

5-axis clamps

27592

5-axis clamp, TCA 70

ATORN®

Design

- Guides hardened and ground on all sides
- Mechanical clamping system without power transmission with manual control
- Centric clamping with two movable jaws

Advantage:

- Repeat accuracy 0.02 mm with the same clamping force/clamping properties
- Symmetrical design = workpiece is centred and parallel
- Telescopic spindle; interference contour remains unchanged
- Centric clamping and simple programming without zero offset
- Integrated scale ring for fine adjustment of the centre position
- Material allowance is distributed symmetrically
- Conventional clamping and grip clamping possible without pre-stamping
- Support height of the workpiece 192 mm
- Quick-change jaw system without tools, using quick-release fastener
- Change time per pair of jaws less than 10 seconds
- Jaws reversible for max./min. clamping widths with one pair of jaws
- Location holes for ATORN zero-point clamping system, depth gauge 200 mm, as standard
- Mounting on machine table with through bolts/fitting screws in 50/63 mm increments
- Fastening also possible with adjustable clamps
- Low weight (without jaws):
TCA 70 K (27592 101) = 17.5 kg
TCA 70 M (27592 102) = 19.5 kg

Scope of delivery:

- ATORN TCA 70 without jaws
- Quick start guide
- Hook eye for transport by crane hook
- Hand crank for presetting with hexagon socket AF 14 mm

Applications

Ideal for use on 5-axis machining centres. Operation with torque wrench/max. 45 Nm = **30 kN clamping force.**

Note:

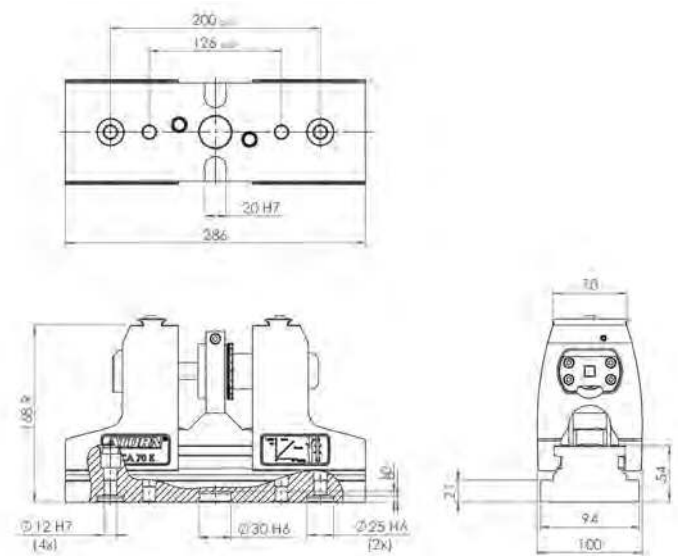
- For suitable torque wrench, 1/2 inch, see art. no. 55640 204.
- For suitable hexagon screwdriver bit see art. no. 51424 120.

NEW



27592 101

Quick jaw change system



| Type | Total length mm | Basic body height mm | Workpiece support height smooth mm/grip mm | Clamping width smooth/grip mm | Groove widths mm (H7) | Max. clamping force kN | Max. required torque Nm | 27592 | ... |
|----------|-----------------|----------------------|--|-------------------------------|-----------------------|------------------------|-------------------------|-------|-----|
| TCA 70 K | 286 | 168.9 | 185/191 / 185/192 | 9-135* / 9-134* | 20 | 30 | 45 | | 101 |
| TCA 70 M | 351 | 168.9 | 185/191 / 185/192 | 42-200* / 42-199* | 20 | 30 | 45 | | 102 |

*Different clamping steps

For accessories see next page ▶

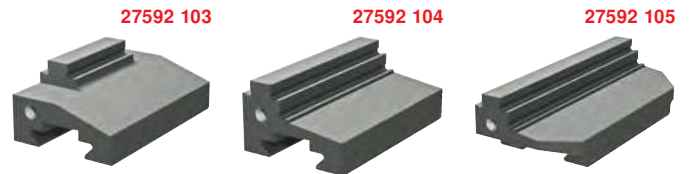
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ATORN®**NEW****Stepped jaws****27592 103-105****Stepped jaws**

- Steps are hardened and coated
- For parallel workpieces
- Contents: 1 piece

Stepped jaw (2nd clamping)

