Tooling technology

BENZ LinTec broaching units
+ for turning centers / lathes
+ for machining centers

www.benz-tools.com
AT BENZ WERKZEUGSYSTEME, OUR MAXIM, "INNOVATION. PRECISION. PASSION." IS FAR MORE THAN JUST A MARKETING FORMULA. RATHER, IT DESCRIBES THE CORE GOALS OF OUR BUSINESS WHILE ALSO OUTLINES THE REASONS WHY WE HAVE BEEN ABLE TO COMPETE IN THE MARKET SUCCESSFULLY WITH TOOL SYSTEMS FOR WOODWORKING, METAL MACHINING AND COMPOSITE MATERIAL PROCESSING FOR MORE THAN 30 YEARS.

INNOVATIONS ARE IMPORTANT TO US. BUT WE ALSO RECOGNIZE THAT THEY CAN BE SUCCESSFUL ONLY IF THEY PRECISELY MEET THE NEEDS OF OUR CUSTOMERS. THIS IS WHY WE HAVE MAINTAINED A STRICT FOCUS ON OUR CUSTOMERS FOR MANY YEARS. WE ENSURE THAT OUR DEVELOPMENTS AND INNOVATIONS SIMPLIFY YOUR PRODUCTION PROCESSES AND LOWER YOUR MANUFACTURING COSTS - AND ULTIMATELY IMPROVE YOUR COMPETITIVENESS AS A RESULT.
Innovation. With an eye on what is currently within the bounds of feasibility, we strive to always make use of innovative technologies. And we keep in close contact with our customers to ensure we already know today what our customers will need tomorrow. Technical progress is ingrained into our very identity, which means you can always find smart, detailed solutions in our product range.

Precision. We ensure our products have the highest level of precision and reliability. This is vital in our industry. Our customers also rely on absolute precision during production—and need to be able to put all their trust in us. But production is not the only area where we strive for precision. We also seek minimal tolerances and maximum accuracy in other areas as well—from development to sales to delivery.

Passion. BENZ precision products are composed of a vast array of different individual parts. They are the result of great care that starts in the design phase and even includes the selection of raw materials. Primarily, however, they are the expression of our employee’s experience and passion to do good work. We are tool specialists through and through and we are willing to move mountains to reach the perfect solution and to ensure the satisfaction of our customers.
PRODUCT GROUPS
TOOLING AND MACHINE TOOLING TECHNOLOGY

LIVE TOOLS/ TOOL HOLDERS

- Radial heads 90°
- Radial heads ≠ 90°
- Axial heads
- Swivel heads
- Multi-spindle heads
- Broaching units
- Rotating tool holders
- Static tool holders

Components. Our comprehensive tool concepts for turning centers and milling centers are ideal for nearly every application. Providing a technological advantage is our goal.

Specific to the customer. Our modular approach enables customized configurations.

Systems. We develop special customer-specific tools for OEM and end customers on request.

EXCHANGEABLE UNITS

- Angle heads 90°
- Angle heads ≠ 90°
- Swivel heads
- Multi-spindle heads
- Broaching units
- High-speed spindles

Knowledge and experience. Our knowledge of the metalworking industry and decades of development partnership make us ideal for new tasks anywhere in the world.

Components. We deliver a vast array of standard components from stock and develop innovative, customized systems for OEM and end customers.

Variety. Whether in machining centers in the automotive, aerospace or wind energy industries, units from Benz can be used anywhere. Numerous customers choose us as their systems and innovation partner.

EXCHANGEABLE UNITS

- Angle heads 90°
- Swivel heads
- Multi-spindle heads
- Multi-axis heads
- Sanding units
- Floating head units

For any application. Cost-effectively process and machine wood, composites and aluminium: We provide series production angle heads for drilling, milling, sawing and grinding in addition to other units for special applications.

From basic to high-end. Benz units are available in a variety of performance classes, making them ideal for everything from light machining to high-performance continuous operation.

Systems. We have the solution for your special applications: Customized Benz units for machining centers. Put us to the test!
Development partner. We accompany you from brainstorming to inspection of the final machine, always to your expectations. Our assortment ranges from compact heads to XXL units.

Systems. Benz stands for high-end solutions in the fields of machine tooling technology, specialty solutions, custom assemblies and mechanical modules. We manufacture and configure multiple-spindle and large-angle heads as well as large drill heads.

Components. Attachment units complete our range.

MULTI-SPINDLE HEADS AND LARGE DRILL HEADS
+ Large angle heads
+ Large drill heads
+ XXL multi-spindle heads

Components. Our range includes standard products in an assortment of shapes and sizes.

The perfect addition. Our system additions provide you with even more efficiency. Perfect your existing solutions with Benz products!

Systems. We develop the technology of tomorrow. Your individual requirements for the efficiency of your machine tools and the suitability of the tools in use provide our benchmark for new, innovative solutions.

Do not lose a second. Speed is the order of the day when unexpected breakdowns occur. Our service center ensures immediate assistance around the world. We ensure your machine has as little downtime as possible.

Service quality. We guarantee top service quality reflecting our expertise as a manufacturer.

