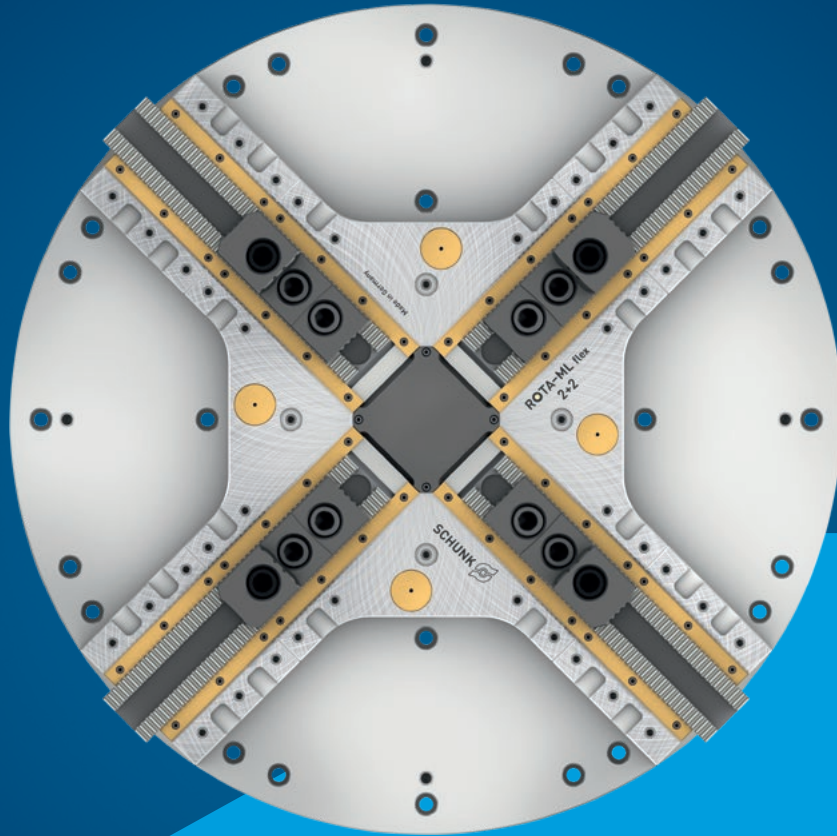


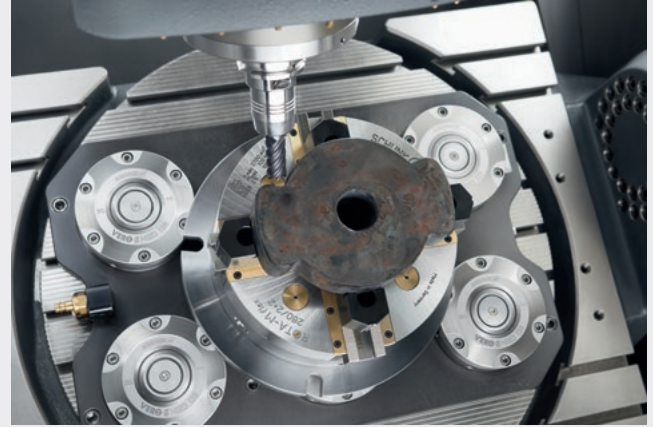


ROTA-ML *flex* 2+2

**Universal manual lathe chuck
for all clamping tasks on
lathes and milling machines**

Centrically compensating workpiece clamping of any workpiece geometry

Clamping of round, cubic and geometrically unshaped parts – no problem for the ROTA-ML flex 2+2. Thanks to the patented drive concept with coupled jaw pairs, any workpiece geometry can be clamped centrically and without overdetermination. The chucks are used in particular in storage solutions and on mill/turn machines, but can also be used on lathes. The chuck weights of the large chucks with $\varnothing$ 500 mm or more have been reduced by up to 40% compared to the previous version, so that an even higher workpiece weight can be loaded.



