



Micro mandrel

Slim specialist for clamping the smallest inner diameters

If you have to clamp workpieces with inner diameters as small as a straw, then the variety of excellent clamping devices is very sparse. In this case, hydro-expansion clamping devices are often the first choice. But if you have to change-over a lot due to small batches or if you want your production to run autonomously – you have to cut back. Your ray of hope: the micro mandrel. Why?

The large opening stroke makes automated loading with the robot or gantry easier. Its robust design compared to a hydro-expansion clamping devices makes it more durable and allows more clamping strokes. You can say goodbye to tool collisions during grinding and gear cutting thanks to the slim interference contour. And when changing to a different clamping diameter, you leave the flange and the force compensating module on the machine and only change the mandrel – set-up optimized, as you know it from HAINBUCH.

The solution for clamping the smallest diameters [5.6 – 15.59 mm] in the highest quality.

Key advantages

- Mandrel with slim interference contour and modular design
- Short version for turning and milling operations, long version for grinding
- High actuating forces are compensated by the integrated clamping force reduction
- Rigid radial clamping with pull-back effect
- Clamping range Ø 5.6 – 15.59 mm
- Run-out accuracy $\leq 15 \mu\text{m}$

Your benefits

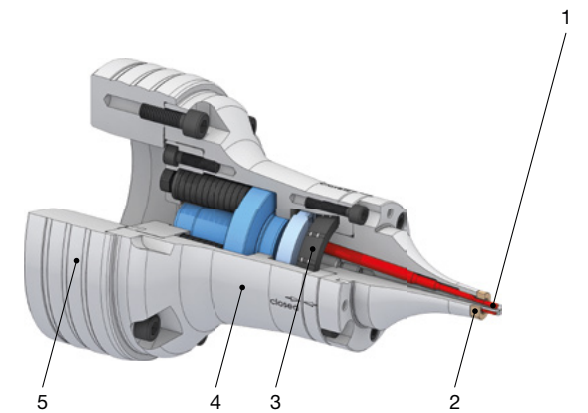
- Time and cost savings thanks to process-safe automated loading
- Flexible thanks to quick set-up without aligning
- Long service life thanks to clamping bolt technology
- Withstands high machining performance
- Overcomes tolerance fluctuations of the workpiece thanks to large clamping and opening stroke



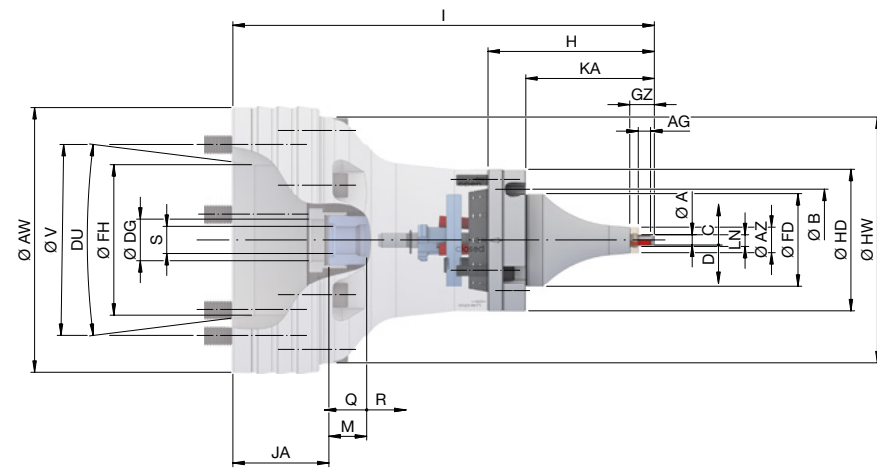
Micro mandrel in detail

Designation

- 1 3 clamping bolts
- 2 End-stop
- 3 CENTREX system for μm -precise use without alignment
- 4 Force compensating module
- 5 Spindle flange suitable for all standard mandrel sizes



Micro mandrel short version size 1. Technical data

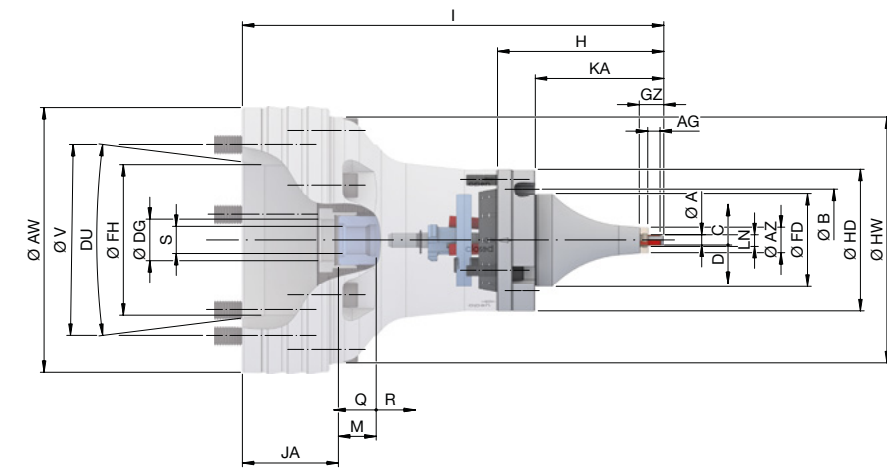


Size	1								
Clamping range [mm]	A	5,6 – 6,29							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		20							
Max. axial drawtube force [pull / push] [kN]		4							
Max. clamping length [mm]	AG	6,5							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Reception workpiece end-stop 2	LN	M8 x 0,75							
End-stop outer Ø [mm]	AZ	13,5							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	88							
Total length [mm]	I	223		227			223		
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8		54,8			50,8		
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	13							
End-stop height 2 [mm]	KA	68							
Weight [kg]		1,25							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		On request							