Foresight. We go one step further: Preventive maintenance, customized crash packages and our spare part management service ensure you have the best setup to face any emergency. We look to the future to keep you at your peak.

SERVICE
+ Repair service
+ Express Service
+ Customized crash package
+ Preventive maintenance
+ Spare part management
+ Global service
+ Service hotline

SYSTEM TECHNOLOGY
+ Multiple-spindle drill heads
+ Motor spindles
+ Motors
+ 5-axis technology
+ C-axes
+ Swivel axes
+ Rotary distributors
+ Z-axes

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TOOLING TECHNOLOGY
METAL MACHINING

LIVE TOOLS
EXCHANGEABLE UNITS
BENZ LINTEC SHAPING TECHNOLOGY
IN OVERVIEW

BENZ LINTEC SHAPING TECHNOLOGY  Page 8
BROACHING UNITS TURNING CENTERS  Page 17
BROACHING UNITS MACHINING CENTERS  Page 27
EQUIPMENT VARIANTS  Page 38

ACCESSORIES  Page 40
SERVICE  Page 42
INQUIRY FORM  Page 44

PLEASE CHECK:
**RESOURCESAVING PRODUCTION FOR GROOVES AND SPECIAL PROFILES**

**Design competitive processes to be more cost-effective**

Specialized production workflows can be optimized by integrating auxiliary units into machine tools. The integration of broaching units into a production process is an ideal example of how you can avoid complicated and expensive changeover and retooling processes all the way to complete machining. These auxiliary units make it possible to produce a wide assortment of forms and profiles, particularly in cases where the geometric conditions at the workpiece mean the only viable machining variant is a keyway broaching or push slotting operation. The driven broaching unit converts the rotational movement of the machine spindle into a pushing movement at the plunger. For the static push-type fixture, the machine fully handles the individual movements of the cutting process.

As the user, you increase the time your machine is operating and adding value to your products. You also contribute to a production process that saves energy and extends the service life of your machine. Your machine and production costs will thank you.

The broaching auxiliary unit keeps your investment costs extremely low compared to alternatives such as purchasing a conventional broaching machine. In addition, you are no longer reliant on external suppliers. The throughput times in your production process decrease, since subcontracting machining steps and internal retooling on other machine tools are no longer necessary.

**TYPE OVERVIEW**

As the leading company in shaping technology, BENZ provides units for all common CNC lathes and machining centers. Receive the benefits of our years of experience for your specific application.
Cost-effective manufacturing of a vast array of forms and profiles (pre-processing and finishing)
This includes grooves, internal toothing, external toothing, hexagon sockets, Torx, special profiles, etc.

Reduced retooling times and costs
Complete machining of workpieces in just one setting gives you a leaner production process and increases production speed.

Increase in efficiency
Your productivity increases thanks to a reduction in machine operating time and downtime.

Energy and resource-saving production
The cutting and lift-off function is carried out by the broaching unit and not by the machine. All of the kinematics of the cutting process are integrated into the driven broaching unit. No heavy machine components are moved for removing material.

Low investment costs
The broaching unit is an auxiliary unit for your machine tool. There is no need to purchase separate machines, such as a broaching machine.

Utilization of existing machine functions
The broaching unit uses pre-existing machine functions, such as a turret drive or the C-axis functionality of the main spindle.
**INTERNAL AND EXTERNAL PROCESSING**

**2 clamping holders**

- **Internal machining**
  Special clamping holders are used for internal machining of workpieces.

**1 clamping holder**

- **Internal machining**
  A clamping holder with two opposing positioning grooves is used for the internal machining of workpieces. The clamping holder is suitable for internal and external machining.

**2 clamping holders**

- **External machining**
  A special clamping holder is used for the external machining of workpieces.

**1 clamping holder**

- **External machining**
  External machining does not require a separate clamping holder. The same clamping holder is simply rotated by 180° and inserted into the broaching unit.
### PROCESSING TYPES

- Splines
- Torx
- Involute toothing (gears/shafts)
- Hexagon socket
- Groove
- Other special profiles
THE PRINCIPLE BEHIND THE SHAPING/BROACHING PROCESS

Moving to the start position
Move with the cutter in the X-axis and Z-axis at the desired starting dimension.

Cutting movement
The cutter pushes forward into the workpiece and begins cutting.

Integrated lift-off function
The broaching unit lifts up after the shaping process. It features an integrated lift-off device.

Return stroke as idle stroke
The non-contact return motion during the idle stroke prevents wear and prevents the cutter from breaking during the return motion.

With the X-axis providing continuous feed, the cycle repeats until the desired groove depth has been reached.