Advantages – Your benefits

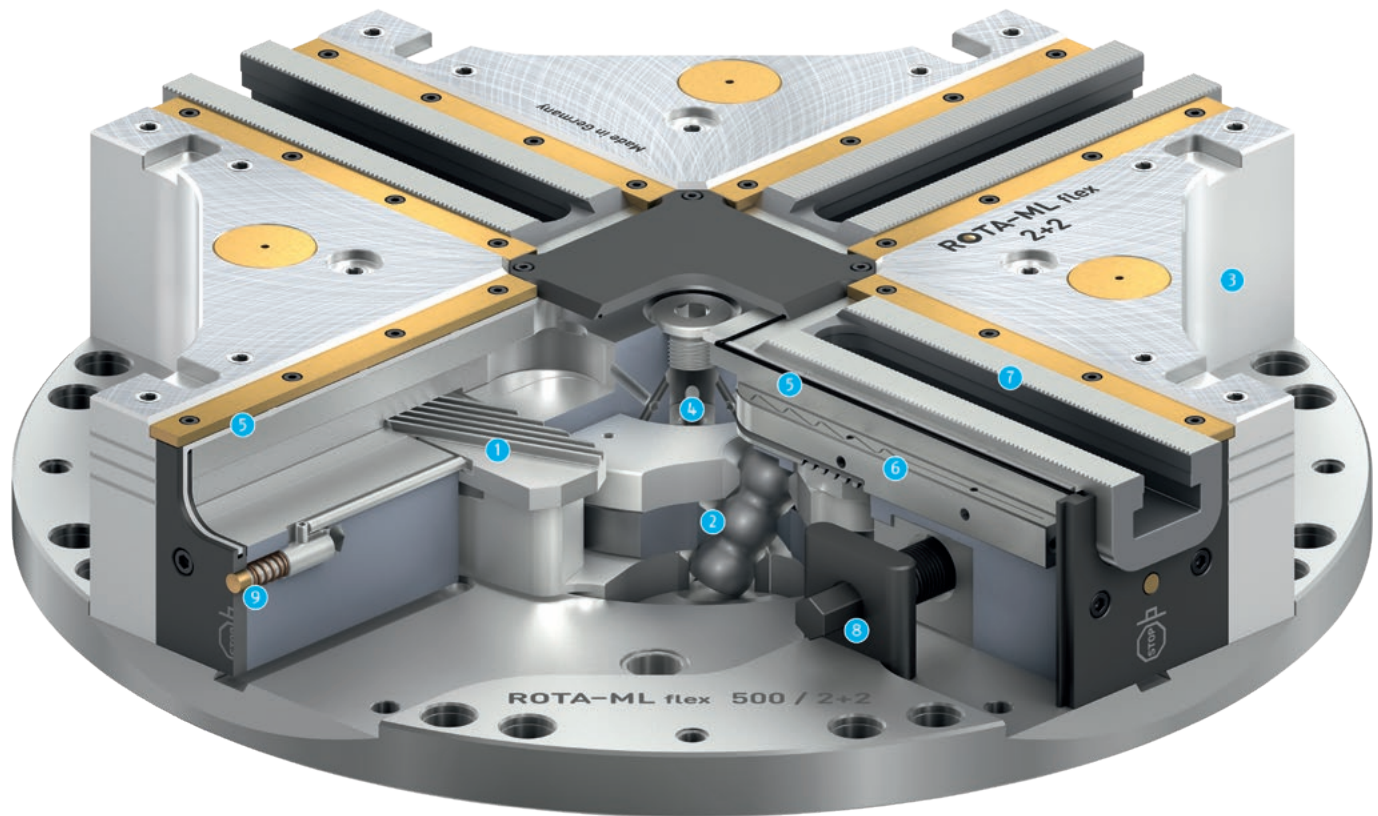
- + Sealed manual lathe chuck**
For significantly longer maintenance intervals
- + Patented drive concept**
Independent installation of the jaw pairs with subsequent centrically compensating workpiece clamping
- + Flexible clamping system**
For clamping round, cubic, or geometrically bulky workpieces
- + Compensation mechanism**
Enables centric clamping of any workpiece geometries
- + Optimized chuck heights and weights for the new ROTA-ML flex 2+2 versions from $\varnothing$ 500 mm**
For a maximum additional payload of workpiece weight
- + High efficiency of the wedge bar system**
Process-reliable clamping due to high clamping forces
- + Lubrication system with grease circulation**
Ensures permanent grease supply for constant clamping forces
- + Visual clamping release**
As an indicator for the range in which safe clamping can be ensured
- + All sides of the functional parts are hardened and ground**
Ensures a long service life

Technical data

Description	Max. rotational speed [min ⁻¹]	Max. clamping force [kN]	Max. torque [Nm]	Stroke/jaw [mm]	Compensation stroke/jaw [mm]
ROTA-M flex 2+2 260	2700	100	120	9.5	5.1
ROTA-M flex 2+2 315	2200	100	120	9.5	5.1
ROTA-M flex 2+2 400	1500	150	200	14.5	7.9
ROTA-M flex 2+2 500	1500	180	210	17.3	12
ROTA-ML flex 2+2 500	1500	180	210	17.3	12
ROTA-ML flex 2+2 630	1300	180	210	17.3	12
ROTA-ML flex 2+2 800	1100	180	210	17.3	12
ROTA-ML flex 2+2 1000	850	180	210	17.3	12
ROTA-ML flex 2+2 1200	750	180	210	17.3	12

Function ROTA-ML flex 2+2

A patented drive ring system transfers the rotary motion of the threaded spindle onto the jaws. The opposing pairs of jaws contact the workpiece one after the other and center it in the corresponding plane. The workpiece is then clamped evenly at full clamping force.

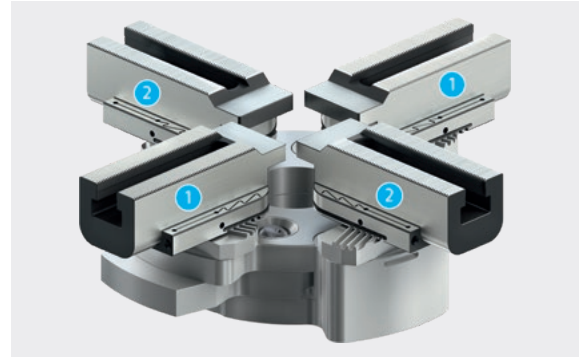


- | | |
|---|---|
| <p>1 Wedge bar actuation system
Offers high run-out accuracies</p> <p>2 Patented drive concept
As a basis for centrally compensating workpiece clamping</p> <p>3 Hardened and extremely rigid base body
Therefore a longer service life at highest precision. Even with maximum clamping force</p> <p>4 Central lubrication system with grease reservoir
Provides sufficient grease during machining. The actuation as well as the centrifugal force during machining also ensure that the grease is circulated in the chuck.</p> | <p>5 Sealing of the lathe chuck
Consists of a gasket and O-rings for the initial tension</p> <p>6 Long jaw guidance
Offers optimal support for O.D.- and I.D. clamping</p> <p>7 Standard jaw interface
For the use of standard top jaws from SCHUNK</p> <p>8 Actuation via hexagon connection
This ensures easy operation</p> <p>9 Indicator pin
For monitoring the jaw position via drive ring movement</p> |
|---|---|

