

ICEVICE® Freeze clamp technology

ICEVICE®
ICEVICE® AFP
ICEVICE® Peltier Basic

When to use this technology

To clamp small or intricate workpieces without any tension yet accurately.

For machining mechanically or to separate small parts from a large unity of raw material.

Favoured by the following industries;

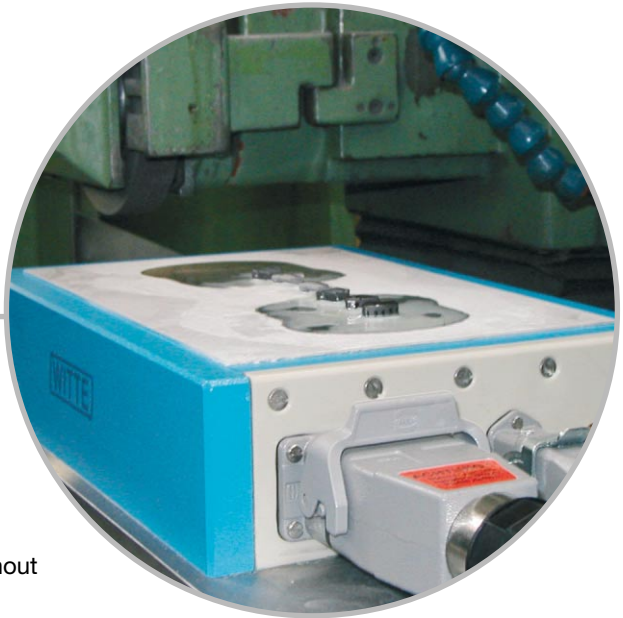
- Electronics / Semi-conductors
- Ceramics
- Optics, Glass / Quarz treatment
- Metals, clocks and watches
- Medicinal tools and laboratory equipment
- For universities and research.

Advantages

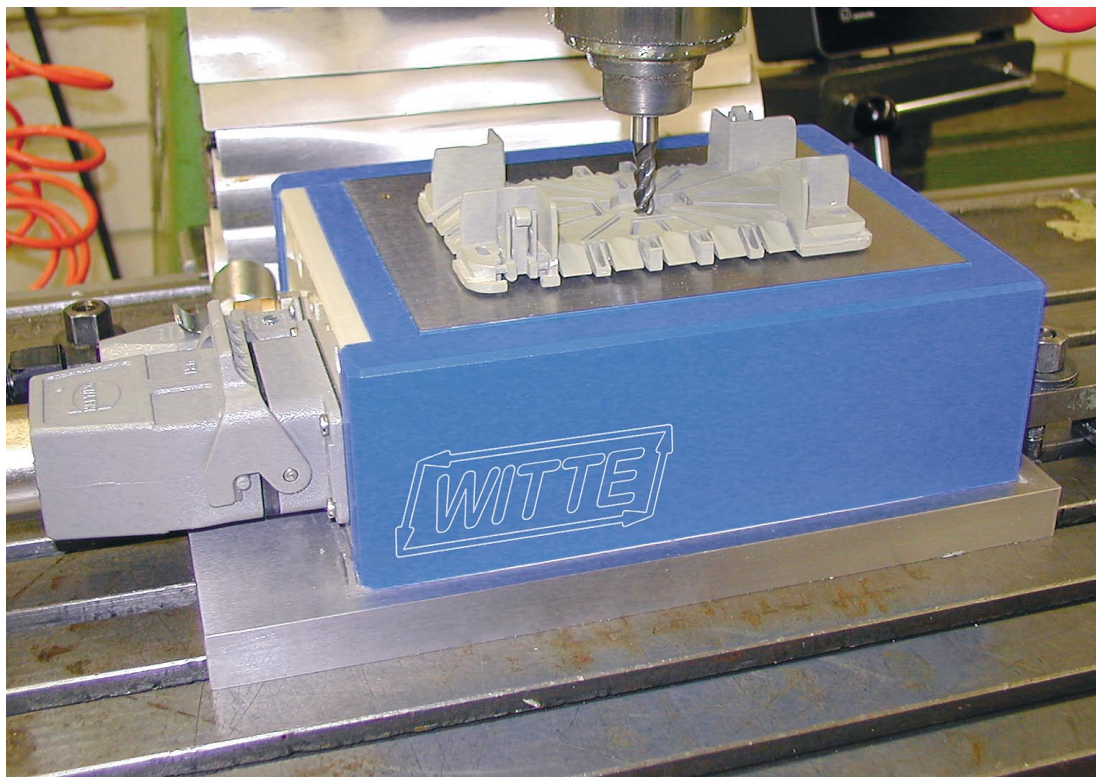
- Very precise up to $\pm 3\mu\text{m}$
- No tension builds up within the workpiece
- Short clamping time +/- 90 seconds.