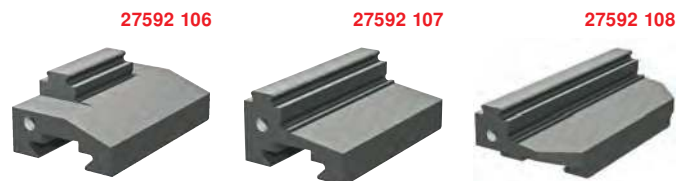
| Jaw width mm | 27592 | ... |
|-----------------|-------|-----|
| 38 | 103 | |
| 70 | 104 | |
| 100 | 105 | |

**Grip jaws****27592 106-108****Grip jaws**

- Clamping of unmachined parts
- Integrated row of grips in horizontal position to prevent vibration when parts are placed on edge
- Additional clamping surfaces ground on both sides
- Minimum lost clamping edge 4 mm
- Suitable for material up to 1000 N/mm²
- Contents: 1 piece

Grip jaw (1st clamping)

| Jaw width mm | 27592 | ... |
|-----------------|-------|-----|
| 38 | 106 | |
| 70 | 107 | |
| 100 | 108 | |

**Prism jaw****27592 109****Vee block jaw**

- Clamping width at TCA 70 K (27592 101):
horizontal: 10–40 mm
vertical: 16 - 80 mm
- Clamping width at TCA 70 M (27592 102):
horizontal: 10–40 mm
vertical: 47 - 110 mm
- Contents: 1 piece

Vee block jaw

| Jaw width mm | 27592 | ... |
|-----------------|-------|-----|
| 70 | 109 | |

**Soft jaws****27592 110-111****Soft jaws**

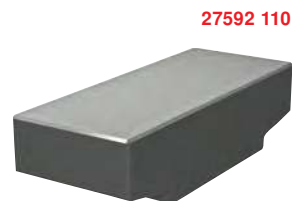
- For self-production of special jaws
- Max. machining depth 15 mm
- Contents: 1 piece

27592 110**Design**Material: Case-hardening steel
21MnCr5G**27592 111****Design**

Material: AlZn5.5MgCu

Soft jaw

| Jaw width mm | Material | 27592 | ... |
|-----------------|-----------|-------|-----|
| 120 | Steel | 110 | |
| 120 | Aluminium | 111 | |



Continued ▶

Continued ▶



Workpiece stops

27592 112

Design

- Mechanical, complete

27592 113

Design

- Magnetic, complete

| | | |
|------------|-------|-----|
| Version | 27592 | ... |
| Mechanical | 112 | |
| Magnetic | 113 | |



27592 112



27592 113



Adjustable clamps (pair)

27592 114

- For mounting the clamp on the machine table

- Delivery: 1 pair

| | | |
|------------|-------|-----|
| Thread | 27592 | ... |
| M 10/12/16 | 114 | |

27592 114



Alignment and fixing sets

27592 115-117

For aligning (positioning) and mounting the clamp on a pallet or machine table.

| Groove size mm | Thread | 27592 | ... |
|----------------|--------|-------|-----|
| 14 | M 12 | 115 | |
| 16 | M 12 | 116 | |
| 18 | M 12 | 117 | |

27592 115-117



Alignment and fixing sets including mounting base

27592 118-122

For aligning (positioning) and mounting the clamp on a pallet or machine table.

| Groove size mm | Thread | 27592 | ... |
|----------------|--------|-------|-----|
| 12 | M 10 | 118 | |
| 14 | M 12 | 119 | |
| 16 | M 14 | 120 | |
| 18 | M 16 | 121 | |
| 22 | M 16 | 122 | |

27592 118-122



Shoulder screw

| Ø mm | Thread | 27592 | ... |
|------|--------|-------|-----|
| 12 | M 12 | 123 | |

27592 123



Design

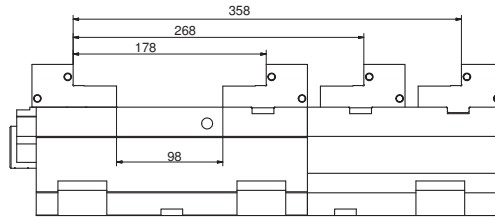
Sturdy, compact basic body (GGG60). Guideways inductively hardened and ground. Maintenance-free, enclosed high-pressure spindle with retensioning spring assembly. Precise aligning grooves. Optimised chip protection. Minimal cleaning effort. Mechanical/mechanical clamping system.

Advantages:

- Max. accessibility during machining
- Patented quick adjustment
- Little clamping loss even when clamping close to the edge
- Very low clamping loss even when clamping with grip inserts
- Stepped jaws with clipping devices for underlay bars

Applications

For 5-axis machines or on CNC machines. Safe and fast clamping of blanks. Exchangeable grip jaws for flame and saw cuts.



