



# Tooling technology

Angle Heads

METAL MACHINING

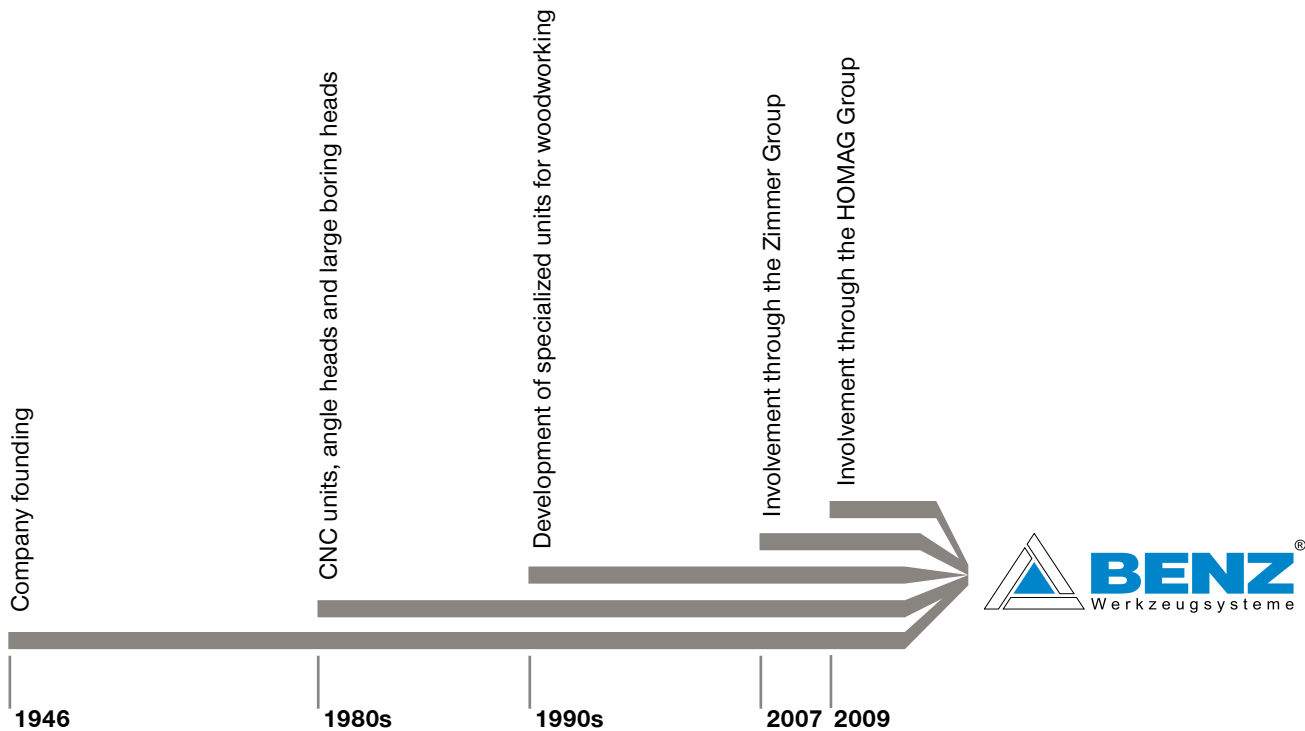


AT BENZ WERKZEUGSYSTEME, OUR MAXIM, “INNOVATION. PRECISION. PASSION.” IS FAR MORE THAN JUST A MARKETING FORMULA. RATHER, IT DESCRIBES THE CORE GOALS OF OUR BUSINESS WHILE ALSO OUTLINING THE REASONS WHY WE HAVE BEEN ABLE TO COMPETE IN THE MARKET SUCCESSFULLY WITH TOOL SYSTEMS FOR WOODWORKING, METAL MACHINING 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 GMBH WERKZEUGSYSTEME



**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

### 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

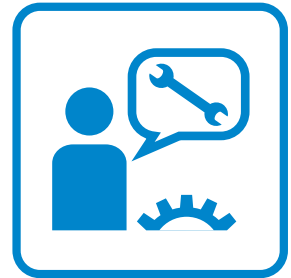
**For any application.** Cost-effectively process and machine wood, composites and aluminium: We provide series production angle heads for drilling, milling, sawing and grinding in addition to other units for special applications.

**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 multi-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.

# TOOLING TECHNOLOGY

## METAL MACHINING

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### EXCHANGEABLE UNITS

# ANGLE HEADS IN OVERVIEW



## SYSTEM DESIGN

1 Page 8



## DESIGN OVERVIEW

2 Page 15



## CUSTOMISED SPECIAL SOLUTIONS

3 Page 68



## EQUIPMENT VERSIONS

4 Page 72



## ACCESSORIES

5 Page 78



## SERVICE

6 Page 82

## PLEASE CHECK:



## INQUIRY FORM

Page 84

# 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. 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.

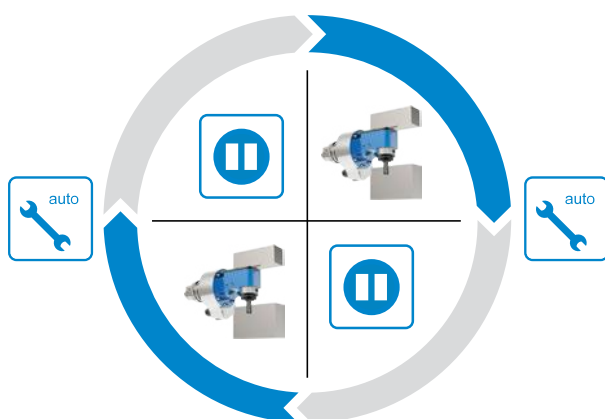
Our objective is to optimize your production sequence. BENZ angle heads assist you in the economic complete machining of your workpieces by minimising the number of tool clampings and machining time and therefore reducing your production costs.

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

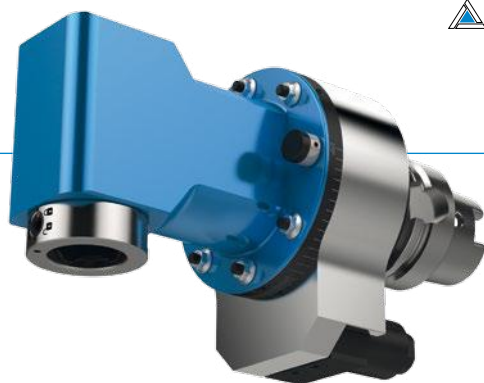


#### ► Angle head additional module

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.

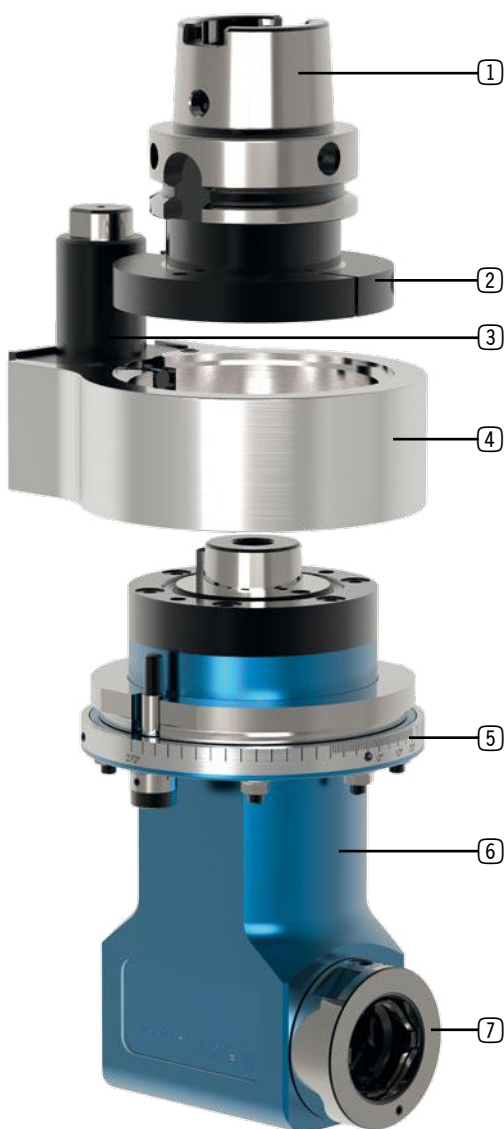
### ► **Compact, modular design**

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.

