

MADAULA
creative solutions



Angle Heads

- Allow attachment of extra axis to machine.
 - Time saving and precision increasing.
 - Constant precision, high rotation speed and minimum weight for automatic tool change.
 - Used for drilling, tapping, reaming and milling in all kind of materials.
 - Can be fitted on machining center, conventional milling machines, CNC machines, machining units and/or transfer machines.
-

Angle heads

CA: 90° angle head.



CAR: 0-90° adjustable angle head.

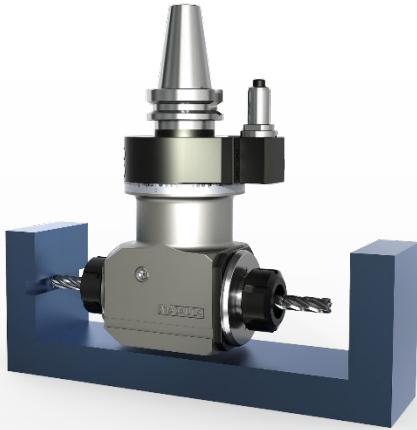


CAF-CAFS: fixed angle head.



Angle heads

CAD: 90° double output



CAP: Slim design



EXTENDED CA: 90° angle heads for long pieces




CA 1

90° Angle head

Technical Data

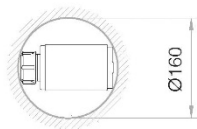
Caractéristiques techniques / Technische Daten

		ER-32 / 20 mm
R.P.M max	Heavy duty bearings	3.000
		7.5 kg
		1:1
KW		7 kW
Nm max		35 Nm
Rotation		in = out

L / H

Other measures under request

Autres mesures sur demande
Weitere Maßnahmen auf Anfrage



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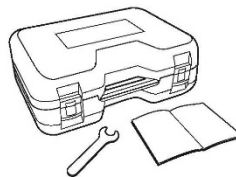
Taper Cône / Kegel	Size taille / Größe	H	S
DIN 69871 / 2080	40/50	65/80	40
CAT	40/50	65/80	40
MAS-BT	40/50	65/80	40/50
HSK	63/100	65/80	40/50
CAPTO	C6/C8	65/80	40/50
KM	63/100	65/80	40/50

Standard Equipment

Standard / Standard


Optional Equipment

Optional / Option




Stop Block

Bloc d'arrêt / Anschlag-Block

See page 55 

Collets

Pinces / Spannzangen

See page 56 

Coolant through index pin

Arrosage par le doigt d'indexage / Kühlen/itzelfuhr durch bolzen

bar/psi max 12/175

High speed option RPM max

Haute vitesse en option RPM / Hochgeschwindigkeit optional UPM max

6.000

CA 1 IC COOLANT

90° Angle head

Technical Data

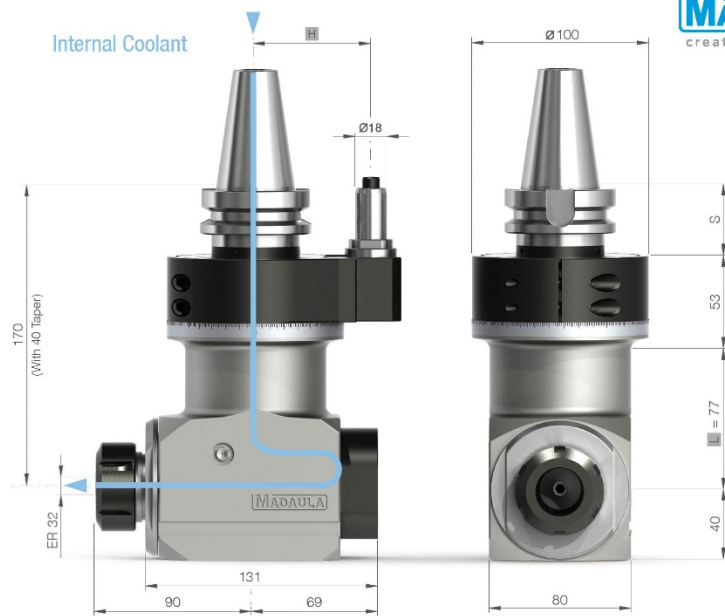
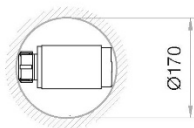
Caractéristiques techniques / Technische Daten

