

# ANGLE HEADS

Tooling technology

Metal machining



# BENZ TOOLING

At BENZ Tooling 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 metal machining, woodworking and composite material processing for more than 75 years.

Innovations are important to us. But we also recognize that they can be successful only if they precisely meet the needs of our customers. This is why we have maintained a strict focus on our customers for many years. We ensure that our developments and innovations simplify your production processes and lower your manufacturing costs – and ultimately improve your competitiveness as a result.

**INNOVATION.** With an eye on what is currently within the bounds of feasibility, we strive to always make use of innovative technologies. And we keep in close contact with our customers to ensure we already know today what our customers will need tomorrow. Technical progress is ingrained into our very identity, which means you can always find smart, detailed solutions in our product range.

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

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

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# BENZ TOOLING – YOUR PARTNER

## COMPLETE MACHINING FOR ALL SECTORS

### Angle heads for your application – from standard to custom-made solutions

Do you have an application where an angle head is suitable for machining a workpiece? Then you are right to come to BENZ Tooling. Because our goal is to optimize your production sequence.

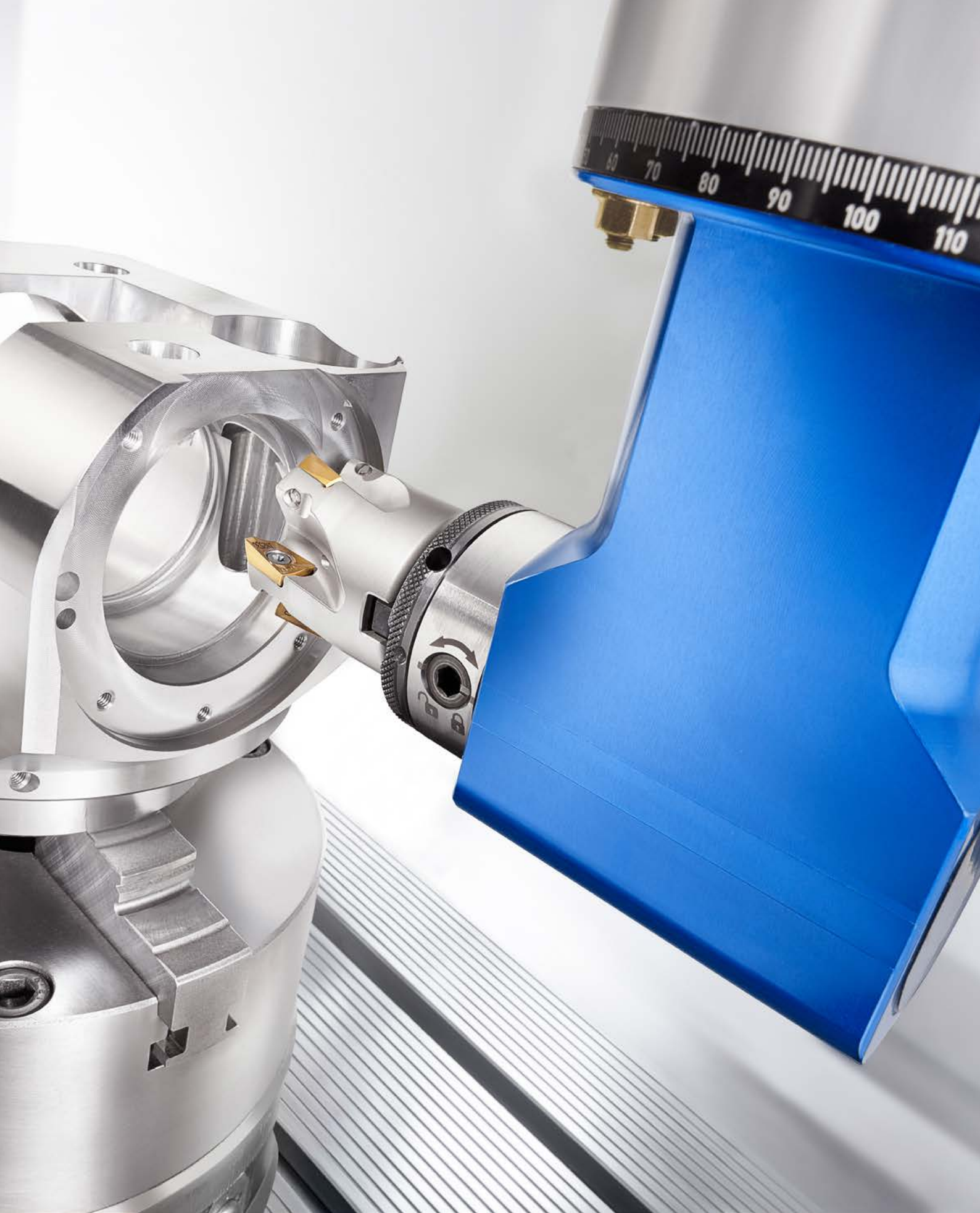
As a partner working with CNC machining, we have many years of experience in manufacturing units for machining centers. We know what we are talking about. And we implement what we say.

This is reflected in our products, featuring high performance, machining precision and quality.

BENZ angle heads help you with the economical complete machining of your workpieces by minimizing the number of tool set-ups and the machining time, thus reducing your production costs.

Besides an extensive standard program, we also offer unique, custom-made solutions. In close cooperation with you as a customer we develop the individual answer to your needs. We maintain close contact with machinery manufacturers and therefore have the necessary know-how to develop the exceptional. Challenge us!





# BENZ ANGLE HEADS

## ADDED VALUE FOR YOUR MACHINE

Angle heads are additional modules that extend the functional scope of your machine tool. They are used in the machining process mainly for cyclical applications.

A machining step is usually followed by a rest period for the unit. The machining of the workpiece is then continued with a newly inserted tool. All BENZ standard units are specially designed for this.

### YOUR ADVANTAGES

#### **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.

#### **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!

#### **Machining of hard-to-reach areas**

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

#### **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.

#### **Simplification of the machining procedure**

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

#### **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.

#### **Usable in all common machine concepts**

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





# ANGLE HEAD DESIGN



# BENZ ANGLE HEADS

## UNLIMITED POSSIBILITIES

### BENZ SELECT LINE

#### PREDEFINED STANDARD

**Most popular angle head configurations**  
Page 12

### CUSTOMIZABLE PRODUCTS

#### ADAPTABLE

**Adaptable standard angle heads**  
Page 14



## UNIQUE SOLUTIONS CUSTOM-MADE

**Individual products for your needs**  
Page 16

# BENZ SELECT LINE

## PREFINED ANGLE HEADS

**Quick delivery, attractive pricing and BENZ Solidfix®**

Our most popular angle heads MONO WSX and FORTE WWX are available in the BENZ Select Line program.

BENZ Select Line products are equipped with our quick-change system BENZ Solidfix®.

Your benefits: even more flexibility and further cost savings – all in the well-known BENZ quality.

BENZ Select Line products are available as BLP version (BENZ locking pin) and TLP version (tapered locking pin).

Including adapter  
and stop block

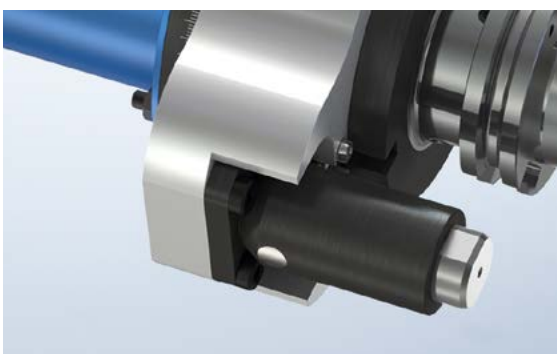




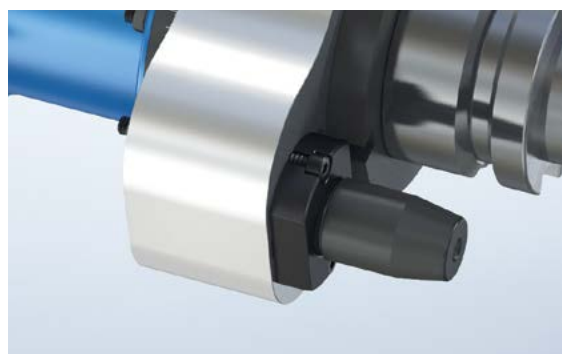
## BENZ SELECT LINE ANGLE HEADS



BLP EDITION



TLP EDITION



# CUSTOMIZABLE PRODUCTS

## ADAPTABLE ANGLE HEADS

### **“Plug & Play” with customized standard**

Would you like to purchase an angle head and start machining immediately? With the modular component system from BENZ Tooling, this is no longer a challenge.

Using standard components a wide selection of front heads in various sizes and for the most common output spindles allows you to configure the angle head you need for your machining operation.

To ensure that the angle head fits your machine perfectly, we create a customized torque support – in close cooperation with the machine manufacturer.

Thanks to years of experience and in line with the motto “as much standard as possible, as much customization as needed”, we make sure that you don’t lose time during assembly and can start processing straight away.



## DESIGN TYPES

The combination of the machine, the cutting tools used and your workpiece determine which product design is the best for you.

BENZ angle heads are available in various sizes with different parameters. The choice is yours!

See all variations on page 44.



# UNIQUE SOLUTIONS

## CUSTOM-MADE ANGLE HEADS

### **We love the challenge and the exceptional**

Do you need an angle head that does not match the standard parameters? No problem!

Custom-made products and highly complex new developments are our strength – prompt, affordable and always in the well-known BENZ quality.

Extreme conditions anywhere in the world: our tried and tested components and systems provide you with limitless possibilities.

We develop and produce your angle head made to measure for

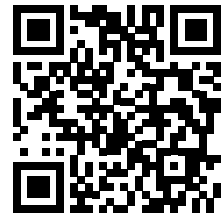
- your specific working piece
- your specific machine
- your specific working conditions

See already realized custom-made solutions from page 97.



What can we do for you?

YOUR DIRECT LINE  
YOUR CONTACTS WORLDWIDE



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

2 Your contact partner 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.

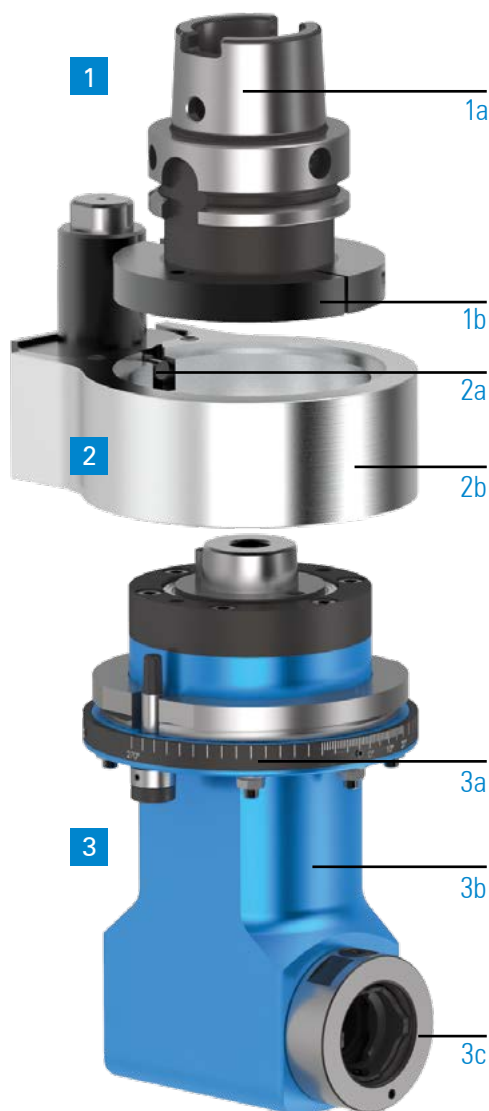




# BENZ FEATURES & OPTIONS

# ANGLE HEADS SYSTEM DESIGN

## GENERAL SYSTEM DESIGN



### 1 Drive

#### 1a Drive cone

- holds angle head in machine
- all common drive cones available: see p. 21

#### 1b Locking disc

- ensures the exact angle setting of the drive cone in relation to torque support, locking sleeve and locking pin

### 2 Torque support

#### 2a Locking pin

- lock of drive cone and locking disc
- prevents turning of drive and enables precise depositing in tool magazine
- the stop block unlocks the angle head

#### 2b Torque arm

- secures angle head against turning during machining by fixing it to the machine spindle
- standard torque arm (e.g. BENZ Select Line p. 34)
- customized torque arm adapted to the machine model of the customer

### 3 Front head

#### 3a Scale ring (360°)

- manual, stepless turning of angle head at a desired working angle
- fixing using clamping screws

#### 3b Housing

- different types, sizes and designs available for delivery according to application: see p. 44

#### 3c Output spindle

- holds the cutting tool
- all common output spindles possible: see p. 21
- discover the BENZ modular quick-change systems for an optimal solution

## COMPONENT VARIANTS

### Front head – Design / Size

design and size are matched with respective machining case

#### Design



#### Sizes

04

05

07

15

20

### Output spindle

all common output spindles can be realized

#### BENZ Standard



BENZ Solidfix®



BENZ CAPTO™



Collet chuck



Weldon



Whistle Notch



Milling arbor



HSK



KM™

### Torque support

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



### Drive cone

all common drive cones can be realized



HSK  
DIN 69893



SK  
DIN 69871



MAS BT



CAT



Coromant  
Capto®



KM™

## OPTIONAL: EQUIPMENT VERSIONS

### Coolant supply



page 26

### Additional support



page 25

### Stop block



page 24

### BENZ i.TAG



page 30

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

# BENZ MODULAR QUICK CHANGE SYSTEMS

## BENZ SOLIDFIX® | BENZ CAPTO™

### An investment worth making

Beside higher rpms and higher accuracy the reduction of set up and machine down times is the main focus in the manufacturing industry. An important success factor is the integration of a modular tool interface.

The basic principle and the biggest advantage of modular tooling systems is that tools can be pre-set, set up and be ready for use on the machine by the operator, all while he is already in the process of machining other parts. The pre-set adapters then can be changed in a flash in the machine.

You as the customer increase the valuable production time of your machine while at the same time saving costs: Due to the modular design only the adapters are being changed – the base tool holder stays in the machine. This reduces the necessity of buying additional tools to a minimum.

With BENZ Solidfix® and BENZ CAPTO™ you have two of the most advanced and sophisticated modular quick change systems available to you.

### BENZ SOLIDFIX®



### BENZ CAPTO™



## PERFORMANCE. PRECISION. HANDLING. SAFETY.



**Minimises setup and non-productive time / increases productivity**  
by changing the preset tool within seconds



**Low investment overhead,**  
because the angle head remains on the machine and only an adapter needs to be changed, fewer angle heads are needed overall

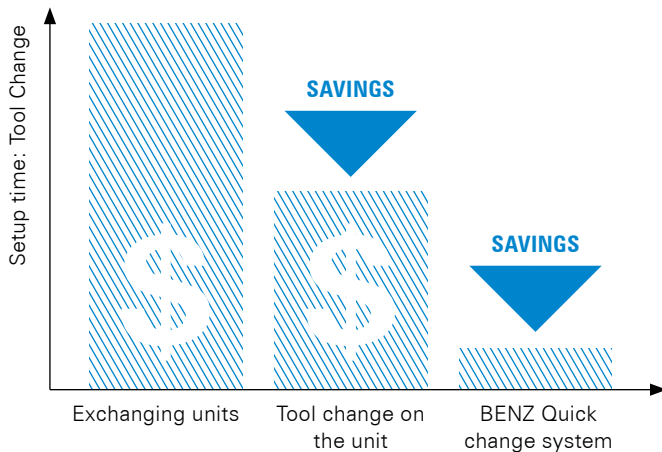


**Easy handling**  
One-hand operation without a special tool



**Operating safety**  
Cannot become detached accidentally

## SAVINGS WITH BENZ QUICK CHANGE SYSTEMS



### 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.

## OUTPUT SPINDLES ACCESSORIES

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



- adapters BENZ Solidfix®
- adapters BENZ CAPTO™
- accessories for collet chucks
- wrenches
- miscellaneous

DOWNLOAD CATALOG



# PERFECTLY FIT SECURED AND STABLE

## BENZ STOP BLOCK

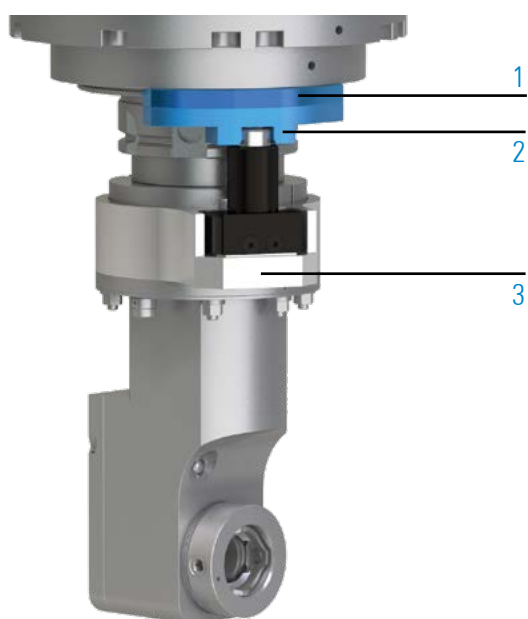
### Lock and unlock block

BENZ stop block mounted on the machine spindle secures your unit against rotation during machining, enables fast positioning via the torque support and guarantees high positioning accuracy during manual or automatic tool change.

The design is standardised according to ISO 9524.

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 arm

#### 3 Torque support

- increases the rigidity between angle head and machine spindle
- usually adapted to the respective machine
- alternative: BENZ standard torque arm

### BLP EDITION



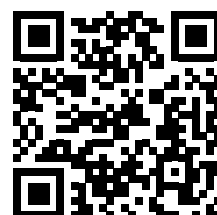
### TLP EDITION



Technical data for BENZ stop block see in section BENZ Select Line from page 36



## HOW TO INSTALL



## ADDITIONAL SUPPORT

### Support for optimal machining results

An additional support increases the stiffness between the machine spindle and the unit. It ensures optimum force transmission from the machine spindle to the tool.

The vibrations that occur during machining are reduced. This leads to better workpiece quality and a longer service life of the aggregate.

### Versions



torque arm



torque arm  
with 3-point support



torque arm  
with 4-point support



mechanical/hydraulic  
additional support



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

# EQUIPMENT VERSIONS

## COOLING

### Several types and methods of tool cooling

Cooling the cutting edge and the coolant itself have a significant impact on the quality of the workpiece, the life of your cutting tool and therefore on your costs. Depending on the machine load and specifications, we offer following cooling options.

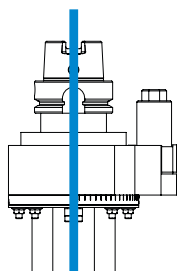
**Water coolant:** max. 100 bar

**MQL:** max. 8 bar

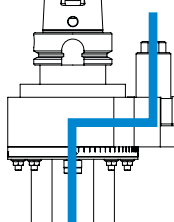
### WATER COOLING



#### Coolant supply from the machine



via spindle



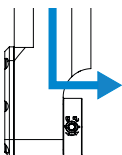
via stop block /  
torque support

#### Coolant supply to the cutting edge



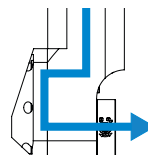
**EC**

external coolant



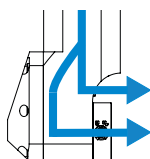
**IC**

internal coolant



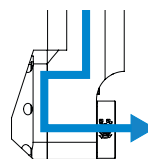
**EC+IC**

external / internal coolant

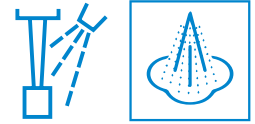


**MQL**

internal coolant



# MQL – MINIMUM QUANTITY LUBRICATION



## Less lubricants – great benefits

Reducing lubricant consumption not only cuts costs, moreover, it protects the environment and improves working conditions.

By reducing residues, MQL also helps to extend the service life of tools and eases cleaning and disposal.

Essentially, minimum quantity lubrication offers an efficient and sustainable lubrication solution.

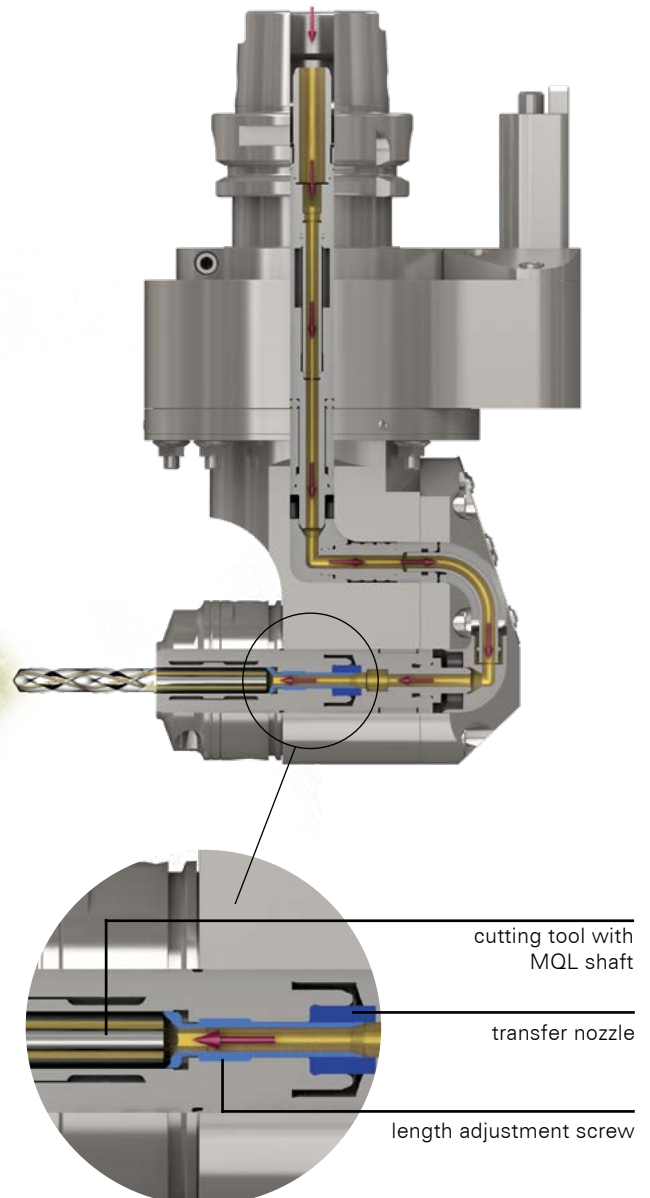
BENZ angle heads can be equipped with MQL on request.

## BENZ MQL technology – optimal MQL flow

BENZ Tooling designed angle heads especially for MQL to always provide the right MQL quantity to the cutting tool.

By using a special, separate curved pipe (without corners and edges) the MQL is directly transported into the cutting tool.

Without baggings and undesired droplet formation this ensures an optimal MQL flow.



## Perfect media transfer by customized interfaces

Furthermore we are offering specific adjustment screws for your cutting tool. This secures the perfect interface and transfer of the MQL from the head into the cutting tool.

BENZ MQL angle heads are offered with collets spindle or with the modular quick change system BENZ Solidfix® for even more flexibility.

# GEARBOX LIFETIME LUBRICATION

## GREASE LUBRICATING



### Cyclical machining

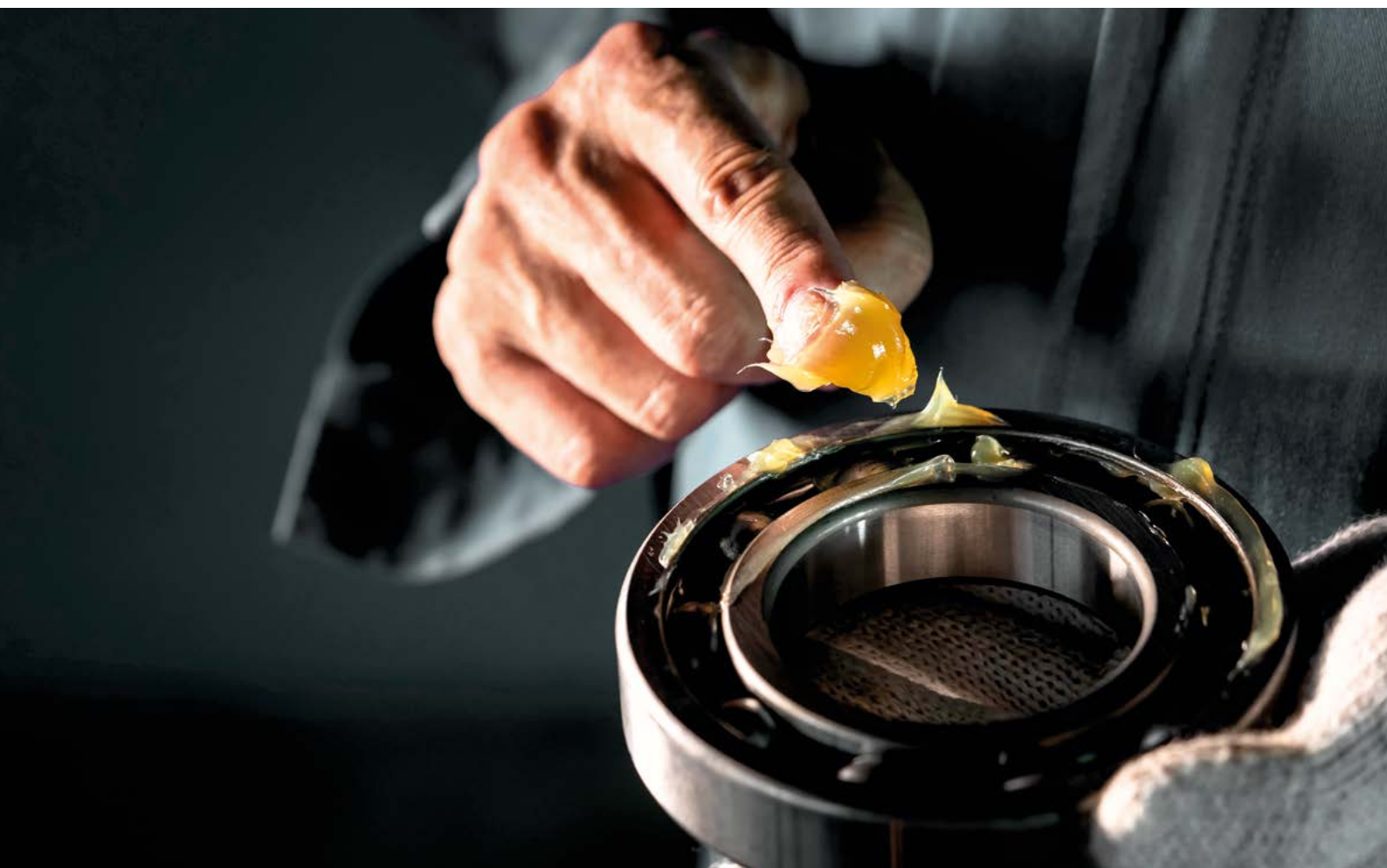
All BENZ units are equipped with grease lubrication as a standard feature.