# ANGLE HEADS

## SYSTEM DESIGN

### ► 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

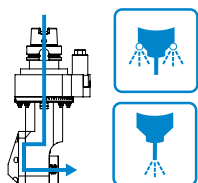
- Different types and sizes of design available for delivery according to application: see P. 15ff.

#### 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



P. 72

#### ADDITIONAL SUPPORT



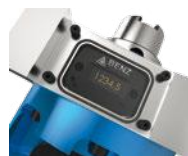
P. 73

#### STOP BLOCK



P. 74

#### OPERATING HOURS COUNTER



P. 76

#### C-AXIS FUNCTIONALITY



P. 77

## ► MODULAR DESIGN

### REQUIREMENTS

#### CHANGE THE ANGLE HEAD



#### OUTPUT SPINDLE

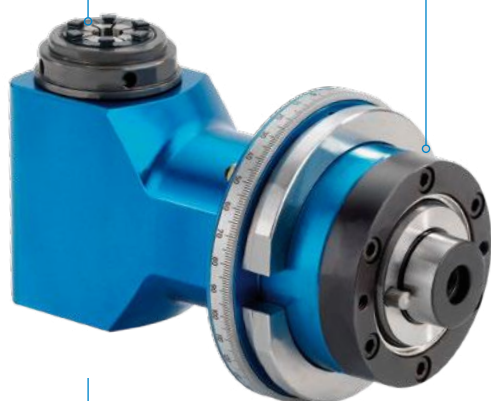
(TOOL HOLDING / CLAMPING SYSTEM)



#### MACHINING CASE



#### MACHINE TYPE



### ANGLE HEAD COMPONENTS

#### OUTPUT SPINDLE / CLAMPING SYSTEM

all common output spindles  
can be realised



BENZ Solidfix® BENZ CAPTO™ Collet chuck HSK



Milling arbor Weldon Whistle Notch KM™

#### DESIGN / SIZE

the design and size are  
matched with the respective  
machining case

#### Design - from P. 15



#### Sizes

04 05 07 15 20

#### TORQUE SUPPORT

primarily a machine-related  
design

alternative: BENZ standard  
torque support

#### DRIVE CONE

all common drive cones can  
be realised



SK  
DIN 69871

MAS BT

CAT



HSK  
DIN 69893



Coromant  
Capto®



KM™



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





















# ANGLE HEADS











## SYSTEM DESIGN

1

System design / Angle heads

### PICTOGRAM AND ABBREVIATION OVERVIEW

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

General specifications	
Pictogram	
Information	 <p><b>Important Information</b></p> <p>Caution! Important Note. Please read this carefully.</p>
Pause	 <p><b>Pause</b></p> <p>The angle head is not used for machining.</p>
Weight	 <p><b>Weight (in kg)</b></p> <p>Approx. weight specification (for HSK 63). The weights change depending on the desired drive cone.</p>
Sectors	<div>    </div> <p><b>Automotive Machine construction Aerospace</b></p> <div>    </div> <p><b>Medical Plastics technology Wind power</b></p>
Services	 <p><b>Service</b></p> <p>Services, e.g. repair, preventative maintenance, etc.</p>

#### Abbreviations

$M_{max}$  Maximum torque

$i$  Transmission ratio

$n_{max}$  Maximum speed

$p_{max}$  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

# ANGLE HEADS

## ORDER INFORMATION

M

A

T

S

L

Machine

Drive cone

Type

Output spindle


Length

L


Length

S


Output spindle (Tool holding / clamping system)




BENZ Solidfix®




BENZ CAPTO™




Collet chuck




HSK




Milling arbor



Weldon



Whistle Notch




KM™


Type Design

A


Drive cone




SK DIN 69871




MAS BT




CAT



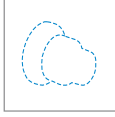
HSK DIN 69893



Coromant Capto®



KM™



More

Machine

BENZ standard

Individual

Manufacturer and type

Standard torque support from BENZ

Torque support adapted to machine type

Optional

+ 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.



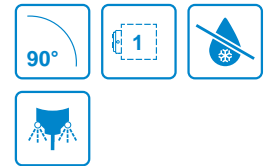
# ANGLE HEADS IN OVERVIEW

## DESIGN



### MONO WSX

Angle head 90°  
Machining: without spatial constraint  
Optional: with EC



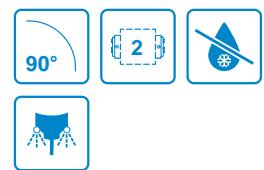
16

2



### DUO WZX

Angle head 90° - output spindle on both sides  
Machining: in opposite direction / with different tools  
Optional: with EC

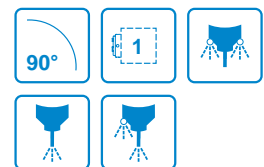


24



### FORTE WWX

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

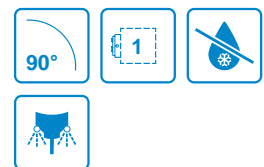


32



### SLIM WGX / SLIM WGX-S

Angle head 90° - narrow or extremely narrow design  
Machining: for extreme spatial constraint / maximum useable tool length  
Optional: with EC

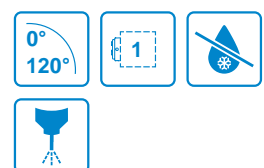


40



### FIX WFX

Angle head ≠ 90° - with fixed angle  
Machining: special machining at fixed angle  
Optional: with IC

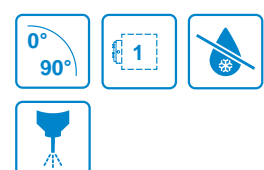


52



### FLEX WDX

Angle head 0-100° - with flexible angle / stepless adjustment  
Machining: in any variable position  
Optional: with IC



60

# 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™

### ► Specifications

Change the  
angle head



Machining



Number of  
output spindles



Axis angle



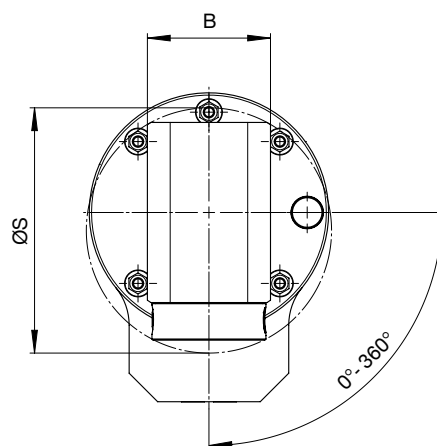
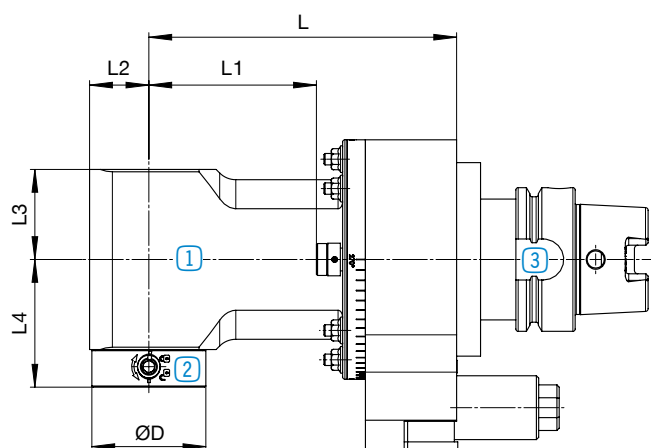
Coolant feed for cutting  
edge