		ER-32 / 20 mm
R.P.M max	Heavy duty bearings	3.000
		8 kg
		1:1
KW		7 kW
Nm max		35 Nm
Rotation		in = out
Coolant max pressure		12 bar / 175 psi

L / H

Other measures under request

Autres mesures sur commande
Weitere Maßnahmen auf Anfrage

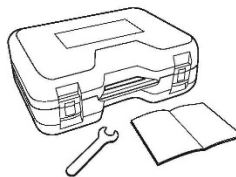


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Taper Cône / Kegel	Size taille / Größe	H	S
DIN 69871 / 2080	40/50	65/80	40
CAT	40/50	65/80	40
MAS-BT	40/50	65/80	40/50
HSK	63/100	65/80	40/50
CAPTO	C6/C8	65/80	40/50
KM	63/100	65/80	40/50

Standard Equipment

Standard / Standard



Optional Equipment

Optionel / Option

Stop Block

Bloc d'arrêt / Anschlag-Block

See page 55 


Collets

Pinces / Spannzangen

See page 56 

Alternative outputs

Sortie alternative / Alternative ausgänge

See page 55 

High speed option RPM max

Haute vitesse option RPM / Hochgeschwindigkeit: optional UPM max

6.000

CAR 1L LIGHT

0–90° Adjustable

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Technical Data

Caractéristiques techniques / Technische Daten

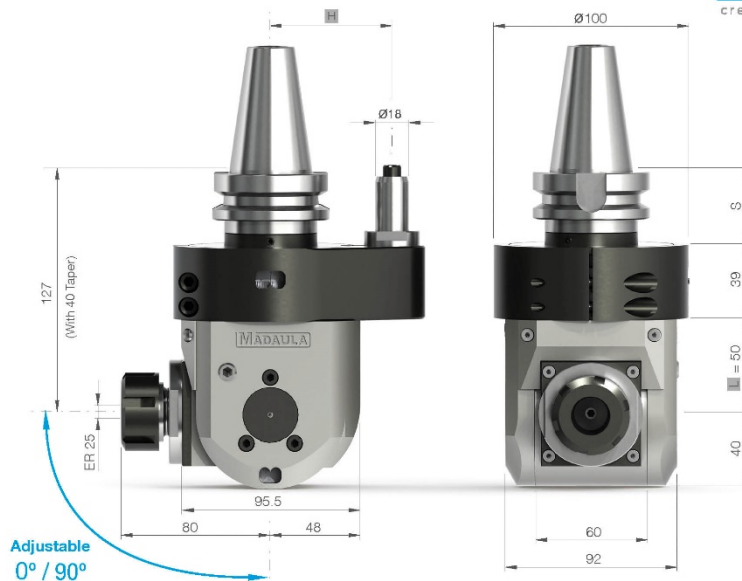
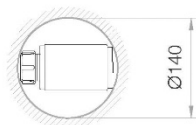
	ER-25 / 16 mm
R.P.M max	5.000
	5,5 kg
	1:1
KW	5 kW
Nm max	20 Nm
Rotation	in ≠ out

L / H

Other measures under request

Autres mesures sur demande

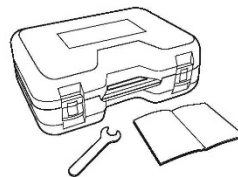
Weitere Maßnahmen auf Anfrage



Taper Cône / Kege	Size Taille / Größe	H	S
DIN 69871 / 2080	40/50	55/65/80	40
CAT	40/50	55/65/80	40
MAS-BT	40/50	55/65/80	40/40/50
HSK	63/100	55/65/80	40/40/50
CAPTO	C6/C8	55/65/80	40/40/50
KM	63/100	55/65/80	40/40/50

Standard Equipment

Standard / Standard




Optional Equipment

Optional / Option

Stop Block

Bloc d'arrêt / Anschlag Block

See page 55 

Collets

Procs / Spannzangen

See page 56 

Coolant through index pin

Arrosage par le doigt d'indexage / Kühlmittelzufuhr durch boizen



bar/psi max 12/175

CAR S $\pm 125^\circ$ Adjustable

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Technical Data

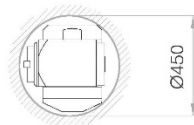
Caractéristiques techniques / Technische Daten