Compensating workpiece clamping

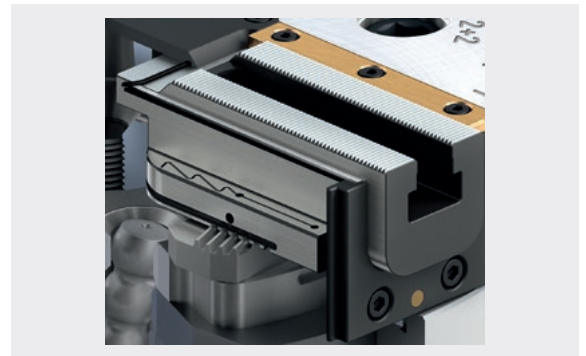
Due to the innovative drive concept, round, cubic and geometrically unshaped workpieces can be clamped in a compensating manner. The opposing jaws are always connected to each other via a drive ring system. Overdetermination is prevented by the compensation mechanism.

- ❶ First pair of jaws
- ❷ Second pair of jaws



Sealed manual lathe chuck

A sealing system consisting of a pre-loaded gasket and O-rings prevents grease from being flushed out during machining and the penetration of dirt or chips. This means that cast or forged parts can also be machined without hesitation.



Visual clamping release

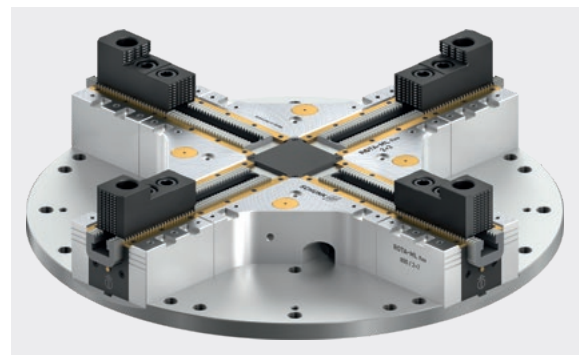
To ensure safe working, an indicator pin shows when the chuck mechanism is close to the stroke end position. As soon as the indicator pin moves outwards, the workpiece is no longer clamped correctly and machining must not be started.

- ❶ Indicator pin



Stationary version

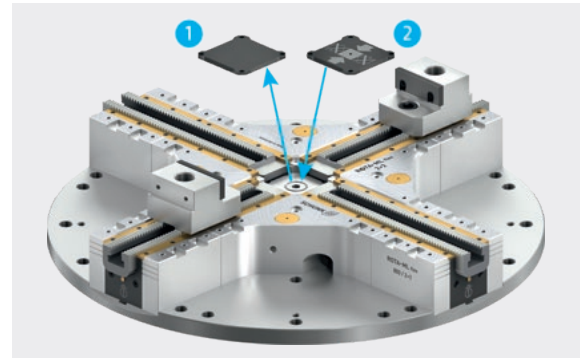
From size $\varnothing$ 500 the ROTA-ML flex 2+2 is designed in an extremely weight-reduced monolithic design, and is now even flatter. As a result, a weight reduction of up to 60% can be achieved compared to conventional chucks of the same size.



2-jaw clamping

The ROTA-ML flex 2+2 can be converted from a 4-jaw chuck into a 2-jaw chuck with one simple adjustment. All you have to do is to exchange the central locking cover.

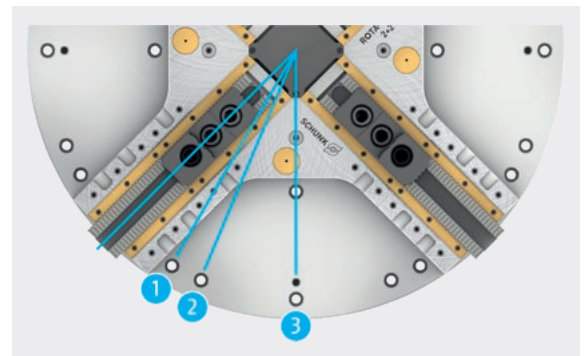
- ❶ **Locking cover without stop**
Both pairs of jaws can be moved freely
- ❷ **Locking cover with stop**
One pair of jaws is blocked, the other one clamps centrally



