

# Angle Heads

Tooling Technology

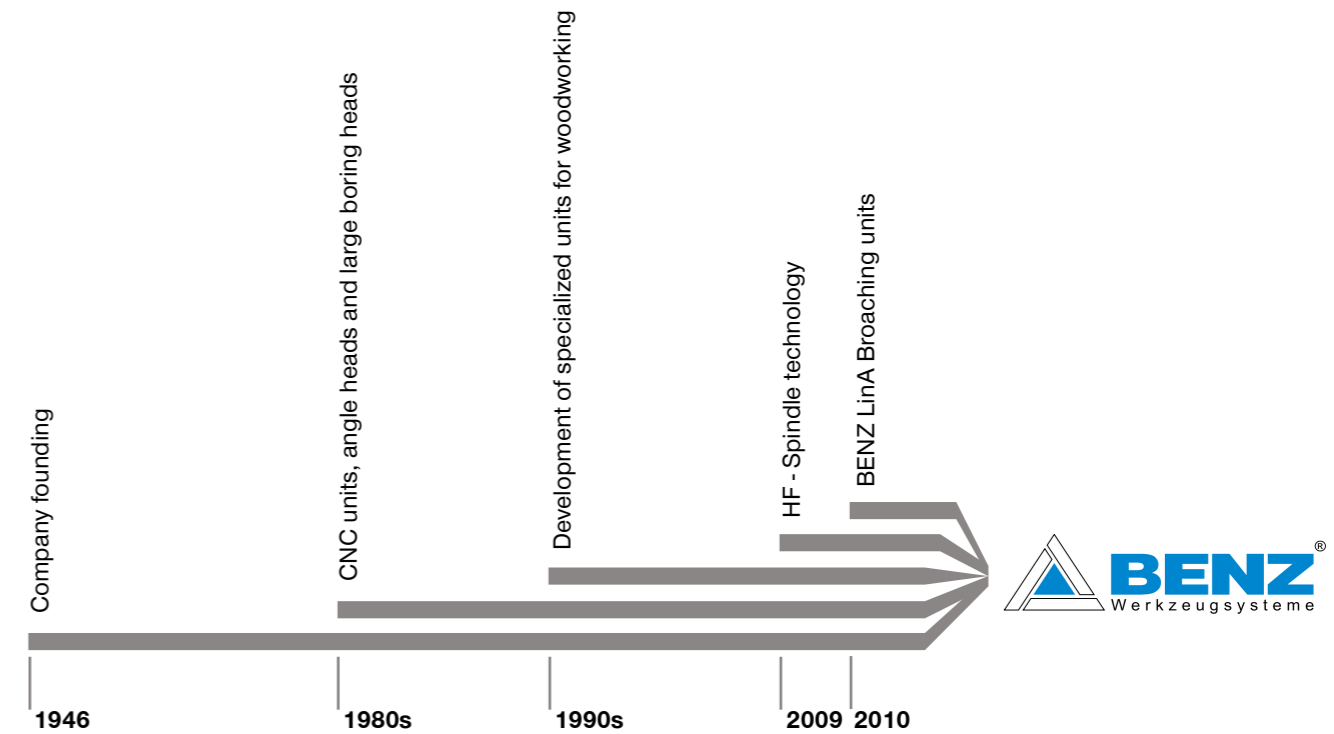
METAL MACHINING



# BENZ GMBH WERKZEUGSYSTEME

AT BENZ GMBH 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 OUTLINING 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.



BENZ PRECISION PRODUCTS PROVIDE REFINED SOLUTIONS, INNOVATIVE TECHNOLOGY AND THE HIGHEST LEVEL OF QUALITY. WHAT IS THE SECRET TO THIS SUCCESS? OUR EMPLOYEES AND THEIR INVALUABLE EXPERTISE MAKE THE DIFFERENCE.

**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

— METAL  
— WOOD/COMPOSITE MATERIALS

### 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

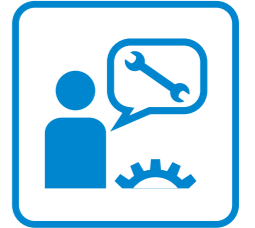
- + Angle heads 90°
- + Swivel heads
- + Multi-spindle heads
- + Multi-axis heads
- + Sanding units
- + Floating head units

**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!

### MACHINE TOOLING TECHNOLOGY



### MULTI-SPINDLE HEADS AND LARGE DRILL HEADS

- + Large angle heads
- + Large drill heads
- + XXL multi-spindle heads

**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.

### SYSTEM TECHNOLOGY

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

**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.

### SERVICE

- + Repair service
- + ExpressService
- + Customized crash package
- + Preventive maintenance
- + Spare part management
- + Global service
- + Service hotline

**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.

### EXCHANGEABLE UNITS

### ANGLE HEADS IN OVERVIEW



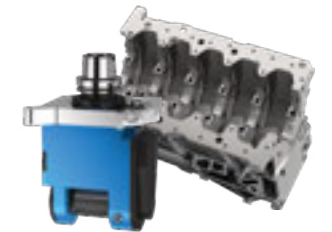
#### SYSTEM DESIGN

1 Page 8



#### DESIGN OVERVIEW

2 Page 19



#### CUSTOMISED SPECIAL SOLUTIONS

3 Page 74



#### EQUIPMENT VERSIONS

4 Page 78



#### SERVICE

5 Page 84

#### PLEASE CHECK:



#### INQUIRY FORM

Page 86

1

2

3

4

5

# ANGLE HEADS SYSTEM DESIGN

1

System design / Angle heads

## ▶ ECONOMICAL COMPLETE MACHINING FOR ALL SECTORS

### Angle heads suitable for your individual application

Do you have an application for which an angle head is worth considering for machining a workpiece? Then you are right to come to BENZ GmbH Werkzeugsysteme. Why?

As a partner working with CNC machining, we have many years of experience in the manufacture of CNC machining units for machining centres. We know what we are talking about. And we implement what we say. This is reflected in the angle heads that feature high performance, machining precision and quality.

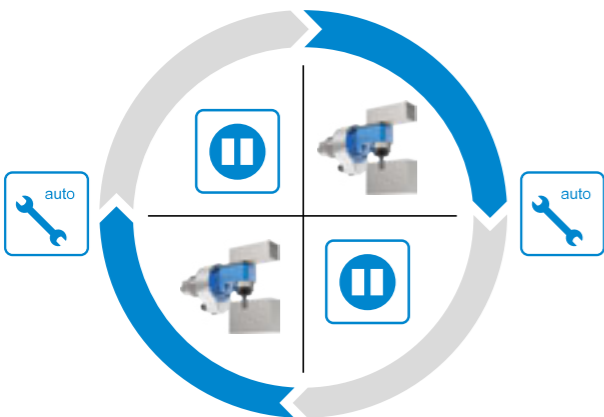
Our objective is to optimize your production sequence. BENZ angle heads assist you in the economic complete machining of your workpieces by minimising the number of tool clampings and machining time and therefore reducing your production costs.

We develop a suitable solution in close cooperation with you as the customer. Together with an extensive standard program, we also offer you individual special solutions. We maintain close contact with machinery manufacturers and therefore have the necessary know-how to develop the exceptional. Challenge us!

### BENZ solutions for all sectors



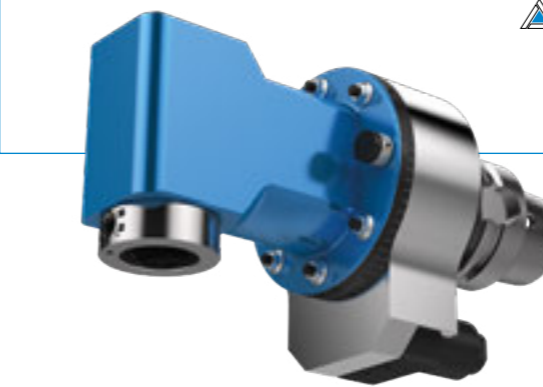
## ▶ ADDED VALUE FOR YOUR MACHINE



### ▶ Angle head additional module

Angle heads are additional modules that extend the functionality of your tool machine. They are typically used cyclically in the machining process. As a rule unit is at rest after a machining step while the unit is changed and further processing is performed with another tool.

## ▶ ADVANTAGES OF ANGLE HEADS



### ▶ Reduction of machining time / production costs

BENZ angle heads enable the complete machining of complex workpieces on a machine. Repeated tool clamping is dispensed with. This reduces the machining time and therefore the costs and increases accuracy.

### ▶ Efficiency increase / Internal machining

Even locations on workpieces that are difficult to access or were previously inaccessible can be machined with angle heads.

### ▶ Simplification of the machining procedure

Elaborate and complicated machining procedures can be simplified considerably by using BENZ angle heads.

### ▶ Usable in all common machine concepts

BENZ angle heads are designed for use in all common machining centres with automatic or manual tool change.

### ▶ Optimally designed for the machining task

BENZ angle heads are perfectly matched by our specialists to your individual requirements. We have a suitable solution for every challenge!

### ▶ High torque transmission / fewer wear parts

The transmission of high torques and fewer wear parts are realised by using angular gears made up of a crown wheel and spur wheel.

### ▶ Compact, modular design

BENZ angle heads have an extremely compact design and consist of components including the output spindle (tool holding/clamping system), angle head, torque support and drive cone. Together we prepare the angle head suitable for your work task.

1

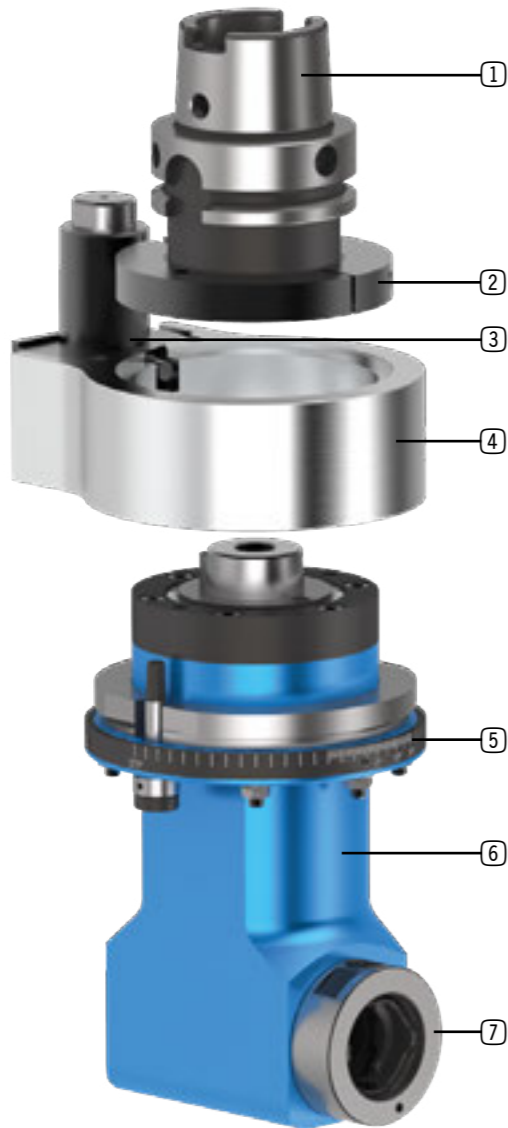
System design / Angle heads

# ANGLE HEADS SYSTEM DESIGN

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System design / Angle heads

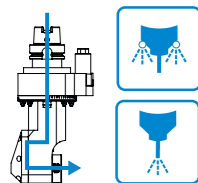
## SYSTEM DESIGN - GENERAL



- ① **Drive cone / Machine interface**
  - For holding the angle head in the machine
  - All common drive cones available: see p. 11
- ② **Locking disc**
  - Ensures the exact angle setting of the drive cone for the torque support in combination with the locking sleeve and locking pin
- ③ **Lock**
  - The lock of the drive cone - together with the locking disc - prevents the drive turning when it is not changed. This enables precise depositing in the tool change magazine. When change the angle head in the machine, the lock is activated by the stop block and the drive is released
- ④ **Torque support**
  - Secures the angle head against turning during machining by fixing it to the machine spindle
  - As a rule it is adapted to the relevant machine type: see p. 11
  - Alternative: Standard torque support from BENZ
- ⑤ **Scale ring (360°)**
  - For manual, stepless turning of the angle head at a desired working angle
  - Fixing using clamping screws
- ⑥ **Housing / Angle head body**
  - Different types and sizes of design available for delivery according to application: see P. 15ff.
- ⑦ **Output spindle (tool holding / clamping system)**
  - For holding the tool
  - All common clamping systems can be realised: see p. 11

### Optional: Equipment versions

#### COOLANT SUPPLY



Page 78

#### ADDITIONAL SUPPORT



Page 79

#### STOP BLOCK



Page 80

#### BENZ I.COM

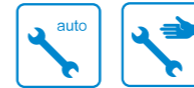


Page 82

## MODULAR DESIGN

### REQUIREMENTS

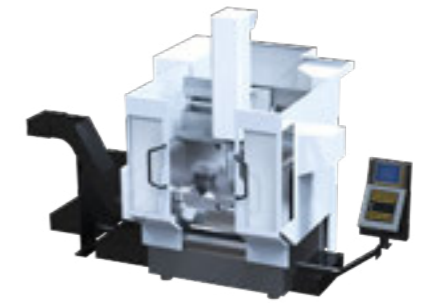
#### CHANGE THE ANGLE HEAD



#### MACHINING CASE



#### MACHINE TYPE



#### OUTPUT SPINDLE (TOOL HOLDING / CLAMPING SYSTEM)



### ANGLE HEAD COMPONENTS

#### OUTPUT SPINDLE / CLAMPING SYSTEM

all common output spindles can be realised



#### DESIGN / SIZE

the design and size are matched with the respective machining case

#### Design - from Page 19



#### Sizes



#### TORQUE SUPPORT

primarily a machine-related design  
alternative: BENZ standard torque support

#### DRIVE CONE

all common drive cones can be realised



**i** Individual customer requirements, e.g. drive cones, output spindles, etc. not listed here, can be realised on request. Please contact us!

1

System design / Angle heads

# MULTI-SPINDLE HEADS TOOL INTERFACES

1

Advantages / Multi-spindle heads

## ▶ BENZ MODULAR QUICK CHANGE SYSTEMS



BENZ Solidfix®  
Output spindle



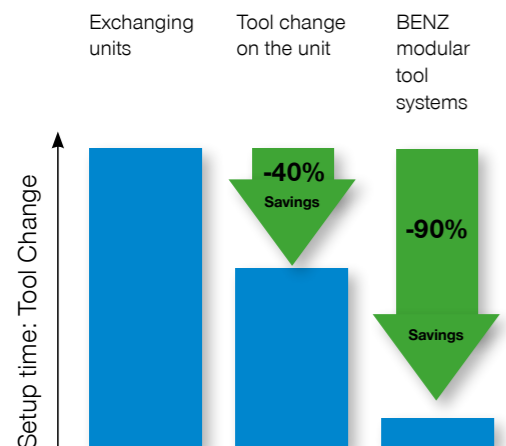
BENZ CAPTO™  
Output spindle



BENZ Nanofix®  
Output spindle

- ▶ **Modular design**  
via basic tool and exchange unit with various tool holders
- ▶ **Minimize setup- and nonproductive time**  
via change of the pre-set tool within seconds
- ▶ **Much lower investment**  
as the basic tool stays on the machine and only the adapters are changed in total fewer basic tools are needed
- ▶ **Simple handling**  
by one-hand operation, without special tools
- ▶ **Operator safety**  
tool cannot fall out

## ▶ REDUCE SETUP TIME = SAVE COSTS



Long machine standstill times arise for a tool change where the complete unit is taken out of the machine. By changing the cutting tool directly on the unit, setup times can already be reduced by 40%. The optimum can be achieved with modular quick-change systems. Here the cutting tool is measured outside of the machine in the presetting device. Replacing the adapter therefore only requires a few seconds. You save 90% of your original setup costs! You also reduce your reject rate as the first part is already a good part.

## ▶ SHORT DESCRIPTION

### ▶ BENZ SOLIDFIX®

#### User-friendly, stable and extremely precise

Due to the combination of a zero-play cone-centering unit with an extremely large and flat contact surface in conjunction with high clamping forces, BENZ Solidfix® provides a maximum of tilt resistance and stability, which also meets the requirements for milling. The high torque transfer and the high potential speeds also characterize the performance capability. This is supported by a special clamping mechanism, which operates centrally, without lateral forces, and works together with the high-precision and compact components to achieve top values for concentricity, bending stiffness and repeatability. The structural design makes the system optimally suited for IC tools.

+++	++	+++	+++



### ▶ BENZ CAPTO™

#### Increase efficiency and processing quality

The BENZ CAPTO™ modular quick-change system guarantees an extremely compact design through the well-conceived integration of the clamping set into the spindle. Special clamping kinematics provide for clamping forces that are significantly above the specifications in ISO/DIS 26623-2. BENZ CAPTO™ can be used for turning on a lathe, milling and drilling with a coolant pressure of up to 100 bar. The system is particularly suited also for heavy-duty cutting.

+++	+	+++	+++



### ▶ BENZ NANOFIX®

#### Quick change in confined spaces

BENZ Nanofix® is a new quick-change interface that is convincing thanks to its extremely compact design. The outer diameter of 22 mm is designed for minimal spindle distances and is therefore particularly suitable for use in confined spaces.

