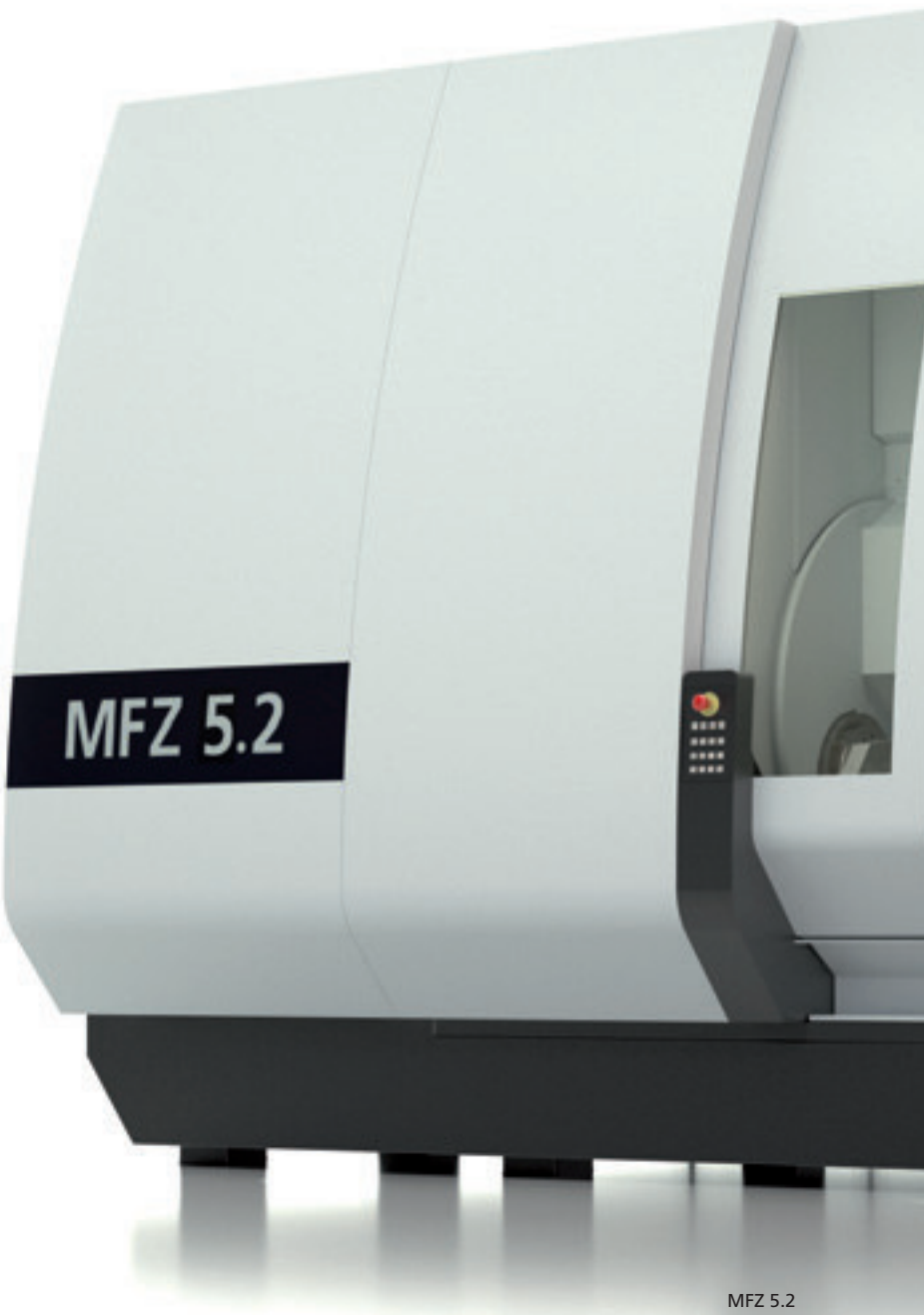
MULTISPINDLE MACHINING CENTERS

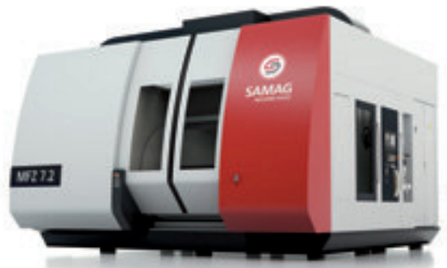
SAMAG



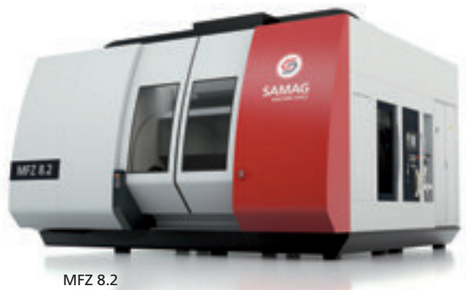
MFZ 5.2

MFZ – FIT 2 PART

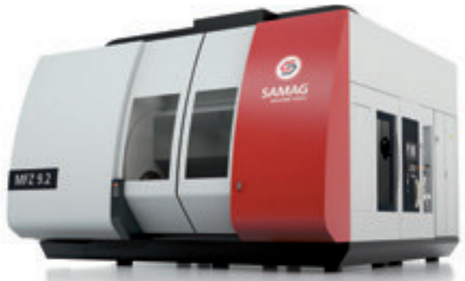
CUSTOMIZED SOLU-
TIONS READY TO USE!
THE MFZ SERIES OFFERS
INFINITE POSSIBILITIES.



MFZ 7.2



MFZ 8.2



MFZ 9.2

MFZ SERIES – FIT 2 PART – YOUR TASK DEFINES OUR MACHINE

Highest performance and output per square meter, simultaneously lower costs and higher productivity – that was the task we set for our engineers and developers at SAMAG Machine Tools.

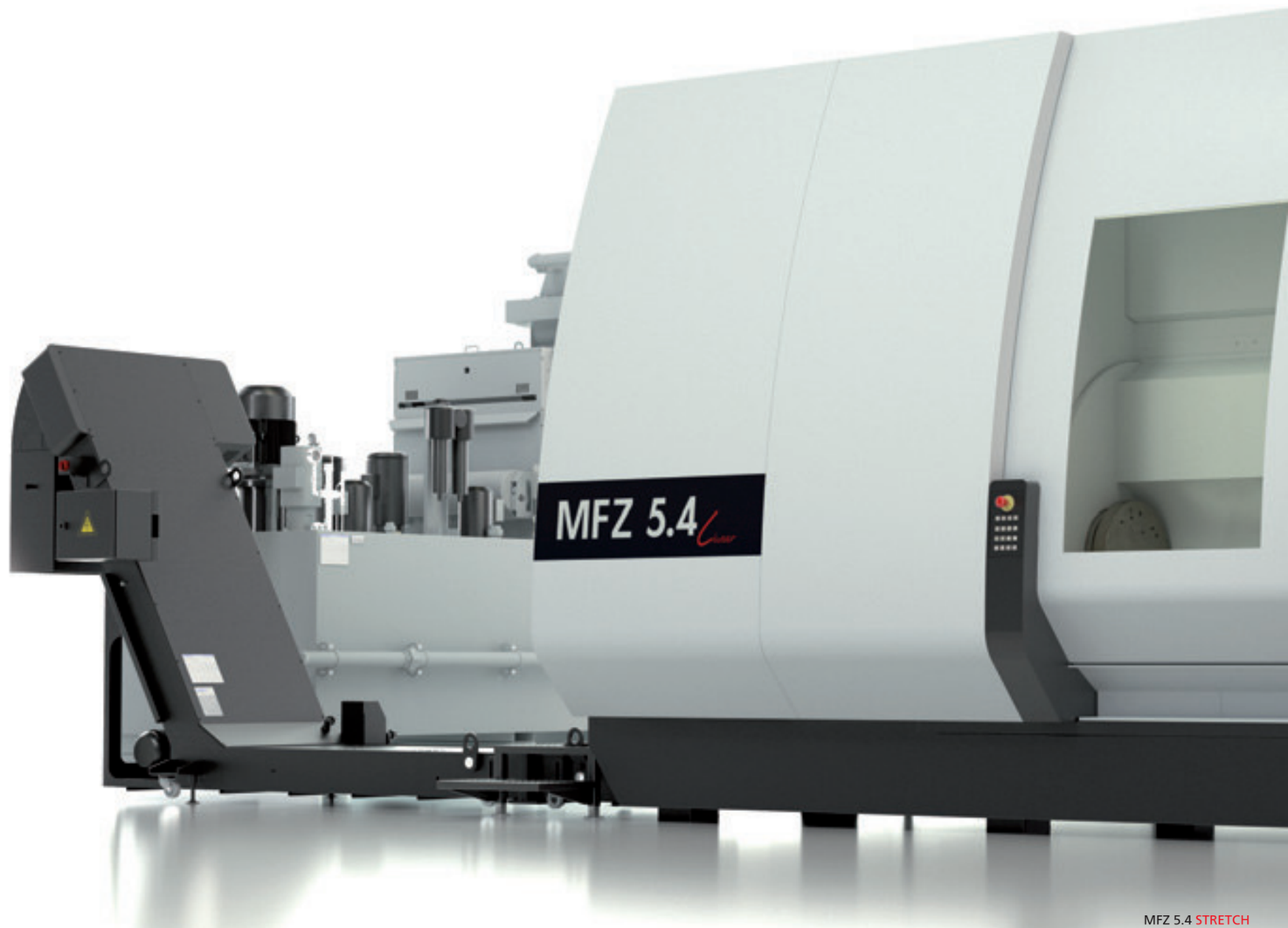
The result: the MFZ series with FIT 2 PART. The design of the new series leaves nothing to be desired.

Technological know-how – for maximum precision with the greatest possible productivity – coupled with passion and innovations; this is how we create the possibility to adapt the productive capacity of our MFZ machine tools to your workpiece – FIT 2 PART!