For the BENZ LinS static fixture, the shaping process and the individual motions have to be performed entirely by the machine.
MODULAR QUICK-CHANGE INTERFACE

- **High flexibility**
  thanks to modular design
- **High stiffness**
  thanks to planar support
- **Simple handling**
  thanks to easy operation
- **Quick tool change**
  Clamping holder securing using inclined plane and clamping screw
  Clamping holder can be preset outside the machine
- **High repeating accuracy**
  even across several tool changes
### EXPLANATION OF SYMBOLS AND ABBREVIATIONS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>General specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Services</strong></td>
<td>Service</td>
</tr>
<tr>
<td></td>
<td>Services, such as repair, preventive maintenance, etc.</td>
</tr>
<tr>
<td><strong>Information</strong></td>
<td>Important information</td>
</tr>
<tr>
<td></td>
<td>Caution! Important note. Please carefully read these.</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Weight (in kg)</td>
</tr>
<tr>
<td></td>
<td>Approximate weight information (for HSK 63). The weights differ depending on the desired drive cone.</td>
</tr>
<tr>
<td><strong>Shapes</strong></td>
<td>Serration</td>
</tr>
<tr>
<td></td>
<td>Hexagon socket</td>
</tr>
<tr>
<td><strong>Turret</strong></td>
<td>Star turret</td>
</tr>
</tbody>
</table>

### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>p.</td>
<td>Page</td>
</tr>
<tr>
<td>max.</td>
<td>Maximum</td>
</tr>
</tbody>
</table>

#### Special custom solutions

Products shown in dashed lines represent solutions adapted for a specific customer.

#### Alignment option for clamping holder

This equipment variant comes standard for this unit. See p. 38.
BENZ LINA FOR LATHES - AUXILIARY UNIT WITH HIGH EFFICIENCY AND LOW INVESTMENT VOLUME
COMPLETE MACHINING WITH BENZ LINA BROACHING UNIT FOR TURNING CENTERS
# BROACHING UNITS FOR TURNING CENTERS IN OVERVIEW

## BENZ LINA - DRIVEN

<table>
<thead>
<tr>
<th>TECHNICAL INFORMATION</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>System design</td>
<td></td>
</tr>
</tbody>
</table>

## RADIAL

<table>
<thead>
<tr>
<th>Variants/Technical features</th>
<th>20</th>
</tr>
</thead>
</table>

## RADIAL, ANGLED

<table>
<thead>
<tr>
<th>Variants/Technical features</th>
<th>22</th>
</tr>
</thead>
</table>

## AXIAL

<table>
<thead>
<tr>
<th>Variants/Technical features</th>
<th>24</th>
</tr>
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</table>
BROACHING UNITS FOR TURNING CENTERS
SYSTEM DESIGN

▶ BENZ LINA (RADIAL)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Coolant nozzle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Tool insert</td>
<td>For holding the clamping holder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Alignment system</td>
<td>For aligning driven tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Alignment area</td>
<td>For aligning driven tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Base holder (adjusted)</td>
<td>Adjusted for the turret type</td>
<td>Wide variety of drive variants and shanks available</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Permanent grease lubrication</td>
<td>Lubrication for the life of the tool with no need to re-lubricate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SEMI-MODULAR DESIGN

▶ Broaching unit
▶ Base holder (adjusted)

The principle behind the shaping/broaching process
See p. 12

Optional: Equipment variants

<table>
<thead>
<tr>
<th>STROKE COUNTER</th>
<th>ALIGNMENT OPTION FOR CLAMPING HOLDER*</th>
</tr>
</thead>
<tbody>
<tr>
<td>p. 38</td>
<td>p. 38</td>
</tr>
</tbody>
</table>

Videos

▶ BENZ LinA - in use
Scan the adjacent QR code with a smartphone and see a demonstration of the BENZ LinA in action. Alternatively, you can visit our YouTube channel to view the video: www.youtube.com/BENZWerkzeugsysteme

* Depending on the broaching unit type
Note:

► The products displayed in this catalog are standard components. We would be happy to develop a suitable solution together with you to meet your specific requirements.

► Delivery does not include equipment variants or accessories. Please order these separately at your preferred cutting insert manufacturer. We offer starter kits consisting of a broaching unit and predefined clamping holders to help get you started with your shaping operation quickly.

► Trifix®: Units for Trifix® turrets including fixed flange connection are available.
BROACHING UNITS FOR TURNING CENTERS
BENZ LINA - RADIAL

PRODUCT IN OVERVIEW

- max. groove width: 8-10 [mm]
- Ratio: 1:1
- max. feed per stroke: 0.15 [mm]
- max. speed: 1,200 [rpm]