+++	+	+++	+++



1

Advantages / Multi-spindle heads

## OUTPUT SPINDLES ACCESSORIES

Please see our catalog for detailed information on our modular quick change system as well as all accessories

### TOOLING TECHNOLOGY / MACHINE TOOLING TECHNOLOGY BENZ MODULAR QUICK CHANGE SYSTEMS

- ▶ Adapters BENZ Solidfix®
- ▶ Adapters BENZ CAPTO™
- ▶ Accessories for collet chucks
- ▶ Wrenches
- ▶ Miscellaneous



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IN THE DOWNLOAD AREA

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- ▶ <http://www.benz-tools.de/en/services/downloads>
























# ANGLE HEADS SYSTEM DESIGN

1















System design / Angle heads

## ▶ PICTOGRAM AND ABBREVIATION OVERVIEW

▶ Angle head specifications	
Pictogram	
<b>Change the unit</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>Automatic</b></p> <p>BENZ standard angle heads can generally be automatically changed</p> </div> <div style="text-align: center;">  <p><b>Manual</b></p> <p>The angle heads can also be manually changed as an option</p> </div> </div>
<b>Machining</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>Drilling</b></p> <p>The angle head is suitable for drilling operations</p> </div> <div style="text-align: center;">  <p><b>Milling</b></p> <p>The angle head is suitable for milling operations</p> </div> <div style="text-align: center;">  <p><b>Threading</b></p> <p>The angle head is suitable for threading operations</p> </div> </div>
<b>Number of output spindles</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>1</b></p> <p>The angle head has an output spindle</p> </div> <div style="text-align: center;">  <p><b>2</b></p> <p>The angle head has two output spindles</p> </div> <div style="text-align: center;">  <p><b>X</b></p> <p>The angle head has X output spindles (multi-spindle head)</p> </div> </div>
<b>Axis angle</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>90°</b></p> <p>Angle head for machining tasks at 90° angle</p> </div> <div style="text-align: center;">  <p><b>0°-120°</b></p> <p>Angle head for machining tasks in fixed angular position</p> </div> <div style="text-align: center;">  <p><b>0°-100°</b></p> <p>Angle head for machining tasks at flexible angle. Any angle can be set.</p> </div> </div>
<b>Coolant feed for cutting edge</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>External (EC)</b></p> <p>The tool is cooled via an external line (spray nozzle)</p> </div> <div style="text-align: center;">  <p><b>Internal (IC)</b></p> <p>The tool is cooled using an internal line directly through the spindle</p> </div> <div style="text-align: center;">  <p><b>Combination</b></p> <p>The cooling of the tool is combined - internally and externally</p> </div> <div style="text-align: center;">  <p><b>No cooling</b></p> <p>The angle head does not have a coolant feed as standard</p> </div> </div>
<b>Types of cooling (coolants)</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>Water cooling</b></p> <p>The tool cutting edge is cooled with water</p> </div> <div style="text-align: center;">  <p><b>Oil cooling</b></p> <p>The tool cutting edge is cooled with oil</p> </div> <div style="text-align: center;">  <p><b>MQL</b></p> <p>The tool cutting edge is cooled with minimal quantity lubrication (oil/air)</p> </div> <div style="text-align: center;">  <p><b>Air cooling</b></p> <p>The tool cutting edge is cooled with air</p> </div> </div>

1

System design / Angle heads

▶ General specifications	
Pictogram	
<b>Information</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>Important Information</b></p> <p>Caution! Important Note. Please read this carefully.</p> </div> <div style="text-align: center;">  <p><b>Video</b></p> </div> </div>
<b>Pause</b>	<div style="text-align: center;">  <p><b>Pause</b></p> <p>The angle head is not used for machining.</p> </div>
<b>Advantages</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>Time savings</b></p> </div> <div style="text-align: center;">  <p><b>Kost savings</b></p> </div> <div style="text-align: center;">  <p><b>Easy handling</b></p> </div> </div> <div style="text-align: center; margin-top: 10px;">  <p><b>Safe handling</b></p> </div>
<b>Sectors</b>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p><b>Automotive</b></p> </div> <div style="text-align: center;">  <p><b>Machine construction</b></p> </div> <div style="text-align: center;">  <p><b>Aerospace</b></p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  <p><b>Medical</b></p> </div> <div style="text-align: center;">  <p><b>Plastics technology</b></p> </div> <div style="text-align: center;">  <p><b>Wind power</b></p> </div> </div>
<b>Services</b>	<div style="text-align: center;">  <p><b>Service</b></p> <p>Services, e.g. repair, preventative maintenance, etc.</p> </div>

▶ Abbreviations	
$M_{max}$	Maximum torque (input and output)
$M_{2max}$	Maximum torque (output)
$i$	Transmission ratio
$n_{max}$	Maximum speed (input and output)
$n_{2max}$	Maximum speed (output)
$P_{max}$	Maximum pressure (bar)
EC	External cooling
IC	Internal cooling
p.	Page
✓	possible
-	not possible
- / ✓	for EC: without cooling as standard, with external cooling as an option
pc.	Piece
SW	Wrench size
kg	Kilogram

# ANGLE HEADS

## ORDER INFORMATION

**Selection of angle heads**

▶ According to design, size, drive cone, output spindle  
▶ Please inform us of this information in your request

M	A	T	S	L																
Machine	Drive cone	Type	Output spindle	Length																
			<p><b>L</b> Length</p> <p><b>S</b> Output spindle (Tool holding / clamping system)</p> <table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>BENZ Solidfix®</td> <td>BENZ CAPTO™</td> <td>Collet chuck</td> <td>HSK</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Milling arbor</td> <td>Weldon</td> <td>Whistle Notch</td> <td>KM™</td> </tr> </table>					BENZ Solidfix®	BENZ CAPTO™	Collet chuck	HSK					Milling arbor	Weldon	Whistle Notch	KM™	
BENZ Solidfix®	BENZ CAPTO™	Collet chuck	HSK																	
Milling arbor	Weldon	Whistle Notch	KM™																	
		<p><b>Type Design</b></p>																		
	<p><b>A</b> Drive cone</p> <table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SK DIN 69871</td> <td>MAS BT</td> <td>CAT</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>HSK DIN 69893</td> <td>Coromant Capto®</td> <td>KM™</td> <td>More</td> </tr> </table>					SK DIN 69871	MAS BT	CAT						HSK DIN 69893	Coromant Capto®	KM™	More			
SK DIN 69871	MAS BT	CAT																		
HSK DIN 69893	Coromant Capto®	KM™	More																	
	<p><b>Machine</b> BENZ standard Individual</p>	<p><b>Manufacturer and type</b> Standard torque support from BENZ Torque support adapted to machine type</p>																		

+ Equipment versions\*  
+ Accessories\*

\* not included in scope of delivery

**Note:**

▶ The products represented in this catalogue use standard components. We will gladly develop suitable solutions for your individual requirements together with you.

# ANGLE HEADS

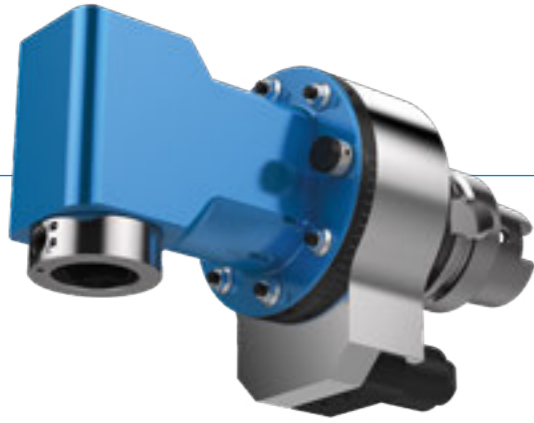
## IN OVERVIEW

**DESIGN**

	<p><b>MONO WSX</b></p> <p>Angle head 90° Machining: without spatial constraint Optional: with EC</p>	  	20
	<p><b>DUO WZX</b></p> <p>Angle head 90° - output spindle on both sides Machining: in opposite direction / with different tools Optional: with EC</p>	  	28
	<p><b>FORTE WWX</b></p> <p>Angle head 90° - reset output spindle / tool holding fixture Machining: for spatial constraint / maximum useable tool length Optional: with EC, IC or EC/IC combination</p>	     	36
	<p><b>SLIM WGX / SLIM WGX-S</b></p> <p>Angle head 90° - narrow or extremely narrow design Machining: for extreme spatial constraint / maximum useable tool length Optional: with EC</p>	   	44
	<p><b>FIX WFX</b></p> <p>Angle head 0°-120° - with fixed angle Machining: special machining at fixed angle Optional: with EC, IC or EC/IC combination</p>	     	56
	<p><b>FLEX WDX</b></p> <p>Angle head 0°-100° - with flexible angle / stepless adjustment Machining: in any variable position Optional: with EC, IC or EC/IC combination</p>	     	64

# ANGLE HEAD MONO WSX

## MODULAR DESIGN



### ANGLE HEAD BODY (SIZE)

04 05 07 15 20

### OUTPUT SPINDLE / CLAMPING SYSTEM



BENZ  
Solidfix®



BENZ  
CAPTO™



Collet chuck



HSK



Milling arbor



Weldon



Whistle  
Notch



KM™

### DRIVE CONE



SK



MAS BT



CAT



HSK  
DIN 69893

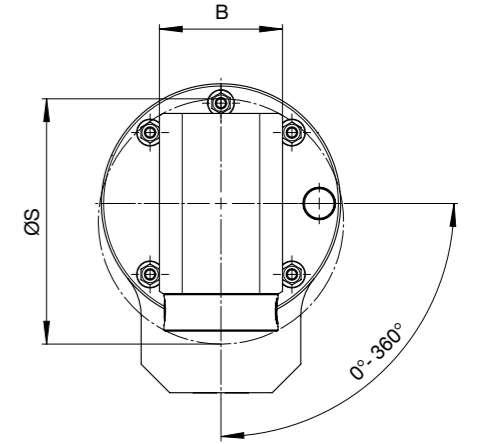
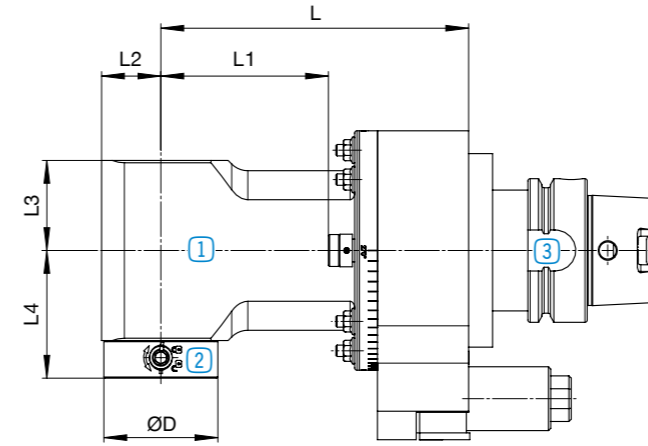


Coromant  
Capto®



KM™

### Angle head without IC



① Angle head body  
page 22



② Output spindle /  
clamping system  
page 24



③ Drive cone  
page 26

### Specifications

Change the angle head	Machining	Number of output spindles	Axis angle	Coolant feed for cutting edge

Other dimensions for angle heads with BENZ CAPTO™ output spindle. Dimensions available on request.

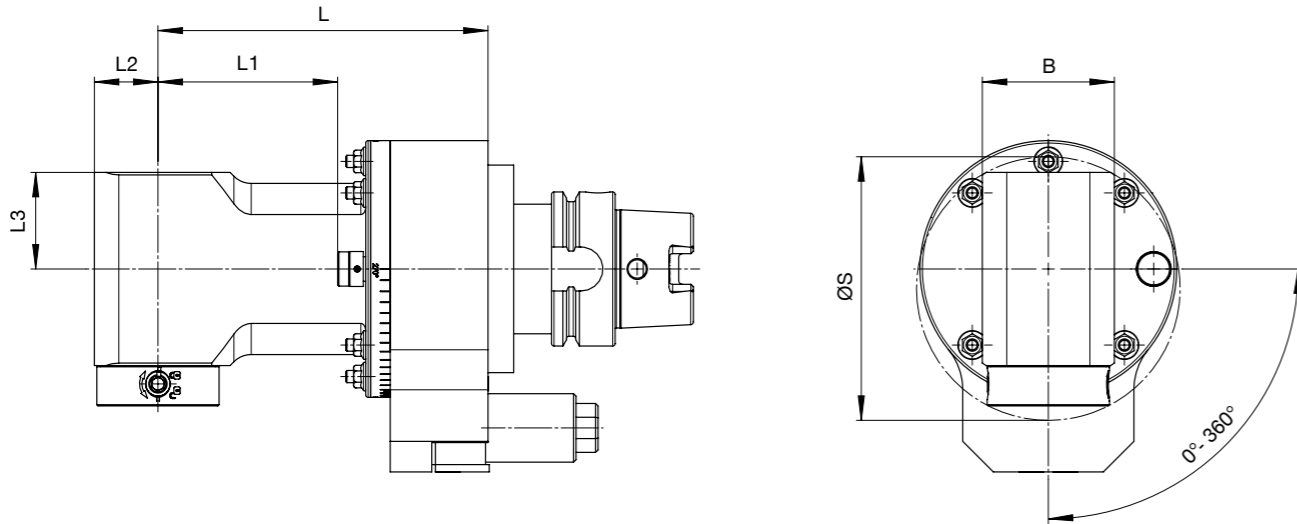
# ANGLE HEAD MONO WSX

## ▶ ANGLE HEAD BODY (SIZE)



**i** More sizes on request.  
Higher speeds are possible as an option.

## ▶ Angle head without IC



### Size 04

$M_{max}$  = 15 Nm  
 $i$  = 1:1  
 $n_{max}$  = 10,000 rpm

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
43.5					95			4
93.5	24	35.5	46	95	145	-	-	4.3
123.5					175			4.5

### Size 05

$M_{max}$  = 30 Nm  
 $i$  = 1:1  
 $n_{max}$  = 8,000 rpm  
 $p_{max}$  = 70 bar\*

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
26.5					88	-		5
73.5	26	39.5	54	108	135	- / ✓	-	5.5
133.5					195	- / ✓		6.5

### Size 07

$M_{max}$  = 70 Nm  
 $i$  = 1:1  
 $n_{max}$  = 6,000 rpm  
 $p_{max}$  = 70 bar\*

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
43.5					105	-		8.5
88.5	35	51	80	141	150	- / ✓	-	9.5
153.5					215	- / ✓		11

### Size 15

$M_{max}$  = 150 Nm  
 $i$  = 1:1  
 $n_{max}$  = 4,000 rpm  
 $p_{max}$  = 70 bar\*

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
85.5					155	-		14.5
155.5	40	63	92	169	225	- / ✓	-	17
228.5					298	- / ✓		19.5

### Size 20

$M_{max}$  = 230 Nm  
 $i$  = 1:1  
 $n_{max}$  = 3,000 rpm  
 $p_{max}$  = 70 bar\*

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
101					171	-		16.5
171	45	63	100	182	241	- / ✓	-	19
241					311	- / ✓		21.5



\*Optional: EC via spray nozzle

# ANGLE HEAD MONO WSX

## ▶ OUTPUT SPINDLE / CLAMPING SYSTEM



**i** Technical data for other output spindles / clamping systems on request:



Weldon

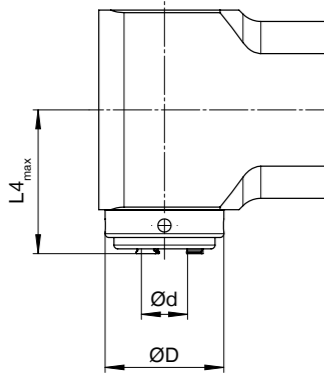


Whistle  
Notch



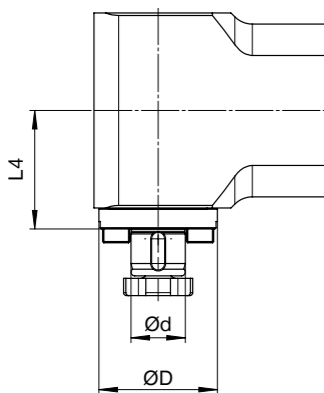
KM™

**i** We show you **preferable sizes** in the following tables. Smaller output spindles are possible at any time as an option.



