



TRAVELING  
COLUMN  
MACHINING  
CENTERS



**SAMAG**



SFZ – FIT 2 TASK

Customized  
solutions in series  
production!  
The SFZ series  
offers endless  
possibilities.





Variable lengths  
for different  
workpiece sizes.

SFZ 2500

SFZ 3500

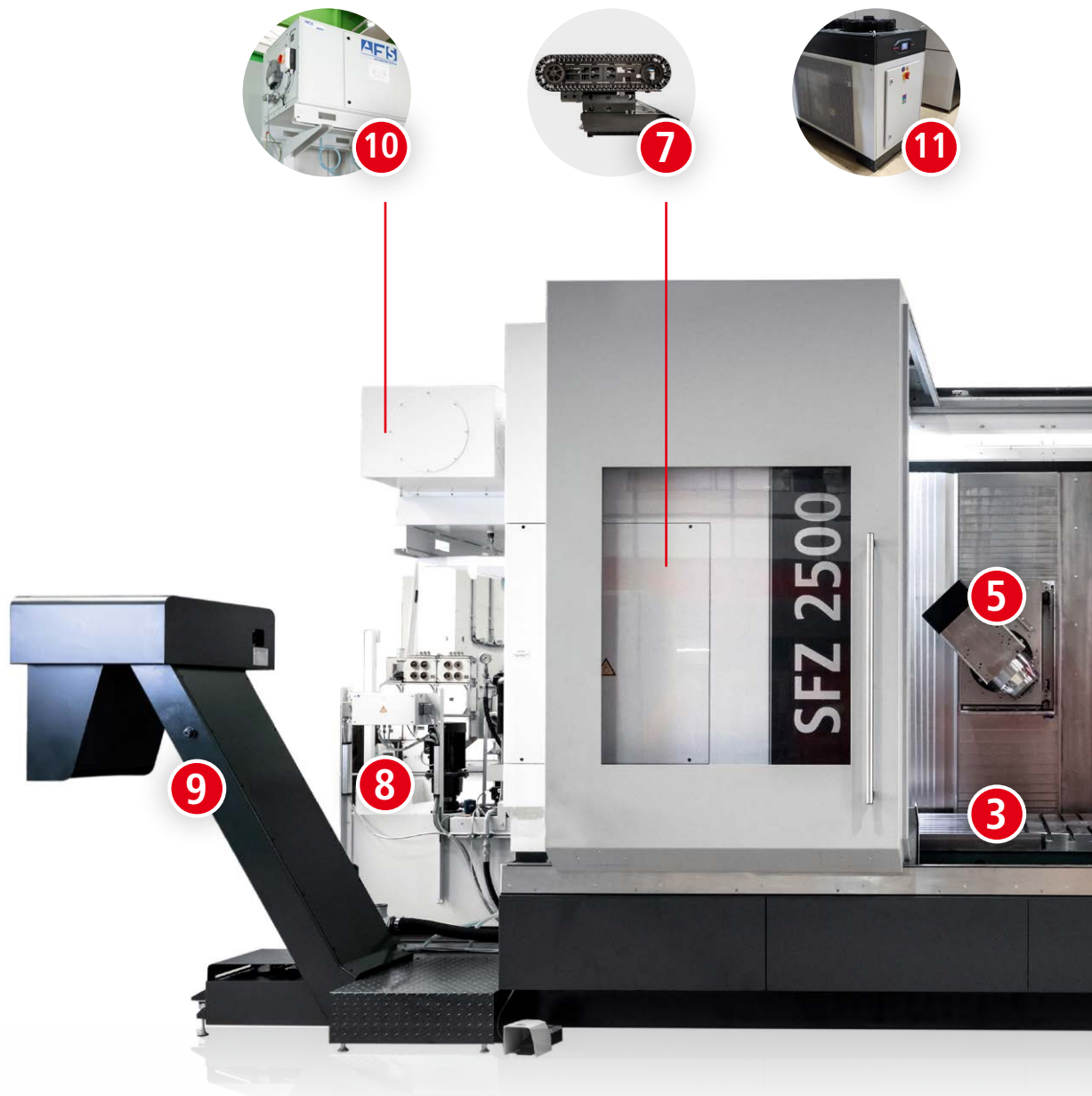
SFZ 5000

SFZ 7500



SFZ – FIT 2 TASK

# SFZ – FIT 2 TASK

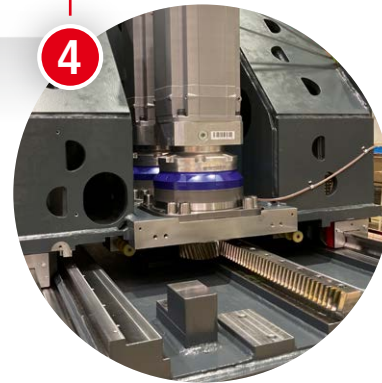


- |  |  |  |
|--|--|--|
| <b>1</b> Machine bed + traveling column<br>FEM-optimized/extremely rigid     | <b>4</b> X-axis drive with rack / pinion<br>backlash-free and accurate | <b>7</b> Tool storage for 60 tools<br>(optional 90/150)                                |
| <b>2</b> Media access (hydraulics, pneumatics,<br>central lubrication)       | <b>5</b> Y-axis, motor spindle<br>vert., horiz. and as swivel head     | <b>8</b> Coolant system with external tool cooling<br>(optional tool internal cooling) |
| <b>3</b> Rigid table with the possibility of<br>installing up to 2 NC tables | <b>6</b> Control cabinet in the<br>Machine integrated                  | <b>9</b> Chip conveyor<br>(different versions possible)                                |

SAMAG machines  
STABILITY – that you can feel!  
ACCURACY – that you can see!



- 10 Efficient suction of the working area
- 11 Cooling unit 12 kW for cooling the drives of the linear axes, the motor spindle and the hydraulic oil