Option

MONO WSX

► Angle head without IC



1 Angle head body  
P. 18



2 Output spindle /  
clamping system  
P. 20



3 Drive cone  
P. 22

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

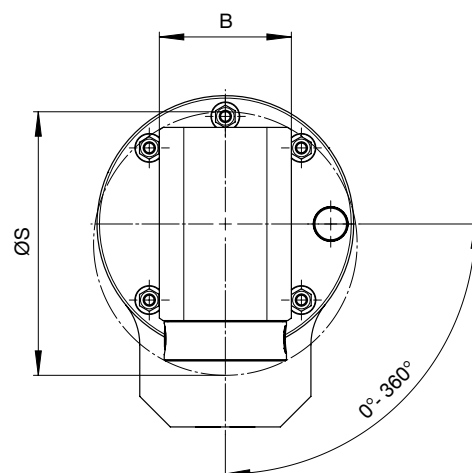
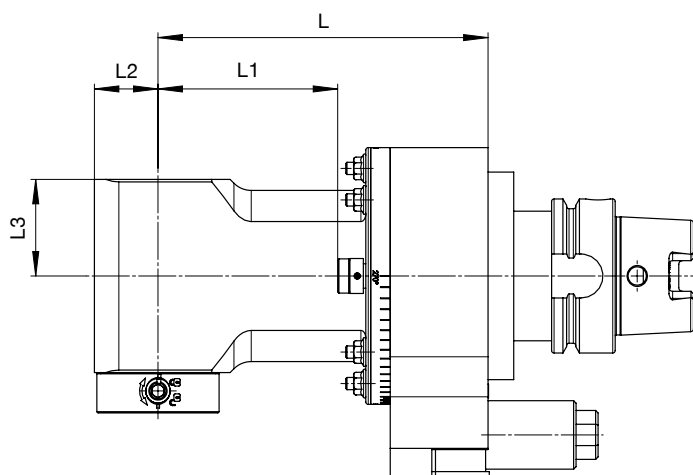
# ANGLE HEAD MONO WSX


## ► ANGLE HEAD BODY (SIZE)





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


## ► Angle head without IC




		► Technical data								
Size 04		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
M <sub>max</sub>	= 15 Nm	43.5					95			4
i	= 1:1	93.5	24	35.5	46	95	145	-	-	4.3
n <sub>max</sub>	= 10,000 min <sup>-1</sup>	123.5					175			4.5

		► Technical data								
Size 05		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
M <sub>max</sub>	= 30 Nm	26.5					88	-		5
i	= 1:1	73.5	26	39.5	54	108	135	- / ✓	-	5.5
n <sub>max</sub>	= 8,000 min <sup>-1</sup>	133.5					195	- / ✓		6.5
p <sub>max</sub>	= 70 bar*									

		► Technical data								
Size 07		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
M <sub>max</sub>	= 70 Nm	43.5					105	-		8.5
i	= 1:1	88.5	35	51	80	141	150	- / ✓	-	9.5
n <sub>max</sub>	= 6,000 min <sup>-1</sup>	153.5					215	- / ✓		11
p <sub>max</sub>	= 70 bar*									

		► Technical data								
Size 15		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
M <sub>max</sub>	= 150 Nm	85.5					155	-		14.5
i	= 1:1	155.5	40	63	92	169	225	- / ✓	-	17
n <sub>max</sub>	= 4,000 min <sup>-1</sup>	228.5					298	- / ✓		19.5
p <sub>max</sub>	= 70 bar*									

		► Technical data								
Size 20		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
M <sub>max</sub>	= 230 Nm	101					171	-		16.5
i	= 1:1	171	45	63	100	182	241	- / ✓	-	19
n <sub>max</sub>	= 3,000 min <sup>-1</sup>	241					311	- / ✓		21.5
p <sub>max</sub>	= 70 bar*									



\*Optional: EC via spray nozzle

# ANGLE HEAD

## MONO WSX

### ▶ OUTPUT SPINDLE / CLAMPING SYSTEM



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



Weldon



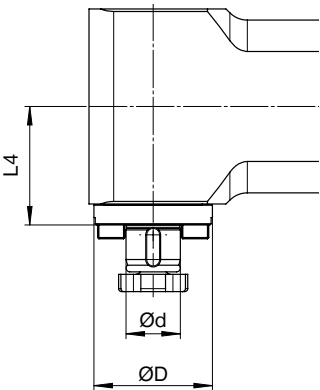
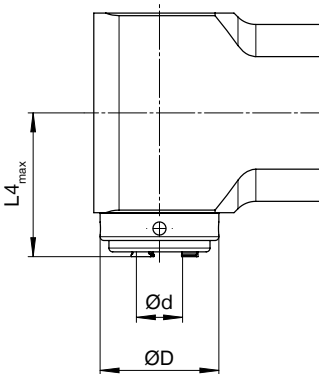
Whistle  
Notch



KM™



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



#### ▶ Technical data

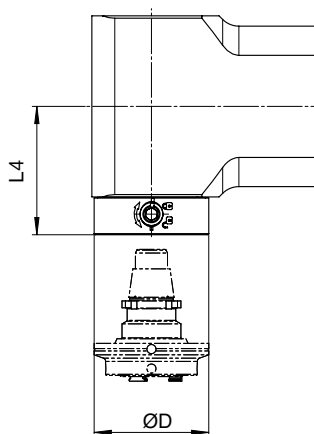
Collet chuck	Size	L4 <sub>max</sub> [mm]	ØD [mm]	Ød <sub>max</sub> [mm]
ER16A	04	46	44	10
ER20A	04	54	44	13
ER25A	05	57	47	16
ER32A	07	69	55	20
ER40A	15	82	70	30



#### ▶ Technical data

Milling arbor	Size	L4 [mm]	ØD [mm]	Ød [mm]
22	05	48	48	22
27	07	62.5	60	27
32	15	76	75	32
40	15	77.5	90	40



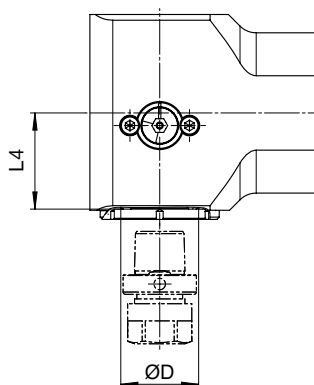


**i** For adapters and dimensions, see catalogue  
**BENZ Modular Tool Systems**



► **Technical data**

<b>BENZ Solidfix®</b>	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

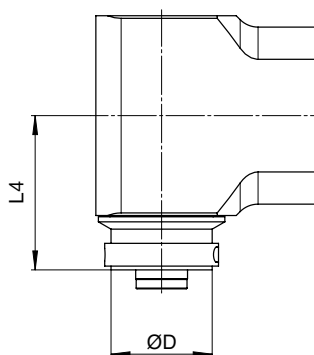


**i** For adapters and dimensions, see catalogue  
**BENZ Modular Tool Systems**



► **Technical data**

<b>BENZ CAPTO™</b>	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	75	63



► **Technical data**

<b>HSK</b>	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	65

# ANGLE HEAD MONO WSX

## ► DRIVE CONE



Technical data for other machine interfaces on request.