27590 101

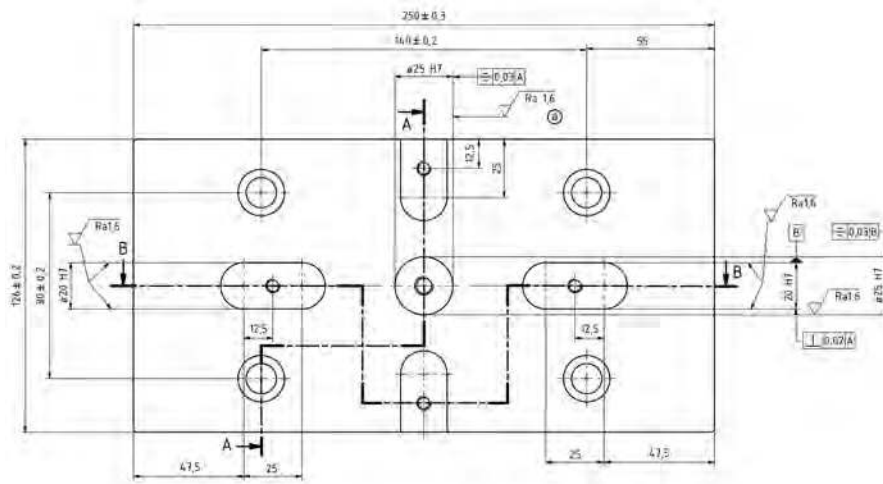
Scope of delivery, basic body:

- Without jaws
- Including 4 adjustable clamps

Scope of delivery, substructure console:

- Without fastening material

| | |
|--------------------------------------|-----|
| Basic body art. no. 27590 101 | |
| Height mm: | 100 |
| Width mm: | 126 |
| Body length mm: | 250 |
| Total length mm: | 273 |
| Clamping force at 110 Nm kN: | 40 |



27590 104



| | |
|--|-----|
| Substructure console art. no. 27590 104 | |
| Height mm: | 100 |
| Width mm: | 126 |
| Body length mm: | 250 |



27590 201 27590 202 27590 203 27590 204 27590 301 27590 401 27590 402 27590 501-502 27590 601 27590 602



| Design | Dimensions H x W x L mm | Clamping width mm | Pieces | 27590 | ... |
|---|----------------------------|----------------------|--------|-------|-----|
| Basic body including accessories | 100 x 126 x 250 | - | 1 | | 101 |
| Substructure console | 100 x 126 x 250 | - | 1 | | 104 |
| Stepped jaws, fixed | 39.5 x 125 x 78 | 0-178 | 2 | | 201 |
| Stepped jaw, movable | 39.5 x 125 x 78 | 0-178 | 1 | | 202 |
| Grip jaw, fixed | 25 x 160 x 105 | 10-202 | 1 | | 203 |
| Grip jaw, movable | 25 x 160 x 105 | 10-202 | 1 | | 204 |
| Pendulum jaw with 2 grip inserts | 20 x 156 x 65 | 6-168 | 1 | | 301 |
| Screw-on grip strips | 19.5 x 125 x 5 | 39-172 | 2 | | 401 |
| Screw-on grip strips | 39.5 x 125 x 6.4 | 5-82 | 2 | | 402 |
| Step strips for clipping | 15-125 | 10-178 | 2 | | 501 |
| Step strips for clipping | 35-125 | 10-178 | 2 | | 502 |
| Screw-on jaws for large clamping widths | 15 x 125 x 45 | 75-240 | 2 | | 601 |
| Screw-on jaws for narrow workpieces | 15 x 60 x 45 | 7-168 | 2 | | 602 |

27591

Mechanical centric clamp, MZE



27591 101-106

Design

- Robust steel design
- Basic body, plain jaws and spindle surface-hardened
- High clamping force
- Compact design
- Maximum freedom of movement for 5-sided and multi-sided machining
- Centring accuracy 0.03 mm
- Mounting drilling template on the underside.

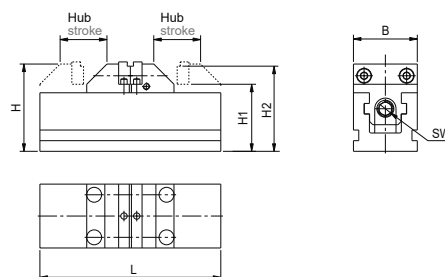
Scope of delivery:

- Includes 1 pair of hard stepped jaws with undercut
- 1 operating key

Applications

Specially designed for clamping and machining of unmachined parts on multi-axis machining centres and for use as an economical centric clamping solution on palletising or automation systems.