Scope of delivery

- Mandrel without flange / without force compensating module

Micro mandrel short version size 2. Technical data



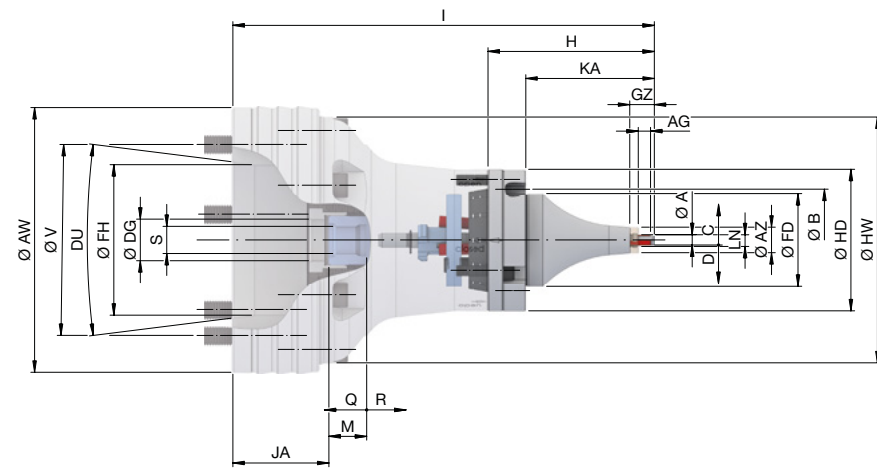
Size	2								
Clamping range [mm]	A	6,3 – 7,19							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		26							
Max. axial drawtube force [pull / push] [kN]		5							
Max. clamping length [mm]	AG	7							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Reception workpiece end-stop 2	LN	M9 x 1							
End-stop outer Ø [mm]	AZ	13,5							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	89							
Total length [mm]	I	224		228			224		
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8		54,8			50,8		
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	15							
End-stop height 2 [mm]	KA	69							
Weight [kg]		1,25							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		On request							

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel short version size 3. Technical data



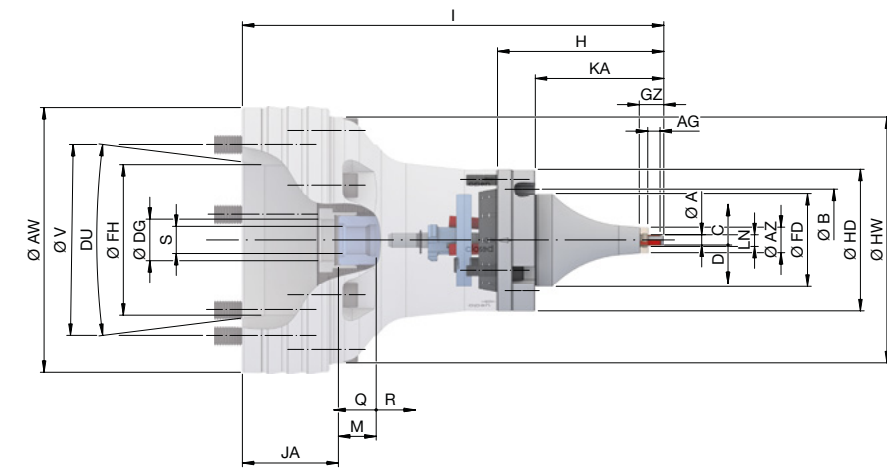
Size	3								
Clamping range [mm]	A	7,2 – 8,19							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		32							
Max. axial drawtube force [pull / push] [kN]		6,5							
Max. clamping length [mm]	AG	8							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Reception workpiece end-stop 2	LN	M10 x 1							
End-stop outer Ø [mm]	AZ	14,5							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	90							
Total length [mm]	I	225		229		225			
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8		54,8		50,8			
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61		79,6		103,2		100	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 171,4 [6 x M16]
Outer Ø [mm]	AW	140		165		210		140	
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	16							
End-stop height 2 [mm]	KA	70							
Weight [kg]		1,26							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		On request							

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel short version size 4. Technical data



