



ROTA NCE

**Energy-efficient lightweight
chuck for maximum process
dynamics**

Robust lightweight chuck with up to 40% reduced moment of inertia at highest rigidity

Field of application

The ROTA NCE unifies lightweight design, maximum load capacity and an extraordinary form language all in one. Ideal preconditions for high process dynamics. Particularly in large-scale production, it provides significant savings and is also ideally suited for the energy management certification DIN EN ISO 50001.



Advantages – Your benefits

- + Energy efficient thanks to extremely low moment of inertia**
Shorter cycle times and reduced energy costs
- + Connection dimensions 100% compatible with power lathe chucks of the Kitagawa BB200 series (up to size 260)**
Exchange of the existing Kitagawa chucks can be done within short time
- + Precision wedge-hook power lathe chuck for highest quality requirements**
Allows excellent machining processes
- + High efficiency of the wedge hook system**
Process-reliable clamping due to high clamping forces
- + Optimized lubrication system**
Consistently high clamping forces are ensured
- + Modular center sleeve system**
Optimum adjustment to new clamping tasks due to exchangeable center sleeves
- + Base jaws with fine serration 1.5 mm x 60° and 1/16" x 90° as standard**
High flexibility in the range of top jaws
- + All functional parts are ground and hardened**
Ensures a long life span

Technical data

Description	Max. RPM [min ⁻¹]	Max. clamping force [kN]	Max. actuating force [kN]	Stroke/jaw [mm]	Through-hole [mm]	Piston stroke [mm]	Moment of inertia [kgm ²]
ROTA NCE 130-38	7500	45	19	3.2	38	14	0.009
ROTA NCE 165-53	6000	65	26	3.3	53	14	0.032
ROTA NCE 210-66	5000	100	38	4.2	66	18	0.08
ROTA NCE 260-81	4500	130	45	4.9	81	21	0.195
ROTA NCE 315-106	3500	155	58	5.8	106	25	0.44

Function of ROTA NCE

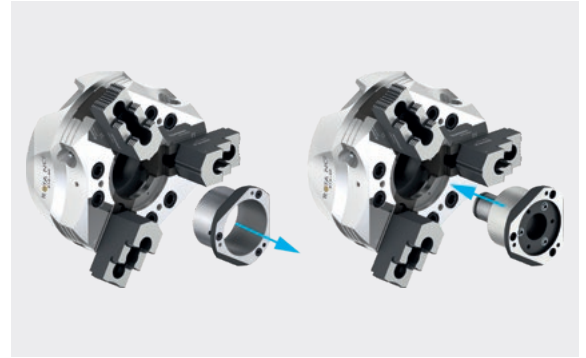
The axially movable piston transfers the force to the base jaw and generates a radial jaw movement synchronized with the rotational axis.



- 1 Wedge hook drive**
Offers constantly high clamping forces in operation
- 2 Hardened and extremely rigid base body**
Therefore a longer life span at highest precision. Even with maximum clamping force
- 3 Large through-hole**
For machining all conventional bar diameters
- 4 Optimized lubrication system**
For maximum efficiency
- 5 Mounting threads**
For workpiece stops
- 6 Base jaw interface**
Inch, metric or with tongue and groove available
- 7 Jaw stroke display**
Control of the jaw stroke
- 8 Blank draw nut**
For machining the required mounting thread for the draw tube or draw bar
- 9 Weight-optimized design**
For great economy in daily use

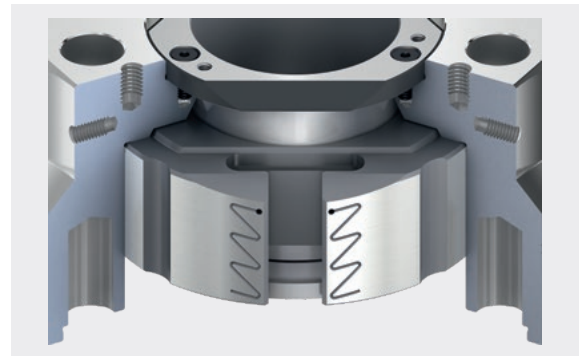
Changing the center sleeve

The modular center sleeves can be changed quickly and easily while the chuck remains mounted. When the three screws are undone, all the protection sleeves can be pulled off from the front and replaced.



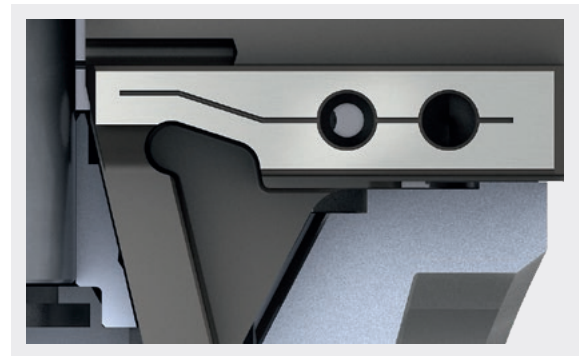
Long and precise piston guidance

For high clamping repeatability and long service life. All functional components used for force transmission are hardened and ground.