27591 101-106



| Jaw width mm | L mm | H mm | H1 mm | H2 mm | Clamping width mm | Clamping force kN | AF mm | Weight approx. kg | 27591 | ... |
|--------------|------|------|-------|-------|-------------------|-------------------|-------|-------------------|-------|-----|
| 36 | 80 | 50 | 39 | 48 | 4-40 | 8.0 | 8 | 1 | | 101 |
| 60 | 170 | 82 | 63 | 80 | 18-90 | 12.5 | 12 | 4 | | 103 |
| 100 | 280 | 114 | 90 | 112 | 50-190 | 22.5 | 15 | 15 | | 105 |
| 125 | 360 | 140 | 110 | 138 | 58-250 | 32.5 | 18 | 30 | | 106 |

Short clamping jaws, hardened

27591 201-206

Applications

- For form-fit clamping of workpieces during roughing
- 15° undercut (dovetail), maximum retention force on workpiece

| Jaw width mm | Clamping depth mm | 27591 | ... |
|--------------|-------------------|-------|-----|
| 36 | 4 | | 201 |
| 60 | 4 | | 203 |
| 100 | 4 | | 205 |
| 125 | 4 | | 206 |

27591 201-206



Grip jaws, hardened and coated

27591 211-216

Applications

- For increasing the retention forces on workpiece blanks

| Jaw width mm | Clamping depth mm | 27591 | ... |
|--------------|-------------------|-------|-----|
| 36 | 4 | | 211 |
| 60 | 4 | | 213 |
| 100 | 4 | | 215 |
| 125 | 4 | | 216 |

27591 211-216



Interchangeable jaw grips, hardened and ground

27591 223-226

Applications

- Increased clamping position allows the use of short tools, especially for small workpieces
- Suitable for holding all standard clamping jaws and self-manufactured jaws

| Jaw width mm | H1 mm | Clamping width mm | 27591 | ... |
|--------------|-------|-------------------|-------|-----|
| 60 | 20 | 7-42 | | 223 |
| 100 | 28 | 7-146 | | 225 |
| 125 | 40 | 7-195 | | 226 |

27591 223-226



Substructure

27591 233-235

Scope of delivery:

Includes centring bolts and fastening screws.

Applications

- For collision-free machining with short tools
- To reduce the Z movement of the machine spindle

| Jaw width mm | L mm | W mm | H mm | 27591 | ... |
|--------------|------|------|------|-------|-----|
| 60 | 170 | 160 | 78 | | 233 |
| 100 | 280 | 160 | 78 | | 235 |

27591 233-235



Fastening material

27591 243-246

Scope of delivery:

2 centring pins, d = 14 mm; 4 adjustable clamps; 4 screws, M 12; 4 T-sliding blocks, 14 mm.

Applications

- For mounting the centring clamp MZE on the machine table
- T-groove dimension 14 mm.

| Jaw width mm | 27591 | ... |
|--------------|-------|-----|
| 60 | | 243 |
| 100 | | 245 |
| 125 | | 246 |

27591 243-246



ATORN®**Design**

- Robust steel design
- Basic body hardened and ground. spindle nitrided
- Compact design, high clamping force
- Sturdy chip guard and scraper to protect the spindle and spindle nut against dirt and damage
- Centring and repeat accuracy 0.02 mm
- Mounting of the vice:
 - From above through the basic body
 - From below with threads in the basic body
 - With adjustable clamps

Advantage:

- The precise grinding height means the clamp can also be mounted in series

Applications

Ideal for 5-sided machining or for use as an economical solution on palletising or automation systems.

Scope of delivery:

- Basic body with plain jaw set for ATORN interchangeable jaw click system (art. no. 27870)

Note:

Supplied *without interchangeable jaw grips.*



| Basic body W x D x H mm | System | Max. clamping range* mm | Width of interchangeable jaw grips min.–max. mm | Clamping force max. kN | Torque max. Nm | Centre clamping device | | Adjustable clamp | |
|----------------------------|--------|----------------------------|--|---------------------------|-------------------|------------------------|-----|------------------|-----|
| | | | | | | 27595 | ... | 27595 | ... |
| 90 x 180 x 45 | 2 | 96 | 65–180 | 30 | 80 | | | 101 | |
| 125 x 250 x 66 | 3 | 152 | 80–250 | 40 | 100 | | | 102 | |
| For screw M 10 | - | - | - | - | - | | | | 110 |
| For screw M 12 | - | - | - | - | - | | | | 111 |



| Driving square inch | Adjustment range Nm | Scale graduation Nm | Length mm | Torque wrench | |
|------------------------|------------------------|------------------------|--------------|---------------|-----|
| | | | | 55640 | ... |
| 1/2 | 20–120 | 1 | 456 | | 204 |

| Hex socket wrench insert | | | |
|--------------------------|--------------|---------------|-----------|
| AF mm | Length mm | Outer Ø mm | 51222 ... |
| 15 | 30 | 20.8 | 110 |