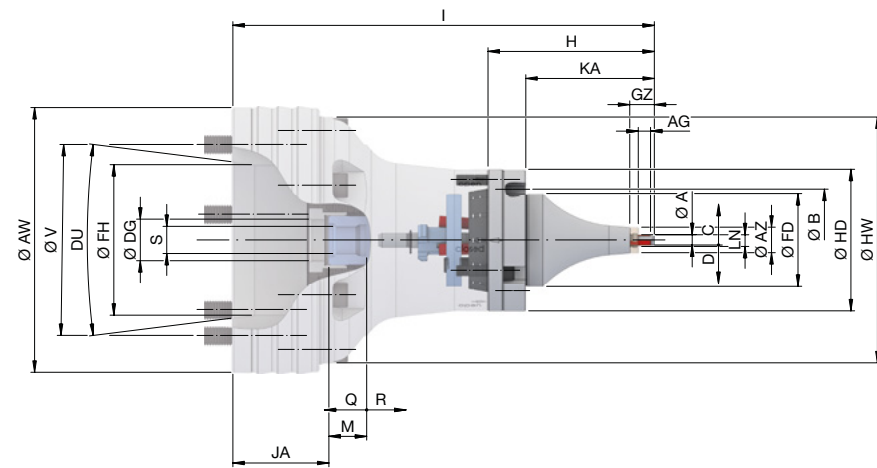
Size	4								
Clamping range [mm]	A	8,2 – 9,29							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		40							
Max. axial drawtube force [pull / push] [kN]		7,5							
Max. clamping length [mm]	AG	10							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Reception workpiece end-stop 2	LN	M11 x 1							
End-stop outer Ø [mm]	AZ	15,5							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	92							
Total length [mm]	I	227		231		227			
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8		54,8		50,8			
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61		79,6		103,2		100	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 171,4 [6 x M16]
Outer Ø [mm]	AW	140		165		210		140	
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	18							
End-stop height 2 [mm]	KA	72							
Weight [kg]		1,27							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		On request							

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel short version size 5. Technical data



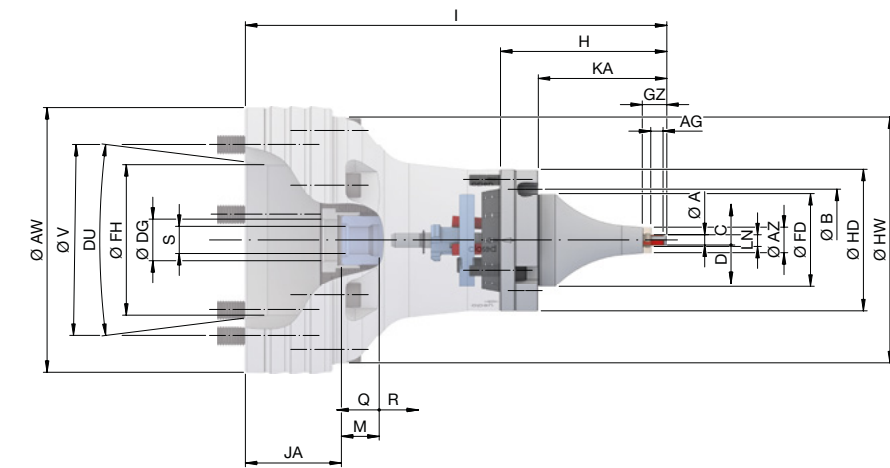
Size	5								
Clamping range [mm]	A	9,3 – 10,49							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		40							
Max. axial drawtube force [pull / push] [kN]		7,5							
Max. clamping length [mm]	AG	12							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Reception workpiece end-stop 2	LN	M12 x 1							
End-stop outer Ø [mm]	AZ	18							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	94							
Total length [mm]	I	229			233			229	
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8			54,8			50,8	
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	20							
End-stop height 2 [mm]	KA	74							
Weight [kg]		1,3							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		On request							

Scope of delivery

- Mandrel without flange / without force compensating module

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Micro mandrel short version size 6. Technical data



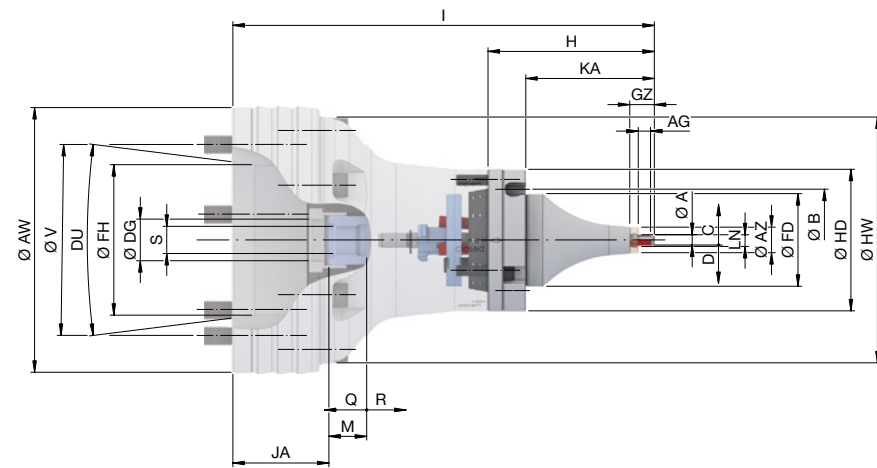
Size	6								
Clamping range [mm]	A	10,5 – 11,89							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		40							
Max. axial drawtube force [pull / push] [kN]		7,5							
Max. clamping length [mm]	AG	14							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Reception workpiece end-stop 2	LN	M14 x 1							
End-stop outer Ø [mm]	AZ	19,5							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	96							
Total length [mm]	I	231			235			231	
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8			54,8			50,8	
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	22							
End-stop height 2 [mm]	KA	76							
Weight [kg]		1,31							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		On request							

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel short version size 7. Technical data



