

GRINDING SPINDLES

HIGH QUALITY AND TAILORED TO YOUR NEEDS





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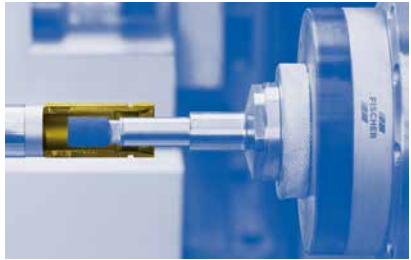
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THE WORLD OF GRINDING

EVERYTHING FROM ONE SOURCE

INTERNAL GRINDING

- Machining of a wide variety of workpieces, both cylindrical as well as end faces, tapered and spherical parts
- Spindles with highest speeds for high cutting speeds
- Spindles for sophisticated deep-hole grinding
- Highest running smoothness and precision
- Universally loadable bearings for radial, axial and combined grinding forces



EXTERNAL GRINDING

- High torque and high power density due to high-pole Synchronous motors
- HSG grinding with peripheral speeds up to 140 m/s
- Robust and high-precision bearing systems



GRINDING OF TOOLS

- Compact, high-torque and high-performance spindle systems for the production of cutting tools
- Razor-sharp cuts thanks to high rigidity and robust bearings
- Minimal axial shaft displacement
- Automatic tool clamping system or double-sided tool interface



DRESSING AND PROFILING OF GRINDING WHEELS

- Compact and powerful spindles with high thermal stability for precise dressing and profiling
- Cylindrical spindle housing or direct mounting housing

MACHINING OF SPECTACLE/FINE OPTICS

- Milling, grinding, polishing and dressing in the spectacle and fine optics industry
- Production of high-precision spheres, aspheres and fine optics at up to 100'000 rpm
- Sophisticated spindle sealing for the high demands of the optical industry
- Tool interface on both sides for pre-machining and finishing with one spindle



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HF MOTOR SPINDLES FOR UNIVERSAL GRINDING

HIGHEST PERFORMANCE IN A COMPACT DESIGN

- Compact, robust design
- High power and high torque over a wide speed range
- Excellent rigidity and concentricity for highest dimensional and form tolerances
- Designed for high radial and axial loads
- Sealing system supported by sealing air

TYPE		MFM-860	MFM-890	MFM-8120	MFM-1022/45	MFM-1032/60
Outer diameter	D [mm]	80	80	80	100	100
Tool interface		Arbor, HJND-42 HSK-C25	Arbor, HJND-50	Arbor, HJND-70	Arbor, HJND-21 HSK-C40	Arbor, HJND-28 HSK-C25
Max. speed	nmax [min ⁻¹]	60'000	90'000	120'000	45'000	60'000
Lubrication		DLS	DLS	DLS	DLS	DLS
Direction of rotation		right left & right	right	right	right left & right	right left & right
Power S1 / S6 40%	P [kW]	3.0 / 3.8	3.0 / 4.0	1.5 / 2.1	7.5 / 8.6	7.5 / 10.5
Torque S1 / S6 40%	M [Nm]	0.49 / 0.62	0.32 / 0.43	0.12 / 0.17	3.4 / 4.9	2.3 / 3.2
Nominal speed	nN [min ⁻¹]	60'000	90'000	120'000	22'000	32'000
Motor frequency	[Hz]	1'000	1'500	2'000	1'500	2'000
Motor technology		ASYN	ASYN	ASYN	ASYN	ASYN
Voltage	[V]	350	350	350	350	350
Current S1	[A]	6.4	7.5	3.7	17.3	19
Housing length	L [mm]	260	230	200	288	251
Weight	[kg]	6.8	6.25	5.5	12.5	10.0
OPTIONS						
Coolant Through Unit		-	-	-	Yes	Yes
Encoder		-	-	-	-	-
Zero-speed monitoring		Yes	Yes	Yes	Yes	Yes