By using grease, long-lasting and durable lubrication is achieved. This type of lubrication permits effective load-carrying capacity, which reduces the wear and friction properties of the gearbox and thus increases the service life of the components.

In addition, the grease provides additional sealing and thus protects against the intrusion of dirt and other impurities into the gearbox.

Due to the permanent grease lubrication, no additional grease needs to be applied during the entire service life.

The installation position of the angle head is not relevant with this type of lubrication.



# OIL MIST LUBRICATION – UNIQUE SOLUTIONS



## Continuous machining and highest speeds

Oil mist lubrication is a state-of-the-art lubrication technology that produces fine oil droplets in an air stream, ensuring efficient and consistent distribution of the lubricant in the gearbox.

This approach allows the lubrication of hard-to-reach areas that are often neglected by other lubrication methods.

Additionally, the oil mist airflow creates a cooling effect, which contributes to better temperature control of the lubricated parts and also makes it possible to drive at high speeds.

Oil mist lubricated BENZ units can be used in continuous operation – without any breaks – and are suitable for high load volumes.

In case your existing machine cannot provide oil mist, we will be happy to offer you a suitable oil mist unit – please get in touch with us.

The installation position of the angle head is not relevant for this type of lubrication.

This technology is used exclusively in our unique, custom-made solutions.

## More benefits

- additional sealing effect due to overpressure in the unit
- permanent renewal of the lubricant
- adjustable lubricant quantity
- significant extension of the service life of the angle head due to good corrosion protection



# BENZ i.tag

## DIGITAL NAME PLATE

That black dot with NFC logo on your tool catches your eye and you wonder what it is?

You have discovered BENZ i.tag, the Digital Nameplate! Simply scan the dot (tag) with your smartphone and access your product data anytime and anywhere.

### BENEFITS

- + time saving: Technical data & documents always at hand and available
- + quick and easy handling via smartphone, no special software required
- + xontact the service team directly via online form, direct phone call or e-mail
- + worldwide availability, link can be sent
- + save storage and logistics costs (no more paper documents)
- + you work sustainably and protect the environment by saving paper
- + your tool data is safely managed: BENZ i.tag can be read out, but does not collect or send any data itself



With BENZ i.tag your tool  
always carries all important  
information with it!



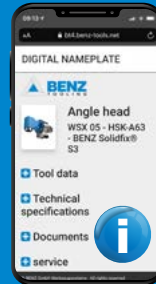
1

Find the NFC tag



2

Scan the NFC tag



3

Get access to  
information



4

Use the  
Information

## 1 PREPARE SCAN

### Activate on your smartphone



NFC



Internet connection  
via WLAN or mobile data

### Installed on your smartphone



PDF Viewer App

## 2 SCAN CORRECTLY



The NFC sensor of your  
smartphone is usually located  
around the camera or in the  
center.

Hold this area to the NFC tag  
of the tool.

Once the scan is successful,  
the data and documents  
automatically open in the  
browser

## 3 ALL AT A GLANCE

- tool data
- technical data
- documents (e.g. operating instructions)
- direct contact to service
- videos (if available)

## 4 DOWNLOAD, SHARE, CONTACT



View, download or share documents.  
Quickly clarify questions with PDF  
search function.

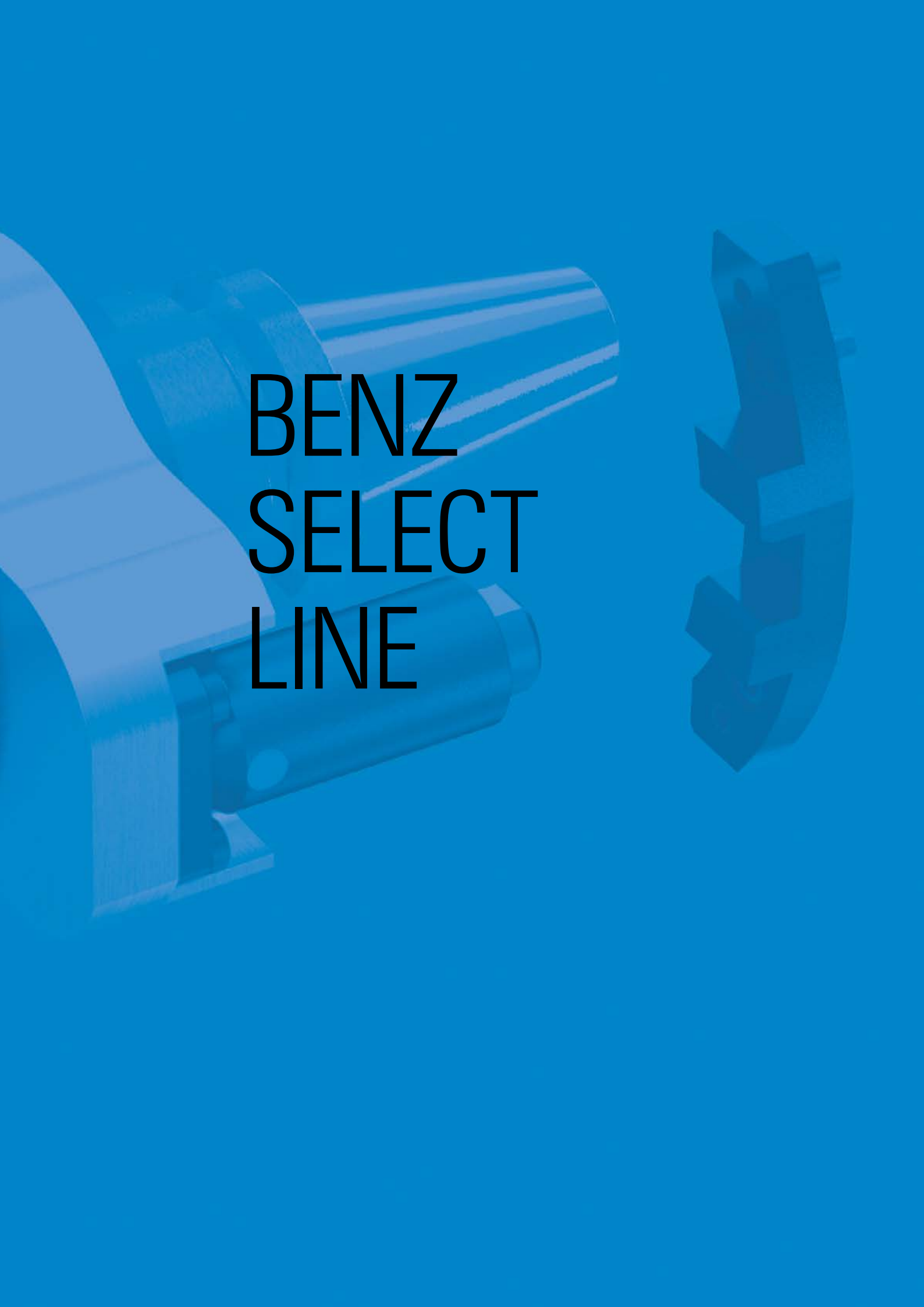


Share i.tag link with co-workers:  
Access to all stored data



Get in a contact with the service  
(by online-form, direct-telephone or  
e-mail).





# BENZ SELECT LINE

# BENZ SELECT LINE

## PRODUCT OVERVIEW

### DESIGNS



1

#### MONO WSX

Angle head 90°

Machining: without spatial constraint

page 36



2

#### FORTE WWX (EC)

Angle head 90°  
reset output spindle

Machining: for spatial constraint / maximum useable tool length

page 38

### LOCKING

#### BLP EDITION



Stop block  
BLP

#### TLP EDITION



Stop block  
TLP



detailed information about  
BENZ Stop block from page 36

### DRIVE CONES



HSK  
DIN 69893



Steep taper  
SK



Steep taper  
MAS BT



Steep taper  
CAT



3

**FORTE WWX (IC)**

Angle head 90°  
reset output spindle

Machining: for spatial  
constraint / maximum  
useable tool length  
page 40

**ORDER INFORMATION****BLP EDITION**

Technical data

**TLP EDITION**

Technical data

**ADAPTER**

BENZ Solidfix®  
S3 Collect chuck adapter



BENZ Solidfix®  
S4 Collect chuck adapter

**ACCESSORIES OPTIONAL****STARTER SET**

Mounting  
block



Allen key



Hook  
wrench

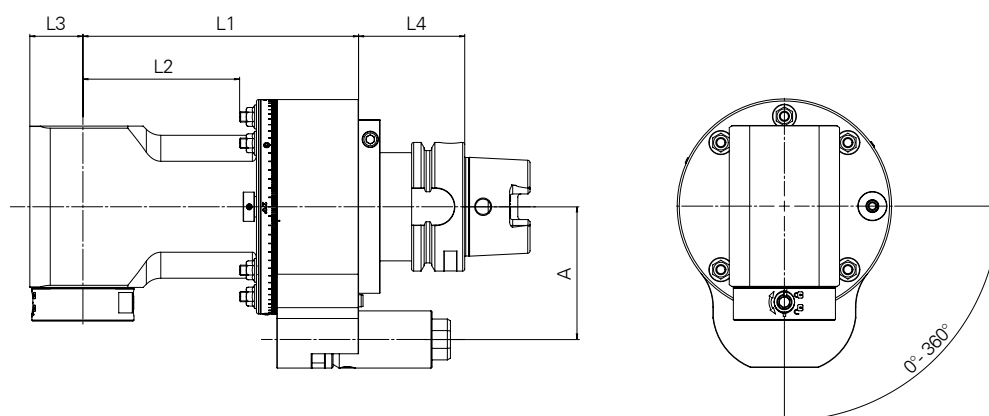


Clamping  
wrench

# ANGLE HEAD

## BENZ SELECT LINE – MONO WSX

### TECHNICAL DATA



05



$M_{max}$  30 Nm  
i 1:1  
 $n_{max}$  8.000 rpm



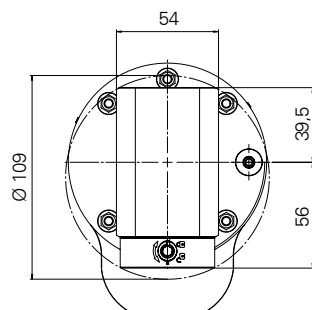
BLP



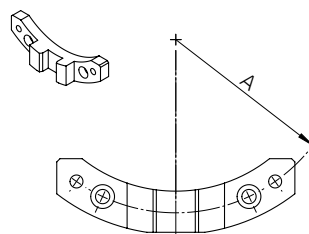
TLP

### OUTPUT SPINDLE

BENZ Solidfix®-S3



Stop block




Stop block Size	Technical data
	A [mm]
HSK-A63	65   80   110
HSK-A100	80   110
SK40   CAT40	65   80   110
SK50   CAT50	80   110
BT40	65   80   110
BT50	80   110




for easy commissioning – starter set available


### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05	135	73,5	5,6

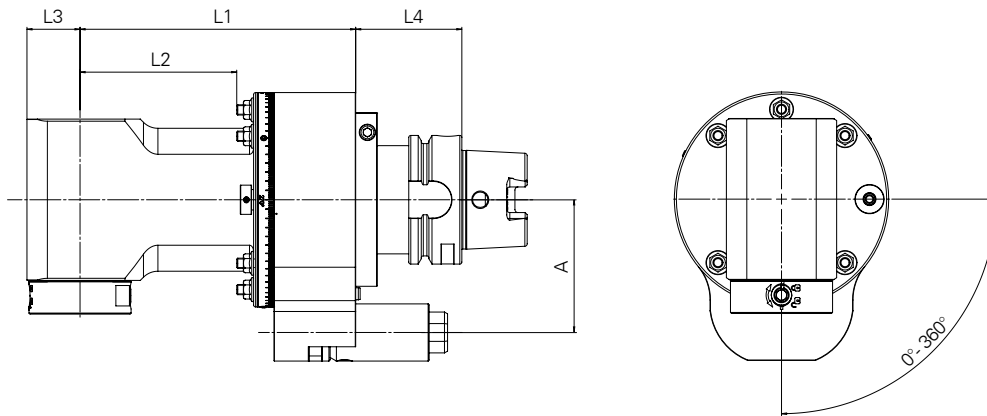
### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]		
S3	26		0

### +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]		
HSK-A63	52		0
HSK-A100	55		1,7
SK40   CAT40	45		0,1
SK50   CAT50	45		2,2
BT40	53		0,4
BT50	60		3,5

## TECHNICAL DATA



<b>M<sub>max</sub></b>	<b>70 Nm</b>
<b>i</b>	<b>1:1</b>
<b>n<sub>max</sub></b>	<b>6.000 rpm</b>



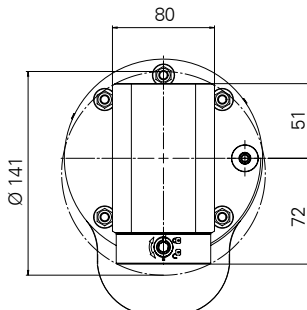
BLP



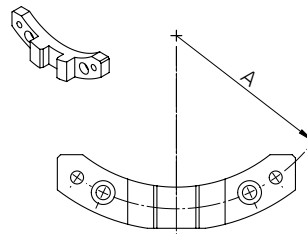
TLP

## OUTPUT SPINDLE

BENZ Solidfix®-S4



Stop block




Stop block Size	Technical data A [mm]
HSK-A63	65   80   110
HSK-A100	80   110
SK40   CAT40	65   80   110
SK50   CAT50	80   110
BT40	65   80   110
BT50	80   110




for easy commissioning – starter set available


## FRONT HEAD

Type Size	Technical data L1 [mm]	L2 [mm]	
07	150	88	8,7

## +OUTPUT SPINDLE

Type Size	Technical data L3 [mm]	
S4	35	0

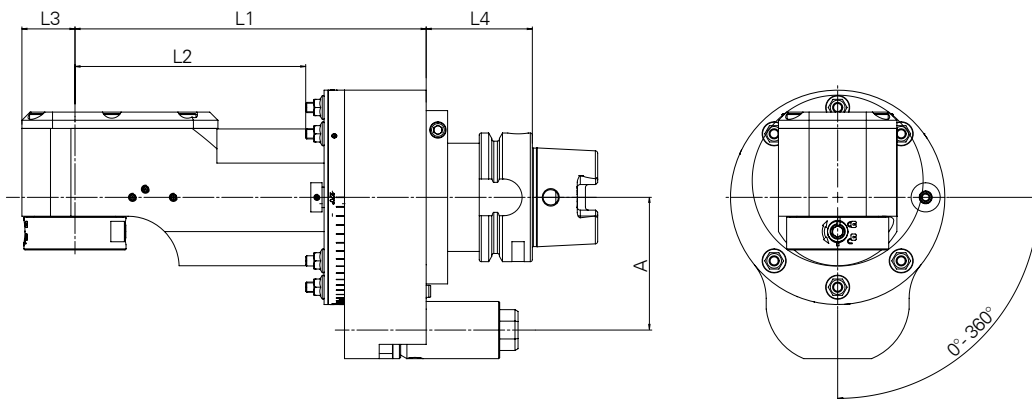
## +MACHINE CONNECTION

Type Size	Technical data L4 [mm]	
HSK-A63	52	0
HSK-A100	55	1,9
SK40   CAT40	45	0,1
SK50   CAT50	45	2,2
BT40	53	0,4
BT50	60	3,5

# ANGLE HEAD

## BENZ SELECT LINE – FORTE WWX (EC)

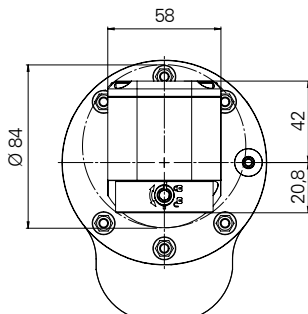
### TECHNICAL DATA



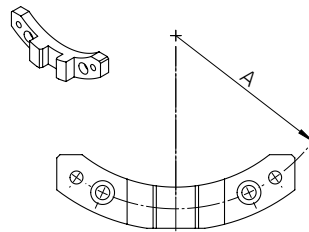
05		
$M_{max}$	30 Nm	
$i$	1:1	
$n_{max}$	8.000 rpm	
BLP	TLP	

### OUTPUT SPINDLE

BENZ Solidfix®-S3



Stop block



Stop block Size	Technical data
	A [mm]
HSK-A63	65   80   110
HSK-A100	80   110
SK40   CAT40	65   80   110
SK50   CAT50	80   110
BT40	65   80   110
BT50	80   110

for easy commissioning – starter set available

### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05	172	110,5	5,8

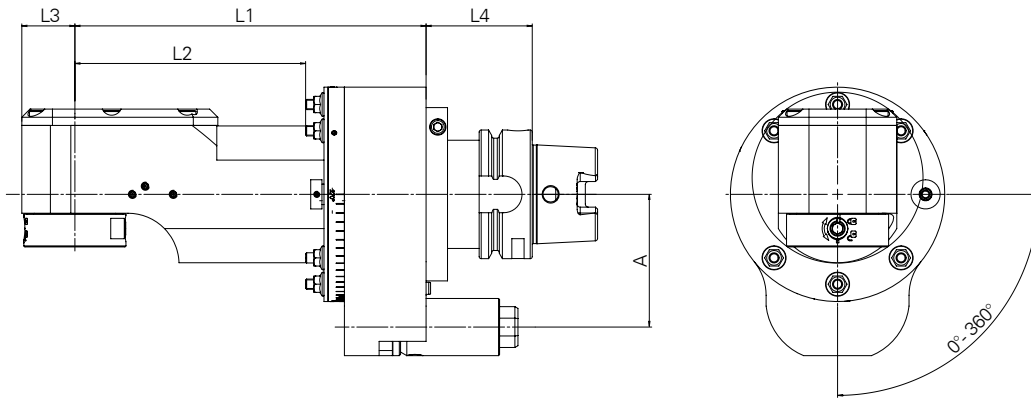
### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]		
S3	26		0

### +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]		
HSK-A63	52		0
HSK-A100	55		1,7
SK40   CAT40	45		0,1
SK50   CAT50	45		2,2
BT40	53		0,4
BT50	60		3,5

## TECHNICAL DATA



07

**M<sub>max</sub>** 70 Nm

**i** 1:1

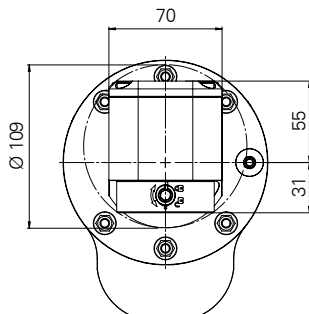
**n<sub>max</sub>** 6.000 rpm

BLP

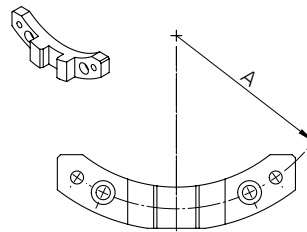
TLP

## OUTPUT SPINDLE

BENZ Solidfix®-S4



Stop block



Stop block Size	Technical data	
	A [mm]	
HSK-A63	65   80   110	
HSK-A100	80   110	
SK40   CAT40	65   80   110	
SK50   CAT50	80   110	
BT40	65   80   110	
BT50	80   110	

**i** for easy commissioning – starter set available

## FRONT HEAD

Type Size	Technical data	
	L1 [mm]	L2 [mm]
07	200	138



8,6

## +OUTPUT SPINDLE

Type Size	Technical data	
	L3 [mm]	+ KG
S4	35	0



0

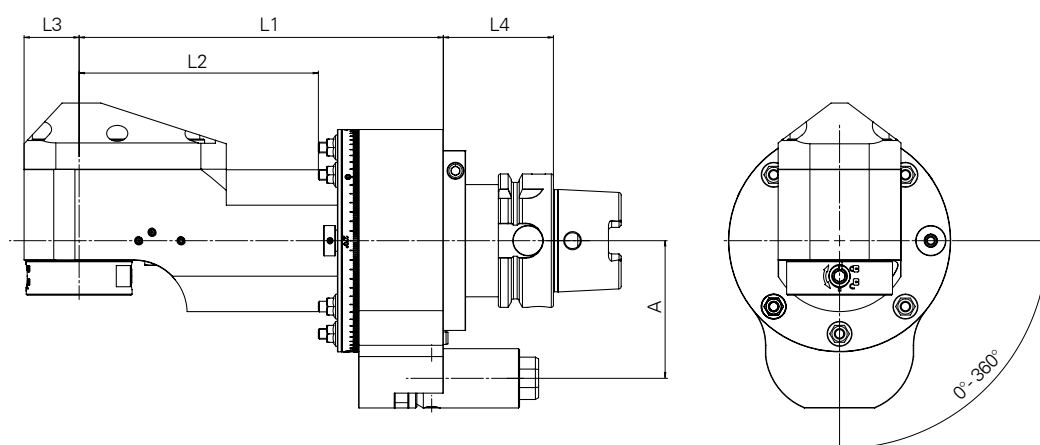
## +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	+ KG
HSK-A63	52	0
HSK-A100	55	1,9
SK40   CAT40	45	0,1
SK50   CAT50	45	2,2
BT40	53	0,5
BT50	60	3,7

# ANGLE HEAD

## BENZ SELECT LINE – FORTE WWX (IC)

### TECHNICAL DATA



05

**M<sub>max</sub>** 30 Nm

**i** 1:1

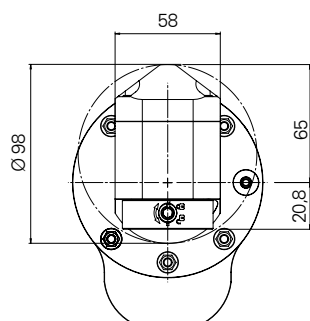
**n<sub>max</sub>** 8.000 rpm

BLP

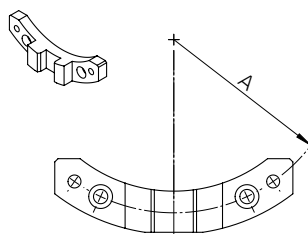
TLP

### OUTPUT SPINDLE

BENZ Solidfix®-S3



Stop block



Stop block Size	Technical data
	A [mm]
HSK-A63	65   80   110
HSK-A100	80   110
SK40   CAT40	65   80   110
SK50   CAT50	80   110
BT40	65   80   110
BT50	80   110

**i** for easy commissioning – starter set available

### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05	172	110,5	5,9

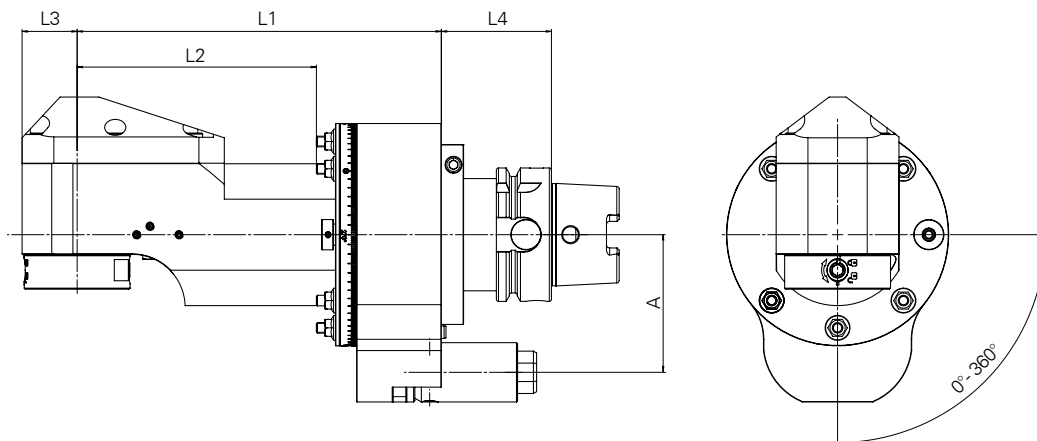
### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]		
S3	26	0	0