### Type: Steep taper



**SK**  
DIN 69871

#### ► Size

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



**MAS BT**

#### ► Size

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



**CAT**

#### ► Size

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

## Type: Hollow shank taper



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



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

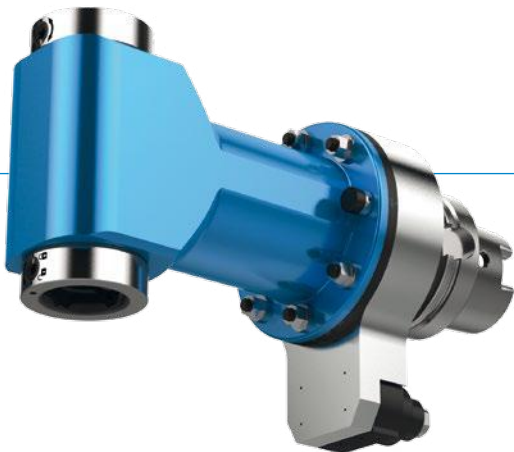


Kennametal™	Size				
	04	05	07	15	20
KM 40	✓	-	-	-	-
KM 50	✓	✓	-	-	-
KM 63	✓	✓	✓	-	-
KM 80	✓	✓	✓	✓	-
KM 100	✓	✓	✓	✓	✓

# 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™

#### Specifications

Change the  
angle head



Machining



Number of  
output spindles



Axis angle



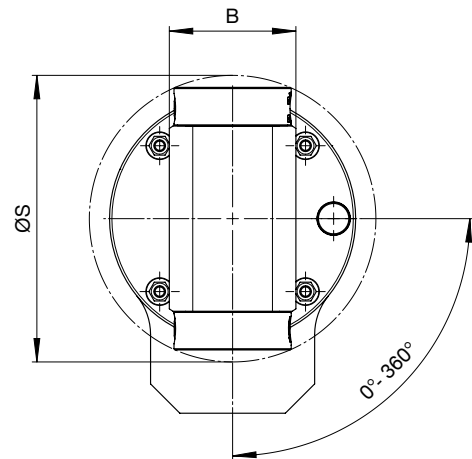
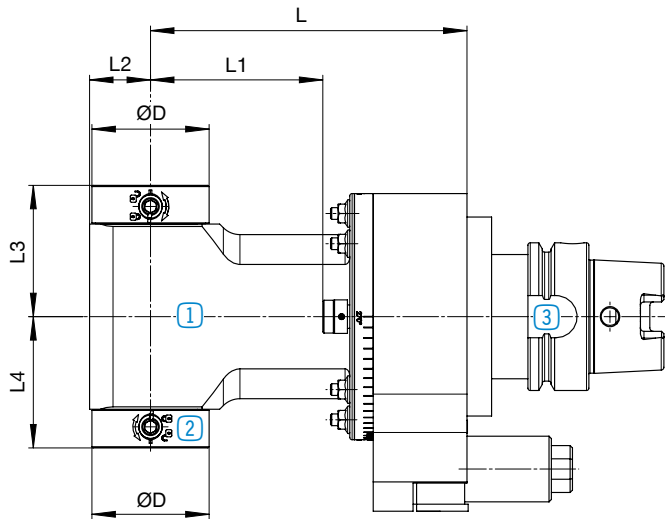
Coolant feed for cutting  
edge



Option

DUO WZX

► Angle head without IC



① Angle head body  
P. 26



② Output spindle /  
clamping system  
P. 28

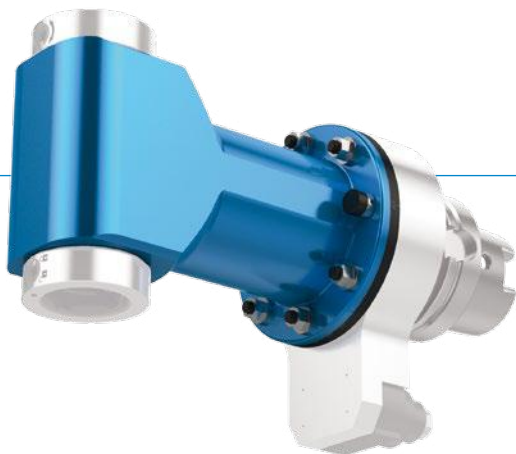


③ Drive cone  
P. 30

# ANGLE HEAD

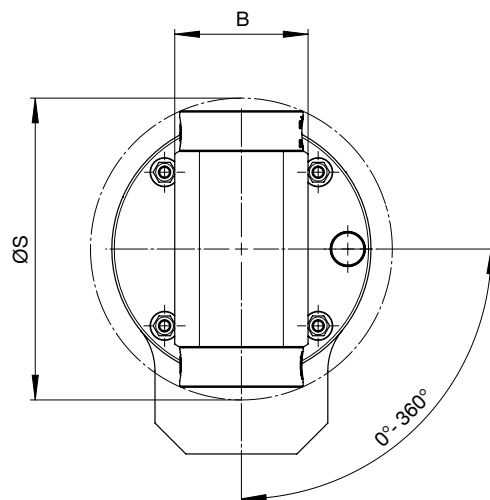
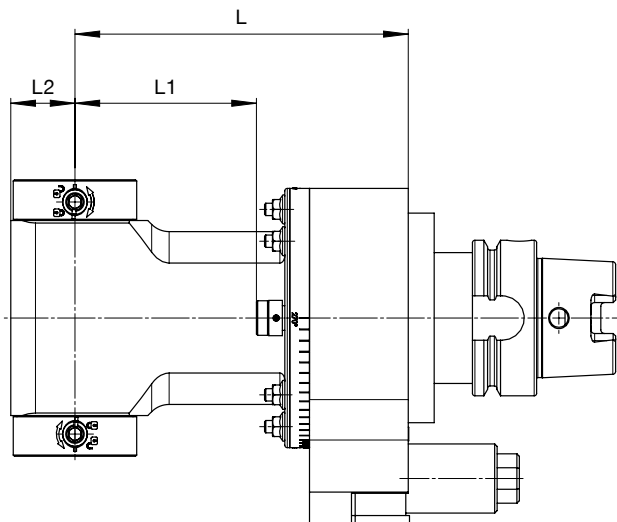
## DUO WZX

### ► ANGLE HEAD BODY (SIZE)





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


### ► Angle head without IC







		▶ Technical data								
Size 04		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	 kg
M <sub>max</sub>	= 15 Nm	43.5					95			4
i	= 1:1	93.5	24	-	46	107	145	-	-	4.3
n <sub>max</sub>	= 10,000 rpm	123.5					175			4.5

		▶ Technical data								
Size 05		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	 kg
M <sub>max</sub>	= 30 Nm	26.5					88	-		5
i	= 1:1	73.5	26	-	54	123	135	- / ✓	-	5.5
n <sub>max</sub>	= 8,000 rpm	133.5					195	- / ✓		6.5
p <sub>max</sub>	= 70 bar*									

		▶ Technical data								
Size 07		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	 kg
M <sub>max</sub>	= 70 Nm	43.5					105	-		8.5
i	= 1:1	88.5	35	-	80	157	150	- / ✓	-	9.5
n <sub>max</sub>	= 6,000 rpm									
p <sub>max</sub>	= 70 bar*	153.5					215	- / ✓		11

		▶ Technical data								
Size 15		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	 kg
M <sub>max</sub>	= 150 Nm	85.5					155	-		14.5
i	= 1:1	155.5	40	-	92	188	225	- / ✓	-	17
n <sub>max</sub>	= 4,000 rpm	228.5					298	- / ✓		19.5
p <sub>max</sub>	= 70 bar*									

Size 20		▶ Technical data								
		L1 [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	 kg
M <sub>max</sub>	= 230 Nm	101					171	-		16.5
i	= 1:1	171	45	-	100	205	241	- / ✓	-	19
n <sub>max</sub>	= 3,000 rpm									
p <sub>max</sub>	= 70 bar*	241					311	- / ✓		21.5