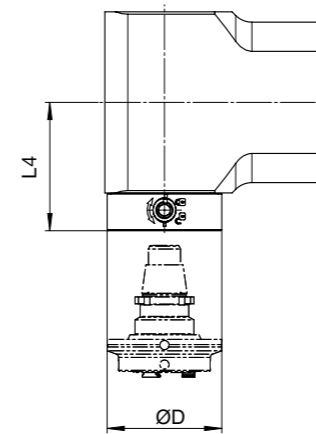
Collet chuck

▶ Technical data				
	Size	L4 <sub>max</sub> [mm]	ØD [mm]	Ød <sub>max</sub> [mm]
<b>ER16A</b>	04	46	44	10
<b>ER20A</b>	04	54	44	13
<b>ER25A</b>	05	57	47	16
<b>ER32A</b>	07	69	55	20
<b>ER40A</b>	15	82	70	30
<b>ER40A</b>	20	85	75	30

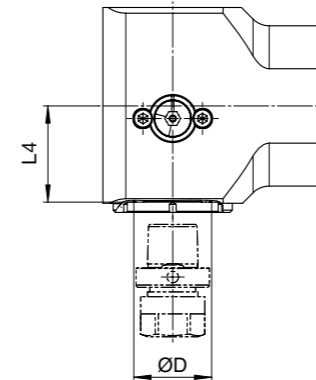


Milling arbor

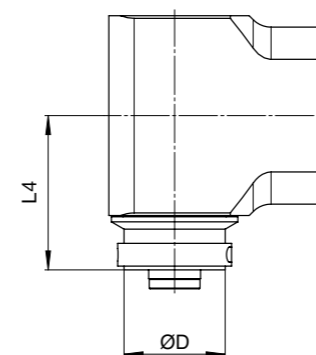
▶ Technical data				
	Size	L4 [mm]	ØD [mm]	Ød [mm]
<b>22</b>	05	48	48	22
<b>27</b>	07	62.5	60	27
<b>32</b>	15	76	75	32
<b>40</b>	15	77.5	80	40
<b>40</b>	20	77.5	80	40



**i** For adapters and dimensions, see catalogue [BENZ Modular Tool Systems](#)



**i** For adapters and dimensions, see catalogue [BENZ Modular Tool Systems](#)



**BENZ Solidfix®**

▶ Technical data			
	Size	L4 [mm]	ØD [mm]
<b>S2</b>	04	49.5	40
<b>S3</b>	05	56	50
<b>S4</b>	07	72	63
<b>S5</b>	15	86	75
<b>S5</b>	20	90	75



**BENZ CAPTO™**

▶ Technical data			
	Size	L4 [mm]	ØD [mm]
<b>C3</b>	05	42	32
<b>C4</b>	07	52	40
<b>C5</b>	15	60	50
<b>C6</b>	20	80	63

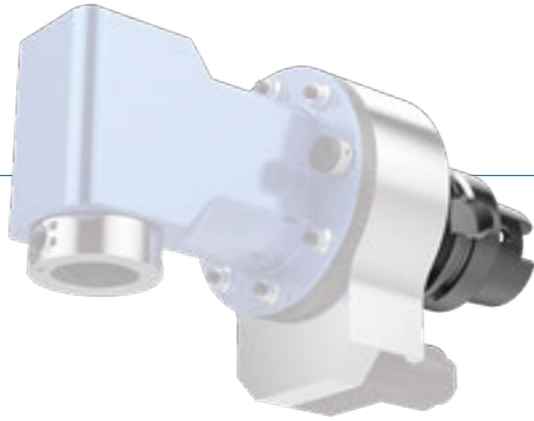


**HSK**

▶ Technical data			
	Size	L4 [mm]	ØD [mm]
<b>HSK 40</b>	05	59	40
<b>HSK 50</b>	07	68	50
<b>HSK 63</b>	15	93	63
<b>HSK 63</b>	20	99	63

# ANGLE HEAD MONO WSX

## DRIVE CONE



**i** Technical data for other machine interfaces on request.

### Type: Steep taper



	Size				
	04	05	07	15	20
<b>SK</b> DIN 69871					
<b>SK 40</b>	✓	✓	✓	-	-
<b>SK 50</b>	✓	✓	✓	✓	✓



	Size				
	04	05	07	15	20
<b>MAS BT</b>					
<b>BT 40</b>	✓	✓	✓	-	-
<b>BT 50</b>	✓	✓	✓	✓	✓



	Size				
	04	05	07	15	20
<b>CAT</b>					
<b>CAT 40</b>	✓	✓	✓	-	-
<b>CAT 50</b>	✓	✓	✓	✓	✓

### Type: Hollow shank taper



	Size				
	04	05	07	15	20
<b>HSK</b> DIN 69893					
<b>HSK 40</b>	✓	-	-	-	-
<b>HSK 50</b>	✓	✓	-	-	-
<b>HSK 63</b>	✓	✓	✓	-	-
<b>HSK 80</b>	✓	✓	✓	✓	-
<b>HSK 100</b>	✓	✓	✓	✓	✓



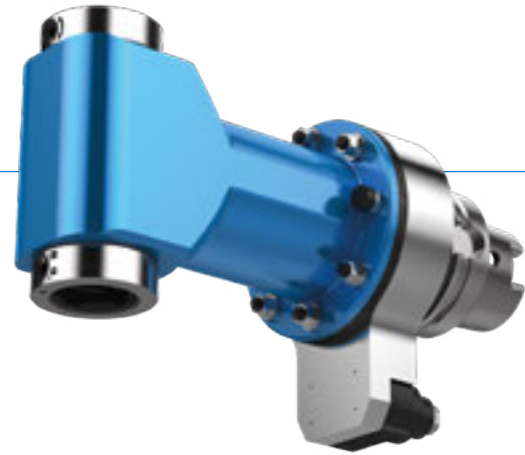
	Size				
	04	05	07	15	20
<b>Coromant Capto®</b>					
<b>C3</b>	✓	-	-	-	-
<b>C4</b>	✓	✓	-	-	-
<b>C5</b>	✓	✓	✓	✓	-
<b>C6</b>	✓	✓	✓	✓	✓
<b>C8</b>	✓	✓	✓	✓	✓



	Size				
	04	05	07	15	20
<b>Kennametal™</b>					
<b>KM 40</b>	✓	-	-	-	-
<b>KM 50</b>	✓	✓	-	-	-
<b>KM 63</b>	✓	✓	✓	-	-
<b>KM 80</b>	✓	✓	✓	✓	-
<b>KM 100</b>	✓	✓	✓	✓	✓

# ANGLE HEAD DUO WZX

## MODULAR DESIGN



### ANGLE HEAD BODY (SIZE)

04 05 07 15 20

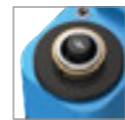
### OUTPUT SPINDLE / CLAMPING SYSTEM



BENZ  
Solidfix®



Collet chuck



HSK



Milling arbor



Weldon



Whistle  
Notch



KM™

### DRIVE CONE



SK  
DIN 69871



MAS BT



CAT



HSK  
DIN 69893

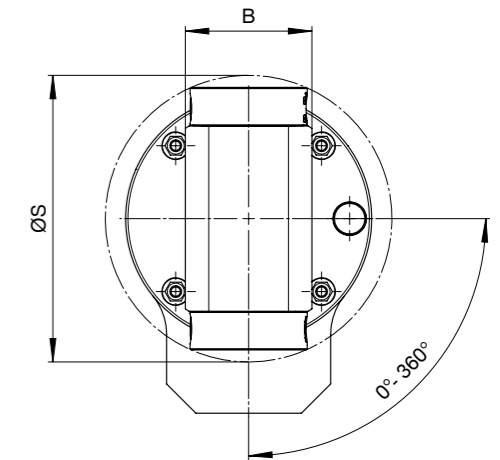
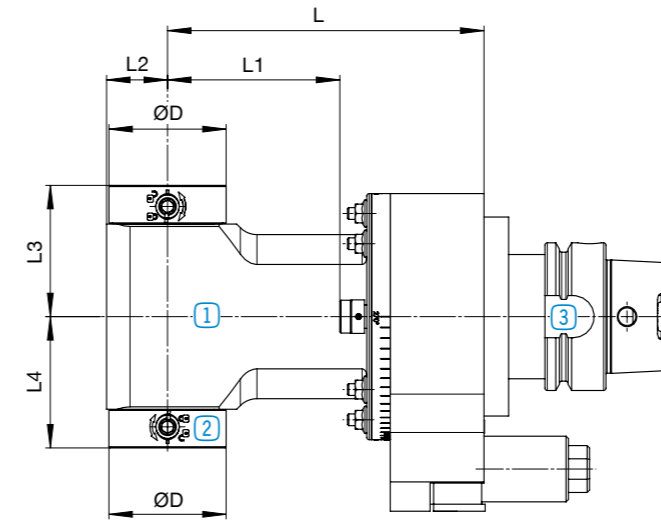


Coromant  
Capto®



KM™

### Angle head without IC



1 Angle head body  
page 30



2 Output spindle /  
clamping system  
page 32



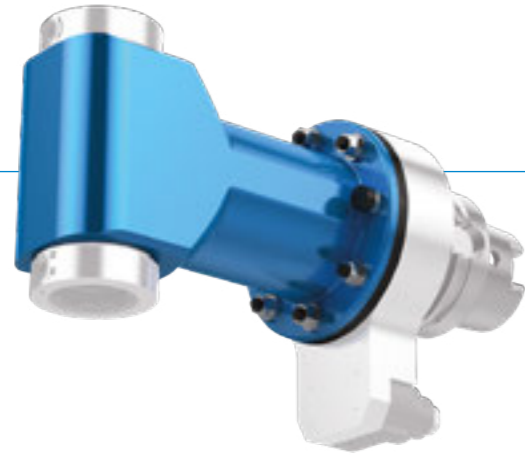
3 Drive cone  
page 34

### Specifications

Change the angle head	Machining	Number of output spindles	Axis angle	Coolant feed for cutting edge

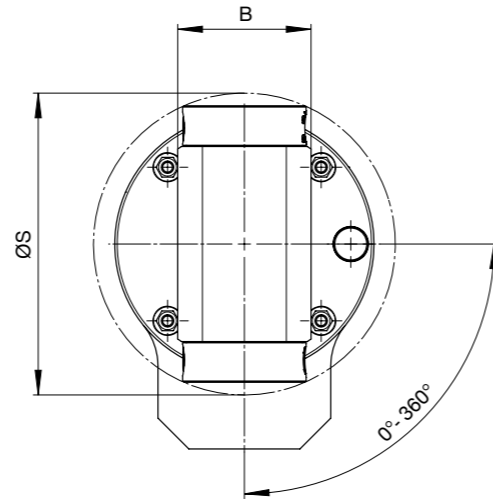
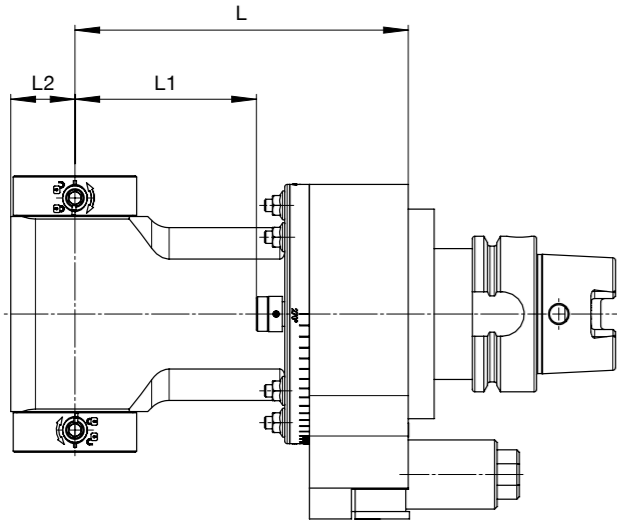
# ANGLE HEAD DUO WZX

## ▶ ANGLE HEAD BODY (SIZE)



**i** More sizes on request.  
Higher speeds are possible as an option.

### ▶ Angle head without IC



### Size 04

$M_{max}$  = 15 Nm  
 $i$  = 1:1  
 $n_{max}$  = 10,000 rpm

#### ▶ Technical data

L1 [mm]	L2 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
43.5				95			4
93.5	24	46	107	145	-	-	4.3
123.5				175			4.5

### Size 05

$M_{max}$  = 30 Nm  
 $i$  = 1:1  
 $n_{max}$  = 8,000 rpm  
 $p_{max}$  = 70 bar\*

#### ▶ Technical data

L1 [mm]	L2 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
26.5				88	-		5
73.5	26	54	123	135	- / ✓	-	5.5
133.5				195	- / ✓		6.5

### Size 07

$M_{max}$  = 70 Nm  
 $i$  = 1:1  
 $n_{max}$  = 6,000 rpm  
 $p_{max}$  = 70 bar\*

#### ▶ Technical data

L1 [mm]	L2 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
43.5				105	-		8.5
88.5	35	80	157	150	- / ✓	-	9.5
153.5				215	- / ✓		11

### Size 15

$M_{max}$  = 150 Nm  
 $i$  = 1:1  
 $n_{max}$  = 4,000 rpm  
 $p_{max}$  = 70 bar\*

#### ▶ Technical data

L1 [mm]	L2 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
85.5				155	-		14.5
155.5	40	92	188	225	- / ✓	-	17
228.5				298	- / ✓		19.5

### Size 20

$M_{max}$  = 230 Nm  
 $i$  = 1:1  
 $n_{max}$  = 3,000 rpm  
 $p_{max}$  = 70 bar\*

#### ▶ Technical data

L1 [mm]	L2 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
101				171	-		16.5
171	45	100	205	241	- / ✓	-	19
241				311	- / ✓		21.5

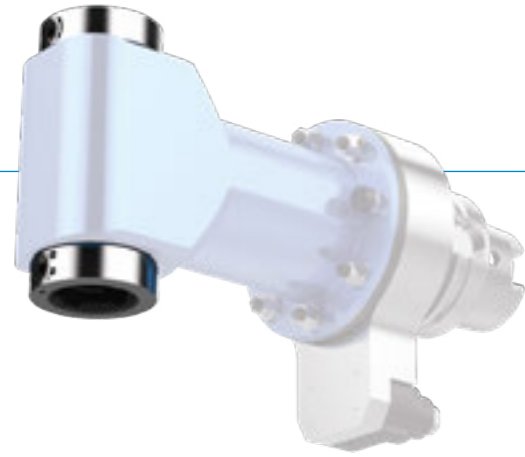


\*Optional: EC via spray nozzle



# ANGLE HEAD DUO WZX

## ▶ OUTPUT SPINDLE / CLAMPING SYSTEM



**i** Technical data for other output spindles / clamping systems on request:



Weldon

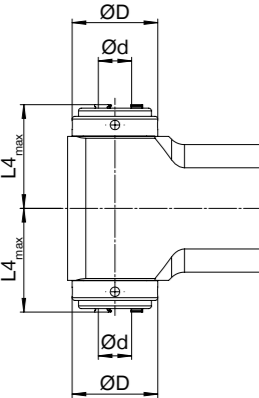


Whistle Notch



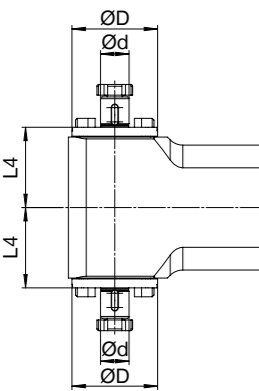
KM™

**i** We show you **preferable sizes** in the following tables. Smaller output spindles are possible at any time as an option.



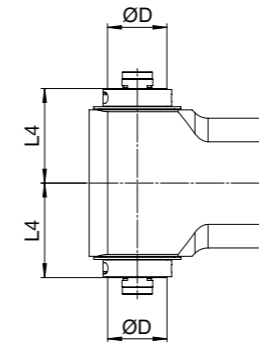
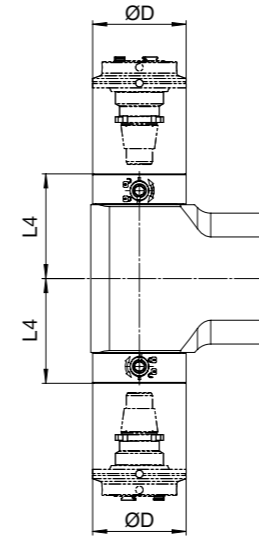
Collet chuck

▶ Technical data				
	Size	L4 <sub>max</sub> [mm]	ØD [mm]	Ød <sub>max</sub> [mm]
<b>ER16A</b>	04	46	44	10
<b>ER20A</b>	04	54	44	13
<b>ER25A</b>	05	57	47	16
<b>ER32A</b>	07	69	55	20
<b>ER40A</b>	15	82	70	30
<b>ER40A</b>	20	82	75	30



Milling arbor

▶ Technical data				
	Size	L4 [mm]	ØD [mm]	Ød [mm]
<b>22</b>	05	48	48	22
<b>27</b>	07	62.5	60	27
<b>32</b>	15	76	75	32
<b>40</b>	15	77.5	80	40
<b>40</b>	20	77.5	80	40



**i** For adapters and dimensions, see catalogue **BENZ Modular Tool Systems**



BENZ Solidfix®

▶ Technical data			
	Size	L4 [mm]	ØD [mm]
<b>S2</b>	04	49.5	40
<b>S3</b>	05	56	50
<b>S4</b>	07	72	63
<b>S5</b>	15	86	75
<b>S5</b>	20	90	75

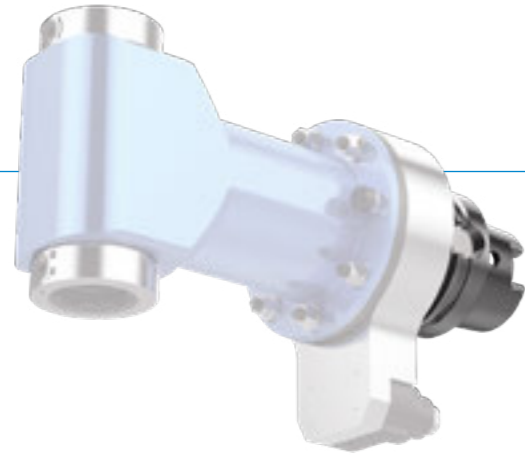


HSK

▶ Technical data			
	Size	L4 [mm]	ØD [mm]
<b>HSK 40</b>	05	59	40
<b>HSK 50</b>	07	68	50
<b>HSK 63</b>	15	93	63
<b>HSK 63</b>	20	99	63

# ANGLE HEAD DUO WZX

## DRIVE CONE



**i** Technical data for other machine interfaces on request.

### Type: Hollow shank taper



	Size				
	04	05	07	15	20
<b>HSK</b> DIN 69893					
<b>HSK 40</b>	✓	-	-	-	-
<b>HSK 50</b>	✓	✓	-	-	-
<b>HSK 63</b>	✓	✓	✓	-	-
<b>HSK 80</b>	✓	✓	✓	✓	-
<b>HSK 100</b>	✓	✓	✓	✓	✓



	Size				
	04	05	07	15	20
<b>Coromant Capto®</b>					
<b>C3</b>	✓	-	-	-	-
<b>C4</b>	✓	✓	-	-	-
<b>C5</b>	✓	✓	✓	✓	-
<b>C6</b>	✓	✓	✓	✓	✓
<b>C8</b>	✓	✓	✓	✓	✓

### Type: Steep taper



	Size				
	04	05	07	15	20
<b>SK</b> DIN 69871					
<b>SK 40</b>	✓	✓	✓	-	-
<b>SK 50</b>	✓	✓	✓	✓	✓



	Size				
	04	05	07	15	20
<b>MAS BT</b>					
<b>BT 40</b>	✓	✓	✓	-	-
<b>BT 50</b>	✓	✓	✓	✓	✓



	Size				
	04	05	07	15	20
<b>CAT</b>					
<b>CAT 40</b>	✓	✓	✓	-	-
<b>CAT 50</b>	✓	✓	✓	✓	✓



	Size				
	04	05	07	15	20
<b>Kennametal™</b>					
<b>KM 40</b>	✓	-	-	-	-
<b>KM 50</b>	✓	✓	-	-	-
<b>KM 63</b>	✓	✓	✓	-	-
<b>KM 80</b>	✓	✓	✓	✓	-
<b>KM 100</b>	✓	✓	✓	✓	✓

