | kitchen counter tops | sales counters | etc.

#### Production process

#### 1. P-groove with Zeta P2

- Make a joint with 2 fittings in 2 minutes
- Short setup time
- No side stops necessary line up to the workpiece edge or to the pencil mark
- Connector with installation tolerance
- Same profile groove for both workpieces

#### 2. Storage

- Small storage volume when stacking despite installed connector
- Remove the connector for surface treatment fast and easy

#### 3. Delivery: in parts

- Small transport volume with pre-installed fittings due to stackability
- Easy transport of the parts into the building (stairs, elevator)

#### 4. Assembly on site

- Efficient trial assembly in the workshop since connectors stay in the workpiece for transporting
- Fast and efficient assembly with an allen key
- No waiting time after clamping the workpieces
- No transporting clamps and protectors to and from the job site
- No building of jigs for complex workpieces
- No dowels for line up necessary





# Furniture manufacturing / Interior fitting

## Your advantages with Clamex P

#### **Aestethic solution**

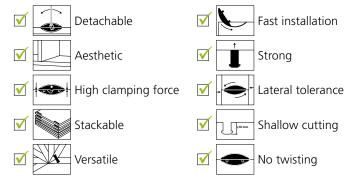
- Differentiation to furniture standards

#### Stackable with pre-installed fittings

- Advantages in packaging, transport and logistics

#### Short assembly time on site

- Minimal installation cost



#### **Applications**

sideboards | shelves | wardrobes | display cases | 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 finsihing of standard parts

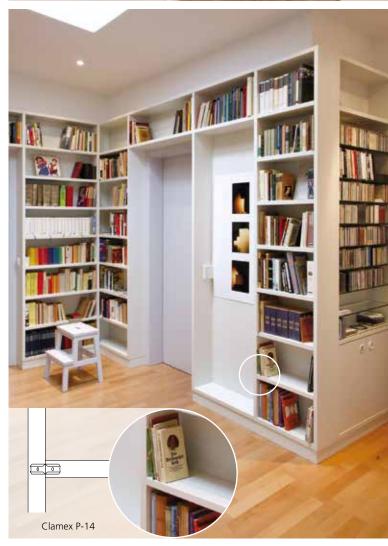
#### 3. Delivery in parts

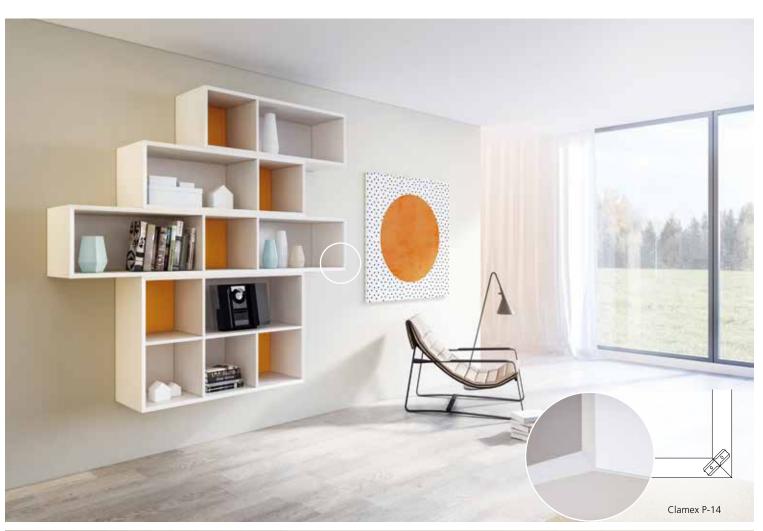
- Small transport volume with pre-installed fittings due to stackability
- Smaller stock volume for the dealer
- Easy transport of the parts into the building