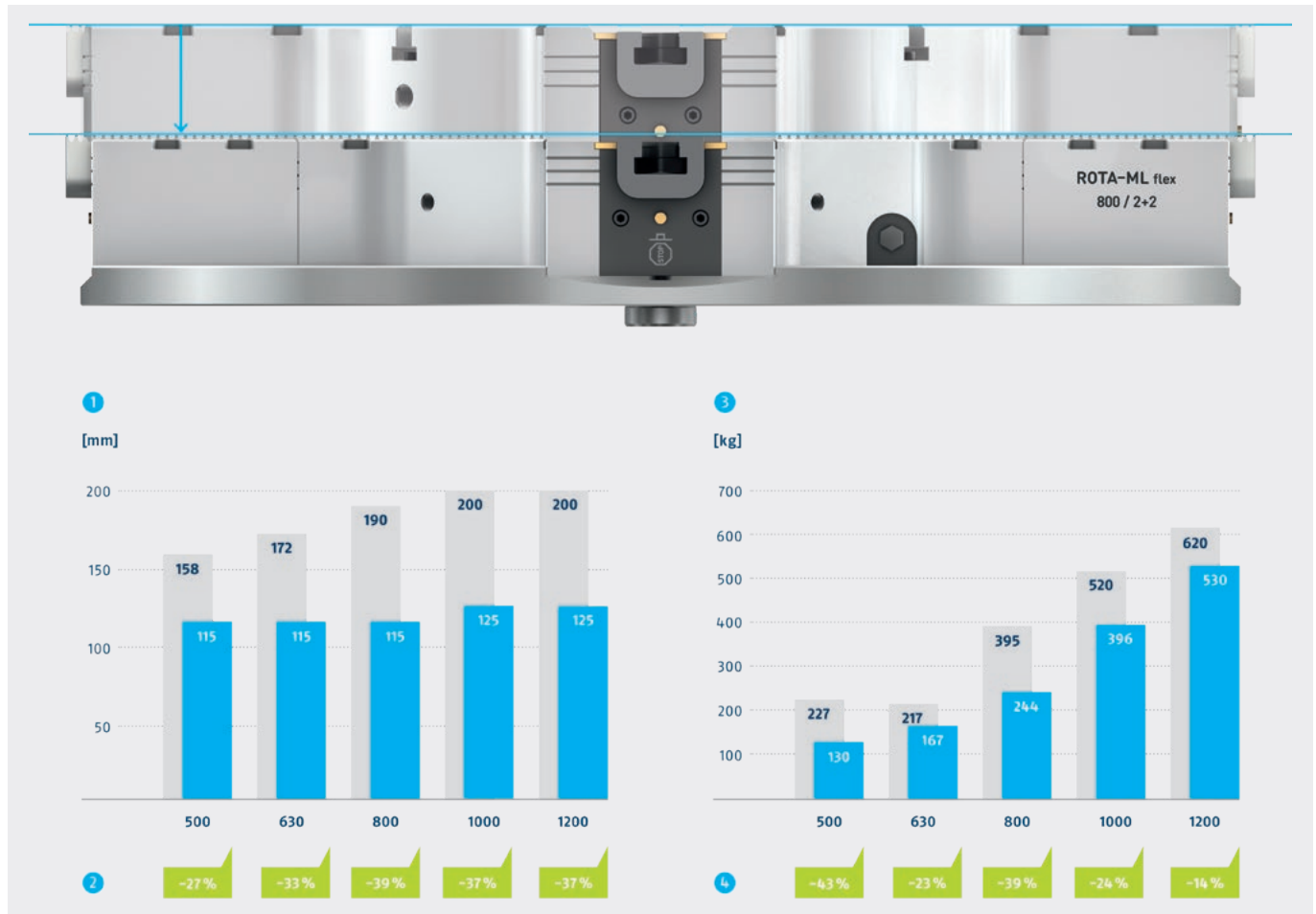
Versatile mounting options

With the new ROTA-ML flex 2+2, additional mounting options have been incorporated into the base plate. This means that the lathe chucks can be used even more flexibly on the machine tables of the individual machine manufacturers.

- ❶ **22.5° star slot**
For up to 16 radial T-slots
- ❷ **30° star slot**
For up to 12 radial T-slots
- ❸ **45° star slot**
For up to 8 radial T-slots



Significant weight reduction in the new generation ROTA-ML flex 2+2



The large sizes of the ROTA-ML flex 2+2 from Ø 500 mm have undergone a complete facelift. The main focus has been on reducing the overall height and the associated reduction in chuck weight. Thanks to design modifications, the chuck height has been significantly reduced and the weight has been cut by as much as 40% compared to its predecessor. This means that even larger and heavier workpieces can now be processed. Another positive side effect of the weight reduction is that higher table speeds are now possible due to the lower mass.

