

Technical information zero-point clamping system



Application

The modular structured flexible zero-point clamping system was specifically developed for the machining and non-machining fields. This system enables a quick and accurate clamping and referencing of fixtures and workpieces on all production machines, machining centres, EDM's and inspection equipment. Whether subplate, fixture, vice or workpiece, this system allows an exchange with a defined reference point in a matter of seconds and repeat accuracy of less than 0.005 mm.

The advantages

- Modular system
- Compact flat design
- Workpiece or fixture change within seconds
- Pneumatic system
- Positive locking
- Holding forces up to 75 kN and pull-in forces up to 25 kN
- Turbo function
- Positioning via short conical locator
- Works reliably in every mounting position
- Sealing air function

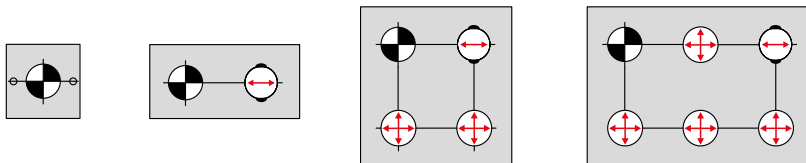
Your benefit

- Can be combined with our modular clamping system
- Better machine room utilisation
- Increased productive machine running times, significantly reduced set-up times
- Reliable system
- Very high cutting forces possible
- High operating and process safety
- Increased pull-in forces are standard
- Very high repeat accuracy
- Clamping cylinder installation in both vertical and horizontal positions
- Blow out function can be activated when changing pallets

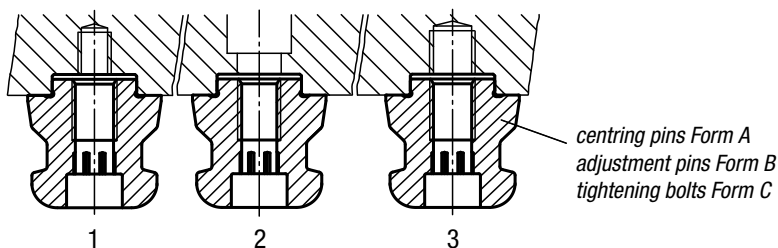
Spigot arrangement/set-up

The workpieces, fixtures or subplates are positioned and clamped using spigots. There are three different spigot types.

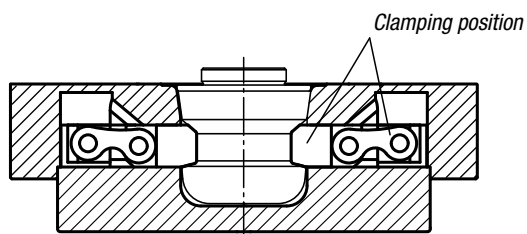
- Centring spigot fixed in x and y direction (reference point)
- ⊖ Compensating pin fixes the free axis (studs)
- ⊕ Clamping spigot Spigot with undersize (no centring function only clamping function)
- Cylindrical pin For individual clamping, positioning is done with centring spigot + 2 cylindrical pins



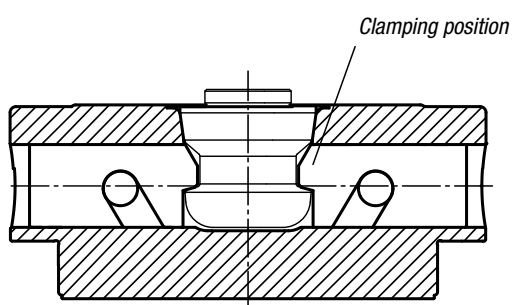
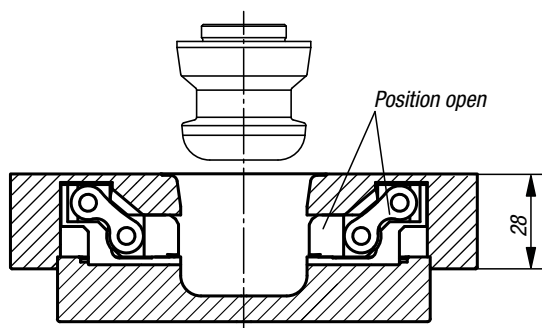
- 1 = fastening with DIN 912 screw through the tightening bolt
2 = fastening with DIN 912 screw through the fixture or workpiece
3 = fastening with grub screw DIN 913



Function



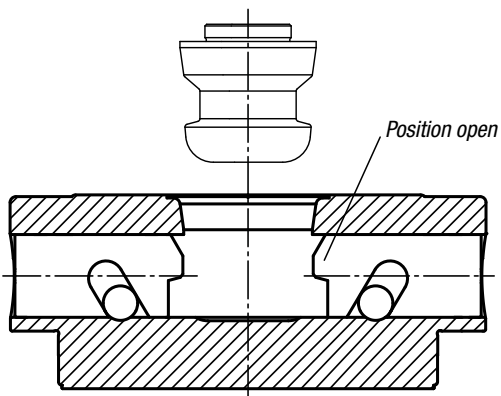
UNILOCK clamping module ERGO 138



UNILOCK clamping module ESM 138-C

UNILOCK clamping module ESM 176

UNILOCK clamping module EFM 138



UNILOCK clamping station



Material:

Clamping module high-carbon steel.
Baseplate steel 1.1730.