Whether complicated workpiece dimensions or the search for the optimum quantity solution with minimum investment in machinery, with the innovative production series of multispindle horizontal machining centers MFZ 5, MFZ 7, MFZ 8 and MFZ 9 we have further developed our proven machine tool technology – in line with the requirements of our clients.

Developed in proven SAMAG design – but perfected in many details – the new machine types improves their reputation as multi-talented powerhouses for efficient machining solutions. Moreover, the modular construction has significantly expanded the range of the workpiece dimensions.

FIT 2 PART – MORE POSSIBILITIES FOR HIGHEST PRECISION AND PRODUCTIVITY.



MFZ 5.4 STRETCH
with linear drive

MFZ – FIT 2 PART

CUSTOMIZED SOLU-
TIONS READY TO USE!
THE MFZ SERIES OFFERS
INFINITE POSSIBILITIES.

MFZ – FIT 2 PART

YOUR PARTS AND OUR MACHINES WILL BE PERFECTLY ADAPTED TO ONE ANOTHER! THE MFZ SERIES LEAVES VIRTUALLY NOTHING TO BE DESIRED. THANKS TO THE MODULAR CONCEPT FIT 2 PART, NEW CHALLENGES ARE NO PROBLEM FOR THE MFZ!

Turbo housing
3- or 4-spindle machining
Complete machining on MFZ
Machining time less than 55 s per workpiece

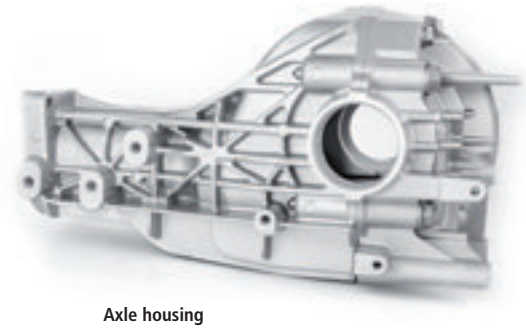
Aluminum knuckle (Rear axle)
Machining with 3 or 4 spindles in one clamping
Machining time less than 80 s per workpiece possible
Right and left workpieces are produced in the same machine

ABS housing
Machining with 4 spindles
Tool monitoring for all tools takes place during primary machining

The modular concept of the MFZ production series facilitates a large range and maximum flexibility in the selection of the right machining equipment, even for large and highly complex parts.

Because of the new selection options users can also machine comparatively complicated parts efficiently and profitably. At the same time, owning a machine from the MFZ production series ensures that you are ideally prepared for the future. Because in modern machining parts production of the supply industry in automotive manufacturing, the general engineering industry, medical technology or precision technology above all the greatest possible productivity and flexibility with minimum investment are sought after.

YOU HAVE THE WORKPIECE, WE HAVE GOT THE MACHINE!



Axle housing
Complete machining on MFZ
incl. axle bore
2-spindle solution with independent X-, Y- and Z-axis

Servo pump housing
2-spindle solution with 4 parts clamping
Machining in one clamping
Machining time less than 82 s per workpiece

Master brake cylinder
Machining with 4 spindles
OP 10 with 4 parts clamping on workpiece carrier unit
OP 20 with 4 workpieces on 2 rotary tables
(5 axis machining)

?

Please enter the
specifications for your
new workpiece here.
On the following pages you
will see how we can best
master your challenge.

Brake caliper
Machining with 3 or 4 spindles
OP 10 and OP 20 are processed in one machine
Complete machining in 67 s

Cast iron knuckle (Front axle)
Machining with 3 or 4 spindles in one clamping
Machining time on the 3-spindle solution: 97 s per part
Right and left workpieces are produced in
the same machine

Connecting rod
4-spindle solution for the pre-machining
2-spindle solution for the fine boring with
independent X-, Y- and Z-axes
Cycle times for transfer lines lower than
30 s possible

Common rail
Machining with 3 or 4 spindles
Clamping device with 6 or 8 workpieces
Machining of ends and connections on MFZ
Machining of deep bore can be done with 4-6 spindles
on SAMAG deep drilling machines

Truck rocker arm
4-spindle solution with HSK-A100
Machining of slot with 4 spindles possible
OP 10 and OP 20 are processed in one machine
Part times lower than 50 s possible

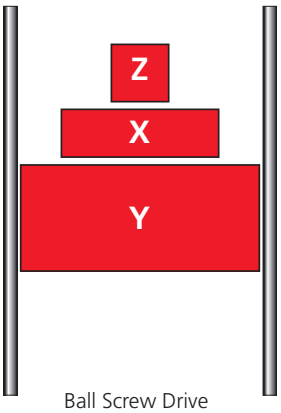
Bearing housing
2-spindle solution with a 4 part clamping fixture
Machining of OP 20 after the turning process
Part time less than 90 s possible

ZERO GRAVITY DRIVE

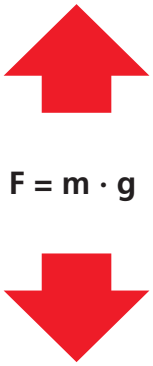
SIMPLY TURN THE 3-D UNIT BY 90°, AND THE MASS TO BE MOVED IS CUT IN HALF!

Traditional drive

Exertion of force in Y-direction



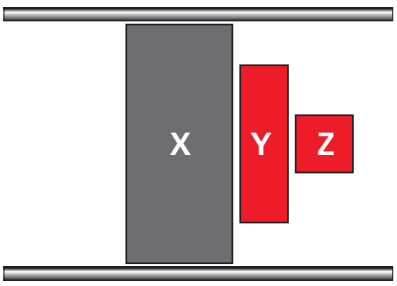
Ball Screw Drive (BSD)



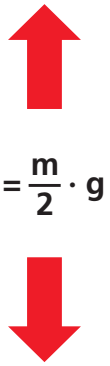
Turning 3-D unit by 90°

ZERO GRAVITY DRIVE

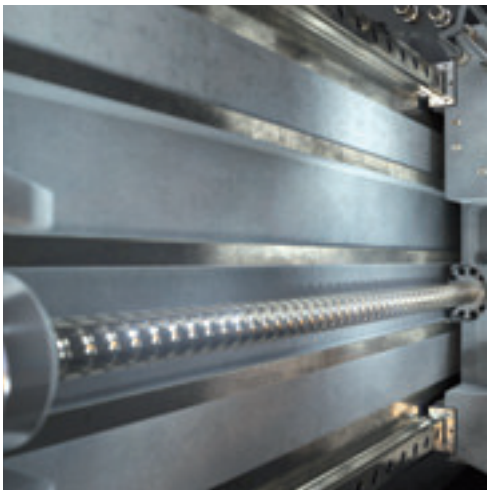
Exertion of force in Y-direction



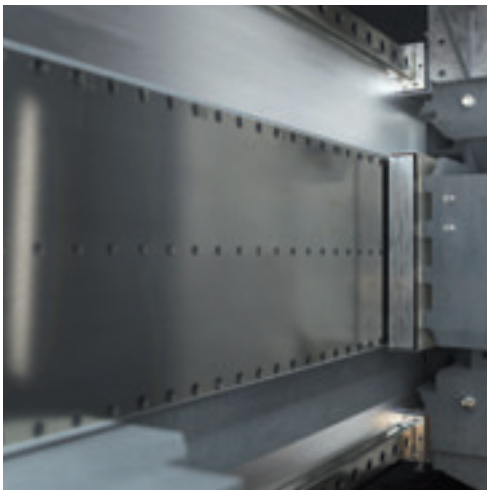
Ball Screw Drive (BSD) or Linear Drive (LD)



THE TURN OF THE MASS



Ball Screw Drive (BSD)



Linear Drive (LD)

ZERO GRAVITY DRIVE – OR THE TURN OF THE MASS

Due to the turn and the resulting reduction of the mass to be moved – by about half – with the ZERO GRAVITY DRIVE we are able to implement an incomparably dynamic, precise and stable type of spindle movement in all three linear axes.

This kinematic concept is unique among multispindle machining centers. On the one hand it enables the highest efficiency and absolute precision and on the other hand maximum utilization and extreme profitability.

ZERO GRAVITY DRIVE – MOVING THE 3-D UNIT HAS NEVER BEEN SO EASY

- Shifting the moved mass from the Y-axis to the horizontal X-motion axis
- highest machining performance and higher model diversity through modular concept
- Reduction of masses to be moved up and down
- Lower acceleration and braking forces necessary
- Increase in energy efficiency
- Increase of machine dynamics
- Reduction of machining and idle times
- Enables "stretch variant" and separate spindle axes X, Y and Z (for 2 spindle version)
- Modular machine module allows optimum adaptation of the machine to the workpiece

LINEAR DRIVE

- Higher rapid traverses and axis accelerations, as a result shorter non-productive times
- Precise positioning
- Wear free, since contact-free
- Permanent current consumption and active cooling of primary and secondary parts

Linear drive is ideally suited for multispindle horizontal machining centers. For minimum time loss in the event of lots of machining and positioning operations coupled with frequent tool changes, linear drive technology is an essential element for more productivity.