1 Height comparison

x-axis = size of the chuck
y-axis = height of the chuck

2 Saving

In chuck height from the old to the new generation

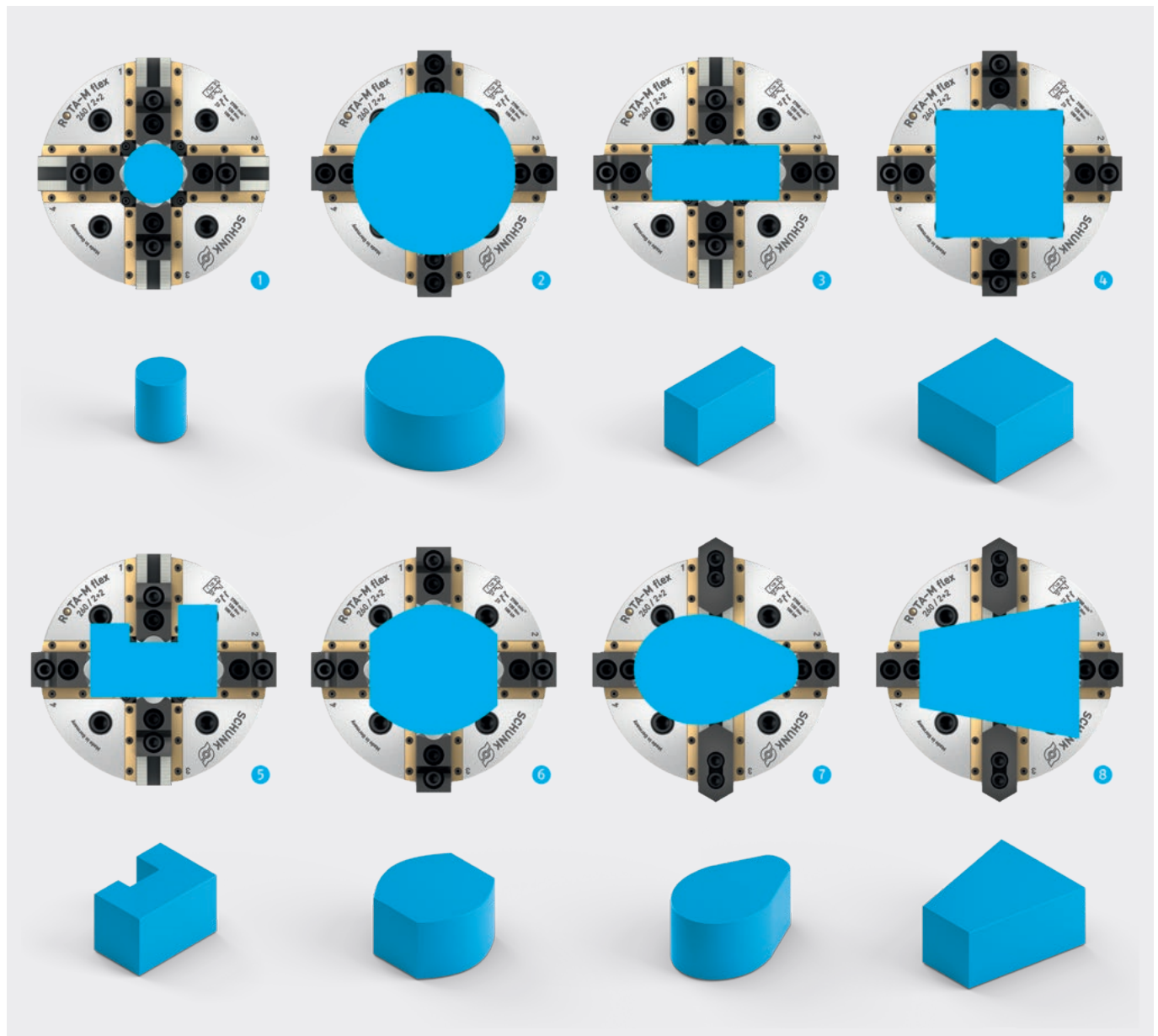
3 Weight comparison

x-axis = size of the chuck
y-axis = weight of the chuck

4 Saving

In chuck weight from the old to the new generation

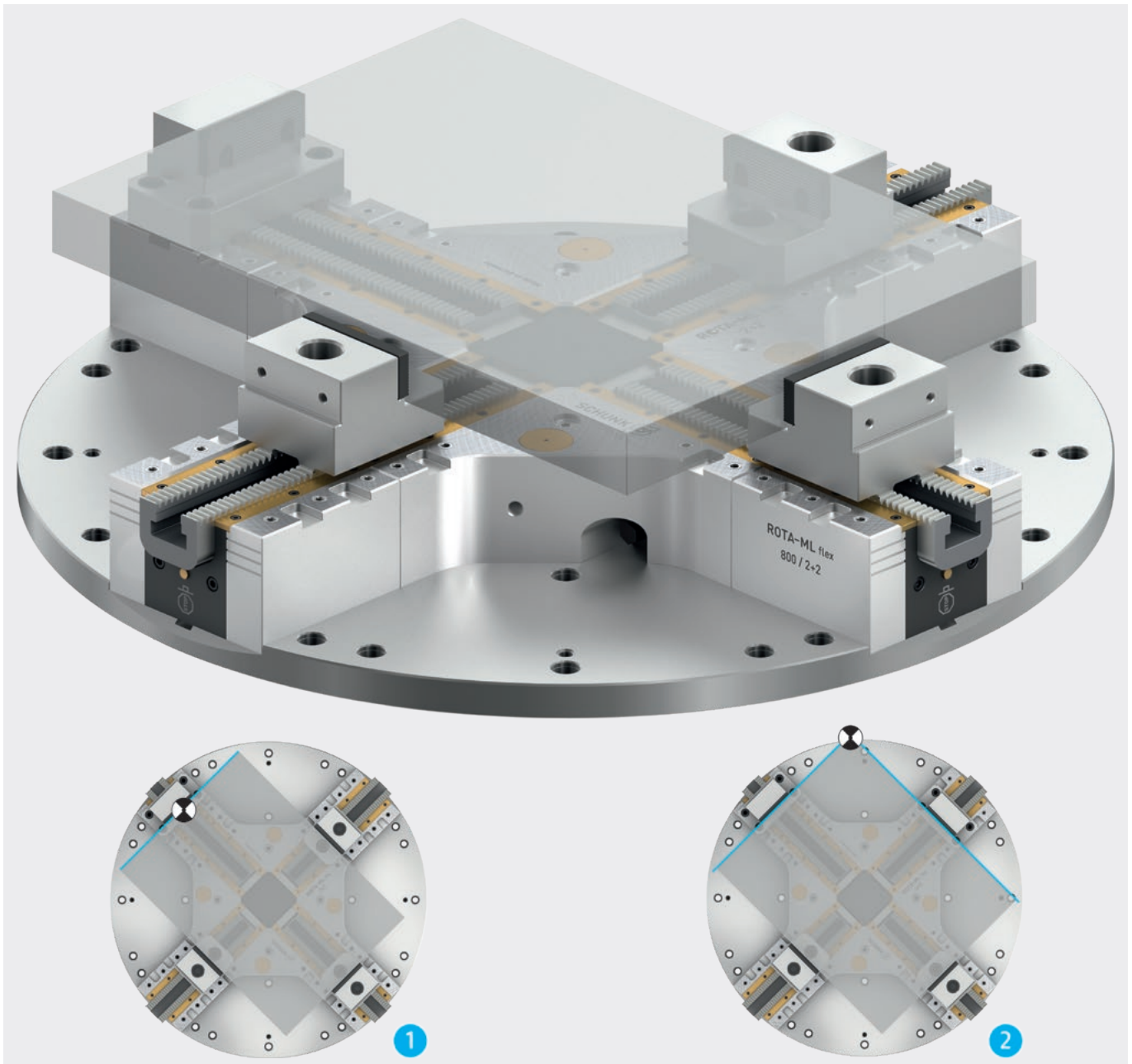
Highest flexibility



The ROTA-ML flex 2+2 is impressive due to its high degree of flexibility. With this centrally compensating manual lathe chuck, there is virtually no workpiece that cannot be clamped with it. With a selection of proper top jaws, round, cubic and a variety of geometrically unshaped parts can be clamped.