### +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]		
HSK-A63	52	0	
HSK-A100	55	1,7	
SK40   CAT40	45	0,1	
SK50   CAT50	45	2,2	
BT40	53	0,4	
BT50	60	3,5	

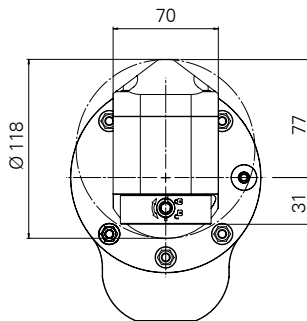
## TECHNICAL DATA



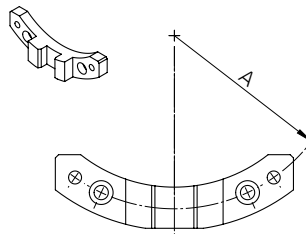
<b>07</b>		
<b>M<sub>max</sub></b>	<b>70 Nm</b>	
<b>i</b>	<b>1:1</b>	
<b>n<sub>max</sub></b>	<b>6.000 rpm</b>	
<b>BLP</b>	<b>TLP</b>	

## OUTPUT SPINDLE

BENZ Solidfix®-S4



Stop block



Stop block Size	Technical data	
	<b>A</b> [mm]	
<b>HSK-A63</b>	65   80   110	
<b>HSK-A100</b>	80   110	
<b>SK40   CAT40</b>	65   80   110	
<b>SK50   CAT50</b>	80   110	
<b>BT40</b>	65   80   110	
<b>BT50</b>	80   110	

for easy commissioning – starter set available

## FRONT HEAD

Type Size	Technical data		
	<b>L1</b> [mm]	<b>L2</b> [mm]	
<b>07</b>	200	138	8,7

## +OUTPUT SPINDLE

Type Size	Technical data		
	<b>L3</b> [mm]	<b>L4</b> [mm]	
<b>S4</b>	35	0	0

## +MACHINE CONNECTION

Type Size	Technical data		
	<b>L4</b> [mm]	<b>L5</b> [mm]	
<b>HSK-A63</b>	52	0	0
<b>HSK-A100</b>	55	1,9	1,9
<b>SK40   CAT40</b>	45	0,1	0,1
<b>SK50   CAT50</b>	45	2,2	2,2
<b>BT40</b>	53	0,5	0,5
<b>BT50</b>	60	3,7	3,7





# BENZ ANGLE HEADS

# BENZ ANGLE HEADS

## PRODUCT OVERVIEW

### DESIGNS



1

#### **MONO WSX**

Angle head 90°

Machining: without spatial constraint

page 46



2

#### **DUO WZX**

Angle head 90°  
output spindle on both sides

Machining: in opposite direction / with different tools

page 54



3

#### **FORTE WWX (EC)**

Angle head 90°  
reset output spindle

Machining: for spatial constraint / maximum useable tool length

page 62



4

#### **FORTE WWX (IC)**

Angle head 90°  
reset output spindle

Machining: for spatial constraint / maximum useable tool length

page 68



5

#### SLIM WGX

Angle head 90°  
narrow design

Machining: for spatial  
constraint / maximum  
useable tool length

page 72



6

#### SLIM WG-S / WGX-S

Angle head 90°  
extremely narrow design

Machining: for extreme  
spatial constraint /  
maximum useable tool  
length

page 78



7

#### FLEX WDX

Angle head 0°-100°  
with flexible angle /  
stepless adjustment

Machining: in any  
variable position

page 88



8

#### FIX WFX

Angle head 0°-120°  
with fixed angle

Machining: special  
machining at fixed angle

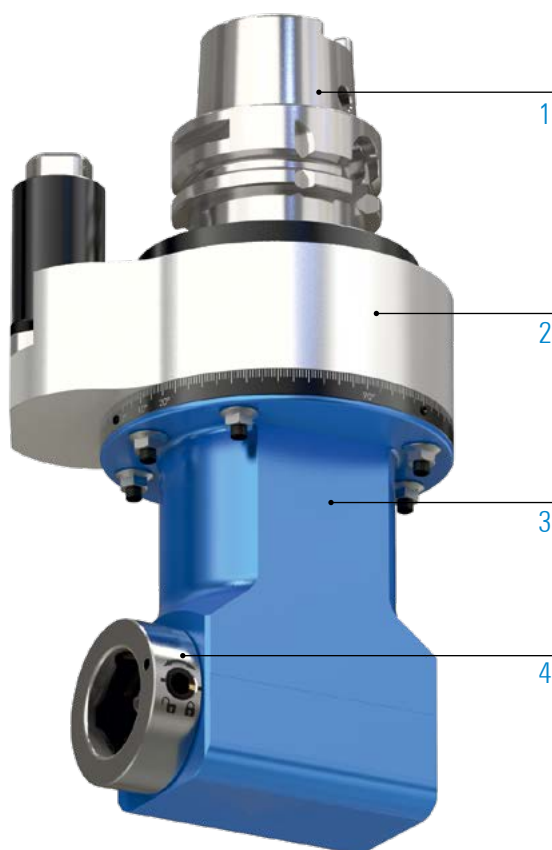
page 94

# ANGLE HEAD MONO WSX

## ANGLE HEAD 90° – SINGLE OUTPUT SPINDLE

Angle head for machining without spatial constraint

Product version: with external cooling (EC) and internal cooling (IC) on request



## 1 MACHINE CONNECTION – DRIVE CONE



HSK  
DIN 69893



Steep taper  
SK



Steep taper  
MAS BT



Steep taper  
CAT



Coromant  
Capto®



KM™

## 2 TORQUE SUPPORT

optional: customized torque arm  
more information on page 25

## 3 FRONT HEAD (SIZE)

04

05

07

15

20

## 4 OUTPUT SPINDLE



BENZ  
Solidfix®



BENZ  
CAPTO™



Collet chuck



Weldon



Whistle  
Notch



Milling arbor



HSK



KM™

## MACHINING



drilling



milling



tapping

## SPECIFICATIONS



amount of  
output spindles



axis angle



change the  
angle head



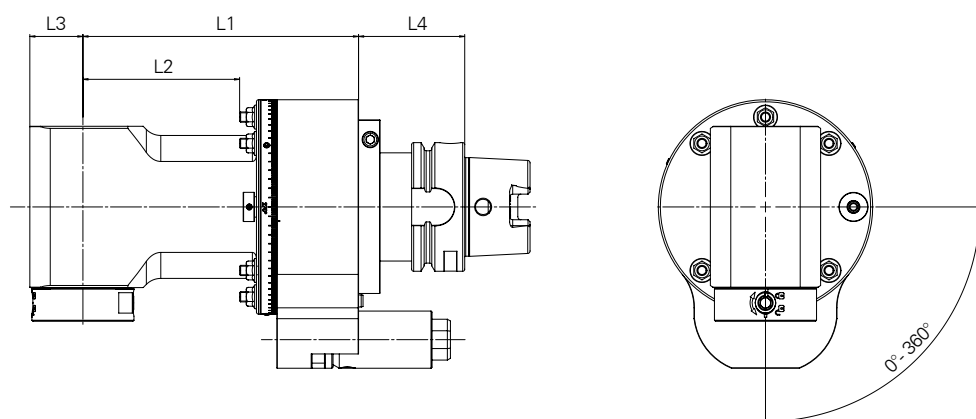
grease lubrication



without cooling

# ANGLE HEAD MONO WSX

## TECHNICAL DATA



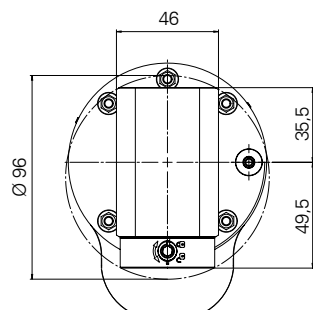
04



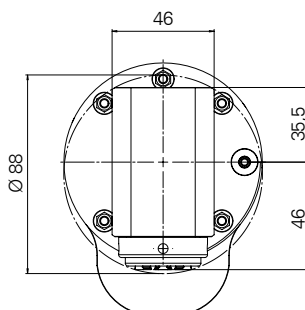
$M_{max}$  15 Nm  
i 1:1  
 $n_{max}$  10.000 rpm

## OUTPUT SPINDLE

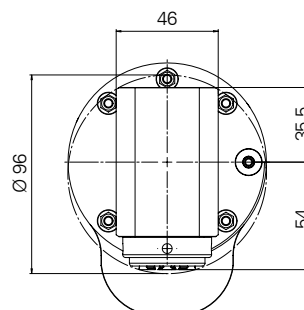
BENZ Solidfix®-S2



Collet chuck-ER16A




Collet chuck-ER20A




technical data for other output spindles on request


## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
04	145	93,5	4,1

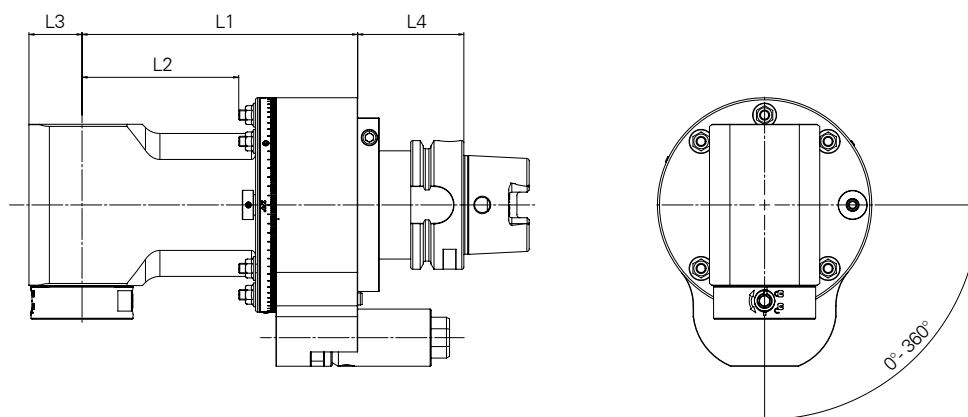
## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
S2	24		0
ER16A	24		0
ER20A	24		0

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52		0
HSK-A100	55		1,5
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		0,9
SK50   CAT50	45		2
BT40	53		0,4
BT50	60		3,3

## TECHNICAL DATA



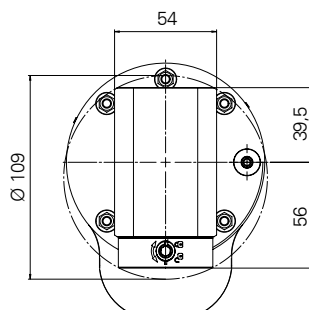
05



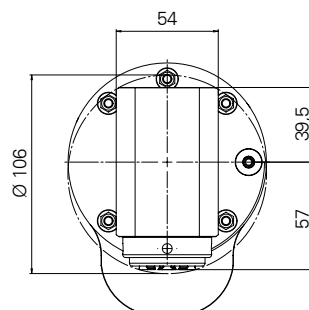
$M_{max}$  30 Nm  
i 1:1  
 $n_{max}$  8.000 rpm

### OUTPUT SPINDLE

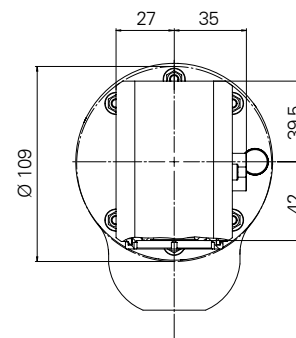
BENZ Solidfix®-S3



Collet chuck-ER25A



BENZ CAPTO™-C3



technical data for other output spindles on request

### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05	88*	26,5	4,8
	135	73,5	5,6
	195	133,5	6,4

### +OUTPUT SPINDLE

Type Size	Technical data	
	L3 [mm]	+
S3	26	0
ER25A	26	0
C3	30,5	1

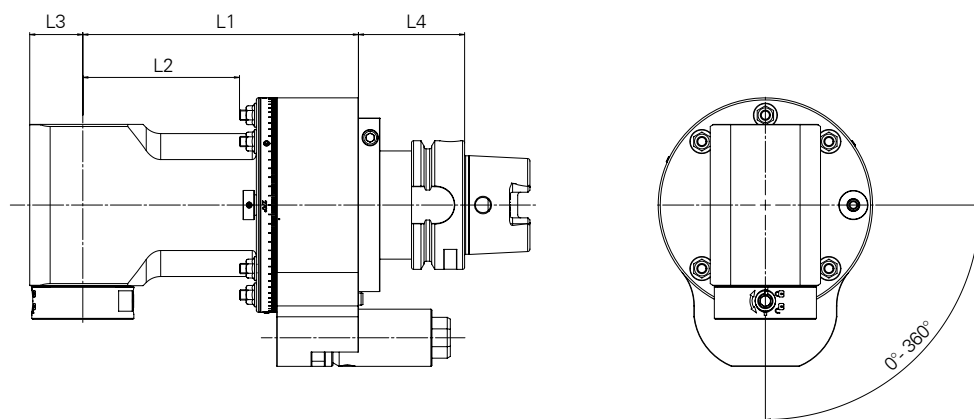
### +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	+
HSK-A63	52	0
HSK-A100	55	1,7
Capto C6   SK40   CAT40	45	0,1
Capto C8	45	1,0
SK50   CAT50	45	2,2
BT40	53	0,4
BT50	60	3,5

\* short size: output spindle BENZ CAPTO™ not possible

# ANGLE HEAD MONO WSX

## TECHNICAL DATA



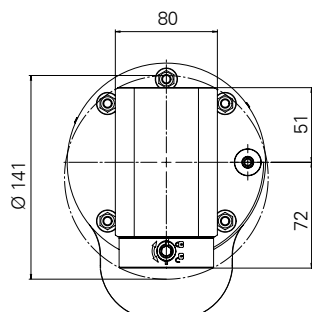
07



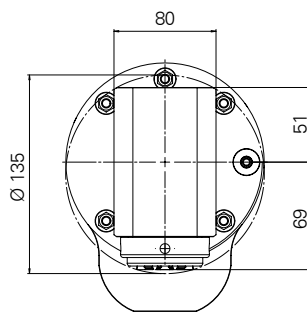
$M_{max}$  70 Nm  
i 1:1  
 $n_{max}$  6.000 rpm

## OUTPUT SPINDLE

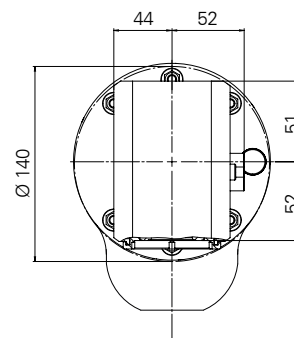
BENZ Solidfix®-S4



Collet chuck-ER32A



BENZ CAPTO™-C4



technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
07	105	43,5	7,5
	150	88	8,7
	215	153,5	10,1

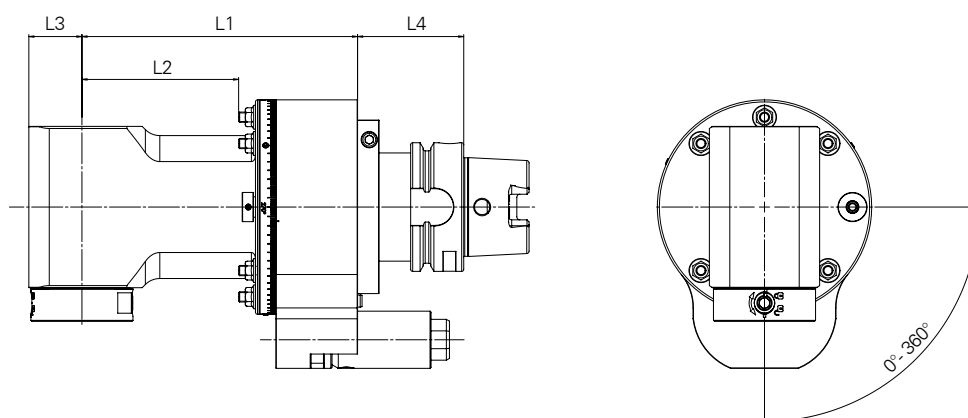
## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
S4	35		0
ER32A	35		0
C4	37		0,5

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52		0
HSK-A100	55		1,9
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		1,0
SK50   CAT50	45		2,2
BT40	53		0,5
BT50	60		3,5

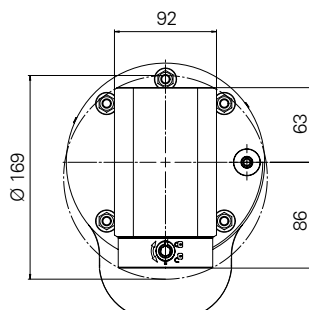
## TECHNICAL DATA



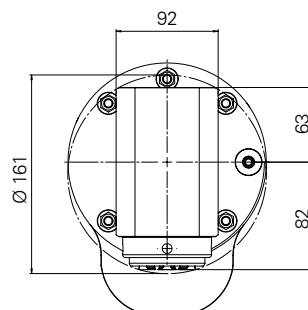
$M_{max}$	150 Nm
$i$	1:1
$n_{max}$	4.000 rpm

## OUTPUT SPINDLE

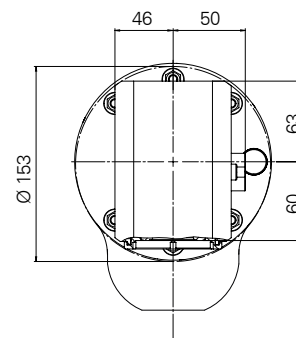
BENZ Solidfix®-S5



Collet chuck-ER40A




BENZ CAPTO™-C5




**i** technical data for other output spindles on request


## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
15	155	85,5	14,1
	225	155,5	16,3
	298	228,5	19,1

## +OUTPUT SPINDLE

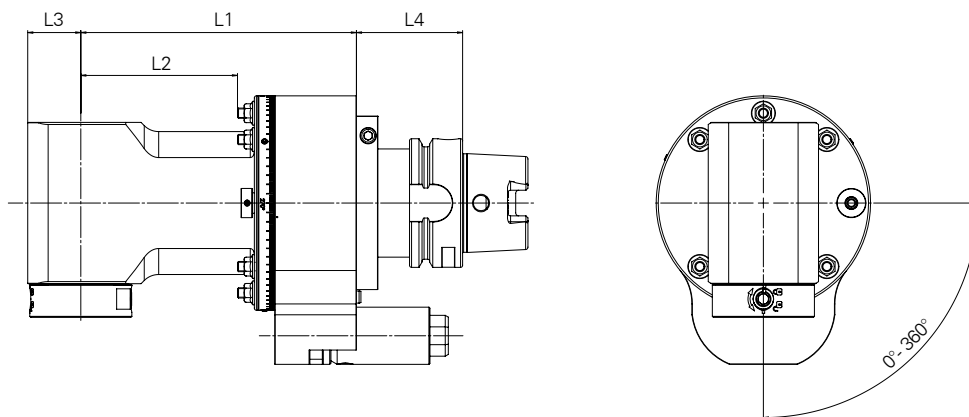
Type Size	Technical data		
	L3 [mm]	+	
S5	40		0
ER40A	40		0
C5	44		0

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A100	55		0
Capto C8	45		-0,8
SK50   CAT50	45		0,3
BT50	60		2,9

# ANGLE HEAD MONO WSX

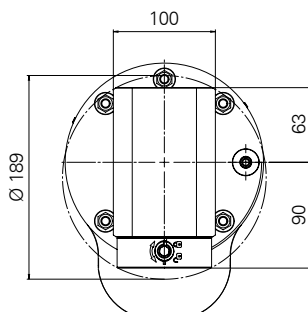
## TECHNICAL DATA



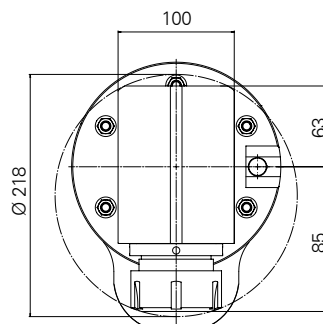
20	
$M_{max}$	230 Nm
$i$	1:1
$n_{max}$	3.000 rpm

## OUTPUT SPINDLE

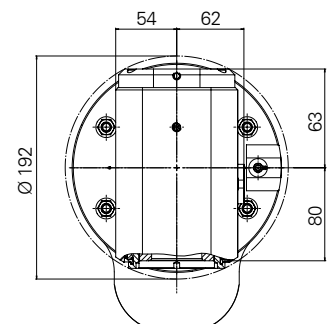
BENZ Solidfix®-S5



Collet chuck-ER50



BENZ CAPTO™-C6



technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
20	171	101	20,4
	241	171	21,2
	311	241	24,4

## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
S5	45	0	
ER50	45	0	
C6	50	0,6	

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A100	55	0	
Capto C8	45	-0,8	
SK50   CAT50	45	0,3	
BT50	60	2,9	

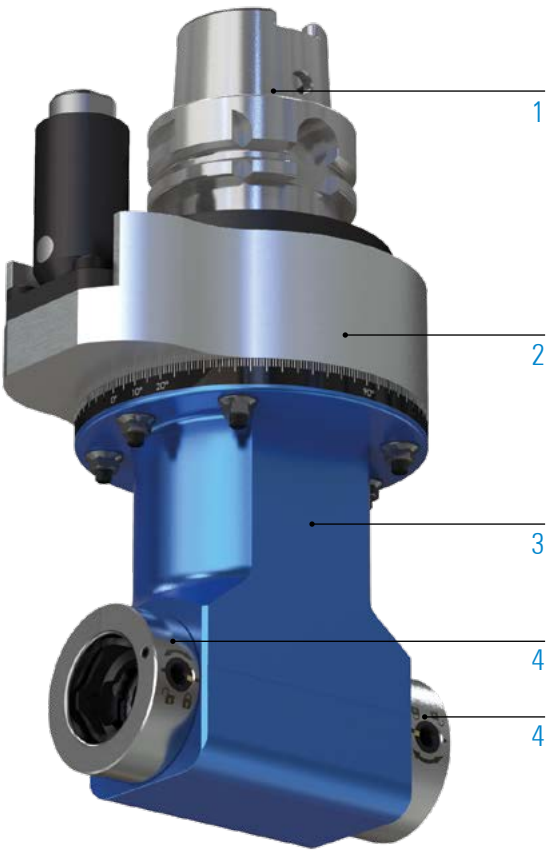


# ANGLE HEAD DUO WZX

## ANGLE HEAD 90° – OUTPUT SPINDLE ON BOTH SIDES

Angle head with two output spindles arranged opposite each other and running in opposite directions

Product version: with external cooling (EC) on request



1 MACHINE CONNECTION – DRIVE CONE



HSK  
DIN 69893



Steep taper  
SK



Steep taper  
MAS BT



Steep taper  
CAT



Coromant  
Capto®



KM™

2 TORQUE SUPPORT

optional: customized torque arm  
more information on page 25

3 VORSATZKOPF (BAUGRÖSSE)

- 04
- 05
- 07
- 15
- 20

4 WERKZEUGAUFNAHME



BENZ  
Solidfix®



BENZ  
CAPTO™



Collet chuck



Weldon



Whistle  
Notch



Milling arbor



HSK



KM™

MACHINING



drilling



milling



tapping

SPECIFICATIONS



amount of  
output spindles



axis angle



change the  
angle head



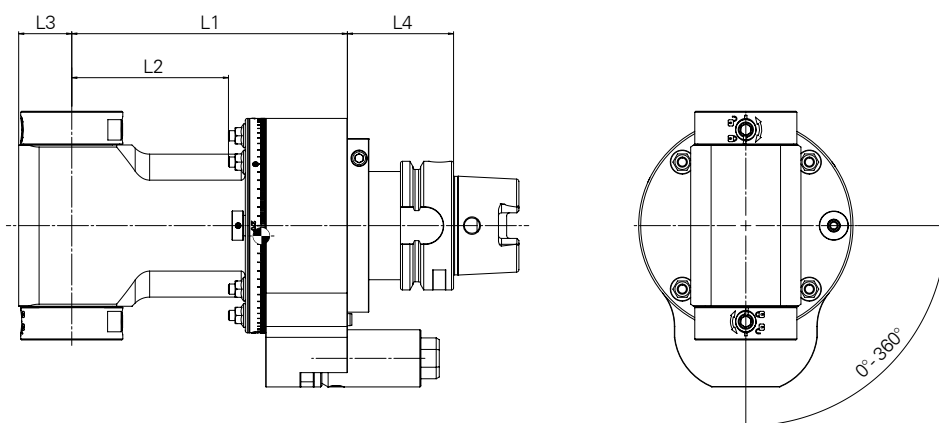
grease lubrication



without cooling

# ANGLE HEAD DUO WZX

## TECHNICAL DATA



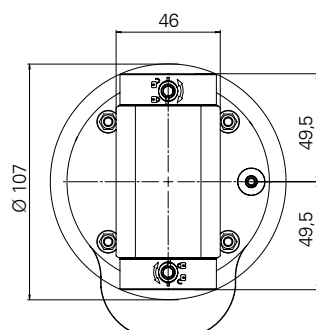
04



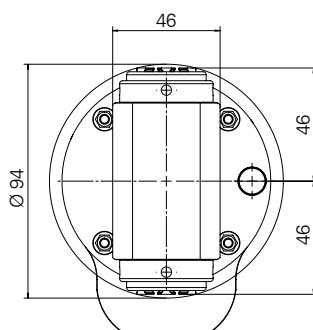
$M_{max}$	15 Nm
$i$	1:1
$n_{max}$	10.000 rpm