- 12 Control panel with Heidenhain or Siemens controller



# SFZ – FIT 2 TASK

## 4 DESIGN SIZES AND A LOT OF POSSIBILITIES!

THE SFZ SERIES CONVINCES  
ABOVE ALL IN THE  
COMBINATION OF EXTREMELY  
RIGID AND STABLE MACHINE  
AS WELL AS VERY HIGH  
ACCURACY.

Depending on the application we offer  
equipment options optimally tailored to  
your requirements.

Modern controls such as HEIDENHAIN  
or SIEMENS guarantee you the  
highest performance.



### TECHNICAL DATA

#### Work paths

X-axis (horizontal)	[mm]
Y-axis (horizontal)	[mm]
Z-axis (vertical)	[mm]

#### Working spindles

Tool holder	
Drive power spindle (S1)	[kW]
Torque spindle (S1)	[Nm]
Max. rotation speed	[rpm]

#### Working table

Table dimensions, W x L	[mm]
Table load, max.	[kg]

#### B-axis

Swivel range	[°]
Clamping torque, max.	[Nm]

#### Rotary table (C-axis)

Table diameter	[mm]
Table load, max.	[kg]
Rotation speed, max.	[rpm]
Interference circle, rotary table, Ø / Height	[mm]
Torque, max.	[Nm]
Tangential torque, max. (clamping torque)	[Nm]
Mass moment of inertia, max.	[kgm <sup>2</sup> ]

#### Feed axes

Rapid traverse speed X,Y,Z, max.	[m/min]
Feed force X,Y,Z, max.	[kN]
Axis acceleration X,Y,Z, max.	[m/s <sup>2</sup> ]

#### Tool magazine

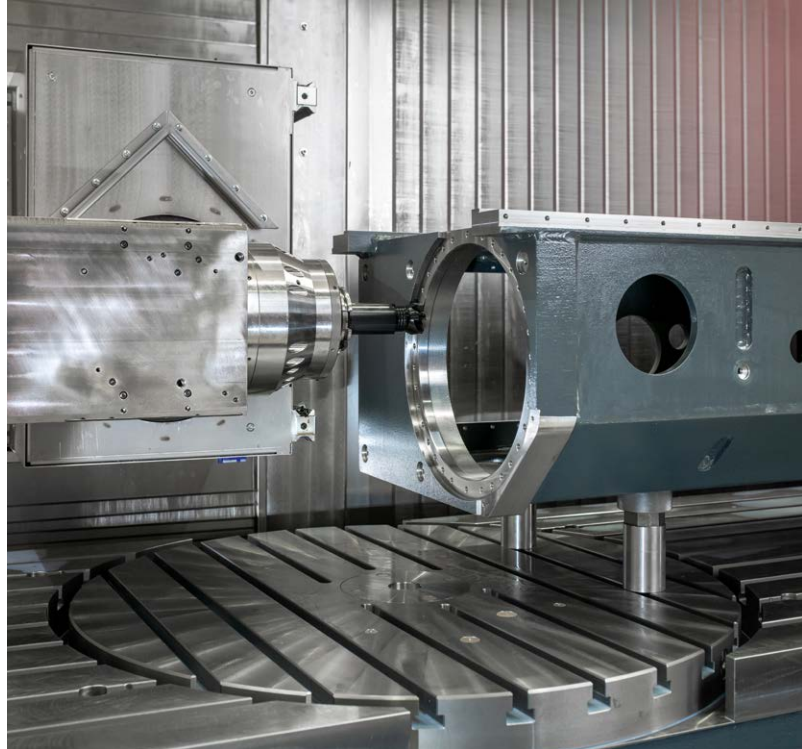
Tool holder	
Capacity	Pcs.
Max. Ø tool (all places occupied)	[mm]
Max. Ø tool (incl. free secondary places)	[mm]
Max. tool length	[mm]
Max. tool weight	[kg]