- ① Small workpieces
- ② Large workpieces
- ③ Rectangular workpieces
- ④ Square workpieces
- ⑤ Free-form parts
- ⑥ Semicircular and angular workpieces
- ⑦ Cams
- ⑧ Inclined workpieces

Console clamping



If one or two fixed zero points are required on mill/turn centers instead of centric compensating clamping, the ROTA-ML flex 2+2 can be converted into a "fixed jaw clamping vise" using special jaws. Via grooves in the chuck face, the fixed jaws can be connected to the chuck. The result is a defined, repeatable zero point, which is particularly important for precise OP20 machining.

1 Clamping against a fixed jaw

The workpiece is clamped against a fixed jaw. As a result, this one jaw forms the precise zero point in a plane.
Attention: With this set-up, the clamping force is reduced by 25% compared to the maximum clamping force specified for the chuck.

2 Clamping against two fixed jaws

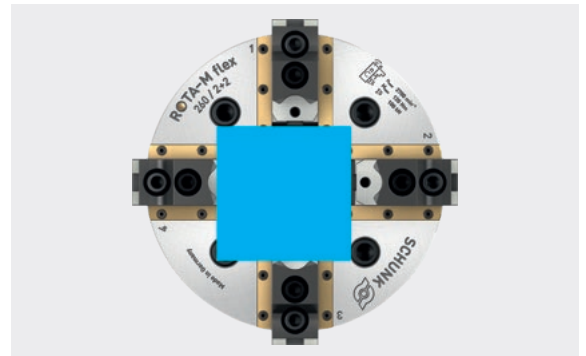
The workpiece is clamped against two fixed jaws. The two fixed stops form the precise zero point at the intersection of the two stop lines.
With this set-up, the maximum clamping force of the chuck is maintained.

ⓘ Attention: Fixed stops are not intended for use under rotation!

Functionality: Compensating workpiece clamping

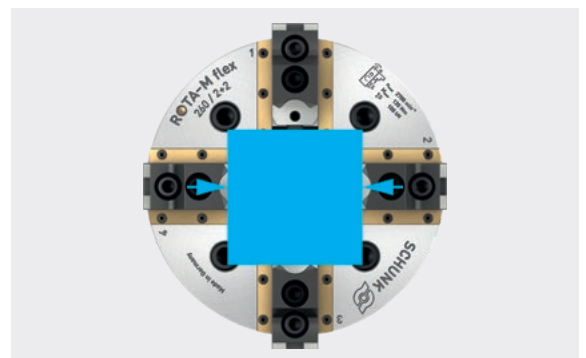
Step 1: Insert the workpiece

Round, cubic or geometrically unshaped parts can be inserted in open state.



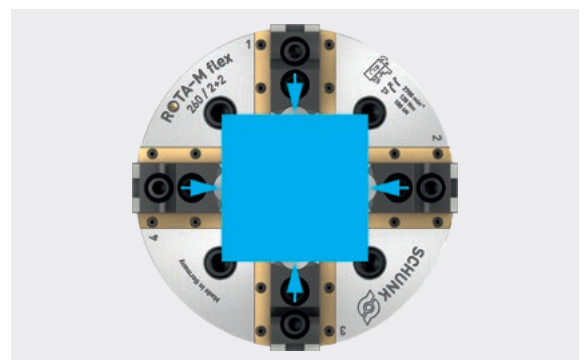
Step 2: Install the first pair of jaws

By actuating the manual lathe chuck, the first pair of jaws contacts the workpiece. The workpiece is now centered in this plane.