3/8"



ATORN®

Design

- Quick-change system can be adapted for use with many common vices
- Mounting, guide and lock offer a high degree of production safety
- Plain jaws and stepped jaws nitrided
- Interchangeable jaw grips made of high-strength aluminium or case-hardening steel

Advantage:

- Unprecedented economy and measurable advantages in daily use
- Quick change, even of special jaws
- Jaws in the system compatible with one another
- Jaw width up to 400 mm

Note:

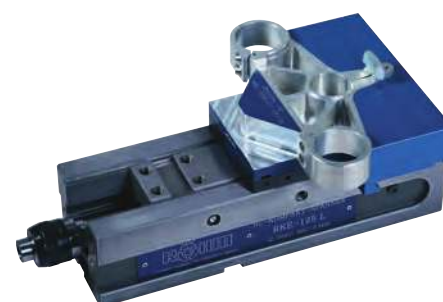
Plain jaw sets also deliverable for other vice types on request.



Plain jaw set



| Vice | Type | Design mm | For system | 27870 | ... |
|--------------|----------------------|-----------|------------|-------|-----|
| ATORN | MM-G | 125 | 3 | | 101 |
| ATORN | MM-G | 160 | 4 | | 102 |
| ATORN | 5-axis clamp | 125 | 3 | | 142 |
| Allmatic | Centro Grip | 125 | 3 | | 103 |
| Allmatic | Duo Plus | 125 | 3 | | 104 |
| Allmatic | LC/TC up to April 98 | 125 | 3 | | 105 |
| Allmatic | LC/TC from May 98 | 125 | 3 | | 106 |
| Allmatic | T-Rex (14 mm groove) | 125 | 3 | | 107 |
| Allmatic | T-Rex (XL) | 125 | 3 | | 108 |
| Allmatic | Titan | 125 | 3 | | 109 |
| Arnold Arno | NC Twin | 125 | 3 | | 110 |
| Fresmak Arno | MB2 | 125 | 3 | | 111 |
| Fresmak Arno | Twin | 90 | 2 | | 112 |
| Fresmak Arno | Twin | 125 | 3 | | 113 |
| Garant | NC-LC | 125 | 3 | | 114 |
| Garant | NC-TC | 125 | 3 | | 115 |
| Gressel | Centrinos | 65 | 2 | | 116 |
| Gressel | Centrinos | 100 | 2 | | 117 |
| Gressel | Duogrip (all types) | 100 | 3 | | 118 |
| Gressel | Duogrip (all types) | 125 | 3 | | 119 |
| Gressel | Grepos 5X | 125 | 3 | | 120 |
| Gressel | Gripos | 100 | 3 | | 121 |
| Gressel | Gripos | 125 | 3 | | 122 |
| Hilma | CS | 80 | 2 | | 123 |
| Hilma | DCS | 80 | 2 | | 124 |
| Hilma | DS/TS | 100 | 2 | | 125 |
| Hilma | DS/TS | 125 | 3 | | 126 |
| Hilma | KNC | 100 | 3 | | 127 |
| Hilma | KNC | 125 | 3 | | 128 |
| Hilma | KNC | 160 | 4 | | 129 |
| Hilma | SCS | 80 | 2 | | 130 |
| Hilma | SCS | 120 | 3 | | 131 |
| Röhm | KZS | 80 | 2 | | 132 |
| Röhm | KZS | 125 | 3 | | 133 |
| Röhm | RKD | 125 | 3 | | 134 |
| Röhm | RKE/RKG | 125 | 3 | | 135 |
| Röhm | RKE | 160 | 4 | | 136 |
| Röhm | RKZ | 125 | 3 | | 137 |
| Schunk | KSP-250. KSH-250 | 125 | 3 | | 138 |
| WNT | DSG | 125 | 3 | | 139 |
| WNT | NCG | 125 | 3 | | 140 |
| WNT | ZSG | 125 | 3 | | 141 |