Base jaw safety feature

The small nose at the base jaw remains on the chuck body. This prevents the ejection of the jaws in case of a crash.



Jaw stroke display

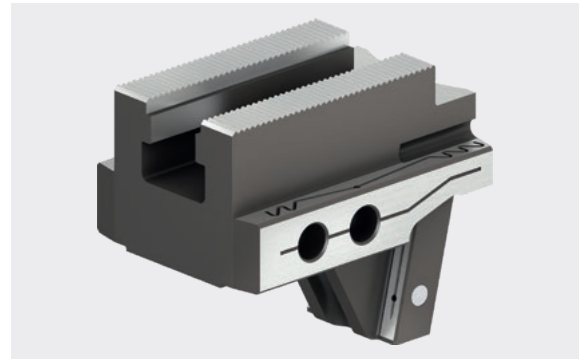
The jaw stroke display is an additional safety feature, which ensures safe workpiece clamping and simplifies the use of the chuck in daily operation.

1 Jaw stroke display

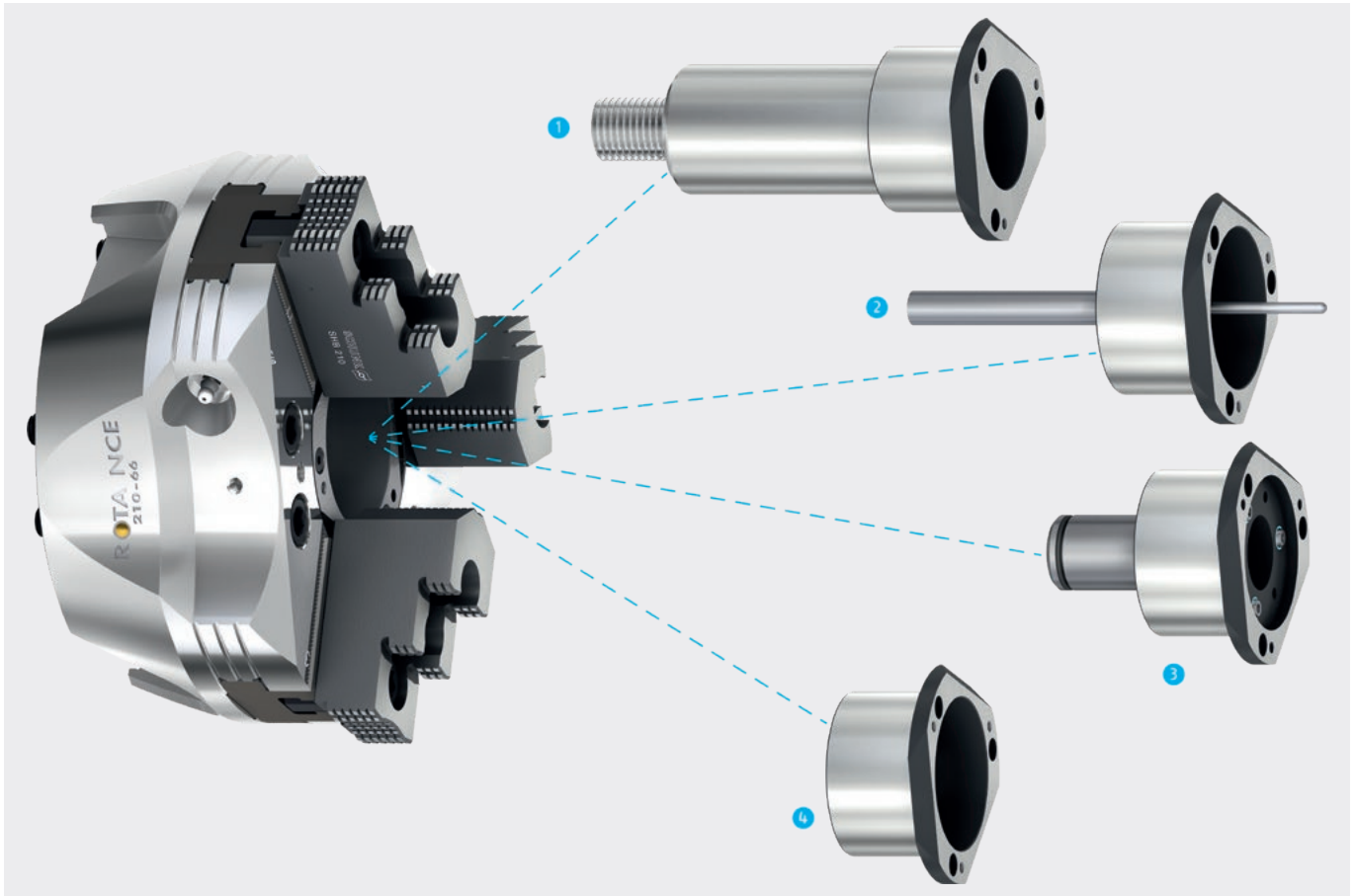


Absolute flexibility of the base jaw

Select between three standard jaw interfaces 1/16" x 90°, 1.5 mm x 60°, or tongue and groove with the advantage of being able to continue using your existing top jaws on the new SCHUNK chuck.