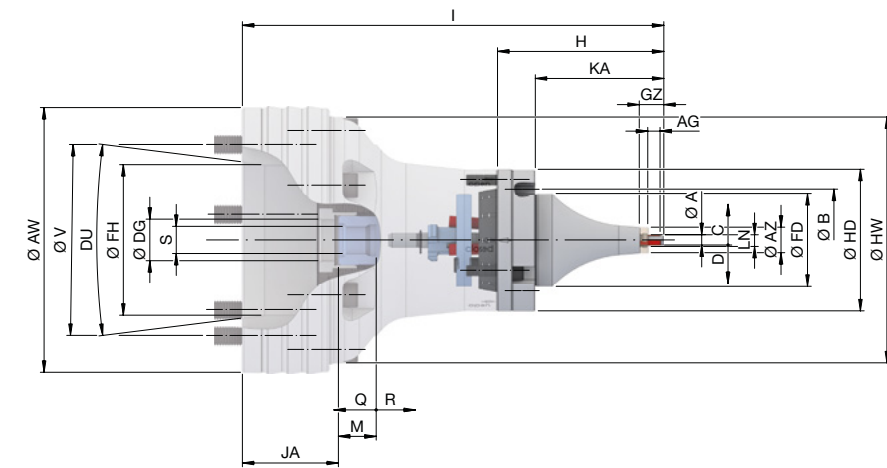
Size	7														
Clamping range [mm]	A	11,9 – 13,59													
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220						
Run-out ≤ [mm]		0,015													
Repeatability ≤ [mm]		0,003													
Max. radial clamping force [kN]		40													
Max. axial drawtube force [pull / push] [kN]		7,5													
Max. clamping length [mm]	AG	16													
Reserve stroke in Ø [mm]	D	0,25													
Release stroke in Ø [mm]	C	0,2													
RPM n max. [1/min.]		6000													
Reserve stroke axial [mm]	Q	2													
Release stroke axial [mm]	R	2													
Reception workpiece end-stop	FD	Ø 49 f8													
Reception workpiece end-stop 2	LN	M16 x 1													
End-stop outer Ø [mm]	AZ	20													
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]													
Length [mm]	H	98													
Total length [mm]	I	233		237		233									
Connecting thread inside	S	M16 x 1,5													
Distance [mm]	JA	50,8		54,8		50,8									
Depth of thread [mm]	M	20													
Max. drawtube Ø [mm]	DG	22													
Bore-Ø	FH	61		79,6		103,2		100		77		80		103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]		LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]						
Outer Ø [mm]	AW	140		165		210		140		150		180		230	
Outer Ø 2 [mm]	HD	75													
Outer Ø 3 [mm]	HW	131													
End-stop height [mm]	GZ	24													
End-stop height 2 [mm]	KA	78													
Weight [kg]		1,32													
In stock		✓	✓	✓	✓	✓	✓	✓	✓	✓					
Material no.		On request													

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel short version size 8. Technical data



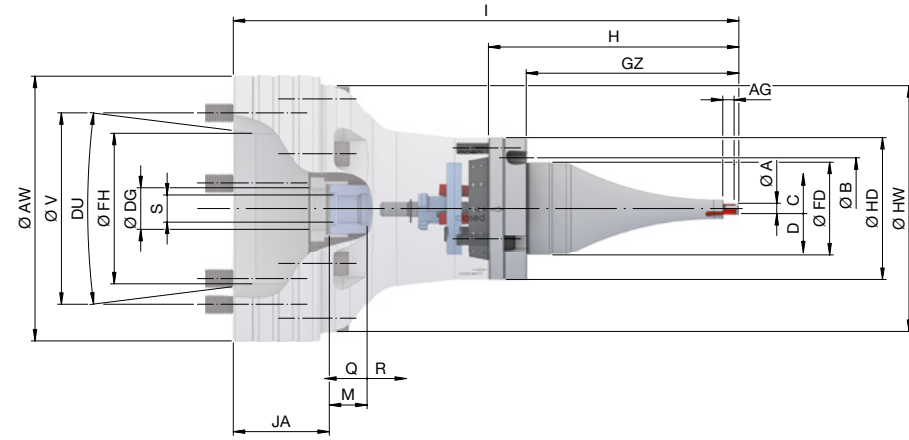
Size	8														
Clamping range [mm]	A	13,6 – 15,59													
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220						
Run-out ≤ [mm]		0,015													
Repeatability ≤ [mm]		0,003													
Max. radial clamping force [kN]		40													
Max. axial drawtube force [pull / push] [kN]		7,5													
Max. clamping length [mm]	AG	18													
Reserve stroke in Ø [mm]	D	0,25													
Release stroke in Ø [mm]	C	0,2													
RPM n max. [1/min.]		6000													
Reserve stroke axial [mm]	Q	2													
Release stroke axial [mm]	R	2													
Reception workpiece end-stop	FD	Ø 49 f8													
Reception workpiece end-stop 2	LN	M18 x 1													
End-stop outer Ø [mm]	AZ	22													
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]													
Length [mm]	H	100													
Total length [mm]	I	235		239		235									
Connecting thread inside	S	M16 x 1,5													
Distance [mm]	JA	50,8		54,8		50,8									
Depth of thread [mm]	M	20													
Max. drawtube Ø [mm]	DG	22													
Bore-Ø	FH	61		79,6		103,2		100		77		80		103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]		LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]						
Outer Ø [mm]	AW	140		165		210		140		150		180		230	
Outer Ø 2 [mm]	HD	75													
Outer Ø 3 [mm]	HW	131													
End-stop height [mm]	GZ	26													
End-stop height 2 [mm]	KA	80													
Weight [kg]		1,35													
In stock		✓	✓	✓	✓	✓	✓	✓	✓	✓					
Material no.		On request													