Version:

Clamping module contact faces hardened and ground.
Baseplate ground on both sides.

Sample order:

K1009.1000149199

Note:

Pre-assembled multi-clamping stations with integrated UNILOCK clamping modules ERGO 138. The clamping stations can be screwed directly onto machine tables or secured using claw clamps.

Standard hole patterns on the back for fastening are pre-centred.

The clamping stations can be aligned using the 14H7 reference holes.

The clamping modules are actuated using a central pneumatic connection.

The high clamping forces are generated by the integrated spring package. (the unit clamps in while not under pressure).

Clamping is released pneumatically.

The following clamping forces are possible with the UNILOCK clamping pin in conjunction with M10, M12, M16 fastening screws:

- Clamping force (M10) 35,000 N/module
 - Clamping force (M12) 50,000 N/module
 - Clamping force (M16) 75,000 N/module
- Clamping force with DIN EN ISO 4762 -12.9 cap screws

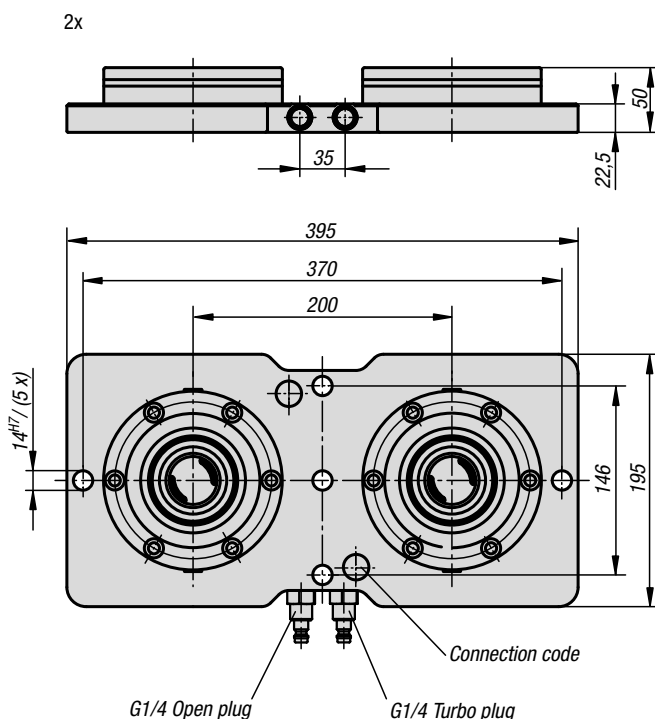
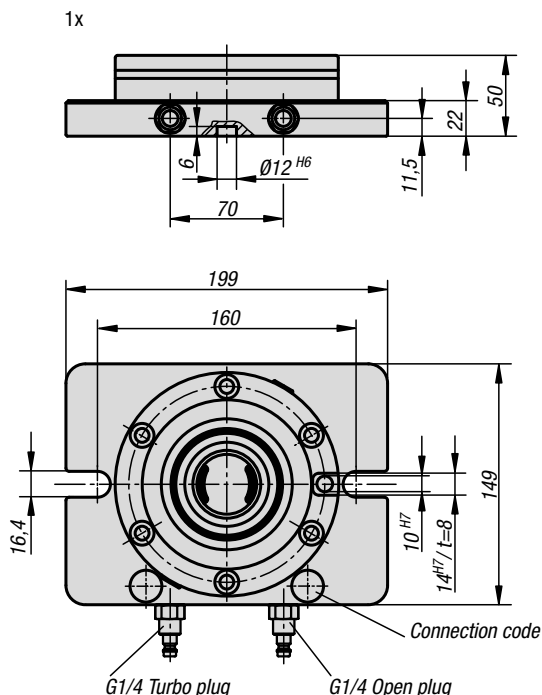
Clamping pins may only be clamped in conjunction with a mounted interchangeable unit in the clamping module.

On request:

Clamping station in special dimensions.

Technical data:

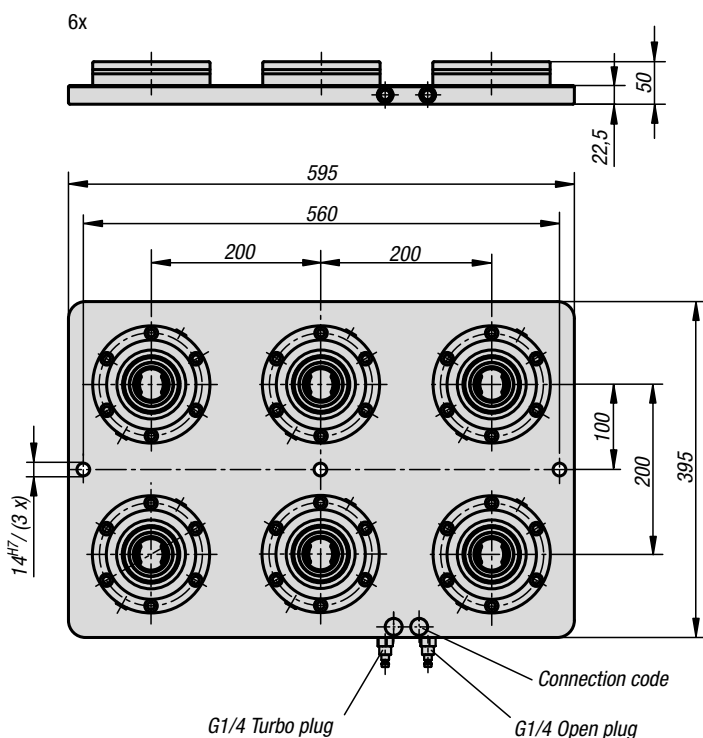
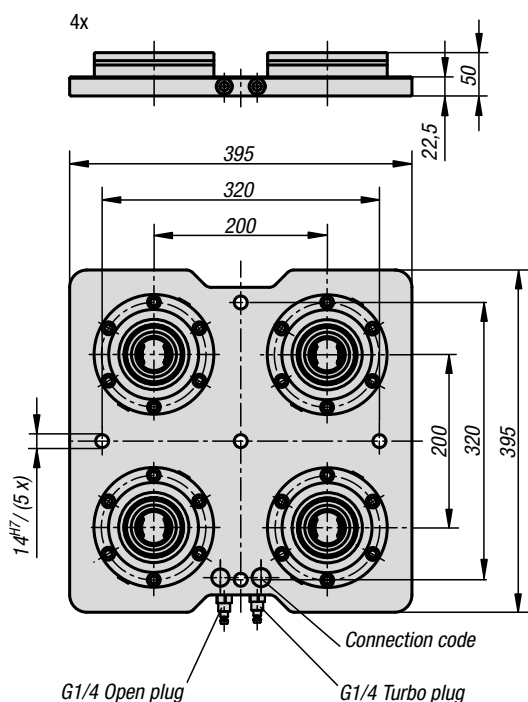
- Retraction force with turbo from 18 kN/module
- Opening pressure: 6 bar, lubricated air.
- Turbo pressure: 6 bar.
- Air connection: G1/4
- Repeat accuracy ≤ 0.005 mm
- Reference holes 14H7 to align the clamping plate.



KIPP UNILOCK clamping station

Order No.	Version 2	Form	Form-Type	weight kg
K1009.1000149199	1x	A	without rotation lock	7,08
K1009.10001491991	1x	B	with rotation lock	7,2
K1009.2200395195	2x	A	without rotation lock	17,62

UNILOCK clamping station



Material:

Clamping module high-carbon steel.
Baseplate steel 1.1730.

Version:

Clamping module contact faces hardened and ground.
Baseplate ground on both sides.

Sample order:

K1009.4200395395

Note:

Pre-assembled multi-clamping stations with integrated UNILOCK clamping modules ERGO 138. The clamping stations can be screwed directly onto machine tables or secured using claw clamps.

Standard hole patterns on the back for fastening are pre-centred.

The clamping stations can be aligned using the 14H7 reference holes.

The clamping modules are actuated using a central pneumatic connection.

The high clamping forces are generated by the integrated spring package. (the unit clamps in while not under pressure).

Clamping is released pneumatically.

The following clamping forces are possible with the UNILOCK clamping pin in conjunction with M10, M12, M16 fastening screws:

- Clamping force (M10) 35,000 N/module
- Clamping force (M12) 50,000 N/module
- Clamping force (M16) 75,000 N/module

Clamping force with DIN EN ISO 4762 -12.9 cap screws

Clamping pins may only be clamped in conjunction with a mounted interchangeable unit in the clamping module.

On request:

Clamping station in special dimensions.