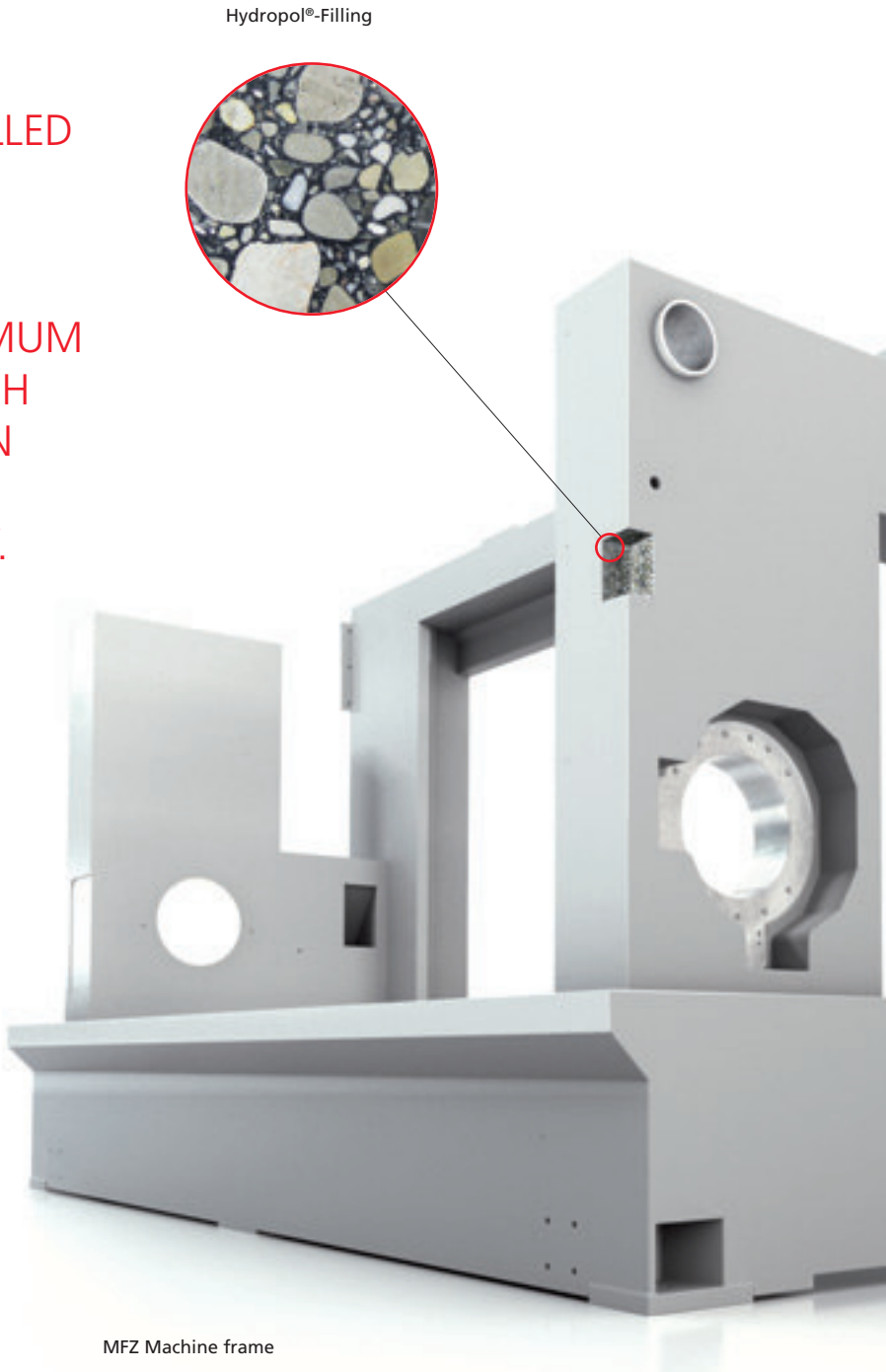
BALL SCREW DRIVE

- Robust and reliable design, suitable for very high feed forces
- Standard drive for machinig centers with a comparatively low power consumption

The ball screw has an attractively high service life and has been continuously improved in development. In the process it combines a reliably stable and compact design.

ROCK SOLID DESIGN

OUR MFZ SERIES IS SOLID AS A ROCK. A SINGLE FRAME FILLED WITH HYDROPOL® AND THE CLOSED CONSTRUCTION GUARANTEE MAXIMUM PRECISION THROUGH THE BEST VIBRATION DAMPING AND THERMAL STABILITY.



MFZ Machine frame

SINGLE FRAME

The new generation of MFZs is built on the solid machine bed with Hydropol® filling. The specially developed composite material improves the stability of machine tool beds. Hydropol® makes possible a further step in energy efficiency and higher productivity.

ROCK SOLID DESIGN – THE ADVANTAGES OF A ROCK SOLID MACHINE BED COMPARED TO STEEL AND CAST IRON FRAMES:

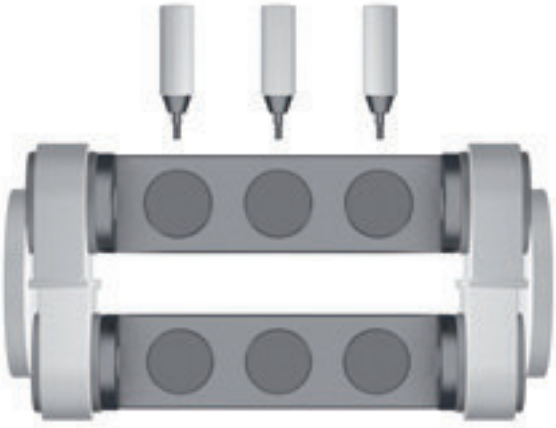
- Closed construction – analyzed and optimized by FEM
- Optimum force flow
- Dimensionally stable even during heavy duty machining
- Thermal expansion is minimized due proven solid Hydropol® filling
- High static and dynamic bed rigidity, stable and easy to assemble design through steel cover
- Sustainability: the average energy expended for the production of a machine bed made of Hydropol® is 2/3 lower than the energy expended for the production of a machine bed made of cast iron
- Outstanding damping ability
- Higher thermal stability compared to steel/cast/ mineral cast/polymer concrete beds
- Higher machine dynamics
- Longer tool lifes
- Higher energy efficiency
- Better surface quality on the workpiece

SINGLE FRAME CONSTRUCTION: MAXIMUM STABILITY FOR THE WORKSPACE

The concept of the frame construction offers reliable stability through its closed construction. Therefore the power transmission through the axis motions in the working area does not cause deformations of the frame. This extremely stable solution is the requirement for the high precision machining of your workpiece and guarantees consistently high process quality.

CONSTRUCTION

SMART

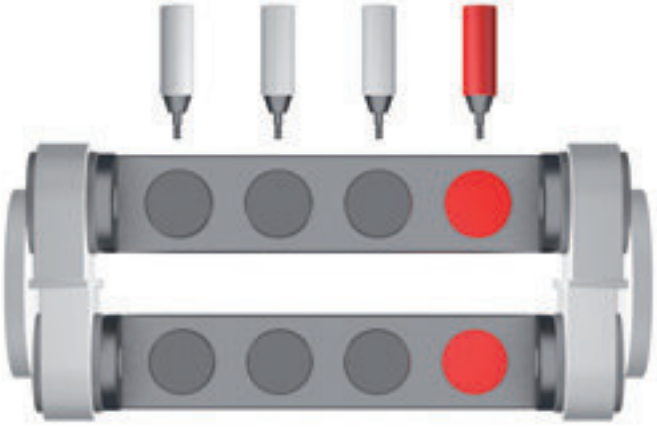


MFZ machining center in
standard design …

+

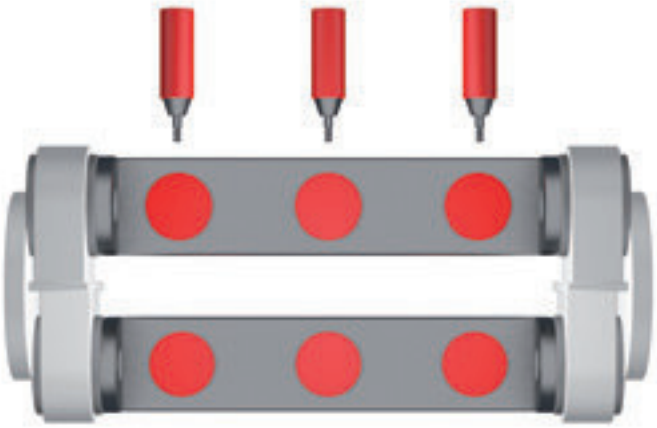
… SMART STRETCH TECHNOLOGY …

=



… more spindles …

V



… more distance …

=

… the same machine,
more options!

STRETCH TECHNOLOGY

NEED MORE?
NO PROBLEM!
OUR MACHINES
CAN BE EASILY
ENLARGED.

SMART STRETCH TECHNOLOGY – INTELLIGENT SPACE UTILIZATION

SMART STRETCH TECHNOLOGY – means flexibility in working width expansion in optimum accordance with your machining workpiece, within the same, cost-optimized machine size.

- Variable spindle distances in the X-axis within machine sizes MFZ 5 and MFZ 7
- Optimum adaptation of work area design to the machining workpiece
- Lower machine investment costs because of work area flexibility
- Lower production costs due to optimum work area
- Shorter delivery times because of modular machine design
- Ecological, because only the exact "amount of machine" is produced which is necessary for your workpiece
- Higher productivity due to an increase in the number of spindles with equal work area per spindle in the same machine size
- Definition of the machine by the workpiece, not by the spindle distance

PENDULUM CHANGER – GOOD BY EXPERIENCE

The W-axis principle established in 1995 by SAMAG enables workpiece loading during primary processing time. The workpiece carrier table is moved from 0-180°. While simultaneously machining the next loading/unloading of workpieces can occur. Efficient and practical even for robot-supported feed.

PENDULUM CHANGER

MFZ – FIT 2 PART

YOUR WORKPIECE – DIMENSION, QUALITY, MATERIAL, CAPACITY – DEFINES THE MACHINE, NOT THE OTHER WAY ROUND! YOU WOULD THINK WE WERE JOKING, IF WE DON'T FIND THE RIGHT COST PER PART SOLUTION WITH 74 VARIANTS OF MFZ.

Precision coupled with flexibility in machinery sets new standards and offers a wide variety of solutions for multispindle workpiece machining. We have redefined the interplay of quality, quantity, material and dimension, and thus are able to guarantee clients more capacity at lower cost – we increase your productivity.

Innovation taken to its logical conclusion – Modularity in the components will get you there.