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel long version size 1. Technical data



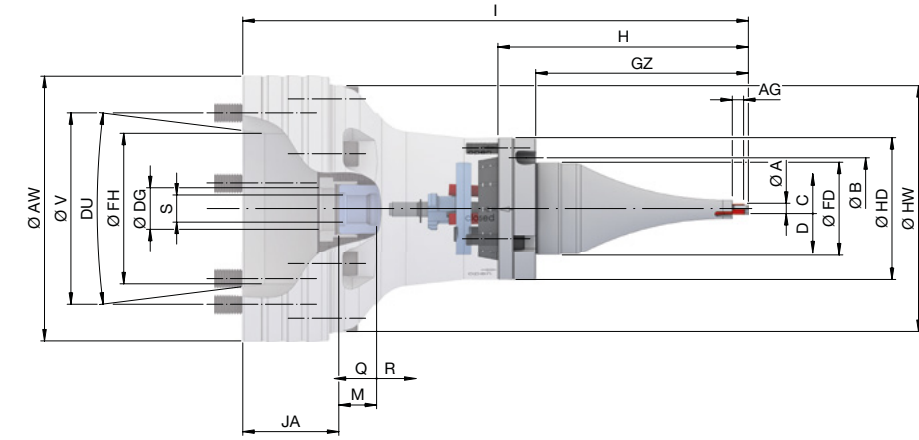
Size	1									
Clamping range [mm]	A	5,6 – 6,29								
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220	
Run-out ≤ [mm]		0,015								
Repeatability ≤ [mm]		0,003								
Max. radial clamping force [kN]		29								
Max. axial drawtube force [pull / push] [kN]		5								
Max. clamping length [mm]	AG	6								
Reserve stroke in Ø [mm]	D	0,25								
Release stroke in Ø [mm]	C	0,2								
RPM n max. [1/min.]		6000								
Reserve stroke axial [mm]	Q	2								
Release stroke axial [mm]	R	2								
Reception workpiece end-stop	FD	Ø 49 f7								
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]								
Length [mm]	H	132,5								
Total length [mm]	I	267,5		271,5				267,5		
Connecting thread inside	S	M16 x 1,5								
Distance [mm]	JA	50,8		54,8				50,8		
Depth of thread [mm]	M	20								
Max. drawtube Ø [mm]	DG	22								
Bore-Ø	FH	61	79,6	103,2	100	77	80	103		
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]		
Outer Ø [mm]	AW	140		165	210	140	150	180	230	
Outer Ø 2 [mm]	HD	75								
Outer Ø 3 [mm]	HW	131								
End-stop height [mm]	GZ	112,5								
Weight [kg]		1,55								
In stock		✓	✓	✓	✓	✓	✓	✓	✓	
Material no.					On request					

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel long version size 2. Technical data



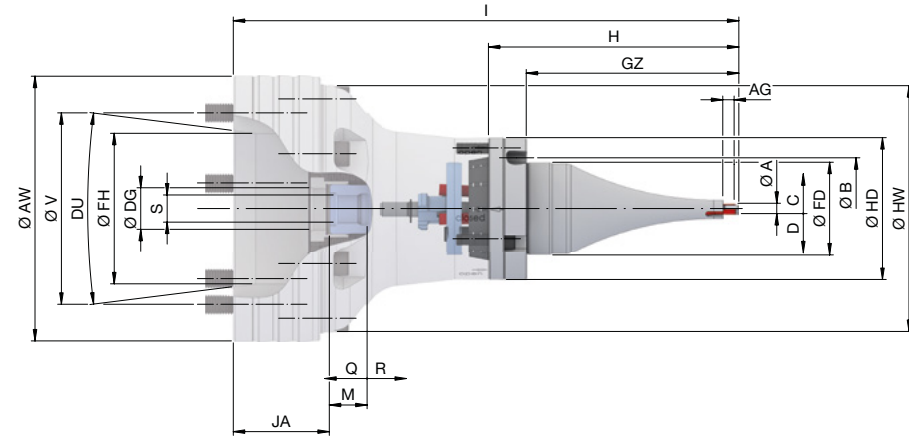
Size	2									
Clamping range [mm]	A	6,3 – 7,19								
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220	
Run-out ≤ [mm]		0,015								
Repeatability ≤ [mm]		0,003								
Max. radial clamping force [kN]		29								
Max. axial drawtube force [pull / push] [kN]		5								
Max. clamping length [mm]	AG	7								
Reserve stroke in Ø [mm]	D	0,25								
Release stroke in Ø [mm]	C	0,2								
RPM n max. [1/min.]		6000								
Reserve stroke axial [mm]	Q	2								
Release stroke axial [mm]	R	2								
Reception workpiece end-stop	FD	Ø 49 f7								
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]								
Length [mm]	H	133,5								
Total length [mm]	I	268,5		272,5				268,5		
Connecting thread inside	S	M16 x 1,5								
Distance [mm]	JA	50,8		54,8				50,8		
Depth of thread [mm]	M	20								
Max. drawtube Ø [mm]	DG	22								
Bore-Ø	FH	61	79,6	103,2	100	77	80	103		
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]		
Outer Ø [mm]	AW	140		165	210	140	150	180	230	
Outer Ø 2 [mm]	HD	75								
Outer Ø 3 [mm]	HW	131								
End-stop height [mm]	GZ	113,5								
Weight [kg]		1,57								
In stock		✓	✓	✓	✓	✓	✓	✓	✓	
Material no.					On request					