SFZ 2500		SFZ 3500		SFZ 5000		SFZ 7500	
2,500		3,500		5,000		7,500	
1,000		1,000		1,000		1,000	
1,000		1,000		1,000		1,000	
SK 40 HSK-A63	SK 50 HSK-A100	SK 40 HSK-A63	SK 50 HSK-A100	SK 40 HSK-A63	SK 50 HSK-A100	SK 40 HSK-A63	SK 50 HSK-A100
45	54/50*	45	54/50*	45	54/50*	45	54/50*
120/130	200/400*	120/130	200/400*	120/130	200/400*	120/130	200/400*
12,000/20,000	12,500/10,000*	12,000/20,000	12,500/10,000*	12,000/20,000	12,500/10,000*	12,000/20,000	12,500/10,000*
3,000 x 1,000		4,000 x 1,000		5,500 x 1,000		8,000 x 1,000	
4,000		5,500		6,500		9,000	
+/- 120		+/- 120		+/- 120		+/- 120	
2,484		2,484		2,484		2,484	
1,000		1,000		1,000		1,000	
2,000		2,000		2,000		2,000	
40		40		40		40	
1,300/1,000		1,300/1,000		1,300/1,000		1,300/1,000	
2,700		2,700		2,700		2,700	
8,000		8,000		8,000		8,000	
120		120		120		120	
40		40		40		40	
10		10		10		10	
5		5		5		5	
SK 40 HSK-A63	SK 50 HSK-A100	SK 40 HSK-A63	SK 50 HSK-A100	SK 40 HSK-A63	SK 50 HSK-A100	SK 40 HSK-A63	SK 50 HSK-A100
60 (90/150)	60 (90/150)	60 (90/150)	60 (90/150)	60 (90/150)	60 (90/150)	60 (90/150)	60 (90/150)
78	125	78	125	78	125	78	125
125	160	125	160	125	160	125	160
300	400	300	400	300	400	300	400
8	20	8	20	8	20	8	20

\* only available for vertical spindle

# SFZ – FIT 2 PART

Our SFZ machines offer maximum performance and at the same time best quality.



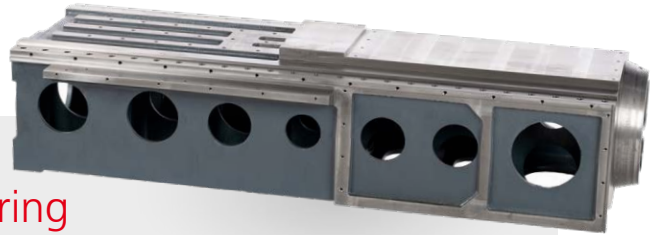
Horizontal machining of the plane seat of the drive unit



Vertical machining of the guideways of a Y-slide

The high flexibility of the machine allows the SFZ to be used in a wide range of industries.

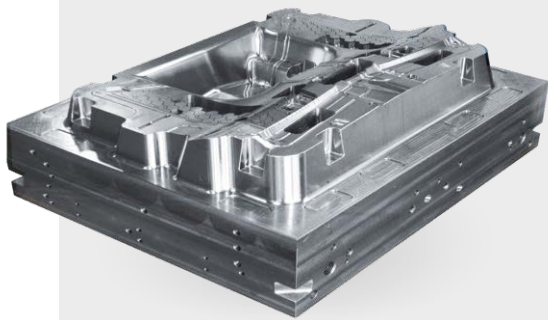
From heavy-duty machining to high-precision finish machining of different materials, you are always right with the SFZ.