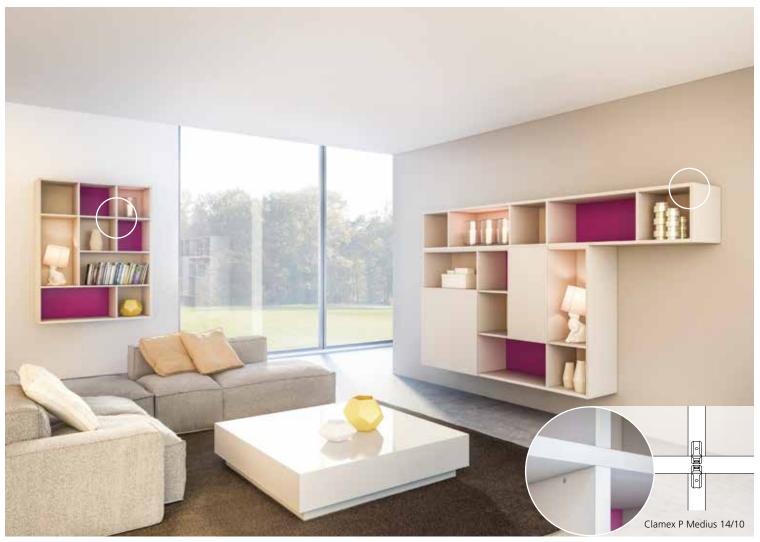
#### 4. Assembly on site

- 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









# Shop fitting / kitchen manufacturing

## Your advantages with Clamex P

#### Stackable with pre-installed fittings

- Advantages in packaging, transport and logistics

#### Versatility for all angles

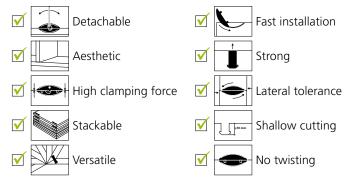
- Same system for all joining situations

#### Freedom of choice during assembly

- Detachable or glued construction

#### Short assembly time on site

- Minimal installation cost



#### **Applications**

wall elements | furniture | show cases | changing rooms | stools | etc.

#### **Production process**

- 1. P-System groove with CNC
- Same profile groove for both workpieces
- Short process time
- Direct data transfer from CAD / CAM

#### 2. Storage

- Small storage volume when stacking despite installed connector
- Remove the connector for surface treatment fast and easy
- Enable efficient just-in-time production
- 3. Assembly in the factory
- Fast and easy assembly
- No clamps or protective wood blocks necessary
- No second person required
- No building of jigs for complex workpieces
- No dowels for line up necessary
- No waiting time before the clamps are removed
- Less space used in the assembly area since workpiece quickly continues to the next process
- 4. Delivery with workpiece assembled
- Short assembly time on site due to pre-installed elements / furniture parts





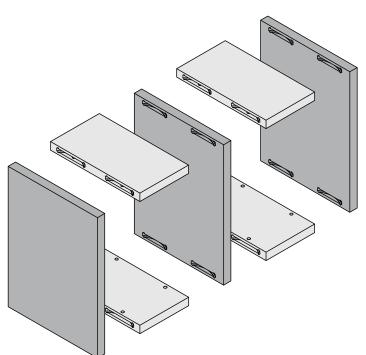




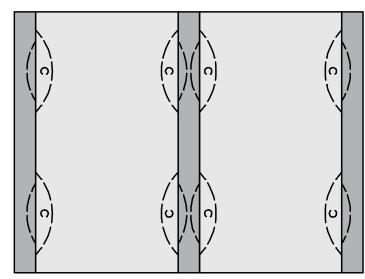


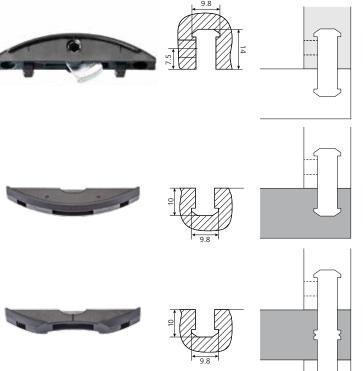


# Standardising production on a CNC machine



Machining depth 14 mm for all P-System grooves in the edge Machining depth 10 mm for all P-Systemgrooves in the surface





Clamex P-14, element with lever	Art.No.
Box with 2'000 pcs	145338

Clamex P-10, element without lever	Art.No.
Box with 2'000 pcs	145358

Clamex P-10, element Medius	Art.No.
Box with 2'000 pcs	145369

# **Clamex P Accessories**





P-System groove cutter for Zeta P2	Art.No.
Ø 100.4 × 7 × 22 mm, Z3, diamond dipped	132140
Ø 100.9 × 7 × 22 mm, Z3, carbide tipped	132141



P-System drill jig	Art.No.
P-System drill jig incl drill, from 22.5°	125344
for all Clamex P fittings (P-10, P-14, P Medius 14/10)	



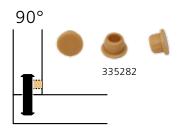
Drill	Art.No.
Spiral drill Ø 6 mm with centering point	131506



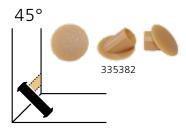
Clamex P assembly tool	Art.No.
For all angles, fast and flexible,	
Hex 4 × 30 mm, length 290 mm	251993