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel long version size 3. Technical data



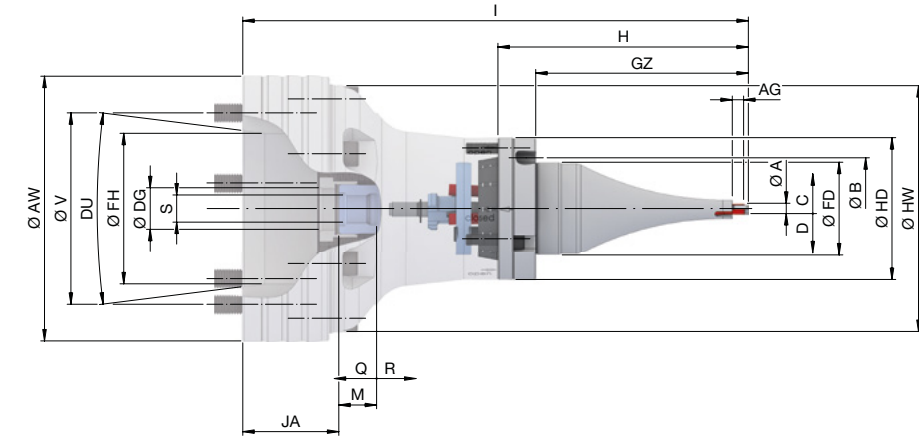
Size	3								
Clamping range [mm]	A	7,2 – 8,19							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		29							
Max. axial drawtube force [pull / push] [kN]		5							
Max. clamping length [mm]	AG	8							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	134,5							
Total length [mm]	I	269,5		273,5			269,5		
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8			54,8		50,8		
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]		LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	114,5							
Weight [kg]		1,6							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.					On request				

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel long version size 4. Technical data



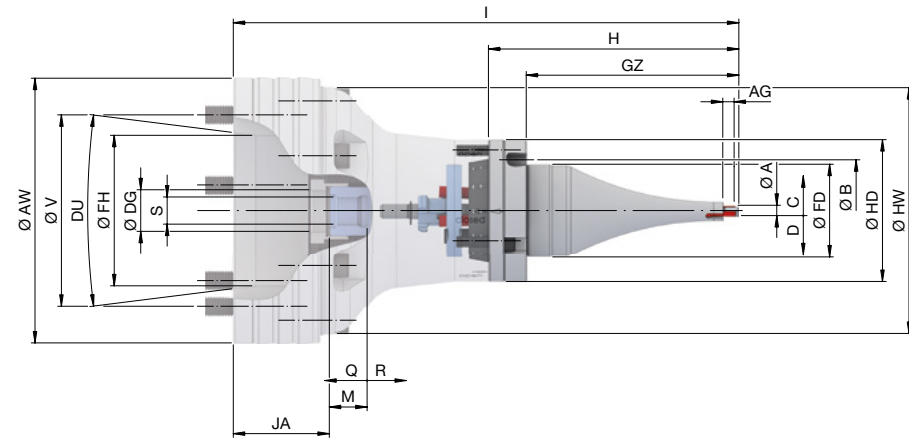
Size	4								
Clamping range [mm]	A	8,2 – 9,29							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		29							
Max. axial drawtube force [pull / push] [kN]		5							
Max. clamping length [mm]	AG	10							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	116,5							
Total length [mm]	I	271,5		275,5			271,5		
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8			54,8		50,8		
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]		LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	116,5							
Weight [kg]		1,62							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.					On request				

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel long version size 5. Technical data



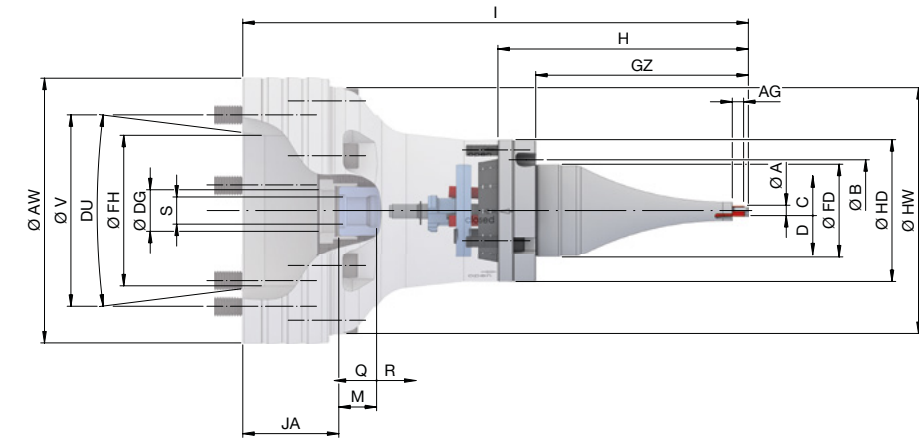
Size	5								
Clamping range [mm]	A	9,3 – 10,49							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		29							
Max. axial drawtube force [pull / push] [kN]		5							
Max. clamping length [mm]	AG	12							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	138,5							
Total length [mm]	I	273,5		277,5				273,5	
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8			54,8			50,8	
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]		LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	118,5							
Weight [kg]		1,64							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		On request							