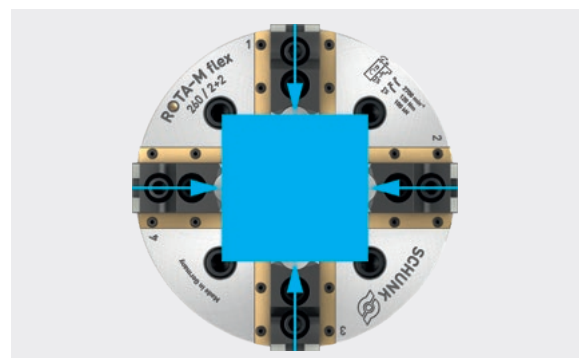
Step 3: Install the second pair of jaws

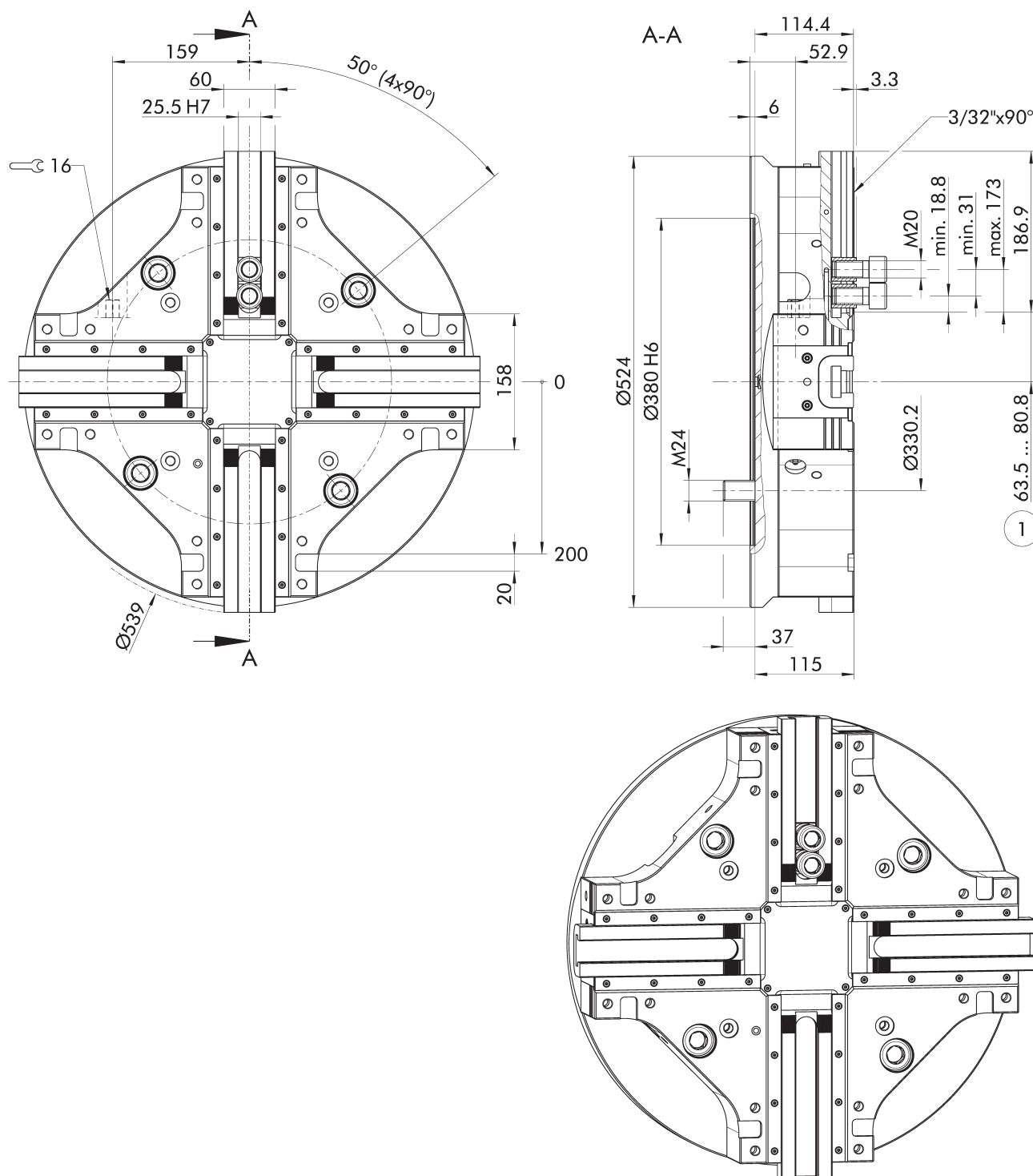
During further actuation, the second pair of jaws also contacts the workpiece and moves the workpiece in this plane to the center.



Step 4: Clamp the workpiece

If both pairs of jaws are in contact with the workpiece, the workpiece is clamped evenly and centrally with the full clamping force (depending on the torque).





Technical data

Spindle type	Spindle size	ID	Serration	Max. rotational speed [min ⁻¹]	Max. clamping force [kN]	Max. torque [Nm]	Stroke/jaw [mm]	Compensation stroke/jaw [mm]	Weight [kg]
ISO 702-4	Nr. 15 (Z380)	1573344	3/32" x 90°	1500	180	210	17.3	12	135

Scope of delivery

Chuck, T-nuts, or attachment screws for top jaws, chuck mounting screws, spanner wrench, eye bolt, operating manual; without top jaws, without locking cover

Notes

Stationary applications

For stationary use, the ROTA-M flex 2+2 can be retrofitted with standardized console and adapter plates (see accessories).

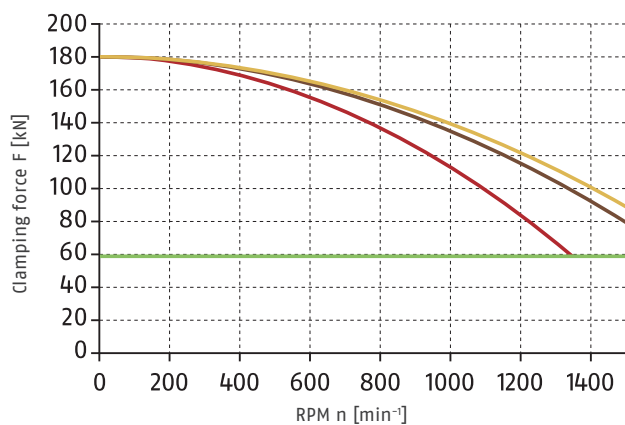
Use of 2-jaw clamping

When using 2-jaw clamping, a locking cover is additionally required to block one pair of jaws (see accessories).

Clamping force, 2-jaw clamping

When changing to 2-jaw clamping, the maximum clamping force is halved at the same torque.