TYPE

FS  FSS  FSL

TURRET INTERFACE

VDI  BMT  CDI  More on request
### Turning centers / Broaching units

<table>
<thead>
<tr>
<th></th>
<th>Technical data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FS</strong></td>
<td></td>
</tr>
<tr>
<td>Usable working stroke</td>
<td>= 32 mm</td>
</tr>
<tr>
<td>Total stroke</td>
<td>= 35 mm</td>
</tr>
<tr>
<td>Material strength_{max}</td>
<td>= 900 N/mm²</td>
</tr>
<tr>
<td>No. of strokes/speed_{max}</td>
<td>= 1,000 rpm</td>
</tr>
<tr>
<td><strong>Technical data</strong></td>
<td>L2 [mm]</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Technical data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FSS</strong></td>
<td></td>
</tr>
<tr>
<td>Usable working stroke</td>
<td>= 17 mm</td>
</tr>
<tr>
<td>Total stroke</td>
<td>= 19 mm</td>
</tr>
<tr>
<td>Material strength_{max}</td>
<td>= 1,100 N/mm²</td>
</tr>
<tr>
<td>No. of strokes/speed_{max}</td>
<td>= 1,200 rpm</td>
</tr>
<tr>
<td><strong>Technical data</strong></td>
<td>L2 [mm]</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>28</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Technical data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FSL</strong></td>
<td></td>
</tr>
<tr>
<td>Usable working stroke</td>
<td>= 51 mm</td>
</tr>
<tr>
<td>Total stroke</td>
<td>= 53 mm</td>
</tr>
<tr>
<td>Material strength_{max}</td>
<td>= 900 N/mm²</td>
</tr>
<tr>
<td>No. of strokes/speed_{max}</td>
<td>= 750 rpm</td>
</tr>
<tr>
<td><strong>Technical data</strong></td>
<td>L2 [mm]</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

*Varies based on base holder*
BROACHING UNITS FOR TURNING CENTERS
BENZ LINA - RADIAL, ANGLED

PRODUCT IN OVERVIEW

- max. groove width: 8-10 [mm]
- Ratio: 1:1
- max. feed per stroke: 0.15 [mm]
- max. speed: 1,200 [rpm]

TYPE

- FS
- FSS
- FSL
- FIX

TURRET INTERFACE

- VDI
- BMT
- CDI
- More on request

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### Technical data

<table>
<thead>
<tr>
<th>FS-FIX</th>
<th>Usable working stroke</th>
<th>Total stroke</th>
<th>Material strength max</th>
<th>No. of strokes/speed max</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>L2</td>
<td>L3</td>
<td>L4</td>
<td>B</td>
</tr>
<tr>
<td>30-90</td>
<td>28</td>
<td>approx. 134</td>
<td>approx. 40</td>
<td>104</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FS-FIX</th>
<th>Usable working stroke</th>
<th>Total stroke</th>
<th>Material strength max</th>
<th>No. of strokes/speed max</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>L2</td>
<td>L3</td>
<td>L4</td>
<td>B</td>
</tr>
<tr>
<td>30-90</td>
<td>28</td>
<td>approx. 134</td>
<td>approx. 40</td>
<td>104</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FSL-FIX</th>
<th>Usable working stroke</th>
<th>Total stroke</th>
<th>Material strength max</th>
<th>No. of strokes/speed max</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>L2</td>
<td>L3</td>
<td>L4</td>
<td>B</td>
</tr>
<tr>
<td>45-90</td>
<td>32</td>
<td>approx. 155</td>
<td>approx. 65</td>
<td>129</td>
</tr>
</tbody>
</table>

*Varies based on base holder
1 maximum angle α depending on the machine geometry
2 Depending on angle α
BROACHING UNITS FOR TURNING CENTERS
BENZ LINA - AXIAL

PRODUCT IN OVERVIEW

- max. groove width: 8-10 [mm]
- Ratio: 1:1
- max. feed per stroke: 0.15 [mm]
- max. speed: 1,200 [rpm]

TYPE

DS  DSS

TURRET INTERFACE

VDI  More on request

Dimensions:
- S
- L
- L1
- L2
- L3
- B
### DS

- **Usable working stroke**: 32 mm
- **Total stroke**: 35 mm
- **Material strength max**: 900 N/mm²
- **No. of strokes/speed max**: 1,000 rpm

<table>
<thead>
<tr>
<th></th>
<th>L2 [mm]</th>
<th>L3 [mm]</th>
<th>B [mm]</th>
<th>S [mm]</th>
<th>L [mm]</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS</td>
<td>28</td>
<td>66</td>
<td>104</td>
<td>32/35</td>
<td>194</td>
<td>approx. 12</td>
</tr>
</tbody>
</table>

### DSS

- **Usable working stroke**: 17 mm
- **Total stroke**: 19 mm
- **Material strength max**: 1,100 N/mm²
- **No. of strokes/speed max**: 1,200 rpm

<table>
<thead>
<tr>
<th></th>
<th>L2 [mm]</th>
<th>L3 [mm]</th>
<th>B [mm]</th>
<th>S [mm]</th>
<th>L [mm]</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSS</td>
<td>28</td>
<td>66</td>
<td>104</td>
<td>17/19</td>
<td>194</td>
<td>approx. 12</td>
</tr>
</tbody>
</table>
STATIC BENZ LINS BROACHING FIXTURE FOR MACHINING PROFILES AND FORMS ON MACHINING CENTERS
# BROACHING UNITS FOR MACHINING CENTERS

## IN OVERVIEW

### BENZ LINA - DRIVEN

<table>
<thead>
<tr>
<th>TECHNICAL INFORMATION</th>
<th>System design</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AXIAL</strong></td>
<td>Variants/Technical features</td>
<td>30</td>
</tr>
<tr>
<td><strong>RADIAL</strong></td>
<td>Variants/Technical features</td>
<td>32</td>
</tr>
</tbody>
</table>