# ANGLE HEAD FORTE WWX

## MODULAR DESIGN



### ANGLE HEAD BODY (SIZE)

05 07 15 20

### OUTPUT SPINDLE / CLAMPING SYSTEM



BENZ  
Solidfix®



BENZ  
CAPTO™



Collet chuck



HSK



Milling arbor



Weldon



Whistle  
Notch



KM™

### DRIVE CONE



SK  
DIN 69871



MAS BT



CAT



HSK  
DIN 69893



Coromant  
Capto®

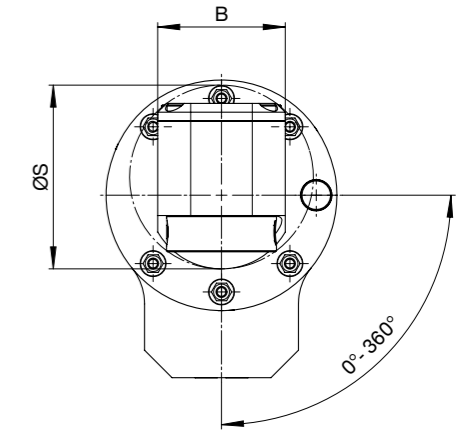
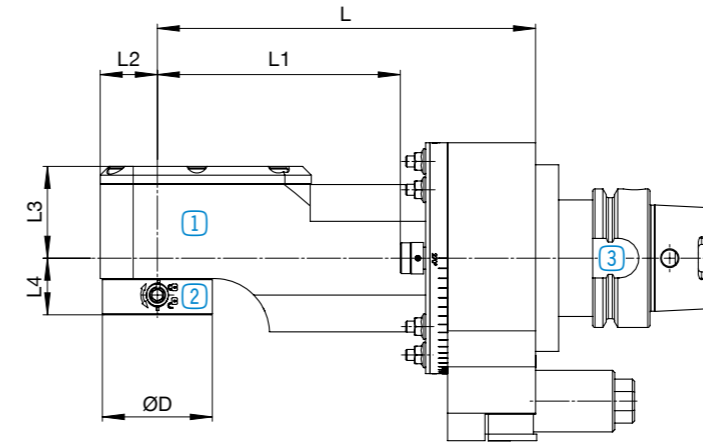


KM™

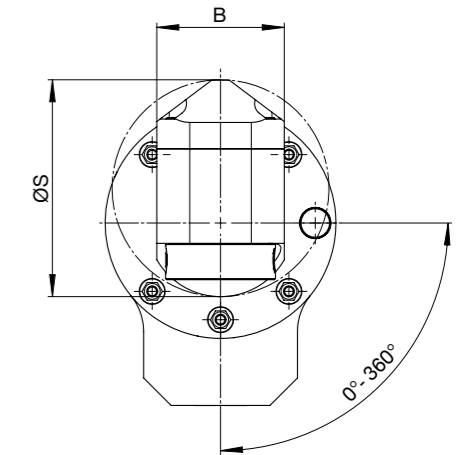
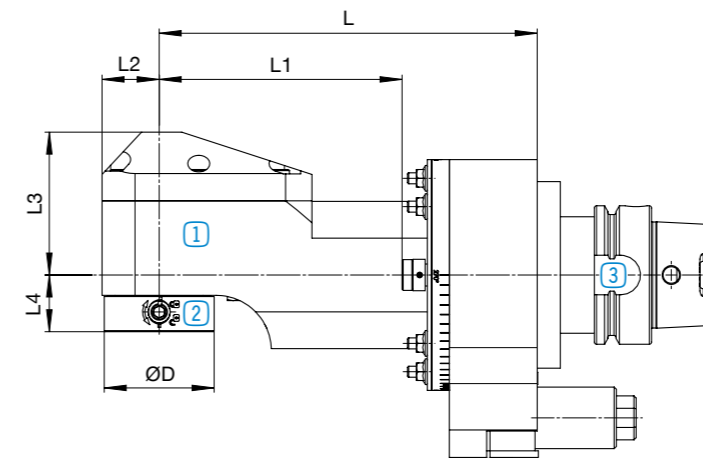
### Specifications

Change the angle head	Machining	Number of output spindles	Axis angle	Coolant feed for cutting edge

### Angle head without IC



### Angle head with IC



1 Angle head body  
page 38



2 Output spindle /  
clamping system  
page 40



3 Drive cone  
page 42

Other dimensions for angle heads with BENZ CAPTO™ output spindle. Dimensions available on request.

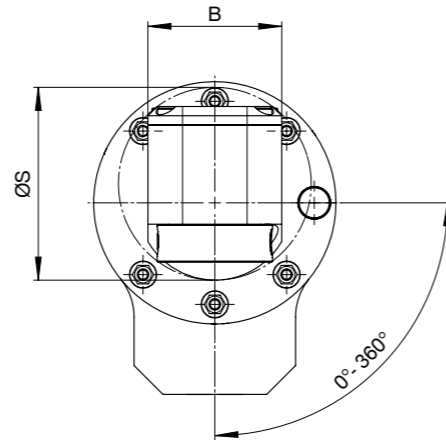
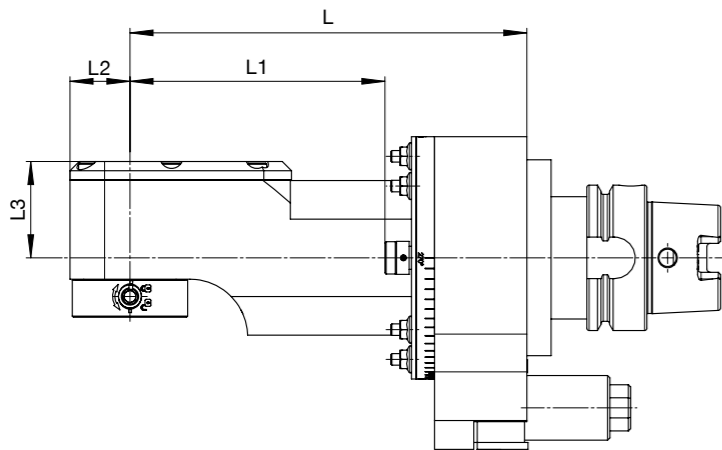
# ANGLE HEAD FORTE WWX

## ▶ ANGLE HEAD BODY (SIZE)

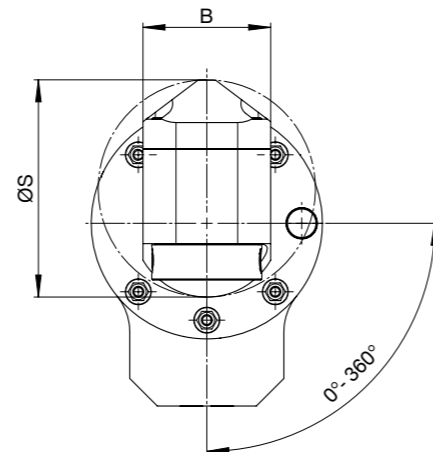
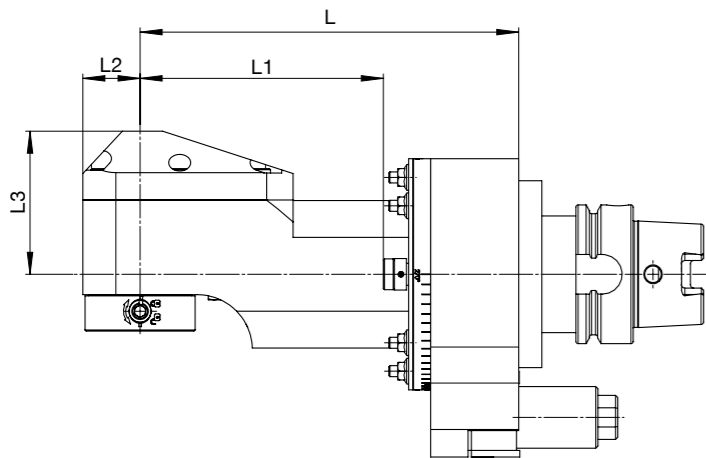


**i** More sizes on request.  
Higher speeds are possible as an option.

### ▶ Angle head without IC



### ▶ Angle head with IC



### Size 05

$M_{max}$  = 30 Nm  
 $i$  = 1:1  
 $n_{max}$  = 8,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	EC+IC	Weight [kg]
63.5					125	- / ✓	- / ✓	✓	5
110.5	26	EC 42	IC 65	58	EC 84	IC 81	172	- / ✓	6
170.5					232	- / ✓	- / ✓	✓	7

### Size 07

$M_{max}$  = 70 Nm  
 $i$  = 1:1  
 $n_{max}$  = 6,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	EC+IC	Weight [kg]
93.5					155	- / ✓	- / ✓	✓	8.5
138.5	35	EC 55	IC 77	70	EC 109	IC 122	200	- / ✓	9.5
191.5					253	- / ✓	- / ✓	✓	10.5

### Size 15

$M_{max}$  = 150 Nm  
 $i$  = 1:1  
 $n_{max}$  = 4,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	EC+IC	Weight [kg]
125.5					195	- / ✓	- / ✓	✓	14
162.5	40	EC 66	IC 88.5	90	EC 129	IC 139	232	- / ✓	15
262.5					332	- / ✓	- / ✓	✓	17.5

### Size 20

$M_{max}$  = 230 Nm  
 $i$  = 1:1  
 $n_{max}$  = 3,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	EC+IC	Weight [kg]
135.5					200	- / ✓	- / ✓	✓	17
172.5	45	EC 65.5	IC 88.5	90	EC 130	IC 141	237	- / ✓	18
272.5					337	- / ✓	- / ✓	✓	21.5



\*Optional: EC via spray nozzle

# ANGLE HEAD FORTE WWX

## ▶ OUTPUT SPINDLE / CLAMPING SYSTEM



**i** Technical data for other output spindles / clamping systems on request:



Weldon

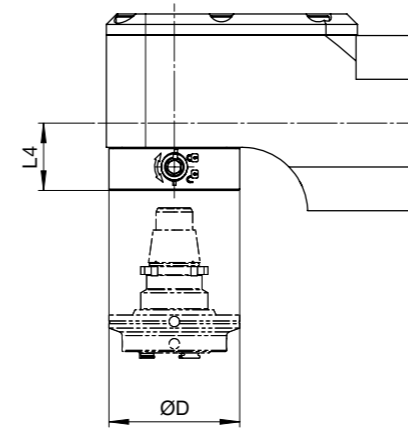


Whistle Notch



KM™

**i** We show you **preferable sizes** in the following tables. Smaller output spindles are possible at any time as an option.

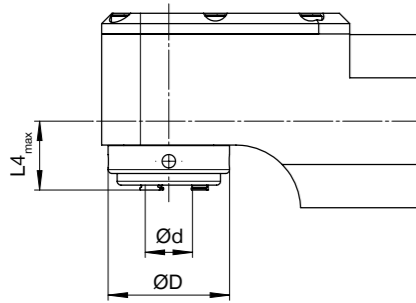


**i** For adapters and dimensions, see catalogue [BENZ Modular Tool Systems](#)



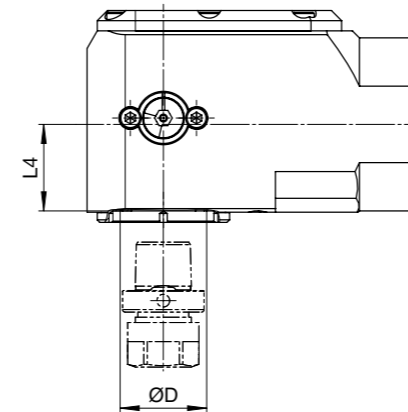
### ▶ Technical data

	Size	L4 [mm]		ØD [mm]
		EC	IC	
<b>BENZ Solidfix®</b>				
<b>S3</b>	05	25.75		50
<b>S4</b>	07	31		63
<b>S5</b>	15	35.5		75
	20	39.5		75



### ▶ Technical data

	Size	L4_max [mm]		ØD [mm]	Ød_max [mm]
		EC	IC		
<b>Collet chuck</b>					
<b>ER25A</b>	05	20.75	25.75	47	16
<b>ER32A</b>	07	23.9	28.9	55	20
<b>ER40A</b>	15	31	35.9	70	30
<b>ER40A</b>	20	31	41.6	75	30

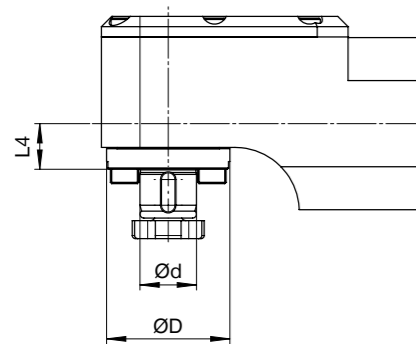


**i** For adapters and dimensions, see catalogue [BENZ Modular Tool Systems](#)



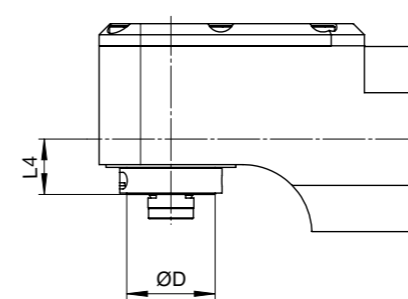
### ▶ Technical data

	Size	L4 [mm]		ØD [mm]
		EC	IC	
<b>BENZ CAPTO™</b>				
<b>C3</b>	05	34		32
<b>C4</b>	07	32		40
<b>C5</b>	15	39		50
<b>C6</b>	20	58		63



### ▶ Technical data

	Size	L4 [mm]		ØD [mm]	Ød [mm]
		EC	IC		
<b>Milling arbor</b>					
<b>22</b>	05	17.75		48	22
<b>27</b>	07	21.5		60	27
<b>32</b>	15	32.5		75	32
<b>32</b>	20	32.5		75	32

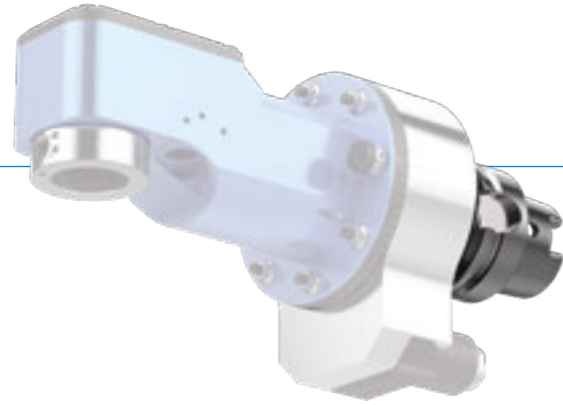


### ▶ Technical data

	Size	L4 [mm]		ØD [mm]
		EC	IC	
<b>HSK</b>				
<b>HSK 32</b>	05	20		32
<b>HSK 40</b>	07	24		40
<b>HSK 50</b>	15	35		50
<b>HSK 63</b>	15	42		63
<b>HSK 63</b>	20	40		63

# ANGLE HEAD FORTE WWX

## ▶ DRIVE CONE



**i** Technical data for other machine interfaces on request.

### Type: Hollow shank taper



	▶ Size			
	05	07	15	20
<b>HSK</b> DIN 69893	05	07	15	20
HSK 40	-	-	-	-
HSK 50	✓	-	-	-
HSK 63	✓	✓	-	-
HSK 80	✓	✓	✓	-
HSK 100	✓	✓	✓	✓



	▶ Size			
	05	07	15	20
<b>Coromant Capto®</b>	05	07	15	20
C3	-	-	-	-
C4	✓	-	-	-
C5	✓	✓	✓	-
C6	✓	✓	✓	✓
C8	✓	✓	✓	✓

### Type: Steep taper



	▶ Size			
	05	07	15	20
<b>SK</b> DIN 69871	05	07	15	20
SK 40	✓	✓	-	-
SK 50	✓	✓	✓	✓



	▶ Size			
	05	07	15	20
<b>MAS BT</b>	05	07	15	20
BT 40	✓	✓	-	-
BT 50	✓	✓	✓	✓



	▶ Size			
	05	07	15	20
<b>CAT</b>	05	07	15	20
CAT 40	✓	✓	-	-
CAT 50	✓	✓	✓	✓



	▶ Size			
	05	07	15	20
<b>Kennametal™</b>	05	07	15	20
KM 40	-	-	-	-
KM 50	✓	-	-	-
KM 63	✓	✓	-	-
KM 80	✓	✓	✓	-
KM 100	✓	✓	✓	✓

# ANGLE HEAD SLIM WGX

## MODULAR DESIGN



### ANGLE HEAD BODY (SIZE)

05 07

### OUTPUT SPINDLE / CLAMPING SYSTEM



BENZ  
Solidfix®



Collet chuck

### DRIVE CONE



SK  
DIN 69871



MAS BT



CAT



HSK  
DIN 69893

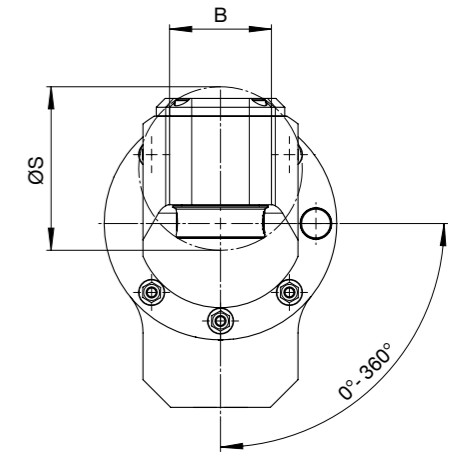
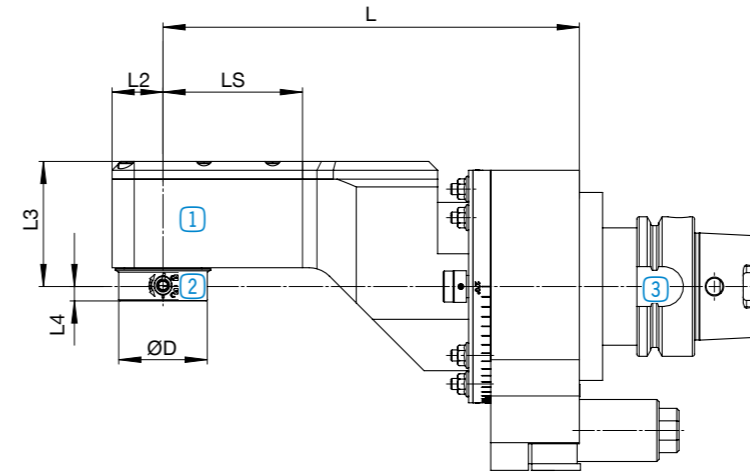