Handling

- Easy and quick
- With the use of workpiece specific adapter plates a high degree of repeatability in positioning and clamping is achieved



ICEVICE® freeze chucks



Clamping by freezing on a thin water film

During clamping with ICEVICE systems workpieces are frozen tight onto a chuck for machining by a capillary film of water. Also for relatively uneven workpieces the gaps filled completely with water and thereby frozen. The adhesion, detaching and shearing forces are strong enough to be able to mill, grind, drill or polish parts.

ICEVICE freeze plate with ca. 400 workpieces frozen on the surface



ICEVICE® supply unit

ICEVICE® supply unit with two regular cooling cycles for using two freeze plates independantly; While one freeze plate is being used for machining the other can be prepared. After machining is finished the plate can be switched to thaw and the workpiece removed.

| No. | wxhxt | Connection | kg |
|-------|-------------|----------------------------------|----|
| 91439 | 540x770x760 | 400V/50Hz | 65 |
| 92365 | 540x770x760 | 400V/50Hz 2-3kW | 65 |
| 92366 | 540x770x760 | 400V/50Hz, Prec. control unit | 65 |

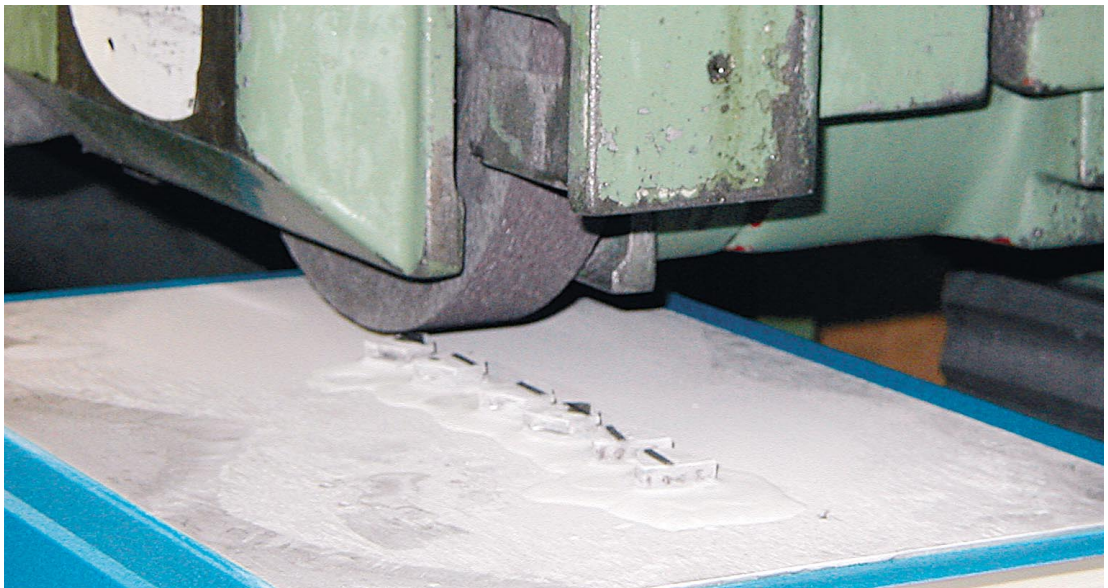
Unit with simple connection for only one ice chuck max. size 150x250mm

| No. | wxhxt | Connection | kg |
|-------|-------------|------------|----|
| 88156 | 420x850x680 | 400V/50Hz | 50 |