### BENZ LINS - STATIC

<table>
<thead>
<tr>
<th>TECHNICAL INFORMATION</th>
<th>System design</th>
<th>34</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AXIAL</strong></td>
<td>Variants/Technical features</td>
<td>36</td>
</tr>
</tbody>
</table>
BROACHING UNITS FOR MACHINING CENTERS
SYSTEM DESIGN

► BENZ LINA (AXIAL*)

1. Tool insert
   - For holding the clamping holder

2. Drive cone
   - For holding the broaching unit in the machine spindle
   - All common drive cones available

3. Changeable torque support arm
   - Secures the broaching unit to prevent turning during machining
   - Generally adapted to the specific machine type

4. Auxiliary support
   - Increases the stiffness between the broaching unit and the machine spindle
   - Ensures optimal power transmission

5. Key alignment

SEMI-MODULAR DESIGN

► Changeable torque support arm/drive cone
► Broaching unit

Optional: Equipment variants

STROKE COUNTER

The principle behind the shaping/broaching process
See p. 12

* Design also applies to the radial broaching unit
## TYPE OVERVIEW

### BENZ LinA - driven

<table>
<thead>
<tr>
<th>Letter</th>
<th>Type</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Axial type</td>
<td>Standard stroke</td>
</tr>
<tr>
<td>F</td>
<td>Radial type</td>
<td>Short stroke</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long stroke</td>
</tr>
<tr>
<td></td>
<td>DS</td>
<td>Axial type</td>
</tr>
<tr>
<td></td>
<td>FS</td>
<td>Radial type</td>
</tr>
<tr>
<td></td>
<td>FSS</td>
<td>Radial type</td>
</tr>
<tr>
<td></td>
<td>FSL</td>
<td>Radial type</td>
</tr>
</tbody>
</table>

### Note:

- The products displayed in this catalog are standard components. We would be happy to develop a suitable solution together with you to meet your specific requirements.

- Delivery does not include equipment variants or accessories. Please order these separately at your preferred cutting insert manufacturer. We offer starter kits consisting of a broaching unit and predefined clamping holders to help get you started with your push-slotting operation quickly.

- For all BENZ LinA broaching units for machining centers, an auxiliary support is absolutely required.
BROACHING UNITS FOR MACHINING CENTERS
BENZ LINA - AXIAL

PRODUCT IN OVERVIEW

- max. groove width: 8-10 [mm]
- Ratio: 1:1
- max. feed per stroke: 0.15 [mm]
- max. speed: 800 [rpm]

TYPE
- DS

DRIVE CONE
- SK DIN 69871
- MAS BT
- CAT
- HSK DIN 69893
- Coromant Capto®
- KM™
- Other
### Technical data

<table>
<thead>
<tr>
<th>DS</th>
<th>B [mm]</th>
<th>S [mm]</th>
<th>L [mm]</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable working stroke</td>
<td>128</td>
<td>35/38</td>
<td>261</td>
<td>approx. 16</td>
</tr>
<tr>
<td>Total stroke</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material strength</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of strokes/speed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Usable working stroke = 35 mm
- Total stroke = 38 mm
- Material strength $\max$ = 900 N/mm²
- No. of strokes/speed $\max$ = 800 rpm
BROACHING UNITS FOR MACHINING CENTERS
BENZ LINA - RADIAL

▶ PRODUCT IN OVERVIEW

▶ max. groove width 8-10 [mm]
▶ Ratio 1:1
▶ max. feed per stroke 0.15 [mm]
▶ max. speed 1,200 [rpm]

▶ TYPE

FS  FSS  FSL

▶ DRIVE CONE

SK DIN 69871
MAS BT
CAT
HSK DIN 69893
Coromant Capto®
KM™
Other

Machining centers  /  Broaching units
### Technical data

<table>
<thead>
<tr>
<th>FS</th>
<th>L1 [mm]</th>
<th>L2 [mm]</th>
<th>L3 [mm]</th>
<th>L4 [mm]</th>
<th>B [mm]</th>
<th>S [mm]</th>
<th>L [mm]</th>
<th>Usable working stroke</th>
<th>Total stroke</th>
<th>Material strength max</th>
<th>No. of strokes/speed max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>68</td>
<td>28</td>
<td>65</td>
<td>109</td>
<td>104</td>
<td>32/35</td>
<td>130</td>
<td>≈ 32 mm</td>
<td>≈ 35 mm</td>
<td>≈ 900 N/mm²</td>
<td>≈ 1,000 rpm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FSS</th>
<th>L1 [mm]</th>
<th>L2 [mm]</th>
<th>L3 [mm]</th>
<th>L4 [mm]</th>
<th>B [mm]</th>
<th>S [mm]</th>
<th>L [mm]</th>
<th>Usable working stroke</th>
<th>Total stroke</th>
<th>Material strength max</th>
<th>No. of strokes/speed max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>68</td>
<td>28</td>
<td>65</td>
<td>109</td>
<td>104</td>
<td>17/19</td>
<td>130</td>
<td>≈ 17 mm</td>
<td>≈ 19 mm</td>
<td>≈ 1,100 N/mm²</td>
<td>≈ 1,200 rpm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FSL</th>
<th>L1 [mm]</th>
<th>L2 [mm]</th>
<th>L3 [mm]</th>
<th>L4 [mm]</th>
<th>B [mm]</th>
<th>S [mm]</th>
<th>L [mm]</th>
<th>Usable working stroke</th>
<th>Total stroke</th>
<th>Material strength max</th>
<th>No. of strokes/speed max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>73</td>
<td>32</td>
<td>85</td>
<td>135</td>
<td>129</td>
<td>51/53</td>
<td>135</td>
<td>≈ 51 mm</td>
<td>≈ 53 mm</td>
<td>≈ 900 N/mm²</td>
<td>≈ 750 rpm</td>
</tr>
</tbody>
</table>
BROACHING UNITS FOR MACHINING CENTERS
SYSTEM DESIGN