Coromant  
Capto®



KM™

### Angle head without IC



① Angle head body  
page 46



② Output spindle /  
clamping system  
page 48



③ Drive cone  
page 54

extremely narrow  
design  
page 50

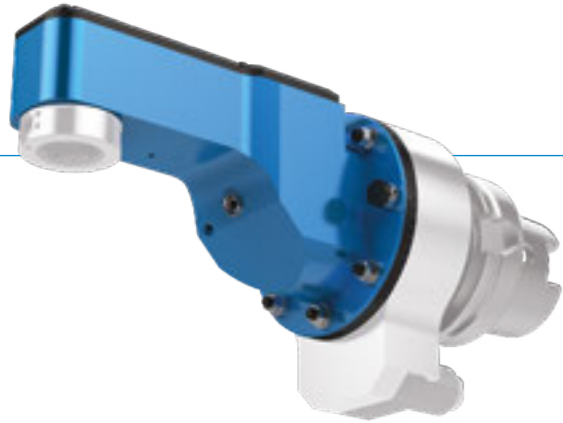
### Specifications

Change the angle head	Machining	Number of output spindles	Axis angle	Coolant feed for cutting edge

SLIM WGX

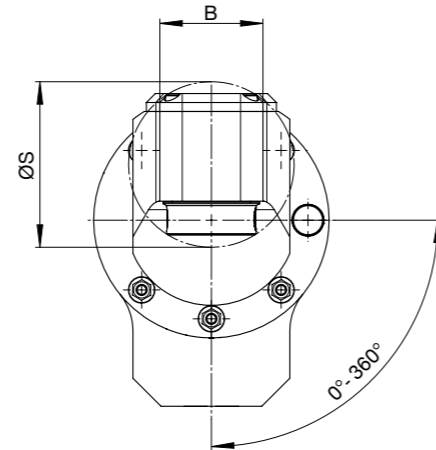
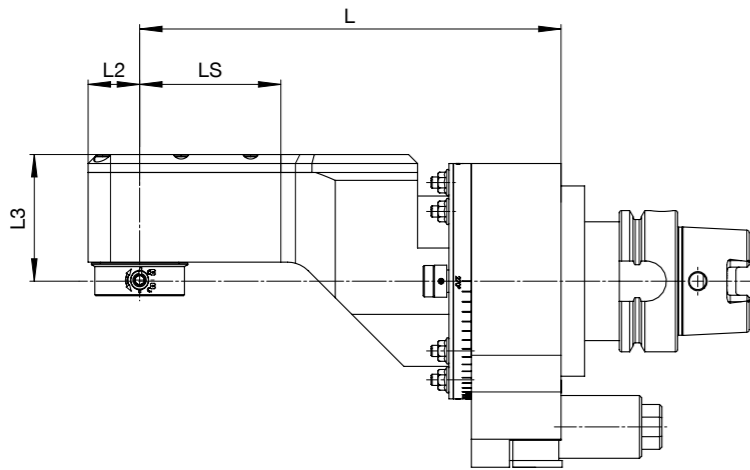
# ANGLE HEAD SLIM WGX

## ▶ ANGLE HEAD BODY (SIZE)



**i** More sizes on request.  
Higher speeds are possible as an option.

## ▶ Angle head without IC



### Size 05 / L2=16

$M_{2\max}$	= 12 Nm
$i$	= 1:1,607
$n_{2\max}$	= 8,000 rpm
$p_{\max}$	= 100 bar

### ▶ Technical data

LS [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
24.2					149.2	- / ✓		5
56.2	16	56	40	63	181.2	- / ✓	-	5.2
88.2					213.2	- / ✓		5.4

### Size 05 / L2=18

$M_{2\max}$	= 15 Nm
$i$	= 1:1,452
$n_{2\max}$	= 8,000 rpm
$p_{\max}$	= 100 bar

### ▶ Technical data

LS [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
25.4					150.4	- / ✓		5.2
57.4	18	58.5	40	71	182.4	- / ✓	-	5.3
89.4					213.4	- / ✓		5.4

### Size 05 / L2=23

$M_{\max}$	= 15 Nm
$i$	= 1:1
$n_{\max}$	= 8,000 rpm
$p_{\max}$	= 100 bar

### ▶ Technical data

LS [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
31					156	- / ✓		5.4
63	23	56.5	46	74	188	- / ✓	-	5.5
95					220	- / ✓		5.7

### Size 07

$M_{\max}$	= 35 Nm
$i$	= 1:1
$n_{\max}$	= 6,000 rpm
$p_{\max}$	= 100 bar

### ▶ Technical data

LS [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
54					178	- / ✓		9
85	26	65	52	78	215	- / ✓	-	9.5
160					290	- / ✓		10



\*Optional: EC via spray nozzle

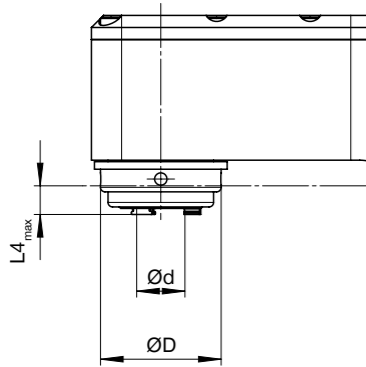
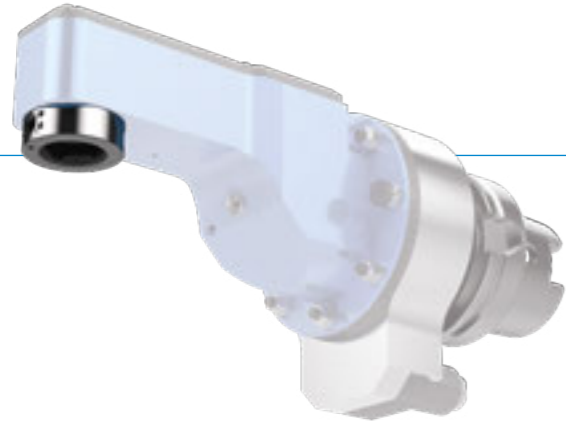


$M_{2\max}$  = output torque  
 $n_{2\max}$  = output speed



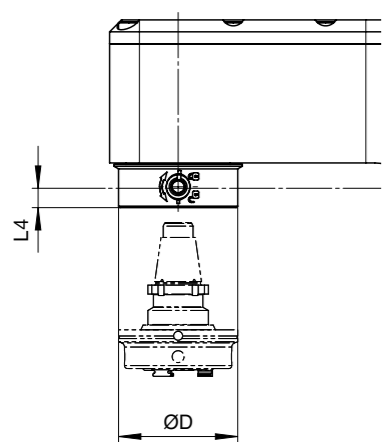
# ANGLE HEAD SLIM WGX

## ▶ OUTPUT SPINDLE / CLAMPING SYSTEM



### ▶ Technical data

Collet chuck	Size	L4 <sub>max</sub> [mm]	ØD [mm]	Ød <sub>max</sub> [mm]
ER11A	05 (L2=16)	1	30	7
ER16A	05 (L2=18)	7	44	10
ER20A	05 (L2=23)	10	44	13
ER25A	07	4	47	16



**i** For adapters and dimensions, see catalogue **BENZ Modular Tool Systems**



### ▶ Technical data

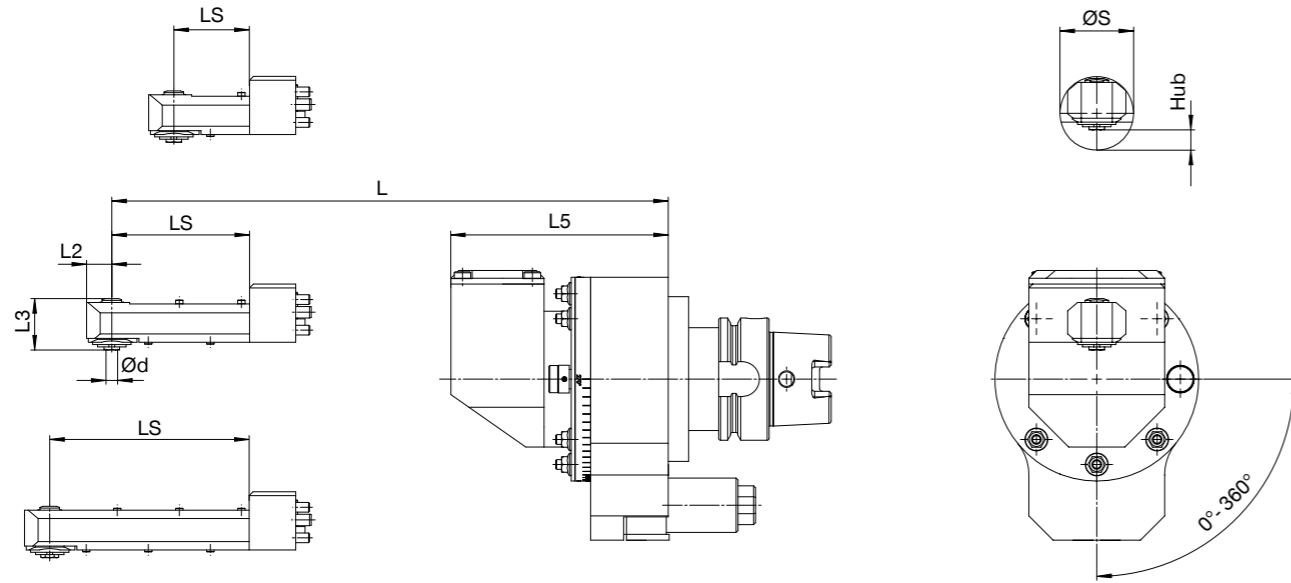
BENZ Solidfix®	Size	L4 [mm]	ØD [mm]
S2	05 (L2=23)	6.5	40
S3	07	2.5	50



# ANGLE HEAD SLIM WGX-S

## ▶ EXTREMELY NARROW DESIGN

### ▶ Angle head without IC



		▶ Technical data										
Size 05 / ØS=25		LS [mm]	L2 [mm]	L3 [mm]	L5 [mm]	Ød [mm]	ØS [mm]	L [mm]	Hub [mm]	EC*	IC	Weight [kg]
$M_{2\max}$	= 3 Nm	31						167		- / ✓		3.7
$i$	= 1:2,38	57	12.5	20	112	4	25	193	4	- / ✓	-	3.8
$n_{2\max}$	= 8,000 rpm					Special						
$p_{\max}$	= 100 bar	96						232		- / ✓		3.9

		▶ Technical data										
Size 05 / ØS=29		LS [mm]	L2 [mm]	L3 [mm]	L5 [mm]	Ød [mm]	ØS [mm]	L [mm]	Hub [mm]	EC*	IC	Weight [kg]
$M_{2\max}$	= 3 Nm	32						168		- / ✓		3.8
$i$	= 1:2,19	71	13.5	20	112	4	29	207	6	- / ✓	-	3.9
$n_{2\max}$	= 8,000 rpm					Special						
$p_{\max}$	= 100 bar	97						233		- / ✓		4.0

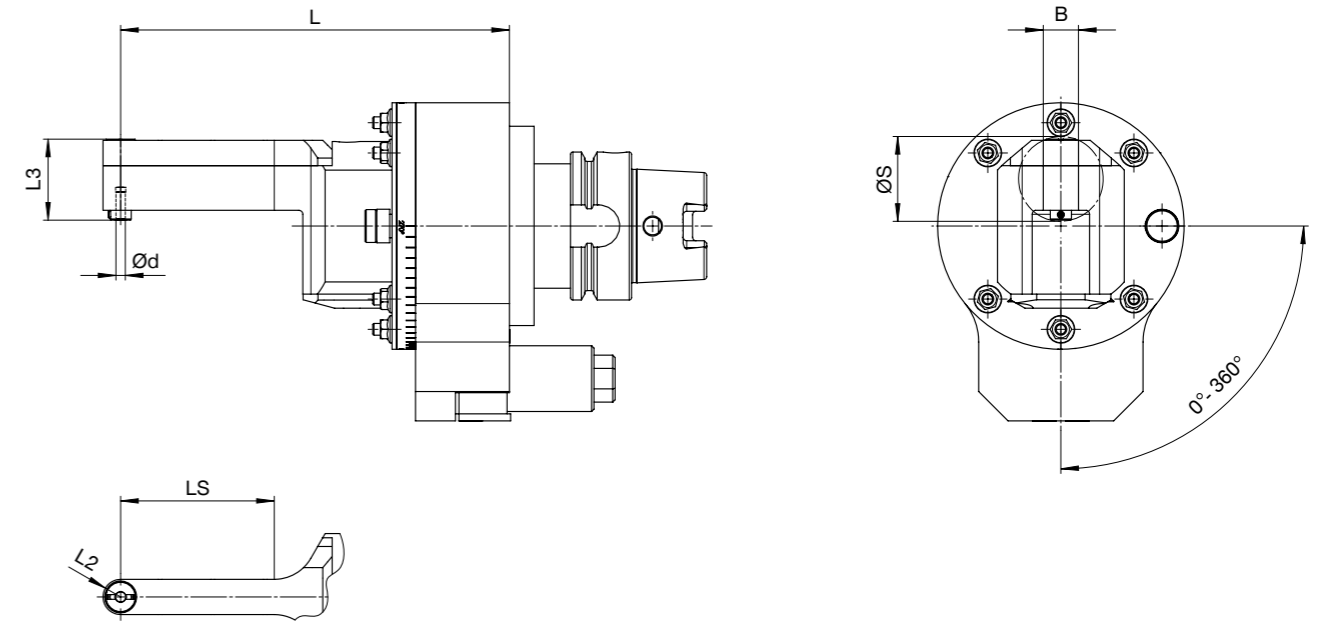
		▶ Technical data										
Size 05 / ØS=32		LS [mm]	L2 [mm]	L3 [mm]	L5 [mm]	Ød [mm]	ØS [mm]	L [mm]	Hub [mm]	EC*	IC	Weight [kg]
$M_{2\max}$	= 5 Nm	37						173		- / ✓		3.8
$i$	= 1:2,273	69	12	26,5	112	5	32	205	9	- / ✓	-	4
$n_{2\max}$	= 8,000 rpm					Special						
$p_{\max}$	= 100 bar	95						231		- / ✓		4.2

\*Optional: EC via spray nozzle

$M_{2\max}$  = output torque  
 $n_{2\max}$  = output speed

## ▶ EXTREMELY NARROW DESIGN

### ▶ Angle head without EC+IC / Output spindle: Whistle Notch



		▶ Technical data										
Size 05 / L2=7.5		LS [mm]	L2 [mm]	L3 [mm]	Ød [mm]	B [mm]	ØS [mm]	L [mm]	EC	IC	Weight [kg]	
$M_{2\max}$	= 3 Nm				4	15	37	166	-	-	5.4	
$i$	= 1:2,07	66	7.5	34.5								
$n_{2\max}$	= 8,000 rpm				DIN 1835E							

		▶ Technical data										
Size 05 / L2=9.5		LS [mm]	L2 [mm]	L3 [mm]	Ød [mm]	B [mm]	ØS [mm]	L [mm]	EC	IC	Weight [kg]	
$M_{2\max}$	= 5 Nm	45			6	19	39.4	143	-	-	5.4	
$i$	= 1:1,61		9.5	37								
$n_{2\max}$	= 8,000 rpm				DIN 1835E			172			5.6	

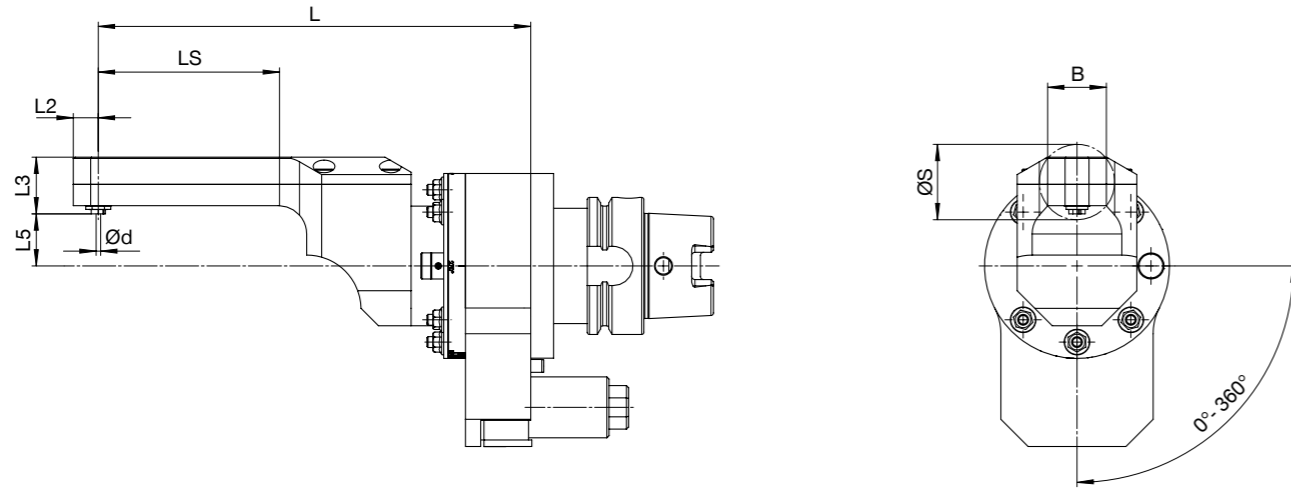
also available with Weldon output spindle

