

NIKKEN SK Output Angle Heads



The Spirit of Innovation



NIKKEN Innovation Centre Europe (NICE)

Our Company

NIKKEN Kosakusho Europe are leading suppliers of elite precision engineering products.

With research and development located at the **NIKKEN** Innovation Centre Europe (NICE), distribution and service operations at the Euro Centre, **NIKKEN** operates in high stature manufacturing environments covering aerospace, medical, oil and gas, motor sport, power engineering as well as the mould and die sectors.

Creative and innovative, **NIKKEN** Europe are at the forefront and number one choice for precision manufacturers, Original Equipment Manufacturers (OEMs) and Tier One suppliers.

NIKKEN's market leading solutions include:

- Performance CNC Rotary Tables
- High Accuracy NC Tooling Solutions
- Tool Presetters
- Spindle Optimisation Solutions
- Custom Workholding & Fixturing

NIKKEN's extensive product range, combined with technical expertise, training and after sales service, come together to deliver a superior end-to-end experience that allows our customers the opportunity to successfully compete in the global marketplace.

“ Opened in late 2015, The **NIKKEN** Innovation Centre is of Global importance, we take projects from our parent in Japan, from our customers around Europe and around the globe and we develop practical solutions. Looking in to the future we see more and more opportunities in those areas, in new material fields and new processes. **”**



Tony Bowkett - CEO
NIKKEN Kosakusho Europe



Cobalt Outils Coupants

Our History

NIKKEN Kosakusho Europe is a subsidiary of **NIKKEN** Kosakusho Works Limited, Japan, with principle activities covering the import and distribution of the complete **NIKKEN** product range.

With operations across three continents, offices in over 70 countries and a 15,000 product range, **NIKKEN** has earned and maintained a reputation globally for producing quality products.

Our people are at the heart of our operations. Our goal is the same where ever our team members may be: to uphold a unified standard of quality performance and excellence in our products and to our customers.

NIKKEN Kosakusho are continually striving to improve technology through research and development, innovation and industry knowledge to ensure that our customers can compete and win in their demanding market sectors.



Contents

TECHNICAL DATA

page 4

LINEA CONTROL

LINEA MODULAR

**CONTROL STANDARD
(T90-TCU)**

LINEA TH

**MODULAR STANDARD
(T90-TCU)**

**FLANGE -
Extension Spacer**

page 7 - 13

page 14 - 16

page 18- 25

page 26



Cobalt Outils Coupants



SPINDLE W/ARBOR



Spindle with arbor made as one solid piece of hardened steel to increase resistance to bending stress up to 25%. Completely ground and balanced at 6,3G. Possibility to reach higher RPM without vibrations

BODY



Casting made of GS 600 stabilized spheroidal cast iron to better absorb vibrations. Increased thermal stability and rigidity compared to materials such as steel and aluminum. Mat chromed finishing outside and ground bearing housing

SPINDLE



Output spindle made of hardened alloyed steel with double labyrinth seal. Completely ground with tolerance lower than 5 micron to ensure a longer tool life.

INDEXING FLANGE



Flange arm and pin as monolithic piece to grant an increased rigidity and stability to the whole structure whilst machining. Very precise pitch dimension and perfect match of the cylindrical pin with the stop block sleeve.

LAPPED SURFACE



Lapped side surface for correct alignment of the tool.



All spare parts are laser marked with Alberti logo to guarantee the authenticity and simplify the recognition of each single item. All parts are measured with our new high precision 3D measuring machine inside a temperature controlled room.

BEARINGS



Angular contact super precision bearings with ABEC 7 and 9 accuracy rate. Mounted in ground bearing housing inside of the body, they ensure a perfect concentricity and stability during machining.

GEARS



Gears made of steel superalloy. They are hardened, completely ground and treated with isotropic polishing which allows to reach 0,01Ra roughness with a dramatic reduction of the vibrations and friction.

MECHANICAL SEALS



Mechanical seal specially studied to reach high pressure up to 100 bar and higher RPM.

SEALS



Low-friction seals made of a special composition. All studied and developed by Alberti.

NIKKEN SK Collet System

The Slim Chuck incorporates **NIKKEN's** exclusive TiN (Titanium Nitrided) Bearing Nut technology. This allows for improved tightening and accuracy thus delivering better all-round performance.

TiN Bearing Nut

Simple & compact design for high speed rotation

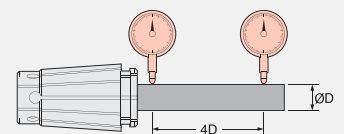
TiN Bearing Nut

8° taper collet for accuracy & gripping torque

Special coating for high efficiency



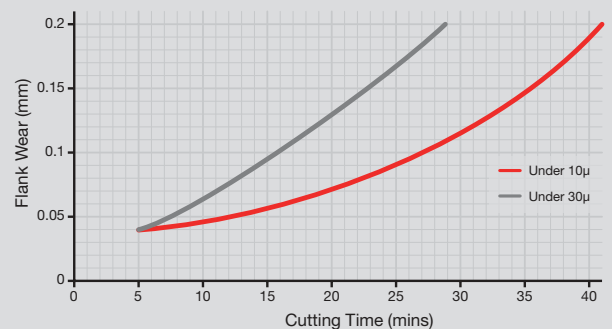
Collet Concentricity (SK)



Collet type	Max run-out	
	At nose	At end
Standard	1μ	5μ
P	1μ	3μ
A	1μ	3μ

Run-out Vs. Wear (+30% Life)

To consider the effect that physical run-out contributes to decreases in tool life and increased wear, our Zero-Fit Slim Chuck was adopted to actually apply and exaggerate the run-out whilst profile cutting Ti 6Al-4V.





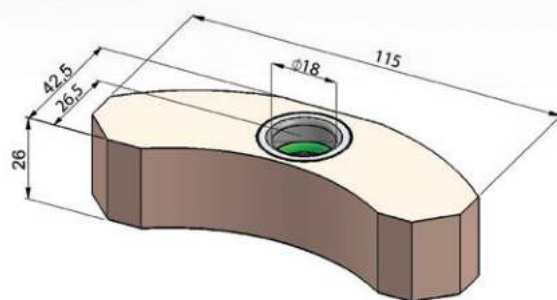
LINEA CONTROL



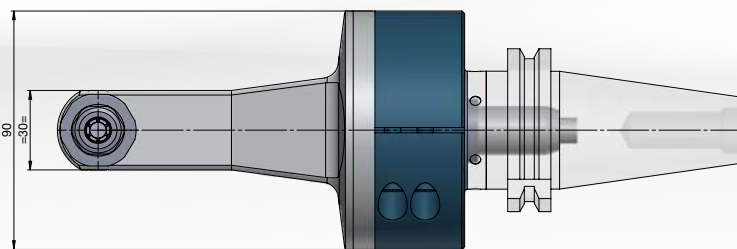
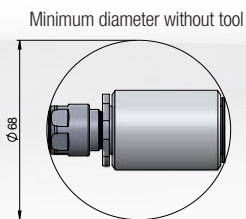
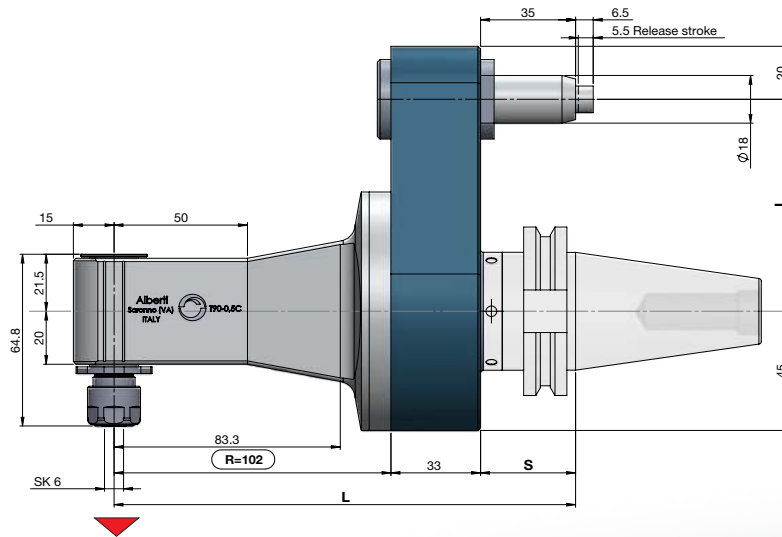
This range of angle heads is designed to be used on machining centres with ATC tool changer and therefore can be mounted in the tool magazine and be automatically exchanged in the machine spindle. The correct positioning of the head is ensured by the stop block mounted on the machine spindle which also prevents the rotation.