TYPE		MFM-12120	MFM-1406/12	MFM-1406/18	MFM-1418/36	MFM-1509/30
Outer diameter	D [mm]	120	140	140	140	150
Tool interface		Arbor, HJND-60	Arbor, HJND-16 HSK-C50 External taper	Arbor, HJND-16 HSK-C50	Arbor, HJND-16 HSK-C50	Arbor, HJND-16 HSK-C63
Max. speed	nmax [min ⁻¹]	120'000	12'000	18'000	36'000	30'000
Lubrication		DLS	Grease	DLS	DLS	DLS
Direction of rotation		right	right left & right right	right left & right	right left & right	right left & right
Power S1 / S6 40%	P [kW]	2.0 / 2.5	10.0 / 12.0	10.0 / 12.0	18.0 / 22.0	10.9 / 14.2
Torque S1 / S6 40%	M [Nm]	0.16 / 0.2	15.9 / 19.6	15.0 / 18.2	9.7 / 11.9	11.6 / 15.2
Nominal speed	nN [min ⁻¹]	120'000	6'000	6'000	18'000	9'000
Motor frequency	[Hz]	2'000	600	900	1'200	1'500
Motor technology		ASYN	ASYN	ASYN	ASYN	ASYN
Voltage	[V]	380	350	350	350	380
Current S1	[A]	4.4	32	28.4	38	33
Housing length	L [mm]	202	373	373	373	308
Weight	[kg]	14.2	32.0	32.0	32.0	28.0
OPTIONS						
Coolant Through Unit		Yes	Yes	Yes	Yes	Yes
Encoder		-	Yes	Yes	Yes	Yes
Zero-speed monitoring		Yes	Yes	Yes	Yes	Yes



ASYN = Asynchronous motor
DLS = Direct Lubrication System
HJND = Threaded Interface

MFM-1090	MFM-10120	MFM-1224/30	MFM-1224/42	MFM-1236/45	MFM-1242/60	MFM-1290
100	100	120	120	120	120	120
Arbor, HJND-50	Arbor, HJND-60	Arbor, HJND-21 HSK-C40	Arbor, HJND-21 HSK-C40	Arbor, HJND-28 HSK-C25	Arbor, HJND-28 HSK-C25, HSK-C32	Arbor, HJND-50
90'000	120'000	30'000	42'000	45'000	60'000	90'000
DLS	DLS	Grease	DLS	Grease	DLS	DLS
right	right	right left & right	right left & right	right left & right	right left & right left & right	right
4.2 / 5.4	2.0 / 2.5	15.0 / 20.0	15.0 / 20.0	12.0 / 16.0	10.0 / 13.0	4.2 / 5.4
0.47 / 0.62	0.16 / 0.2	6.0 / 8.1	6.0 / 8.1	3.2 / 4.3	2.3 / 3.0	0.47 / 0.62
90'000	120'000	24'000	24'000	36'000	42'000	90'000
1'500	2'000	1'000	1'400	1'500	2'000	1'500
ASYN	ASYN	ASYN	ASYN	ASYN	ASYN	ASYN
380	380	380	380	380	380	380
9.0	4.4	38	38	31	28	9
215	200	326	326	279	279	215
8.5	7.5	20.5	20.5	17.5	17.5	13.5
Yes	Yes	Yes	Yes	Yes	Yes	Yes
-	-	Yes	Yes	Yes	Yes	-
Yes	Yes	Yes	Yes	Yes	Yes	Yes

MFM-1524/45	MFM-1542/60	MFM-1590	MFM-15120	MFM-1709/20	MFM-1709/30
150	150	150	150	170	170
Arbor, HJND-21 HSK-C40	Arbor, HJND-28 HSK-C25 HSK-C32	Arbor, HJND-50	Arbor, HJND-60	HSK-C63	HSK-C63
45'000	60'000	90'000	120'000	20'000	30'000
DLS	DLS	DLS	DLS	Grease	DLS
right left & right	right left & right left & right	right	right	left & right	left & right
15.0 / 22.0	10.0 / 13.0	4.2 / 5.4	2.0 / 2.5	20.0 / 26.0	20.0 / 26.0
6.0 / 8.9	2.3 / 3.0	0.47 / 0.62	0.16 / 0.2	21.5 / 28.0	21.5 / 28.0
24'000	42'000	90'000	120'000	9'000	9'000
1'500	2'000	1'500	2'000	667	1'000
ASYN	ASYN	ASYN	ASYN	ASYN	ASYN
380	380	380	380	350	350
38	28	9	4.4	56	56
307	307	244	230	390	390
26.0	28.0	22.5	22.0	49	47.5
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	-	-	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes



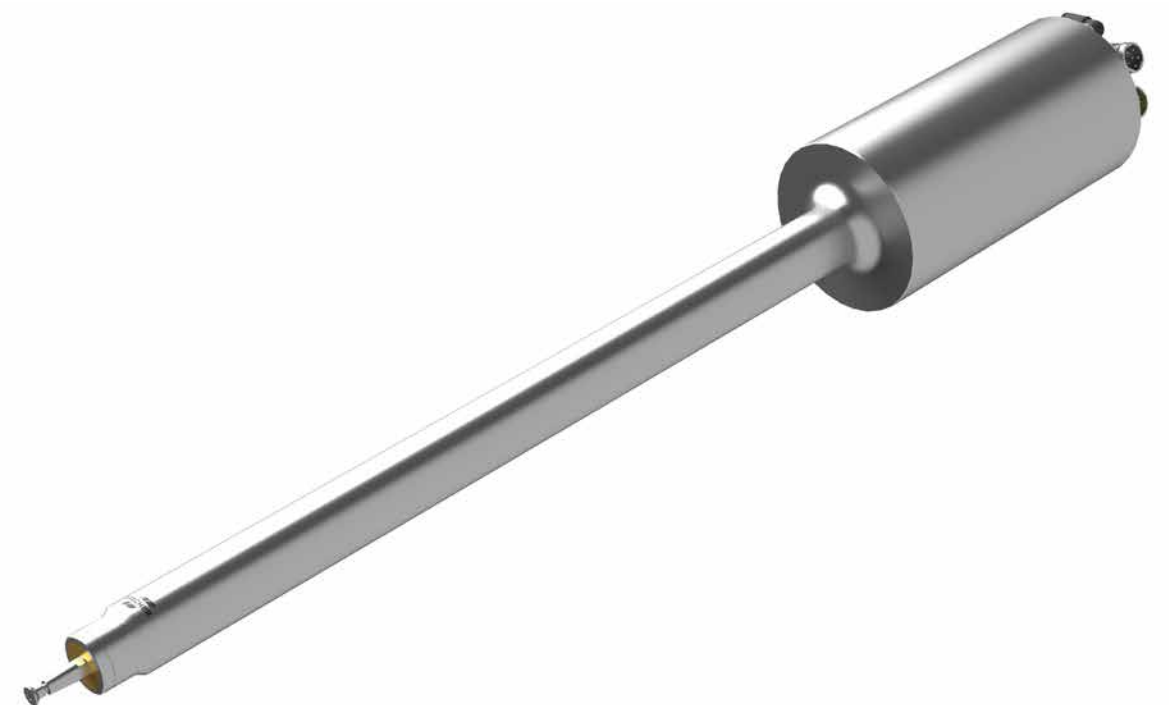
SPINDLES FOR DEEP HOLE GRINDING

UP TO A DIAMETER-LENGTH RATIO OF 1:20

Deep-hole grinding is the top discipline in internal cylindrical grinding. In recent years, it has become an increasingly important component in the manufacturing spectrum of the aerospace industry. Compared to classical internal cylindrical grinding with a diameter-to-length ratio of up to 1:10, with the FISCHER deep-hole spindles can machine workpieces up to 1:20.

This is achieved, among other things, with the proven FISCHER coupling shaft principle, which delivers an unsurpassed grinding quality in deep bores.