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS Micro mandrel

Micro mandrel long version size 6. Technical data



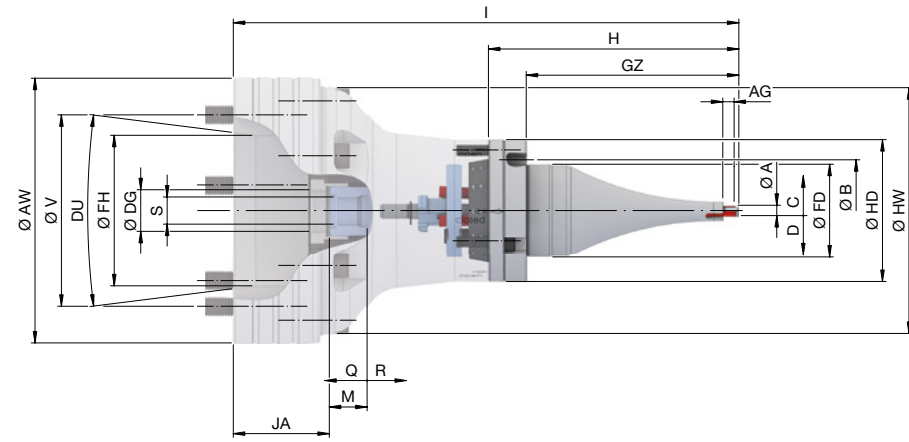
Size	6								
Clamping range [mm]	A	10,5 – 11,89							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		43							
Max. axial drawtube force [pull / push] [kN]		7,5							
Max. clamping length [mm]	AG	14							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	140,5							
Total length [mm]	I	275,5		279,5				275,5	
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8			54,8			50,8	
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]		LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	120,5							
Weight [kg]		1,69							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		On request							

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS
Micro mandrel

Micro mandrel long version size 7. Technical data



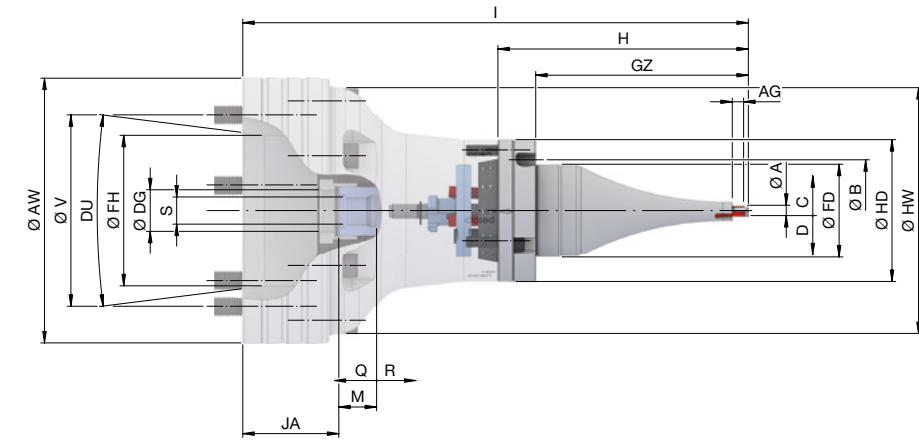
Size	7								
Clamping range [mm]	A	11,9 – 13,59							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		43							
Max. axial drawtube force [pull / push] [kN]		7,5							
Max. clamping length [mm]	AG	16							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	142,5							
Total length [mm]	I	277,5		281,5				277,5	
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8		54,8				50,8	
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	122,5							
Weight [kg]		1,74							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.					On request				

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS
Micro mandrel

Micro mandrel long version size 8. Technical data



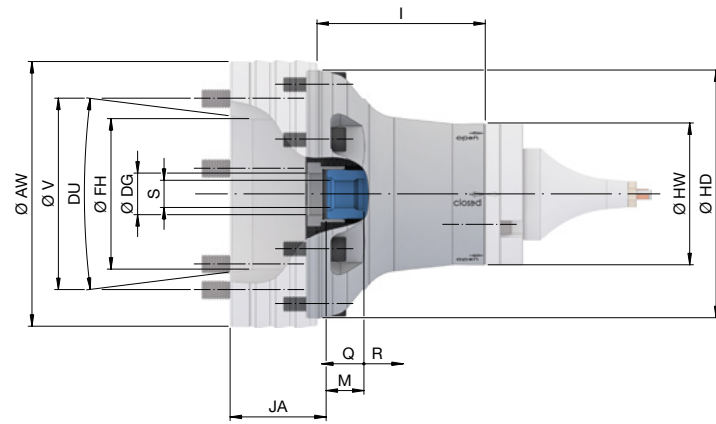
Size	8								
Clamping range [mm]	A	13,6 – 15,59							
Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Run-out ≤ [mm]		0,015							
Repeatability ≤ [mm]		0,003							
Max. radial clamping force [kN]		43							
Max. axial drawtube force [pull / push] [kN]		7,5							
Max. clamping length [mm]	AG	18							
Reserve stroke in Ø [mm]	D	0,25							
Release stroke in Ø [mm]	C	0,2							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2							
Reception workpiece end-stop	FD	Ø 49 f8							
Bolt hole circle end-stop	B	LK Ø 62 [3 x M5]							
Length [mm]	H	144,5							
Total length [mm]	I	279,5		283,5				279,5	
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8		54,8				50,8	
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	75							
Outer Ø 3 [mm]	HW	131							
End-stop height [mm]	GZ	124,5							
Weight [kg]		1,8							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.					On request				