Dimensions STOP BLOCK for heads

T90cn-0,5 / 1,5 / 2,5 / 3,5




T90cn-0,5C

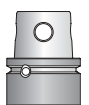
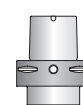
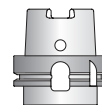
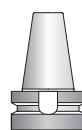
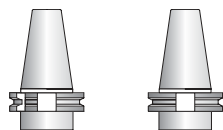


-  Ratio
1:1
-  RPM
10.000 min⁻¹
-  Max. axial load
150 N
-  Torque
8 Nm
-  Weight
4 kg
-  Collet
SK6 Ø 0,5/6 mm

*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book

 Direction of rotation opposite to machine spindle



Shank	DIN-69871		CAT	MAS-BT			HSK		CAPTO		KM
Size	30	40	50	30	40	50	63-80	100	C5-C6	C8	50-63
I	65-80	65-80-(110*)	80-(110*)	65-80	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)
S	35	35	35	30	35	41	42	45	38	40	40
L	170	170	170	165	170	176	177	180	173	175	175

*optional

Non interchangeable input drive shank

Options



bar max

12

Coolant through pin

T90cn-0,5L



Ratio
1:1



RPM
10.000 min⁻¹



Max. axial load
150 N



Torque
8 Nm



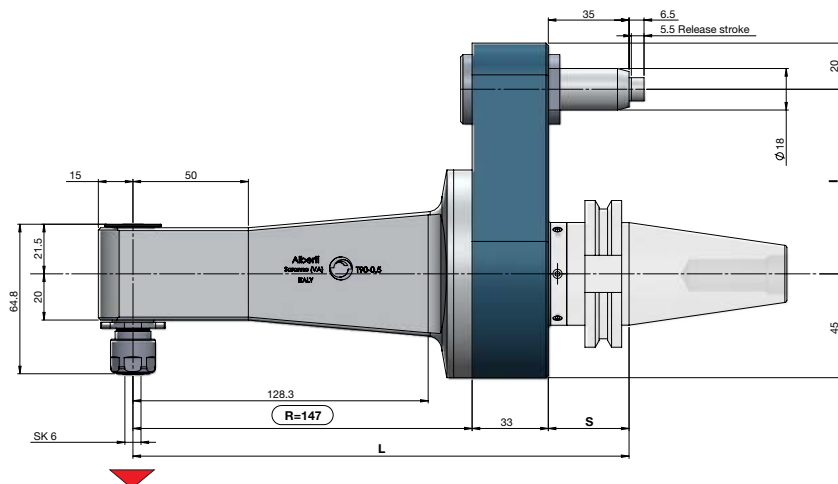
Weight
4,3 kg



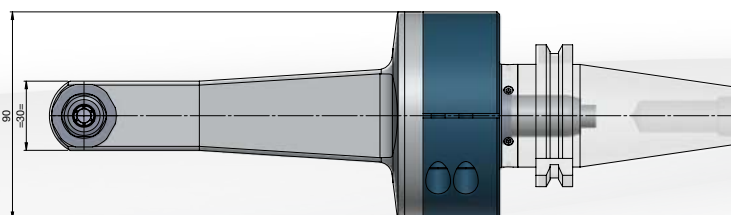
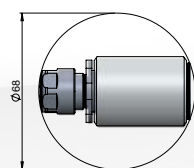
Collet
SK6 Ø 0,5/6 mm

*** STANDARD EQUIPMENT INCLUDES:**

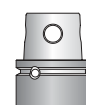
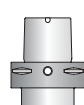
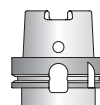
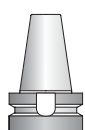
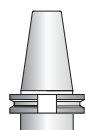
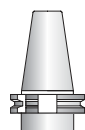
- Special bag - wrenches - Grease tube - Instruction book



Minimum diameter without tool



Direction of rotation opposite to machine spindle



Shank	DIN-69871		CAT	MAS-BT			HSK		CAPTO		KM
Size	30	40	50	30	40	50	63-80	100	C5-C6	C8	50-63
I	65-80	65-80-(110*)	80-(110*)	65-80	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)
S	35	35	35	30	35	41	42	45	38	40	40
L	215	215	215	210	215	221	222	225	218	220	220

*optional

Non interchangeable input drive shank

Options

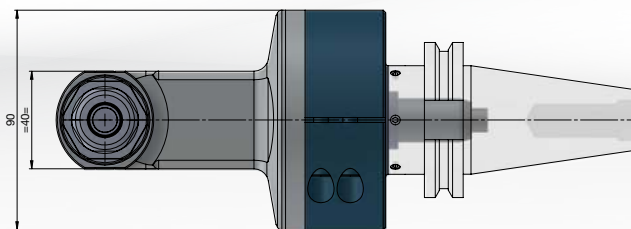
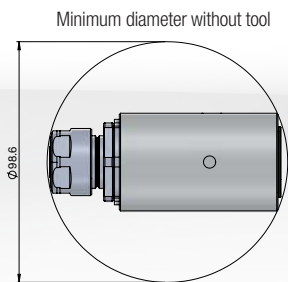
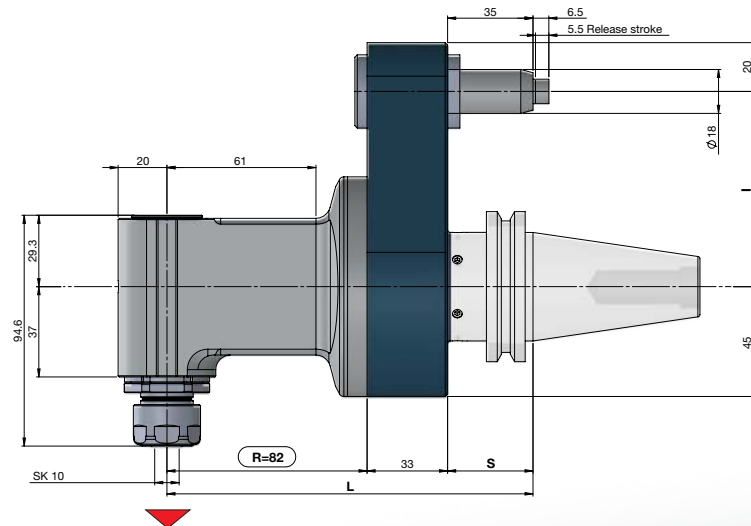


bar max

12

Coolant through pin

T90cn-1,5

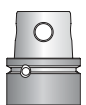
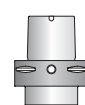
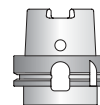
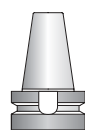
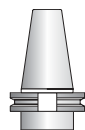
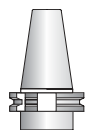


-  Ratio 1:1
-  RPM 8.000 min⁻¹
-  Max. axial load 250 N
-  Torque 15 Nm
-  Weight 4,3 kg
-  Collet SK10 Ø 1/10 mm

*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book

 Direction of rotation opposite to machine spindle



Shank	DIN-69871			CAT			MAS-BT			HSK		CAPTO		KM	
Size	30	40	50	30	40	50	63-80	100	C5-C6	C8	50-63				
I	65-80	65-80-(110*)	80-(110*)	65-80	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)				
S	35	35	35	30	35	41	42	45	38	40	40				
L	150	150	150	145	150	156	157	160	153	155	155				