Modular center sleeve system



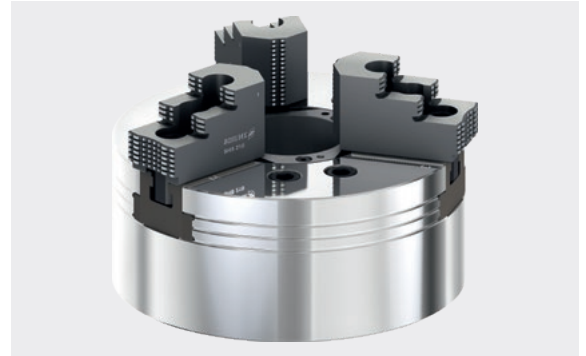
The modular center sleeve system increases flexibility for the most various applications in everyday life.

- 1 Adjustable stop in the center sleeve**
The adjustable stop ensures that all workpieces are stopped with high repeat accuracy in the same selectable position. This makes handling quick and easy.
- 2 Part ejector in the center sleeve**
An optimum addition for automatic loading. The part ejector disposes of a gas spring, which will eject your workpiece safely out of the chuck.
- 3 Coolant nozzles in the center sleeve**
Ideal as an additional component if your machine is equipped with a central coolant supply. For I.D. machining, coolant will be fed directly to the tool.
- 4 Closed center sleeve**
The closed center sleeve prevents penetration of chips and coolant into the through-hole.

Weight-optimized power lathe chuck ROTA NCE

Initial situation

The starting point for today's ROTA NCE was a traditional power lathe chuck with through-hole. This chuck represented the constructive volume for the finite element (FE) model, which was modified by optimization until the desired volume and weight reductions were achieved.



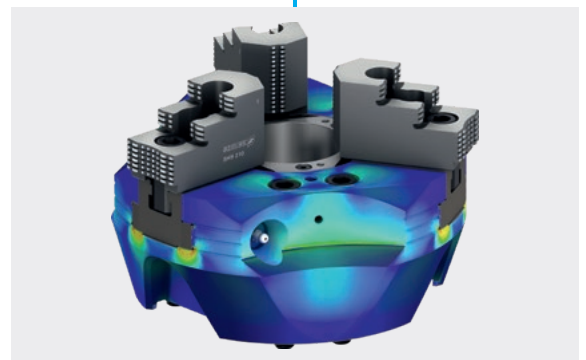
FE topology optimization

In the first step, FE topology optimization was used to calculate the lightest chuck design from the force flow, in which maximum stiffness is achieved.



FE parameter optimization

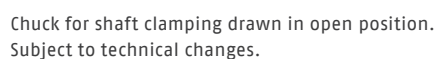
In the second step, FE parameter optimization was used to optimize the design of the highly loaded notch geometries in such a way that minimum notch stresses and maximum stiffness values could be achieved.



Result

The optimization process resulted in the current ROTA NCE, in which a computer-based adjustment of the chuck geometry to the prevailing force flow reduced the mass and the mass moment of inertia by up to 40% respectively – while maintaining the rigidity of the chuck.





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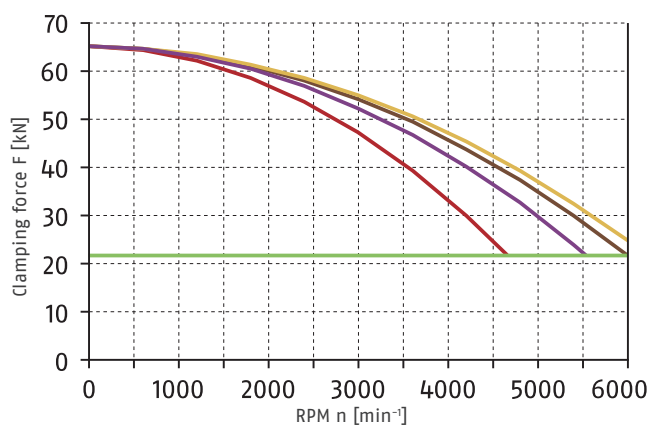
Technical data

Spindle type	Spindle size	ID	Serration	Max. RPM [min ⁻¹]	Max. clamping force [kN]	Max. actuating force [kN]	Stroke/jaw [mm]	Piston stroke (H) [mm]	Moment of inertia [kgm ²]	Weight [kg]
ISO 702-4	Nr. 5 (Z140)	1374448	Tongue and groove	6000	65	26	3.3	14	0.032	9
ISO 702-1	Nr. 5	1374449	Tongue and groove	6000	65	26	3.3	14	0.035	10.1
ISO 702-4	Nr. 5 (Z140)	0808010	1/16" x 90°	6000	65	26	3.3	14	0.032	8.6
ISO 702-1	Nr. 5	0808011	1/16" x 90°	6000	65	26	3.3	14	0.035	9.7
ISO 702-4	Nr. 5 (Z140)	0808012	1.5 mm x 60°	6000	65	26	3.3	14	0.032	8.6
ISO 702-1	Nr. 5	0808013	1.5 mm x 60°	6000	65	26	3.3	14	0.035	9.7