	ISO-50 / BT-50
R.P.M max	3.000
	145 kg
	1:1
KW	30 kW
Nm max	375 Nm
Rotation	in \neq out

L / H

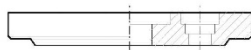
Other measures under request

Autres mesures sur demande
Weitere Maßnahmen auf Anfrage



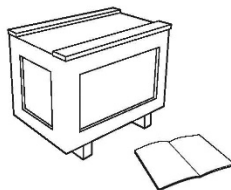
Flange mounted giving an increased rigidity.

Rigidité accrue lors du montage par flasque sur la machine.
Erhöhte Steifheit durch Flanschbau direkt an der Maschine.



Standard Equipment

Standard / Standard



Optional Equipment

Options / Option

Internal air pressure

Suppression d'air interne / Sperrluft

bar/psi max 0,3/4

Quick change system

Système de changement rapide / Schnellwechsellahme

Alternative output HSK 63

Sortie alternative HSK 63 / Alternative ausgänge HSK 63

See page 65

Coolant through

Passage du liquide de refroidissement / Innenkühlung




80 bar

CAF 1

0 to 90°
Fixed angle

Technical Data

Caractéristiques techniques / Technische Daten

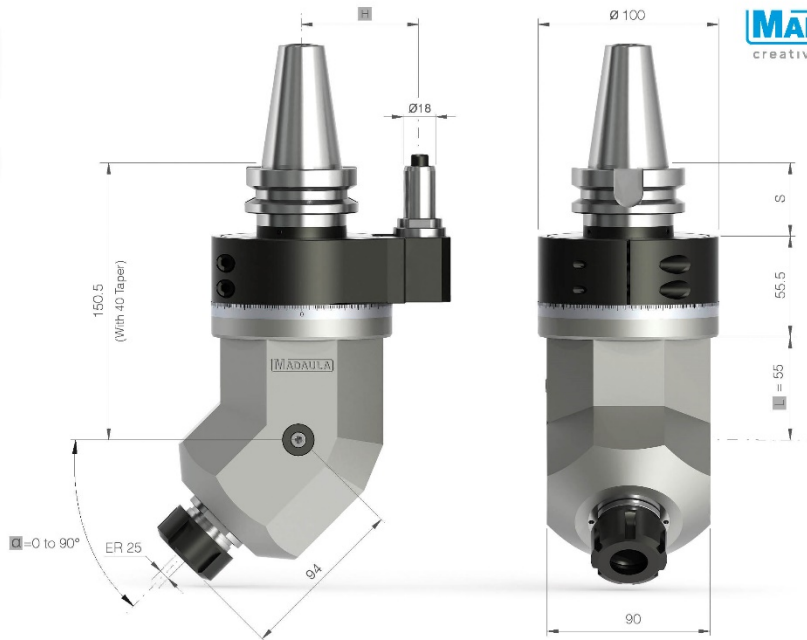
	ER-25 / 16 mm
R.P.M max	4.000
	5,8 kg
	1:1
KW	5 kW
Nm max	12 Nm
Rotation	in ≠ out

L / H / α

Other measures under request

Autres mesures sur demande
Weitere Maßnahmen auf Anfrage

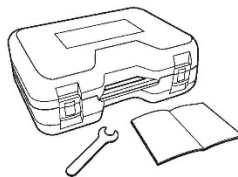
Taper Cône / Kegel	Size Taille / Größe	H	S
DIN 69871 / 2080	40/50	65/80	40
CAT	40/50	65/80	40
MAS-BT	40/50	65/80	40/50
HSK	63/100	65/80	40/50
CAPTO	C6/C8	65/80	40/50
KM	63/100	65/80	40/50