*optional

Non interchangeable input drive shank

Options



bar max
12

Coolant through pin



bar max
12

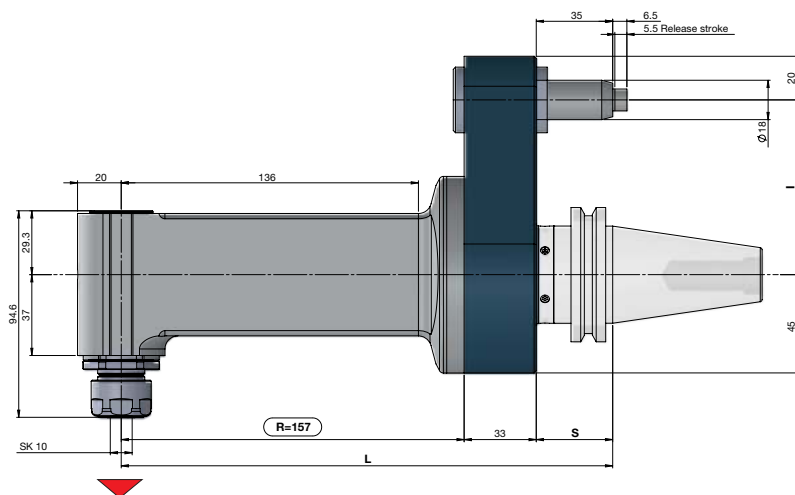
Coolant through pin and spindle

T90cn-1,5L

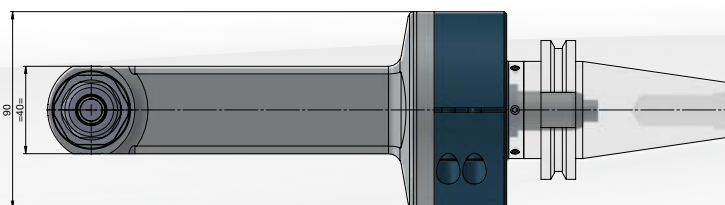
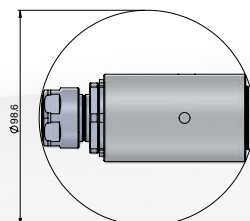
- Ratio
1:1
- RPM
8.000 min⁻¹
- Max. axial load
250 N
- Torque
15 Nm
- Weight
5,2 kg
- Collet
SK10 Ø 1/10 mm

* STANDARD EQUIPMENT INCLUDES:

- Special bag - wrenches - Grease tube - Instruction book



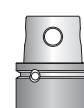
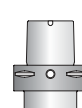
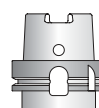
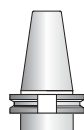
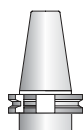
Minimum diameter without tool



Internal coolant - Max. 40 bar



Direction of rotation opposite to machine spindle



Shank	DIN-69871			CAT			MAS-BT			HSK		CAPTO		KM
Size	30	40	50	30	40	50	30	40	50	63-80	100	C5-C6	C8	50-63
I	65-80	65-80-(110*)	80-(110*)	65-80	65-80-(110*)	80-(110*)	65-80	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)
S	35	35	35	30	35	41	30	35	41	42	45	38	40	40
L	225	225	225	220	225	231	220	225	231	232	235	228	230	230

*optional

Non interchangeable input drive shank

Options



bar max
12

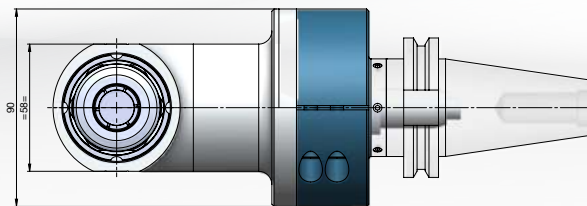
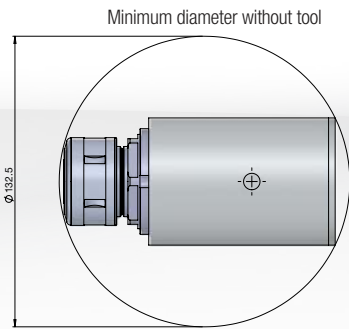
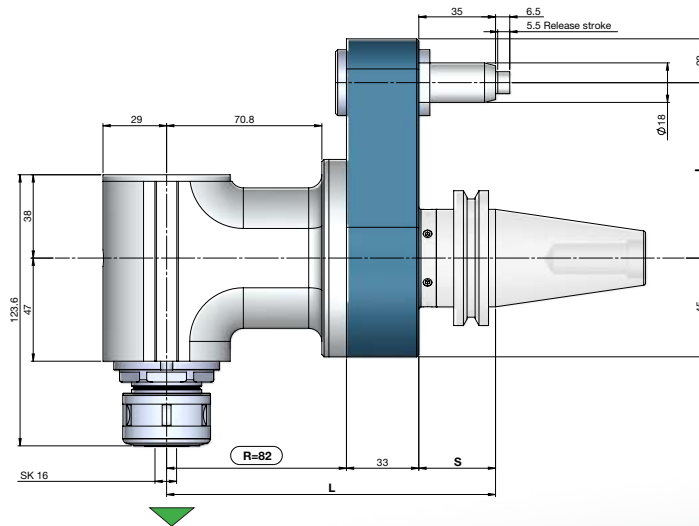
Coolant through pin



bar max
12

Coolant through pin and spindle


T90cn-2,5

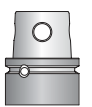
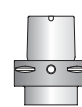
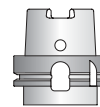
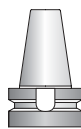
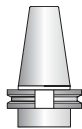
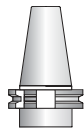


-  Ratio
1:1
-  RPM
6.000 min⁻¹
-  Max. axial load
510 N
-  Torque
30 Nm
-  Weight
5,4 kg
-  Collet
SK16 Ø 1/16 mm

*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book

 Direction of rotation same as machine spindle



Shank	DIN-69871	CAT	MAS-BT		HSK		CAPTO		KM
Size	40	50	40	50	63-80	100	C5-C6	C8	63
I	65-80	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)
S	35	35	35	41	42	45	38	40	40
L	150	150	150	156	157	160	153	155	155

*optional

Non interchangeable input drive shank

Options



bar max
12

Coolant through pin



bar max
12

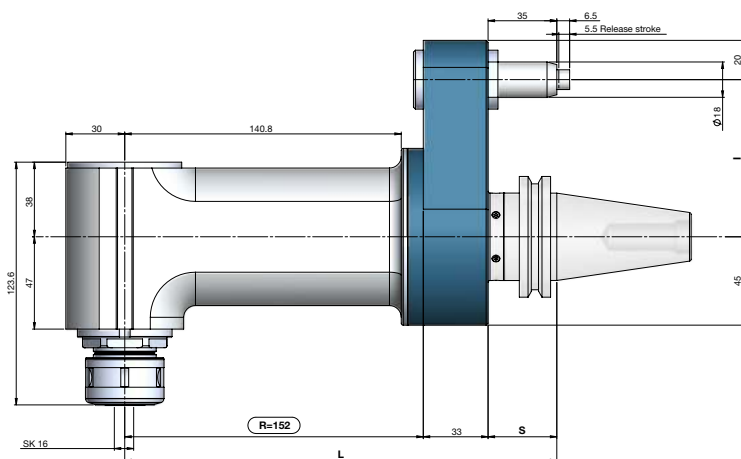
Coolant through pin and spindle

T90cn-2,5L

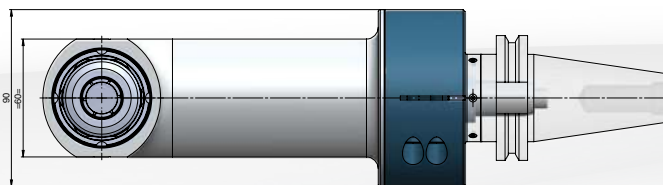
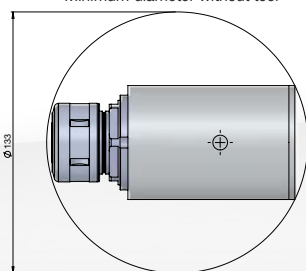
- Ratio
1:1
- RPM
6.000 min⁻¹
- Max. axial load
510 N
- Torque
30 Nm
- Weight
6,7 kg
- Collet
SK16 Ø 1/16 mm

* STANDARD EQUIPMENT INCLUDES:

- Special bag - wrenches - Grease tube - Instruction book



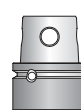
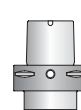
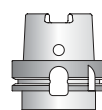
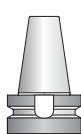
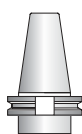
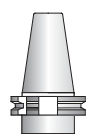
Minimum diameter without tool



Internal coolant - Max. 40 bar



Direction of rotation same as machine spindle



Shank	DIN-69871		CAT		MAS-BT		HSK		CAPTO		KM
Size	40	50	40	50	63-80	100	C5-C6	C8	63		
I	65-80	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)		
S	35	35	35	41	42	45	38	40	40		
L	220	220	220	226	227	230	223	225	225		