► BENZ LINS (AXIAL)

1. Tool holder, static
   - For holding the cutting tool
2. Drive cone
   - For holding the broaching fixture in the machine spindle
   - All common drive cones available
3. Changeable torque support arm
   - Secures the broaching fixture to prevent turning during machining
   - Generally adapted to the specific machine type

SEMI-MODULAR DESIGN
► Drive cone
► Static tool holder

The principle behind the shaping/broaching process
See p. 12

Advantages
► Avoidance of a pointed load on the machine main spindle
► Adjustable orientation of the cutter position (rotatable 360° around the spindle axis)

Videos
► BENZ Lins - in use
Scan the adjacent QR code with a smartphone and see a demonstration of the BENZ LinS in action. Alternatively, you can visit our YouTube channel to view the video: www.youtube.com/BENZWerkzeugsysteme
Note:

- The products displayed in this catalog are standard components. We would be happy to develop a suitable solution together with you to meet your specific requirements.

- Delivery does not include equipment variants or accessories. Please order these separately at your preferred cutting insert manufacturer. We offer starter kits consisting of a broaching unit and predefined clamping holders to help get you started with your push-slotting operation quickly.

- For all BENZ LinS broaching fixtures for machining centers, an auxiliary support is recommended.
BROACHING UNITS FOR MACHINING CENTERS
BENZ LINS - AXIAL

PRODUCT IN OVERVIEW

TYPE

WAS

DRIVE CONE

SK
DIN 69871

MAS BT

CAT

HSK
DIN 69893

Coromant Capto®

KM™

Other

Machining centers / Broaching units

www.benz-tools.com
<table>
<thead>
<tr>
<th>WAS</th>
<th>Technical data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable working stroke</td>
<td>L1 [mm]</td>
</tr>
<tr>
<td>= depending on tool</td>
<td>55</td>
</tr>
<tr>
<td>Total stroke</td>
<td></td>
</tr>
<tr>
<td>Material strength max</td>
<td></td>
</tr>
</tbody>
</table>
BROACHING UNITS
EQUIPMENT VARIANTS

► STROKE COUNTER

► Convenient and fast monitoring of performed strokes via digital display
► Efficient and preventative maintenance by determining the perfect maintenance times
► Prevention of potential faults during production by reducing the risk of unit failure to a minimum

► ALIGNMENT OPTION FOR CLAMPING HOLDERS

► Precision processing
Inaccuracies at the plunger, clamping holder and turret can be compensated for using the alignment option

1 Eccentric
2 Clamping screws
DRIVEN BENZ LINA BROACHING UNIT FOR TURNING CENTERS WITH CLAMPING HOLDER AND COOLANT NOZZLE: TAKE ADVANTAGE OF OUR LINE OF ACCESSORIES FOR A QUICK AND EASY LAUNCH INTO SHAPING TECHNOLOGY
BROACHING UNITS
ACCESSORIES

► CLAMPING HOLDER

► For internal and external machining
  Variant 1: One clamping holder for internal machining and one for external machining
  Variant 2: One clamping holder for both internal and external machining; also capable of being rotated by 180° using the second groove

► Clamping holder to match the broaching unit
  You can find the right solution at your preferred cutting insert manufacturer. We would be happy to pass on corresponding contact information.

► STARTER KIT

► Complete package
  For your broaching unit, we offer the right clamping holder including a second plate at an attractive set price

► Quickly getting up to speed in shaping technology
  A starter kit together with your broaching unit let you immediately get started with your machining
COMPLETE MACHINING OF FORMS OF ALL KINDS ON LATHES AND MACHINING CENTERS
BROACHING UNITS
SERVICE

► SERVICES: CUSTOMIZED, VALUE-RETAINING, COST-EFFECTIVE

► Service repair
Fast and professional analysis of damage
Findings and repair recommendations within 5 working days
on request: general maintenance or refurbishing

► ExpressService
Exceptionally fast and efficient turnaround
Repair at a fixed price
48-hour ExpressService available for select units

► Individual crash package
Keep machine downtime and lost profits to a minimum
Highly recommended for customer-specific solutions
Includes regular wear and tear as well as special parts

► Preventive maintenance
Prevention: Reduce unplanned downtime, increase unit operating times and unit life cycle
Maintain proper product performance / general maintenance or refurbishing
Replacement of wear parts during your planned downtime

www.benz-tools.com
► **Spare part management**
  Immediate availability / delivery of original precision spare parts
  Comprehensive inventory of spare parts / High availability
  Spare parts express shipment as needed