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Standard Equipment

Standard / Standard



Optional Equipment

Optional / Option

Stop Block

Bloc d'arrêt / Anschlag-Block

See page 55 

Collets

Pinces / Spannzangen

See page 56 

Coolant through index pin

Anosage par le doigt d'indexage / Kühlmittelzufuhr durch bolzen

bar/psi max 12/175

Alternative outputs




Sortie alternative / Alternative ausgänge

See page 55 

CAFS 0 to 90° Fixed offset

Technical Data

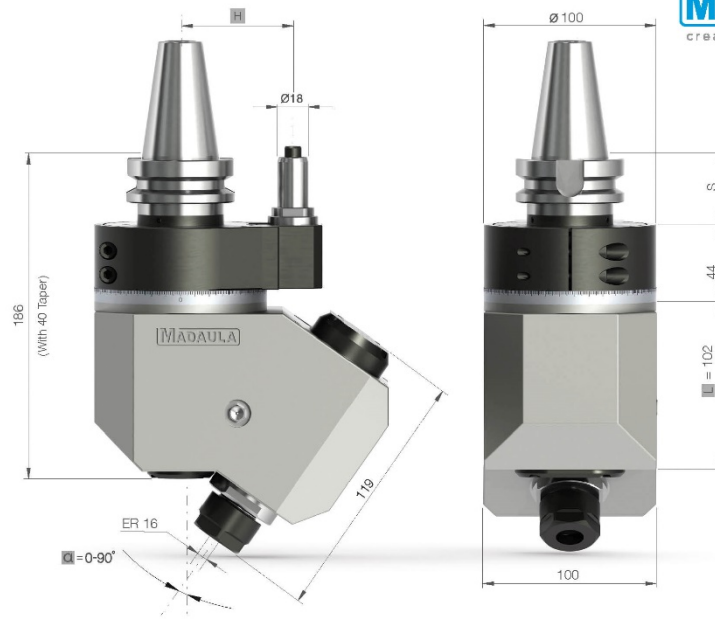
Caractéristiques techniques / Technische Daten

	ER-16 / 10 mm
R.P.M max	8.000
	2.6 kg
	1:1
KW	3.5 kW
Nm max	14 Nm
Rotation	in ≠ out

L / H / α

Other measures under request

Autres mesures sur demande
Weitere Maßnahmen auf Anfrage

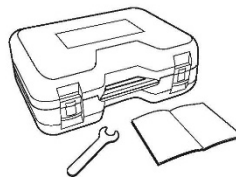


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Taper Cône / Kegel	Size taille / Größe	H	S
DIN 69871 / 2080	30/40/50	55/65/80	40
CAT	30/40/50	55/65/80	40
MAS-BT	30/40/50	55/65/80	40/40/50
HSK	50/63/100	55/65/80	40/40/50
CAPTO	C5/C6/C8	55/65/80	40/40/50
KM	50/63/100	55/65/80	40/40/50

Standard Equipment

Standard / Standard




Optional Equipment

Optionel / Option


Stop Block

Bloc d'arrêt / Anschlag-Block

See page 55 

Collets

Pinces / Spannzangen

See page 56 

Coolant through index pin

Arrosage par le doigt d'indexage / Kühlungszufuhr durch bolzen




bar/psi max 12/175

CAFS IC OOLANT

Fixed offset

Technical Data

Caractéristiques techniques / Technische Daten

	CAFS 0 IC	CAFS 1 IC	CAFS 2 IC	CAFS 3 IC
	ER-16	ER-25	ER-32	ER-40
R.P.M max	8.000	4.000	4.000	3.500
	3.5 kg	5.9 kg	11.7 kg	16.2 kg
	1:1	1:1	1:1	1:1
KW	3.5 kW	5 kW	6 kW	10 kW
Nm max	14 Nm	30 Nm	50 Nm	80 Nm
Rotation	in ≠ out	in ≠ out	in ≠ out	in ≠ out
Max. pressure	80 bar	80 bar	80 bar	80 bar

Other measures under request. See page 37 to 40.

Autres mesures sur demande. Voir page 37 à 40.

Weitere Maßnahmen auf Anfrage. Siehe Seite 37 bis 40.