*optional

Non interchangeable input drive shank

Option / Opzione / Option



bar max
12

Coolant through pin



bar max
12

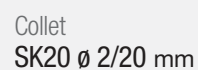
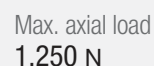
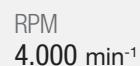
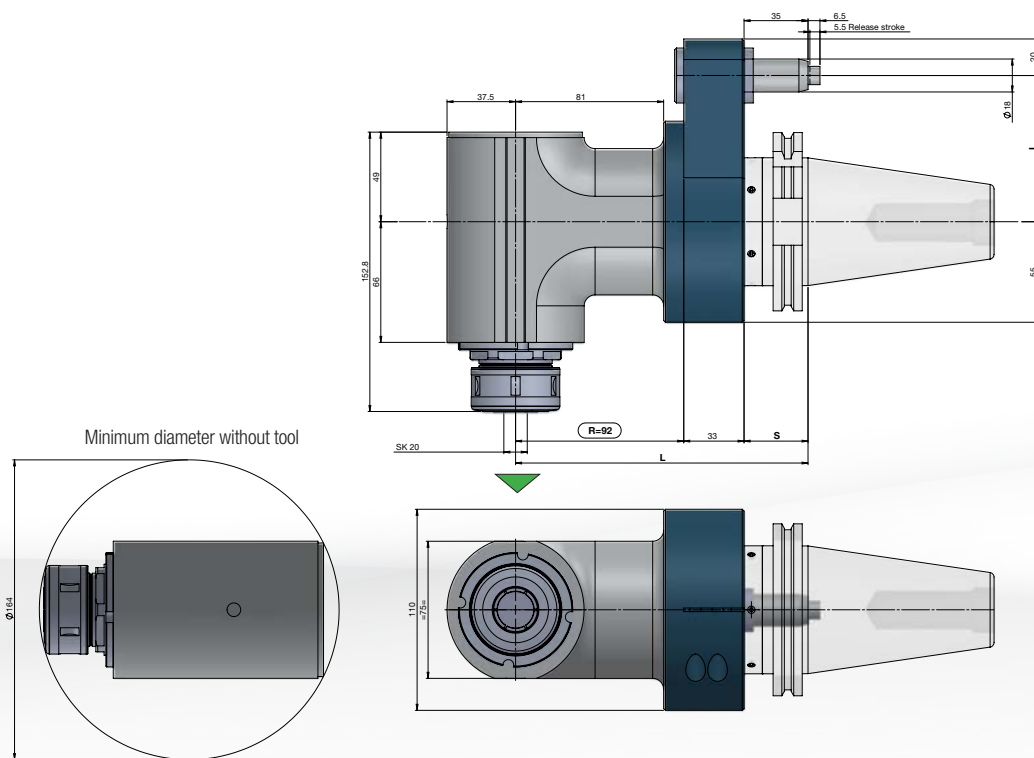
Coolant through pin and spindle



min⁻¹
8.000

High speed RPM max.

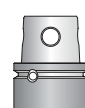
T90cn-3,5



*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book

▼ Direction of rotation same as machine spindle



Shank	DIN-69871	CAT	MAS-BT	HSK		CAPTO		KM
Size	50		50	63-80	100	C6	C8	63
I	80-110		80-110	80-110	80-110	80-110	80-110	80-110
S	35		41	42	45	38	40	40
L	160		166	167	170	163	165	165

*optional

Non interchangeable input drive shank

Option / *Opzione* / *Option*

bar max
12

Coolant through pin



bar max
12

Coolant through pin and spindle


$$\text{min}^{-1}$$

6.000

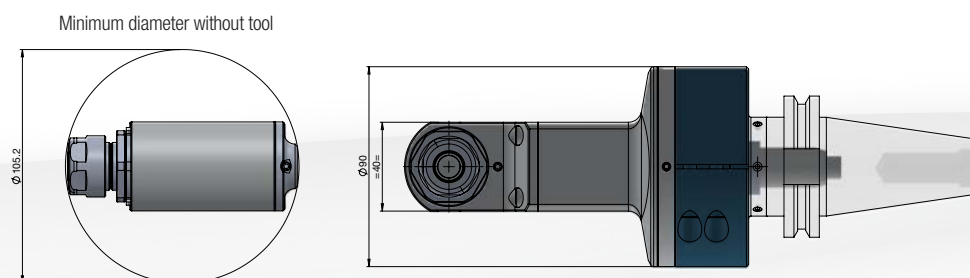
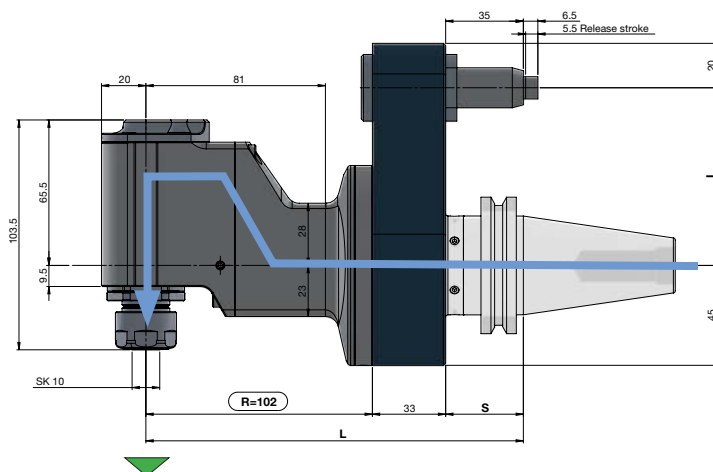
High speed RPM max.

TH90cn-1,5 100 bar

-  Ratio
1:1
-  RPM
10.000 min⁻¹
-  RPM Dry running
8.000 min⁻¹
-  Max. axial load
250 N
-  Torque
15 Nm
-  Weight
4,5 kg
-  Collet
SK10 Ø 1/10 mm

*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book



Dry running also possible

Direction of rotation same as machine spindle



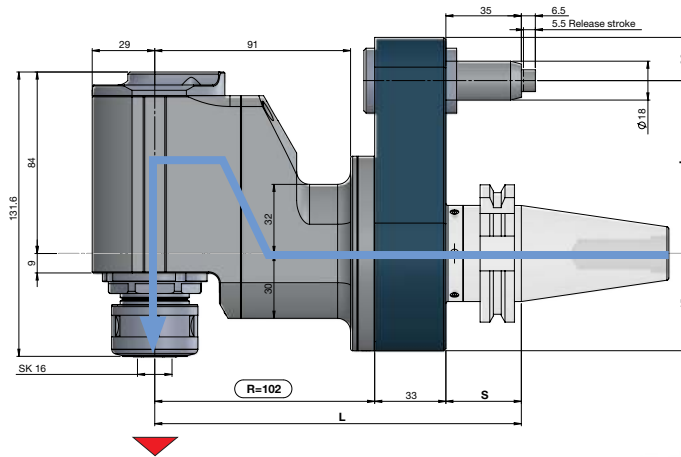
Shank	DIN-69871		CAT	MAS-BT			HSK		CAPTO		KM
Size	30	40	50	30	40	50	63-80	100	C5-C6	C8	50-63
I	65-80	65-80-(110*)	80-(110*)	65-80	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)
S	35	35	35	30	35	41	42	45	38	40	40
L	170	170	170	165	170	176	177	180	173	175	175

*optional

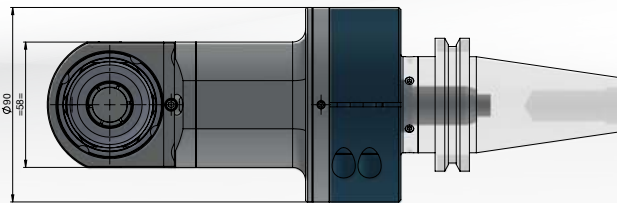
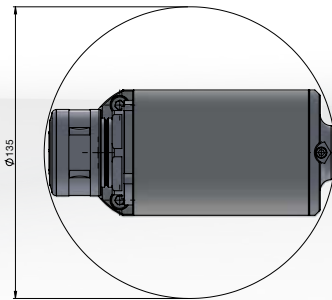
Non interchangeable input drive shank

Options

TH90cn-2,5 100 bar



Minimum diameter without tool




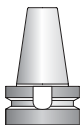
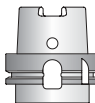


Dry running also possible

▼ Direction of rotation opposite to machine spindle

-  Ratio
1:1
-  RPM
9.000 min⁻¹
-  RPM Dry running
6.000 min⁻¹
-  Max. axial load
510 N
-  Torque
30 Nm
-  Weight
5,5 kg
-  Collet
SK16 ø 1/16 mm

*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book

										
Shank/ <i>Cono/ Aufnahme</i>	DIN-69871 CAT		MAS-BT		HSK		CAPTO		KM	
Size/ <i>Grandezza/ Größe</i>	40	50	40	50	63-80	100	C5-C6	C8	50-63	
I	65-80 - (110*)	80-(110*)	65-80 -(110*)	80-(110*)	65-80 -(110*)	80-(110*)	65-80-(110*)	80-(110*)	65-80-(110*)	
S	35	35	35	41	42	45	38	40	40	
L	170	170	170	176	177	180	173	175	175	