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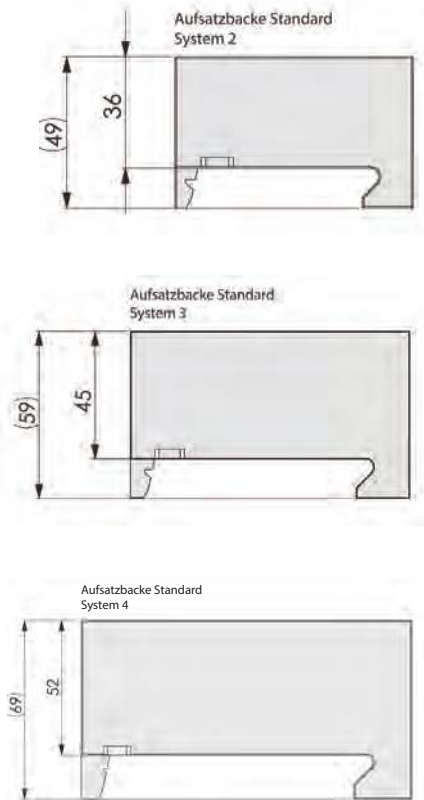
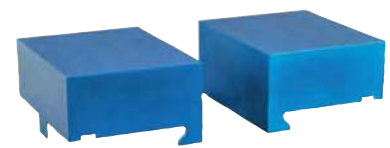
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Design

- Block interchangeable jaw grips made of high-strength aluminium or nitrided case-hardening steel
- Stepped jaws made of case-hardening steel

Advantage:

- Wide variety and many possible combinations
- Milling down the old clamping contours enables the jaws to be used multiple times



| Steel interchangeable jaw grips | Jaw width | 1 piece | |
|---------------------------------|-----------|---------|-----|
| System | mm | 27870 | ... |
| 2 | 65 | 202 | |
| 2 | 70 | 205 | |
| 2 | 80 | 209 | |
| 2 | 90 | 215 | |
| 2 | 100 | 221 | |
| 2 | 150 | 228 | |
| 2 | 160 | 237 | |
| 2 | 180 | 243 | |
| 2 | 200 | 247 | |
| 3 | 80 | 210 | |
| 3 | 90 | 216 | |
| 3 | 100 | 222 | |
| 3 | 125 | 229 | |
| 3 | 140 | 233 | |
| 3 | 160 | 238 | |
| 3 | 180 | 244 | |
| 3 | 225 | 251 | |
| 3 | 250 | 254 | |
| 4 | 80 | 211 | |
| 4 | 100 | 223 | |
| 4 | 125 | 230 | |
| 4 | 160 | 239 | |
| 4 | 200 | 248 | |
| 4 | 250 | 255 | |
| 4 | 300 | 257 | |
| 4 | 400 | 259 | |

| Alu interchangeable jaw grips | Jaw width | 1 piece | |
|-------------------------------|-----------|---------|-----|
| System | mm | 27870 | ... |
| 2 | 65 | 201 | |
| 2 | 70 | 204 | |
| 2 | 80 | 206 | |
| 2 | 90 | 213 | |
| 2 | 100 | 218 | |
| 2 | 125 | 225 | |
| 2 | 160 | 234 | |
| 2 | 180 | 241 | |
| 3 | 80 | 207 | |
| 3 | 90 | 214 | |
| 3 | 100 | 219 | |
| 3 | 125 | 226 | |
| 3 | 140 | 232 | |
| 3 | 160 | 235 | |
| 3 | 180 | 242 | |
| 3 | 200 | 245 | |
| 3 | 225 | 250 | |
| 3 | 250 | 252 | |
| 4 | 80 | 208 | |
| 4 | 100 | 220 | |
| 4 | 125 | 227 | |
| 4 | 160 | 236 | |
| 4 | 200 | 246 | |
| 4 | 250 | 253 | |
| 4 | 300 | 256 | |
| 4 | 400 | 258 | |

Grip inserts

Design

- Optimal clamping results with workpieces that require short-term clamping

Advantage:

- High transmission of clamping forces at minimal clamping depths
- Optimum absorption of vibrations that can occur during machining
- Extension of the service life of the tools used

Note:

A calculation tool for positioning the grip inserts is available on our website at www.hhw.de. Enter a few details and the tool will calculate the ideal installation position for your grip inserts.