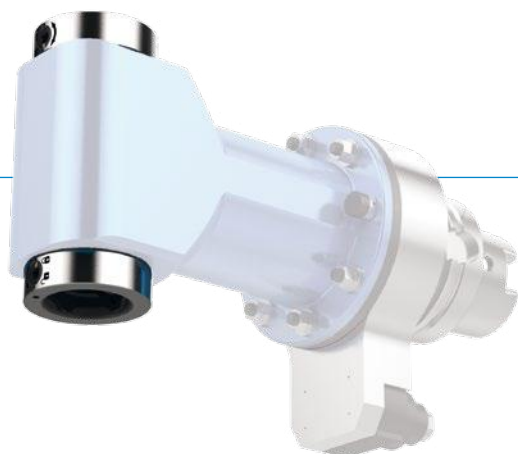


\*Optional: EC via spray nozzle

# ANGLE HEAD

## DUO WZX

### ► OUTPUT SPINDLE / CLAMPING SYSTEM



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



Weldon

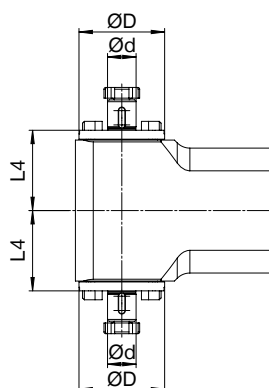
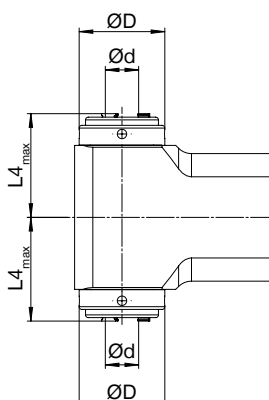


Whistle  
Notch



KM™

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



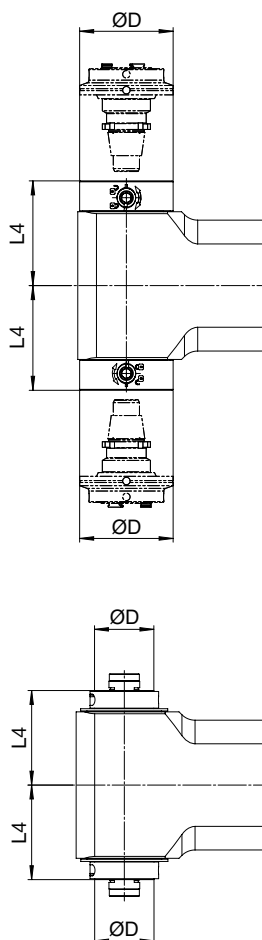
#### ► Technical data

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



#### ► Technical data

Milling arbor	Size	L4 [mm]	ØD [mm]	Ød [mm]
22	05	48	48	22
27	07	62.5	60	27
32	15	76	75	32
40	15	77.5	90	40



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



► Technical data			
BENZ Solidfix®	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

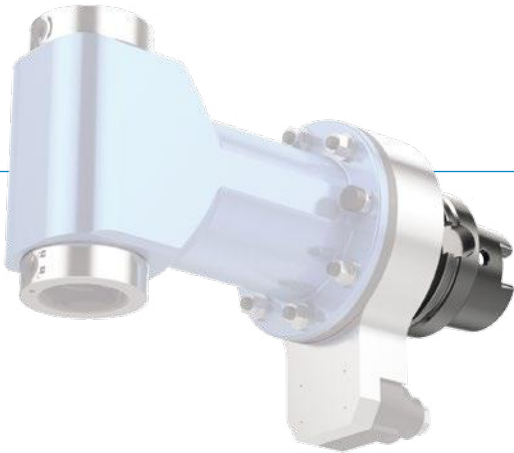


► Technical data			
HSK	Size	L4 [mm]	ØD [mm]
<b>HSK 40</b>	05	59	40
<b>HSK 50</b>	07	68	50
<b>HSK 63</b>	15	93	65

# ANGLE HEAD

## DUO WZX

### DRIVE CONE



Technical data for other machine interfaces on request.

Type: **Steep taper**



	Size				
SK DIN 69871	04	05	07	15	20
SK 40	✓	✓	✓	-	-
SK 50	✓	✓	✓	✓	✓



	Size				
MAS BT	04	05	07	15	20
BT 40	✓	✓	✓	-	-
BT 50	✓	✓	✓	✓	✓



	Size				
CAT	04	05	07	15	20
CAT 40	✓	✓	✓	-	-
CAT 50	✓	✓	✓	✓	✓

## Type: Hollow shank taper



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



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



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

# 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

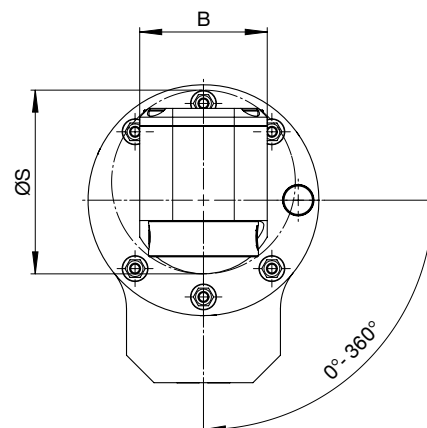
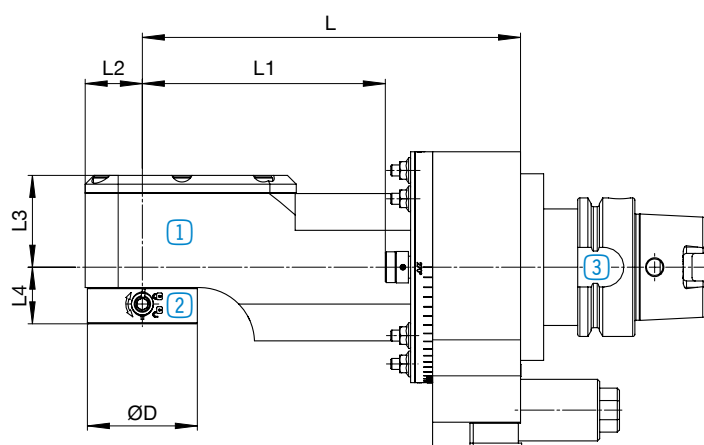


FORTE WWX

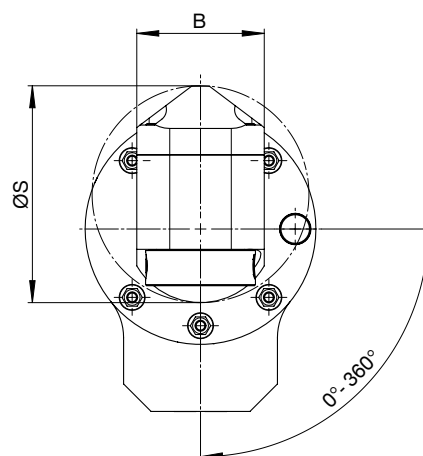
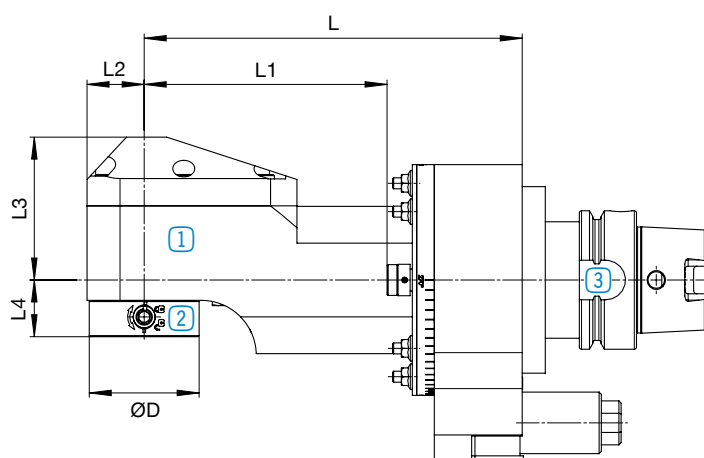




► Angle head without IC



► Angle head with IC



① Angle head body  
P. 34



② Output spindle /  
clamping system  
P. 36



③ Drive cone  
P. 38

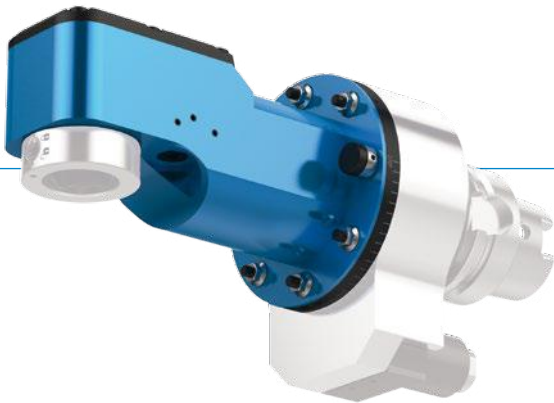


Other dimensions for angle heads with BENZ CAPTO™ output spindle. Dimensions available on request.