Scope of delivery

- Mandrel without flange / without force compensating module

MANDRELS
Micro mandrel

Force compensating module. Technical data



Spindle nose	DU	A2-4	A2-5	A2-6	A2-8	AP120	AP140	AP170	AP220
Max. axial drawtube force [pull / push] [kN]		16							
RPM n max. [1/min.]		6000							
Reserve stroke axial [mm]	Q	2							
Release stroke axial [mm]	R	2,2							
Total length [mm]	I	95							
Connecting thread inside	S	M16 x 1,5							
Distance [mm]	JA	50,8		54,8		50,8			
Depth of thread [mm]	M	20							
Max. drawtube Ø [mm]	DG	22							
Bore-Ø	FH	61	79,6	103,2	100	77	80	103	
Bolt hole circle	V	LK Ø 82,6 [3 x M10]	LK Ø 104,8 [6 x M10]	LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]	LK Ø 104,8 [6 x M10]		LK Ø 133,4 [6 x M12]	LK Ø 171,4 [6 x M16]
Outer Ø [mm]	AW	140		165	210	140	150	180	230
Outer Ø 2 [mm]	HD	131							
Outer Ø 3 [mm]	HW	75							
Weight [kg]		4,31							
In stock		✓	✓	✓	✓	✓	✓	✓	✓
Material no.		10021466							

Scope of delivery

- Force compensating module without flange / micro mandrel

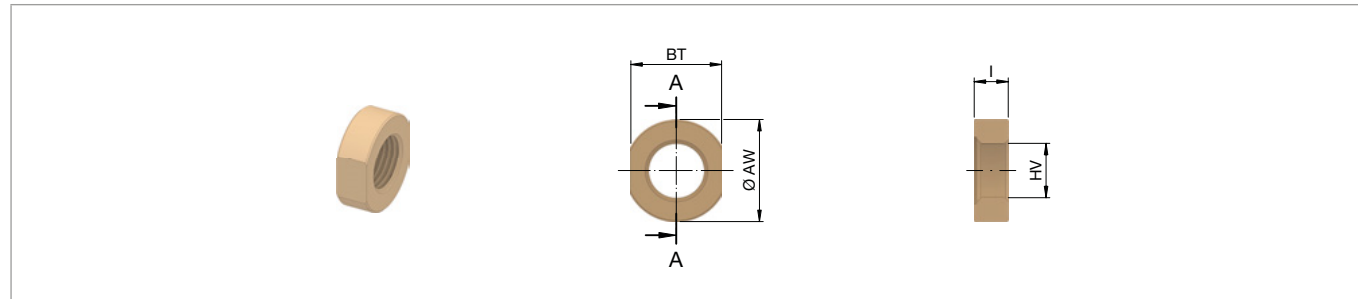
MANDRELS
Micro mandrel

Order overview. Flanges for micro mandrels

Size	Figure	Spindle nose	Flange height [mm]	Interface	Outer Ø [mm]	Bolt hole circle V	In stock	Material no.	
MANDO XXS - 4 / MAXXOS A - F / Micro mandrel 1 - 8		A2-4	40	Ø 131	140	LK Ø 82,6 [3 x M10]	✓	10014772	
		A2-5	77			LK Ø 104,8 [6 x M10]	✓	10014771	
			85				✓	10014781	
							✓	10014782	
		A2-6	40			165	LK Ø 133,4 [6 x M12]	✓	10014770
			60					✓	10014783
			80					✓	10014784
		A2-8	44			210	LK Ø 171,4 [6 x M16]	✓	10014773
		AP120	40		140	LK Ø 104,8 [6 x M10]	✓	10014774	
		AP140					150	✓	10014775
		AP170					180	✓	10014776
		AP220					230	✓	10014777

Machine spindle standard DIN ISO 702-1.

Micro mandrel. End-stops



Size	Suitable for	Outer Ø [mm] AW	Wrench size [SW] BT	Total length [mm] l	Thread size HV	In stock	Material no.
1	Micro mandrel short	13,5	12	4,5	M8 x 0,75	✓	10021525
2	Micro mandrel short	13,5	12	5,5	M9 x 1	✓	10021530
3	Micro mandrel short	14,5	13	5,5	M10 x 1	✓	10021540
4	Micro mandrel short	15,5	14	5,5	M11 x 1	✓	10021541
5	Micro mandrel short	18	16	5,5	M12 x 1	✓	10021542
6	Micro mandrel short	19,5	18	5,5	M14 x 1	✓	10021543
7	Micro mandrel short	20	18	5,5	M16 x 1	✓	10021544
8	Micro mandrel short	22	20	5,5	M18 x 1	✓	10021545



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