*optional

Non interchangeable input drive shank

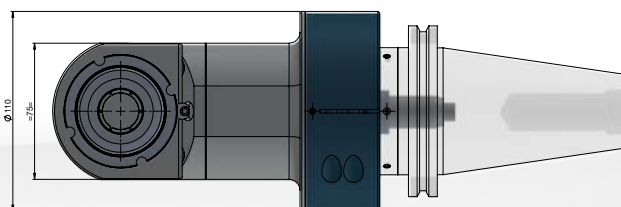
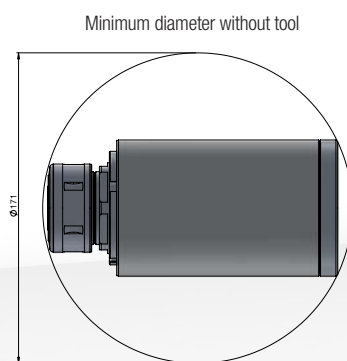
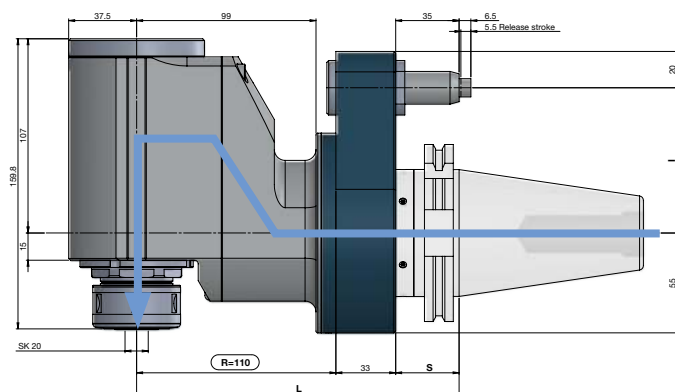
Options

TH90cn-3,5 100 bar

-  Ratio
1:1
-  RPM
8.000 min⁻¹
-  RPM Dry running
4.000 min⁻¹
-  Max. axial load
1.250 N
-  Torque
50 Nm
-  Weight
12 kg
-  Collet
SK20 Ø 2/20 mm

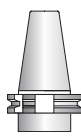
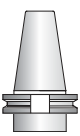
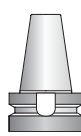
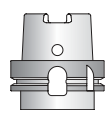
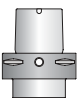
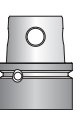
*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book



Dry running also possible

Direction of rotation opposite to machine spindle

								
Shank	DIN-69871CAT		MAS-BT	HSK		CAPTO		KM
Size	50		50	63-80	100	C6	C8	63
I	80-110		80-(110*)	65-80 -(110*)	80-(110*)	80-(110*)	80-(110*)	80-(110*)
S	35		41	42	45	38	40	40
L	178		184	185	188	181	183	183

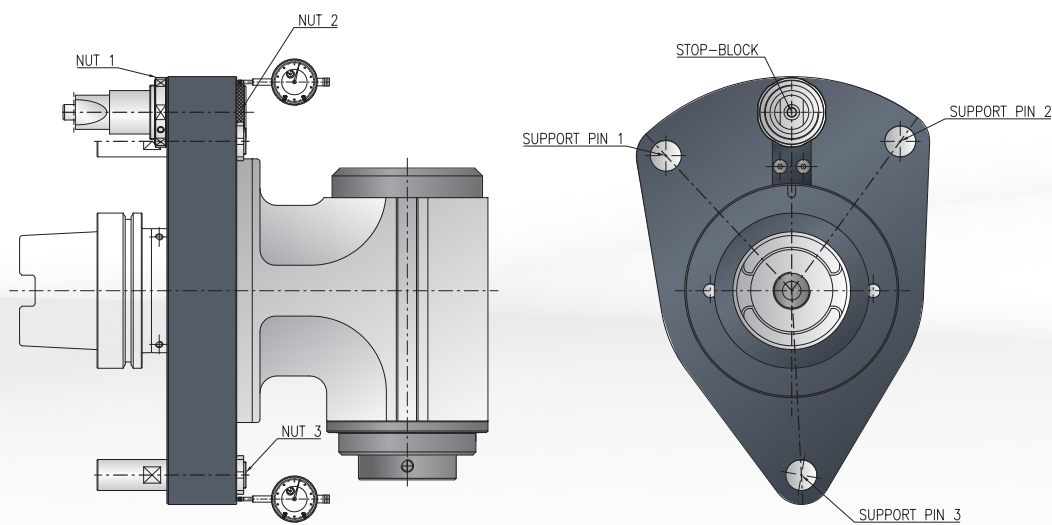
*optional

Non interchangeable input drive shank

Options

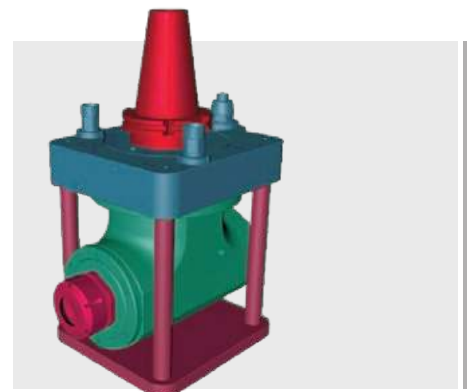
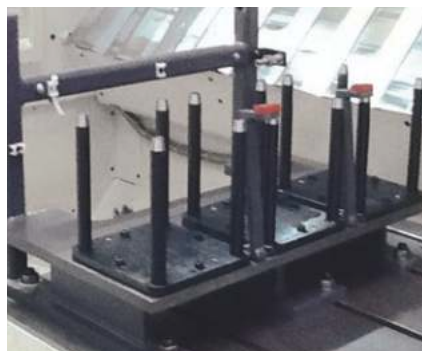
3 Point Support

In order to increase rigidity and stability during machining, Alberti can build a special flange with 3 point support system. The flange is custom-made according to the dimension of the machine spindle. With this system the head cannot be loaded into the tool magazine but requires an external uploading or pick up station



PICK UP AND SUPPORTS FOR LARGE HEADS

In case of big and heavy heads Alberti can study a simple pick up station to be placed on the table.



LINEA MODULAR

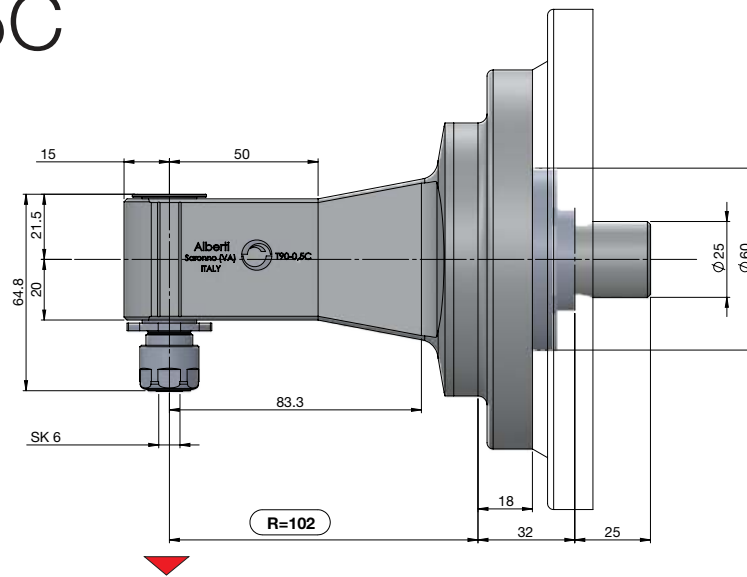


Angle heads of the MODULAR line are suitable to be mounted on traditional machine tools and are attached to the spindle through a flange. They are sold together with an interchangeable shank and a universal flange and they can extend the total length thanks to extension spacers. For a correct mounting, it is necessary to build an adapting flange to be screwed between the head and the machine spindle.