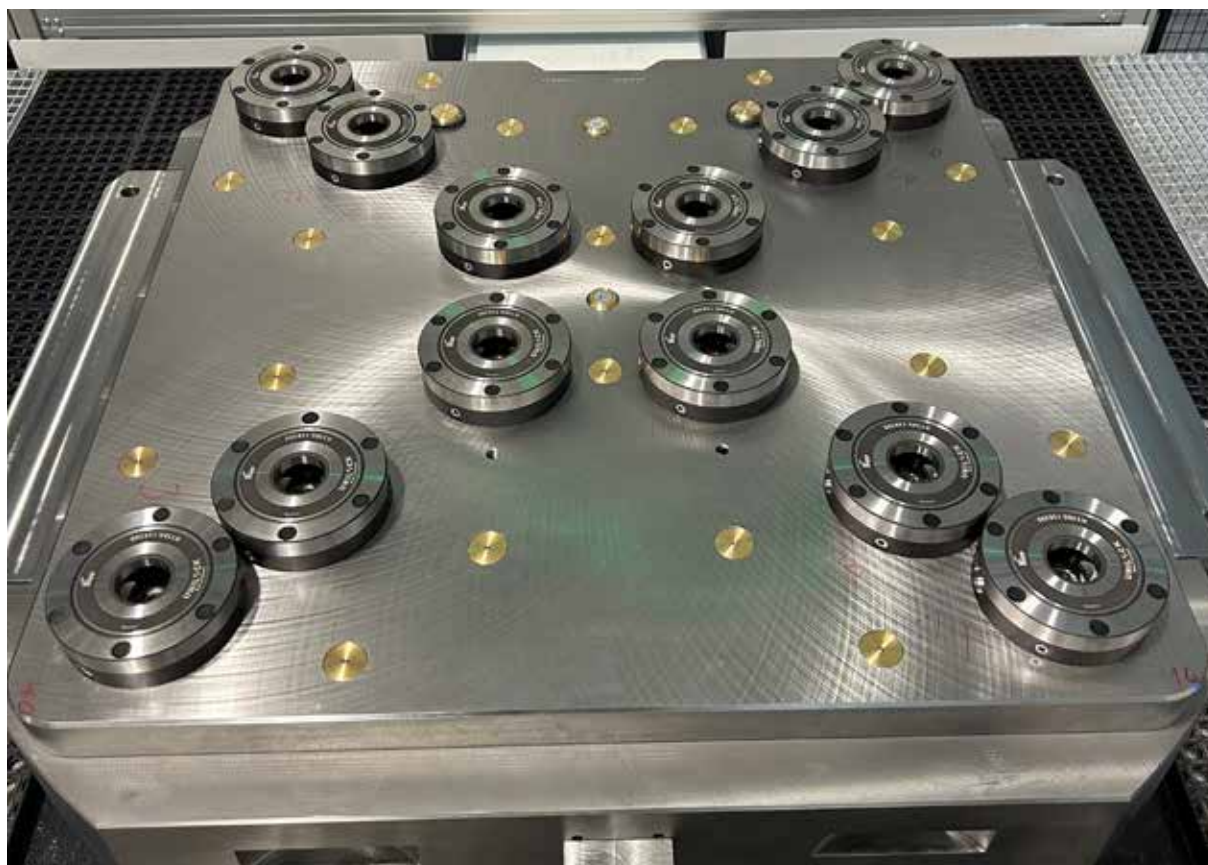
Technical data:

- Retraction force with turbo from 18 kN/module
- Opening pressure: 6 bar, lubricated air.
- Turbo pressure: 6 bar.
- Air connection: G1/4
- Repeat accuracy ≤ 0.005 mm
- Reference holes 14H7 to align the clamping plate.