Always run wet

Tourner toujours avec arrosage / Nicht ohne Kühlmittel fahren

Filtration

Filtration / Filtration 40 µm

Always keep below the max. speed

Tourner toujours au dessous de la vitesse maxi /
Immer unter der maximalen Geschwindigkeit zu halten

Alternative outputs

Sorties alternatives / Alternative Ausgänge

See page 55 

CAFS 0 IC



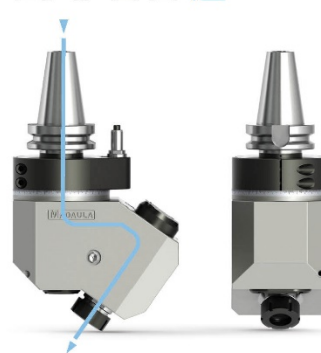
CAFS 1 IC



CAFS 2 IC



CAFS 3 IC






CAP

Slim design 90°

Technical Data

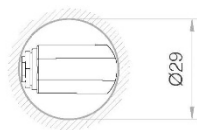
Caractéristiques techniques / Technische Daten

	Special tool max. Ø4 mm
R.P.M max	6.000
	4 kg
	1:1
KW	0.9 kW
Nm max	3 Nm
Rotation	in = out (A-B) in ≠ out (C)

L / H

Other measures under request

Autres mesures sur demande
Weitere Maßnahmen a.f Anfrage



Taper Cône / Kegel	Size taille / Größe	H	S
DIN 69871 / 2080	40/50	65/80	40
CAT	40/50	65/80	40
MAS-BT	40/50	65/80	40/50
HSK	63/100	65/80	40/50
CAPTO	C6/C8	65/80	40/50
KM	63/100	65/80	40/50



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L	A	50
	B	75
	C	100

Standard Equipment

Standard / Standard

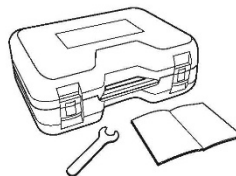
Optional Equipment

Optionel / Option

Stop Block

Bloc d-arrêt / Anschlag-Block

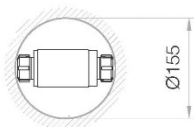
See page 55



CAD**90°**
Double output**Technical Data**

Caractéristiques techniques / Technische Daten

	ER-25A / 16 mm
R.P.M max	5.000
	5.2 kg
	1:1
KW	3.5 kW
Nm max	14 Nm
Rotation	in ≠ out / in = out

L / H**Other measures under request**Autres mesures sur demande
Weitere Maßnahmen auf Anfrage**MADAULA**
creative solutions

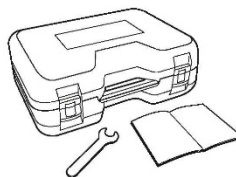
Taper Cône / Kegel	Size Taille / Größe	H	S
DIN 69871 / 2080	30/40/50	55/65/80	40
CAT	30/40/50	55/65/80	40
MAS-BT	30/40/50	55/65/80	40/40/50
HSK	50/63/100	55/65/80	40/40/50
CAPTO	C5/C6/C8	55/65/80	40/40/50
KM	50/63/100	55/65/80	40/40/50