Α	llen key	Art.No.
4	mm, 75 × 55 mm	271945
4	mm, 120 × 50 mm	271945A



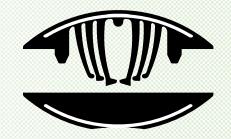
Cover caps, 100 pieces		
90°	Art.No.	Art.No.
RAL 9010, White	335280	RAL 9002, Grey-white 335285
RAL 9011, Black	335281	RAL 7035, Light grey 335286
RAL 1014, Ivory	335282	RAL 7040, Window grey 335287
RAL 1011, Brown beige	335283	RAL 7031, Blue grey 335288
RAL 8007, Brown	335284	
RAL 8017, Dark brown	335289	



45°	Art.No.	Art.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

# Tenso P

Self-clamping fitting as glueing aid, for all angles



#### Tenso P-14, advantages and properties

- Use as glueing aid, high clamping force (no screw clamp or press needed)
- **Perfectly aesthetic,** completely invisible
- Fast + Reliable process, installation without tools (simple + fast, no screws or glue necessary)

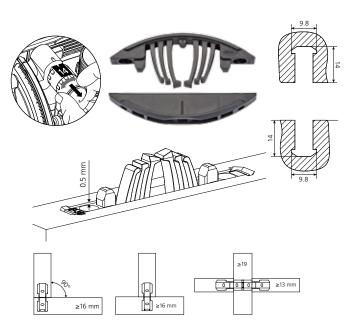
# Tenso P-14 with preload clip, advantages and properties

- **Versatile**, simple glueing of mitre joints
- Lower assembly force, only a short power impulse necessary to join
- **Effortless joining** regardless of the number of connectors



## Tenso P-14

Faster glueing



#### **Technical data**

.66×27×9.7mm
.Ø 100.4 × 7 × 22
. fibreglass reinforced plastic
. longitudinal ± 1 mm

#### Clamping force (N)

Per fitting ~ 150

Tenso P-14 with preload function	Art.No.
Carton with 80 pairs (without preload clip)	145415
Carton with 300 pairs (without preload clip)	145425
Carton with 1000 pairs (without preload clip)	145435

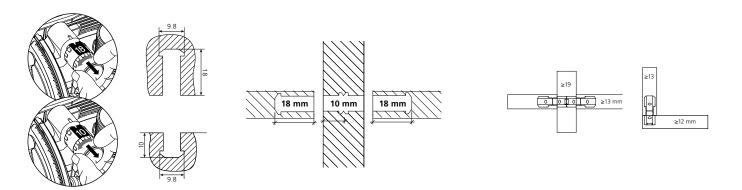
#### Important:

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





#### Installation with off-set



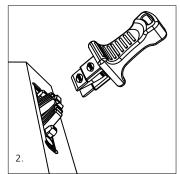
# Tenso P-14 + preload clip

Faster glueing, for all angles





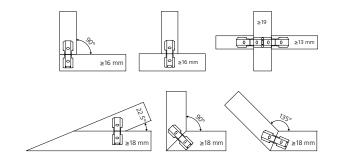


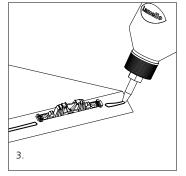


Preload the Tenso P-14

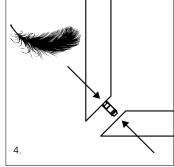
Tenso P-14 Starter-Set	Art.No.
Carton with 80 pairs (with preload clip)	145415S
Carton with 80 pairs (with preload clip)	145425S

Preload clip	Art.No.
Carton with 300 pieces	145426
Carton with 1000 pieces	145436

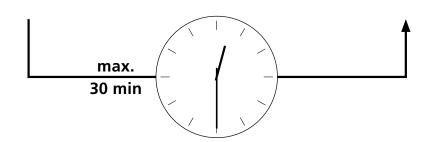




Apply glue



Assemble Work pieces



# Furniture manufacturing / Interior fitting

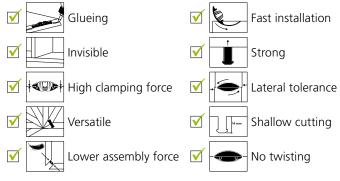
## Your advantages with Tenso P-14

#### 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 insde

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



#### **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 fittings without tools for the surface treatment

#### 3. Assembly in the factory

- Quick and efficient glueing
- No addtional 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-assembles elements / furniture parts







## Shop fitting

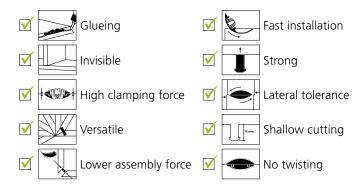
## Your advantages with Tenso P-14

#### Stackable with pre-installed fittings

- Advantages in packaging, transport and logistics

#### Short assembly time on site

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



#### **Applications**

furniture | shelves | stools | sideboards | wardrobes | show cases | sales counters | separating walls | 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 fittings 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