- Highest speeds
- Optimum rigidity
- The bearing-shaft system is statically determinant
- Precision grinding spindles for belt drive or with motor and external taper for internal grinding of deep bores
- Cylindrical or stepped spindle housing
- High precision spindle bearings with lifetime grease lubrication
- Labyrinth or sealing air system



SPINDLES FOR INTERNAL GRINDING

FOR BELT DRIVE OR MOUNTED MOTOR

These precision spindles have been developed for radial and axial loads and have a high-precision spindle bearing with lifetime grease lubrication.

UJ series with belt drive

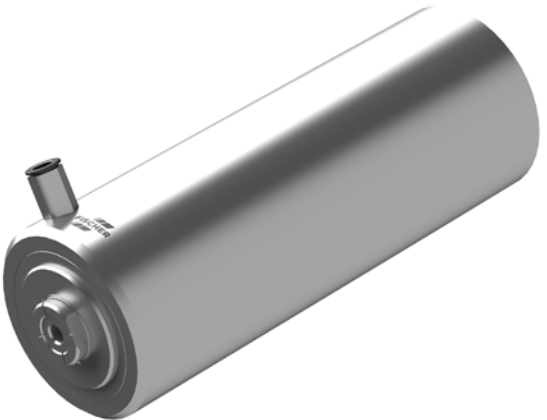
- Standard spindle housing Ø40 to 80 mm
- Speeds up to 28'000 min⁻¹
- UJD tool interface
- Direction of rotation right
- Labyrinth sealing system



TYPE		UJ-40x250	UJ-50x250	UJ-60x300	UJ-70x300	UJ-80x350
Outer diameter	D [mm]	40	50	60	70	80
Tool interface		UJD-40	UJD-50	UJD-60	UJD-70	UJD-80
Max. speed	nmax [min ⁻¹]	28'000	23'000	18'000	14'000	12'000
Lubrication		Grease	Grease	Grease	Grease	Grease
Direction of rotation		right	right	right	right	right
Housing length	L [mm]	250	250	300	300	350
Weight	[kg]	2.5	4.1	6.3	9.7	13.0

HJN series with belt drive

- Standard spindle housing Ø80 mm
- Speeds up to 60'000 min⁻¹
- HJND tool interface
- Direction of rotation right
- Sealing air seal



TYPE		HJN-828	HJN-842	HJN-860
Outer diameter	D [mm]	80	80	80
Tool interface		HJND-28	HJND-42	HJND-60
Max. speed	nmax [min ⁻¹]	28'000	42'000	60'000
Lubrication		Grease	Grease	Grease
Direction of rotation		right	right	right
Housing length	L [mm]	240	230	220
Weight	[kg]	9.0	8.7	8.4

HEN series with mounted motor

- Standard spindle housing Ø32 to 50 mm
- Speeds up to 42'000 min⁻¹
- With integrated collet chuck and manual HSK-C interface
- Hybrid bearing
- Direction of rotation right/left
- Sealing air seal



TYPE		HEN-32	HEN-40	HEN-50	HEN-50/7
Outer diameter	D [mm]	32	40	50	50
Tool interface		Collet ER12	Collet EX16	Collet EX20	HSK-C25
Max. speed	nmax [min ⁻¹]	30'000	42'000	36'000	36'000
Lubrication		Grease	Grease	Grease	Grease
Direction of rotation		right & left	right & left	right & left	right & left
Power S1 / S6 40%	P [kW]	0.26	0.79	1.1	1.1
Torque S1 / S6 40%	M [Nm]	0.08	0.28	0.44	0.44
Nominal speed	nN [min ⁻¹]	30'000	27'000	24'000	24'000
Motor frequency	[Hz]	800	700	600	600
Motor technology		ASYN	ASYN	ASYN	ASYN
Voltage S1	[V]	220	220	220	220
Current S1	[A]	1.7	2.9	5.6	5.6
Motor cooling		External fan 24V DC			
Spindle housing length	L [mm]	160	180	210	210
Motor length	L [mm]	181	203	230	230
Weight	[kg]	3.1	4.2	7.7	10.5