Example of mounting the head on the machine with extension

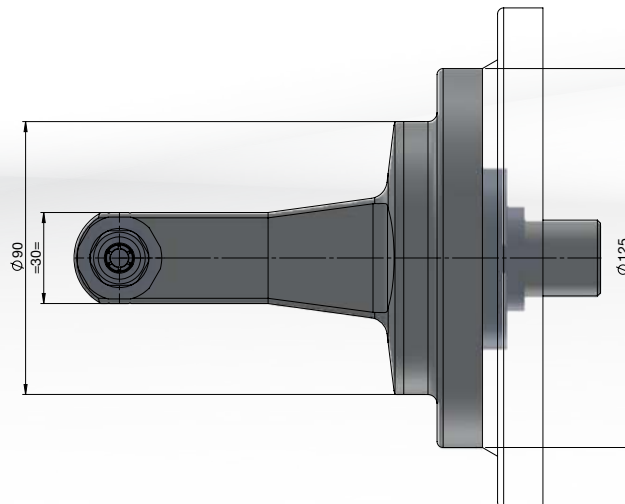
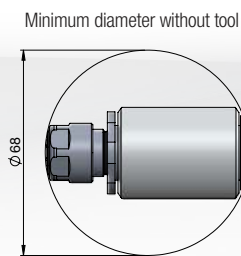
T90-0,5C



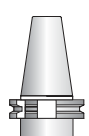
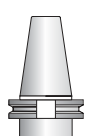
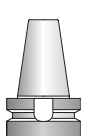
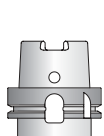
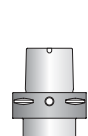
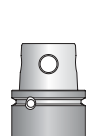
-  Ratio
1:1
-  RPM
10.000 min⁻¹
-  Max. axial load
150 N
-  Torque
8 Nm
-  Weight
4 kg
-  Collet
SK6 Ø 0,5/6 mm

*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book



 Direction of rotation opposite to machine spindle

						
Shank	DIN-69871	CAT	MAS-BT	HSK	CAPTO	KM

Options



bar max
12

Coolant through spindle

T90-0,5L



Ratio
1:1



RPM
10.000 min⁻¹



Max. axial load
150 N



Torque
8 Nm



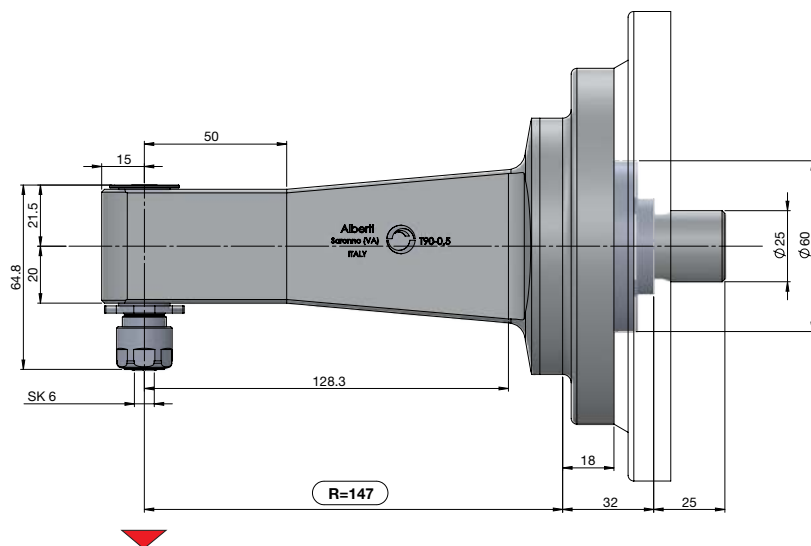
Weight
4,3 kg



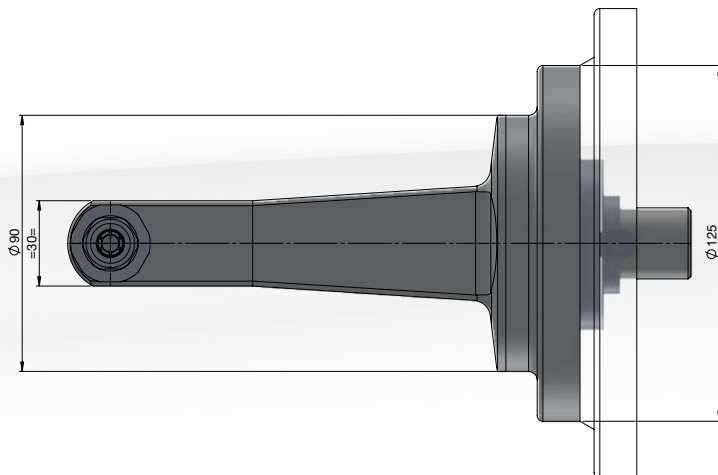
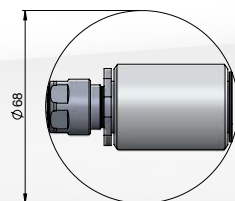
Collet
SK6 Ø 0,5/6 mm

*** STANDARD EQUIPMENT INCLUDES:**

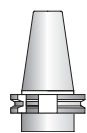
- Special bag - wrenches - Grease tube - Instruction book



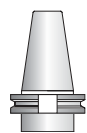
Minimum diameter without tool



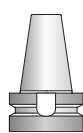
Direction of rotation opposite to machine spindle



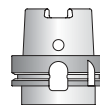
DIN-69871



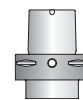
CAT



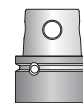
MAS-BT



HSK



CAPTO



KM

Shank

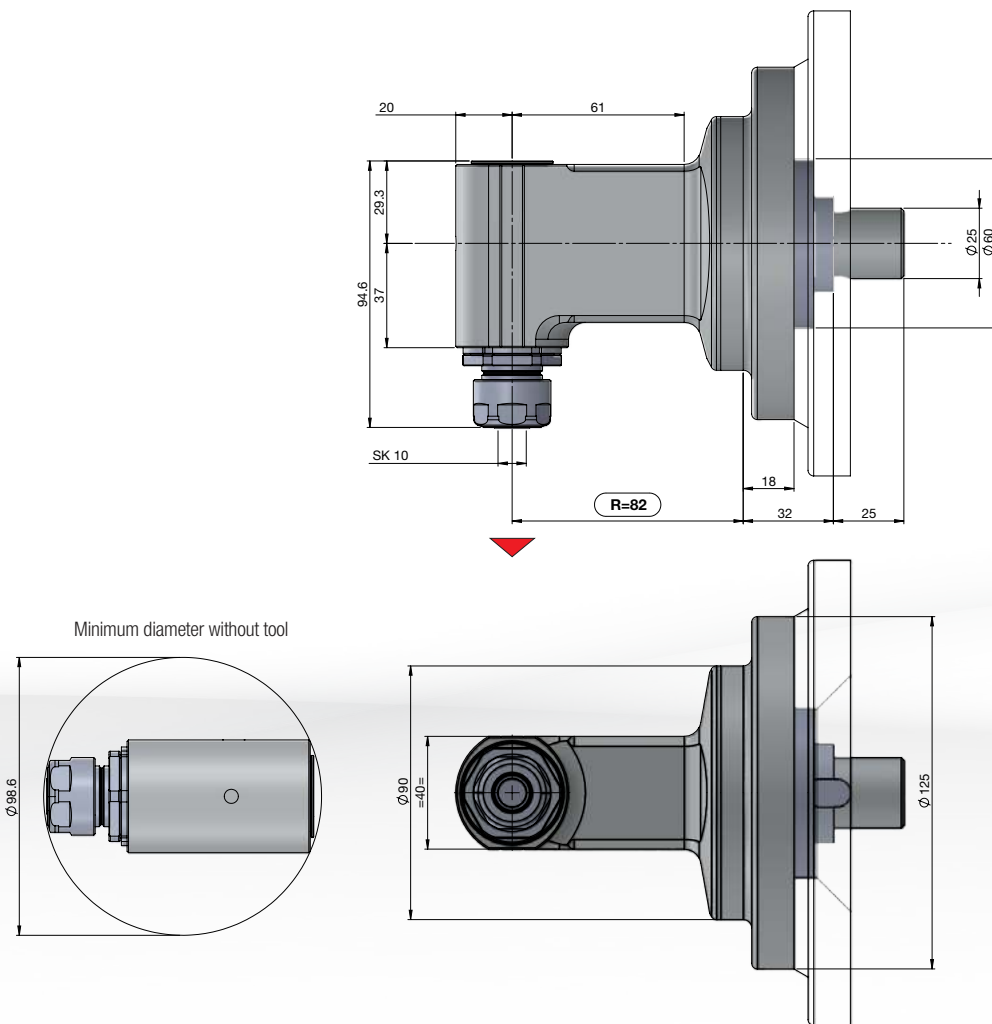
Options



bar max
12

Coolant through spindle

T90-1,5

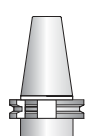
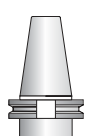
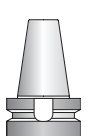
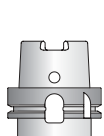
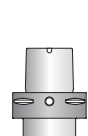
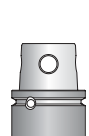


-  Ratio
1:1
-  RPM
8.000 min⁻¹
-  Max. axial load
250 N
-  Torque
15 Nm
-  Weight
4,3 kg
-  Collet
SK10 Ø 1/10 mm

*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book

 Direction of rotation opposite to machine spindle

						
Shank	DIN-69871	CAT	MAS-BT	HSK	CAPTO	KM

Options



bar max
12

Coolant through spindle



min⁻¹
10.000

High speed optional RPM max.