Clamping force-RPM-diagram



Required minimum clamping force F_{spmin} 33%

SHB 400/4
10.8 kg



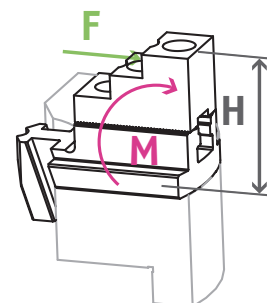
SWB 400/4
21.6 kg



SWB-AL
400/4
8.6 kg



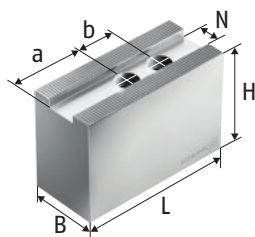
Load of base jaw guidance



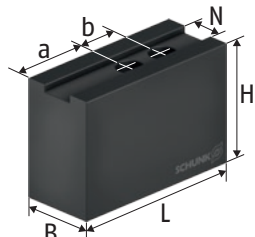
$M_{max} = 4550 \text{ Nm}$

Soft top jaws

with fine serration 90°



SWB-AL
Soft top jaws



SWB
Soft top jaws

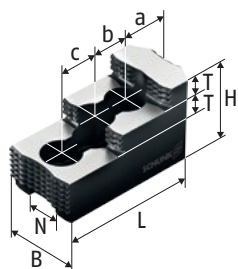
Technical data

Chuck type	Description	ID	N [mm]	B [mm]	H [mm]	L [mm]	a [mm]	b [mm]	Screws	m/SET [kg]
ROTA-M flex 2+2 500	SWB-AL 400/4	1457306	25.5	60	100	155	90	35	M20	8.6
ROTA-M flex 2+2 500	SWB 400/4	1457273	25.5	60	90	155	90	35	M20	21.6

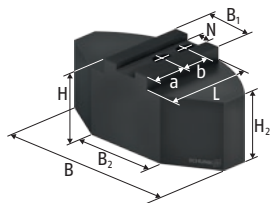
Our complete range of chuck jaws can be found online in our Chuck Jaw Quickfinder and on schunk.com

Hard stepped top jaws, Full grip jaws

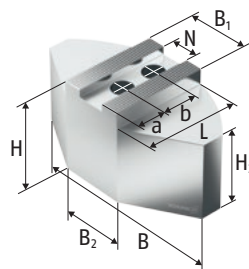
with fine serration 90°



SHB
Hard stepped top jaws



SWB-SM
Full grip jaws



SWB-SA
Full grip jaws

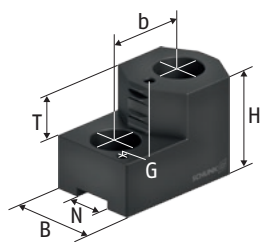
Technical data

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-M flex 2+2 500	SWB-SM 400/4	1457316	25.5	330	60	85	55	155		83.5	35		M20	55.2
ROTA-M flex 2+2 500	SWB-SA 400/4	1609912	25.5	330	150	98	68	160		84.5	35		M20	35.3
ROTA-M flex 2+2 500	SHB 400/4	1457278	25.5	60		75		140	18	53	31	31	M20	10.8

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

Universal claw jaws

with fine serration 90°



SZAU/4
Universal claw jaws

Technical data

Chuck type	Clamping range ØD	Swing diameter SDmax	Description	ID	N	B	H	L	T	G	b	m/SET
	[mm]	[mm]			[mm]	[mm]	[mm]	[mm]	[mm]		[mm]	[kg]
ROTA-M flex 2+2 500	102 - 426	571	SZAU 400/4	1457357	25.5	60	75	114.5	33	M6	60	8.2

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

T-nut

with fine serration 90°



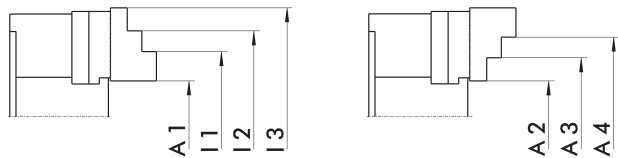
NS
T-nut

Chuck type	Description	ID	N	B	H	H1	L	Cyl.-screw	Max. adm. tightening torque
			[mm]	[mm]	[mm]	[mm]	[mm]		[Nm]
ROTA-M flex 2+2 500	NS 200	0140103	25.5	35.8	29	11	27.8	M20 x 40	220

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

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-M flex 2+2 500	SHB 400/4	1457278	49 - 335	62 - 375	164 - 478	266 - 500

I.D. clamping

Chuck type	Description	ID	I1 [mm]	I2 [mm]	I3 [mm]
ROTA-M flex 2+2 500	SHB 400/4	1457278	130 - 410	228 - 513	328 - 615

Accessories

Clamping force tester

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



Suitable for	Description	ID
ROTA-M flex 2+2 500	IFT Set	1404235

Measuring head adapter for 4-jaw clamping

For use as an extension of the IFT measuring head for measuring the jaw clamping force of 4-jaw chucks.



Suitable for	Description	ID
ROTA-M flex 2+2 500	IFT MA4	1452686

Extension set for large chucks

For use as an extension of the IFT measuring head for measuring the jaw clamping force of large chucks of Ø 400 mm and more.



Suitable for	Description	ID
ROTA-M flex 2+2 500	IFT adapter set	1498512

Torque wrench

Torque wrench for actuation of SCHUNK manual lathe chucks.



Suitable for	Description	ID
ROTA-M flex 2+2 500	SSH-D-1/2" 60-300	1301281

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

Ratchets

Ratchet for fast actuation of SCHUNK manual lathe chucks.



Suitable for	Description	ID
ROTA-M flex 2+2 500	SSH-K 1/2"-350	1151118

Hexagon actuation wrench

Spanner wrench for manual actuation of the SCHUNK manual lathe chucks with hexagonal connections.



Suitable for	Description	ID
ROTA-M flex 2+2 500	SSH-SK SW16-230	1330894
ROTA-M flex 2+2 500	SSH-SL SW16-330	8704923

Hexagon spanner wrench adapter with ejector

For use as an attachment for a torque wrench and ratchet for actuating SCHUNK manual lathe chucks with hexagonal connection.



Suitable for	Description	ID
ROTA-M flex 2+2 500	SAS-I 1/2"-SW16	8705471

Locking cover

For locking of a jaw pair to realize a two jaw clamping.



Suitable for	Description	ID
ROTA-M flex 2+2 500	SLC 500-1200	1471989

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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