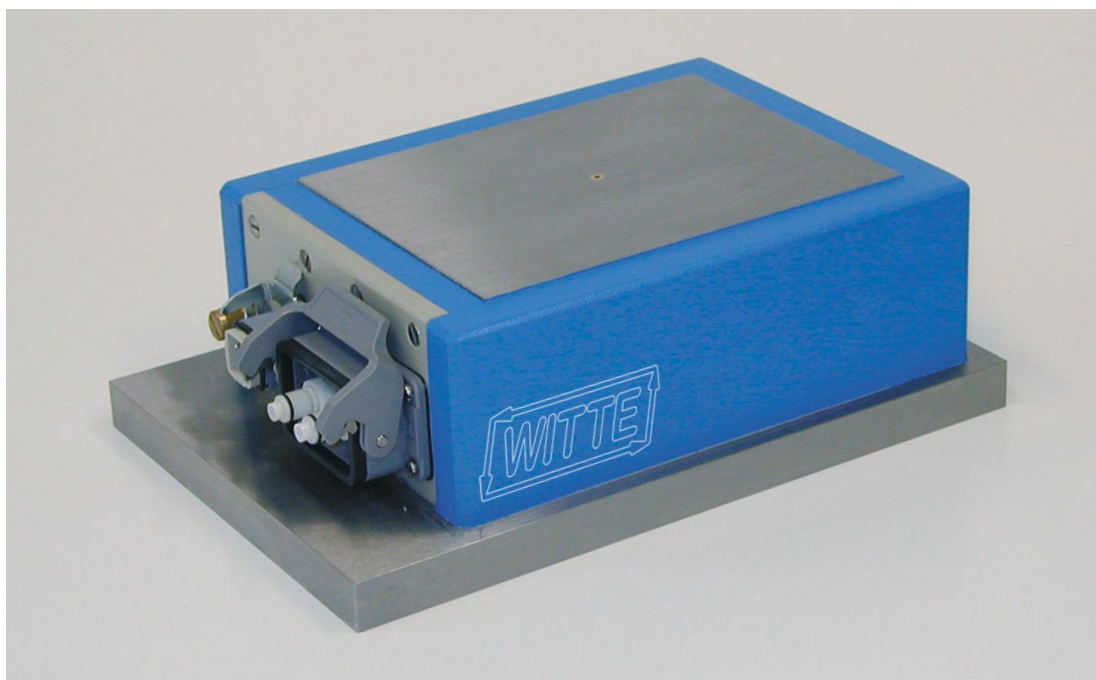


Supply includes:

- 4m electric cable
- 3m coolant connection



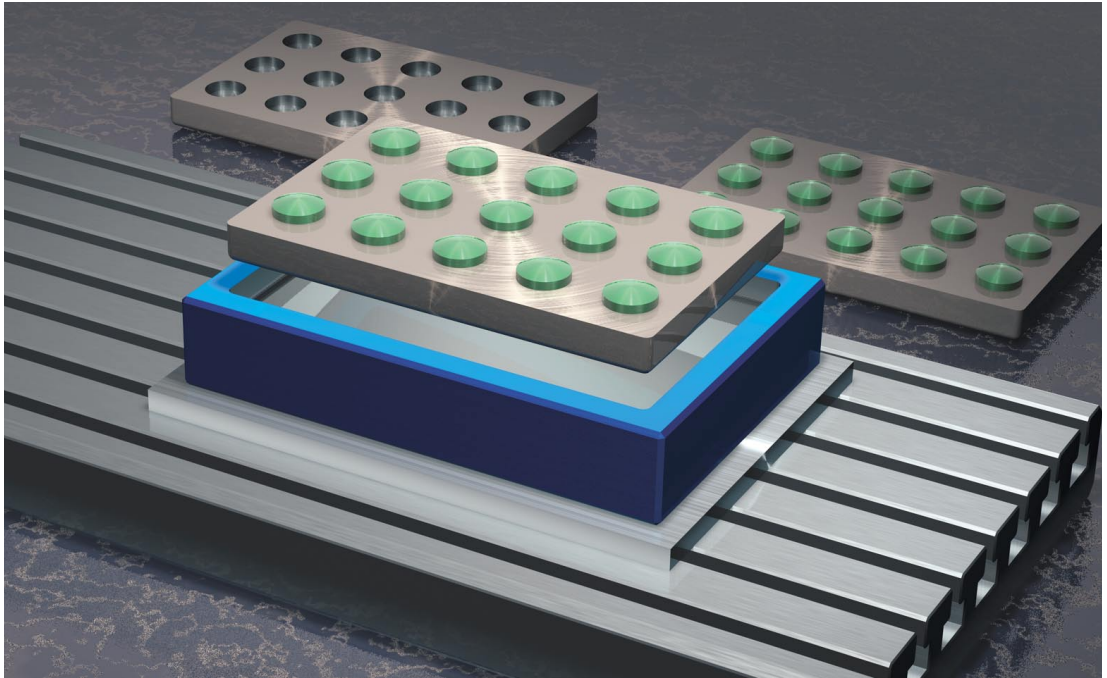
ICEVICE® freeze chucks



ICEVICE®-freeze plate with an even contact surface for freeze-clamping flat-lying workpieces