## Mechanical Engineering

### Z-carriage

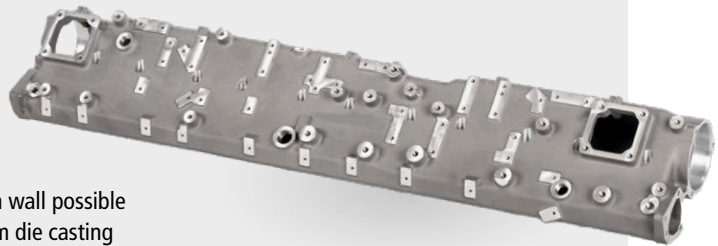
- High accuracies
- Attachment axes/dividing heads possible
- Material in the example: Cast iron GGG 60



## Mold manufacturing

### Tool shape

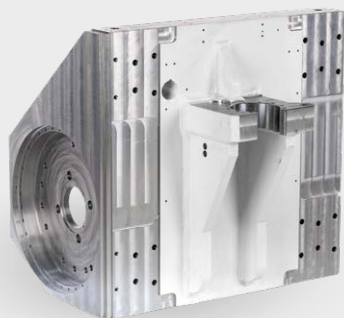
- With a swivel axis and an NC table (torque driven) a very dynamic machining is possible
- Material in the example: Shape steel e.g. 55NiCrMo



## Automotive

### Housing machining

- 5-axis machining
- Pendulum operation with partition wall possible
- Material in the example: Aluminum die casting



## Workshop

### Customized parts

- up to 5-axis machining
- High flexibility
- Material in the example: Structural steel St37

## Aerospace

### Structural components

- Large workspace
- 5-axis simultaneous machining
- Material in the example: Titanium



# EASY ENTRY ARCHITEC



- 1** Loading doors open front and roof at the same time, which allows for easy crane loading

**2** Easier maintenance of the tool magazine

**3** Tool loading possible at an ergonomic height
- 4** Swiveling and sliding main control panel with good visibility into the working area

**5** Generous maintenance access into the machine

**6** Easy accessibility to the control cabinet
- 7** Media supply (hydraulics, compressed air and central lubrication)

**8** Access, to be able to carry out e.g. a bar loading



## TECHNICAL DATA

### Installation data

Space requirement, L x W x H (incl. chip conveyor) *	[mm]
Weight *	[kg]

\* all values are approximate

# TURE

What is important for operation and maintenance?

Through the experience of our customers, we know what is important:

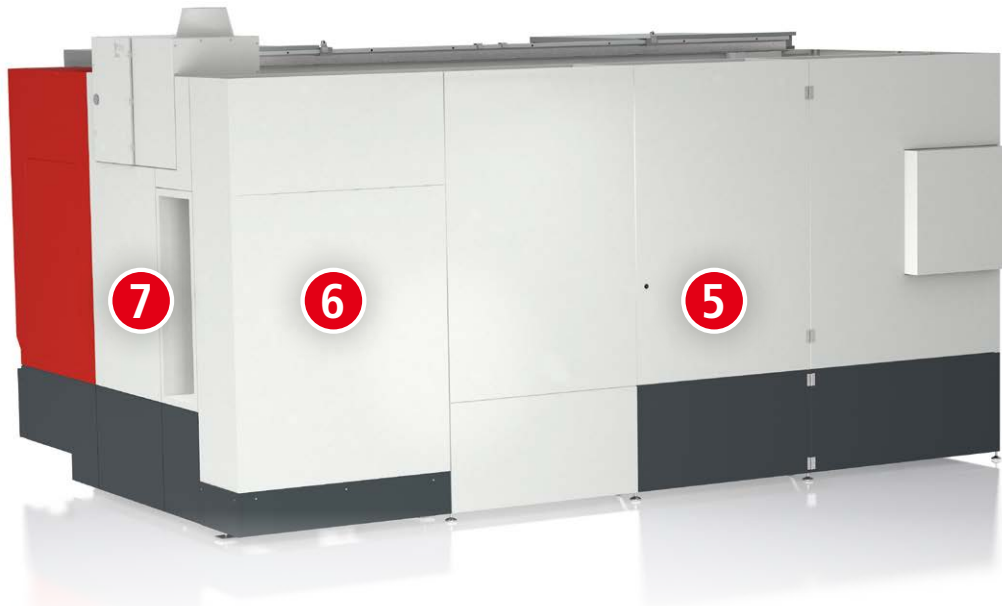
- Easy accessibility
- Well thought-out ergonomics
- Obstacle free loading
- Maximum overview by means of additional viewing windows



Media access



Access to the tool loading



SFZ 2500	SFZ 3500	SFZ 5000	SFZ 7500
8,700 x 5,200 x 3,480	9,700 x 5,200 x 3,480	11,200 x 5,200 x 3,480	13,700 x 5,200 x 3,480
22,000	27,000	33,000	44,000