| Size | Grip insert | |
|----------|-------------|-----|
| | 27870 | ... |
| M 4 x 8 | 301 | |
| M 5 x 10 | 302 | |
| M 6 x 12 | 303 | |

| Size | Grip insert | |
|-----------|-------------|-----|
| | 27870 | ... |
| M 8 x 16 | 304 | |
| M 10 x 20 | 305 | |
| M 12 x 24 | 306 | |

| Accessories | | |
|----------------------------------|-------|-----|
| | 27870 | ... |
| Lifting device for clamping jaws | 401 | |



Clamping technology

Clamping systems 3AX and 5AX

27669

Clamping systems 3AX-100 and 5AX-100



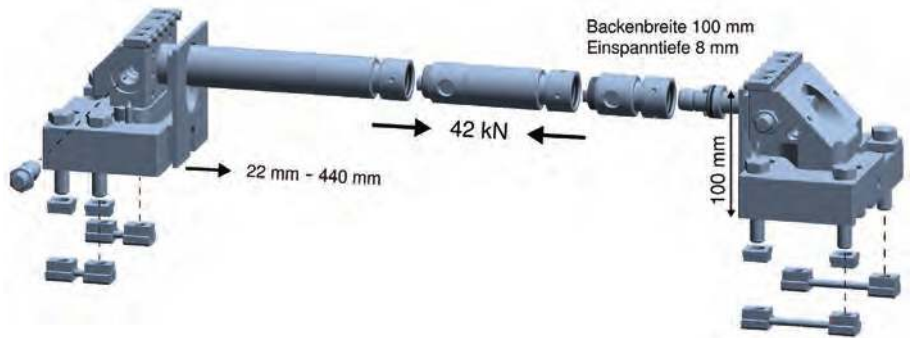
Design

- High clamping force (up to 42 kN) where it is required
- Feed spindle immediately below the workpiece support
- No widening of the jaws under load
- No distortion of the machine table
- Extreme system rigidity
- Clamping depth of 3 or 8 mm
- 3- or 5-axis machining with no projecting edges
- Any clamping width

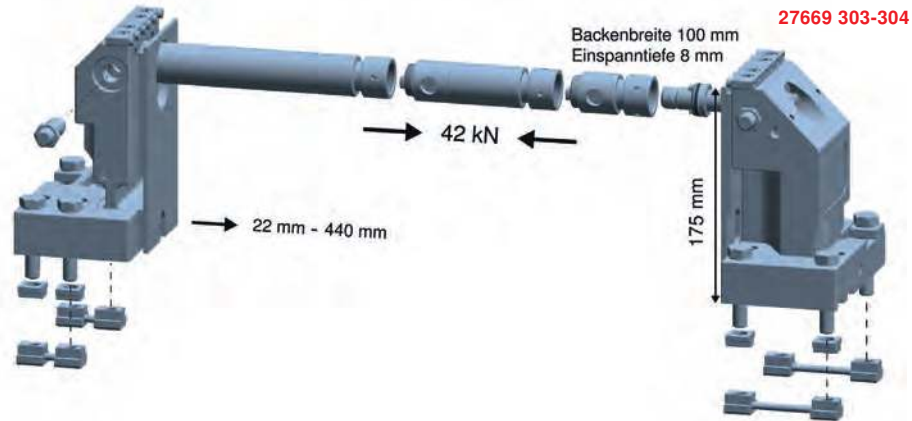
Applications

For clamping workpieces on a 3- or 5-axis milling machine.

27669 301-302



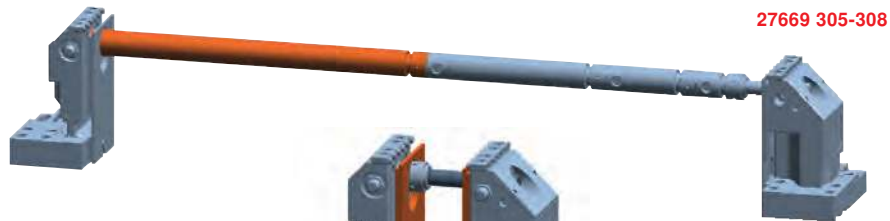
27669 303-304



| Type | For groove mm | 27669 | ... |
|---------|---------------|-------|-----|
| 3AX-100 | 14 | 301 | |
| 3AX-100 | 18 | 302 | |
| 5AX-100 | 14 | 303 | |
| 5AX-100 | 18 | 304 | |