| No. | lxwxh | area dm ² |
|-------|------------------------------------|----------------------|
| 91440 | 125x150x105 | 1,88 |
| 91441 | 125x200x105 | 2,50 |
| 91442 | 125x250x105 | 3,75 |
| 91443 | 150x150x105 | 2,25 |
| 91444 | 150x200x105 | 3,00 |
| 91445 | 150x250x105 | 3,75 |
| 91446 | 150x300x105 | 4,50 |
| 91447 | 200x200x105 | 4,00 |
| 91448 | 200x250x105 | 5,00 |
| 91449 | 200x300x105 | 6,00 |
| 91450 | 200x500x105 | 10,00 |
| 91451 | 320x320x105 | 10,24 |
| 91640 | Additional vac. suction connection | |

Vacuum adapter plates for ICEVICE®



| No. | Name | Dim |
|--------------|----------------------|---------|
| 34992 | Vacuum adapter plate | 125x200 |
| 34993 | Vacuum adapter plate | 125x300 |
| 34994 | Vacuum adapter plate | 150x150 |
| 34995 | Vacuum adapter plate | 150x200 |
| 34996 | Vacuum adapter plate | 150x250 |
| 34997 | Vacuum adapter plate | 150x300 |
| 34998 | Vacuum adapter plate | 200x200 |
| 34999 | Vacuum adapter plate | 200x250 |
| 34888 | Vacuum adapter plate | 200x300 |
| 51000 | Vacuum adapter plate | 200x500 |
| 51001 | Vacuum adapter plate | 400x400 |

These plates with workpiece specific applications can be clamped to the ICEVICE® plate by means of a vacuum after which the workpiece is frozen to the plate for machining. Further adapter plates can be prepared thus minimizing set-up times

ICEVICE®-AFP Freeze plates

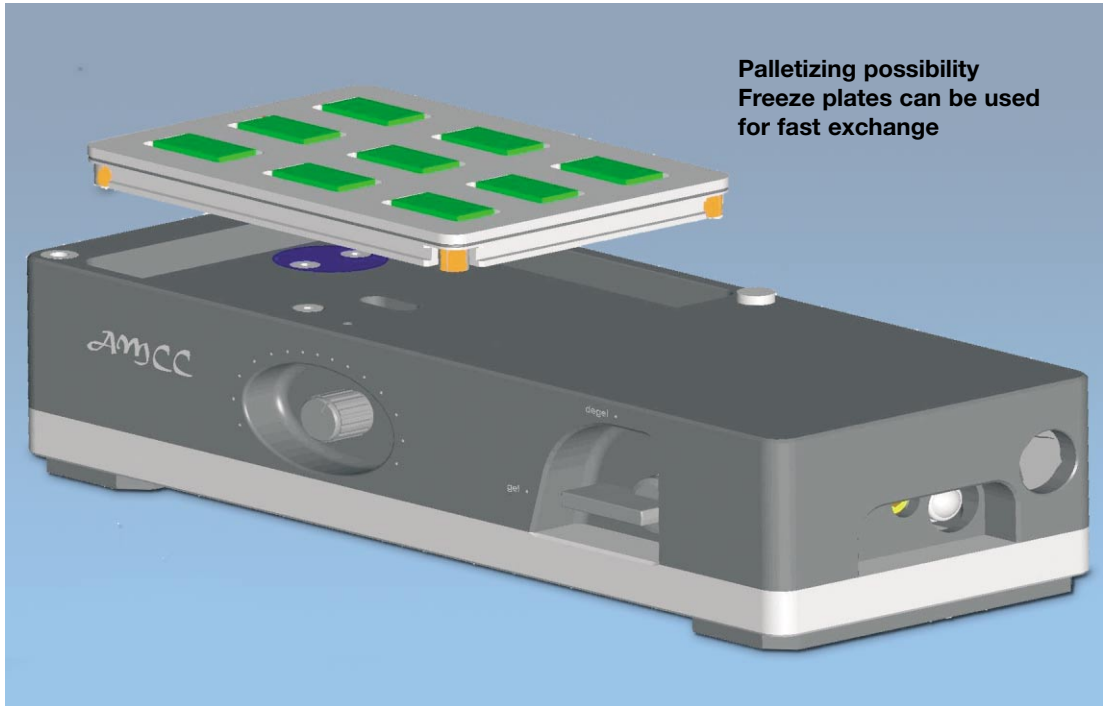


Cooling down with compressed air

Fragile, unstable parts are clamped gently and securely.
No deformation or breaks arise during clamping procedure.