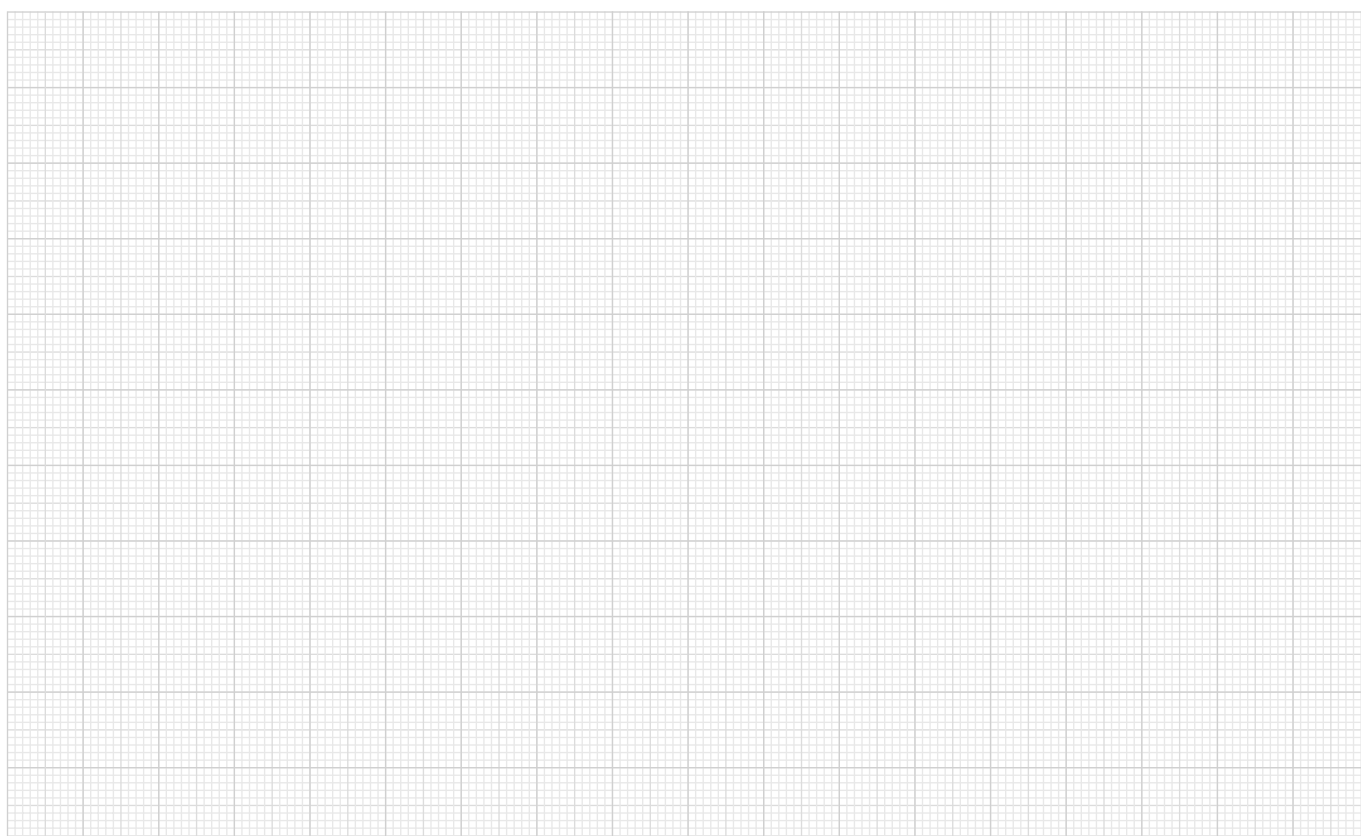
KIPP UNILOCK clamping station

Order No.	Version 2	Form	Form-Type	weight kg
K1009.4200395395	4x	A	without rotation lock	35
K1009.6200595395	6x	A	without rotation lock	52,2





Notes



UNILOCK clamping module

ERGO 138



Material:

Carbon steel.

Version:

Contact faces hardened and ground.

Sample order:

K1003.138280

Note:

The UNILOCK clamp modules can be mounted in any position, with or without projection on machine tables or as part of fixtures (plates, cubes, towers etc). The pneumatic control of the clamping modules can be carried out independently or together, thus an individual zero-point clamping system can be fabricated. The modular design allows the number of and distance between the clamp modules to be ideally adjusted to suit the clamping task. The set-up times are significantly reduced and so the running times of the machines are extended.

A very low installation height of the clamping modules is achieved by the compact design of the flat clamping slides.

The high clamping forces are generated by the integrated spring package (the unit is clamped without constant air pressure).

The release process is pneumatic.

Even in the event of a pressure drop or fluctuations in the compressed air supply, the full traction force is maintained.

All clamping modules have a turbo function included as standard. A short air impulse at the „Turbo“ air port increases the normal traction force, achieved by the springs, significantly. Consequently, the clamping modules can also be used for heavy-feed machining.

Use of the turbo function for maximum traction force is recommended.

The following clamping forces are possible with the UNILOCK clamping pin in conjunction with M10, M12, M16 fastening screws:

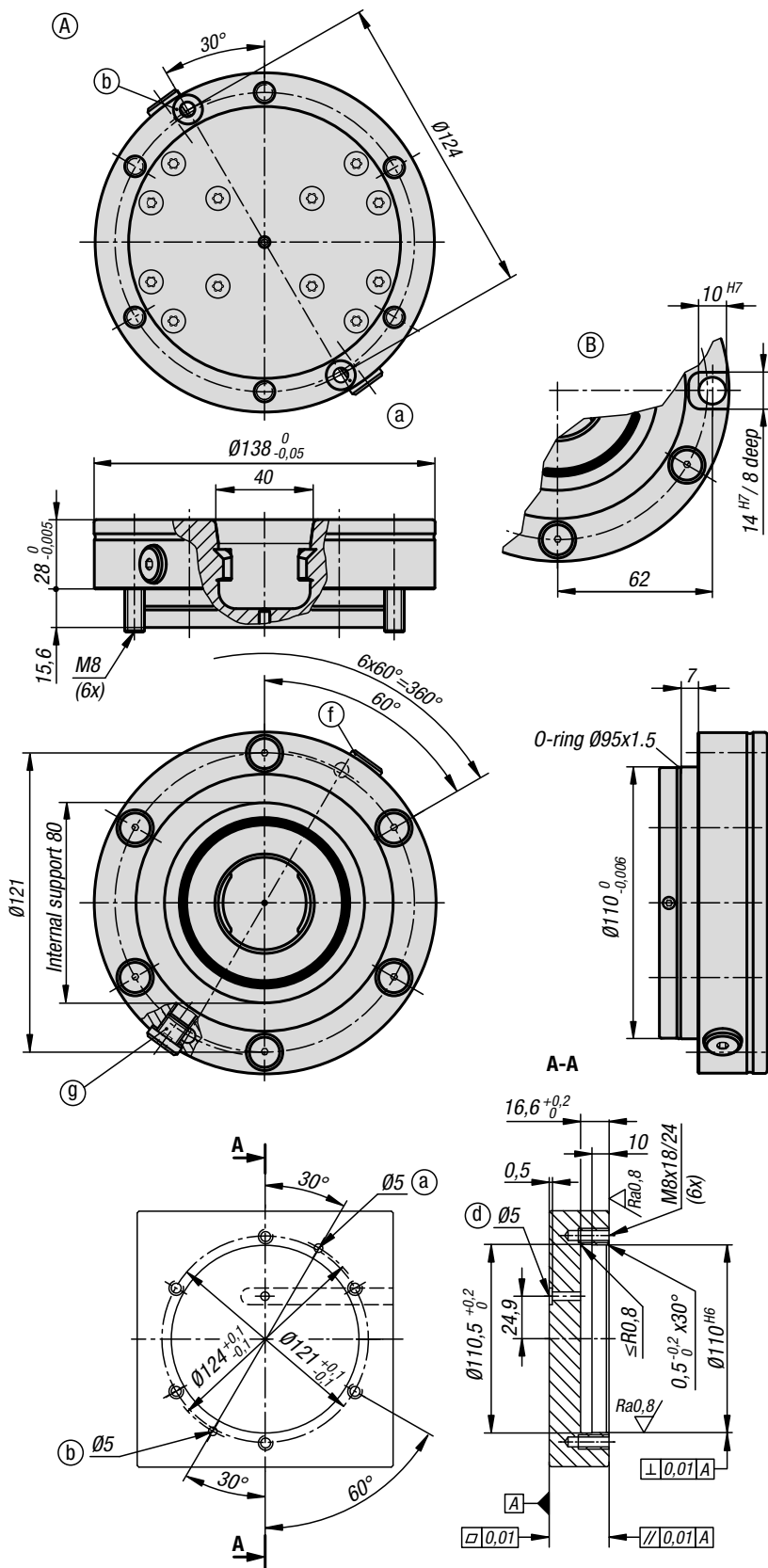
- Clamping force (M10) 35,000 N
- Clamping force (M12) 50,000 N
- Clamping force (M16) 75,000 N