Standard Equipment

Standard / Standard

Optional Equipment

Optional / Option

**Stop Block**

Bloc d'arrêt / Anschlag / Block

See page 55 **Collets**

Pinces / Spannzangen

See page 56 **Coolant through index pin**

Arrosage par le doigt d'indexage / Kühlmittelzufuhr durch boizen

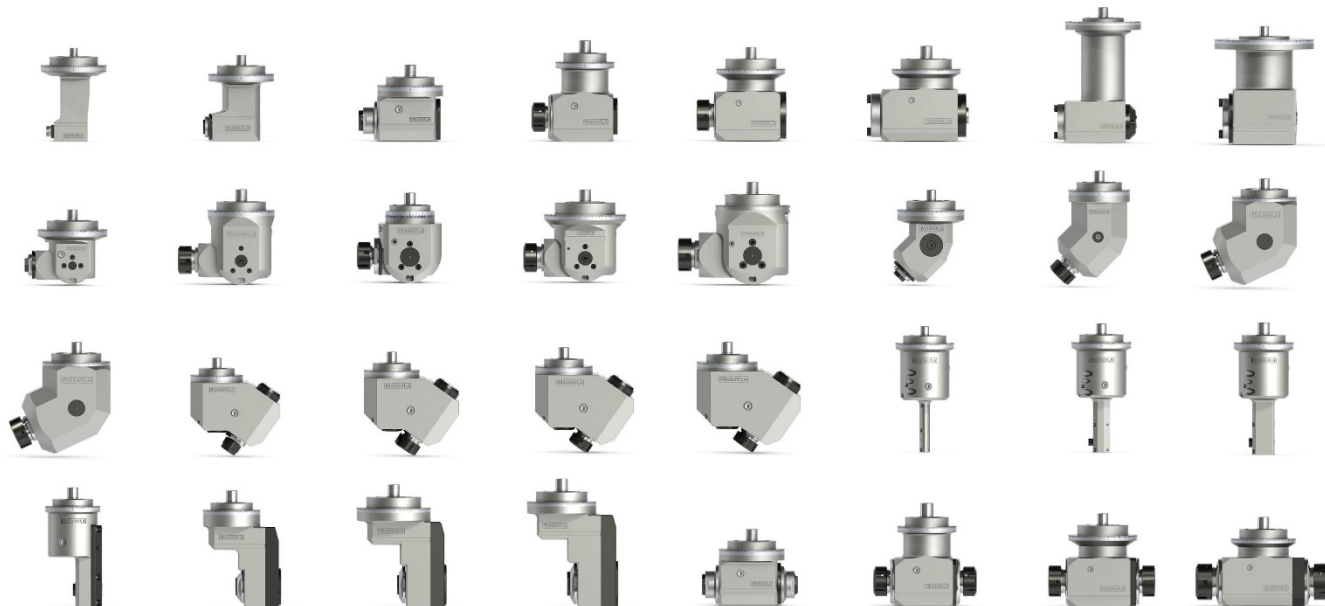
bar/psi max 12/175

High speed option RPM max

Haute vitesse en option RPM / Hochgeschwindigkeit optional UPM max

8.000

Flange mounted



Heads for milling machines / machining units

All the heads our product range are also available to be assembled onto milling machines / machining units through flange.

This provides higher rigidity and easier 360° positioning around its axis.

Tous les renvois de la gamme, sont aussi disponibles pour son montage sur des fraiseuses/unités d'usinage moyennant une flasque adaptée.

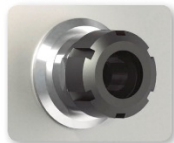
Cela permet une rigidité extra et un positionnement angulaire très facile de 360° autour de son axe.

Alle Köpfe unserer Produktpalette sind auch auf Fräsmaschinen / Bearbeitungseinheiten durch Flansch montierbar.

Dies bietet eine höhere Steifigkeit und eine leichtere 360° - Positionierung um ihre Achse.

Output types

ER Collet DIN 6499



Coromant Capto®



ER-A Internal collet DIN 6499 / KM™



Quick change tapping holder / HSK DIN 69893



Weldon DIN 1835 or Wistle notch / ABS® KOMET®



Madaula modular MMT System / DIN 6358



Index arm types All types of indexation



Cylindrical
(Standard)



Conical



Flat faces



Special flange with 3 stabilization points system



Increased rigidity
Rigidité accrue
Erhöhte Festigkeit

Stop block Locking and unlocking device

• The stop block provides

- 3 basic benefits:
- Prevents the angle head rotation.
- Ensures the repeatability during automatic tool change.
- Ensures the positioning accuracy.

• Standard stop block:
C45 Steel body
Case hardened and ground bushing

• Other types available on request to fit all type of machines.

• Le Bloc d'arrêt a 3 fonctions:

- Éviter la rotation du renvoi.
- Assurer la répétabilité pendant changement automatique de l'outil.
- Assurer la précision de la position.

• Stop block standard:
Corps en acier C45
Cannon en acier cémenté et trempé.

• Autres types sont disponibles pour montage sur tous types de machines.

• Der Anschlag-Block liefert

- 3 grundlegende Vorteile:
- Er verhindert die Drehung des Winkelkopfes.
- Sorgt für die Wiederholgenauigkeit beim automatischen Werkzeugwechsel.
- Gewährleistet Positioniergenauigkeit.

• Standard- Anschlag-Block:
C45 Stahlgehäuse
Gehärtetes Gehäuse und Aufnahmebuchse.

• Andere Aufnahmen verfügbar, passend auf alle Maschinenausführungen.