STEREO 3-D SETUP – CONSTRUCTIVE DECOUPLING OF THE 2-SPINDLE SYSTEMS

- 2-spindle machine with two independently correctable 3-D units (X,Y,Z)
- Highest precision for critical tolerances
- Comparable to two single-spindle machining centers
- New workpiece spectrum
- Finish machining of complex components
- Minimum set-up time for new workpieces

Series		
Parameters for 2, 3 and 4 spindles		
Ø Interference diameter workpiece carrier (A-axis)		[mm]
Travels		[mm]
Rapid traverse rate		[m/min]
Axis acceleration		[m/s²]
Feed force		[kN]
Number of spindles		
Machining spindle	Drive*)	Unit
HSK-A50	BSD & LD	[mm]
HSK-A63	BSD & LD	[mm]
HSK-A63	BSD & LD	[mm]
HSK-A63 STRETCH	BSD & LD	[mm]
HSK-A63 STRETCH	BSD & LD	[mm]
HSK-A100	BSD	[mm]
HSK-A100 STRETCH	BSD	[mm]

MFZ 5.4 STRETCH

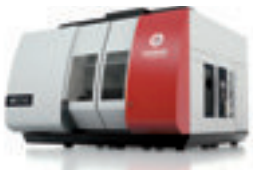
MFZ 7.4 STRETCH

The machines of the MFZ production series can be equipped with ball screw drive or linear drive.

MFZ 5.2

MFZ 7.2

MFZ 8.2



MFZ 9.2

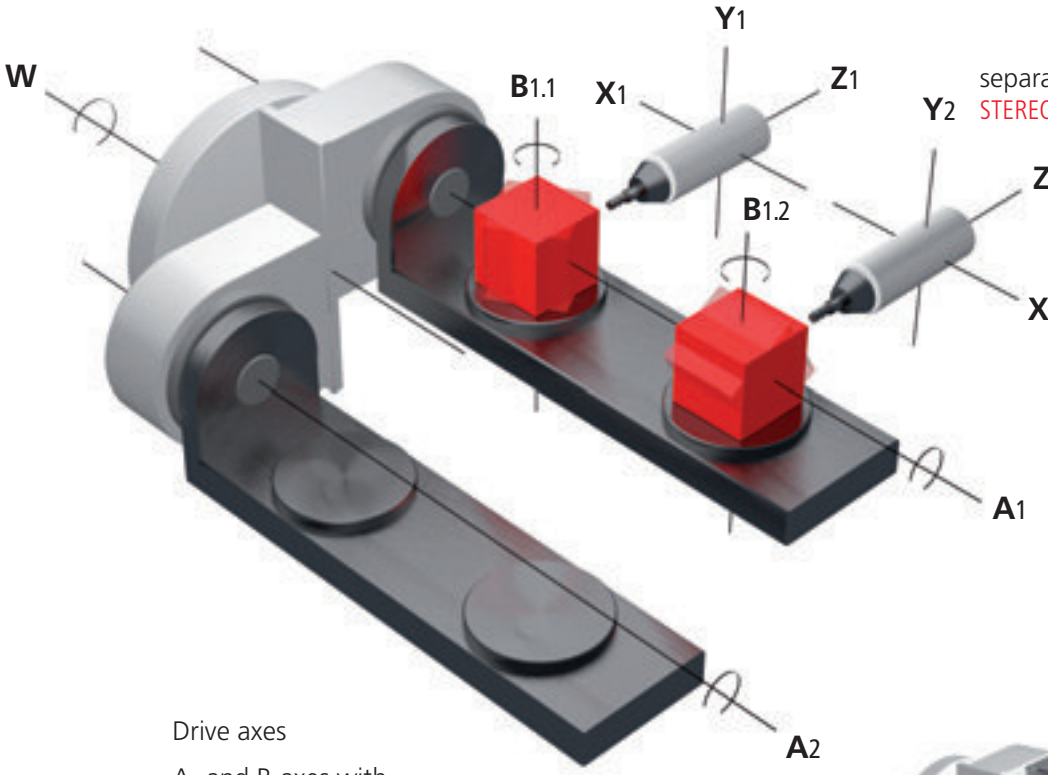
MFZ 5			MFZ 7			MFZ 8			MFZ 9		
X	Y	Z	X	Y	Z	X	Y	Z	X	Y	Z
500			720			800			950		
180-480	450	380	240-840	600	450	360-840	700	520	480-840	900	520
70-100	70-100	80-100	70-100	70-100	80-100	70-100	70-100	70-100	70-100	70-100	70-100
10-12	10-12	15	10-12	10-12	13-15	10-12	10-12	10-15	10	10	10-15
4-7	4-7	2-7**)	6-10	6-10	3-10**)	10-15	10-15	3-15**)	8-12	8-12	5-15**)
1+1	**3**	**4**	**1+1**	**3**	**4**	**1+1**	**3**	**4**	**1+1**	**3**	**4**
Spindle distance											
–	–	180	–	–	–	–	–	–	–	–	–
360	240	–	480	360	240	720	480	360	720	480	–
–	–	–	560	420	–	840	560	420	840	560	–
480	360	240	720	480	360	–	–	–	–	–	–
–	–	–	840	560	420	–	–	–	–	–	–
–	–	–	560	420	–	840	560	420	840	560	–
–	–	–	840	560	420	–	–	–	–	–	–

*) BSD: Ball Screw Drive; LD: Linear Drive

**) Feed force per spindle

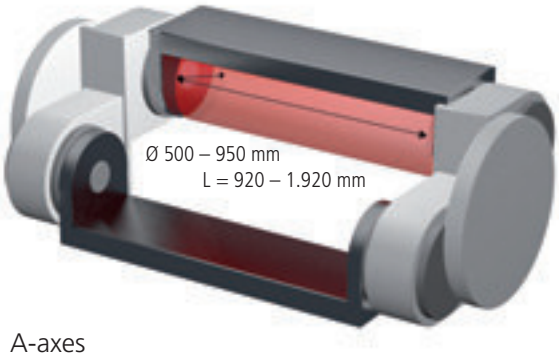
STEREO 3D SETUP

FIT 2 PART –



Drive axes

A- and B-axes with
torque drives



A-axes
1 or 2 Torque drives

W-axis
180° Swivel drive, pendular

PENDULUM CHANGER

WELL-ENGINEERED TECHNOLOGY AND OPTIMUM ACCESSIBILITY – WITHOUT PEDESTAL – MAKE LOADING AND UNLOADING DURING SIMULTANEOUSLY MACHINING TIME CHILD'S PLAY.

A-axes Torque drives		MFZ 5	MFZ 7	MFZ 8	MFZ 9
Faceplate diameter Drive/Thrust bearing	[mm]	425 / 345	425 / 345	425	425
Max. speed	[rpm]	60	60	50	50
Max. acceleration	[rps²]	5	5	5	5
Accuracy of position	["", arcsec]	± 6	± 6	± 6	± 6
Thermal standstill torque per drive side	[Nm]	600 / 900	600 / 900	900 / 1,200	900 / 1,200
Permissible tangential moment (Clamp + Pressurization)	[Nm]	3,000	3,000	8,000	8,000
Max. transport load (Dependent on center of gravity)	[kg]	ca. 600	ca. 600	ca. 1,600	ca. 1,600
Swiveling time (0-180°) without releasing and clamping	[s]	0.8	0.8	0.9	0.9
Clamping area (Ø collision circle)	[mm]	500	720	800	950
Clamping area (length)	[mm]	920	1,500	1,920	1,920
Clamping area STRETCH (length)	[mm]	1,280	1,920	–	–

W-axes		MFZ 5	MFZ 7	MFZ 8	MFZ 9
Faceplate diameter Drive/Thrust bearing	[mm]	345 / 345	345 / 345	500 / 500	500 / 500
Accuracy of position	["", arcsec]	± 3	± 3	± 3	± 3
Swiveling time (0-180°)	[s]	approx. 4.5	approx. 4.5	approx. 7	approx. 7

FIT 2 PART – PENDULUM

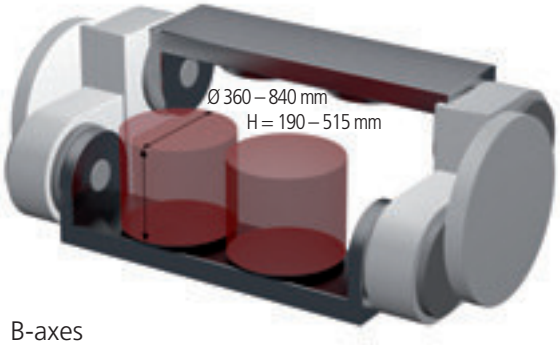
YOU ALWAYS GET
THE RIGHT SOLUTION
WITH TORQUE DRIVEN
B-AXES – FIT 2 PART
IN ACTION.