Scope of delivery

Chuck, T-nuts with screws, chuck mounting screws, mounting wrench for turnable threaded ring, center sleeve, and operating manual

Clamping force-RPM-diagram



Required minimum clamping force F_{spmin} 33%

SHB 165
1.3 kg



SWB 165
2.5 kg



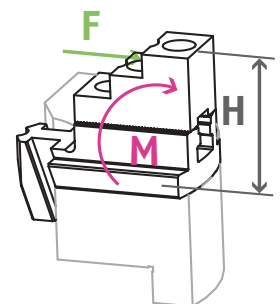
SHB-J 60
0.8 kg



KM-WB 66
1.4 kg



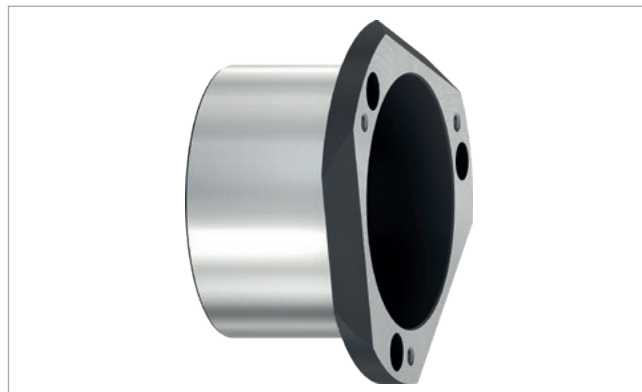
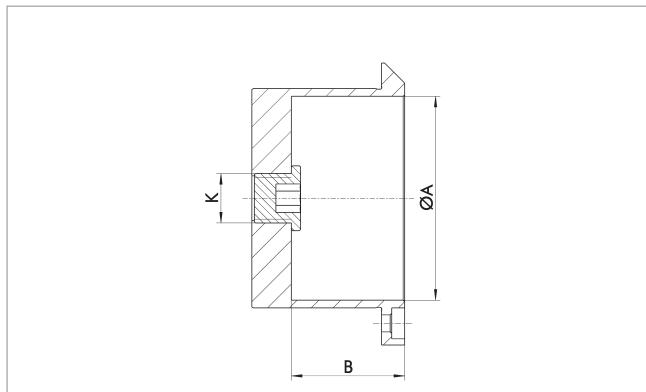
Load of base jaw guidance



$$M_{max} = 1419 \text{ Nm}$$

Center sleeves

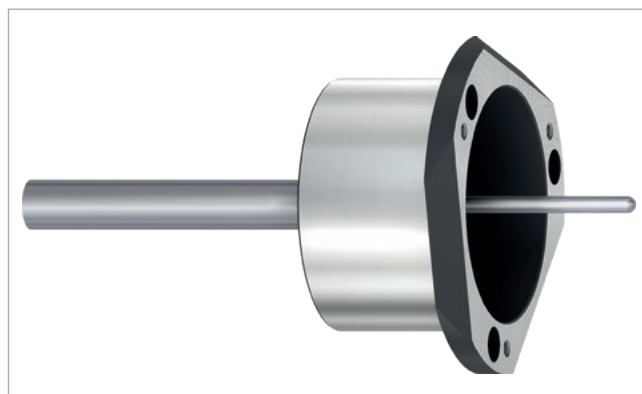
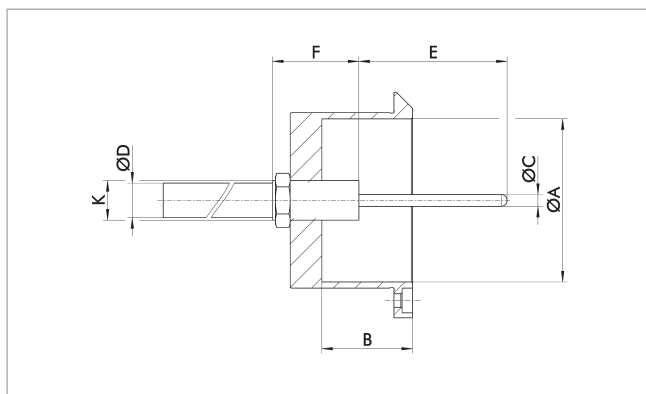
Center sleeve closed



Technical data

Description	ID	Suitable for	ØA [mm]	B [mm]	K	Weight [kg]
SBS-G-E 165	1300320	ROTA NCE 165-53	53	29.9	M16x1.5	0.4