# ANGLE HEAD

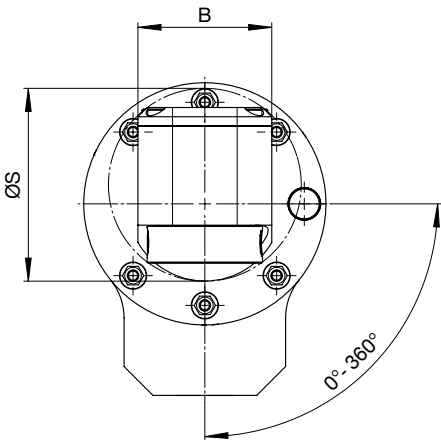
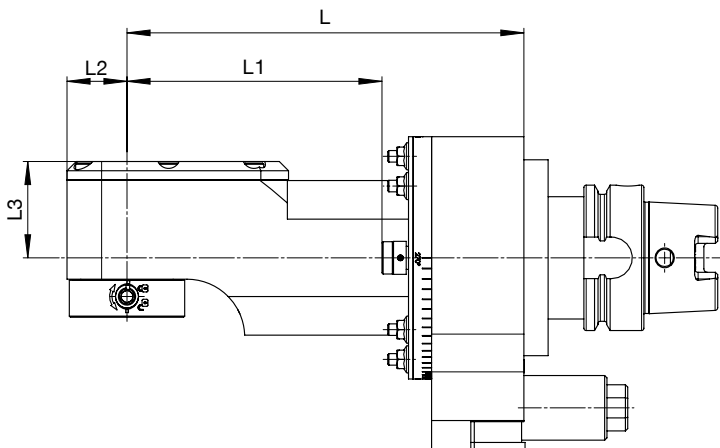
## FORTE WWX

### ▶ ANGLE HEAD BODY (SIZE)

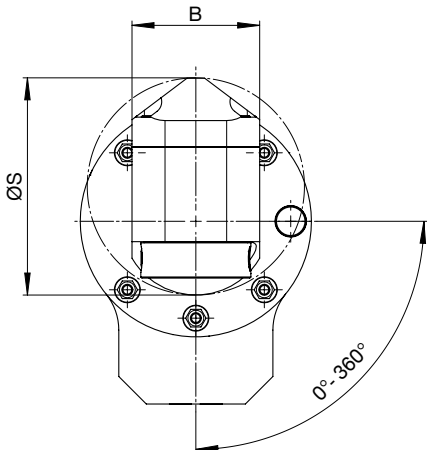
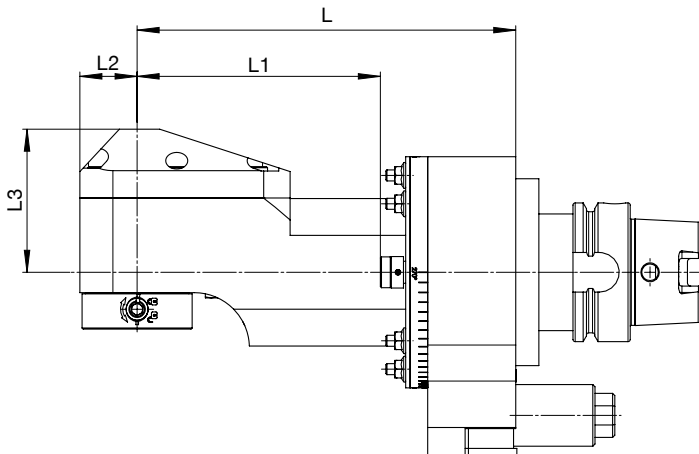



More sizes on request.  
Higher speeds are possible as an option.


### ▶ Angle head without IC





### ▶ Angle head with IC



		▶ Technical data										
Size 05		L1 [mm]	L2 [mm]	L3 [mm]		B [mm]	ØS [mm]		L [mm]	EC*	IC	 kg
M <sub>max</sub>	= 30 Nm	63,5							125	✓	✓	5
i	= 1:1	110,5	26	EK 42	IK 65	58	EK 84	IK 81	172	✓	✓	6
n <sub>max</sub>	= 8,000 min <sup>-1</sup>	170,5							232	✓	✓	7
p <sub>max</sub>	= 100 bar											

		▶ Technical data										
Size 07		L1 [mm]	L2 [mm]	L3 [mm]		B [mm]	ØS [mm]		L [mm]	EC <sup>+</sup>	IC	 kg
M <sub>max</sub>	= 70 Nm	93,5							155	✓	✓	8.5
i	= 1:1	138,5	35	EK 55	IK 77	70	EK 109	IK 122	200	✓	✓	9.5
n <sub>max</sub>	= 6,000 min <sup>-1</sup>											
p <sub>max</sub>	= 100 bar	191,5							253	✓	✓	10.5

		▶ Technical data										
Size 15		L1 [mm]	L2 [mm]	L3 [mm]		B [mm]	ØS [mm]		L [mm]	EC*	IC	 kg
M <sub>max</sub>	= 150 Nm	125,5							195	✓	✓	14
i	= 1:1	162,5		EK	IK		EK	IK		✓	✓	
n <sub>max</sub>	= 4,000 min <sup>-1</sup>		40	66	88,5	90	129	139	232	✓	✓	15
p <sub>max</sub>	= 100 bar	262,5							332	✓	✓	17,5

		▶ Technical data										
Size 20		L1 [mm]	L2 [mm]	L3 [mm]		B [mm]	ØS [mm]		L [mm]	EC*	IC	 kg
M <sub>max</sub>	= 230 Nm	135,5							200	✓	✓	17
i	= 1:1	172,5	45	EK 65,5	IK 88,5	90	EK 130	IK 141	237	✓	✓	18
n <sub>max</sub>	= 3,000 min <sup>-1</sup>	272,5							337	✓	✓	21,5
p <sub>max</sub>	= 100 bar											



\*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

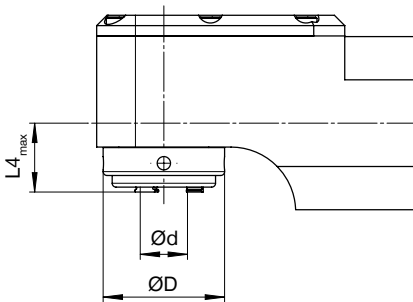


Whistle Notch



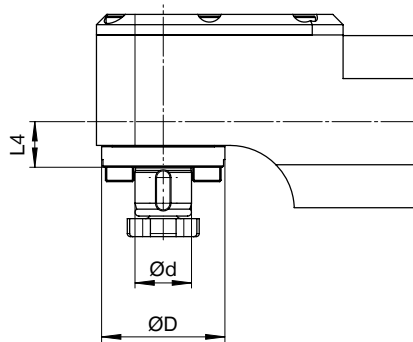
KM™

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



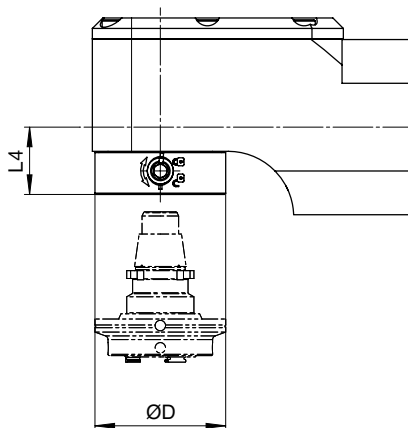
#### ▶ Technical data

	Size	L4 <sub>max</sub> [mm]		ØD [mm]	Ød <sub>max</sub> [mm]
Collet chuck		EC	IC		
ER25A	05	20.75	25.75	47	16
ER32A	07	23.9	28.9	55	20
ER40A	15	31	35.9	70	30