$M_{2\max}$  = output torque  
 $n_{2\max}$  = output speed

# ANGLE HEAD SLIM WGX-S

## ▶ EXTREMELY NARROW DESIGN

### ▶ Angle head without IC / Output spindle: Nann-Collet Chuck



#### Size 04 / L2=11.5

$M_{2\max}$	= 8 Nm
$i$	= 1:1,708
$n_{2\max}$	= 10,000 rpm
$p_{\max}$	= 50 bar

#### ▶ Technical data

LS [mm]	L2 [mm]	L3 [mm]	L5 [mm]	B [mm]	Ød [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
38.5					4		154	- / ✓		3.7
83	11.5	28	22	27	DIN 6043 E	35	199	- / ✓	-	3.8
128							244	- / ✓		3.9

#### Size 04 / L2=14

$M_{2\max}$	= 10 Nm
$i$	= 1:1,367
$n_{2\max}$	= 8,000 rpm
$p_{\max}$	= 50 bar

#### ▶ Technical data

LS [mm]	L2 [mm]	L3 [mm]	L5 [mm]	B [mm]	Ød [mm]	ØS [mm]	L [mm]	EC*	IC	Weight [kg]
42.5					6		158	- / ✓		3.8
89	14	38	14	30	DIN E603E-3	44	205	- / ✓	-	3.9
135							251	- / ✓		4.1

\*Optional: EC via spray nozzle

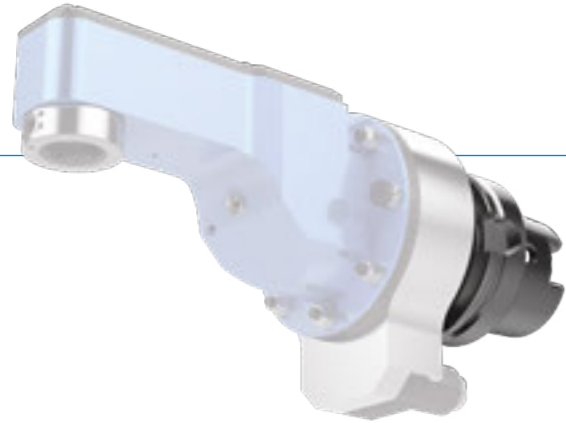
further Nann-Collet Chucks on request

$M_{2\max}$  = output torque  
 $n_{2\max}$  = output speed



# ANGLE HEAD SLIM WGX

## ▶ DRIVE CONE



**i** Technical data for other machine interfaces on request.

### Type: Steep taper



	▶ Size		
	04	05	07
<b>SK</b> DIN 69871			
<b>SK 40</b>	✓	✓	✓
<b>SK 50</b>	✓	✓	✓



	▶ Size		
	04	05	07
<b>MAS BT</b>			
<b>BT 40</b>	✓	✓	✓
<b>BT 50</b>	✓	✓	✓



	▶ Size		
	04	05	07
<b>CAT</b>			
<b>CAT 40</b>	✓	✓	✓
<b>CAT 50</b>	✓	✓	✓

### Type: Hollow shank taper



	▶ Size		
	04	05	07
<b>HSK</b> DIN 69893			
<b>HSK 40</b>	✓	-	-
<b>HSK 50</b>	✓	✓	-
<b>HSK 63</b>	✓	✓	✓
<b>HSK 80</b>	✓	✓	✓
<b>HSK 100</b>	✓	✓	✓



	▶ Size		
	04	05	07
<b>Coromant Capto®</b>			
<b>C3</b>	✓	-	-
<b>C4</b>	✓	✓	-
<b>C5</b>	✓	✓	✓
<b>C6</b>	✓	✓	✓
<b>C8</b>	✓	✓	✓



	▶ Size		
	04	05	07
<b>Kennametal™</b>			
<b>KM 40</b>	✓	-	-
<b>KM 50</b>	✓	✓	-
<b>KM 63</b>	✓	✓	✓
<b>KM 80</b>	✓	✓	✓
<b>KM 100</b>	✓	✓	✓

# ANGLE HEAD FIX WFX

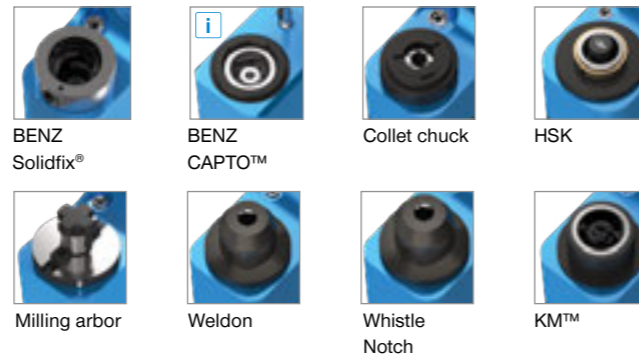
## MODULAR DESIGN



### ANGLE HEAD BODY (SIZE)

05 07 15 20

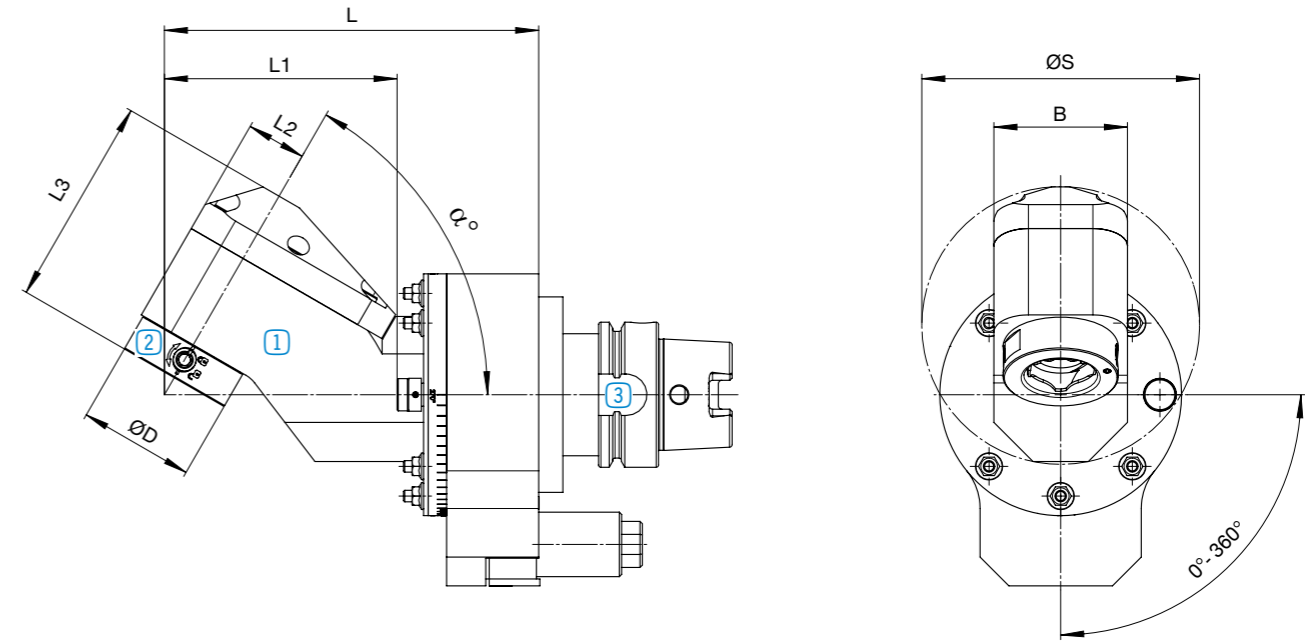
### OUTPUT SPINDLE / CLAMPING SYSTEM



### DRIVE CONE



### Angle head with IC



1 Angle head body page 58



2 Output spindle / clamping system page 60



3 Drive cone page 62

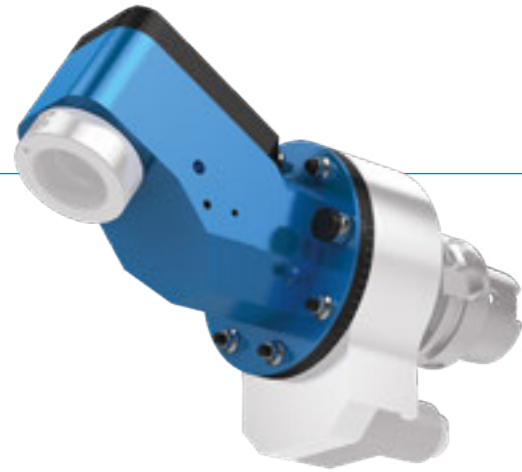
### Specifications

Change the angle head	Machining	Number of output spindles	Axis angle	Coolant feed for cutting edge

Other dimensions for angle heads with BENZ CAPTO™ output spindle. Dimensions available on request.

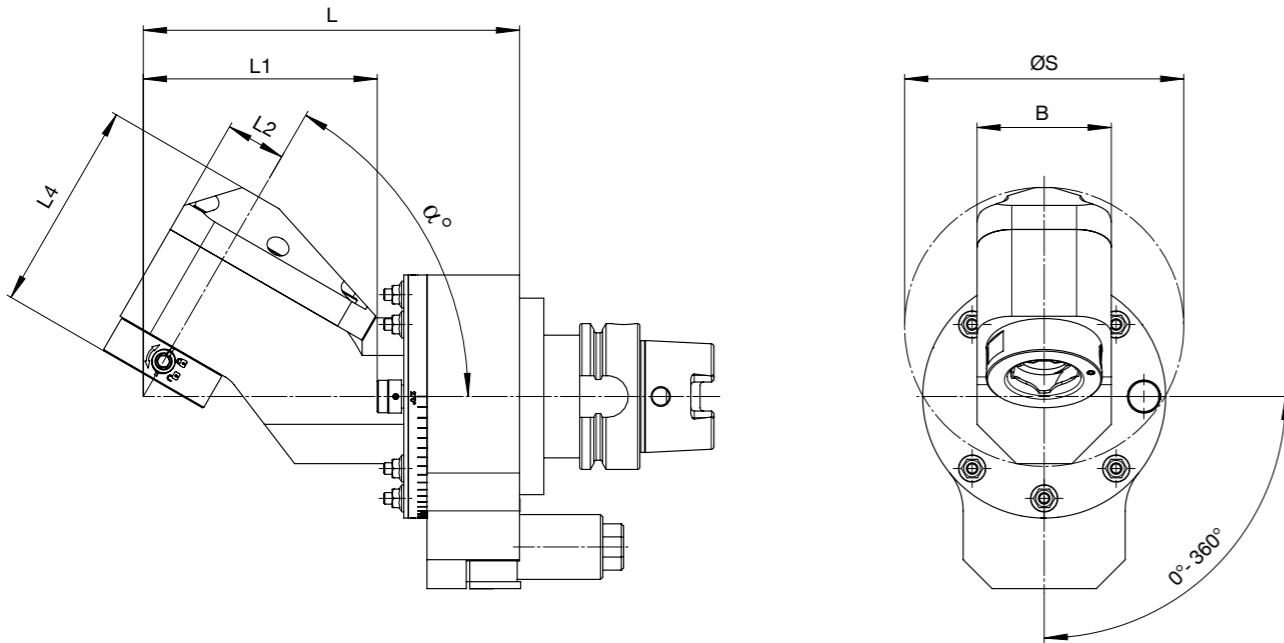
# ANGLE HEAD FIX WFX

## ▶ ANGLE HEAD BODY (SIZE)



**i** More sizes on request.  
Higher speeds are possible as an option.

## ▶ Angle head with IC



### Size 05

$M_{max}$  = 30 Nm  
 $i$  = 1:1  
 $n_{max}$  = 8,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

$\alpha$ [°]	L1 [mm]	L2 [mm]	L4* [mm]	B [mm]	$\varnothing S$ [mm]	L** [mm]	EC	IC	EC+IC	Weight [kg]
0°-120°	138	26	91	54	approx. 108	approx. 200	- / ✓	- / ✓	✓	4

### Size 07

$M_{max}$  = 70 Nm  
 $i$  = 1:1  
 $n_{max}$  = 6,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

$\alpha$ [°]	L1 [mm]	L2 [mm]	L4* [mm]	B [mm]	$\varnothing S$ [mm]	L** [mm]	EC	IC	EC+IC	Weight [kg]
0°-120°	163	35	108	80	approx. 141	approx. 225	- / ✓	- / ✓	✓	9.5

### Size 15

$M_{max}$  = 150 Nm  
 $i$  = 1:1  
 $n_{max}$  = 4,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

$\alpha$ [°]	L1 [mm]	L2 [mm]	L4* [mm]	B [mm]	$\varnothing S$ [mm]	L** [mm]	EC	IC	EC+IC	Weight [kg]
0°-120°	165	40	125	92	approx. 170	approx. 235	- / ✓	- / ✓	✓	13

### Size 20

$M_{max}$  = 230 Nm  
 $i$  = 1:1  
 $n_{max}$  = 3,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

$\alpha$ [°]	L1 [mm]	L2 [mm]	L4* [mm]	B [mm]	$\varnothing S$ [mm]	L** [mm]	EC	IC	EC+IC	Weight [kg]
0°-120°	180	40	125	100	approx. 182	approx. 250	- / ✓	- / ✓	✓	16

**i** \*Value refers to an angle head with BENZ Solidfix® output spindle  
\*\* depending on angle  $\alpha$

# ANGLE HEAD FIX WFX

## ▶ OUTPUT SPINDLE / CLAMPING SYSTEM



**i** Technical data for other output spindles / clamping systems on request:



Weldon

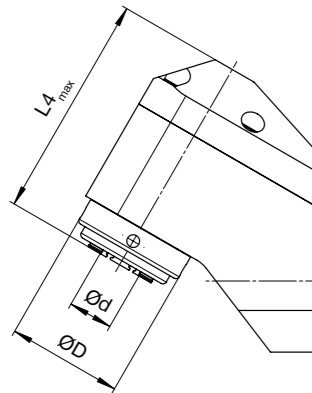


Whistle  
Notch



KM™

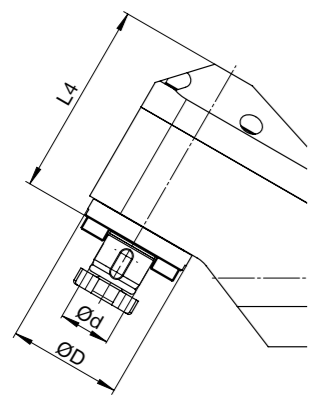
**i** We show you **preferable sizes** in the following tables. Smaller output spindles are possible at any time as an option.



Collet chuck

### ▶ Technical data

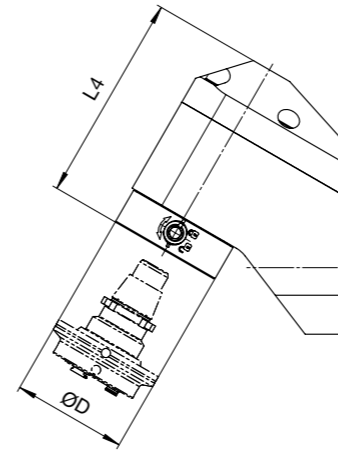
	Size	L4 <sub>max</sub> [mm]	ØD [mm]	Ød <sub>max</sub> [mm]
<b>ER25A</b>	05	91	47	16
<b>ER32A</b>	07	106	55	20
<b>ER40A</b>	15	125	70	30
<b>ER40A</b>	20	125	70	30



Milling arbor

### ▶ Technical data

	Size	L4 [mm]	ØD [mm]	Ød [mm]
<b>22</b>	05	83	48	22
<b>27</b>	07	98	60	27
<b>32</b>	15	122	75	32
<b>40</b>	15	125	90	40
<b>40</b>	20	129	90	40



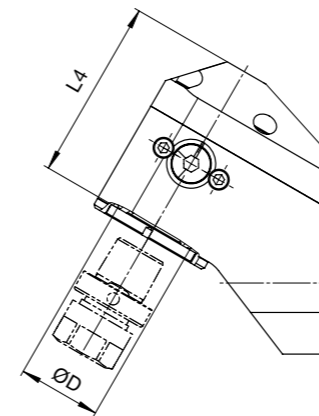
**i** For adapters and dimensions, see catalogue [BENZ Modular Tool Systems](#)



**BENZ Solidfix®**

### ▶ Technical data

	Size	L4 [mm]	ØD [mm]
<b>S3</b>	05	91	50
<b>S4</b>	07	108	63
<b>S5</b>	15	125	75
<b>S5</b>	20	128	75



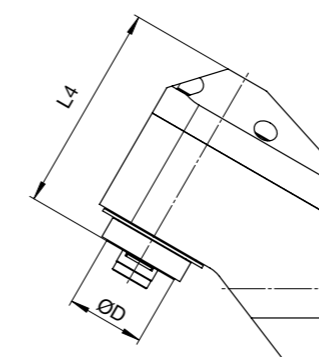
**i** For adapters and dimensions, see catalogue [BENZ Modular Tool Systems](#)



**BENZ CAPTO™**

### ▶ Technical data

	Size	L4 [mm]	ØD [mm]
<b>C3</b>	05	100	32
<b>C4</b>	07	108	40
<b>C5</b>	15	129	50
<b>C6</b>	20	148	63



**HSK**

### ▶ Technical data

	Size	L4 [mm]	ØD [mm]
<b>HSK 32</b>	05	85	32
<b>HSK 40</b>	07	101	40
<b>HSK 50</b>	15	124	50
<b>HSK 63</b>	15	131	63
<b>HSK 63</b>	20	129	63

# ANGLE HEAD FIX WFX

## DRIVE CONE



**i** Technical data for other machine interfaces on request.

### Type: Steep taper



	Size			
	05	07	15	20
<b>SK</b> DIN 69871				
<b>SK 40</b>	✓	✓	-	-
<b>SK 50</b>	✓	✓	✓	✓



	Size			
	05	07	15	20
<b>MAS BT</b>				
<b>BT 40</b>	✓	✓	-	-
<b>BT 50</b>	✓	✓	✓	✓



	Size			
	05	07	15	20
<b>CAT</b>				
<b>CAT 40</b>	✓	✓	-	-
<b>CAT 50</b>	✓	✓	✓	✓

### Type: Hollow shank taper



	Size			
	05	07	15	20
<b>HSK</b> DIN 69893				
<b>HSK 40</b>	-	-	-	-
<b>HSK 50</b>	✓	-	-	-
<b>HSK 63</b>	✓	✓	-	-
<b>HSK 80</b>	✓	✓	✓	✓
<b>HSK 100</b>	✓	✓	✓	✓