Protection sleeve with ejector

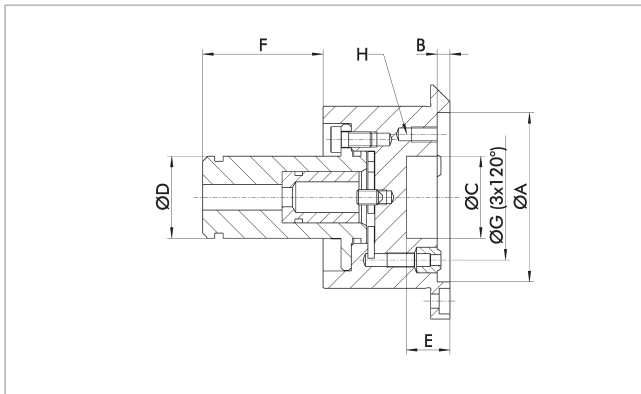


Technical data

Description	Suitable for	ØA [mm]	B [mm]	ØC [mm]	ØD [mm]	E [mm]	F [mm]	K
SBS-A-E 165	ROTA NCE 165-53	53	29.9	4.8	14	10 - 100	35	M16x1.5

- Center sleeves with ejector are available on request
- The ejector stroke is selectable in increments of 10 from 10 - 100 mm
- The ejection force is selectable with 40, 100, 150, 200, 250, or 300 N

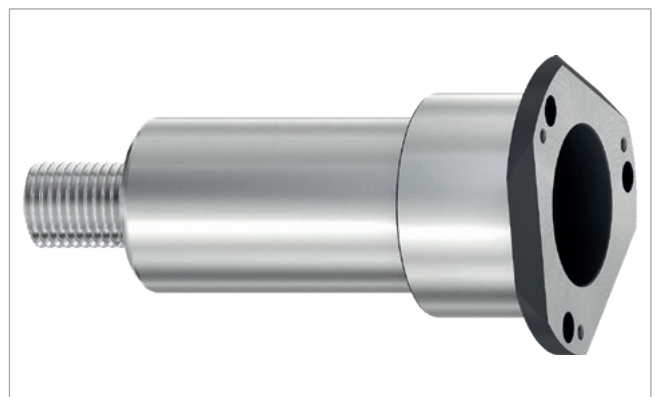
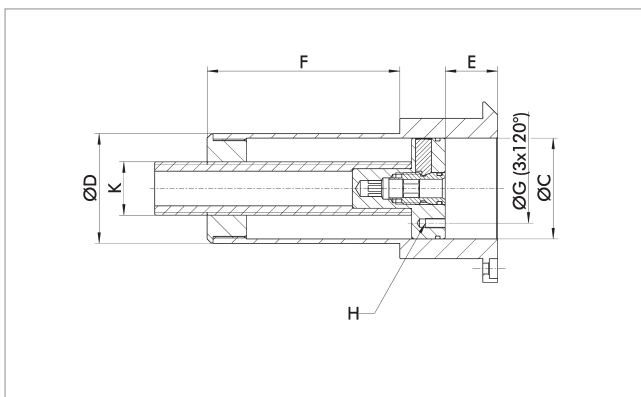
Protection sleeve with spray nozzles



Technical data

Description	ID	Suitable for	ØA [mm]	B [mm]	ØC [mm]	ØD [mm]	F [mm]	ØG [mm]	H	Weight [kg]
SBS-S-E 165	1300316	ROTA NCE 165-53	53	5	25	32	34	39	M6 x 10	0.9

Center sleeve with adjustable stop



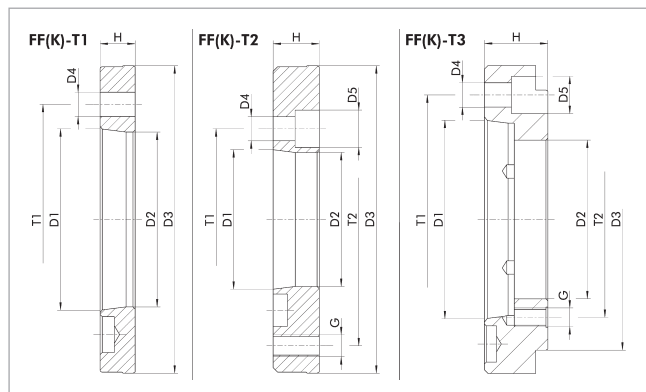
Technical data

Description	ID	Suitable for	ØC [mm]	ØD [mm]	E [mm]	F [mm]	ØG [mm]	H	K	Weight [kg]
SBS-T-E 165	1300323	ROTA NCE 165-53	42	46.5	0 - 110	104.5	30	M4 x 8	M27	1.4

- Important: Check the spindle/draw tube through-hole
- The spindle through-hole must be at least $\varnothing D + 0.5 \text{ mm}$

Adapter plates

Z-mount on short taper ISO 702-1



Technical data

Description	Adapter plate type	ID	Suitable for	D1	D2	D3	D4	D5	G	H	T1	T2
				[mm]			[mm]	[mm]		[mm]	[mm]	[mm]
FFK-T1 Z140-A5	FF-T1	0805120	ROTA NCE 165-53	Nr. 5	79.6	Z140	12 (6 x 60°) 12 (3 x 120°)			15	104.8	
FFK-T3 Z140-A6	FF-T3	0805115	ROTA NCE 165-53	Nr. 6	80	Z140	13 (6 x 60°)	20	M10 (6 x 60°)	34	133.4	104.8

Direct adapter plates

Direct adapter plates are used if the spindle mounting bolt circle has the same size as the lathe chuck mounting bolt circle. The adapter plate has to be mounted on to the spindle together with the lathe chuck. The adapter plate is preassembled on the lathe chuck.