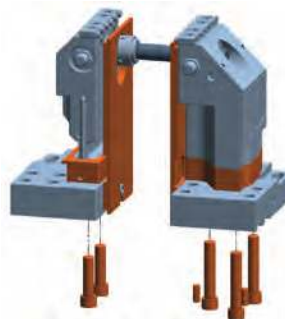
Extension shaft with nut

| Length mm | 27669 | ... |
|-----------|-------|-----|
| 60 | 305 | |
| 120 | 306 | |
| 240 | 307 | |
| 480 | 308 | |



27669 305-308

| For clamp | Height increase to mm | 27669 | ... |
|-----------|-----------------------|-------|-----|
| 3AX-100 | 125 | 309 | |
| 3AX-100 | 150 | 310 | |
| 5AX-100 | 200 | 311 | |
| 5AX-100 | 225 | 312 | |
| 5AX-100 | 250 | 313 | |

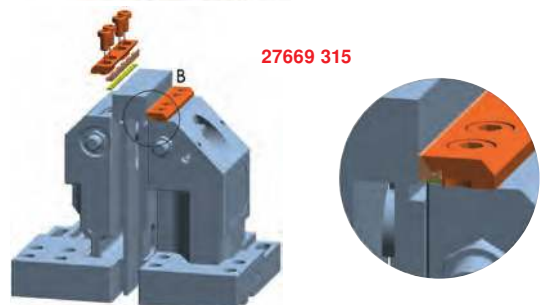


27669 309-313

27669 314



27669 315



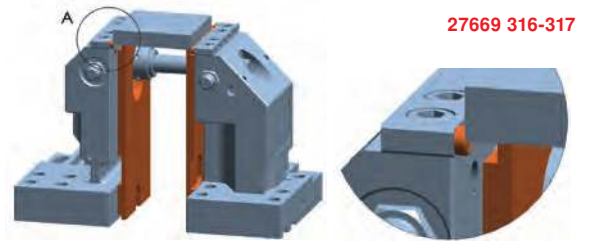
| Description | 27669 | ... |
|--|-------|-----|
| Round clamping chucks including pins, fastening material and support | 314 | |

| Description | 27669 | ... |
|------------------------|-------|-----|
| Pull-down jaws, smooth | 315 | |

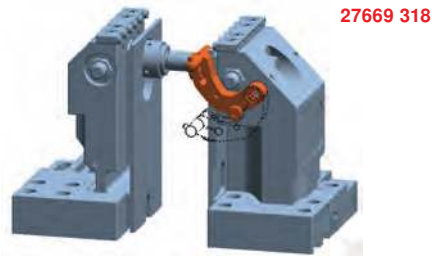
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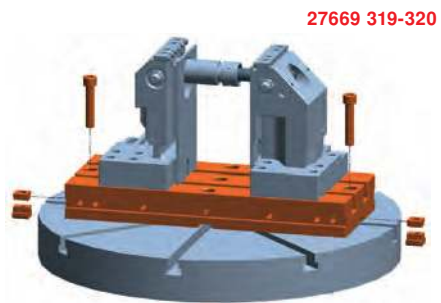
| Designation | For clamp | 27669 | ... |
|---|-----------|-------|-----|
| Support strip, 105 mm, clamping depth 3 mm including 12 pins, ring cutter, 6 mm | 3AX-100 | | 316 |
| Support strip, 180 mm, clamping depth 3 mm including 12 pins, ring cutter, 6 mm | 5AX-100 | | 317 |



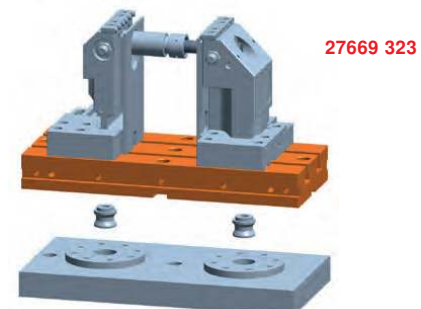
| Description | 27669 | ... |
|----------------------|-------|-----|
| Stop set, swivelling | | 318 |



| Designation | 27669 | ... |
|---|-------|-----|
| T-groove plate, 400 mm, including mounting for groove width 14 mm | | 319 |
| T-groove plate, 400 mm, including mounting for groove width 18 mm | | 320 |



| Description | 27669 | ... |
|--|-------|-----|
| T-groove plate, 400 mm, with NP pin bore | | 323 |



| Designation | 27669 | ... |
|-----------------------------|-------|-----|
| Pin, smooth | | 324 |
| Pin with ring cutter Ø 4 mm | | 325 |
| Pin with ring cutter Ø 6 mm | | 326 |



| Description | 27669 | ... |
|---------------------|-------|-----|
| Clamping jaw, rough | | 327 |