B-axes Torque drives Ø Interference diameter, Height [mm]	Ø 180	Height	Ø 240	Height	Ø 360	Height	Ø 420	Height	Ø 480	Height	Ø 560	Height
MFZ 5		195		195		190	–		–		–	
MFZ 5 STRETCH	–			195		195	–			190	–	
MFZ 7	–			330		330		330		330		330
MFZ 7 STRETCH	–		–			330		330		330		330
MFZ 8	–		–			400		400		400		400
MFZ 9	–		–		–		–			515		515

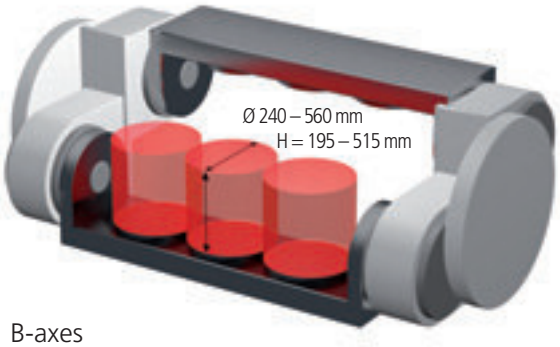
Torque drives		**Construction kit 1**	**Construction kit 2**	**Construction kit 3**	**Construction kit 3**	**Construction kit 3 / 4**	**Construction kit 4**
Permissible tangential moment	[Nm]	300	600	1,000	1,000	1,000 / 2,500	2,500
Max. speed	[U/min]	90	90	90	90	60	60
Accuracy of position	[", arcsec]	± 6	± 6	± 6	± 6	± 6	± 6
Swiveling time (0-180°)	[s]	0.7	0.7	0.7	0.7	0.7	0.7
Max. transport load	[kg]	20	40	70	70	70 / 120	120

CHANGER

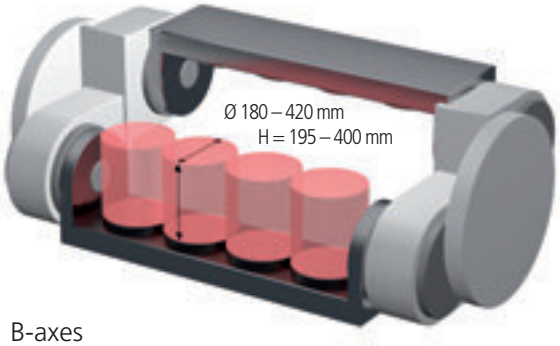
Ø 720	Height	Ø 800	Height	Ø 840	Height
–		–		–	
–		–		–	
–		–		–	
	330	–		–	
	400		400	–	
	515	–			515
Construction kit 4 / 5		**Construction kit 4 / 5**		**Construction kit 4 / 5**	
2,500 / 4,000		2,500 / 4,000		2,500 / 4,000	
60		60		60	
± 6		± 6		± 6	
0.7 / 0.8		0.7 / 0.8		0.7 / 0.8	
120 / 140		120 / 140		120 / 140	



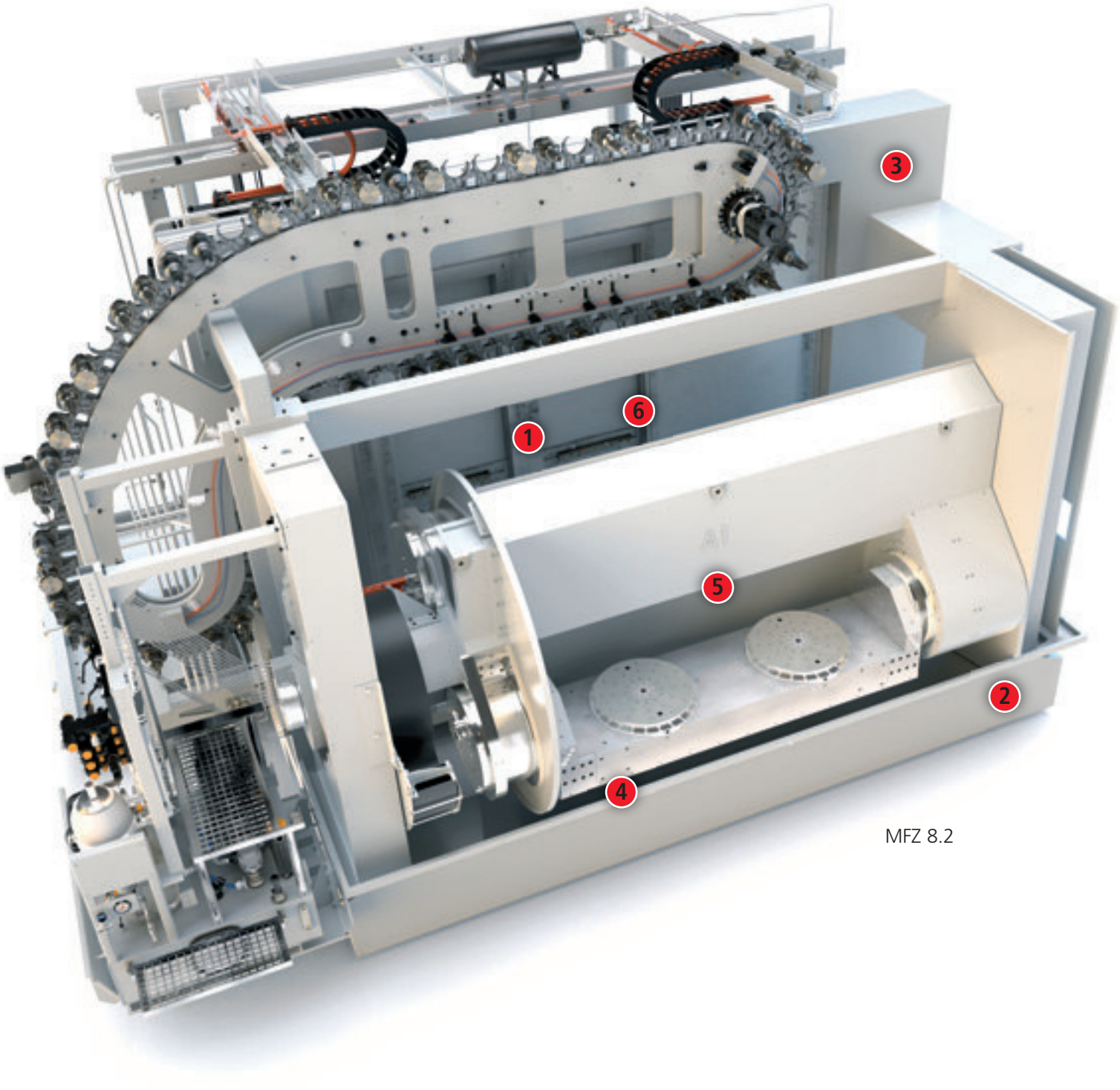
B-axes
2 Torque drives,
independent



B-axes
3 Torque drives,
independent



B-axes
4 Torque drives,
independent



MFZ 8.2

MFZ – FIT 2 PART

1+1 > 2 OR THE WHOLE IS MORE THAN THE SUM OF ITS PARTS, OR: MFZ SERIES.

1 ZERO GRAVITY DRIVE

Dynamics and energy efficiency during workpiece machining, basic technology for modular machine adaptation according to workpiece requirements

2 ROCK SOLID DESIGN

Stability for lifetime – machine bed for highest stability and service life for even higher precision

3 SINGLE FRAME CONSTRUCTION

Closed, stable, the construction counteracts the transfer of force of the axis movements to the frame

4 SMART STRETCH TECHNOLOGY

Flexibility for your workpiece with consistent, cost-optimized machine size

5 PENDULUM CHANGER

Since 1995 the W-axis principle has been a fixed constructive principle of MFZ machines, simultaneously loading and unloading during machining time for more efficiency

6 STEREO 3D SETUP

Maximum precision, correction & compensation

FIT 2 PART – MAXIMUM FLEXIBILITY

- Adaptation of the machine to the workpiece depending on dimension, material, capacity and quality
- Unique modular principle with optional width scaling
- Correction possibilities through optional independence in X, Y and Z (2-spindle version)

COST PER PART – PRODUCTIVITY REDEFINED

- Capital expenditure adapted to the task
- Reduction of primary and auxiliary processing times through higher dynamics
- Minimal tool wear through optimized damping properties of the components
- More output per square meter through multispindle technology

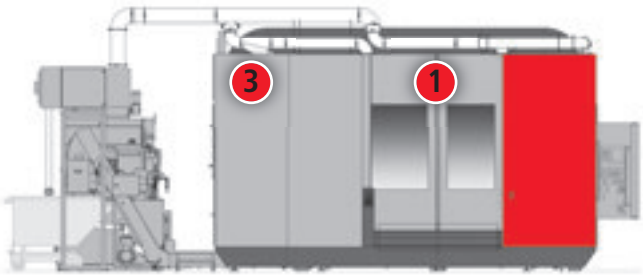
EFFICIENCY

- Use of modern drive technology and energy recovery modules
- Reduction in compressed air consumption
- Energy conscious use of machine components
- Low energy requirements in the production of the machine bed through the use of Hydropol®
- Reduced use of coolants and lubricants through possible dry machining or MQL (Minimum quantity lubrication)
- Usage of software and hardware features such as e.g. sleep mode of aggregates, frequency controlled pumps

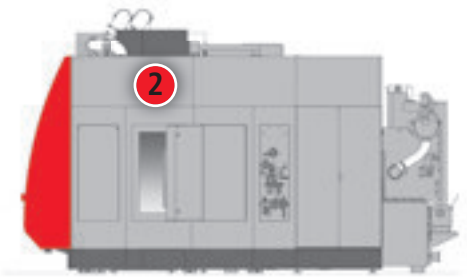
ERGONOMICS

- Best possible accessibility for operators
- Maintenance friendly service accesses for media supply and drives
- Spacious sliding door in the back of the machine enables full access

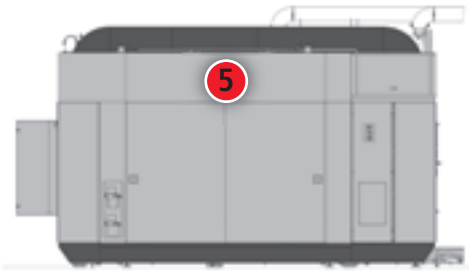
EASY ENTRY ARCHIT



Front



Left



Rear

WE HAVE BEEN BUILDING MACHINES FOR 140 YEARS NOW, AND WE KNOW WHAT MATTERS IN OPERATION AND MAINTENANCE: EASY ACCESS AND WELL THOUGHT OUT ERGONOMICS!