Reduction adapter plates FF-T2

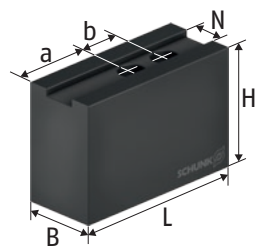
Reduction adapter plates are used if the mounting bolt circle of the spindle is smaller than the lathe chuck mounting bolt circle. The adapter plate is first mounted on the spindle and then the lathe chuck is mounted on the adapter plate.

Expansion adapter plates FF-T3

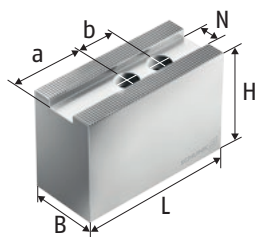
Expansion adapter plates are used if the mounting bolt circle of the spindle is larger than the lathe chuck mounting bolt circle. The adapter plate is first mounted on the spindle and then the lathe chuck is mounted on the adapter plate.

Soft top jaws

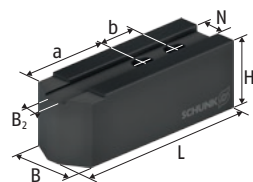
with fine serration 60°



KM-WB
Soft top jaws



KM-WBAL
Soft top jaws



KM-WBL
Soft top jaws

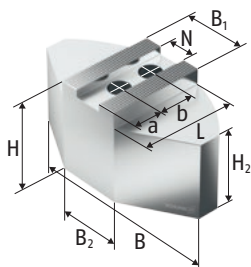
Technical data

Chuck type	Description	ID	N [mm]	B [mm]	H [mm]	L [mm]	a [mm]	b [mm]	Screws	m/SET [kg]
ROTA NCE 165-53	KM-WBL 60	0132600	12	32	32	82	47	20	M10	1.5
ROTA NCE 165-53	KM-WBL 62	0132606	12	35	60	82	47	20	M10	3.1
ROTA NCE 165-53	KM-WB 61	0130128	12	35	60	72	37	20	M10	2.9
ROTA NCE 165-53	KM-WB 66	0132138	12	32	32	72	37	20	M10	1.4
ROTA NCE 165-53	KM-WBAL 70	0132521	12	35	50	72	37	20	M10	0.9

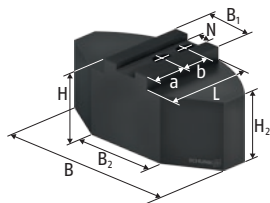
Our complete range of chuck jaws can be found online in our Chuck Jaw Quickfinder and on [schunk.com](https://www.schunk.com)

Hard stepped top jaws, Full grip jaws

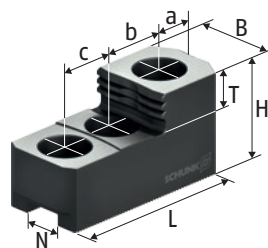
with fine serration 60°



KMWB-SA
Full grip jaws



KMWB-SM
Full grip jaws



SHB-J
Hard stepped top jaws

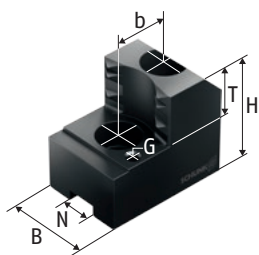
Technical data

Chuck type	Description	ID	N [mm]	B [mm]	B1 [mm]	H [mm]	H2 [mm]	L [mm]	T [mm]	a [mm]	b [mm]	c [mm]	Screws	m/SET [kg]
ROTA NCE 165-53	KMWB-SA 165	0132800	12	120	32	58	48	59.5		25	20		M10	2.2
ROTA NCE 165-53	KMWB-SM 165	0132700	12	120	32	50	40	60		24	20		M10	4.9
ROTA NCE 165-53	SHB-J 60	0133100	12	28		36		67	12	14	20	20	M10	0.8