Almost all materials can be clamped. Composites, graphites, ceramic, rubber and also difficult honeycomb structures, which usually have complete hollows, can be clamped easily with a clamping force of upto approx. 140N/cm².

ICEVICE®-AFP Freeze plates



Palletizing possibility
Freeze plates can be used
for fast exchange

| No | Name | dim |
|-------|--------------------------|-----------|
| 91641 | Freeze plate AFP-140 | 100 x 140 |
| 91642 | Freeze plate AFP-250 | 150 x 250 |
| 92367 | Adapter plate f AFP-140 | 7x100x140 |
| 13052 | Silencer | |
| 92540 | Replacement freeze chuck | ø20mm |
| 92541 | Freeze chuck AFC-55 | ø55mm |
| 92542 | Replacement freeze chuck | ø55mm |
| 92543 | Freeze chuck AFC-80 | ø80mm |



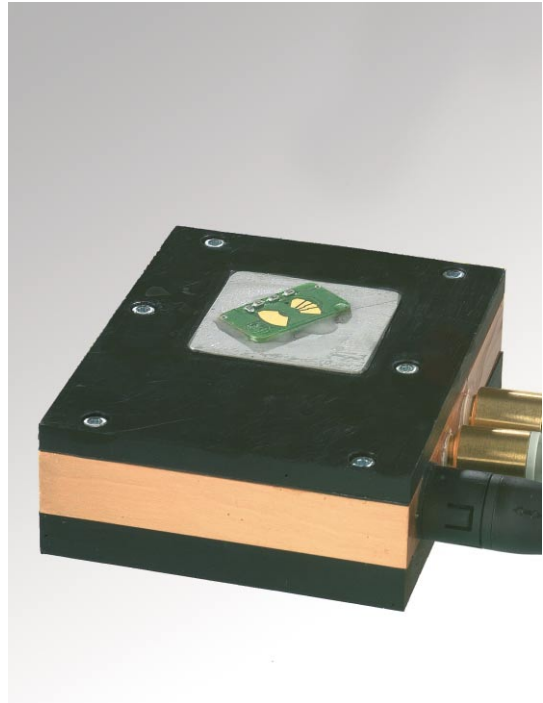
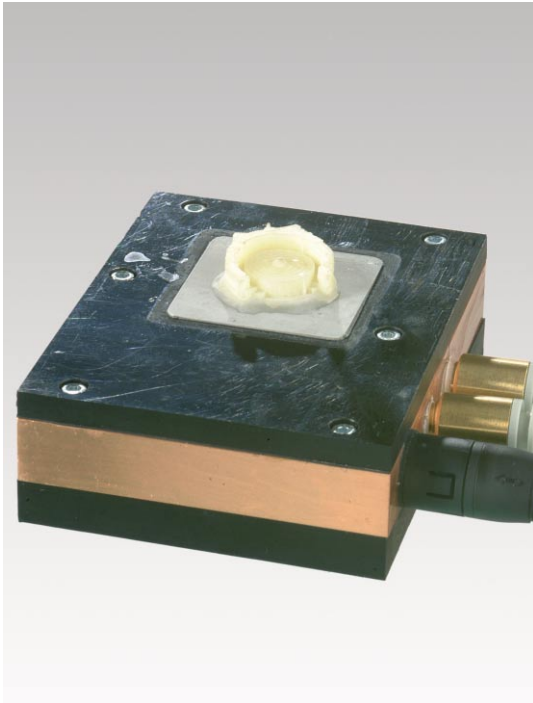
Fixture for holding workpieces
on lathe. Can be used for varying
diameters



Silencer # 13052

Also available in special sizes!

ICEVICE®-Peltier Basic



Freezing with an electric current

Freezing with an electric current. ICEVICE® Peltierplates are supplied with an Electric current using a separate module which then cools as soon as an electrical current is passed into the Peltier plate.

These plates can be switched on or off with the integrated switch showing freeze or thaw.