► **Global service**
  Service technicians visit you on site

► **Service Hotline**
  Skilled service representatives answer your questions and provide additional support in the event of a problem
  Contact information: www.benz-tools.com
INQUIRY FORM
BROACHING UNITS FOR TURNING CENTERS

<table>
<thead>
<tr>
<th>Customer number</th>
<th>Telephone number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
<td>Fax number</td>
</tr>
<tr>
<td>Contact</td>
<td>E-mail</td>
</tr>
<tr>
<td>Mr.</td>
<td>Ms.</td>
</tr>
<tr>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

**Machine information/Tool data**

<table>
<thead>
<tr>
<th>Machine manufacturer</th>
<th>Serial number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine model</td>
<td></td>
</tr>
<tr>
<td>No. of tools</td>
<td>Tool shank</td>
</tr>
<tr>
<td>e.g. 8,12,16, etc.</td>
<td>e.g. VDI, BMT, CDI, etc.</td>
</tr>
<tr>
<td>Turret manufacturer</td>
<td>Turret drive</td>
</tr>
<tr>
<td></td>
<td>e.g. DIN 5480, DIN 1809,</td>
</tr>
<tr>
<td>Turret type</td>
<td></td>
</tr>
<tr>
<td>Star turret</td>
<td>Disc turret</td>
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**Design**

<table>
<thead>
<tr>
<th>Reference article No.</th>
</tr>
</thead>
</table>

**Design**

<table>
<thead>
<tr>
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<th></th>
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<tbody>
<tr>
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<td>FS</td>
<td>FS-FIX</td>
<td>DS</td>
</tr>
<tr>
<td></td>
<td>FSS</td>
<td>FSS-FIX</td>
<td>DSS</td>
</tr>
<tr>
<td></td>
<td>FSL</td>
<td>FSL-FIX</td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Machining**

<table>
<thead>
<tr>
<th>Geometry</th>
<th>Groove</th>
<th>Tooothing</th>
<th>Torx</th>
<th>Hexagon socket</th>
<th>Special</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Equipment variants/Accessories**

<table>
<thead>
<tr>
<th>Stroke counter</th>
<th>Alignment option for clamping holder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter kit</td>
<td></td>
</tr>
</tbody>
</table>

**Comments**
e.g. requests for accessories, special processing details

**Desired delivery date**
INQUIRY FORM
BROACHING UNITS FOR MACHINING CENTERS

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<td>Company</td>
<td>Fax number</td>
</tr>
<tr>
<td>Contact</td>
<td>E-mail</td>
</tr>
</tbody>
</table>

Machine information/Tool data

<table>
<thead>
<tr>
<th>Machine manufacturer</th>
<th>Serial number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine model</td>
<td>Spindle input</td>
</tr>
</tbody>
</table>

Are BENZ angle heads already in use on the machine?

- Yes □  No □

Stop block present

- Yes □  No □

Auxiliary support

- Yes □  No □

Tool change

- Manual □  Automatic □

max. kg  max. ø mm

Design

Reference article No.

<table>
<thead>
<tr>
<th>Design</th>
<th>BENZ LinA - radial</th>
<th>BENZ LinA - axial</th>
<th>BENZ LinS</th>
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</thead>
<tbody>
<tr>
<td>Type</td>
<td>FS</td>
<td>DS</td>
<td>WAS</td>
</tr>
<tr>
<td></td>
<td>FSS</td>
<td>DSS</td>
<td>Ø</td>
</tr>
<tr>
<td></td>
<td>FSL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
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Machining

<table>
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<th>Geometry</th>
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</tr>
<tr>
<td>Required accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Material

Equipment variants/Accessories

- Stroke counter
- Alignment option for clamping holder
- Starter kit

Comments

e.g. requests for accessories, special processing details

Desired delivery date
HANDLING TECHNOLOGY

WITH MORE THAN 30 YEARS OF EXPERIENCE AND INDUSTRY KNOWLEDGE, OUR PNEUMATIC, HYDRAULIC AND ELECTRICAL HANDLING COMPONENTS AND SYSTEMS ARE GLOBAL LEADERS.

Components. More than 2000 standardized gripper systems, positioning systems, robotools and much more. We offer a complete selection of technologically superior products that are ready for rapid delivery.

Semistandard. Our modular approach to design enables custom configurations and high rates of innovation for process automation.

Systems. We are particularly strong in providing custom system solutions for handling technologies, robotics and vacuum engineering.

DAMPING TECHNOLOGY

INDUSTRIAL DAMPING TECHNOLOGY AND SOFT CLOSE PRODUCTS EXEMPLIFY THE INNOVATION AND PIONEERING SPIRIT OF THE KNOW-HOW FACTORY.

Industrial damping technology. Whether standard or customized solutions, our products stand for the highest cycle rates and maximum energy absorption with minimal space requirements.

Soft Close. Development and mass production of pneumatic and hydraulic dampers with extraordinary quality and rapid delivery.