BEST POSSIBLE ERGONOMICS & MAINTENANCE FRIENDLINESS

FOR OPERATORS:

- No pedestal necessary for machine loading and operating area
- Swiveling central operating console with good view into the working area

FOR MAINTENANCE & SERVICE

- Sliding door rear as spacious central maintenance access to the machine, doors in the setup area open wide
- Centrally located, easy access media supply, hydraulic power unit as well as maintenance access for A- and W-axis through sliding housing segment

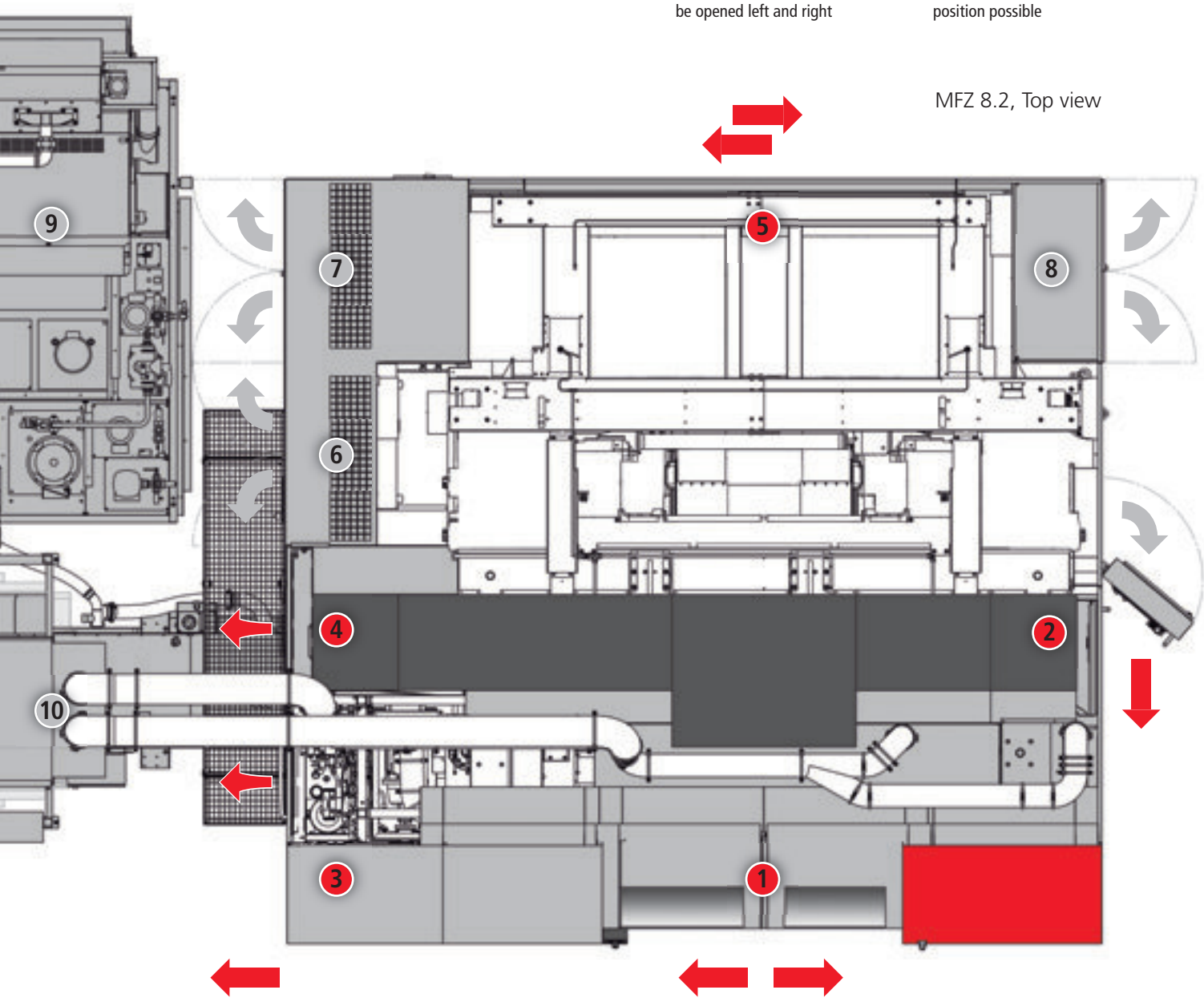
Series		MFZ 5			MFZ 7			MFZ 8			MFZ 9		
		Width	Depth	Height	Width	Depth	Height	Width	Depth	Height	Width	Depth	Height
Floorspace *)	[m]	7.50	4.80	3.10	8.00	5.40	3.00	8.40	6.10	3.40	8.40	6.10	3.70
Floorspace STRETCH	[m]	7.90	4.80	3.10	8.40	5.40	3.00	–	–	–	–	–	–
Weight *)	[kg]	24,700 – 25,700			32,800 – 34,800			37,500 – 39,660			40,700 – 42,350		
Electrical connection *)	[kW]	100 – 140			100 – 170			100 – 170			100 – 150		

*) Dependent on the equipment (Ball screw, linear drive, number of spindles, Stretch yes/no), all values are approximate

ECTURE

1. Sliding doors loading area
2. Door to workspace, swiveling
3. Sliding housing segment, access to the hydraulic system
4. Sliding window opening upwardly for tool change
5. Sliding doors service access to machine room, to be opened left and right
6. Electrical cabinet, swiveling door
7. Electrical cabinet, swiveling door
8. Electrical cabinet, swiveling door
9. Coolant and lubrication unit, if necessary different positions possible
10. Chip conveyor system, if necessary different position possible

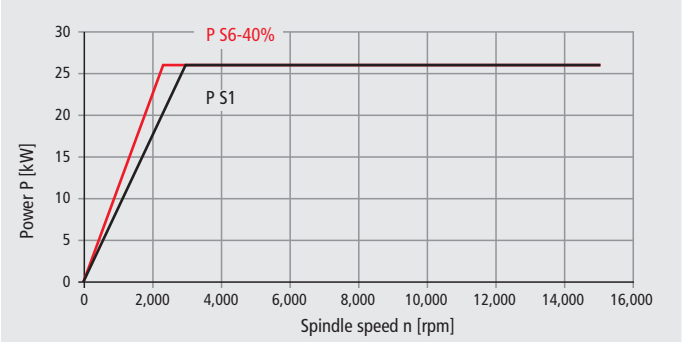
MFZ 8.2, Top view



Standard spindle

HSK-A63

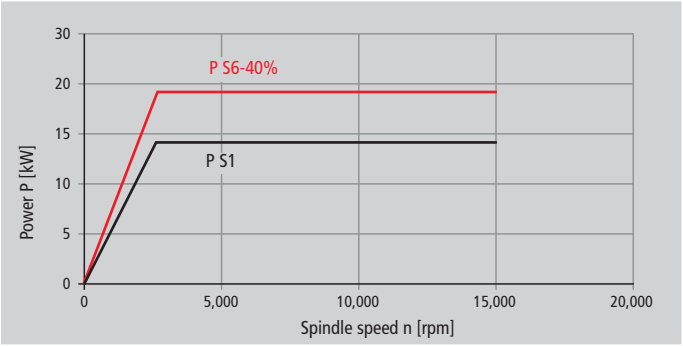
Operating Mode *)	Power (P)	Torque (M)	Max. Speed (n_{max})
	[kW]	[Nm]	[rpm]
S1	26 (continuous)	84	15,000
S6		110	



Fast spindle

HSK-A50
(MFZ 5.4 only)

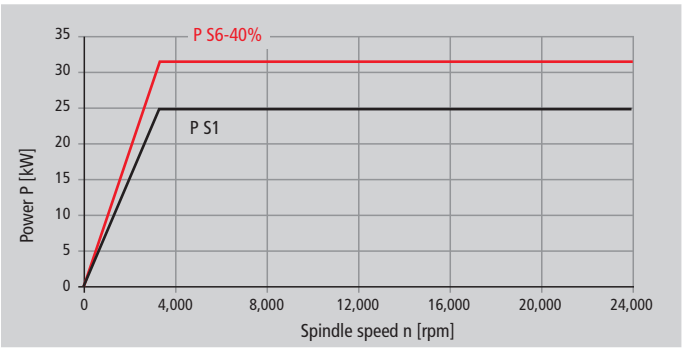
Operating Mode *)	Power (P)	Torque (M)	Max. Speed (n_{max})
	[kW]	[Nm]	[rpm]
S1	14	44	15,000
S6	19	60	



High-speed spindle

HSK-A63

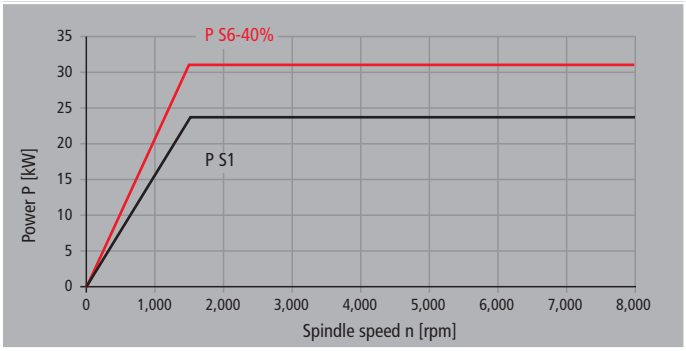
Operating Mode *)	Power (P)	Torque (M)	Max. Speed (n_{max})
	[kW]	[Nm]	[rpm]
S1	25	74	24,000
S6	32,5	96	



Heavy spindle

HSK-A63

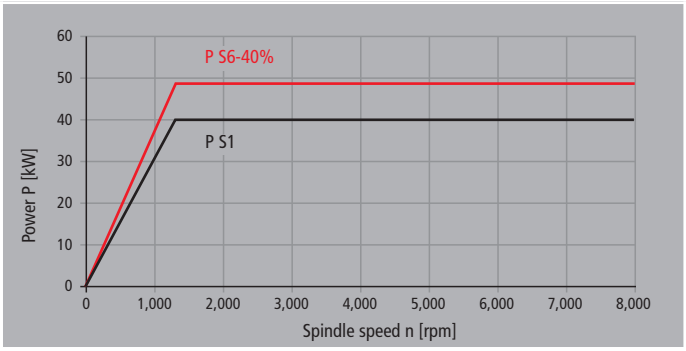
Operating Mode *)	Power (P)	Torque (M)	Max. Speed (n_{max})
	[kW]	[Nm]	[rpm]
S1	23,5	150	8,000
S6	31	197	