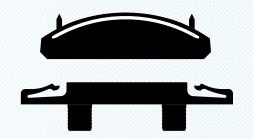






# **Divario P**

Self-clamping, invisible fitting for slide insertion



#### **Advantages and properties**

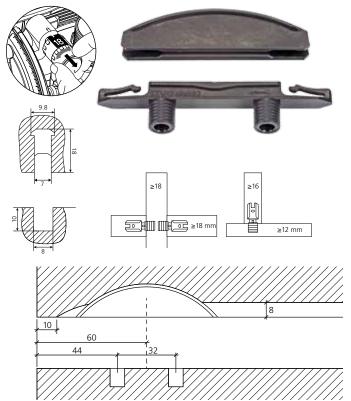
- Completely invisible joint for highest quality standards
- Joins and clamps during insertion for perfectly closed joints
- Efficient machining and installation
   with a CNC or a Zeta based on the P-System

- Narrow element for the use in **shelves from 19 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 fitting for slide insertion



#### **Technical data**

Half for P-System groove	.65×16×9.7mm
Half for drill holes	.Ø8×9 mm, distance 32 mm
Cutter	.Ø100.4×7×22
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	Art.No.
Starter-Set 80 pairs incl. Installation tool	. 145550S
Carton with 80 pairs	145550
Carton with 300 pairs	145560
Carton with 1000 pairs	145570
Divario P-18 installation tool	125500
Divario P-18 marking jig incl. drill	125510
Divario P-18 marking jig in plastic	125511
Divario P-18 positioning pins	145546
Divario P-18 installation tool for positioning pins	125520

# Furniture manufacturing / Interior fitting



# Your advantages with the Divario P-18

#### **Efficient installation**

- Fitting 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

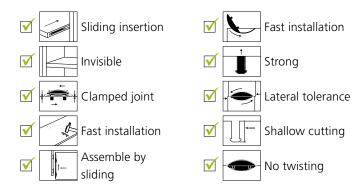








nülsta D-48702 Stadtlohn



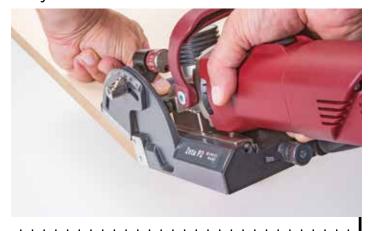
#### **Applications**

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



## Zeta P2

# The fastest joining method with a power tool Any corner in less than 2 minutes!



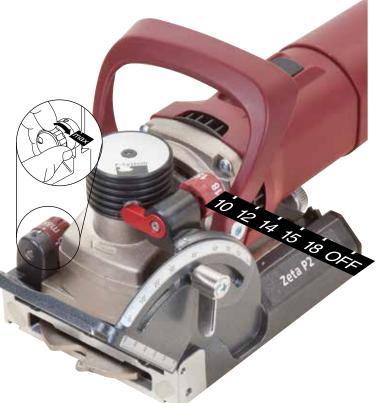
0:30

Cut four P-System grooves with the Lamello Zeta P2 Fast and precise by applying on the workpiece edge



1:05

Drill two openings with the drill jig Use the drill jig for all angles from 22.5–180°



## P-System groove function

## The Vertical Mechanical Drive (VMD) is the core of the Zeta P2.

During the machining process the blade cuts a straight groove with a preset depth. Then follows an automatic movement up and down of the blade, creating the P-System groove.

This P-System groove function is low-wear, automatic and reliable.



## P-System depth adjuster

#### Rotating depth adjuster for the P-System depths

- 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 groovefor standard biscuit joiner

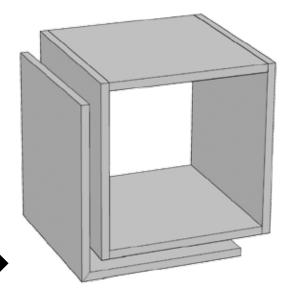
#### Possibility to switch off the P-System function

Insert a 4mm groove cutter into the Zeta P2 to use the joining elements of the Lamello system as well as further applications as cutting panel grooves and expansion gaps









1:35

Slide the Clamex P connectors into the P-System grove by hand without tools!

Close with an allen key – Finished!