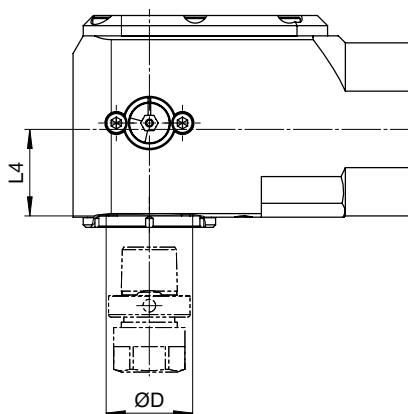


#### ▶ Technical data

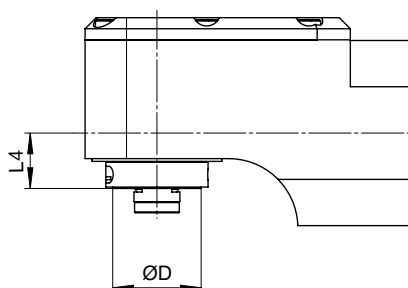
	Size	L4 [mm]		ØD [mm]	Ød [mm]
Milling arbor		EC	IC		
22	05	17.75		48	22
27	07	21.5		60	27
32	15	32.5		75	32



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



**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



► **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	54		63



► **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

# ANGLE HEAD

## FORTE WWX

### ► DRIVE CONE



Technical data for other machine interfaces on request.

### Type: Steep taper



**SK**  
DIN 69871

#### ► Size

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



**MAS BT**

#### ► Size

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



**CAT**

#### ► Size

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

## Type: Hollow shank taper



### HSK DIN 69893

	Size			
	05	07	15	20
HSK 40	-	-	-	-
HSK 50	✓	-	-	-
HSK 63	✓	✓	-	-
HSK 80	✓	✓	✓	-
HSK 100	✓	✓	✓	✓



### Coromant Capto®

	Size			
	05	07	15	20
C3	-	-	-	-
C4	✓	-	-	-
C5	✓	✓	✓	-
C6	✓	✓	✓	✓
C8	✓	✓	✓	✓



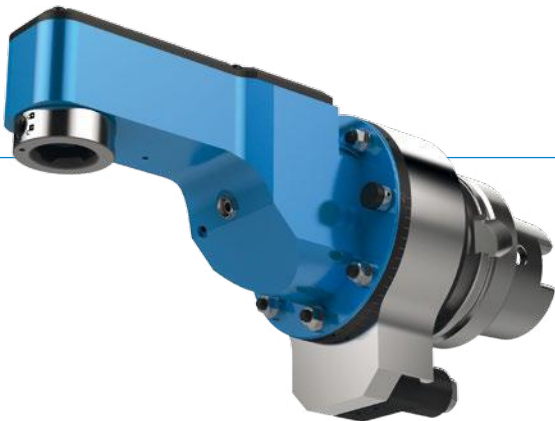
### Kennametal™

	Size			
	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™

#### Specifications

Change the  
angle head



Machining



Number of  
output spindles



Axis angle



Coolant feed for cutting  
edge

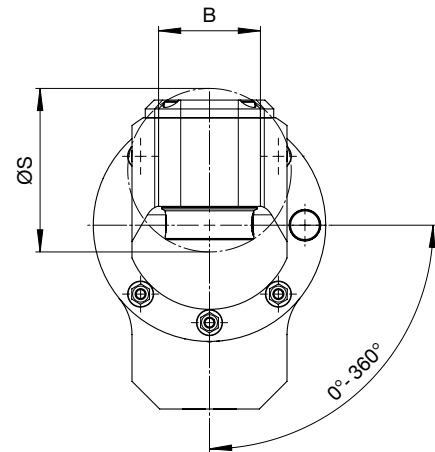
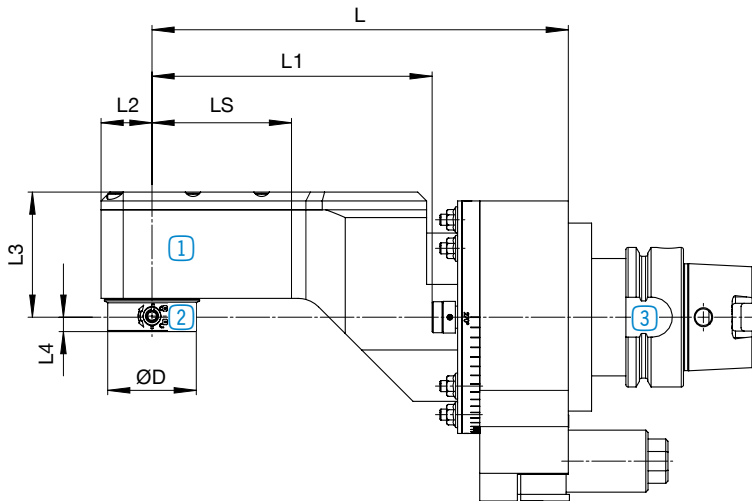


Option

SLIM WGX



► Angle head without IC



① Angle head body  
P. 42

extremely narrow  
design  
P. 46



② Output spindle /  
clamping system  
P. 44

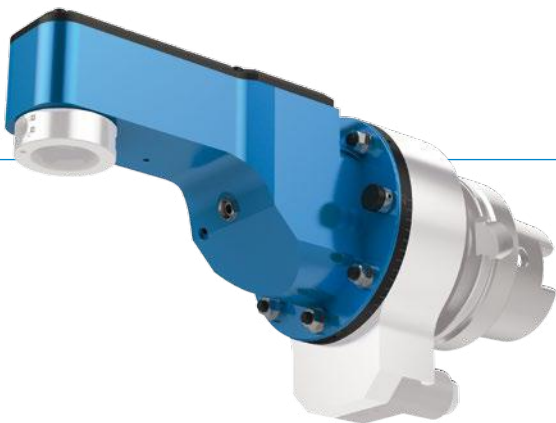


③ Drive cone  
P. 50

# ANGLE HEAD

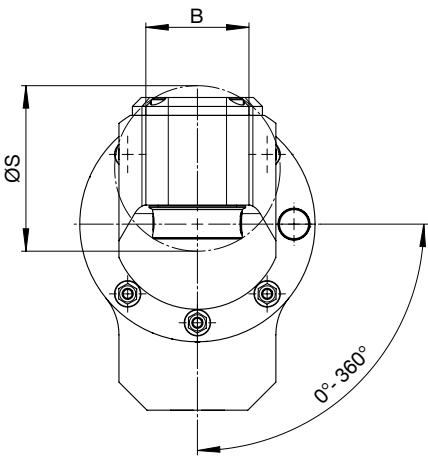
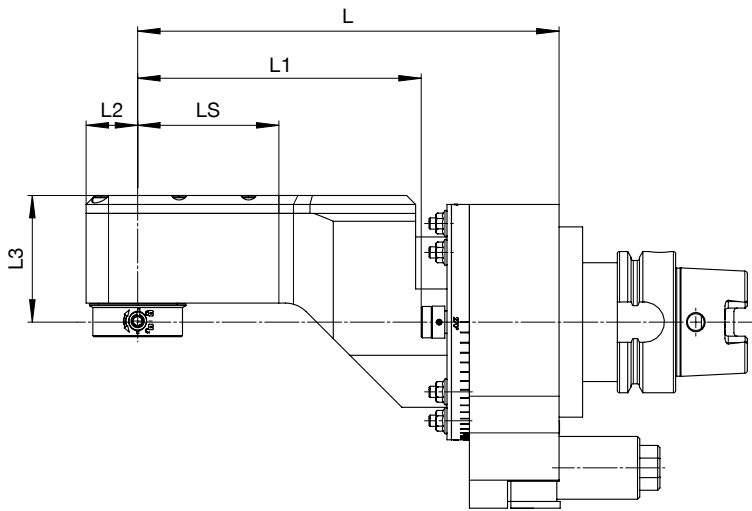
## SLIM WGX