## OUTPUT SPINDLE

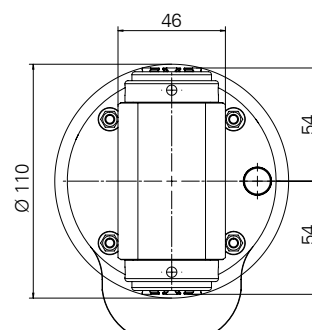
BENZ Solidfix®-S2



Collet chuck-ER 16A



Collet chuck-ER 20A



technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
04	145	93,5	4,8

## +OUTPUT SPINDLE

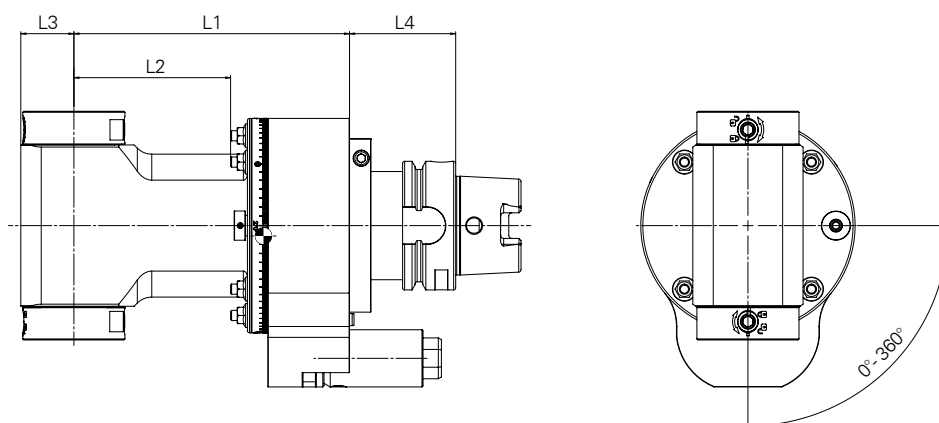
Type Size	Technical data		
	L3 [mm]		
S2	24		0
ER16A	24		0
ER 20A	24		0

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]		
HSK-A63	52		0
HSK-A100	55		3
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		2,4
SK50   CAT50	45		3,6
BT40	53		-0,2
BT50	60		2,8

## TECHNICAL DATA

2



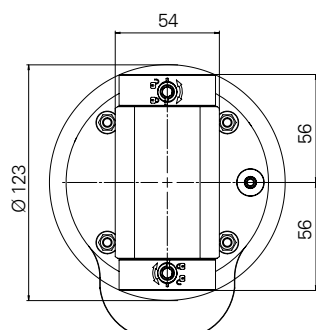
05



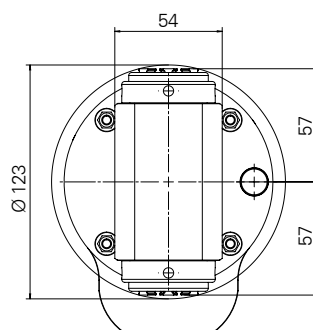
$M_{max}$  30 Nm  
 $i$  1:1  
 $n_{max}$  8.000 rpm

### OUTPUT SPINDLE

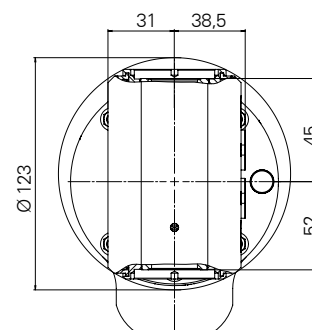
BENZ Solidfix®-S3



Collet chuck-ER 25A




BENZ CAPTO™-C3




technical data for other output spindles on request


### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05	88*	26,5	5,4
	135	73,5	6,2
	195	133,5	6,8

### +OUTPUT SPINDLE

Type Size	Technical data	
	L3 [mm]	+ 
S3	26	0
ER25A	26	0
C3	30,5	0,5

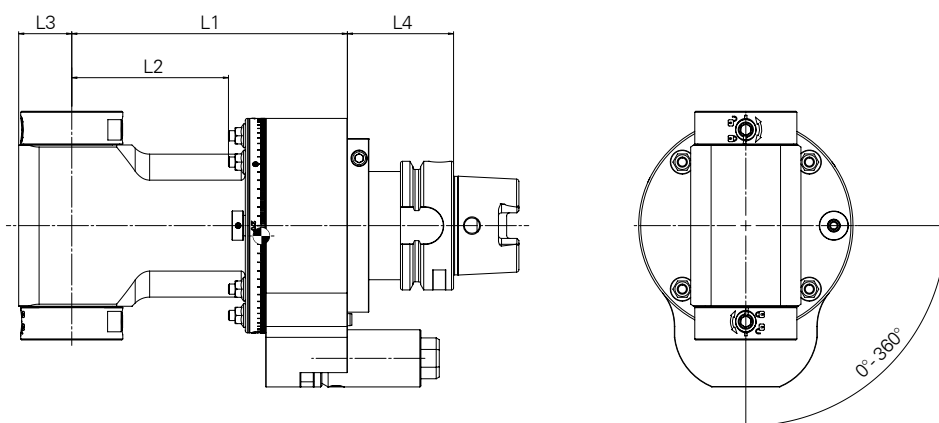
### +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	+ 
HSK-A63	52	0
HSK-A100	55	3
Capto C6   SK40   CAT40	45	0,1
Capto C8	45	2,4
SK50   CAT50	45	3,6
BT40	53	-0,1
BT50	60	3,1

\* short size: output spindle BENZ CAPTO™ not possible

# ANGLE HEAD DUO WZX

## TECHNICAL DATA



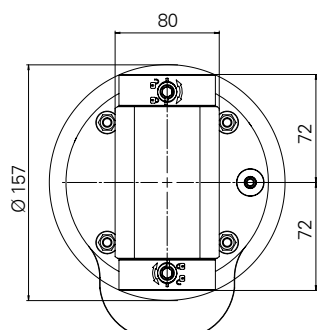
07



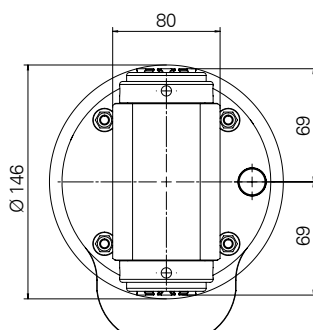
$M_{max}$  70 Nm  
i 1:1  
 $n_{max}$  6.000 rpm

## OUTPUT SPINDLE

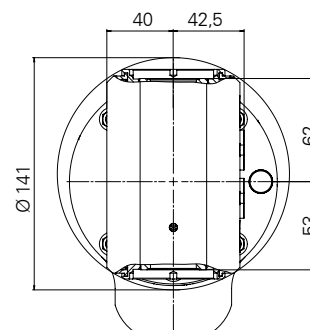
BENZ Solidfix®-S4



Collet chuck-ER32A




BENZ CAPTO™-C4




technical data for other output spindles on request


## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
07	105	43,5	8,4
	150	88,5	9,4
	215	153,5	11,1

## +OUTPUT SPINDLE

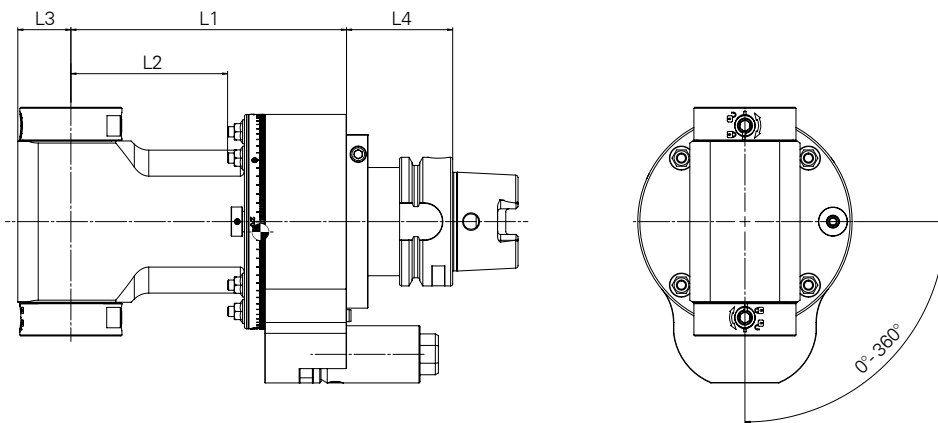
Type Size	Technical data		
	L3 [mm]	+	
S4	35		0
ER32A	35		0
C4	37		1,0

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52		0
HSK-A100	55		1,9
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		1,0
SK50   CAT50	45		2,2
BT40	53		0,5
BT50	60		3,5

## TECHNICAL DATA

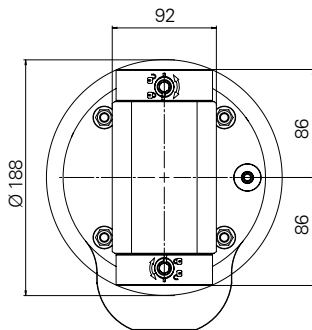
2



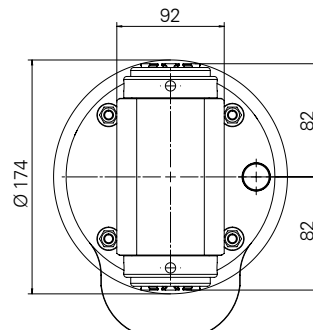
<b>M<sub>max</sub></b>	150 Nm
<b>i</b>	1:1
<b>n<sub>max</sub></b>	4.000 rpm

### OUTPUT SPINDLE

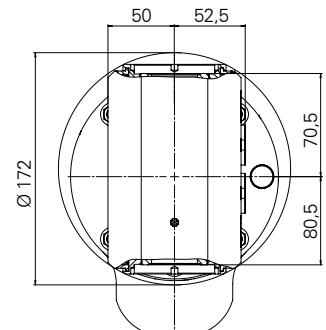
BENZ Solidfix®-S5



Collet chuck-ER40A




BENZ CAPTO™ -C5




**i** technical data for other output spindles on request


### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
15	155	85,5	14,7
	225	155,5	16,9
	298	228,5	19,2

### +OUTPUT SPINDLE

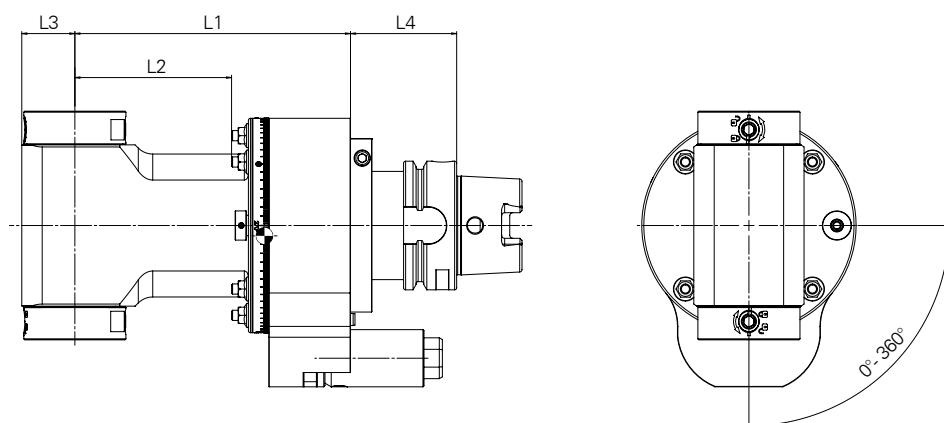
Type Size	Technical data		
	L3 [mm]	+	
S5	40		0
ER40A	40		0
C5	44		5,5

### +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A100	55		0
Capto C8	45		-0,8
SK50   CAT50	45		0,3
BT50	60		2,9

# ANGLE HEAD DUO WZX

## TECHNICAL DATA



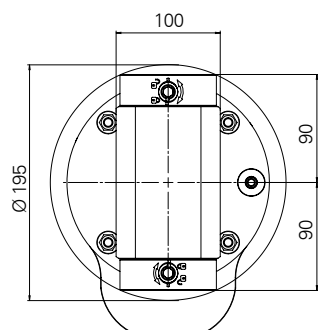
20



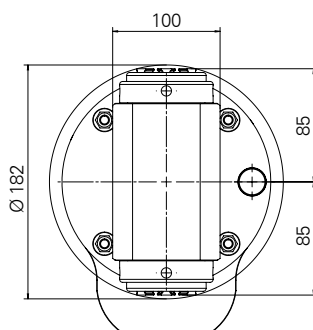
$M_{max}$  230 Nm  
i 1:1  
 $n_{max}$  3.000 rpm

## OUTPUT SPINDLE

BENZ Solidfix®-S5



Collet chuck-ER40A



technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
20	171	101	16,5
	241	171	19
	311	241	21,5

## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
S5	45		0
ER40A	45		0

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A100	55		0
Capto C8	45		-0,8
SK50   CAT50	45		0,3
BT50	60		2,9

# NOTES

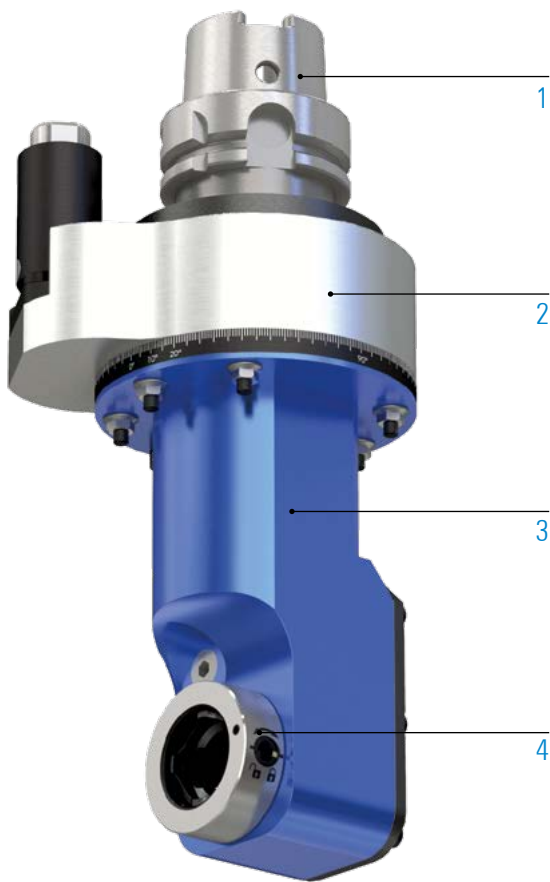
2

# ANGLE HEAD FORTE WWX

## ANGLE HEAD 90° – RESET OUTPUT SPINDLE

Angle head for machining for spatial constraint / maximum useable tool length

Product version: with external coolant (EC), internal coolant (IC) or EC/IC combination



1 MASCHINENANBINDUNG – ANTRIEBSKEGEL



HSK  
DIN 69893



Steep taper  
SK



Steep taper  
MAS BT



Steep taper  
CAT



Coromant  
Capto®



KM™

2 TORQUE SUPPORT

optional: customized torque arm  
more information on page 25

3 FRONT HEAD (SIZE)

- 05
- 07
- 15
- 20

4 OUTPUT SPINDLE



BENZ  
Solidfix®



BENZ  
CAPTO™



Collet chuck



Weldon



Whistle  
Notch



Milling arbor



HSK



KM™

MACHINING



drilling



milling



tapping

SPECIFICATIONS



amount of  
output spindles



axis angle



change the  
angle head



grease lubrication



without cooling



external cooling



internal cooling



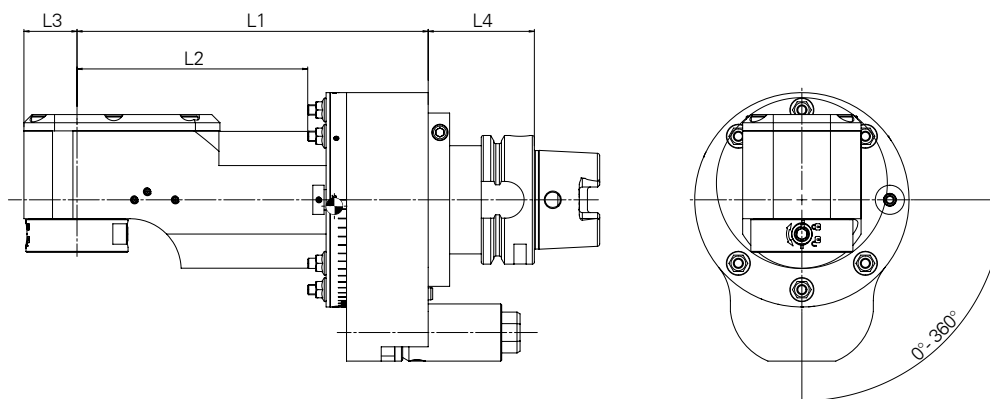
external / internal  
cooling



MQL

# ANGLE HEAD FORTE WWX (EC)

## TECHNICAL DATA



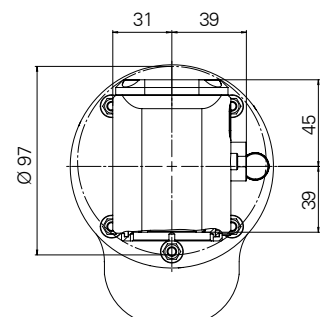
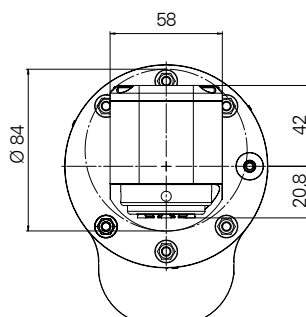
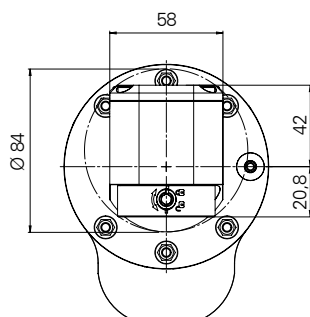
05		
$M_{max}$	30 Nm	
$i$	1:1	
$n_{max}$	8.000 rpm	

## OUTPUT SPINDLE

BENZ Solidfix®-S3

Collet chuck-ER 25A

BENZ CAPTO™-C3



technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05	125*	63,5	5,0
	172	110,5	5,8
	232	170,5	6,6

## +OUTPUT SPINDLE

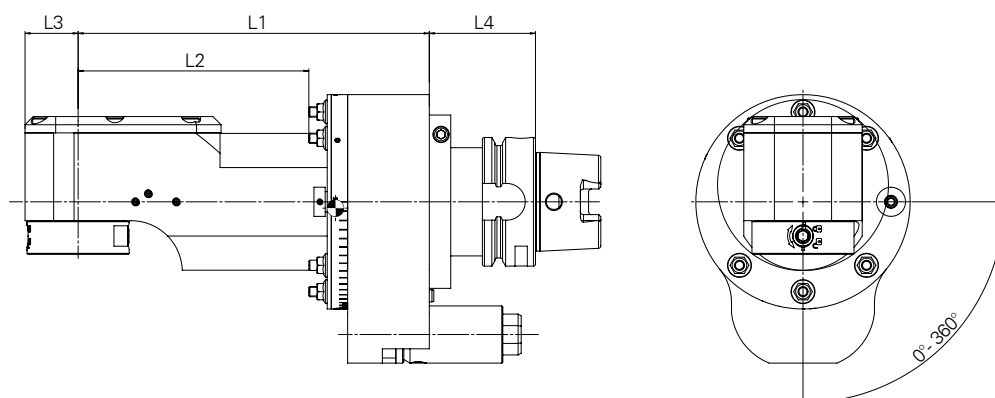
Type Size	Technical data		
	L3 [mm]	+	
S3	26	0	
ER25A	26	0	
C3	30	0,6	

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52	0	
HSK-A100	55	1,7	
Capto C6   SK40   CAT40	45	0,1	
Capto C8	45	1	
SK50   CAT50	45	2,2	
BT40	53	0,4	
BT50	60	3,5	

\* short size: output spindle BENZ CAPTO™ not possible

## TECHNICAL DATA



07

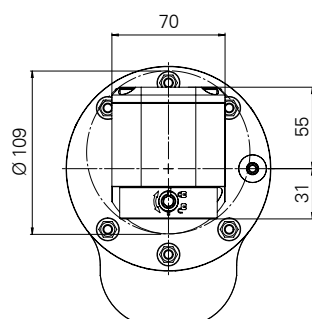


$M_{max}$  70 Nm  
 $i$  1:1  
 $n_{max}$  6.000 rpm

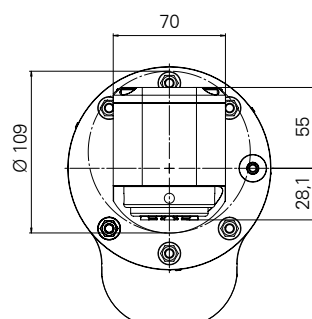
3

### OUTPUT SPINDLE

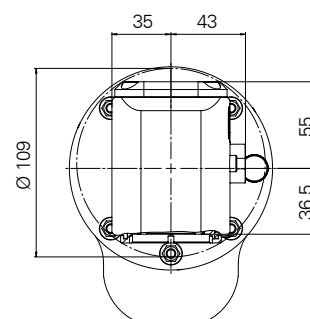
BENZ Solidfix®-S4



Collet chuck-ER32A




BENZ CAPTO™-C4




technical data for other output spindles on request


### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
07	155	93,5	7,6
	200	138,5	8,6
	253	191,5	9,2

### +OUTPUT SPINDLE

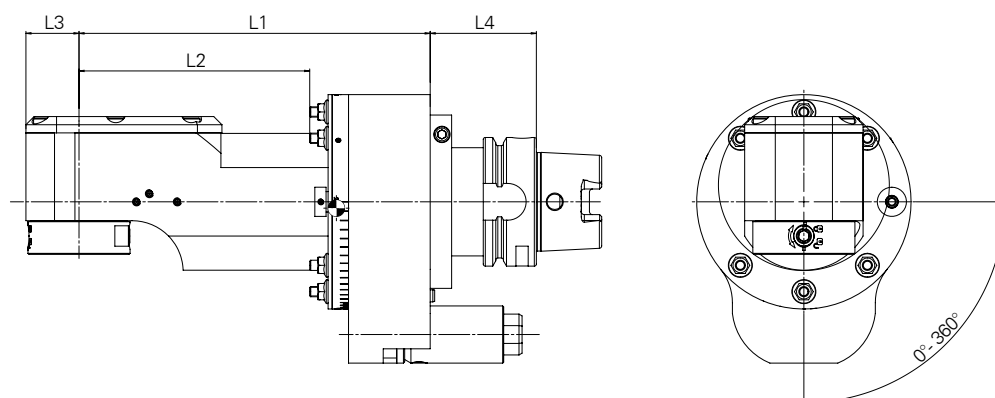
Type Size	Technical data		
	L3 [mm]	+	
S4	35	0	
ER32A	35	0	
C4	35	1	

### +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52	0	
HSK-A100	55	1,9	
Capto C6   SK40   CAT40	45	0,1	
Capto C8	45	1	
SK50   CAT50	45	2,2	
BT40	53	0,5	
BT50	60	3,7	

# ANGLE HEAD FORTE WWX (EC)

## TECHNICAL DATA



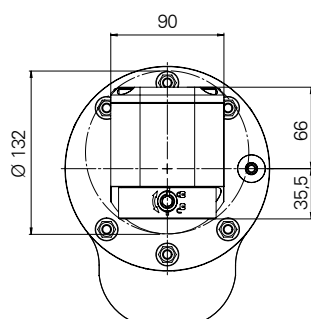
15



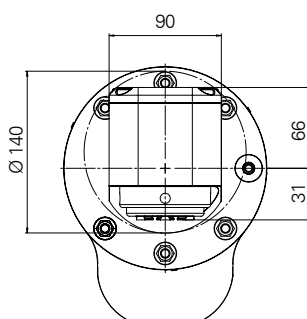
$M_{max}$  150 Nm  
 $i$  1:1  
 $n_{max}$  4.000 rpm

## OUTPUT SPINDLE

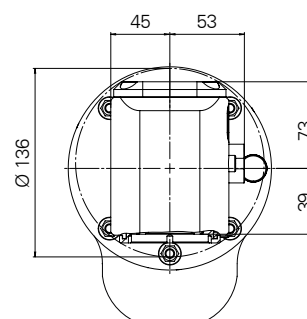
BENZ Solidfix®-S5



Collet chuck-ER 40A



BENZ CAPTO™-C5



technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
15	195	125,5	14,2
	232	162,5	14,8
	332	262,5	17,4