T90-1,5L



Ratio
1:1



RPM
8.000 min⁻¹



Max. axial load
250 N



Torque
15 Nm



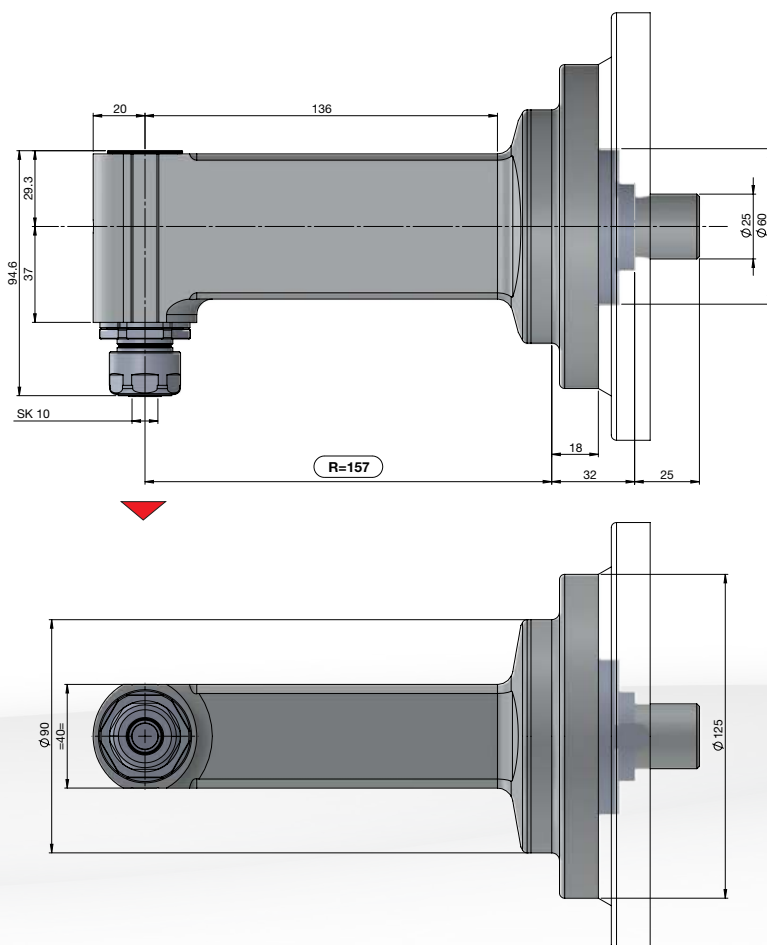
Weight
5,2 kg



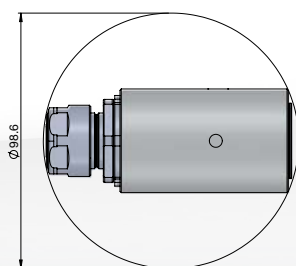
Collet
SK10 Ø 1/10 mm

* STANDARD EQUIPMENT INCLUDES:

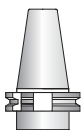
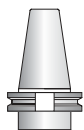
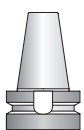
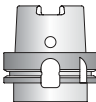
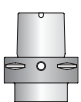
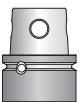
- Special bag - wrenches - Grease tube - Instruction book



Minimum diameter without tool



Direction of rotation opposite to machine spindle

						
Shank	DIN-69871	CAT	MAS-BT	HSK	CAPTO	KM

Options



bar max
12

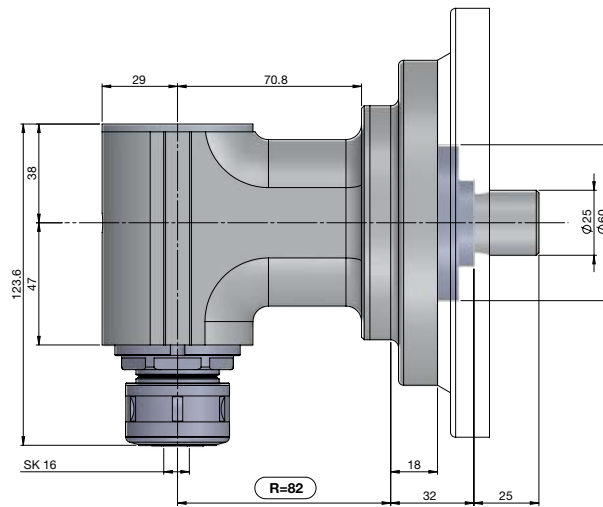
Coolant through spindle



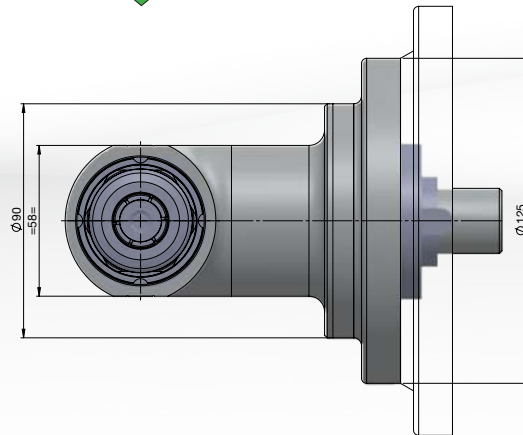
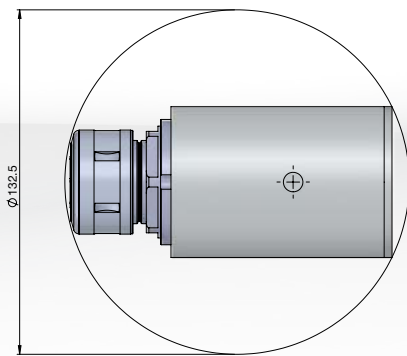
min⁻¹
10.000

High speed optional RPM max.

T90-2,5



Minimum diameter without tool

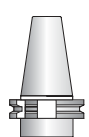

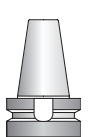
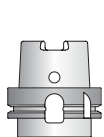
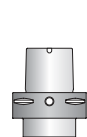
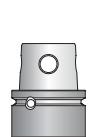


-  Ratio 1:1
-  RPM 6.000 min⁻¹
-  Max. axial load 510 N
-  Torque 30 Nm
-  Weight 5,4 kg
-  Collet SK16 Ø 1/16 mm

*** STANDARD EQUIPMENT INCLUDES:**

- Special bag - wrenches - Grease tube - Instruction book

 Direction of rotation same as machine spindle

						
Shank	DIN-69871	CAT	MAS-BT	HSK	CAPTO	KM

Options



bar max
12

Coolant through spindle



min⁻¹
8.000

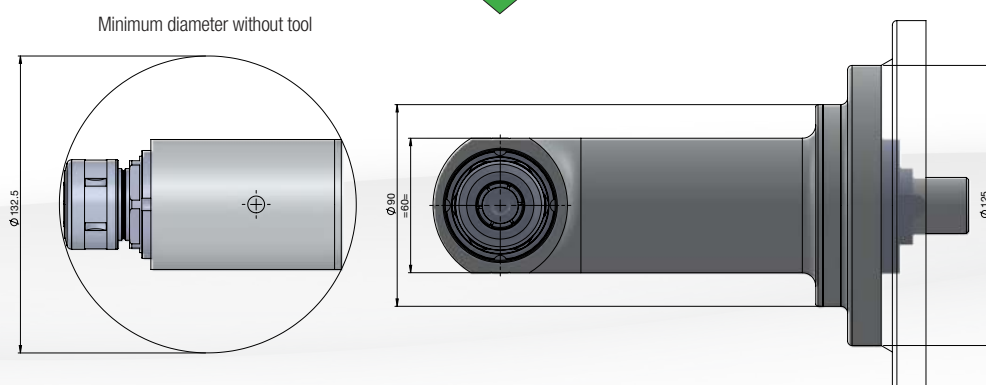
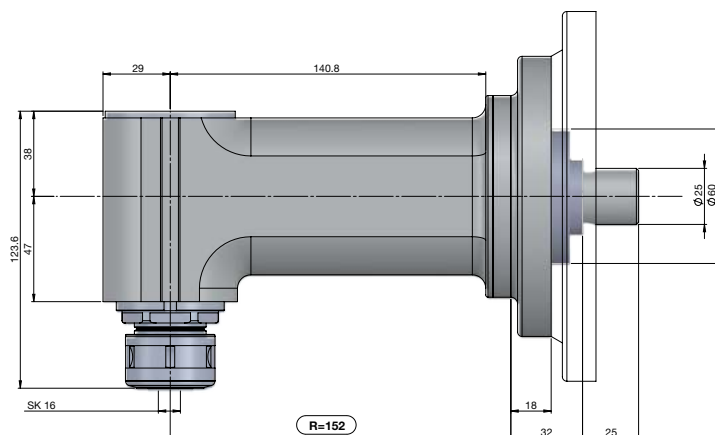
High speed RPM max.