## Fast, easy and precise

Work with the well-known Lamello working principle

#### Lateral tolerance in the connector

- Allows for easy positioning of the machine on the workpiece edge or to the pencil mark
- No side stops or positioning aids necessary

#### Same processing on both workpieces

– No depth adjusting saves times and lower risk of errors

#### Fast connector installation saves time

 Innovative P-System groove method saves time and eliminates the need for fastening material like screws or glue





### Synergies with CNC manufacturing

- Cuts the same P-System groove as the CNC machine, so both production methods can be combined ideally
- Great for individual furniture and prototypes
- Use the Zeta together with CNC manufacturing for small workpieces or on site

#### Technical data

Power	. 1050W
Version	. 230 V
Speed	. 9'000 min⁻¹
Cutter	. P-System cutter $100.4 \times 7 \times 22 \text{mm}$
Teeth	. Z3
Cutting depth max	. 20 mm
Weight	. 3.7 kg

#### Kit contains



P-System cutter 7 mm, Stop square, Suction stub 23 mm, Suction stub 36 mm, Spacer 4 mm,

Machine with:

Spacer 2 mm, Tools, P-System drill jig incl. drill for Clamex P-10, P-14, P-15

Zeta P2-Set with	Art.No.
Carbide tipped P-System cutter	. 101402
Diamond tipped P-System cutter	101402D

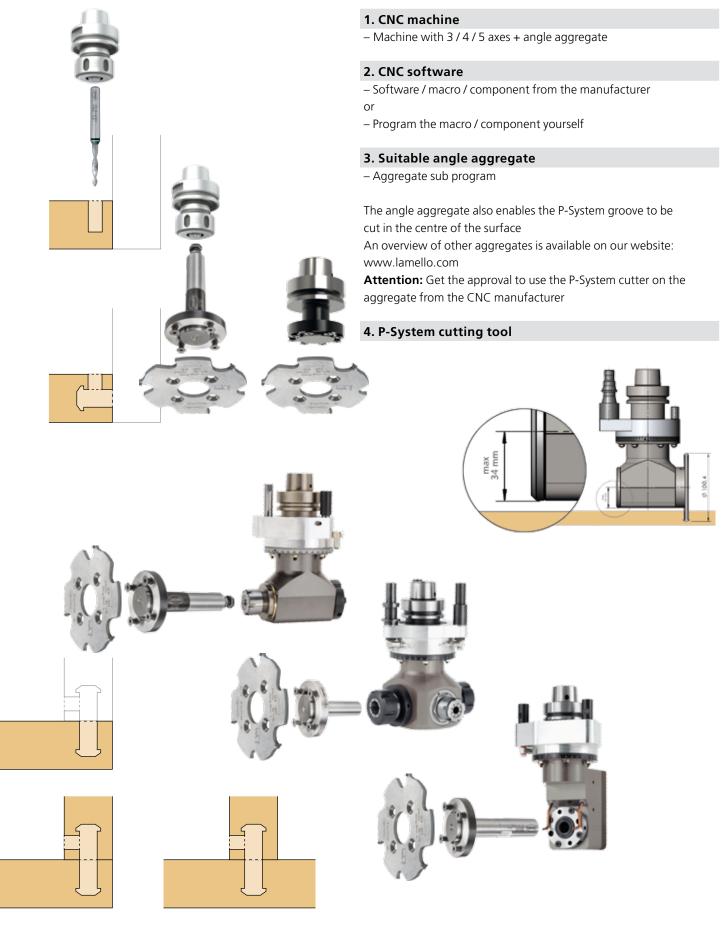
Accessories	Art.No.
Diamond tipped P-System cutter $100 \times 7 \times 22 \text{ mm}$	132140
Carbide tipped P-System cutter 100 x 7 x 22 mm	132141
Standard groove cutter 100 × 4 × 22 mm	132000
Spacer 5 mm	253027

Guaranteed supply: 10 years for spare parts and accessories

## **CNC** machines



## Necessary setup for P-System grooves



# **CNC** tools





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



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



k	P-System CNC cutter arbors 30 / DTK 48 mm	Art.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 $\emptyset$ 16 × 50, L = 85 mm, with clamping surface (2°- angle)	132154
	Shaft $\emptyset$ 20 × 50, L = 85 mm, with clamping surface (2°- angle)	132155



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



Positioning pins for Zeta P2	Art.No.
Ø 5 mm, 1 pairs	251048
Ø 8 mm, 1 pairs	251066



Positioniong clip for Zeta P	Art.No.
Ø 6 mm	251067
For positioning in the Clamex access hole (5mm)	

## P-System partner



The efficient operation of the P-System is assisted by these partner companies:

### Partners for CNC-technology



















#### Partners for aggregates









#### Partners for software





















### Partners for **tooling**









Manufacturer:

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