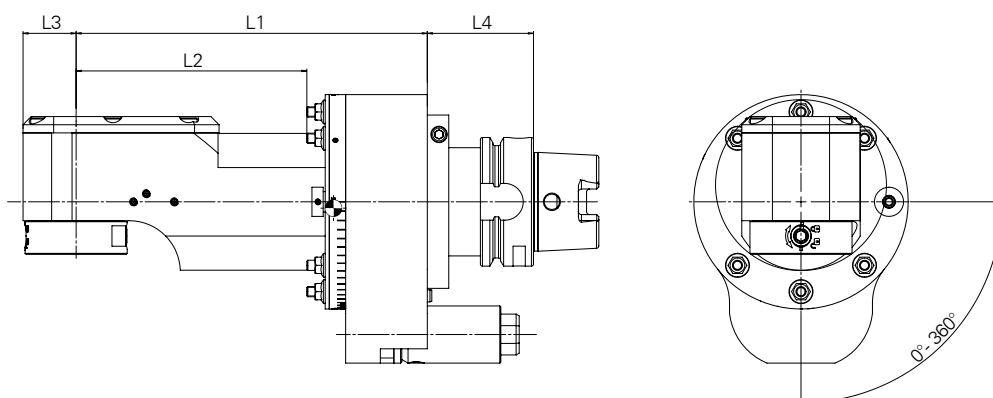
## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]		
S5	40		0
ER40A	40		0
C5	42		2,1

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]		
HSK-A100	55		0
Capto C8	45		-0,8
SK50   CAT50	45		0,3
BT50	60		1,8

## TECHNICAL DATA



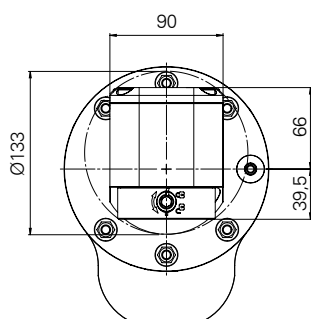
20



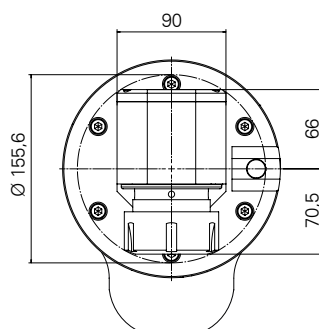
$M_{max}$  230 Nm  
 $i$  1:1  
 $n_{max}$  3.000 rpm

## OUTPUT SPINDLE

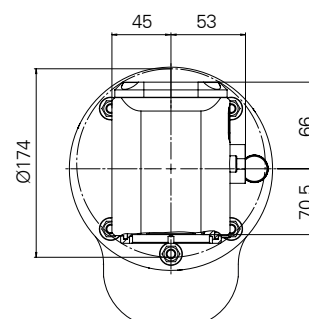
BENZ Solidfix®-S5



Collet chuck-ER50



BENZ CAPTO™-C6



technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
20	200	135,5	17,4
	237	172,5	16,7
	337	272,5	21,9

## +OUTPUT SPINDLE

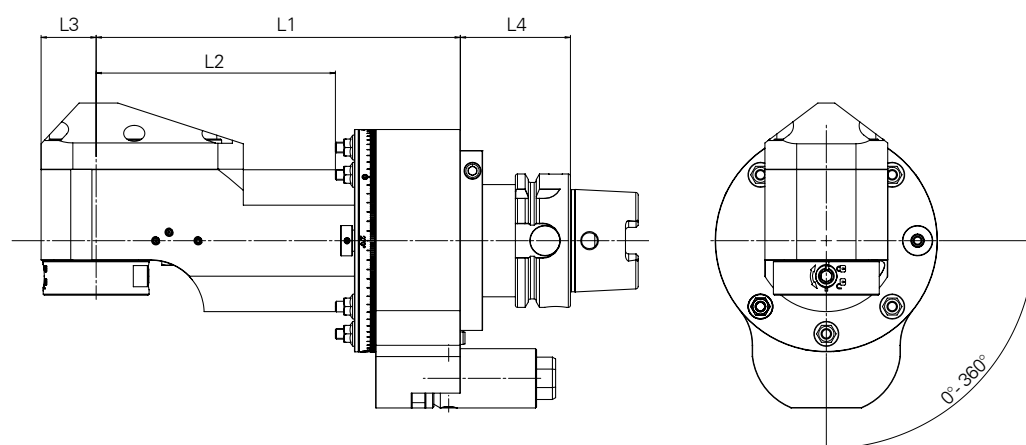
Type Size	Technical data	
	L3 [mm]	+
S5	45	0
ER50	45	0
C6	50	6

## +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	+
HSK-A100	55	0
Capto C8	45	-0,8
SK50   CAT50	45	0,3
BT50	60	2,9

# ANGLE HEAD FORTE WWX (IC)

## TECHNICAL DATA



05

**M<sub>max</sub>** 30 Nm

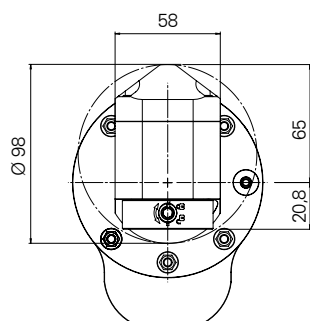
**i** 1:1

**n<sub>max</sub>** 8.000 rpm

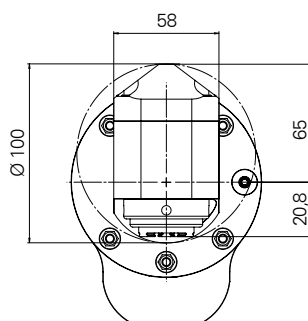
\*optional: MQL

## OUTPUT SPINDLE

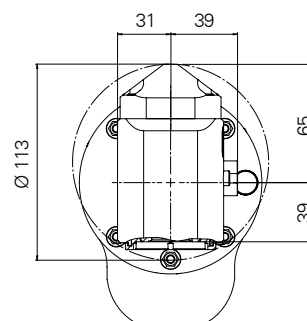
BENZ Solidfix®-S3



Collet chuck-ER 25A



BENZ CAPTO™-C3



**i** technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05	125	63,5	5,2
	172	110,5	5,9
	232	170,5	6,7

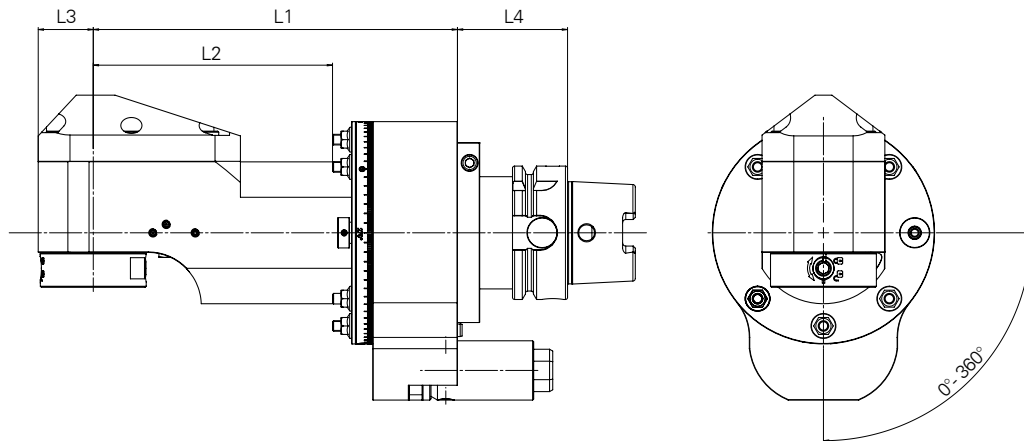
## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
S3	26		0
ER25A	26		0
C3	30		0,6

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52		0
HSK-A100	55		1,7
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		1
SK50   CAT50	45		2,2
BT40	53		0,4
BT50	60		3,5

## TECHNICAL DATA



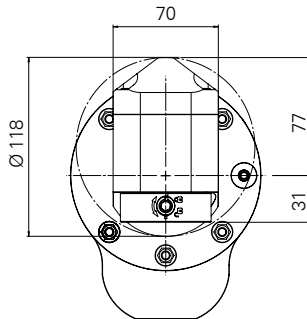
**07**

**M<sub>max</sub> 70 Nm**  
**i 1:1**  
**n<sub>max</sub> 6.000 rpm**

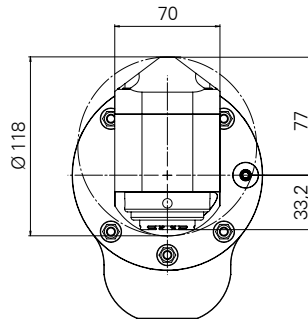
**\*optional: MQL**

## OUTPUT SPINDLE

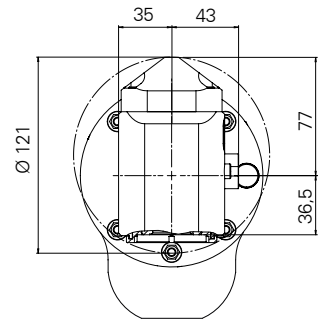
BENZ Solidfix®-S4



Collet chuck-ER32A




BENZ CAPTO™-C4




**i** technical data for other output spindles on request


## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
07	155	93,5	7,5
	200	138	8,7
	253	191,5	10

## +OUTPUT SPINDLE

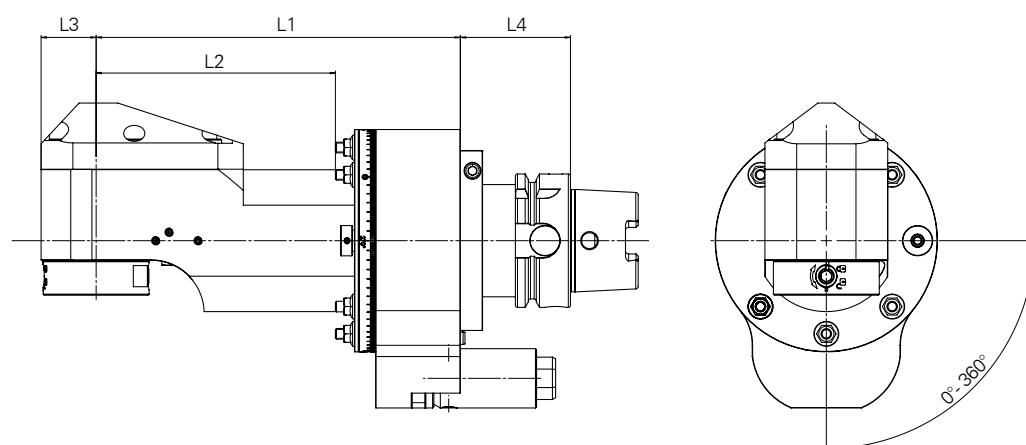
Type Size	Technical data		
	L3 [mm]	+	
S4	35	0	
ER32A	35	0	
C4	35	0,5	

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52	0	
HSK-A100	55	1,9	
Capto C6   SK40   CAT40	45	0,1	
Capto C8	45	1	
SK50   CAT50	45	2,2	
BT40	53	0,5	
BT50	60	3,7	

# ANGLE HEAD FORTE WWX (IC)

## TECHNICAL DATA



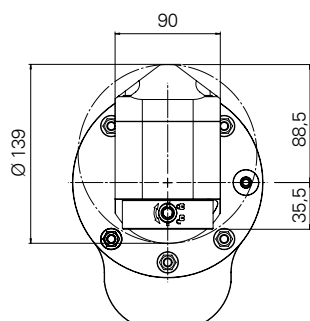
15



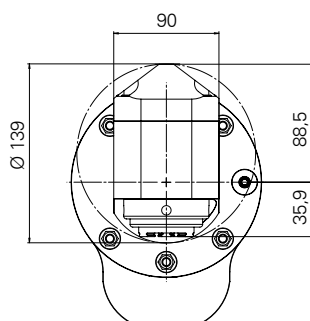
$M_{max}$  150 Nm  
 $i$  1:1  
 $n_{max}$  4.000 rpm

## OUTPUT SPINDLE

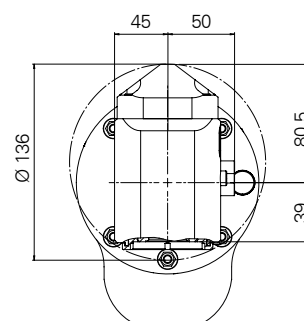
BENZ Solidfix®-S5



Collet chuck-ER 40A




BENZ CAPTO™-C5




technical data for other output spindles on request


## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
15	195	125,5	14,1
	232	161	16,3
	332	262,5	18,7

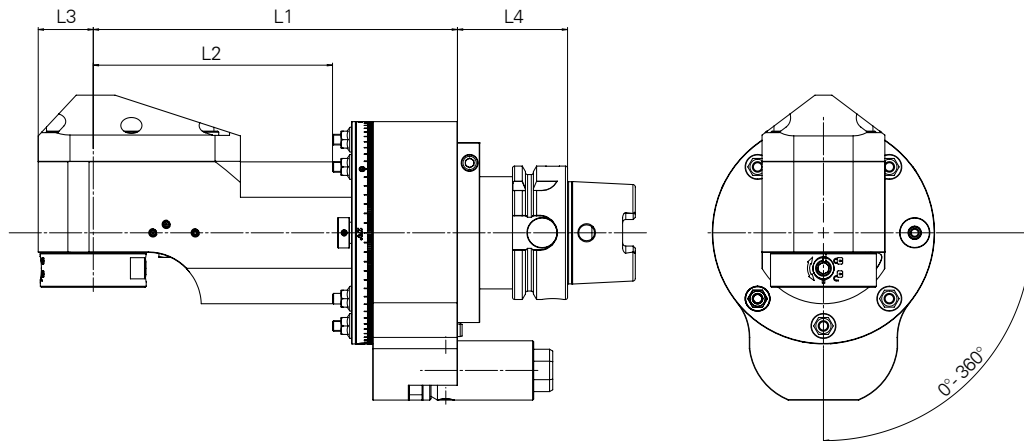
## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
S5	40		0
ER40A	40		0
C5	42		0,5

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A100	55		0
Capto C8	45		-0,8
SK50   CAT50	45		0,3
BT50	60		1,8

## TECHNICAL DATA



**20**

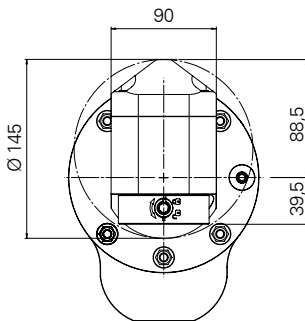
**M<sub>max</sub>** 230 Nm

**i** 1:1

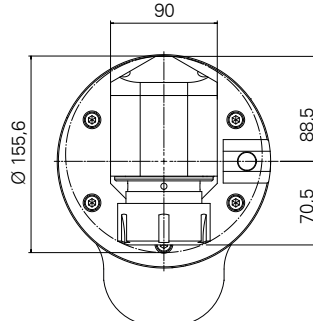
**n<sub>max</sub>** 3.000 rpm

### OUTPUT SPINDLE

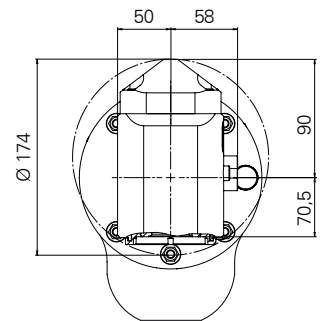
BENZ Solidfix®-S5



Collet chuck-ER 50



BENZ CAPTO™-C6



**i** technical data for other output spindles on request

### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	KG
20	200	135,5	17,6
	237	172,5	18,6
	337	272,5	20,4

### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	KG	+
S5	45	0	
ER50	45	0	
C6	50	3,3	

### +MACHINE CONNECTION

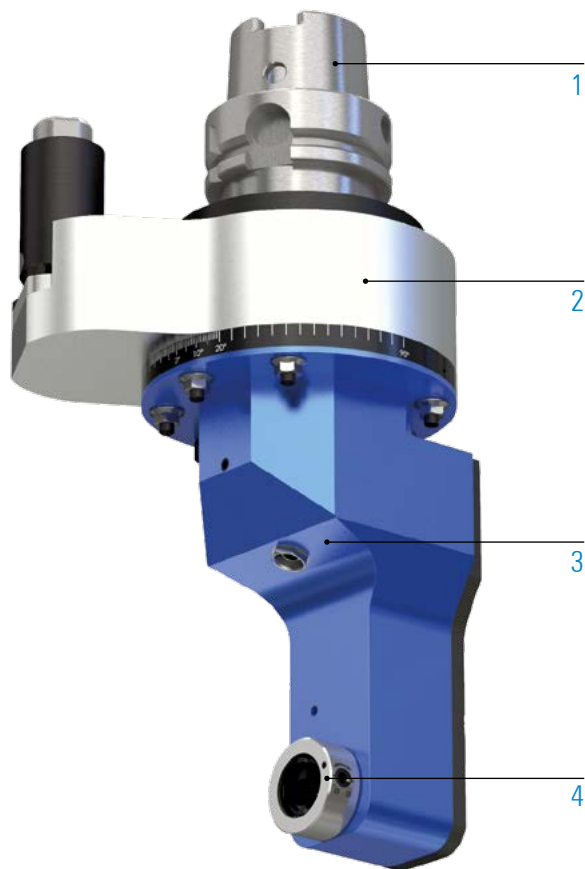
Type Size	Technical data		
	L4 [mm]	KG	+
HSK-A100	55	0	
Capto C8	45	-0,8	
SK50   CAT50	45	0,3	
BT50	60	2,9	

# ANGLE HEAD SLIM WGX

## ANGLE HEAD 90° – NARROW DESIGN

Angle head for machining for spatial constraint / maximum useable tool length

Product version: with internal cooling (IC) on request



## 1 MACHINE CONNECTION – DRIVE CONE



HSK  
DIN 69893



Steep taper  
SK



Steep taper  
MAS BT



Steep taper  
CAT



Coromant  
Capto®



KM™

## 2 TORQUE SUPPORT

optional: customized torque arm  
more information on page 25

## 3 FRONT HEAD (SIZE)

05

07

## 4 OUTPUT SPINDLE



BENZ  
Solidfix®



Collet chuck

## MACHINING



drilling



milling



tapping

## SPECIFICATIONS



amount of  
output spindles



axis angle



change the  
angle head



grease lubrication



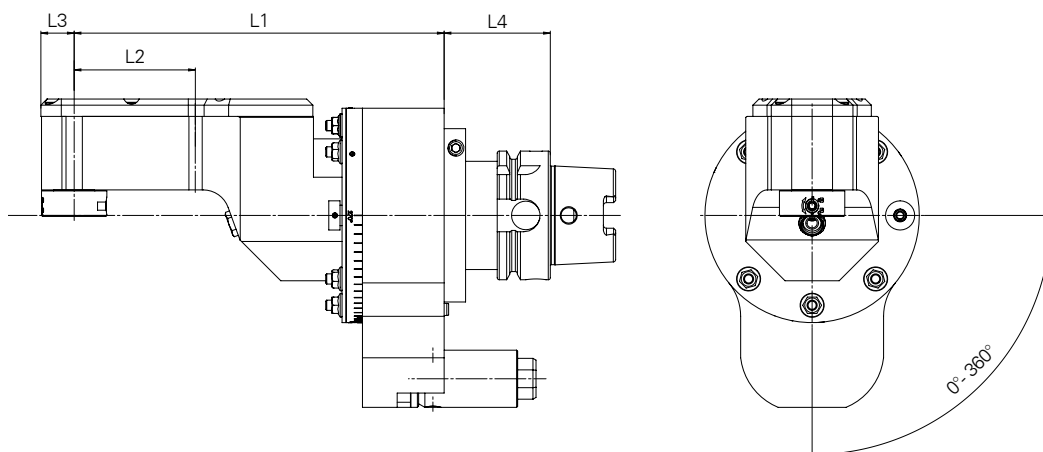
without cooling



external cooling  
optional

# ANGLE HEAD SLIM WGX

## TECHNICAL DATA



05

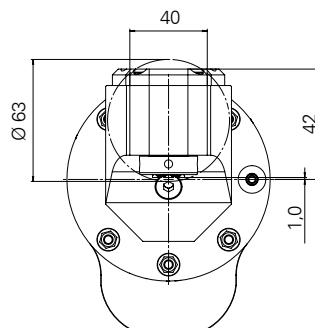
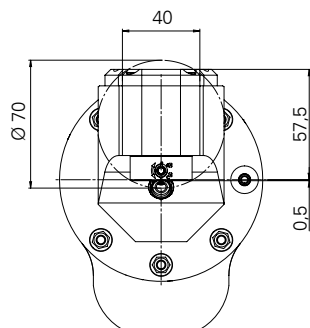


$M_{\max}$  12 Nm  
i 1:1,607  
 $n^2_{\max}$  8.000 rpm


## OUTPUT SPINDLE

BENZ Solidfix®-S1


Collet chuck-ER 11A




## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05 /	149	24,2	4,7
L3=16	181	56,2	4,9
	213	88,2	5,1

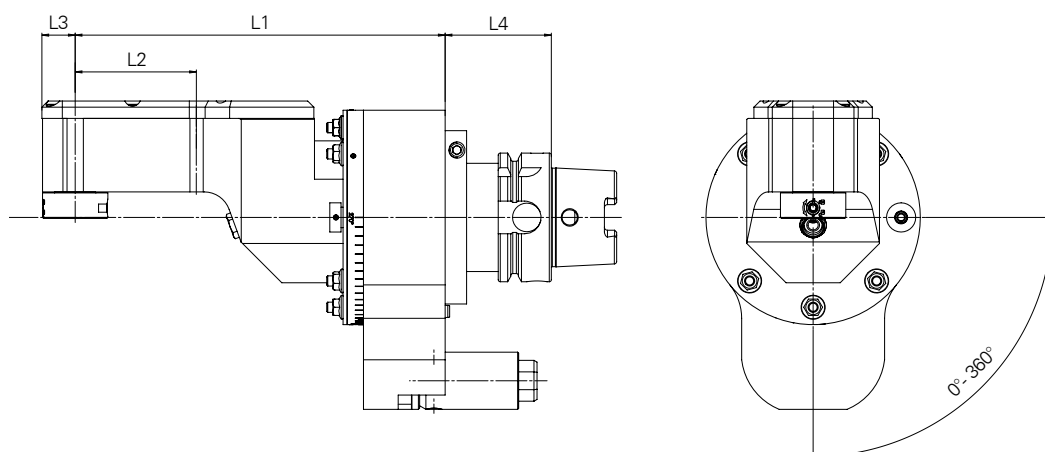
## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]		
S1	16	0	
ER11A	16	0	

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]		
HSK-A63	52	0	
HSK-A100	55	1,7	
Capto C6   SK40   CAT40	45	0,1	
Capto C8	45	1,0	
SK50   CAT50	45	2,2	
BT40	53	0,4	
BT50	60	3,5	

## TECHNICAL DATA



05

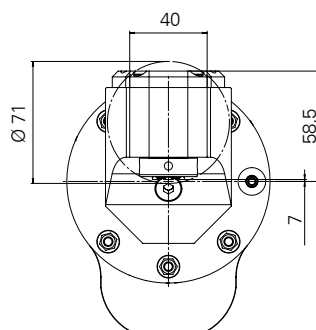
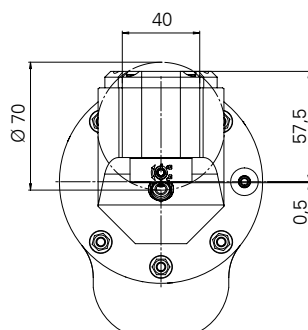


$M_{\max}$  15 Nm  
 $i$  1:1,452  
 $n^2_{\max}$  8.000 rpm

### OUTPUT SPINDLE


BENZ Solidfix®-S1

Collet chuck-ER 16A




5


### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05 /	150	25,4	5
L3=18	182	57,4	5,2
	214	89,4	5,4

### +OUTPUT SPINDLE

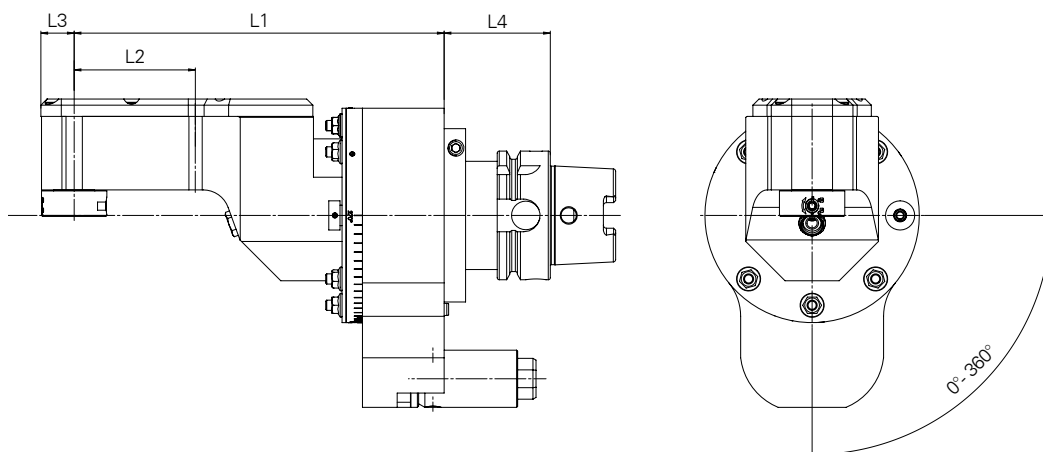
Type Size	Technical data		
	L3 [mm]	+ [mm]	
S1	18	0	0
ER16A	18	0	0