# SFZ – PERFORMANCE

## SPINDLES & APPLICATION POSSIBILITIES

SK40  
12,000 rpm

**Drive power:**

S1/S6 45/45 kW

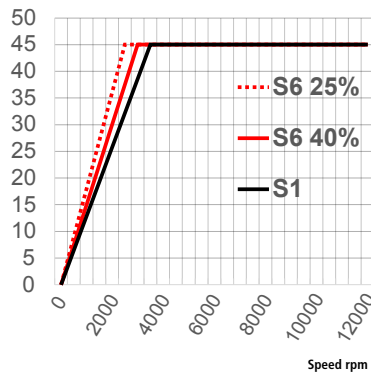
**Torque:**

S1/S6 120/145 Nm

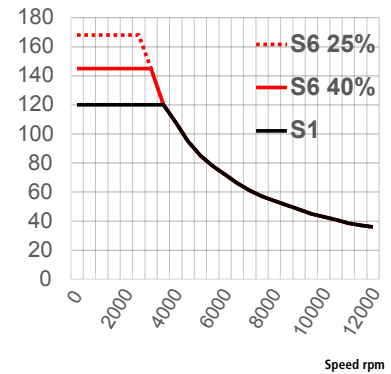
**Nominal speed:**

S1/S6 3,580/2,960 rpm

Power [kW]



Torque [kW]



HSK-A63  
20,000 rpm

**Drive power:**

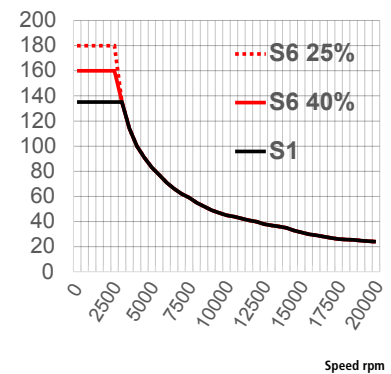
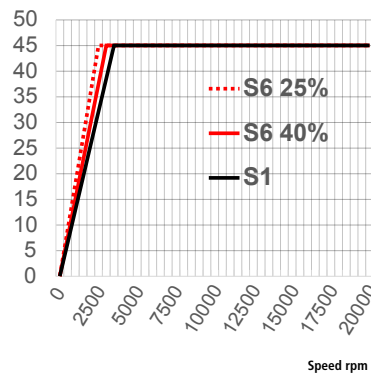
S1/S6 45/45 kW

**Torque:**

S1/S6 130/up to 180 Nm\*

**Nominal speed:**

S1/S6 3,300/2,700 rpm



SK50/HSK-A100  
12,500 rpm

**Drive power:**

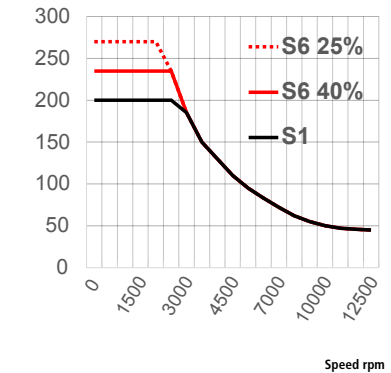
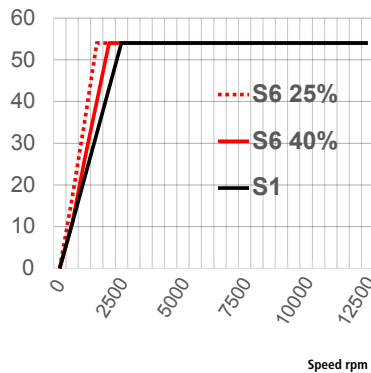
S1/S6 54/54 kW

**Torque:**

S1/S6 200/up to 270 Nm\*

**Nominal speed:**

S1/S6 2,580/2,195 rpm



SK50/HSK-A100  
10,000 U/min

(only available as vertical spindle)

**Drive power:**

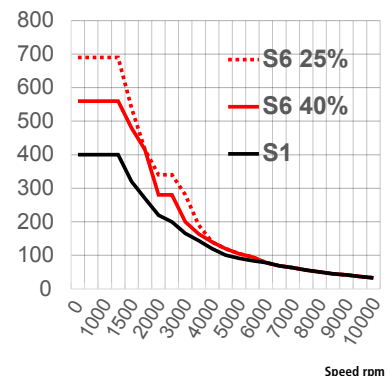
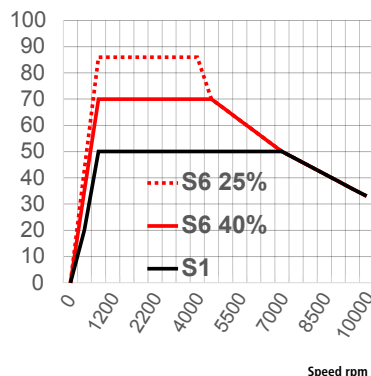
S1/S6 50/70 kW