### ▶ ANGLE HEAD BODY (SIZE)



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


### ▶ Angle head without IC



**Size 05 / L2=16**

$M_{\max}$	= 12 Nm
$i$	= 1:1,607
$n_{\max}$	= 8,000 min <sup>-1</sup>
$p_{\max}$	= 100 bar


► **Technical data**

L1 [mm]	LS [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
	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**

$M_{\max}$	= 15 Nm
$i$	= 1:1,452
$n_{\max}$	= 8,000 min <sup>-1</sup>
$p_{\max}$	= 100 bar


► **Technical data**

L1 [mm]	LS [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
	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 min <sup>-1</sup>
$p_{\max}$	= 100 bar

► **Technical data**

L1 [mm]	LS [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
	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 min <sup>-1</sup>
$p_{\max}$	= 100 bar

► **Technical data**

L1 [mm]	LS [mm]	L2 [mm]	L3 [mm]	B [mm]	ØS [mm]	L [mm]	EC*	IC	
	54					178	- / ✓		9
-	85	26	65	52	78	215	- / ✓	-	9.5
	160					290	- / ✓		10

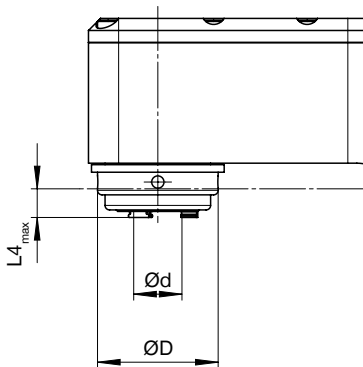
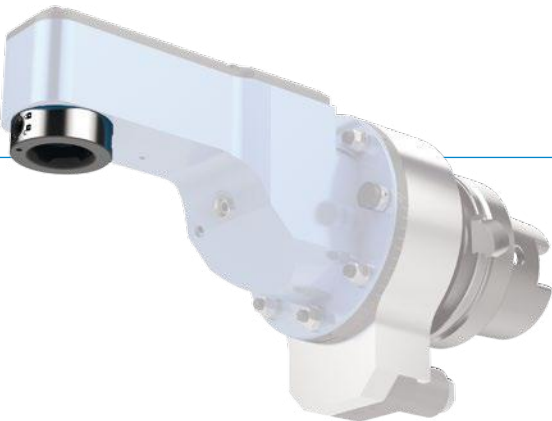


\*Optional: EC via spray nozzle

# ANGLE HEAD

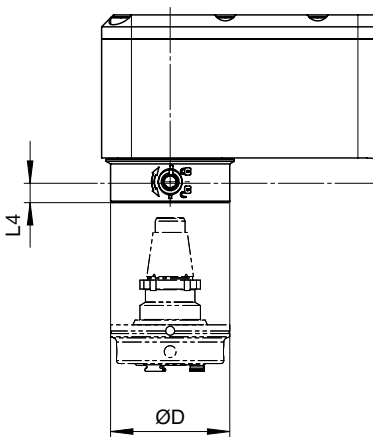
## SLIM WGX

### ▶ OUTPUT SPINDLE / CLAMPING SYSTEM



#### ▶ Technical data

Collet chuck	Size	L4 <sub>max</sub> [mm]	ØD [mm]	Ød <sub>max</sub> [mm]
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	6.5	40
S3	07	2.5	50



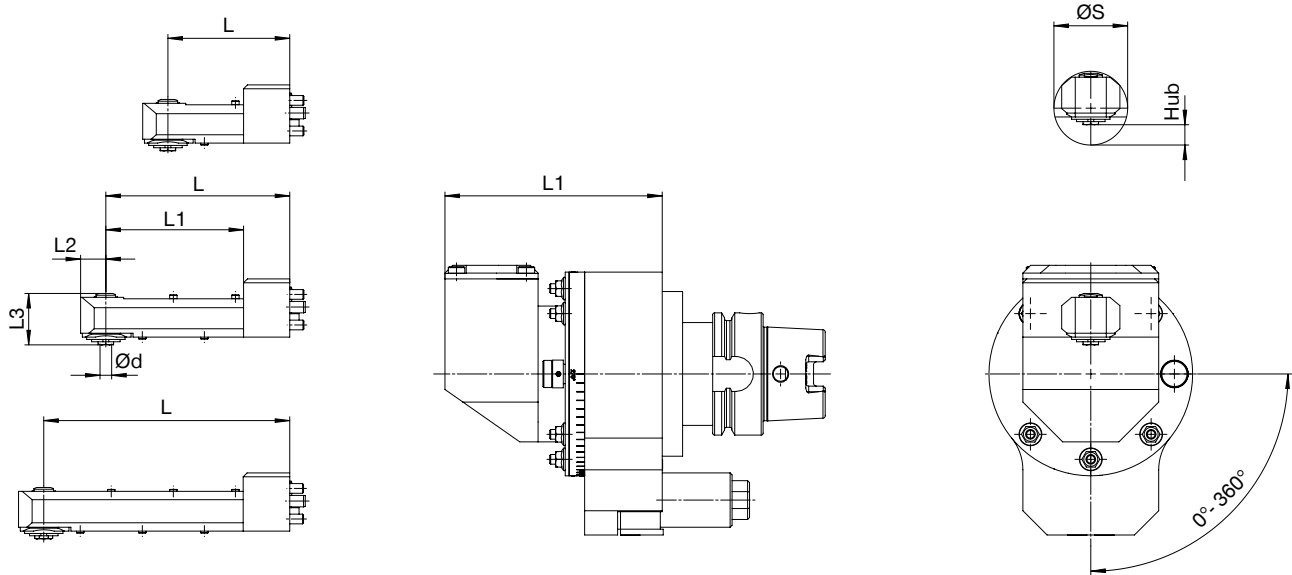
**BENZ ANGLE HEAD FOR MACHINING  
CENTRES WITH BENZ SOLIDFIX® TOOL  
HOLDING FIXTURE**

# ANGLE HEAD

## SLIM WGX-S

► EXTREMELY NARROW DESIGN

► Angle head without IC



Size 05 / ØS=25

M <sub>max</sub>	= 3 Nm
i	= 1:2,22
n <sub>max</sub>	= 8,000 min <sup>-1</sup>
p <sub>max</sub>	= 100 bar

► Technical data

L1 [mm]	L2 [mm]	L3 [mm]	L5 [mm]	Ød [mm]	ØS [mm]	L [mm]	Hub [mm]	EC*	IC	kg
39			39			63		- / ✓		3.7
71	13	20	71	4	25	95	4	- / ✓	-	3.8
103			103	Special		127		- / ✓		3.9

Size 05 / ØS=29

M <sub>max</sub>	= 3 Nm
i	= 1:2,22
n <sub>max</sub>	= 8,000 min <sup>-1</sup>
p <sub>max</sub>	= 100 bar

► Technical data

L1 [mm]	L2 [mm]	L3 [mm]	L5 [mm]	Ød [mm]	ØS [mm]	L [mm]	Hub [mm]	EC*	IC	kg
39						63		- / ✓		3.8
71	13	20	14	4	29	95	6	- / ✓	-	3.9
103				Special		127		- / ✓		4.0

Size 05 / ØS=32

M <sub>max</sub>	= 5 Nm
i	= 1:1,2
n <sub>max</sub>	= 8,000 min <sup>-1</sup>
p <sub>max</sub>	= 100 bar

► Technical data

L1 [mm]	L2 [mm]	L3 [mm]	L5 [mm]	Ød [mm]	ØS [mm]	L [mm]	Hub [mm]	EC*	IC	kg
39						63		- / ✓		3.8
71	13	27	14	5	32	95	9	- / ✓	-	4
103				Special		127		- / ✓		4.2



\*Optional: EC via spray nozzle