T90-2,5L

- Ratio
1:1
- RPM
6.000 min⁻¹
- Max. axial load
510 N
- Torque
30 Nm
- Weight
6,7 kg
- Collet
SK16 Ø 1/16 mm

* STANDARD EQUIPMENT INCLUDES:

- Special bag - wrenches - Grease tube - Instruction book



Direction of rotation same as machine spindle

Shank	DIN-69871	CAT	MAS-BT	HSK	CAPTO	KM

Options



bar max
12

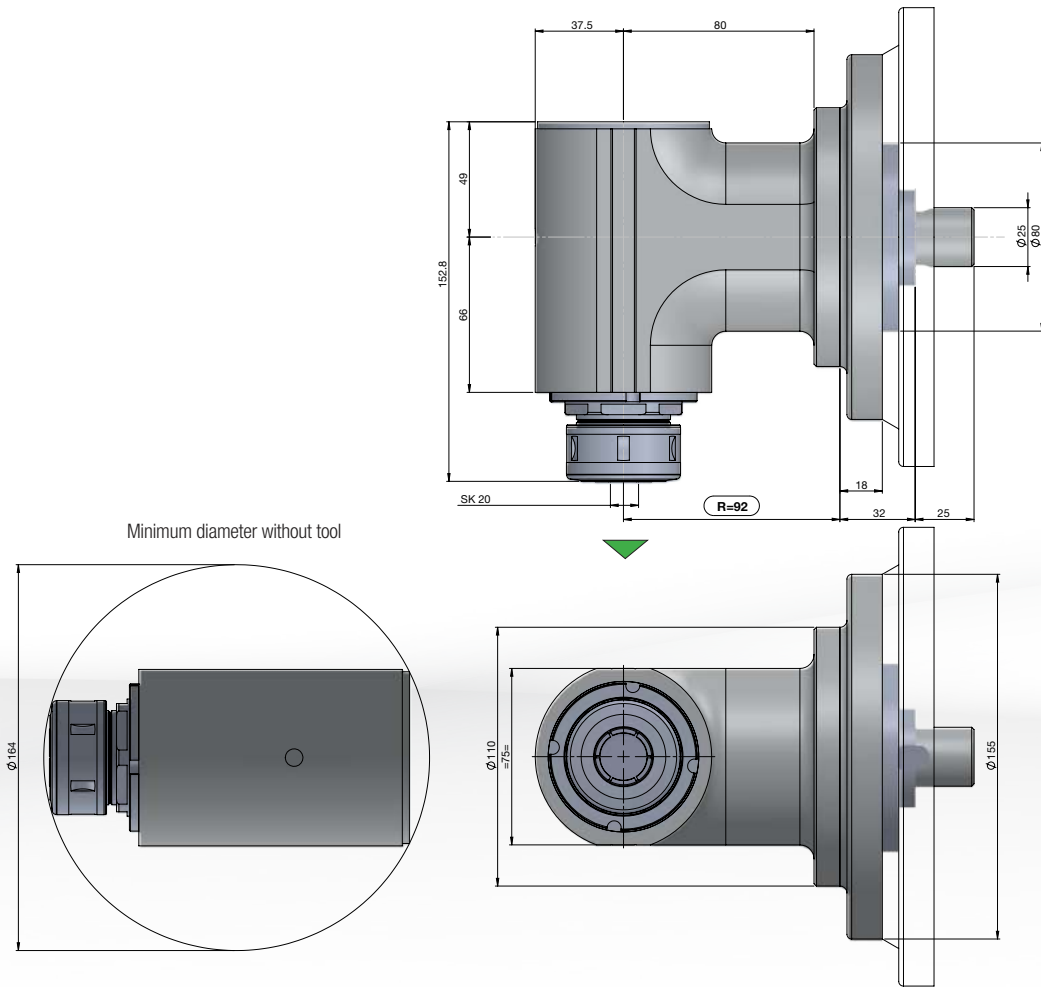
Coolant through spindle



min⁻¹
8.000

High speed RPM max.

T90-3,5



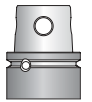
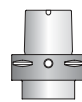
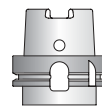
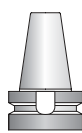
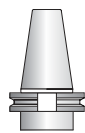
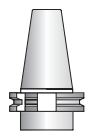
Minimum diameter without tool

Ø164

Ø110

0155

Direction of rotation same as machine spindle



Shank

DIN-69871

CAT

MAS-BT

HSK

CAPTO

KM

Options



bar max

12

Coolant through spindle

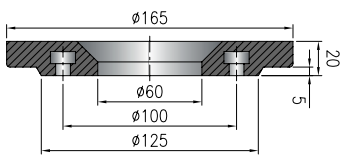
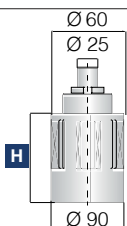
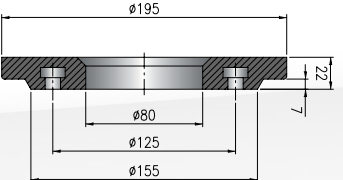
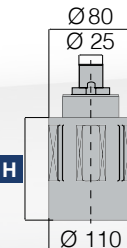
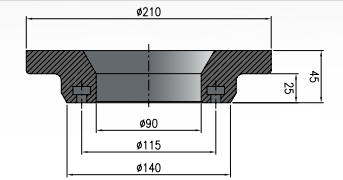
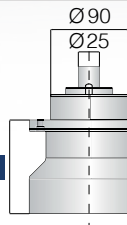
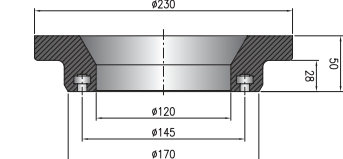
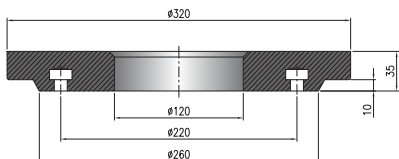
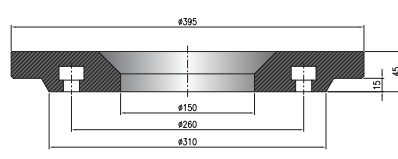

$$\text{min}^{-1}$$

6.000

High speed optional RPM max.

LINEA MODULAR

The modular system makes it possible to extend the length of the body by adding a spacer. The extension spacer, drive tapers and universal flange are modular and therefore interchangeable among all the heads of similar size.

	Flange	Extension Spacer	H	Part Number
T90-0,5 T90-1,5 T90-2,5 TCU-2,5 TCU-3,5	 <p>54206000</p>		55 mm	90006010
			110 mm	90006A11
			150 mm	90006A15
			250 mm	90006A25
T90-3,5	 <p>54208000</p>		55 mm	90008010
			110 mm	90008A11
			150 mm	90008A15
			250 mm	90008A25
			360 mm	90008A36
			450 mm	90008A45
T90-4,5	 <p>54209001</p>		110 mm	90009000
			150 mm	90009050
	T90-5	T90-8 / TDU-8	T90-10 / TDU-10	
	 <p>54212004</p>	 <p>542120000</p>	 <p>54215000</p>	

Example of flange mounting for modular heads including extension spacers



Notes



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Cobalt Outils Coupants

Specifications are subject to change without notice



The Spirit of Innovation

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