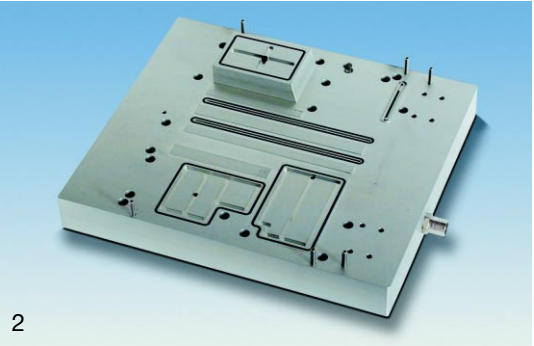
Single ICEVICE- Peltier plates are available as well as the controls or as complete sets.



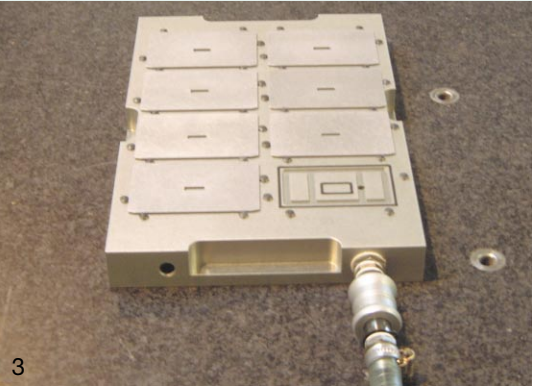
| No. | Name | Clamp. area |
|-------|-----------------------|-------------|
| 94357 | ICEVICE® Peltierplate | 40x40 |
| 94358 | ICEVICE® Peltierplate | 80x80 |



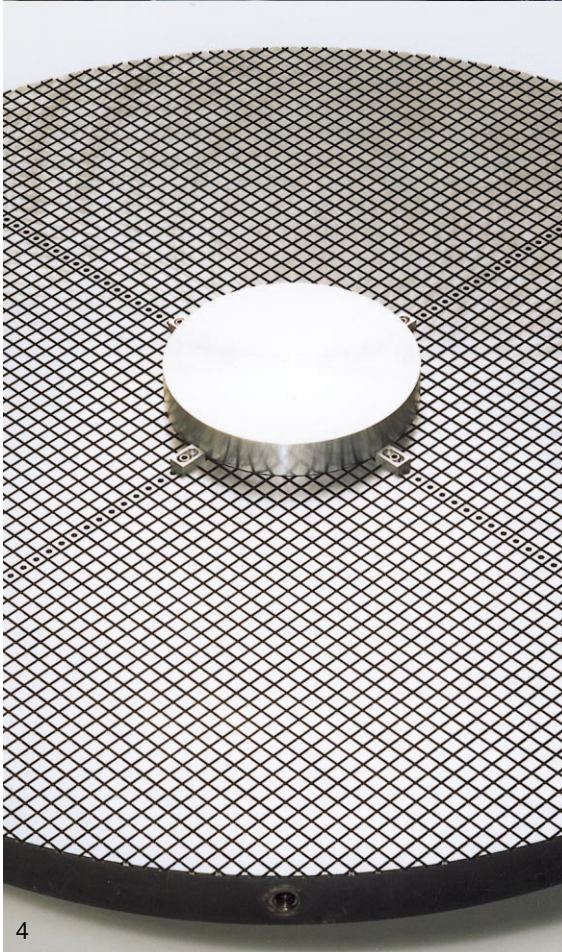
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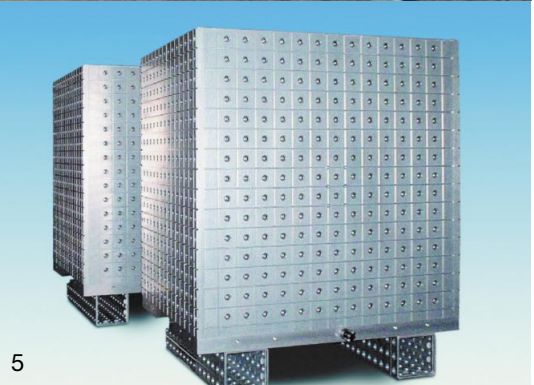
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1. Workpieces frozen on ICEVICE™
2. Vacuum plate for clamping the housing of a Lap-top
3. Clamping fixture for micro-chip cards
4. Circular chuck \varnothing 1500 mm
5. Vacuum cube with integrated storage tank and distribution manifold, approx. 800x800x900mm, used on machining centre with automatic 24 hour pallet exchange system. Parts held with vacuum during machining, transport and standing times.