OEM and direct. Whether they need components, returning mechanisms or complete production lines – we are the trusted partner of many prestigious customers.

LINEAR TECHNOLOGY

WE DEVELOP LINEAR COMPONENTS AND SYSTEMS THAT ARE INDIVIDUALLY ADAPTED TO OUR CUSTOMERS’ NEEDS.

Clamping and braking elements. We offer you more than 4000 types for profiled and rounded rails as well as for a variety of guide systems from all manufacturers. It makes no difference whether you prefer a manual, automatic, electric or hydraulic drive.

Individualized systems. The unique functionality and precision of our clamping and breaking elements open up numerous possibilities for custom applications such as active or semi-active braking and damping.
MAXIMUM EFFICIENCY IS ESSENTIAL FOR SYSTEMS AND COMPONENTS USED IN PROCESS TECHNOLOGY. HIGH-LEVEL CUSTOM SOLUTIONS ARE OUR TRADEMARK.

A rich reservoir of experience. Our know-how ranges from the development of materials, processes and tools through product design to production of series products. Challenge us.

Deep production capabilities. The Zimmer Group pairs these capabilities with flexibility, quality and precision, even when making custom products.

Series production. We manufacture demanding products out of metal (MIM), elastomers and plastics with flexibility and speed.

ZIMMER GROUP DEVELOPS INNOVATIVE WOOD, METAL AND COMPOSITE PROCESSING TOOL SYSTEMS FOR ALL INDUSTRIES. NUMEROUS CUSTOMERS CHOOSE US AS THEIR SYSTEMS AND INNOVATION PARTNER.

Knowledge and experience. Industry knowledge and a decades-long development partnership for exchangeable assemblies, tool interfaces and tool systems make us the ideal choice for new challenges around the world.

Components. We deliver numerous standard components from stock and develop innovative, customized systems for OEM and end customers – far beyond just the metal- and wood-processing industries.

Variety. Whether you have machining centers, lathes or flexible production cells, the power tools, holders, assemblies and drilling heads of Zimmer Group are ready for action.

AS A DRIVING FORCE IN OUR INDUSTRY, WE DELIVER HIGH-VALUE SOLUTIONS IN THE FIELD OF MECHANICAL ENGINEERING, FULLY ACCORDING TO THE NEEDS OF OUR CUSTOMERS.

Development partner. We accompany you from brainstorming to inspection of the final machine, always to your expectations.

Components. We deliver series products and modules, five-axis heads, motor spindles, gearbox swiveling heads, add-on assemblies and motors.

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DECLARATION OF INCORPORATION IN TERMS OF THE EC DIRECTIVE 2006/42/EC ON MACHINERY
(ANNEX II 1 B)

We hereby declare that our products meet the basic requirements of the Machinery Directive 2006/42/EC as an incomplete machine to the extent that this is possible as part of delivery.

We also declare that the specific technical documents were produced in accordance with Annex VII Part B of this Directive. We undertake to provide the market supervisory bodies with versions of the incomplete machine's special documents via our documentation department should they have reason to request them.

The incomplete machine also satisfies the stipulations of EC Directive 2004/108/EC on electromagnetic compatibility. The protective goals of EC Directive 2006/95/EC regarding electronic equipment have been met.

The incomplete machine may only be commissioned if it has been ascertained, if applicable, that the machine or system in which the incomplete machine is to be installed satisfies the requirements of Directive 2006/42/EC on Machinery and an EC declaration of conformity has been drawn up in accordance with Annex II.
ARE YOU ALREADY FAMILIAR WITH OUR EXPERTISE?

► TEAMS OF EXPERTS WITH INDUSTRY EXPERIENCE
► INTERNATIONALLY NETWORKED THROUGH WORLD-WIDE LOCATIONS AND PARTNERS
► THE HIGHEST QUALITY FOR ALL PRODUCTS AND SERVICES
► PRECISE, CUSTOMER-SPECIFIC SOLUTIONS
► CONSTANT DEVELOPMENT OF OUR INDUSTRY EXPERTISE
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BENZ GMBH WERKZEUGSYSTEME

BENZ PRECISION TOOLS PROVIDE Refined SOLUTIONS, INNOVATIVE TECHNOLOGY AND THE HIGHEST LEVELS OF QUALITY IN PRECISION MACHINING.

AS PART OF THE ZIMMER GROUP, WE GO ONE STEP FURTHER. THE NEW ZIMMER GROUP UMBRELLA BRAND COMBINES THE COMPANIES ZIMMER GMBH, ZIMMER KUNSTSTOFTECHNIK, ZIMMER DAEMPFUNGSSYSTEME AND BENZ WERKZEUGSYSTEME INTO ONE PARTNER FOR YOUR PROJECTS: THE KNOW-HOW FACTORY.

CHALLENGE US. DISCOVER THE ENTIRE WORLD OF ZIMMER GROUP! IF YOU HAVE QUESTIONS ABOUT THE NEW ZIMMER GROUP AND OUR TECHNOLOGY, WE WOULD BE HAPPY TO ANSWER THEM.

CONTACT

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F +49 7832 704-8001
info@benz-tools.com
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