### +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+ [mm]	
HSK-A63	52	0	0
HSK-A100	55	1,7	1,7
Capto C6   SK40   CAT40	45	0,1	0,1
Capto C8	45	1,0	1,0
SK50   CAT50	45	2,2	2,2
BT40	53	0,4	0,4
BT50	60	3,5	3,5

# ANGLE HEAD SLIM WGX

## TECHNICAL DATA



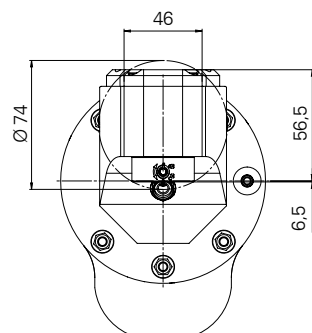
05



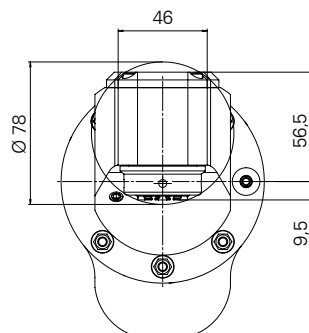
$M_{\max}$  15 Nm  
i 1:1  
 $n_{\max}$  8.000 rpm

## OUTPUT SPINDLE


BENZ Solidfix®-S2




Collet chuck-ER20A




## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05 /	156	31	5,5
L3=23	188	63	5,6
	220	95	5,7

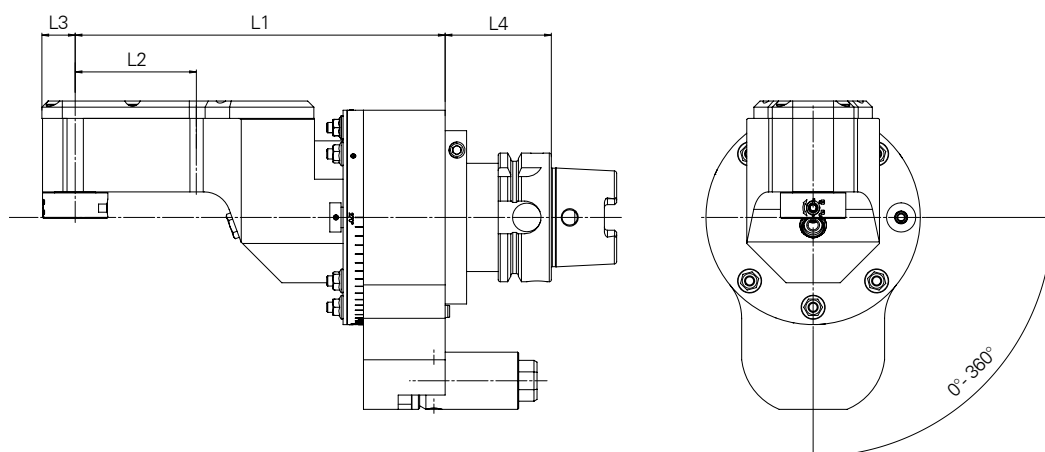
## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]		
S2	23		0
ER20A	23		0

## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]		
HSK-A63	52		0
HSK-A100	55		1,7
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		1,0
SK50   CAT50	45		2,2
BT40	53		0,4
BT50	60		3,5

## TECHNICAL DATA



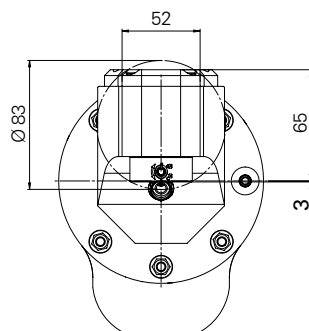
07



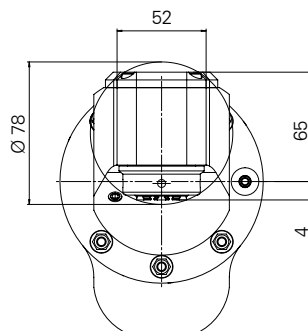
$M_{\max}$  35 Nm  
 $i$  1:1  
 $n_{\max}$  6.000 rpm

### OUTPUT SPINDLE

BENZ Solidfix®-S3




Collet chuck-ER25A




5


### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
07 /	178	54	7,5
L3=26	215	85	7,9
	290	160	8

### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+ [mm]	
S3	26	0	0
ER25A	26	0	0

### +MACHINE CONNECTION

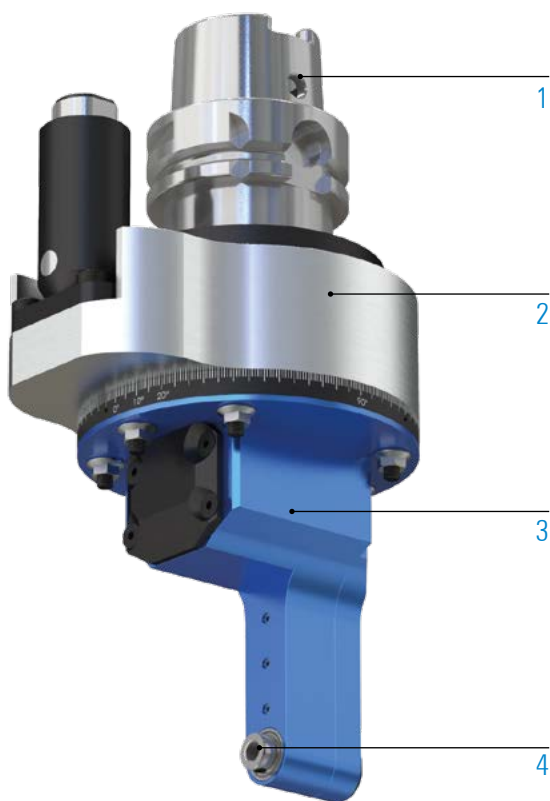
Type Size	Technical data		
	L4 [mm]	+ [mm]	
HSK-A63	52	0	0
HSK-A100	55	1,9	1,9
Capto C6   SK40   CAT40	45	0,1	0,1
Capto C8	45	1,0	1,0
SK50   CAT50	45	2,2	2,2
BT40	53	0,5	0,5
BT50	60	3,5	3,5

# ANGLE HEAD SLIM WGX-S

## ANGLE HEAD 90° – EXTREMELY NARROW DESIGN

Angle head for machining for extreme spatial constraint / maximum useable tool length

Product version: with internal cooling (IC) on request



## 1 MACHINE CONNECTION – DRIVE CONE



HSK  
DIN 69893



Steep taper  
SK



Steep taper  
MAS BT



Steep taper  
CAT



Coromant  
Capto®



KM™

## 2 TORQUE SUPPORT

optional: customized torque arm  
more information on page 25

## 3 FRONT HEAD (SIZE)

05

07

## 4 OUTPUT SPINDLE



Nann-  
Collet chuck



Whistle  
Notch

### MACHINING



drilling



tapping

### SPECIFICATIONS



amount of  
output spindles



axis angle



change the  
angle head



grease lubrication



without cooling

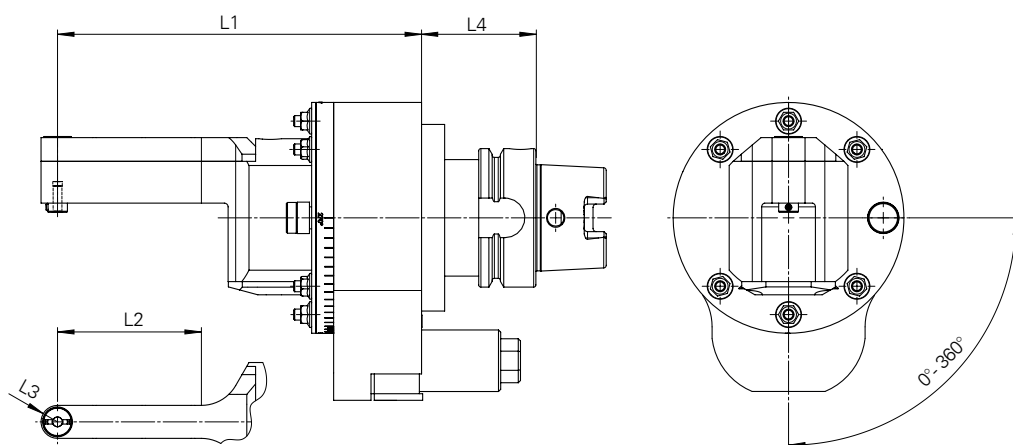


external cooling  
optional

# ANGLE HEAD

## SLIM WGX-S (WHISTLE NOTCH SIMILAR DIN1835-E)

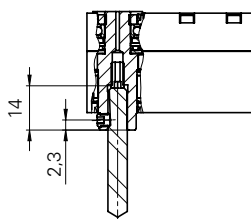
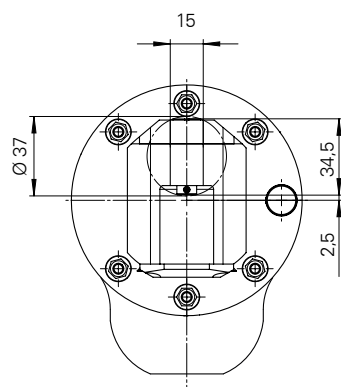
### TECHNICAL DATA



05		
$M_{max}$	3 Nm	
$i$	1:2,07	
$n^2_{max}$	8.000 rpm	

### OUTPUT SPINDLE

WHISTLE-NOTCH Ø 4



Whistle Notch Ø 4  
shortened version

### FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05 / L3=7,5	166	65	5,1

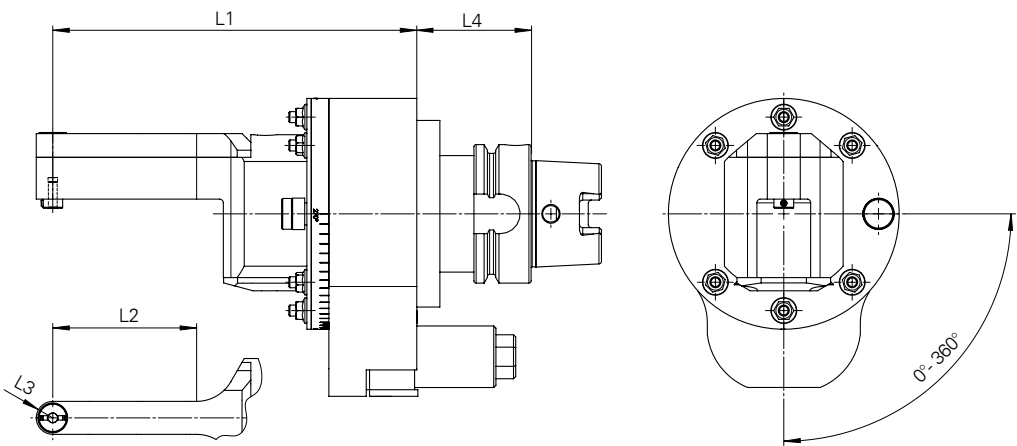
### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
WNØ4/U1	7,5	0	

### +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52	0	
HSK-A100	55	1,7	
Capto C6   SK40   CAT40	45	0,1	
Capto C8	45	1,0	
SK50   CAT50	45	2,2	
BT40	53	0,4	
BT50	60	3,5	

TECHNICAL DATA



05

$M_{\max}$

3 Nm

$i$

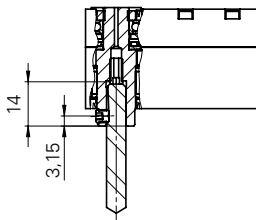
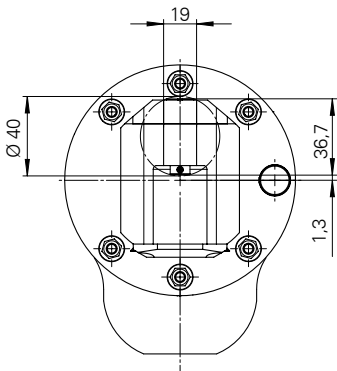
1:1,61

$n^2_{\max}$

8.000 rpm


OUTPUT SPINDLE

WHISTLE-NOTCH Ø 6




Whistle Notch Ø 6  
shortened version


FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05 /	143	45	5,0
L3=9,5	172	73	5,2

+OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
WNØ6/U3	9,5		0

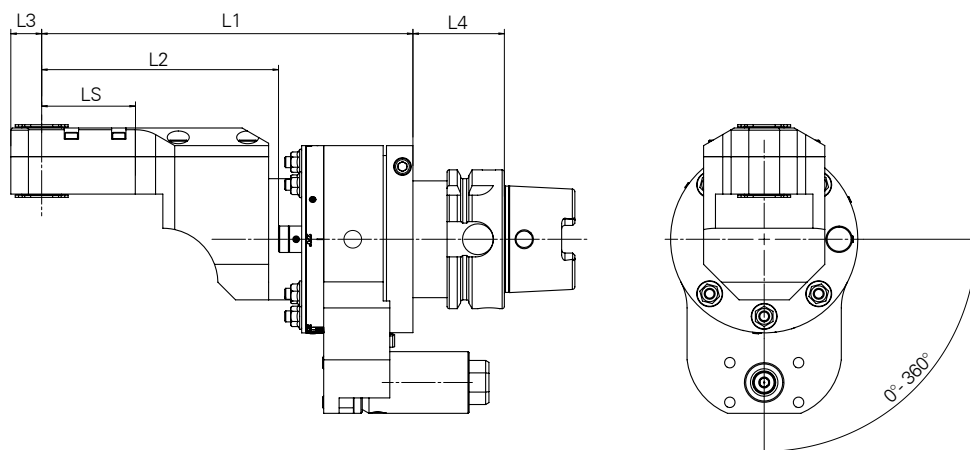
+MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52		0
HSK-A100	55		1,7
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		1,0
SK50   CAT50	45		2,2
BT40	53		0,4
BT50	60		3,5

# ANGLE HEAD

## SLIM WG-S (NANN COLLET CHUCK)

### TECHNICAL DATA



04

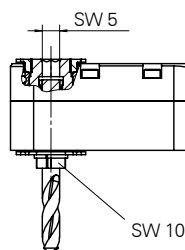
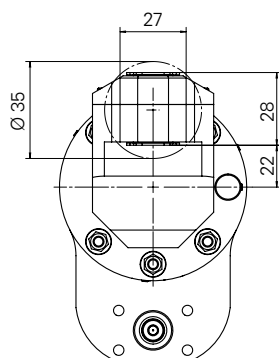


$M_{max}$	8 Nm
$i$	1:1,708
$n^2_{max}$	10.000 rpm


### OUTPUT SPINDLE

#### NANN COLLET CHUCK


Clamping range 1-4 mm




### FRONT HEAD

Type Size	Technical data			
	L1 [mm]	L2 [mm]	LS [mm]	
04 /	154	103	50	3,7
L3=11,5	199	148	95	3,8
	244	193	140	3,9

### +OUTPUT SPINDLE

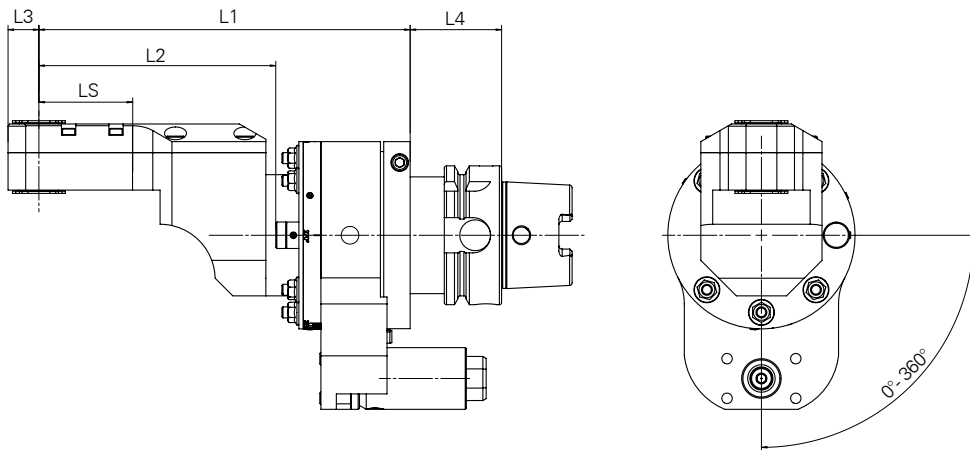
Type Size	Technical data		
	L3 [mm]	+	
E00-1-4 / 6043E*	11,5	0	

### +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	+ 
HSK-A63	52	0
HSK-A100	55	1,5
Capto C6   SK40   CAT40	45	0,1
Capto C8	45	0,9
SK50   CAT50	45	2
BT40	53	0,4
BT50	60	3,3

\* Collet-Ø available in 0,1mm steps

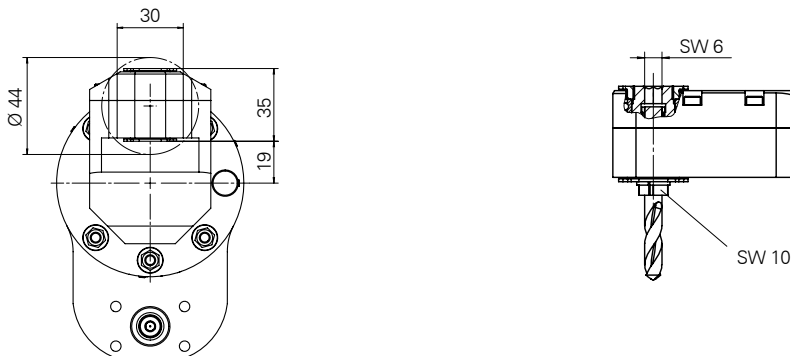
## TECHNICAL DATA



04		
$M_{max}$	7,32 Nm	
$i$	1:1,367	
$n^2_{max}$	8.000 rpm	

### OUTPUT SPINDLE

NANN COLLET CHUCK  
Clamping range 1-6 mm



### FRONT HEAD

Type Size	Technical data			
	L1 [mm]	L2 [mm]	LS [mm]	
04 /	158	108	57	3,7
L3=14	205	153	103	3,8
	251	205	149	3,9

### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
E00-1-6 / E603E-3*	14		0

### +MACHINE CONNECTION

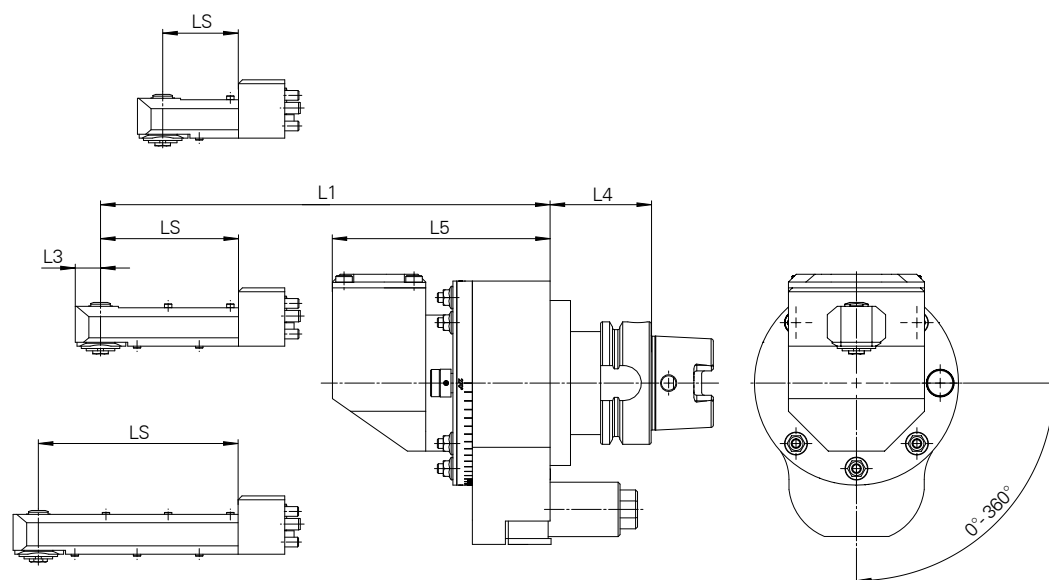
Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52		0
HSK-A100	55		1,5
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		0,9
SK50   CAT50	45		2
BT40	53		0,4
BT50	60		3,3



\* Collet-Ø available in 0,1mm steps

# ANGLE HEAD

## SLIM WGX-S (SCREW-IN MILLING CUTTER)

### TECHNICAL DATA

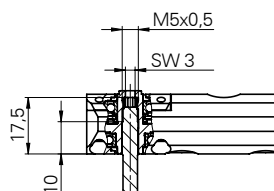
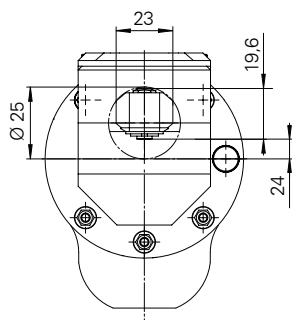


05		
$M_{max}$	3 Nm	
$i$	1:2,38	
$n^2_{max}$	8.000 rpm	


### OUTPUT SPINDLE

Special admission


Tool fitting dimensions



### FRONT HEAD

Type Size	Technical data			
	L1 [mm]	LS [mm]	L5 [mm]	
05 /	167	31	112	6,4
Ø=25	193	57	112	6,5
	232	96	112	6,6

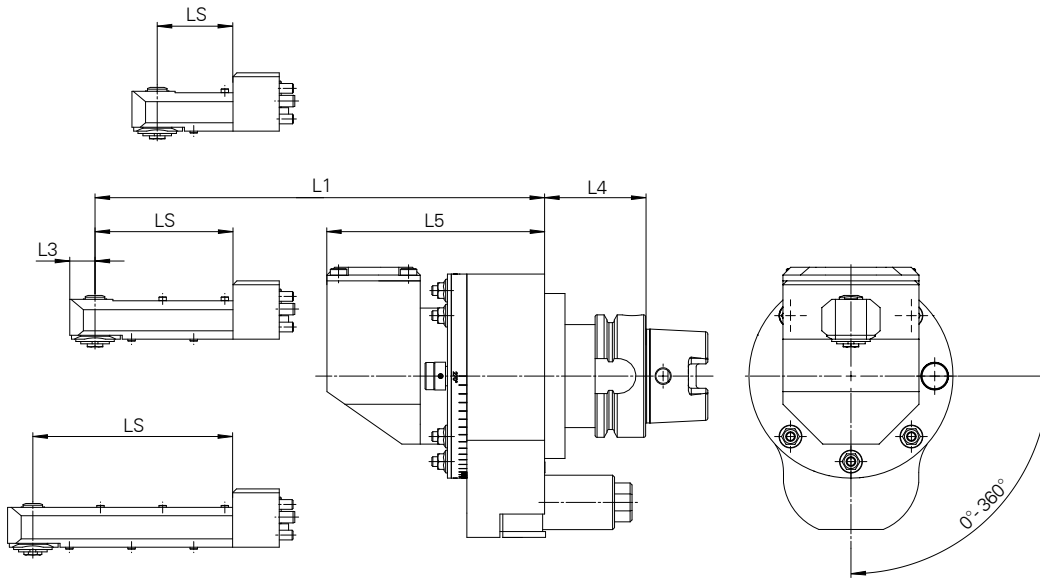
### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
Ø=5	12,5		0

### +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	+
HSK-A63	52	0
HSK-A100	55	1,7
Capto C6   SK40   CAT40	45	0,1
Capto C8	45	1,0
SK50   CAT50	45	2,2
BT40	53	0,4
BT50	60	3,5

## TECHNICAL DATA



05

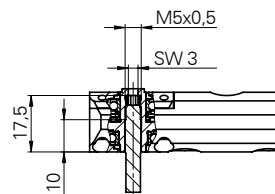
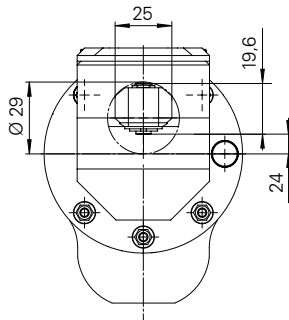


$M_{\max}$	3 Nm
$i$	1:2,19
$n_{\max}^2$	8.000 rpm


## OUTPUT SPINDLE

Special admission


Tool fitting dimensions




## FRONT HEAD

Type Size	Technical data			
	L1 [mm]	LS [mm]	L5 [mm]	
05 /	168	32	112	6,4
Ø=29	207	71	112	6,5
	233	97	112	6,6

## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
Ø=5	13,5		0

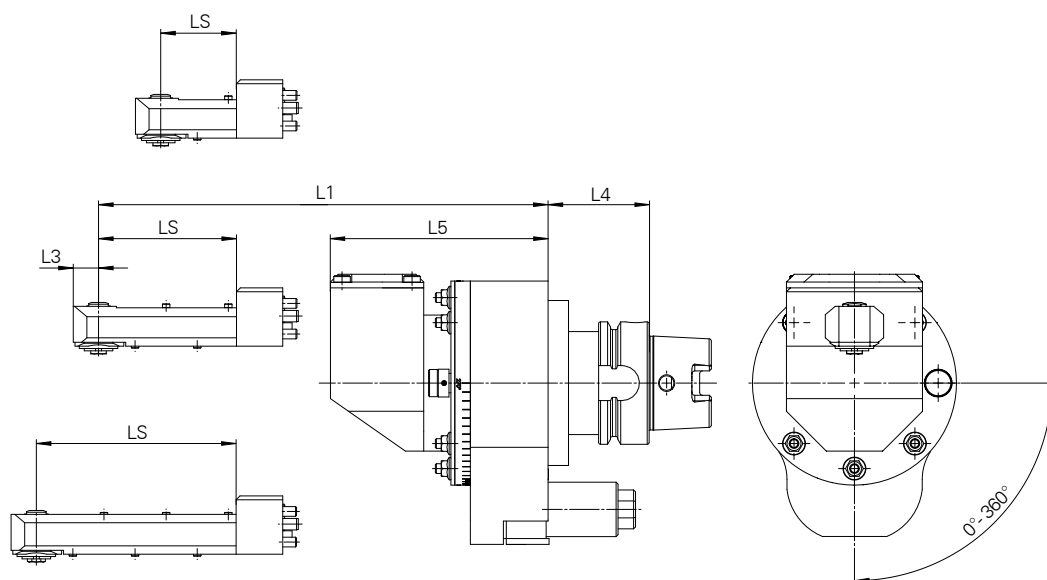
## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52		0
HSK-A100	55		1,7
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		1,0
SK50   CAT50	45		2,2
BT40	53		0,4
BT50	60		3,5

# ANGLE HEAD

## SLIM WGX-S (SCREW-IN MILLING CUTTER)

### TECHNICAL DATA



05

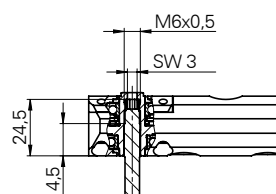
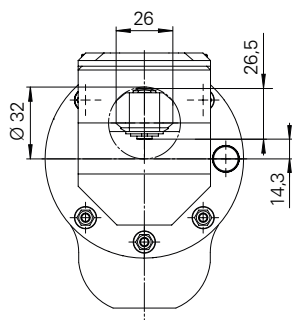


$M_{\max}$  5 Nm  
 $i$  1:2,273  
 $n^2_{\max}$  8.000 rpm


### OUTPUT SPINDLE

Special admission


Tool fitting dimensions




### FRONT HEAD

Type Size	Technical data			
	L1 [mm]	LS [mm]	L5 [mm]	 KG
05 /	173	37	112	3,8
Ø=32	205	69	112	4
	231	95	112	1,2

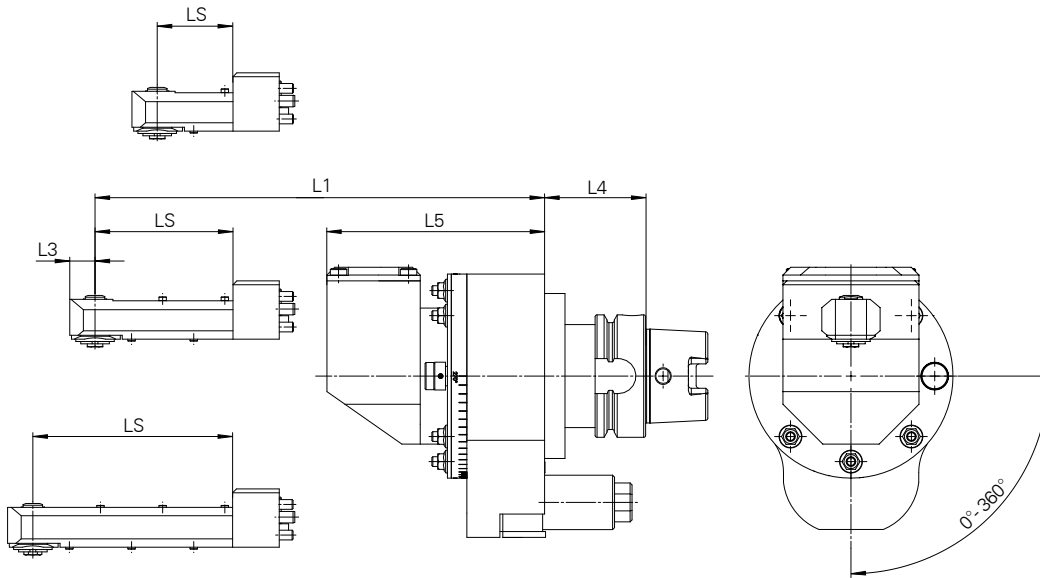
### +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	 KG	+
Ø=6	12	0	

### +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	 KG
HSK-A63	52	0
HSK-A100	55	1,7
Capto C6   SK40   CAT40	45	0,1
Capto C8	45	1,0
SK50   CAT50	45	2,2
BT40	53	0,4
BT50	60	3,5

## TECHNICAL DATA



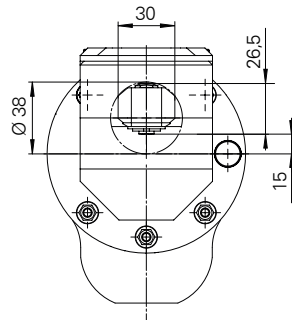
05



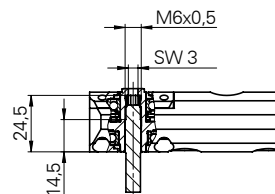
$M_{\max}$  5 Nm  
 $i$  1:1,185  
 $n_{\max}^2$  8.000 rpm

## OUTPUT SPINDLE


Special admission




Tool fitting dimensions




## FRONT HEAD

Type Size	Technical data			
	L1 [mm]	LS [mm]	L5 [mm]	
05 /	175	39	112	6,5
Ø=38	207	71	112	6,6
	239	103	112	6,8

## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	+	
Ø=6	13		0

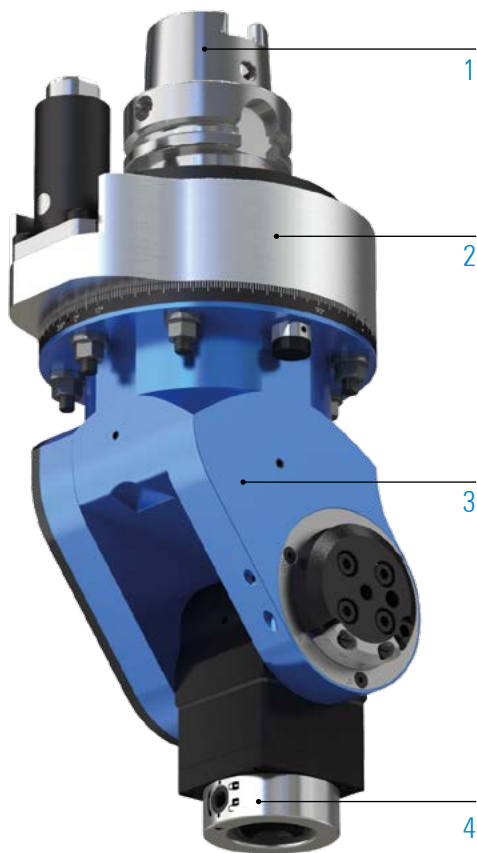
## +MACHINE CONNECTION

Type Size	Technical data		
	L4 [mm]	+	
HSK-A63	52		0
HSK-A100	55		1,7
Capto C6   SK40   CAT40	45		0,1
Capto C8	45		1,0
SK50   CAT50	45		2,2
BT40	53		0,4
BT50	60		3,5

# ANGLE HEAD FLEX WDX

ANGLE HEAD 0-100° – WITH FLEXIBLE ANGLE / STEPLESS ADJUSTMENT

Angle head for machining in any variable position



## 1 MACHINE CONNECTION – DRIVE CONE



HSK  
DIN 69893



Steep taper  
SK



Steep taper  
MAS BT



Steep taper  
CAT



Coromant  
Capto®



KM™

## 2 TORQUE SUPPORT

optional: customized torque arm  
more information on page 25

## 3 FRONT HEAD (SIZE)

05

07

15

## 4 OUTPUT SPINDLE



BENZ  
Solidfix®



BENZ  
CAPTO™



Collet chuck



Weldon



Whistle  
Notch



Milling arbor



HSK



KM™

## MACHINING



drilling



tapping

## SPECIFICATIONS



amount of  
output spindles



axis angle



change the  
angle head



grease lubrication



without cooling



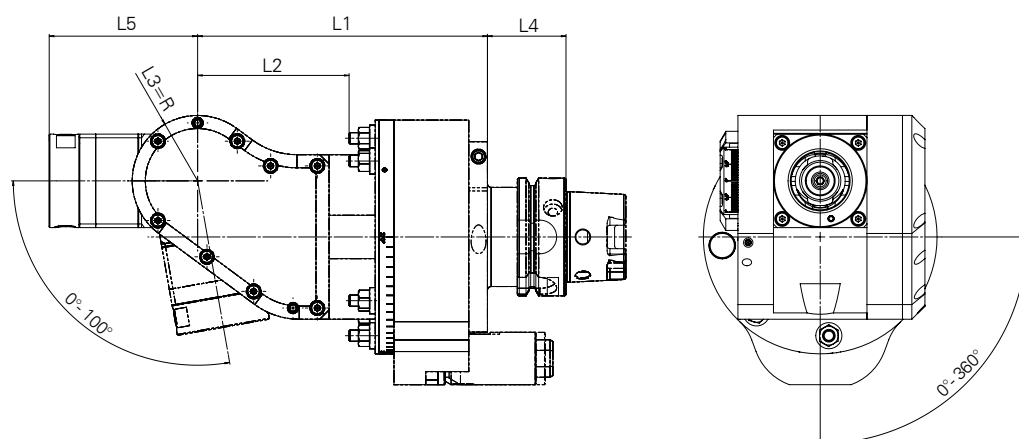
external cooling



internal cooling

# ANGLE HEAD FLEX WDX

## TECHNICAL DATA



05

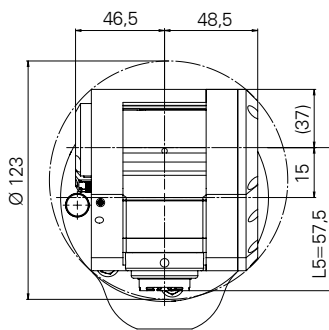
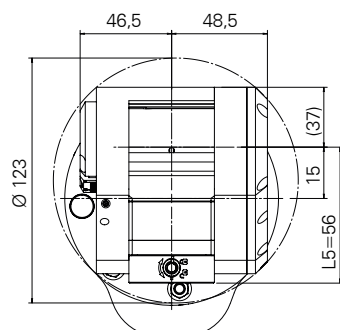


$M_{max}$  20 Nm  
i 1:1  
 $n_{max}$  8.000 rpm

## OUTPUT SPINDLE – 90° SWIVELED


BENZ Solidfix®-S2

Collet chuck-ER20A




technical data for other output spindles on request


## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
05	130	68,5	6,6

## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	L5 [mm]	
S4	37	56	0
ER32A	37	57,5	0

## +MACHINE CONNECTION

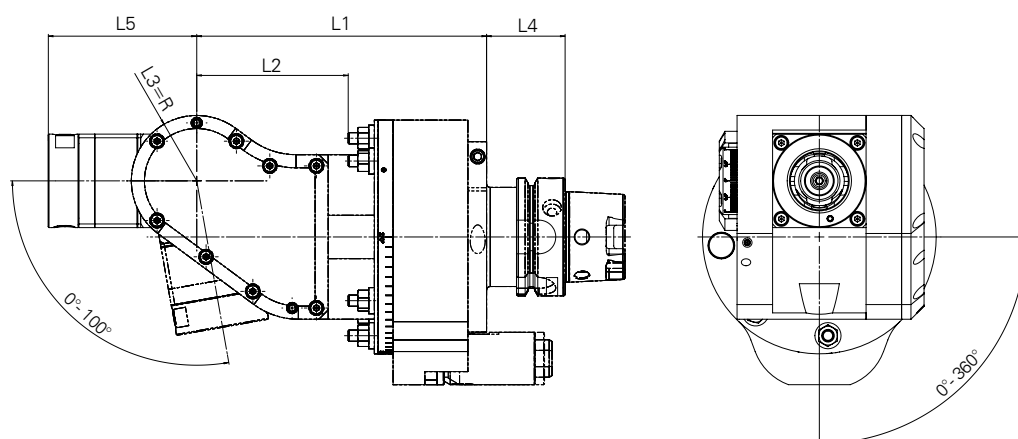
Type Size	Technical data	
	L4 [mm]	+ 
HSK-A63	52	0
HSK-A100	55	1,7
Capto C6   SK40   CAT40	45	0,1
Capto C8	45	1
SK50   CAT50	45	2,2
BT40	53	0,4
BT50	60	3,5



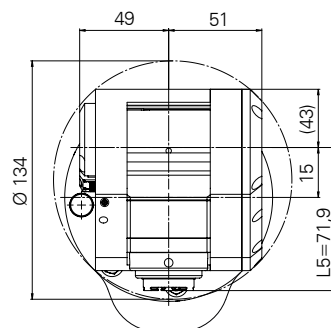
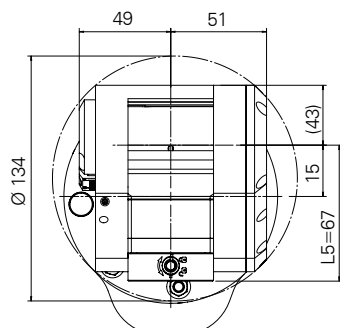
07



M <sub>max</sub>	50 Nm
i	1:1
n <sub>max</sub>	6.000 rpm




## Collet chuck-ER25A




technical data for other output spindles on request


## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
07	140	77,5	8,9

+OUTPUT SPINDLE

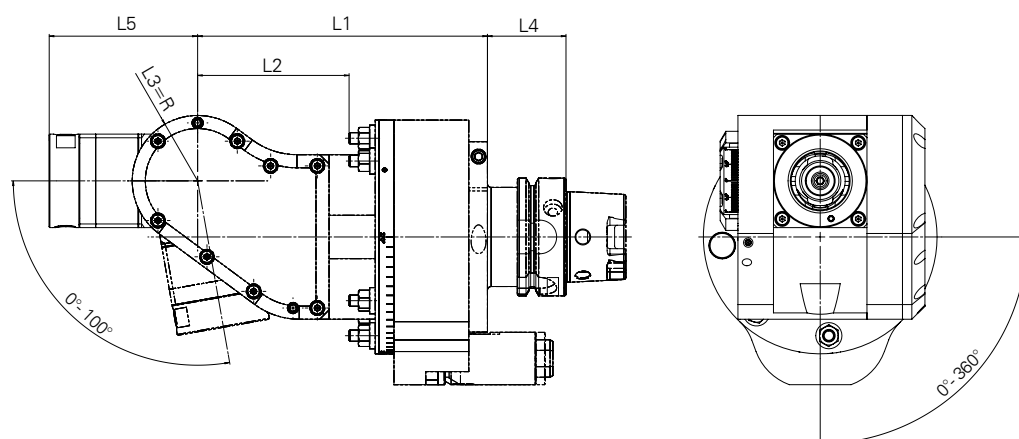
Type Size	Technical data		 KG
	L3 [mm]	L5 [mm]	
S4	43	67	0
ER32A	43	71,9	0

## +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	+  KG
HSK-A63	52	0
HSK-A100	55	1,9
Capto C6   SK40   CAT40	45	0,1
Capto C8	45	1
SK50   CAT50	45	2,2
BT40	53	0,5
BT50	60	1,8

# ANGLE HEAD FLEX WDX

## TECHNICAL DATA



15

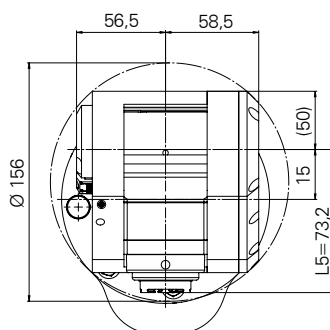
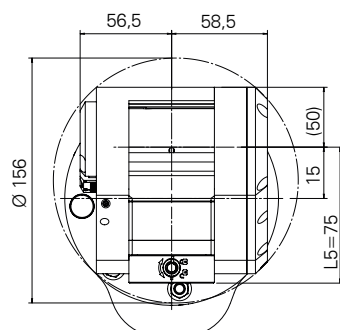


$M_{\max}$  90 Nm  
i 1:1  
 $n_{\max}$  4.000 rpm

## OUTPUT SPINDLE – 90° SWIVELED

BENZ Solidfix®-S4

Collet chuck-ER32A



technical data for other output spindles on request

## FRONT HEAD

Type Size	Technical data		
	L1 [mm]	L2 [mm]	
15	180	109	15,5

## +OUTPUT SPINDLE

Type Size	Technical data		
	L3 [mm]	L5 [mm]	
S4	50	75	0
ER32A	50	73,2	0

## +MACHINE CONNECTION

Type Size	Technical data	
	L4 [mm]	+
HSK-A100	55	0
Capto C8	45	-0,8
SK50   CAT50	45	0,3
BT50	60	1,8



# ANGLE HEAD FIX WFX

## ANGLE HEAD $\neq 90^\circ$ – WITH FIXED ANGLE

Angle head for special machining with fixed angle

All dimensions and weights depend on the machining angle selected.

Precise data is only available on request.

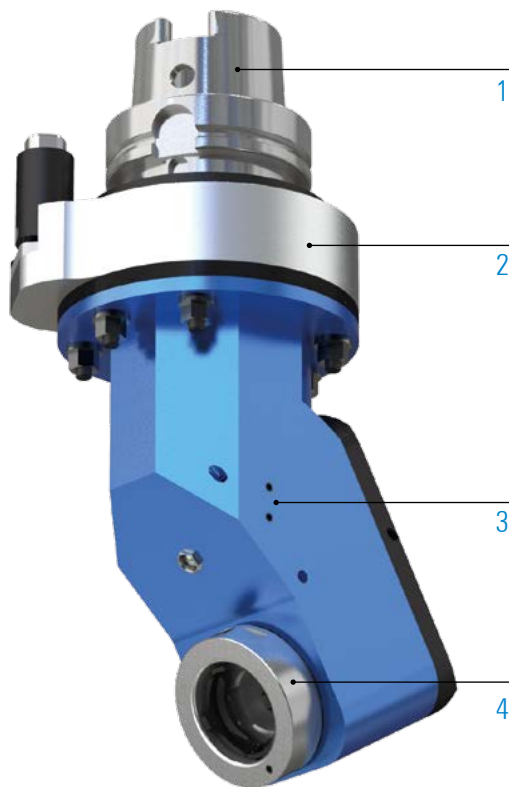
GET IN TOUCH



---

### PERFORMANCE DATA

05	07	15	20
M <sub>max</sub> 30 Nm	M <sub>max</sub> 70 Nm	M <sub>max</sub> 150 Nm	M <sub>max</sub> 230 Nm
i 1:1	i 1:1	i 1:1	i 1:1
n <sub>max</sub> 8.000 rpm	n <sub>max</sub> 6.000 rpm	n <sub>max</sub> 4.000 rpm	n <sub>max</sub> 3.000 rpm



## 1 MACHINE CONNECTION – DRIVE CONE



HSK  
DIN 69893



Steep taper  
SK



Steep taper  
MAS BT



Steep taper  
CAT



Coromant  
Capto®



KM™

## 2 TORQUE SUPPORT

optional: customized torque arm  
more information on page 25

## 3 FRONT HEAD (SIZE)

05

07

15

20

## 4 OUTPUT SPINDLE



BENZ  
Solidfix®



BENZ  
CAPTO™



Collet chuck



Weldon



Whistle  
Notch



Milling arbor



HSK



KM™

## MACHINING



drilling



milling



tapping

## SPECIFICATIONS



amount of  
output spindles



axis angle



change the  
angle head



grease lubrication



without cooling



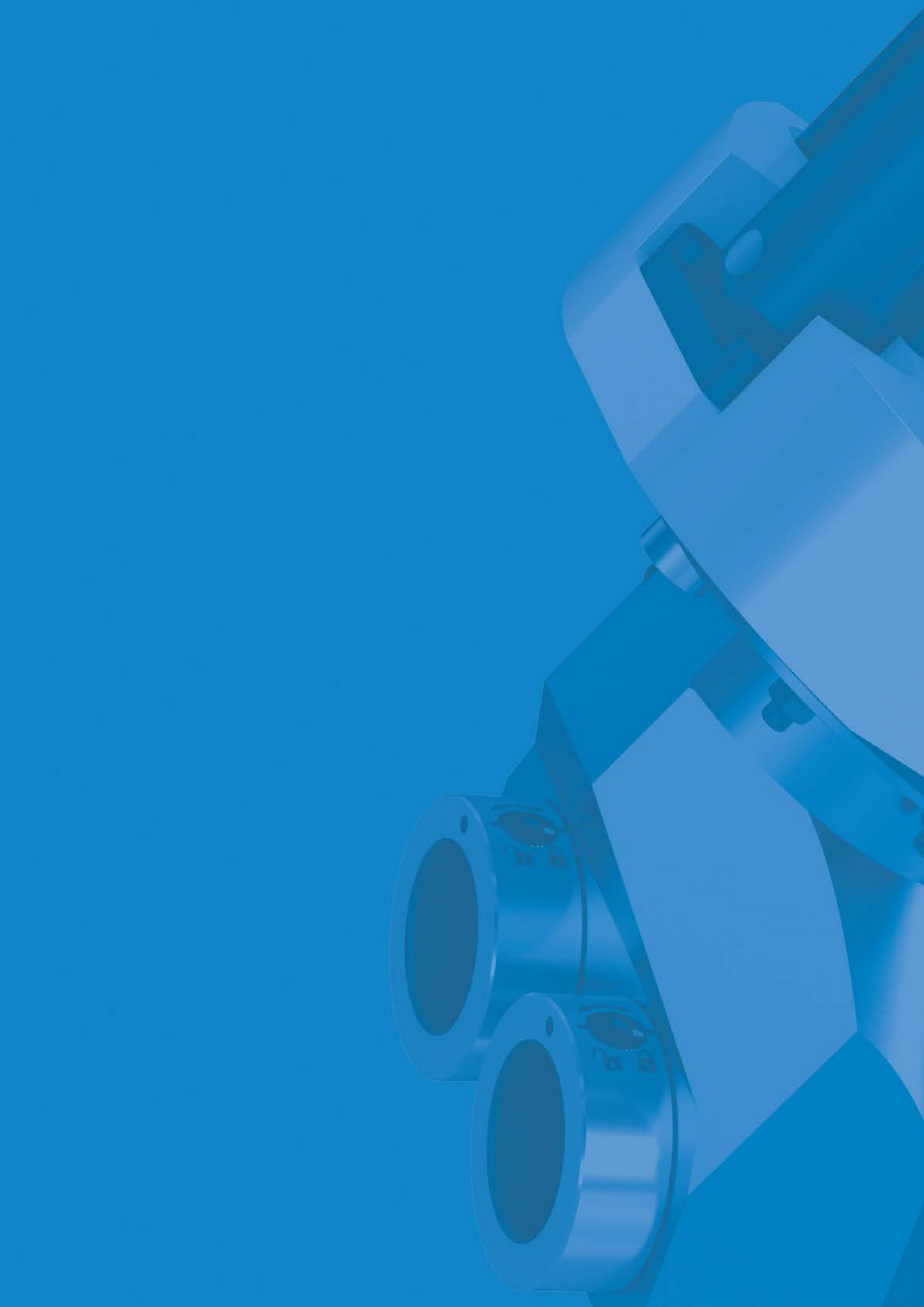
external cooling



internal cooling



external / internal  
cooling





# UNIQUE SOLUTIONS



# ELECTRIC MOBILITY DRIVING THE FUTURE

## The industry of the future

Electric mobility is enjoying high growth rates as it combines sustainability aspects with the need for mobility.