Clamping force with DIN EN ISO 4762 -12.9 cap screws.

Clamping pins may only be clamped in conjunction with a mounted interchangeable unit in the clamping module.

A consistent clamping bolt size for all clamping modules and compatibility with the 5-axis module clamping system 80 guarantees diverse combinations of application possibilities.

The ERGO clamping modules are available with and without rotation lock.

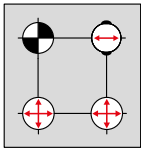


KIPP UNILOCK clamping module ERGO 138

Order No.	Form	Form-Type	Operating pressure bar	Retraction force with turbo kN	weight kg
K1003.138280	A	without rotation lock	6	18	3,56
K1003.138281	B	with rotation lock	6	18	3,52

UNILOCK clamping module

ERGO 138



-  Centring pins = Form A fixes in x and y axis (reference point)
-  Adjustment pins = Form B fixes the free axis (bayonet pin)
-  Tightening bolts = Form C Pins with undersize (no centring function, clamping only)

Advantages:

- Compact flat design through flat slides.
- Turbo-function as standard.
- Repeat accuracy ≤ 0.005 mm.
- Positioning via short taper.
- High traction force.
- Setup time optimisation.

Supplied with:

- 1x clamping module.
- 1x O-ring $\varnothing 95 \times 1,5$.
- 2x O-rings $\varnothing 8 \times 2$ for media feed.
- 6x fastening screws.
- 6x cover caps for fastening screws.

Accessories:

- Clamping pin K0967.
- Protective bolt for clamping module K1010.
- Protective plug for clamping module K1010.

Attention:

- Recommended nominal hose size:
- Up to four clamping modules, hose size 6 mm.
- From five clamping modules, hose size 8 mm.

Functional principle:

The clamping modules can be connected either via the connections on the base plate or directly on the clamping module via the threaded port.

In order to guarantee the function of the clamping slides, the venting of the upper piston chamber must be carried out via the „Turbo“ air port.

This can be implemented through one of four options:

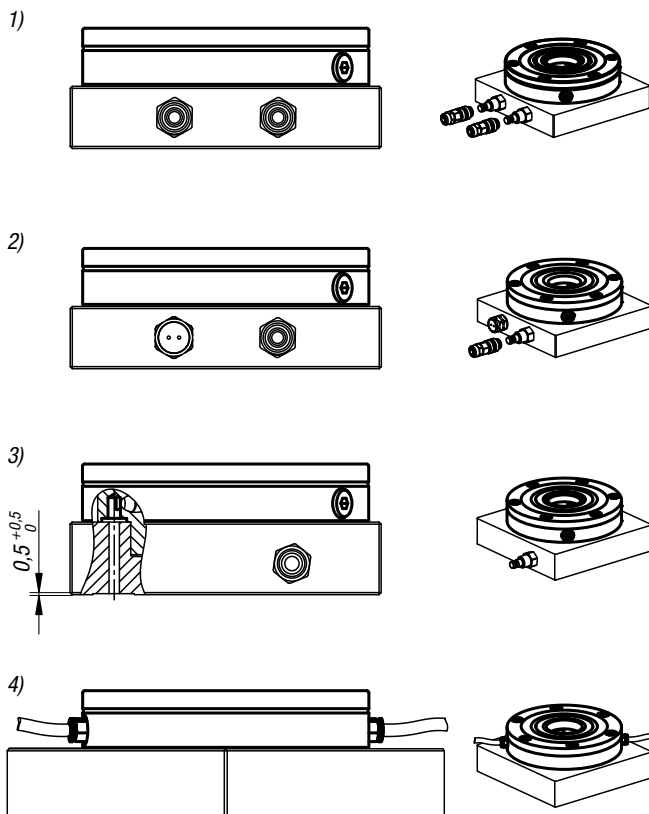
- 1) Connection and use of the turbo function in the base plate next to the „Open“ port. This also enables the clamping module to be additionally tensioned with a short air pulse if required. (recommended)
- 2) Simple hole in the baseplate connected to the turbo port to permit air to escape. To seal the bore against dirt, use a vent screw instead of a connection with a shut-off function.
- 3) In the third case, the piston chamber must be vented via a bore that is connected below the baseplate via a transverse slot. This bore must join with the turbo port so that venting can take place.
- 4) If the clamping module is controlled from the side, the one vent screw must also be inserted at this point.

Technical data:

- Traction force with turbo from 18 kN.
- System pressure: 6 bar, lubricated air.
- Repeat accuracy ≤ 0.005 mm.
- Temperature range 5° to 60° C.
- Optional port for blow-out air.

Drawing reference:

- a) Underside hose-less port (open)
O-ring $\varnothing 8 \times 2$
- b) Underside hose-less port (turbo)
O-ring $\varnothing 8 \times 2$
- c) Centring rim
- d) Vent
- f) Lateral connection G1/8 (actuator open)
- g) Lateral connection G1/8 (turbo)



UNILOCK clamping module

ESM 138-C



Material:

Steel.

Version:

Contact faces case-hardened and ground.

Sample order:

K1385.138390

Note:

The UNILOCK clamp modules can be mounted in any position, with or without projection on machine tables or as part of fixtures (plates, cubes, towers etc). The pneumatic control of the clamping modules can be carried out independently or together, thus an individual zero-point clamping system can be fabricated. The modular design allows the number of and distance between the clamp modules to be ideally adjusted to suit the clamping task. The set-up times are significantly reduced and so the running times of the machines are extended.

The high clamping forces are generated by the integrated spring package (the unit is clamped without constant air pressure).

The release process is pneumatic.

Even in the event of a pressure drop or fluctuations in the compressed air supply, the full traction force is maintained.

All clamping modules have a turbo function included as standard. A short air impulse at the „Turbo“ air port increases the normal traction force, achieved by the springs, significantly. Consequently, the clamping modules can also be used for heavy-feed machining.

Use of the turbo function for maximum traction force is recommended.

The following clamping forces are possible with the UNILOCK clamping pin in conjunction with M10, M12, M16 fastening screws:

- Clamping force (M10) 35,000 N

- Clamping force (M12) 50,000 N

- Clamping force (M16) 75,000 N

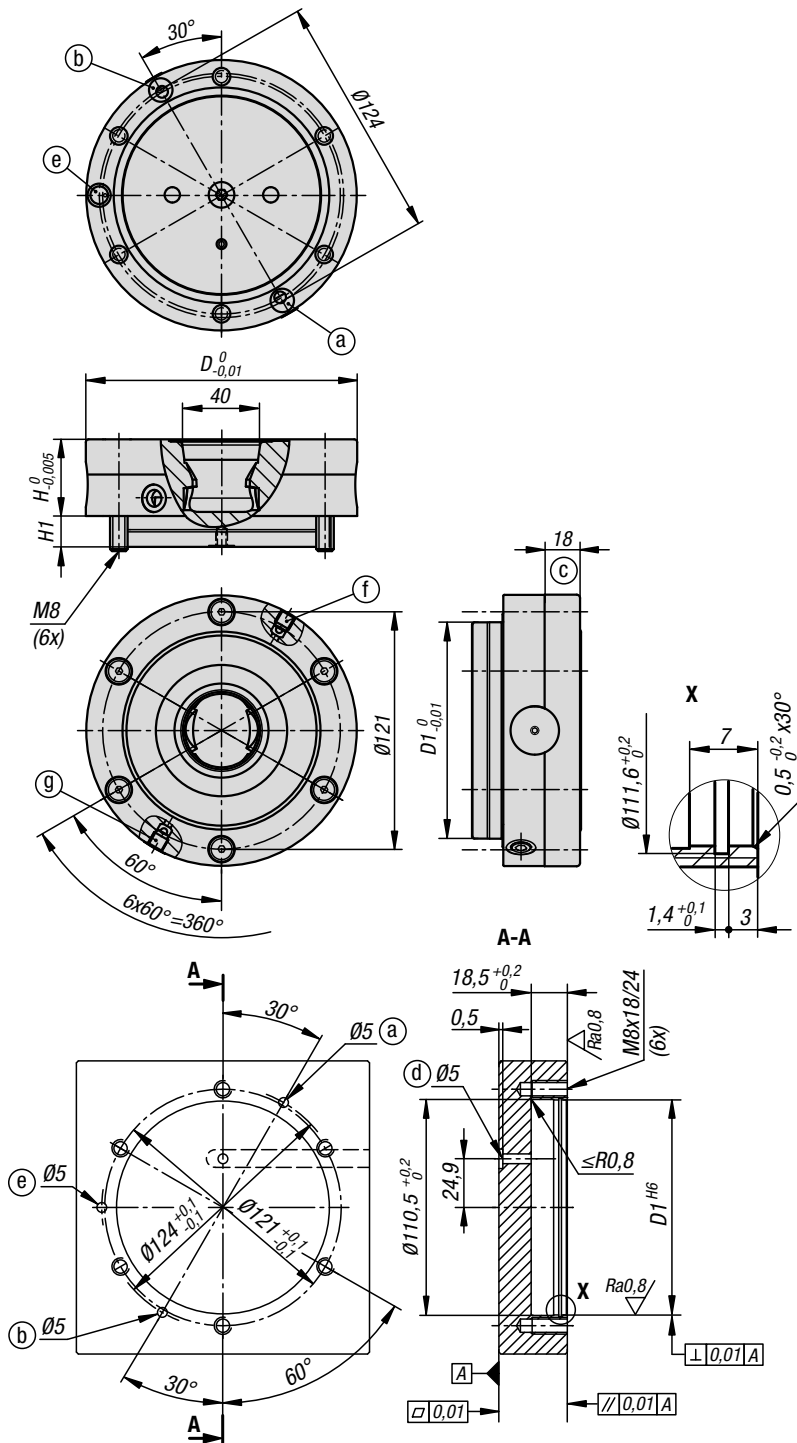
Clamping force with DIN EN ISO 4762 - 12.9 cap screws

Clamping pins may only be clamped in conjunction with a mounted interchangeable unit in the clamping module.

A consistent clamping bolt size for all clamping modules and compatibility with the 5-axis module clamping system 80 guarantees diverse combinations of application possibilities.

Advantages:

- Automation-capable through various query options.
- Turbo-function as standard.
- Repeat accuracy ≤ 0.005 mm.
- Positioning via short taper.
- High traction force.
- Setup time optimisation.

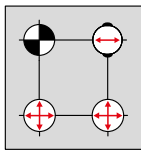


KIPP UNILOCK clamping module ESM 138-C

Order No.	Form	Form-Type	D	D1	H	H1	Operating pressure bar	Retraction force with turbo kN
K1385.138390	A	without rotation lock	138	110	39	16,7	6	25

UNILOCK clamping module

ESM 138-C



-  Centring pins = Form A fixes in x and y axis (reference point)
-  Adjustment pins = Form B fixes the free axis (bayonet pin)
-  Tightening bolts = Form C Pins with undersize (no centring function, clamping only)

Supplied with:

- 1x clamping module.
- 1x O-ring Ø110x1.
- 3x O-rings Ø9x1.5 for media feed.
- 6x fastening screws.
- 6x cover caps for fastening screws.

Accessories:

- Clamping pin K0967.
- Protective bolt for clamping module K1010.
- Protective plug for clamping module K1010.

Attention:

- Recommended nominal hose size:
- Up to four clamping modules, hose size 6 mm.
- From five clamping modules, hose size 8 mm.

Functional principle:

The clamping modules can be connected either via the connections on the base plate or directly on the clamping module via the threaded port.

In order to guarantee the function of the clamping slides, the venting of the upper piston chamber must be carried out via the „Turbo“ air port.

This can be implemented through one of four options:

- 1) Connection and use of the turbo function in the base plate next to the „Open“ port. This also enables the clamping module to be additionally tensioned with a short air pulse if required. (recommended)
- 2) Simple hole in the baseplate connected to the turbo port to permit air to escape. To seal the bore against dirt, use a vent screw instead of a connection with a shut-off function.
- 3) In the third case, the piston chamber must be vented via a bore that is connected below the baseplate via a transverse slot. This bore must join with the turbo port so that venting can take place.
- 4) If the clamping module is controlled from the side, the one vent screw must also be inserted at this point.



Technical data:

- Traction force with turbo from 25 kN.
- System pressure: 6 bar, lubricated air.
- Repeat accuracy ≤ 0.005 mm.
- Temperature range 5° to 60° C.
- Optional port for blow-out air.
- The third air port can be used as a query function to report if clamping slides are open or closed.

Drawing reference:

- a) Underside hose-less port (open)
O-ring Ø9x1.5
- b) Underside hose-less port (turbo)
O-ring Ø9x1.5
- c) Centring rim
- d) Vent
- e) Underside hose-less port
(dynamic pressure detection / clamp slider position)
O-ring Ø9x1.5
- f) Lateral connection G1/8 (actuator open)
- g) Lateral connection G1/8 (turbo)