	Size			
	05	07	15	20
<b>Coromant Capto®</b>				
<b>C3</b>	-	-	-	-
<b>C4</b>	✓	-	-	-
<b>C5</b>	✓	✓	✓	✓
<b>C6</b>	✓	✓	✓	✓
<b>C8</b>	✓	✓	✓	✓



	Size			
	05	07	15	20
<b>Kennametal™</b>				
<b>KM 40</b>	-	-	-	-
<b>KM 50</b>	✓	-	-	-
<b>KM 63</b>	✓	✓	-	-
<b>KM 80</b>	✓	✓	✓	✓
<b>KM 100</b>	✓	✓	✓	✓



# ANGLE HEAD FLEX WDX

## MODULAR DESIGN



### ANGLE HEAD BODY (SIZE)

05 07 15

### OUTPUT SPINDLE / CLAMPING SYSTEM



BENZ  
Solidfix®



Collet chuck



HSK



Weldon



Whistle  
Notch



KM™

### DRIVE CONE



SK  
DIN 69871



MAS BT



CAT



HSK  
DIN 69893

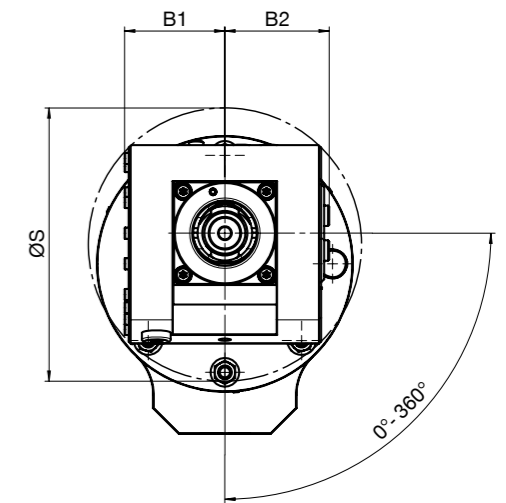
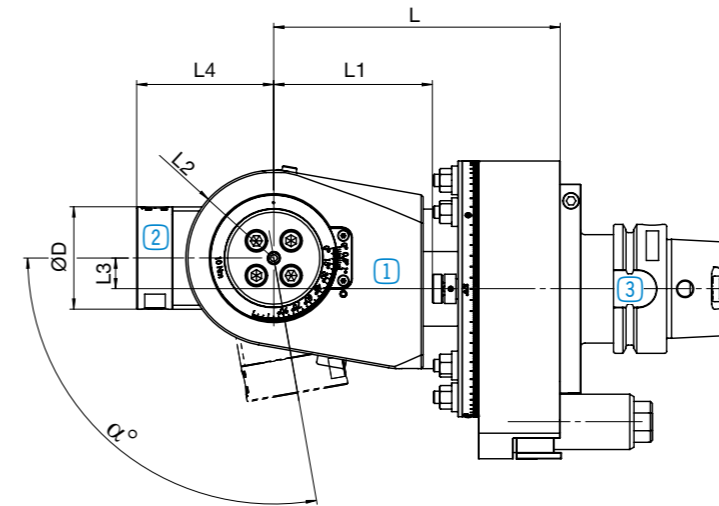


Coromant  
Capto®



KM™

### Angle head with IC



1 Angle head body  
page 62



2 Output spindle /  
clamping system  
page 64



3 Drive cone  
page 66

### Specifications

Change the angle head	Machining	Number of output spindles	Axis angle	Coolant feed for cutting edge

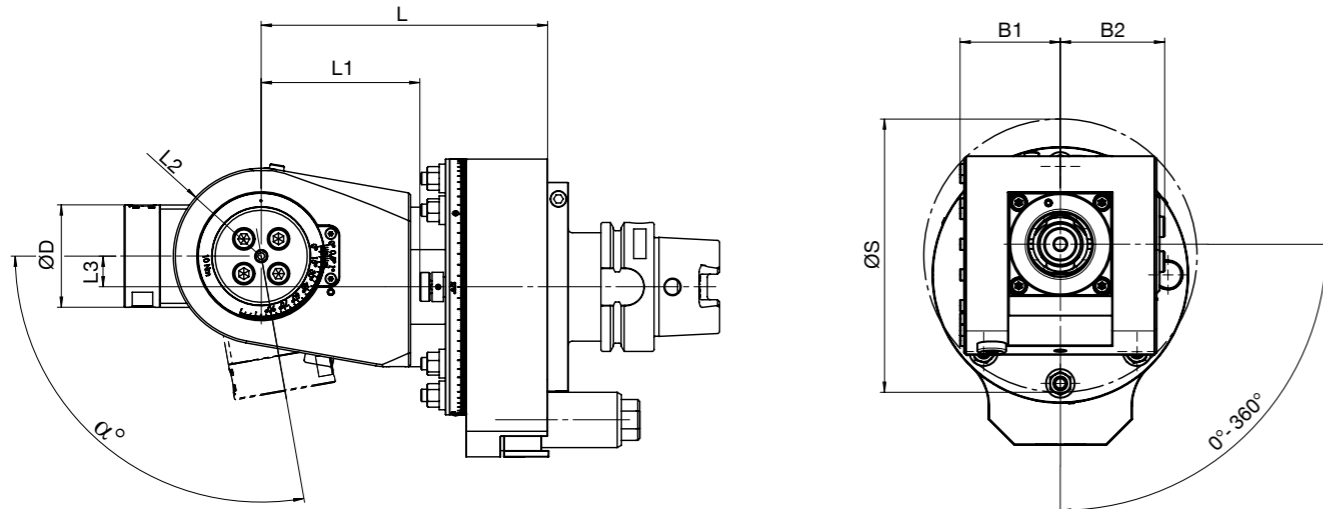
# ANGLE HEAD FLEX WDX

## ▶ ANGLE HEAD BODY (SIZE)



**i** More sizes on request.  
Higher speeds are possible as an option.

### ▶ Angle head with IC



### Size 05

$M_{max}$  = 20 Nm  
 $i$  = 1:1  
 $n_{max}$  = 8,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

$\alpha$ [°]	L1 [mm]	L2 [mm]	L3 [mm]	B1 [mm]	B2 [mm]	ØS [mm]	L [mm]	EC	IC	EC+IC	Weight [kg]
0°-100°	68.5	37	15	46.5	48.5	123	130	- / ✓	- / ✓	✓	7

### Size 07

$M_{max}$  = 50 Nm  
 $i$  = 1:1  
 $n_{max}$  = 6,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

$\alpha$ [°]	L1 [mm]	L2 [mm]	L3 [mm]	B1 [mm]	B2 [mm]	ØS [mm]	L [mm]	EC	IC	EC+IC	Weight [kg]
0°-100°	77.5	43	15	49	51	134	140	- / ✓	- / ✓	✓	9

### Size 15

$M_{max}$  = 90 Nm  
 $i$  = 1:1  
 $n_{max}$  = 4,000 rpm  
 $p_{max}$  = 100 bar

#### ▶ Technical data

$\alpha$ [°]	L1 [mm]	L2 [mm]	L3 [mm]	B1 [mm]	B2 [mm]	ØS [mm]	L [mm]	EC	IC	EC+IC	Weight [kg]
0°-100°	109	50	15	56.5	58.5	156	180	- / ✓	- / ✓	✓	16.5

# ANGLE HEAD FLEX WDX

## ▶ OUTPUT SPINDLE / CLAMPING SYSTEM



**i** Technical data for other toutput spindles / clamping systems on request:



Weldon

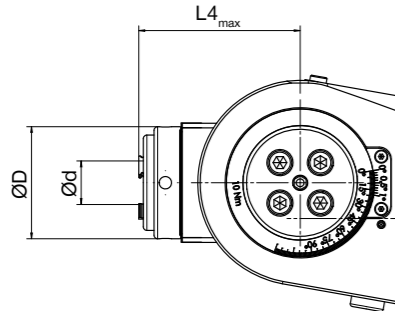


Whistle  
Notch



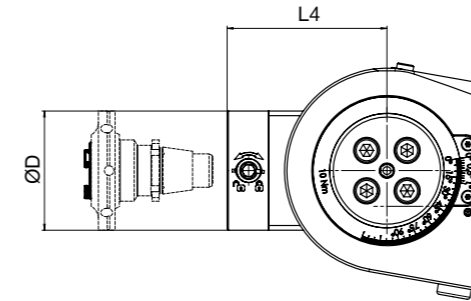
KM™

**i** We show you **preferable sizes** in the following tables. Smaller output spindles are possible at any time as an option.



Collet chuck

▶ Technical data				
Size	L4 <sub>max</sub> [mm]	ØD [mm]	Ød <sub>max</sub> [mm]	
ER20A	05	62.5	40	16
ER25A	07	71.9	45	20
ER32A	15	73.2	55	30

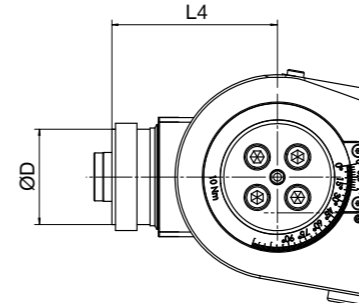


**i** For adapters and dimensions, see catalogue **BENZ Modular Tool Systems**



BENZ Solidfix®

▶ Technical data			
Size	L4 [mm]	ØD [mm]	
S2	05	56	40
S3	07	67	50
S4	15	74	63



HSK

▶ Technical data			
Size	L4 [mm]	ØD [mm]	
HSK 32	05	55	32
HSK 40	07	67	40
HSK 50	15	77	50

# ANGLE HEAD FLEX WDX

## DRIVE CONE



**i** Technical data for other machine interfaces on request.

### Type: Steep taper



	Size		
	05	07	15
<b>SK</b> DIN 69871			
<b>SK 40</b>	✓	✓	-
<b>SK 50</b>	✓	✓	✓



	Size		
	05	07	15
<b>MAS BT</b>			
<b>BT 40</b>	✓	✓	-
<b>BT 50</b>	✓	✓	✓



	Size		
	05	07	15
<b>CAT</b>			
<b>CAT 40</b>	✓	✓	-
<b>CAT 50</b>	✓	✓	✓

### Type: Hollow shank taper



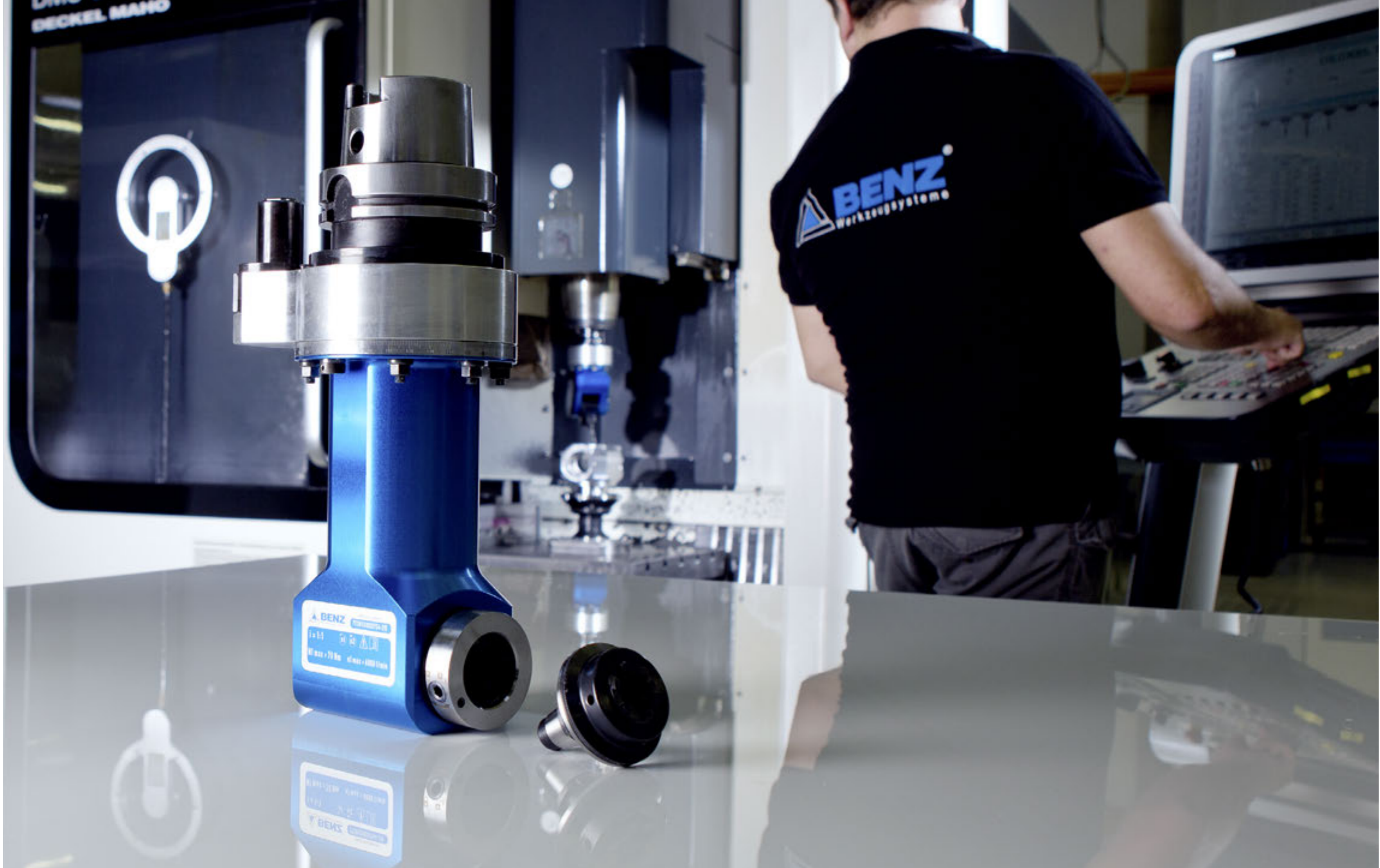
	Size		
	05	07	15
<b>HSK</b> DIN 69893			
<b>HSK 40</b>	-	-	-
<b>HSK 50</b>	✓	-	-
<b>HSK 63</b>	✓	✓	-
<b>HSK 80</b>	✓	✓	✓
<b>HSK 100</b>	✓	✓	✓



	Size		
	05	07	15
<b>Coromant Capto®</b>			
<b>C3</b>	-	-	-
<b>C4</b>	✓	-	-
<b>C5</b>	✓	✓	✓
<b>C6</b>	✓	✓	✓
<b>C8</b>	✓	✓	✓



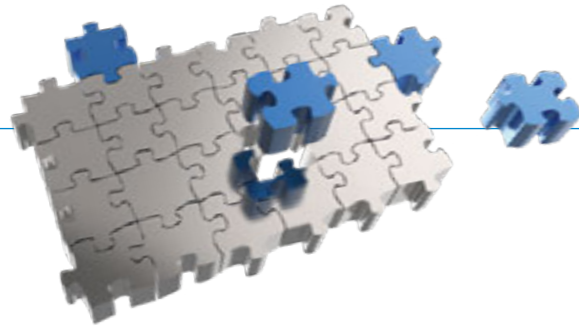
	Size		
	05	07	15
<b>Kennametal™</b>			
<b>KM 40</b>	-	-	-
<b>KM 50</b>	✓	-	-
<b>KM 63</b>	✓	✓	-
<b>KM 80</b>	✓	✓	✓
<b>KM 100</b>	✓	✓	✓



# ANGLE HEADS

## CUSTOMISED SPECIAL SOLUTIONS

### ▶ YOUR CUSTOM ANGLE HEAD



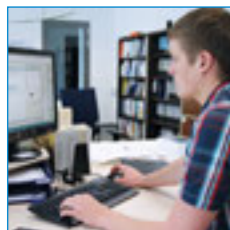
**We love the challenge and the exceptional!**

▶ Do you need an angle head that does not match any standard parameters? No problem! We develop and produce your angle head made to measure exactly according to your specifications. Small adaptations to standard products and highly complex new developments are our strength - prompt, affordable and with the usual BENZ quality thanks to our modular kits. Extreme conditions anywhere in the world: our tried and tested components and systems provide you with limitless possibilities.

### FROM THE CUSTOMER REQUIREMENT TO THE INDIVIDUAL SOLUTION



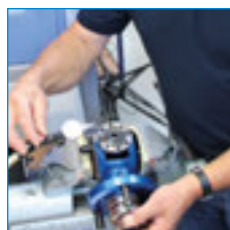
1 We define the best possible solution and develop an appropriate concept based on your requirements.