Stop block must be ordered separately
Bloc d'arrêt doit être commandé séparément
Anschlag-Block muss separat bestellt werden



Special Angle heads



Star shaped
3 Outputs



Cutter on axis with
steady holder



Reversed angle

Special Angle heads



Very narrow spaces



Double parallel output



ISO-50 / ISO-50

Special Angle heads



HSK-63A
Adjustable angle



L = 250mm



With rotary center

Special Angle heads



High press. coolant



L = 300 mm



CAD-2 L = 425 mm

Aerospace Solutions

Solutions Aéropatiales / Soluzioni Aerospaziale



“Perfect work requires passion, precision
and well designed and reliable tools.
Madaula focus
is to supply these tools to world-wide industry”

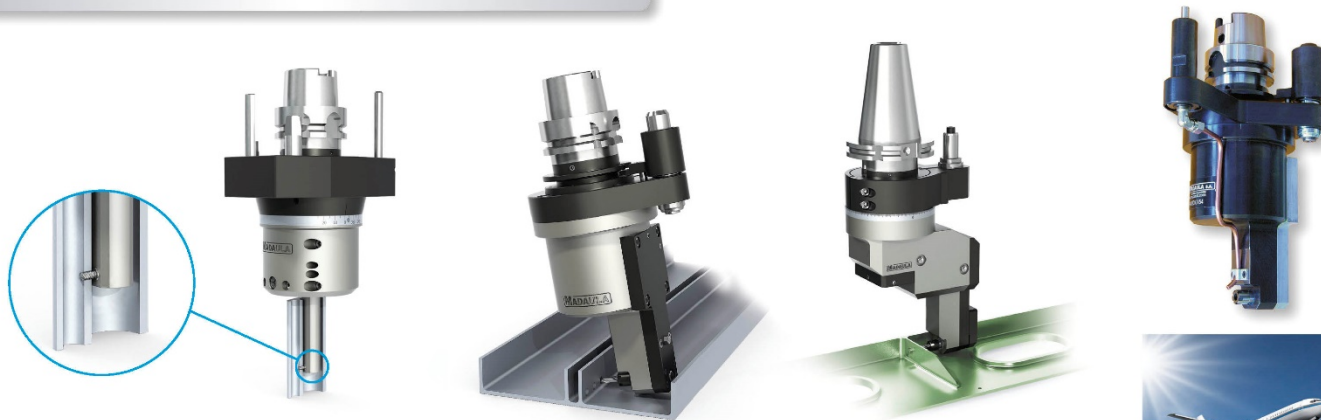






With more than 60 years of experience in the machine tool industry, Madaula offers a new kind of products for aerospace sector. Expanding and developing heads adapted to their customer's needs and requirements with standard and special head's design.

This current series of products offers:

- Customized solutions to optimize the machining processes.
 - Provide stability and precision
 - Achieve greater performance in machining operations
-

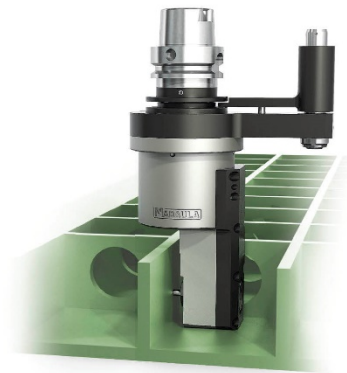
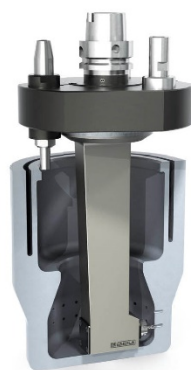
NARROW SPACES




	Slim + Speeder	Speeder	Speeder + Internal Coolant 
Code	A.151	A.163	A.553
Application	Drilling and milling	Drilling and reaming	Drilling and milling in narrow spaces
Materials	Composites / Aluminium Alloy / Stainless Steel / Titanium / Superalloys		
Inputs	ISO-40/50 / BT-40/50 / HSK-63/100 / CAPTO C6/C8		ISO-50 / BT-50 / HSK-100 / CAPTO C8
	Ø3	ER-8M (Ø5)	ER-8M (Ø5)
R.P.M Max	12.000	10.000	10.000
	3	6	8
	1:1.8	1:2	1:2