Heavy spindle

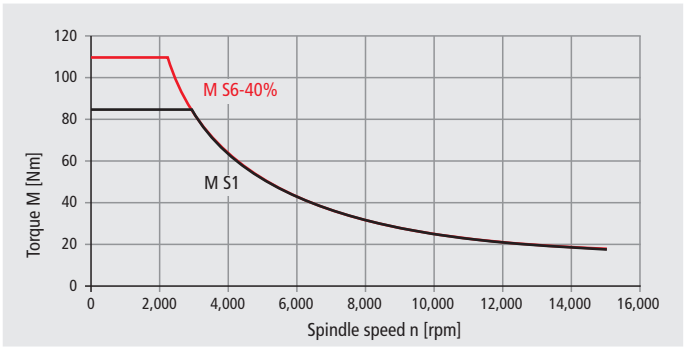
HSK-A100

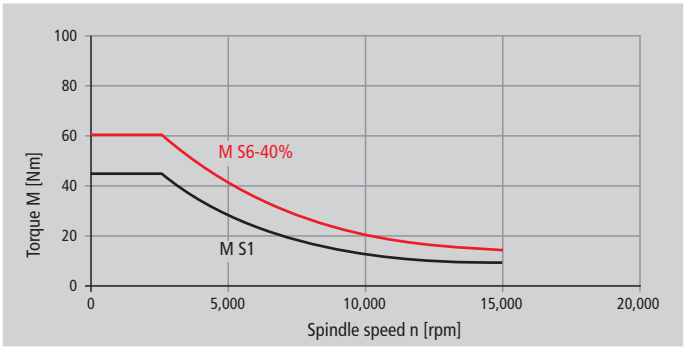
Operating Mode *)	Power (P)	Torque (M)	Max. Speed (n_{max})
	[kW]	[Nm]	[rpm]
S1	40	300	8,000
S6	49	360	

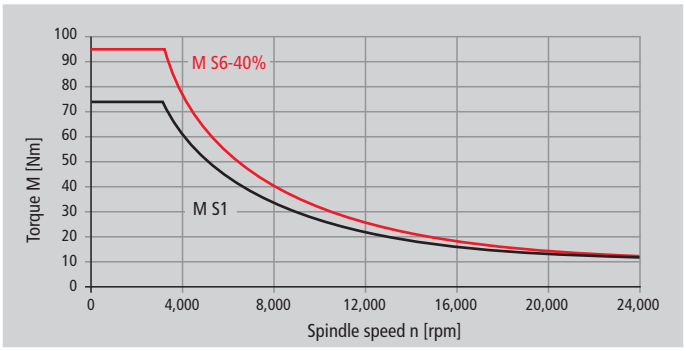


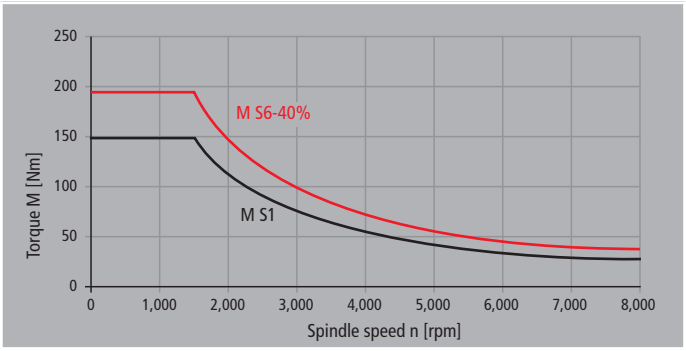
*) Duty cycle 40 % for S6 operation

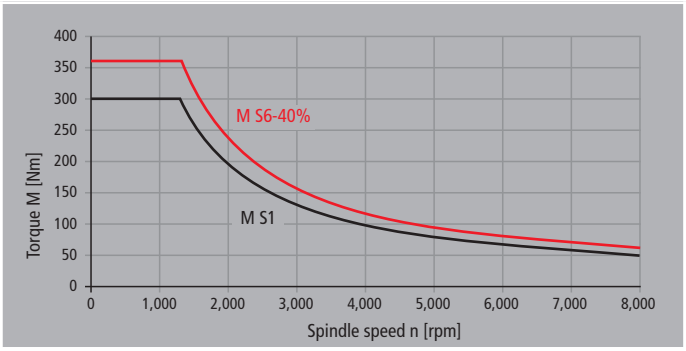
FIT 2 PART – SPINDLES











STANDARD, HIGH-SPEED, HEAVY ... THE MATERIAL AND THE JOB DETERMINE WHICH SPINDLE IS RIGHT FOR YOUR WORKPIECE.

WHETHER STEEL, CAST OR ALUMINUM MACHINING, WE OFFER THE RIGHT SPINDLE.

Spindle selection depends on the necessary process. Your horizontal arrangement provides for favorable chip fall in the working area and in this way prevents chip packing on the workpiece. Here too, stability and an exact adaptation are criteria for more flexibility and large output ranges.

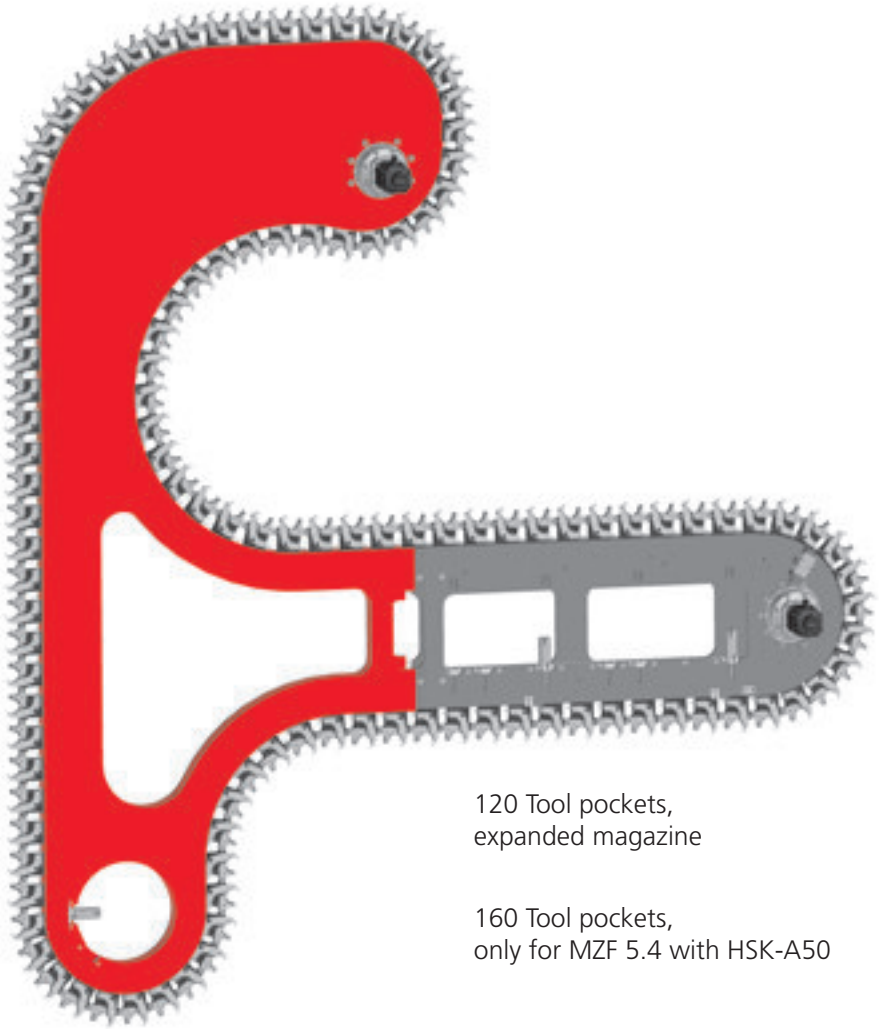
Depending on client specifications or process requirements the HSK-A50, HSK-A63 and HSK-A100 interfaces are available. In a hurry? No problem, our high-speed spindle achieves speeds of up to 24,000 rpm. But we have also got you covered with our powerful HSK-A100 spindle for a secure process in heavy machining.

FIT 2 PART – TOOLS

THE MODULAR DESIGN IS ALSO SYSTEMATICALLY IMPLEMENTED FOR TOOL MAGAZINES – FIT 2 PART.