2 Your contact partner for construction starts implementation after coordinating the solution proposal.



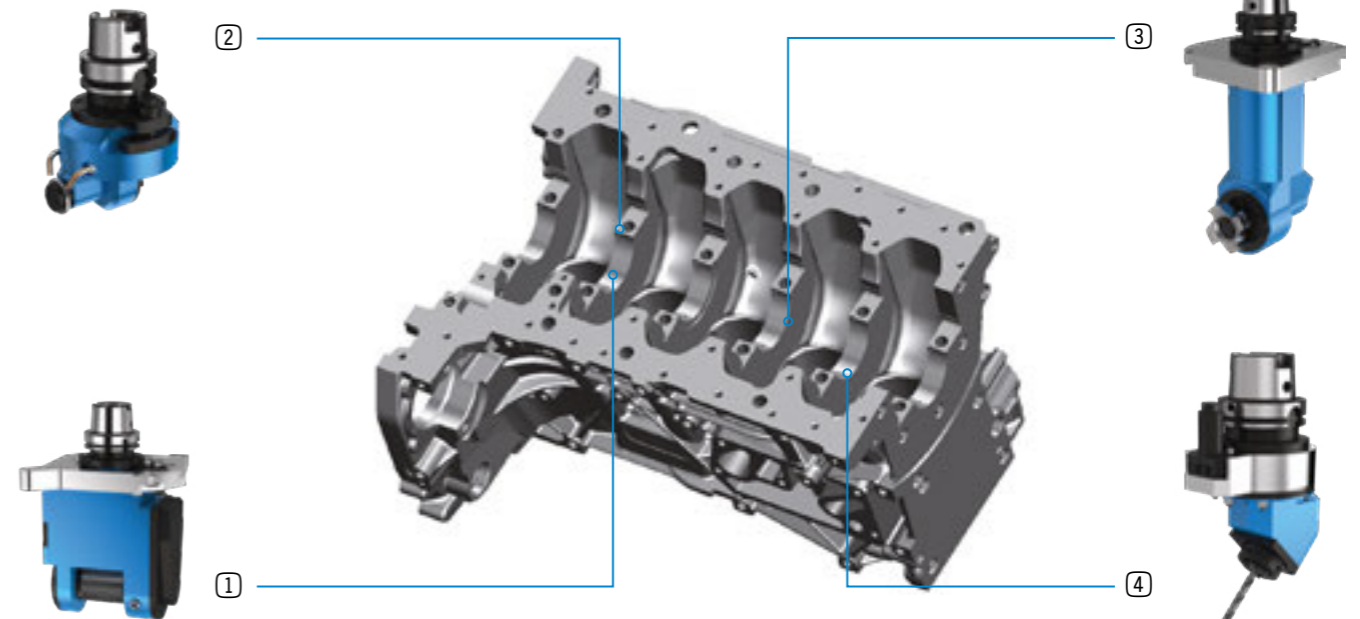
3 Your angle head is a high quality piece of work and is produced and assembled at the BENZ factory by experienced employees.



4 Your angle head is subjected to various performance tests before it leaves our factory.



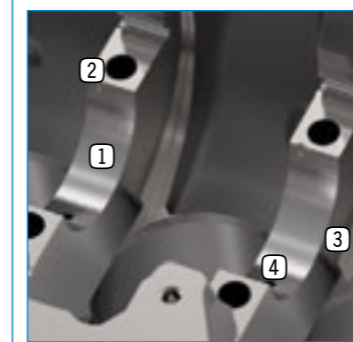
### ▶ AUTOMOTIVE EXAMPLES



Engine block machining in the automobile industry



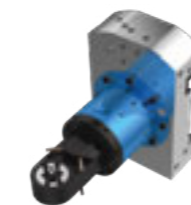
#### Workpiece in detail



#### ▶ Automobile industry

1	2	3	4
Bearing shell milling	Retaining slot milling	Side plate milling	Oil hole drilling

#### More special solutions:



Milling operation for servo housing



Milling operation at rear side of a disc brake



Engine block machining

# ANGLE HEADS

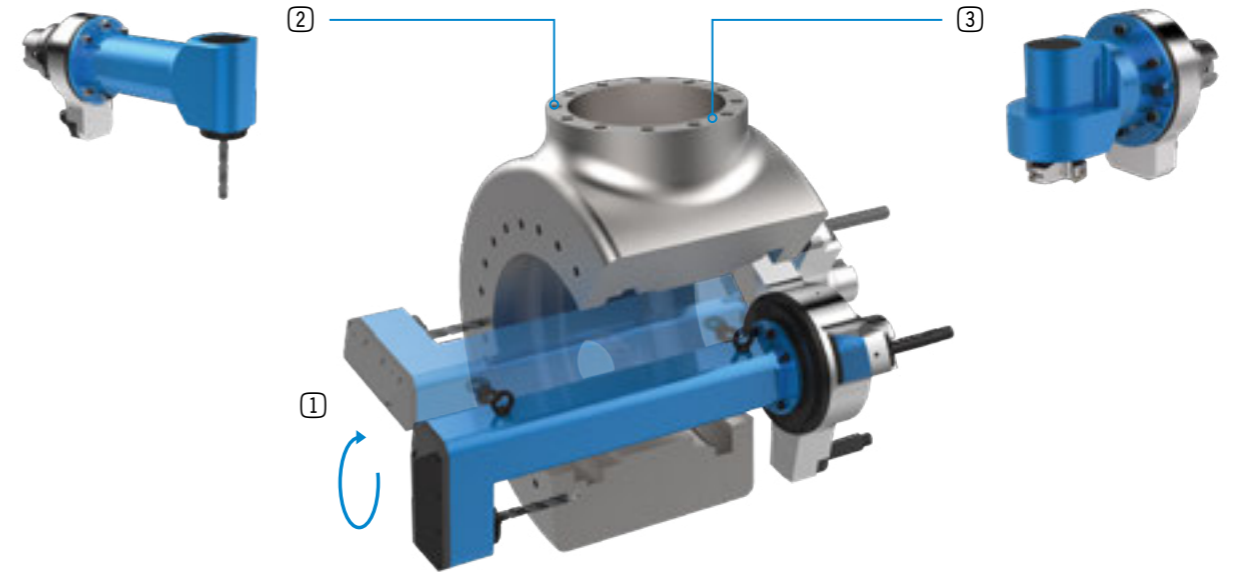
## CUSTOMISED SPECIAL SOLUTIONS

### AEROSPACE EXAMPLES



Engine machining in the aerospace industry

### WIND POWER EXAMPLES



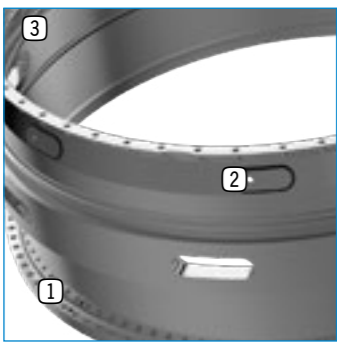
Rotor hub machining in the wind power industry



**Aerospace**

1	2	3
Flange hole drilling	Connection hole drilling	Internal hole drilling

Workpiece in detail



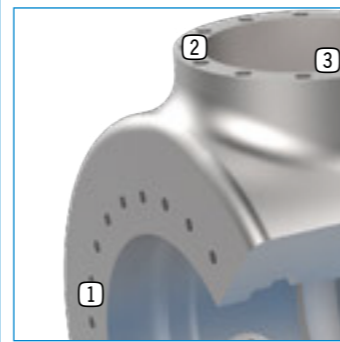
More special solutions:



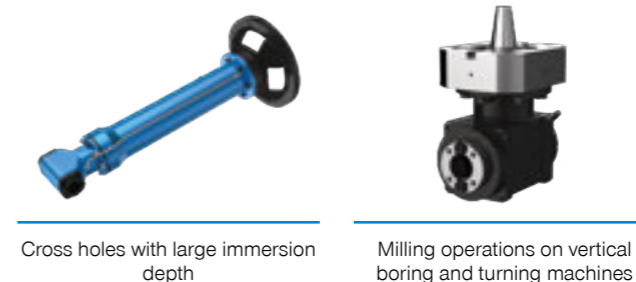
**Wind power**

1	2	3
Core hole drilling	Thread tapping	Flange surface milling

Workpiece in detail



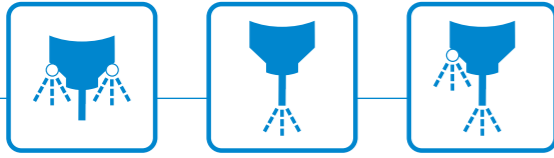
More special solutions:



# ANGLE HEADS

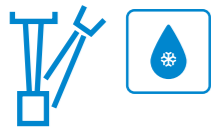
## EQUIPMENT VERSIONS

### ▶ COOLANT FEED FOR CUTTING EDGE



- ▶ **Cooling of the tool**  
for demanding machining work
- ▶ **Various options**  
internal cooling, external cooling or a combination of both
- ▶ **Cooling lubricant options**  
Water, oil, MQL and a

### Types of cooling (coolants)



Water cooling



Oil cooling

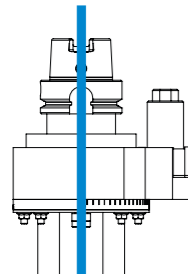


MQL

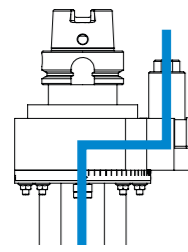


Air cooling

### Coolant feed from the machine



via the spindle

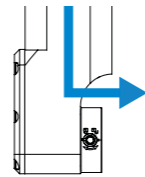


via the stop block

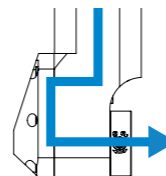
### Coolant feed to the cutting edge



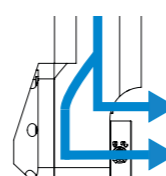
EC



IC



EC+IC



### ▶ ADDITIONAL SUPPORT



- ▶ **Increased rigidity**  
between angle head and machine spindle
- ▶ **Optimum power transmission**  
from the machine spindle onto the tool
- ▶ **Improved workpiece quality / service life of the angle head**  
due to reduced vibrations

**i** The need for an additional support depends on the respective machining case. Please contact us. We will be happy to advise you.

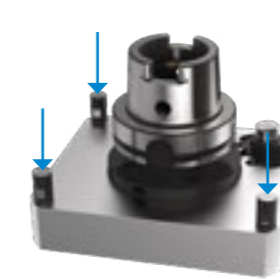
### Versions



Torque support



Torque support with 3-point support



Torque support with 4-point support



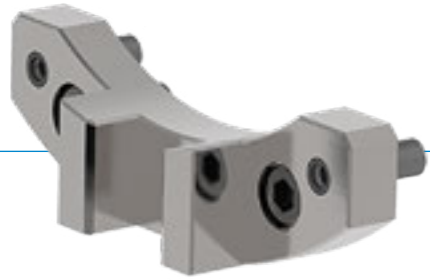
Mechanical/hydraulic additional support



# ANGLE HEADS

## EQUIPMENT VERSIONS

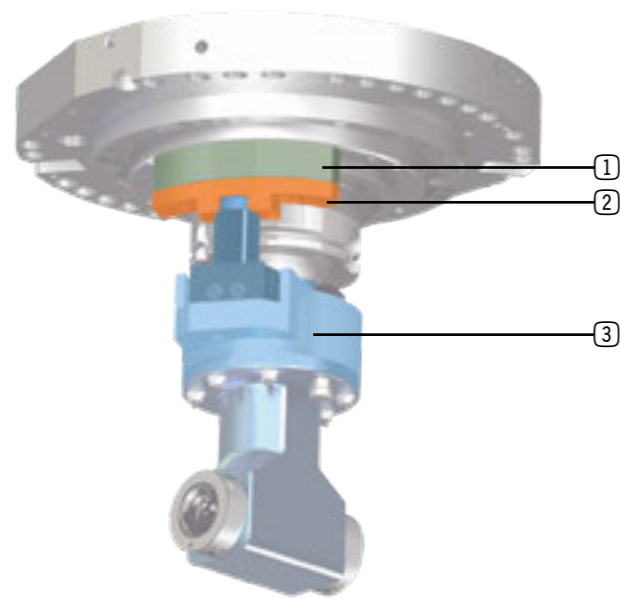
### ▶ LOCK AND UNLOCK BLOCK: STOP BLOCK



- ▶ **Positioning the angle head** at the machine spindle
- ▶ **Fixing the angle head** against possible turning
- ▶ **Guarantees a high level of repeat accuracy** during automatic change of the angle head
- ▶ **ISO 9524 standardised design**

**i** BENZ stop blocks can be adjusted to the machine by the user. In this case, the hole pattern is provided by the user. For this purpose, please observe our latest angle head operating instructions.

We will be happy to help you with the adjustment of the stop block. Please contact us.



- 1 Spacer block**
  - Regulates the distance between stop block and machine
  - Matched to the specific machine
- 2 Stop block**
  - Locks or unlocks the angle head at the machine spindle
  - The slot at the stop block holds the locking bolt of the torque support
- 3 Torque support**
  - Increases the rigidity between angle head and machine spindle
  - As a rule matched to the specific machine
  - Alternative: BENZ standard torque support

### Matching



#### ▶ Stop block / torque support

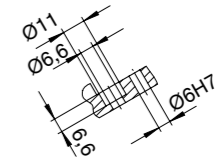
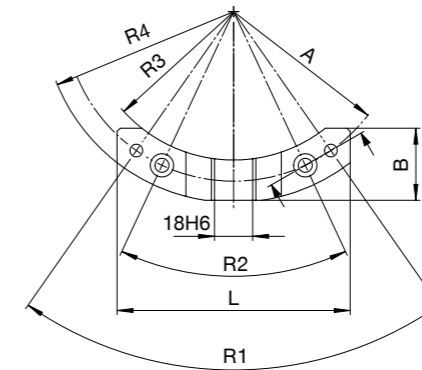
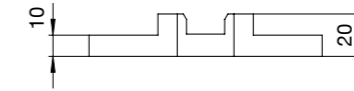
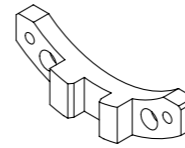
The torque support of the angle head and the stop block at the machining centre must be matched to each other



#### ▶ Stop block / spacer block

The spacer block must be attached to the machine and adjusted by the customer to set the stop block.

### ▶ Standard stop blocks



### ▶ Technical data

Order No.	A [mm]	R1 [°]	R2 [°]	R3 [°]	R4 [°]	L [mm]	B [mm]
<b>K00600-055/075</b>	65	70	50	R55	R75	90	28
<b>K00600-070/090</b>	80	70	50	R70	R90	110	34
<b>K00600-100/120</b>	110	60	40	R100	R120	130	31

# ANGLE HEADS

## EQUIPMENT VERSIONS

► BENZ I.COM



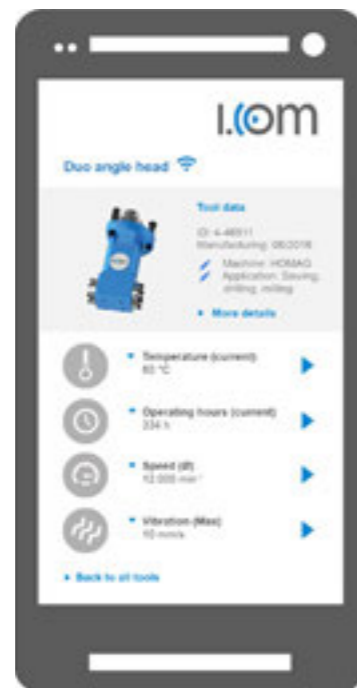
- Continuous monitoring of your production
- Transparent service intervals
- Prevention of unwanted production downtime
- Extension of your unit's service life
- Increased reliability of your production
- Tools that are more efficient and use fewer resources
- Units are ready to be used for Industrie 4.0

Combining the wireless technologies NFC and Bluetooth LE enables you to do things such as transfer the operating states to your smartphone as raw data. The app scans, saves and processes this data. From now on you can monitor your unit to make sure it is running properly and without errors and, if necessary, take action to prevent defective production. The service life of your tool can be extended by the transparent tool monitoring system and the recommended service intervals. The BENZ Cloud solution gives you access not only to the data you yourself have scanned, but also to all data saved in the cloud for your unit. Once the product is installed on your terminal device, it synchronizes the data for each further scan.

The BENZ i.com smartphone and tablet application processes your tool data and thereby gives you important information about your unit's status.



Scanning process: Transferring the tool data and measured values of a unit with BENZ i.com.



Product view: Tool data with a preview image and an overview of scanned measurements.



Temperature: Scanned measurements in detail. Red indicates the temperature was exceeded.



# ANGLE HEADS 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



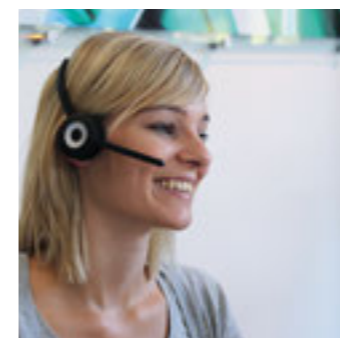
### ► Spare part management

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](http://www.benz-tools.com)

# INQUIRY FORM EXCHANGEABLE UNITS



# INQUIRY FORM EXCHANGEABLE UNITS - SUPPLEMENT



Customer number	<input type="text"/>	Telephone number	<input type="text"/>
Company	<input type="text"/>	Fax number	<input type="text"/>
Contact Mr. <input type="checkbox"/> Ms. <input type="checkbox"/>	<input type="text"/>	E-mail	<input type="text"/>
BENZ retailer (if known)	<input type="text"/>	Date	<input type="text"/>

## Machine information/Tool data

Machine manufacturer  Serial number

Machine model  Machine spindle type

Are BENZ angle heads already in use on the machine?  Yes  No

Drawing number/  
Unit number

Stop block present  Yes ▶ Please send us the drawing of the spindle with the stop block  Nein ▶ Please send us the machine adaptation drawing

Additional support  Yes  No

Tool change  Manual  Automatic ▶ max.  kg max. ø  mm

## Design

Reference article No.

IC not possible

Design	MONO WSX	DUO WZX	FORTE WWX	SLIM WGX	FIX WFX	FLEX WDX	MULTI	RAPIDO	BENZ LinS
Effective length	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Quantity	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Spindle form / Type	BENZ Solidfix®	BENZ CAPTO™	Collet chuck	Weldon	Whistle Notch	Milling arbor	KM™	Other
Size	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Coolant supply  No  Yes ▶  EC  IC

## Machining

Application  Drilling ▶ ø  Material

Please specify the tool ø  Milling - Finishing ▶ ø  Speed max.  rpm

Milling - Roughing ▶ ø  Torque max.  Nm

Tapping ▶ ø  Duty / Off time cycle  /  min

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

Drawing of workpiece enclosed

3D model enclosed

Desired delivery date

**i** Please do only attach this form if you would like to order equipment versions or accessories.

## Equipment versions

Additional support ▶  3-point  4-point  Mechanical/hydraulic

Stop block ▶  A=65  A=80  A=110

BENZ I.com

# USAGE NOTE

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# USAGE NOTE

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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.

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