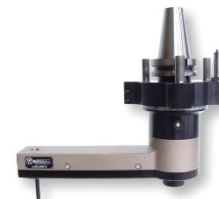
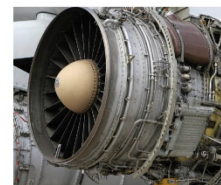


SPECIALIZED APPLICATIONS



	Offset Angle Head	Long Reach	CA with vibratory system
Code	A.112	A.104	A.153
Application	Drilling and milling in confined spaces	Drilling and reaming	Drilling
Materials	Composites / Aluminium Alloy / Stainless Steel / Titanium / Superalloys		
Inputs	ISO-30/40/50 / BT-30/40/50 / HSK-50/63/100 / CAPTO C5/C6/C8		
	ER-8M (Ø25)	ER-11M	ER-20A
R.P.M Max	15.000	12.000	5.000
	5	8	6
	1:4	1:1	1:1




SPECIALIZED APPLICATIONS



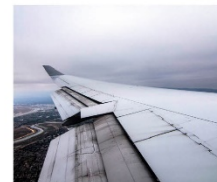
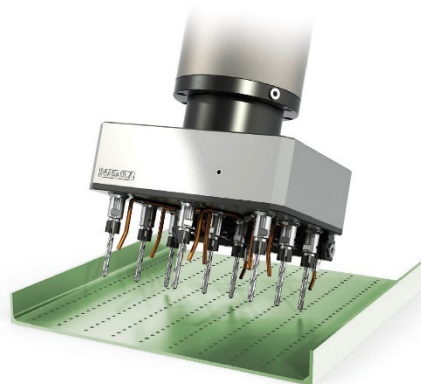
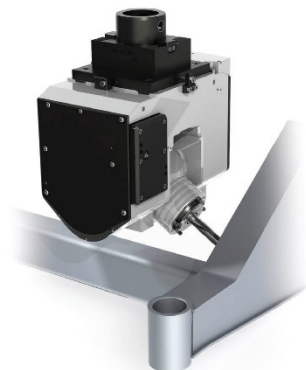
Axial with Vacumm system

Offset with Vacumm system

Offset Angle head

Code	A.111	A.161	A.162
Application	Drilling and reaming	Drilling and tapping	Drilling and milling
Materials	Composites / Aluminium Alloy / Stainless Steel / Titanium / Superalloys		
Inputs	ISO-10/50 / B1-10/50 / HSK-63/100 / CAP10 C6/C8		
	ER-11A	ER-11A	ER-16A
R.P.M Max	6.000	6.000	8.000
 KG	7	12	5
	1:1	1:1	1:1

SPECIALIZED HEADS



Programmable Tilting Head $\pm 115^\circ$ IC

High Productivity Multipindle Head

Code	G.123	M.050
Application	Drilling, boring and milling	Drilling and milling
Materials	Composites / Aluminium Alloy / Stainless Steel / Titanium / Superalloys	
Inputs	Flange / ISO-50 / BT-50 / HSK-100 / CAPTO C8	
	HSK-63A	ER-16 (x9)
R.P.M Max	6.000	8.000
	400	18
	1:1	1:1

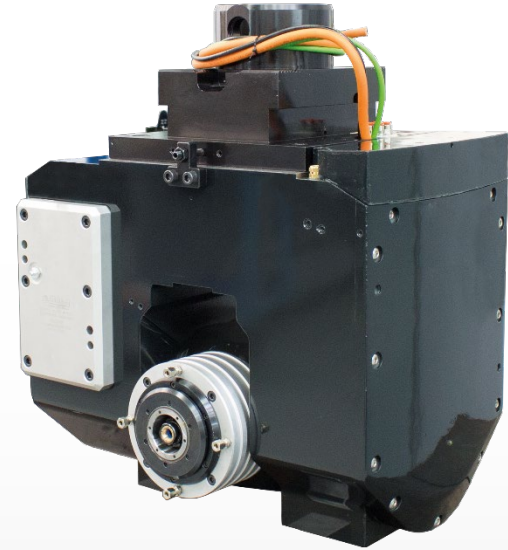
Special Angle heads



Offset for composites
with vibratory system



Offset Angle Head



Tilting Head