TOOL MAGAZINE WITH 72, 120 OR 160 TOOL STATIONS

- Protected chain magazine with locked tool pocket outside of the machining area
- Available with HSK-A63 and HSK-A100 (HSK-A50 for MFZ5.4)
- Modular design for all four different sizes
- Standard 72 Tool pockets
- Expandable Tool magazine
- Pick-up tool change



120 Tool pockets,
expanded magazine

160 Tool pockets,
only for MZF 5.4 with HSK-A50

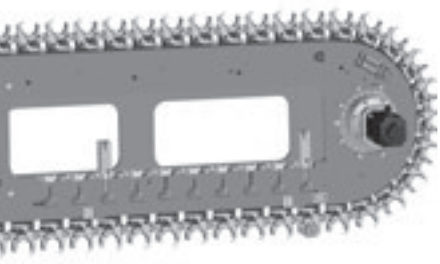
Tools		MFZ 5	MFZ 7	MFZ 8	MFZ 9
Tool Ø, max.	[mm]	160	200	260	260
Tool lenght, max.	[mm]	320	320	420	420
Tool weight at HSK-A63 spindle, max.	[kg]	12	12	12	12
Tool weight at HSK-A100 spindle, max.	[kg]	–	20	20	20

Tool magazine basic module with extension module in HSK-A63 version

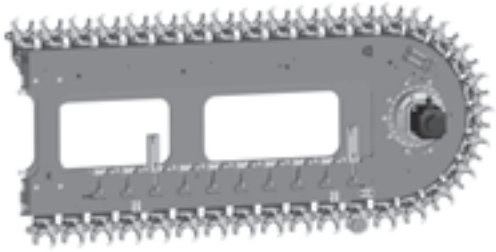
Access for tool loading with operator panel

Tool pockets HSK-A63

Tool assortments from various suppliers



72 Tool pockets, standard magazine

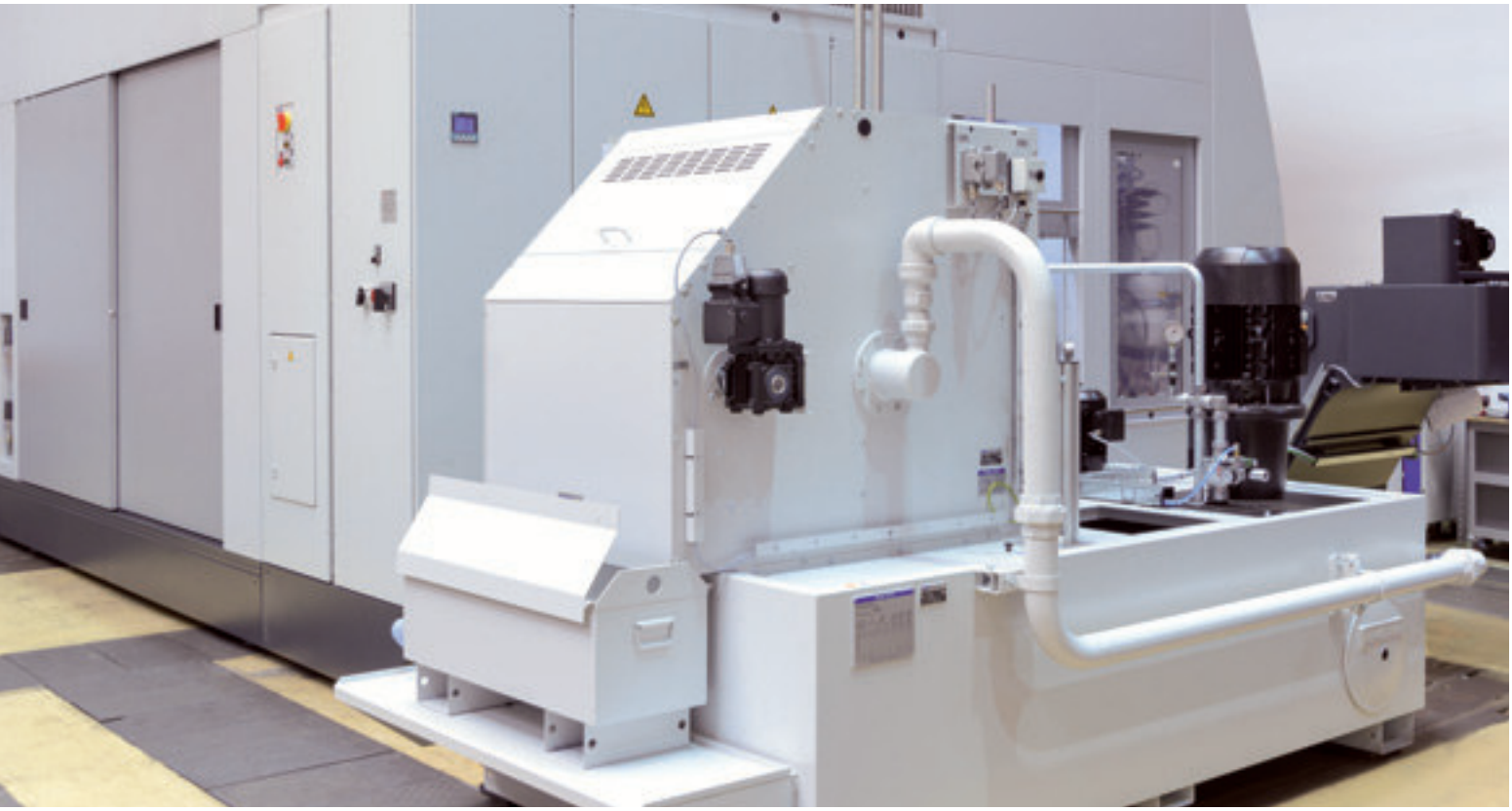


Basic module

MFZ – COMPONENTS

EVERY DETAIL HAS BEEN THOUGHT OUT AND IS THE RESULT OF DECADES OF EXPERIENCE IN MACHINE BUILDING. MFZ SERIES – INNOVATION MEETS TRADITION!

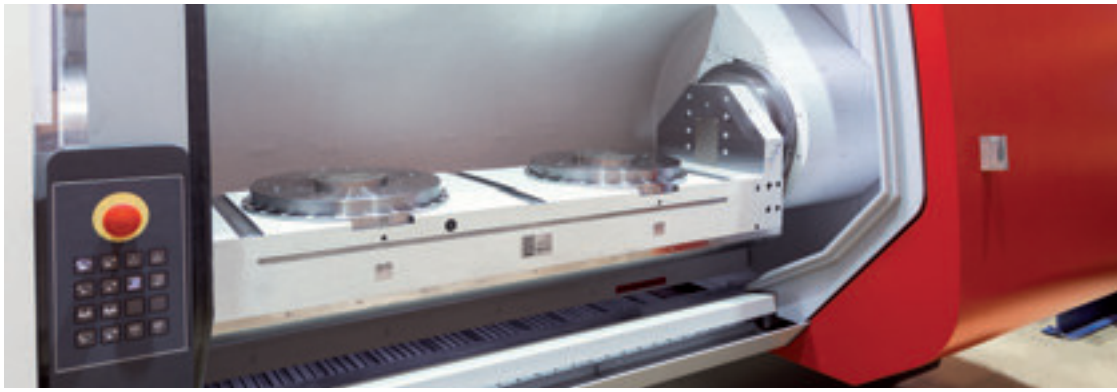
Main operator panel



MFZ 9.2 linear with cooling lubricant unit, standard layout

Switch cabinet

Torque drive



PENDULUM CHANGER, A/B-axes

Pressure accumulator hydraulic unit

Frequenzy controlled hydraulic pump

Motor spindles with tools – 2-spindle version

Additional operator panel

CONTROL

- SINUMERIK 840D sl
- Profinet system

HYDRAULICS

- Sleep mode of aggregates,
- Frequency controlled pumps

CENTRAL COOLING

- Scalable by machine capacity and climate zone
- Available in 25, 30 and 40 kW

COOLING LUBRICANT UNIT

- Filter system with 1,600 l or 3,400 l
- High pressure pumps of 40 l/min at 30 bar to 164 l/min at 70 bar
- Options: Double cartridge filter, magnetic roller and flange heater

ELECTRICAL CABINET

- Fully integrated – no extra floor space necessary
- Dust-proof through cooling via heat exchanger

SERVICE-PANEL

- Second operating panel close to the tool loading area as well as the components chip conveyor and cooling lubricant unit
- Up to 50 % less travel paths

DRIVES

- Rotary axes A and B are always driven by torque motors
- Linear motors or ball screw for X, Y, Z; as a result higher speed, better precision, dynamics and fewer wear parts

MFZ – EFFICIENCY

THE MFZ SERIES HANDLES RESOURCES ESPECIALLY EFFICIENTLY: CONSUMPTION OF ENERGY, LUBRICANTS AND COMPRESSED AIR ARE SIGNIFICANTLY REDUCED. THE MFZ MACHINES RUN PARTICULARLY EFFICIENTLY, QUICKLY AND DYNAMICALLY. BOTTOM LINE: LOWEST COST PER PART!

IT'S ABOUT LOWERING RESOURCE CONSUMPTION

Efficiency starts with less machine with the same performance or the same machine with more performance. This saves resources, improves energy efficiency in production and cuts costs.

Since 2001 we have introduced the environmental management system EMAS and we participate voluntarily in the EU Eco Audit according to the EMAS regulation. The SAMAG Group is implementing an environmental management program and is continually maintaining and developing this system in conjunction with the quality management system. The environmental management system is in compliance with ISO 14001:2004+ Cor. 1:2009 and Regulation (EC) No. 1221/2009 (EMAS III).

Based of these standards and their improvement we have also considered the cutting edge of environmental technologies in the further development of the MFZ production series. One of the greatest efficiency potentials arose from the horizontally moved mass. Lower movement of mass requires less energy. In addition, there is reduced use of coolant and lubricant through possible dry machining. Software and hardware features such as e.g. sleep mode of aggregates, frequency regulated pumps, reduced compressed air consumption, the use of energy recover modules complete an innovative resource concept for the production process.

EMAS
GEPRÜFTES UMWELTMANAGEMENT
DE-154-00122

SERVICE
IS OUR PRIMARY CONCERN

Our customer service does not end with the delivery of the machines. We offer you production launch support, service contracts as well as spare parts supply. As a standard feature our machines are equipped with teleservice, which dramatically reduces the required troubleshooting. Of course, we are at your site, throughout the world.

Comprehensive, individually tailored user training for maintenance, operating and programming also at customers.

OUR SERVICES:

- Installation and commissioning of our machines
- Short response times in diagnostics and repairs
- Maintenance, overhauls, and RETROFIT
- Machine relocations
- Retooling for other components
- Maintenance contracts, Inspections
- Express service / Emergency repairs
- Short-term delivery of space parts
- International service partners
- Remote diagnosis via Ethernet interface
- 24/7 Service response
- Customized service for your machinery

SAMAG – SERVICE

SAMAG MACHINE TOO

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