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Claw jaws

with fine serration 60°



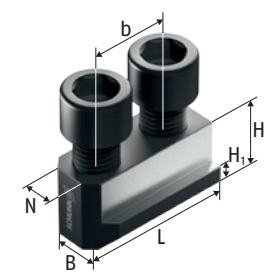
SZAJ
Claw jaws

Technical data

Chuck type	Clamping range ØD	Swing diameter SDmax	Description	ID	N	B	H	T	G	b	Screws	m/SET
	[mm]	[mm]			[mm]	[mm]	[mm]	[mm]		[mm]		[kg]
ROTA NCE 165-53	36 - 61	186	SZAJ 16-6	0176100	12	30	47	20	M6	20	M10	1.2
ROTA NCE 165-53	51 - 77	185	SZAJ 16-7	0176101	12	30	47	20	M6	20	M10	1.0
ROTA NCE 165-53	67 - 93	185	SZAJ 16-8	0176102	12	30	47	20	M6	20	M10	1.1
ROTA NCE 165-53	81 - 107	186	SZAJ 16-9	0176103	12	30	47	20	M6	20	M10	1.1
ROTA NCE 165-53	97 - 123	187	SZAJ 16-10	0176104	12	40	47	20	M6	20	M10	1.2

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T-nut
with fine serration 60°



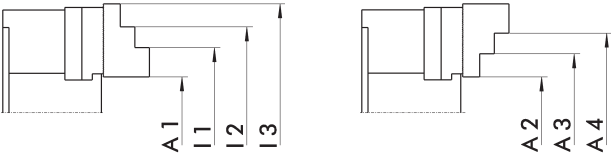
NJ
T-nut

Chuck type	Description	ID	H	H1	b	G	Cyl.-screw	Max. adm. tightening torque
			[mm]	[mm]	[mm]			[Nm]
ROTA NCE 165-53	NJ 62	0146133	18.5	7.5	20	M10	M10 x 25	50

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Hard stepped top jaws

with fine serration 60°



Jaw position I

Jaw position II

O.D. clamping

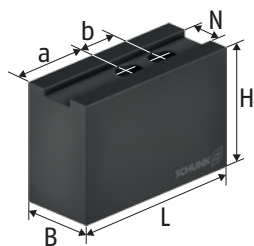
Chuck type	Description	ID	A1 [mm]	A4 [mm]
ROTA NCE 165-53	SHB-J 60	0133100	23 - 87	101 - 170

I.D. clamping

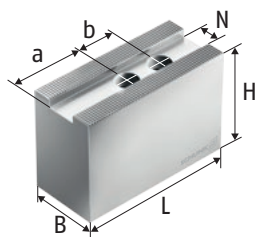
Chuck type	Description	ID	I1 [mm]
ROTA NCE 165-53	SHB-J 60	0133100	79 - 145

Soft top jaws

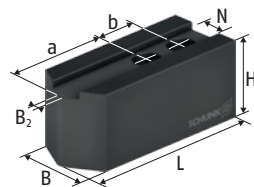
with fine serration 90°



SWB
Soft top jaws



SWB-AL
Soft top jaws



SWBL
Soft top jaws

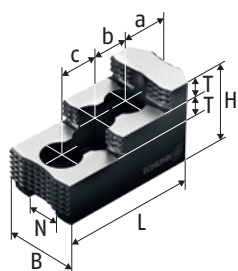
Technical data

Chuck type	Description	ID	N [mm]	B [mm]	H [mm]	L [mm]	a [mm]	b [mm]	Screws	m/SET [kg]
ROTA NCE 165-53	SWBL 165	0120152	14	35	40	80	45	20	M10	2.1
ROTA NCE 165-53	SWB 165	0120101	14	35	60	68	33	20	M10	2.5
ROTA NCE 165-53	SWB-FF 160	0120302	14	35	40	72	36	21	M12	1.8
ROTA NCE 165-53	SWB-AL 165	0168105	14	35	60	80	45	20	M10	1.2

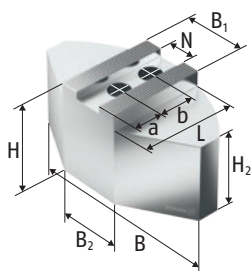
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Hard stepped top jaws, Full grip jaws

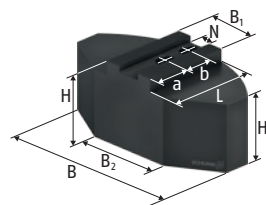
with fine serration 90°



SHB
Hard stepped top jaws



SWB-SA
Full grip jaws



SWB-SM
Full grip jaws

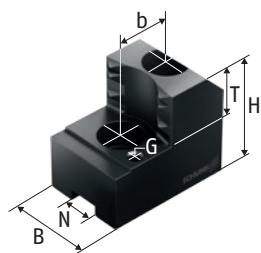
Technical data

Chuck type	Description	ID	N [mm]	B [mm]	B1 [mm]	H [mm]	H2 [mm]	L [mm]	T [mm]	a [mm]	b [mm]	c [mm]	Screws	m/SET [kg]
ROTA NCE 165-53	SWB-SA 165	0170099	14	120	40	58	48	59.5		25	20		M10	2.2
ROTA NCE 165-53	SWB-SM 165	0169099	14	120	40	60	50	59.5		24.5	20		M10	6.0
ROTA NCE 165-53	SHB 165	0121101	14	30		46		79.7	11	16.6	22	22	M10	1.3