**Torque:**

S1/S6 400/up to 690 Nm\*

**Nominal speed:**

S1/S6 1,200/1,200 rpm



\* S6/25 %

## SWIVEL HEAD

B-axis

**Torque:**

S1/S6 1,136/2,282 Nm

**Drive power:**

S1/S6 12/18 kW

**max. rotation speed:**

100 rpm

**Clamping torque**

**(pneumatic):**

2,484 Nm

**Swivel range:**

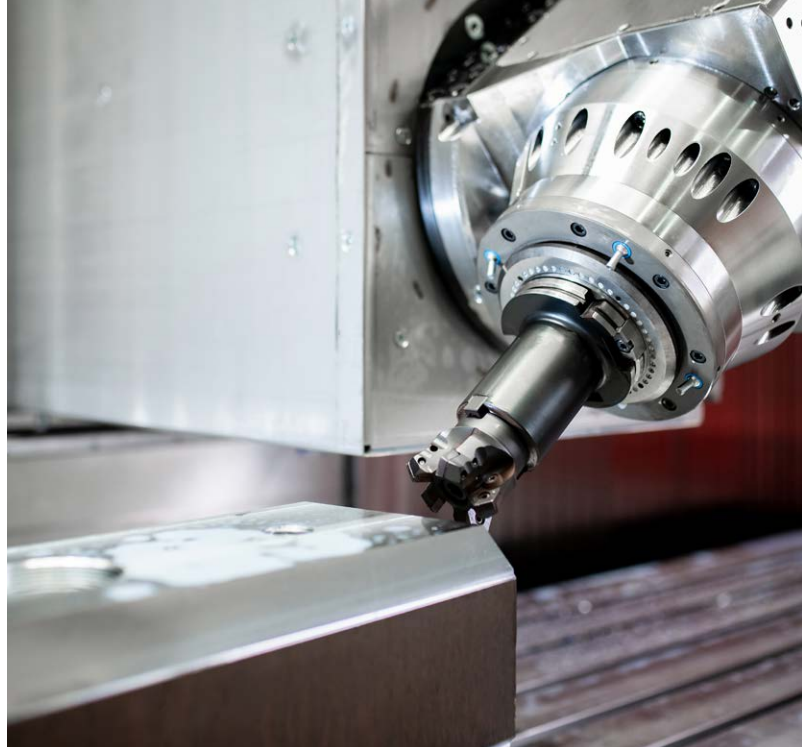
$\pm 120^\circ$

**Measuring system:**

absolute

**Accuracy:**

$\pm 2.0$  angular seconds

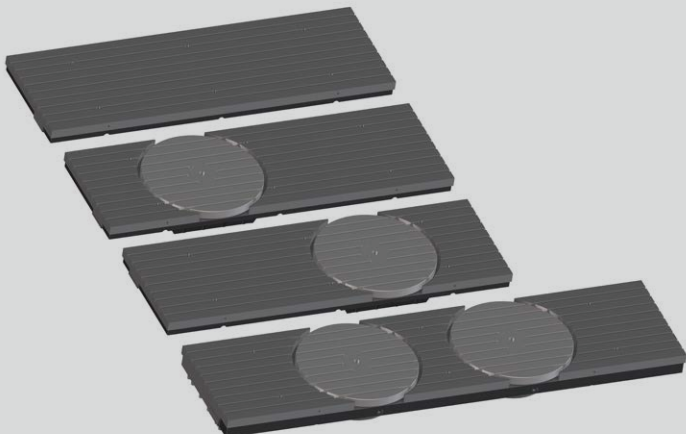


## RIGID SPINDLES

(vertical)

## RIGID SPINDLES

(horizontal)