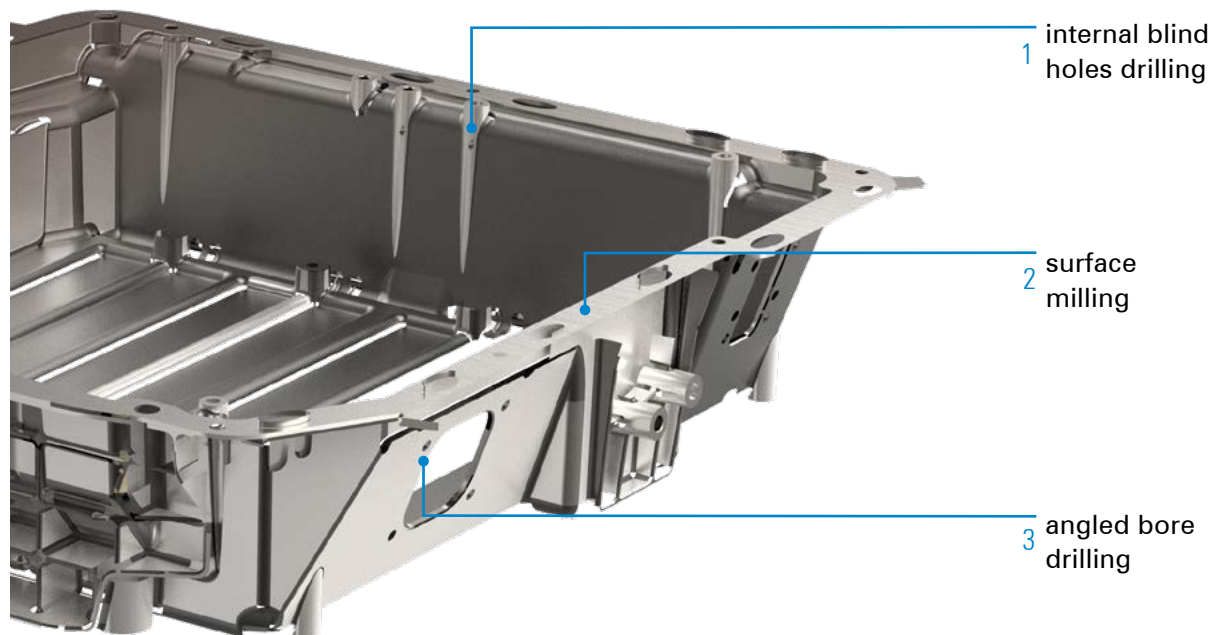
In the last decade, the number of electric cars sold worldwide has increased more than tenfold – from 0.8 million units in 2010 to 9.3 million units in 2021.

(Source: Fraunhofer Battery Update 7.12.22)

A continuing trend that, in addition to the e-mobility industry, is also having a significant impact on many suppliers.

In particular, our angle heads with minimum quantity lubrication are frequently used in the field of electromobility. More information about MQL you can find on page 27.

## PROCESSING OF BATTERY TANK

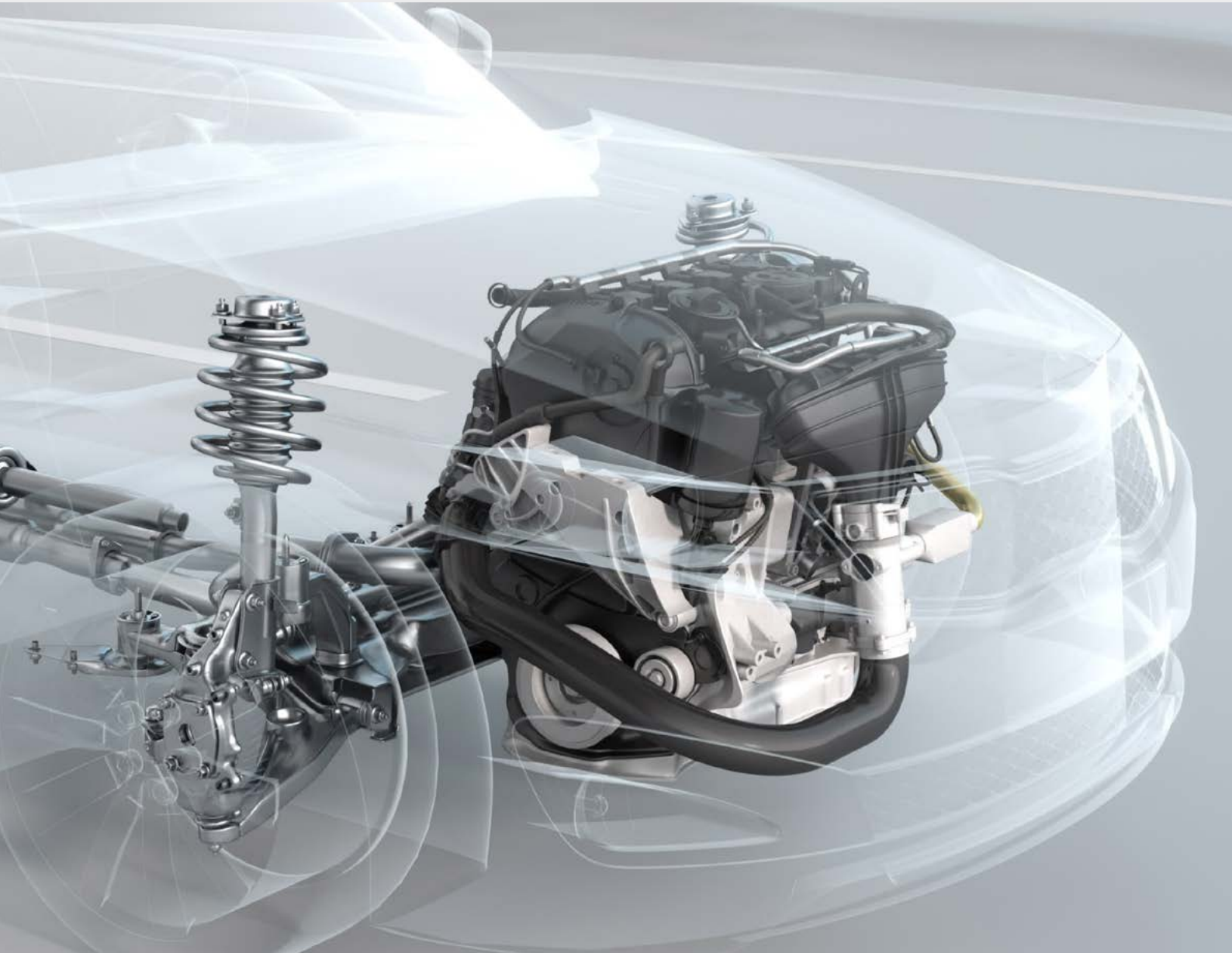


## UNITS IN APPLICATION



## MORE SPECIAL SOLUTIONS





## AUTOMOTIVE: TECHNICAL SOLUTIONS AT THE HIGHEST LEVEL

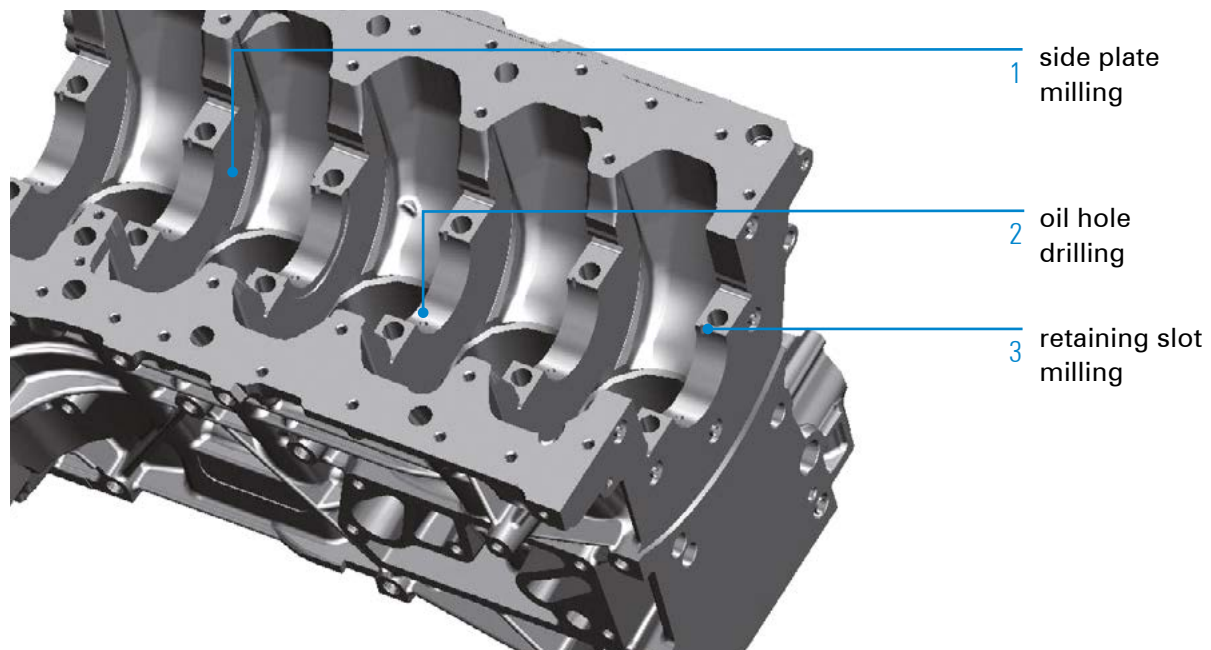
### **Innovative technologies on the cutting edge of what is possible**

For the machining of components in the automotive industry, BENZ Tooling offers technical solutions at the highest level! You benefit from the ambition of our engineering team, because technical innovation is ingrained into our very identity.

BENZ units create an essential competitive edge.

They are not only designed for high quantities in series production, but also shorten the machining cycle for each component.

## PROCESSING OF ENGINE BLOCK



## UNITS IN APPLICATION

1



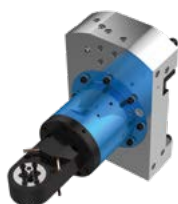
2



3



## MORE SPECIAL SOLUTIONS





## BRAKE CALIPERS MACHINING IN SMALLEST SPACES

### Highest precision in the tightest space...

... is the greatest challenge in the production of brake calipers – both in the area of passenger and commercial vehicles as well as motorcycles.

Especially modern models of high-performance vehicles with electronic brake systems can be very complex to machine.

With BENZ angle heads you are perfectly prepared for these challenges.

We offer the right solution for machining almost all functional surfaces. Additionally, you will not only achieve a clean and precise result, but also an economical one.

## PROCESSING OF BRAKE CALIPER

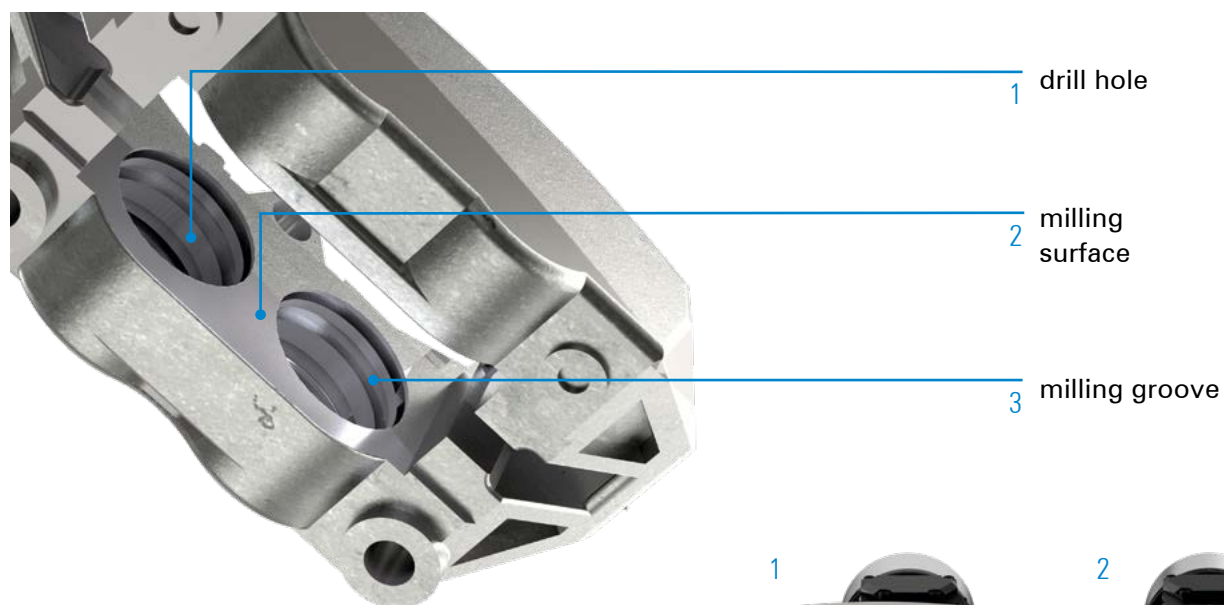
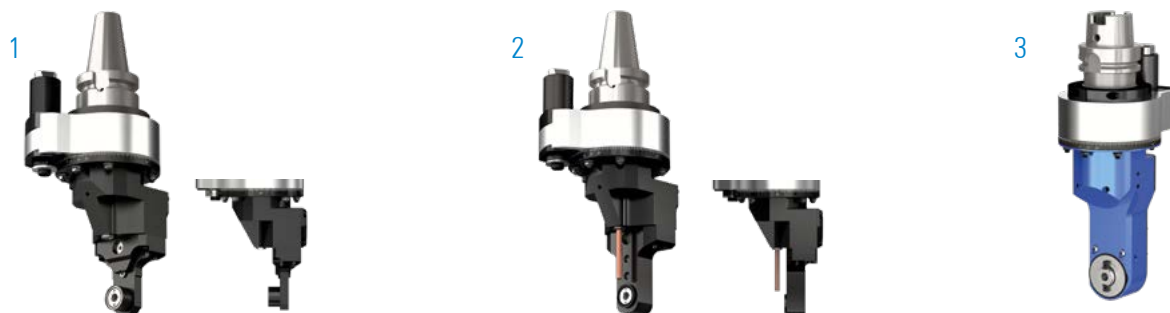


Illustration: Motorcycle brake caliper with external dimensions in mm – W 155 x H 83 x D 67

## UNITS IN APPLICATION



## MORE SPECIAL SOLUTIONS





BENZ ANGLE HEADS FOR MACHINING IN  
THE AEROSPACE INDUSTRY



## SOARING FLIGHTS IN AEROSPACE TECHNOLOGY

### **Precision, reliability, lightweight.**

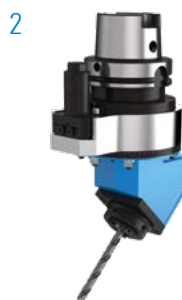
The aerospace industry demands extreme precision and reliability from technology and materials. In aircraft construction and in the production of aerospace components, there is one crucial thing above all: lightness.

For this reason, aluminum and composites are used particularly frequently in this industry. BENZ Tooling offers various solutions for processing highly complex components in the aerospace industry.

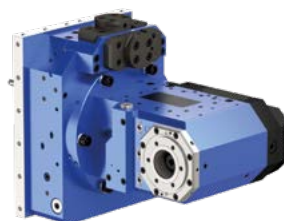
## PROCESSING OF TURBINE HOUSINGS



## UNITS IN APPLICATION



## MORE SPECIAL SOLUTIONS





# WIND POWER FOR ENVIRONMENTAL CONTRIBUTION

## Robust precision for wind turbines

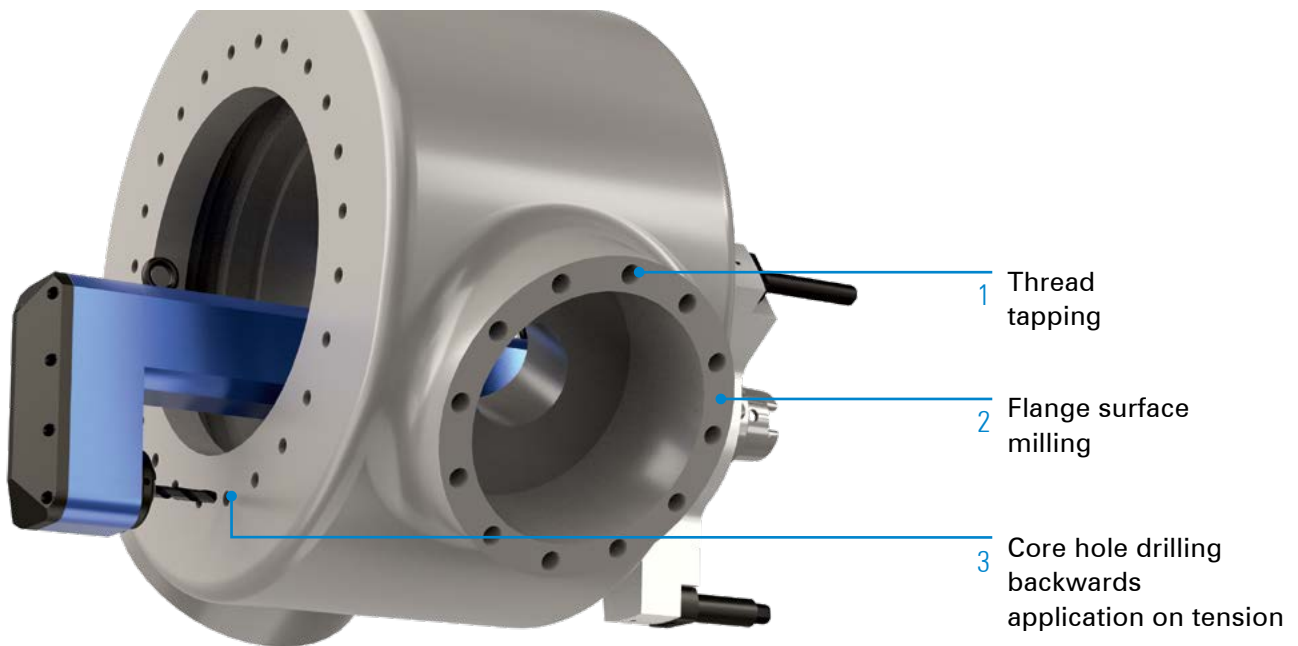
Wind turbines have to meet extraordinary requirements in terms of statics and durability of the individual components.

Despite their robust construction, the manufacturing of wind turbines is real precision work.

Many classic metalworking operations such as milling, drilling and tapping come into play here.

BENZ exchangeable units guarantee high time savings and a low error rate in your individual production processes.

## PROCESSING OF ROTOR HUB



## UNITS IN APPLICATION



## MORE SPECIAL SOLUTIONS





Services: customized, value-retaining, cost-effective

## BENZ SERVICES FOR YOUR BENEFIT

### **Rapid Repair Kits**

Promptly solved

- reduce downtime costs due to a machine standstill
- all critical wear and special parts available for a prompt repair
- assembly of your individual Rapid Repair Kit
- offer and order processing
- attractive pricing

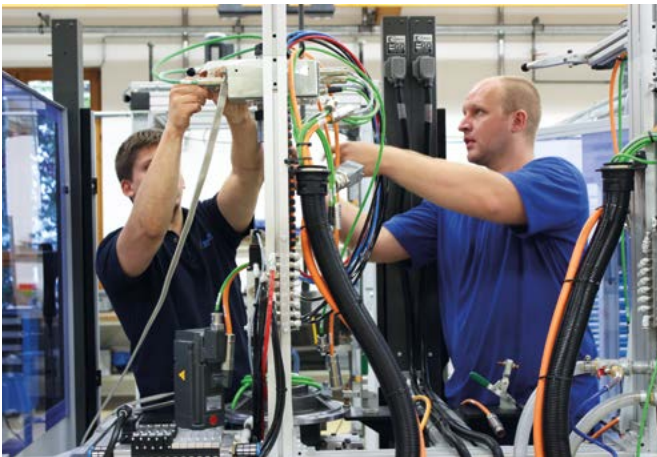
### **Service evaluation and repair**

Expertly solved

- quick and professional analysis of damage
- findings and recommended repairs within 5 working days
- you decide based on the recommendation how to proceed
- on request: general overhaul

## BENZ TOOLING SERVICE

+ 49 7832 704-8600  
[service@benztooling.com](mailto:service@benztooling.com)



Service installers come to your site anywhere in the world



Competent service employees answer your questions and help with issues

### **Preventive maintenance**

Precautionary solved

- preventively reduce unplanned downtimes
- increase the unit's lifetime
- maintenance of a perfect product condition
- can be done during a shutdown
- on request: general overhaul

### **Worldwide on-site service**

Globally solved

- professional assembly / product briefing
- troubleshooting
- repair on-site (if possible)
- regular maintenance

# BENZ PRODUCT WORLD

## TOOLING & MACHINE TOOLING TECHNOLOGY

### TOOLING TECHNOLOGY



METAL

#### TOOLS FOR TURNING CENTERS LIVE TOOLS / STATIC TOOLS

- Radial heads 90°
- Radial heads  $\neq 90^\circ$
- Axial heads
- Swivel heads
- Multi-spindle heads
- Broaching units
- Static tools

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.



METAL

#### TOOLS FOR MACHINING CENTERS

- Angle heads 90°
- Angle heads  $\neq 90^\circ$
- Swivel heads
- Multi-spindle heads
- Broaching units
- High-speed spindles
- Rotating tool holders

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.



WOOD / COMPOSITE AND ALUMINIUM

#### TOOLS FOR MACHINING CENTERS

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

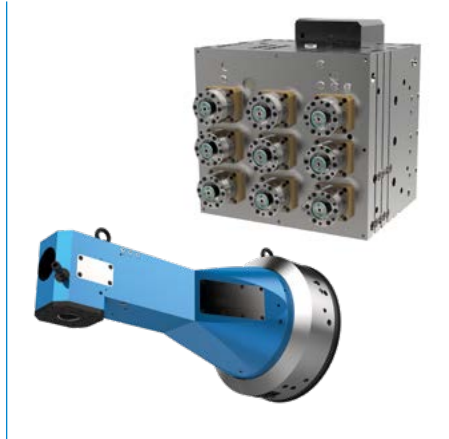
FOR ANY APPLICATION. Cost-effectively process and machine wood, composites and aluminium: We provide series production angle heads for drilling, milling, sawing and grinding in addition to other units for special applications.

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



METAL

### 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.



METAL / WOOD / COMPOSITE AND ALUMINIUM

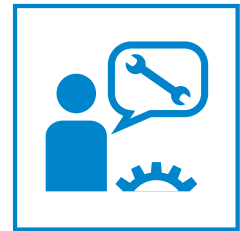
### SYSTEM TECHNOLOGY

- Multiple-spindle drill heads
- Motor spindles
- 5-axis technology
- C-axes
- Swivel axes
- 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



METAL / WOOD / COMPOSITE AND ALUMINIUM

### SERVICE

- Service evaluation and repair
- Rapid Repair Kit
- Preventive maintenance
- Spare part management
- Worldwide on-site service

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 Rapid Repair Kit 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.

# PICTOGRAMS AND ABBREVIATIONS

## OVERVIEW

### ANGLE HEADS SPECIFICATION

#### Change the unit



##### Automatic

BENZ standard  
angle heads can generally  
be automatically changed



##### Manual

The angle heads can also  
be manually changed

#### Machining



##### Drilling

The angle head is suitable  
for drilling operations



##### Milling

The angle head is suitable  
for milling operations



##### Tapping

The angle head is suitable  
for threading operations

#### Number of output spindles (tool holding fixtures)



1

The angle head has one  
output spindle



2

The angle head has two  
output spindles

#### Axis angle



90°

Angle head for machining  
tasks at 90° angle



0° bis +100°

Angle head for machining  
tasks at flexible angle. Any  
angle can be set.



0°-120°

Angle head for machining  
tasks in fixed angular  
position



##### MQL-internal

The tool is cooled using  
an internal line directly  
through the spindle

#### Coolant supply for cutting edge



##### External (EC)

The tool is cooled via an  
external line  
(coolant nozzle)



##### Internal (IC)

The tool is cooled using an  
internal line directly through  
the spindle



##### Combination

The cooling of the tool  
is combined –  
internally and externally



##### No coolant supply

The angle head does not  
have a coolant supply as  
standard

#### Types of cooling (coolants) and Lubrications



##### Water cooling

The tool cutting edge is  
cooled with water



##### MQL

The tool cutting edge  
is cooled with minimal  
quantity lubrication (oil/air)



##### Air cooling

The tool cutting edge is  
cooled with air



##### Lubrication Grease | MQL

## GENERAL SPECIFICATION

### Information



**Important  
information**



**Video**

### Advantages



**Time  
savings**



**Cost  
savings**



**Easy  
handling**



**Safe  
handling**

### Sectors



**Automotive**



**Two-wheeler**



**Machine  
construction**



**Aerospace**



**Medical**



**Plastics  
technology**



**Wind power**

### Services



**Services**

## ABBREVIATIONS

$\alpha$	Angle
CAD	Computer-aided design
CNC	Computerized Numerical Control
$\varnothing$	Diameter
$^{\circ}$	Degrees
kg	Kilograms
L (1-5)	Length
$p_{max.}$	Pressure
$min^{-1}$	Revolutions per minute
mm	Millimeters
Nm	Newton meters
$n_{max.}$	Revolutions per minute
$p_{max.}$	Pressure (bar)
e.g.	for example

## Explanation of the weight composition of the angle heads

The weights specified on the product pages always refer to the configuration with an HSK-taper, a standard torque arm and the BENZ Solidfix® output spindle.

The deviations of alternative tool holders and/or alternative machine connections are specified in the tables and have to be added to the original weight.

The weight of a quick-change adapter and that of a tool cutter are not considered.

# ARE YOU ALREADY FAMILIAR WITH OUR EXPERTISE?

- + Teams of experts with industry experience
- + Internationally networked through world-wide locations and partners
- + The highest quality for all products and services
- + Precise, customer-specific solutions
- + Constant development of our industry expertise

---

YOUR DIRECT LINE  
YOUR CONTACTS WORLDWIDE



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## Usage note – individual

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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.

The incomplete machine also satisfies the stipulations of EC Directive 2014/30/EU on electromagnetic compatibility. The protective goals of EC Directive 2014/35/EU regarding electronic equipment have been met.

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

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**BENZ GmbH Werkzeugsysteme**

Im Mühlegrün 12

D-77716 Haslach

Germany

T +49 7832 704-0

F +49 7832 704-8001

info@benztooling.com

[www.benztooling.com](http://www.benztooling.com)