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Claw jaws

with fine serration 90°



SZA
Claw jaws

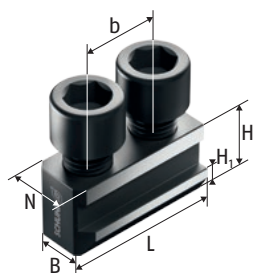
Technical data

Chuck type	Clamping range ØD	Swing diameter SDmax	Description	ID	N	B	H	T	G	b	Screws	m/SET
	[mm]	[mm]			[mm]	[mm]	[mm]	[mm]		[mm]		[kg]
ROTA NCE 165-53	36 - 59	182	SZA 17-1	0122260	14	30	47	20	M6	20	M10	1.2
ROTA NCE 165-53	58 - 81	183	SZA 17-2	0122261	14	30	47	20	M6	20	M10	1.0
ROTA NCE 165-53	85 - 108	184	SZA 17-3	0122262	14	30	47	20	M6	20	M10	1.0
ROTA NCE 165-53	111 - 134	192	SZA 17-4	0122263	14	35	47	20	M6	20	M10	1.2

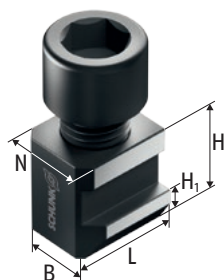
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T-nut

with fine serration 90°



NKA
T-nut



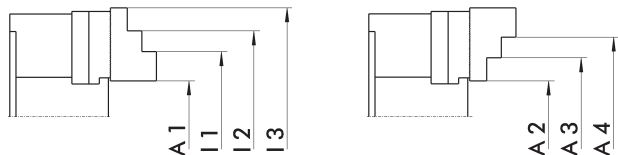
NKS
T-nut

Chuck type	Description	ID	H	H1	b	G	Cyl.-screw	Max. adm. tightening torque
			[mm]	[mm]	[mm]			[Nm]
ROTA NCE 165-53	NKA 1	0145103	18.5	6.5	20	M10	M10 x 25	50
ROTA NCE 165-53	NKS 1	0143104	18.5	6.5		M10	M10 x 25	50

Our complete range of chuck jaws can be found online in our Chuck Jaw Quickfinder and on schunk.com

Hard stepped top jaws

with fine serration 90°



Jaw position I

Jaw position II

O.D. clamping

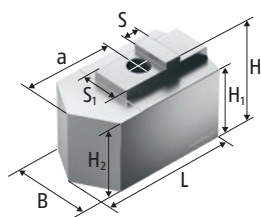
Chuck type	Description	ID	A1 [mm]	A2 [mm]	A3 [mm]	A4 [mm]
ROTA NCE 165-53	SHB 165	0121101	15 - 61	22 - 74	71 - 118	115 - 170

I.D. clamping

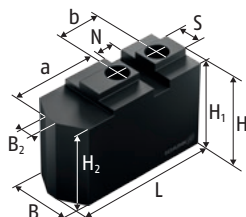
Chuck type	Description	ID	I1 [mm]	I2 [mm]	I3 [mm]
ROTA NCE 165-53	SHB 165	0121101	79 - 126	123 - 171	173 - 210

Soft top jaws

with tongue and groove



SRK-AL
Soft top jaws



SRK
Soft top jaws

Technical data

Chuck type	Description	ID	N [mm]	S [mm]	B [mm]	H [mm]	H1 [mm]	H2 [mm]	L [mm]	a [mm]	b [mm]	Screws	m/SET [kg]
ROTA NCE 165-53	SRK 160	0136105	10	16	40	60	55.5	54	76	35.5	25	M12	2.9
ROTA NCE 165-53	SRKL 160	1496965	10	16	40	60	55.5	54	88	35.5	25	M12	3.5
ROTA NCE 165-53	SRKL-AL 160	1496969	10	16	40	60	55.5	54	88	35.5	25	M12	1.3

Our complete range of chuck jaws can be found online in our Chuck Jaw Quickfinder and on [schunk.com](https://www.schunk.com)

Accessories

Clamping force tester

For measuring the jaw clamping force of 2, 3 and 6-jaw chucks up to 6,000 RPM .



Suitable for	Description	ID
ROTA NCE 165-53	IFT Set	1404235

Mounting wrench

For power lathe chucks with a turnable threaded ring in pipe design with two actuation tabs.



Suitable for	Description	ID
ROTA NCE 165-53	SSH-MR Ø53-122.5	1301751

Grease

LINOMAX plus

High-performance grease as standard for regularly lubricating SCHUNK manual and power lathe chucks and steady rests.



Bundle	Description	ID
Cartridge	LINOMAX plus cartridge	1342585
Can	LINOMAX plus can	1342586
Bucket	LINOMAX plus bucket	1342587

Grease gun

Auxiliary tools for lubrication of all kinds of SCHUNK products. The grease gun can be used for cartridges of all types of SCHUNK grease.



Bundle	Description	ID
Cartridge	Grease gun	9900543



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