## NC TABLE

C-axis

**Torque axis:**

0–360°

**Max. centr. load:**

2,000 Kg

**Speed:**

40 rpm

**Measuring system:**

absolute

**Part accuracy:**

$\pm 5$  angular seconds

**Repeatability:**

$\pm 1$  angular seconds

**Max. tangential moment:**

8,000 Nm

**Installation variants:**

- without NC table
- with 1 NC table (right or left)
- with 2 NC tables

# SFZ – OPTIONS

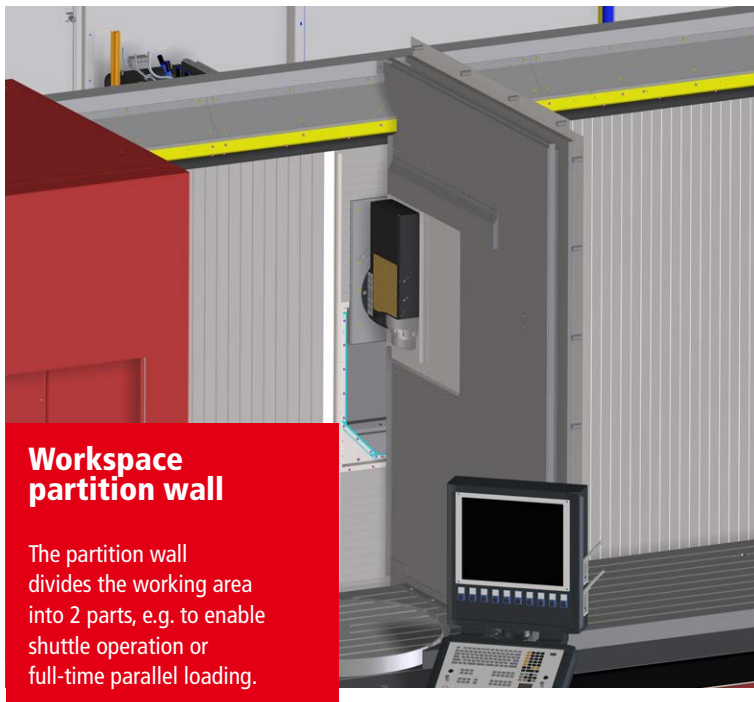
EXAMPLES

Modular equipment variants enable to handle even special requirements with the machine.



## Tool magazines (extension)

Optionally, tool magazines with different numbers of tools are available in SK40 / SK50 / HSK-A63 and HSK-A100.



## Workspace partition wall

The partition wall divides the working area into 2 parts, e.g. to enable shuttle operation or full-time parallel loading.



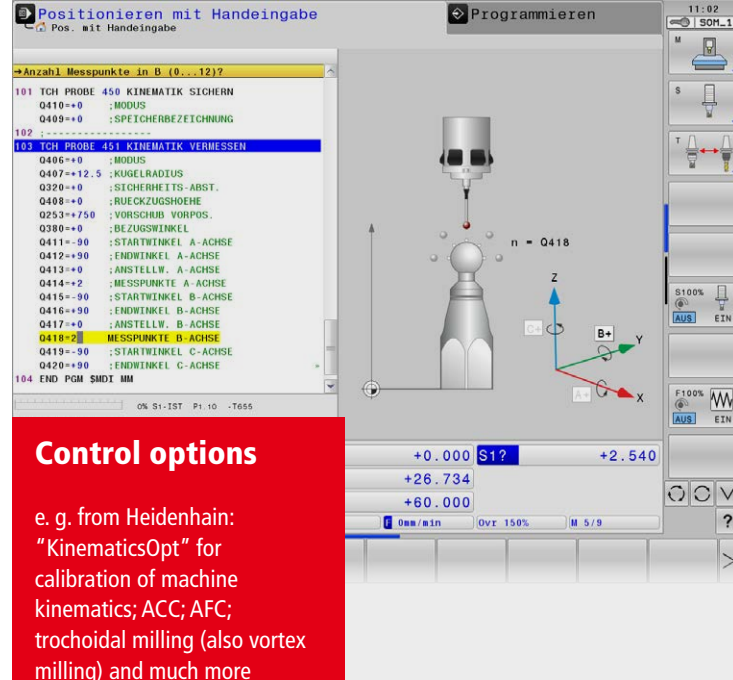
## Attachment rotary axes (A-axes)

Attachment axes are used for multi-sided machining of long workpieces (axes, shafts, structural components, etc.)



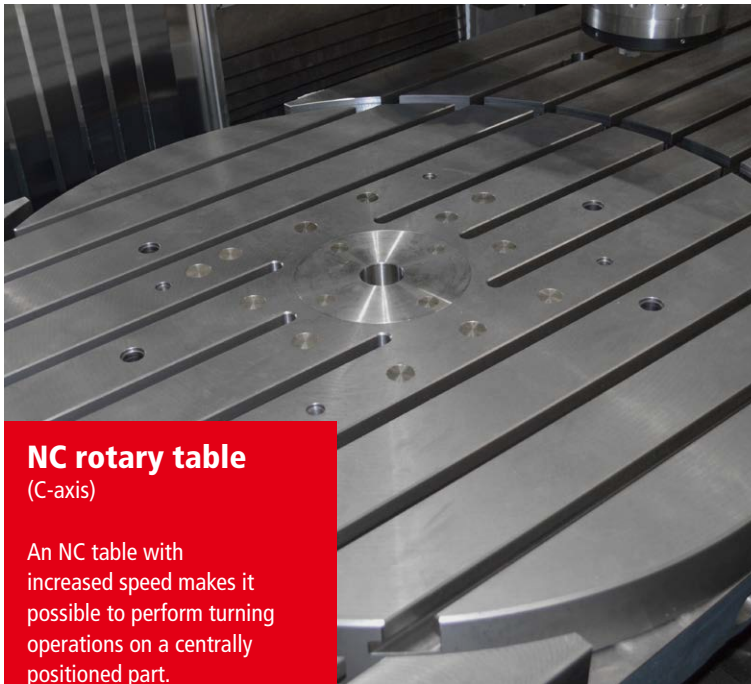
### Measuring probe 3D touch probe system

- Wireless infrared touch probe for workpiece measurement
- Wireless infrared touch probe for tool measurement



### Control options

e. g. from Heidenhain: "KinematicsOpt" for calibration of machine kinematics; ACC; AFC; trochoidal milling (also vortex milling) and much more



### NC rotary table (C-axis)

An NC table with increased speed makes it possible to perform turning operations on a centrally positioned part.

### Controls of the latest generation

Your requirements are met perfectly in the standard version by HEIDENHAIN control and optionally by SIEMENS control.

# SFZ – SPECIAL APPLICA

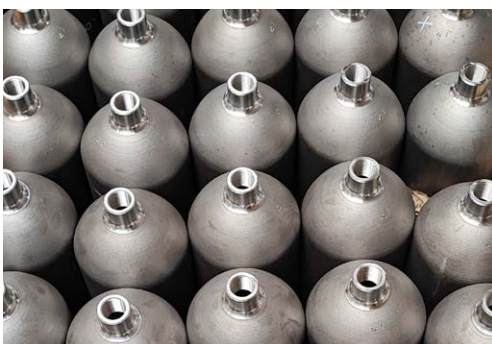
An example of how flexibly the SFZ can be used. This reflects the fact that SAMAG also has extensive experience in special machine construction.



Special machine based on two SFZ 2500, front-to-front setup.

The machines are used for automated machining of pressure cylinder necks (drilling, milling, thread milling). The machines are equipped with horizontal rigid spindles (one spindle each) and disc magazines for the tools.

Bottle body



Machined bottle body neck



Disc storage with 20 tools HSK-A100

# TION



Association of two SFZ 2500 to form a special machine

Automatic loading and unloading of the two machines



# SAMAG MACHINE TOOL

GLOBAL PRESENCE,  
SUSTAINABLE  
COMMITMENT AND  
150 YEARS OF  
EXPERIENCE!

KNOW-HOW & EXPERIENCE,  
COMMITMENT & IDEAS,  
RELIABILITY & FLEXIBILITY –  
SAMAG SINCE 1873.

SAMAG's machine tool manufacturing in Saalfeld, Thuringia, can look back on 150 years of tradition. At the end of the 19th century the company began to manufacture the first drilling machines. Since then, SAMAG engineers have repeatedly contributed to improving the quality and efficiency of production processes with trend-setting developments and technological excellence.

Thus, SAMAG is one of the pioneers in the field of multi-spindle process systems. Today SAMAG Machine Tools is one of the leading manufacturers of:

- **multi-spindle horizontal machining centers:**  
MFZ series for individual workpiece machining for medium to large series production
- **Deep drilling and milling centers:**  
TFZ series for the 4-sided complete machining of cubic workpieces (milling and deep hole drilling)
- **Deep-hole drilling machines:**  
TBM series for deep-hole drilling machining of rotationally symmetrical workpieces
- **Traveling column machining centers:**  
SFZ series for universal machining of different workpiece sizes also for single and small series
- Special machines, for example for internal machining of differential housings

WE WRITE  
**SERVICE**  
IN CAPITAL

Our customer service does not end with the handover of the machines. We offer production start-up support, service contracts and spare parts supply. Our machines are equipped with teleservice as standard, which of course significantly reduces the time factor of troubleshooting.

We offer: comprehensive, individually tailored user training on maintenance, operation and programming - also on site.

**OUR SERVICES:**

- Machine installation and commissioning
- Short response times for troubleshooting and repairs
- Repair, overhaul and retrofit
- Machine relocations
- Technological conversion to other components
- Maintenance contracts, inspections
- Spare parts deliveries at short notice
- International service partners
- Remote diagnostics via Ethernet interface
- 24/7 Service desk
- Customized service for your machinery pool

# LS



# SAMAG – SERVICE



# SAMAG

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[www.samag.com](http://www.samag.com)