FIV series with belt drive

- Standard spindle housing Ø45 to 80 mm
- Speeds up to 35'000 min⁻¹
- Internal taper as tool interface
- Direction of rotation right
- Labyrinth sealing system

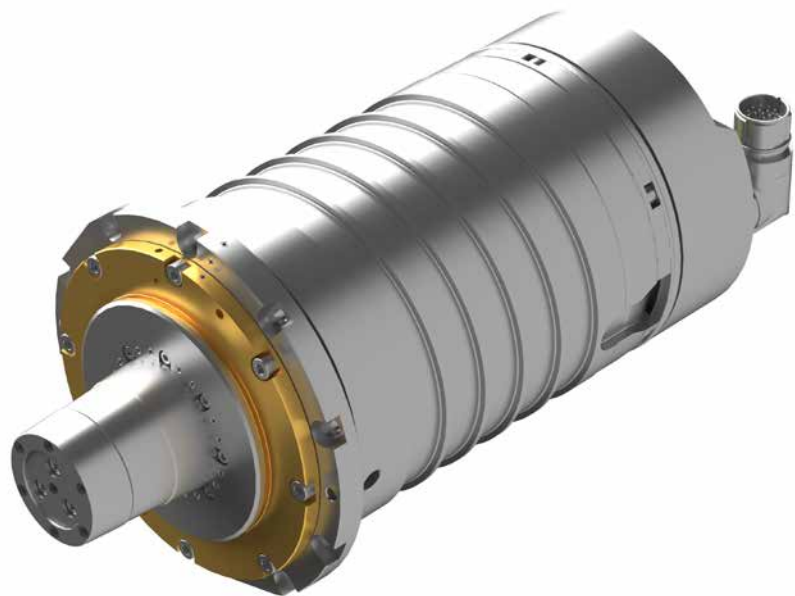


TYPE		FIV45R160	FIV60R160	FIV80R250
Outer diameter	D [mm]	45	60	80
Tool interface		Internal taper 1:7.5	Internal taper 1:7.5	Internal taper 1:7.5
Max. speed	nmax [min ⁻¹]	35'000	24'000	17'000
Lubrication		Grease	Grease	Grease
Direction of rotation		right	right	right
Housing length	L [mm]	160	160	250
Weight	[kg]	1.8	3.3	9.8

SPINDLES FOR EXTERNAL GRINDING

CUSTOMISED OR STANDARD SERIES

High precision and smooth running, a long service life and easy maintenance and care are the hallmarks of high-quality FISCHER external grinding spindles. Only with these spindles can machines achieve very good cutting performance and the best surface qualities.



- Customized solutions according to the machine manufacturer's specifications
- Motor spindles or externally driven spindles
- With one-sided or two-sided tool interface, depending on customer requirements
- Integrated, automatic balancing systems as an option
- Cylindrical spindle housing or direct mounting housing
- Asynchronous and synchronous motors
- Rotary encoders as an option
- Robust, high-precision bearing systems
- HSG grinding with circumferential speeds of up to 140 m/s

M32 series with attached motor

- Standard spindle housing Ø60 to 100 mm
- Speeds up to 6'000 min⁻¹
- External taper as tool interface
- Direction of rotation right
- Labyrinth sealing system



TYPE		M32-FAV60 R190-3/2.2	M32-FAV60 R190-6/2.2	M32-FAV80 R220-3/3	M32-FAV80 R405-3/3	M32-FAV100 R285-3/4	M32-FAV100 R400-3/4
Outer diameter	D [mm]	60	60	80	80	100	100
Tool interface		External taper 1:75	External taper 1:75	External taper 1:75	External taper 1:75	External taper 1:75	External taper 1:75
Max. speed	n _{max} [min ⁻¹]	3'000	6'000	3'000	3'000	3'000	3'000
Lubrication		Grease	Grease	Grease	Grease	Grease	Grease
Direction of rotation		right	right	right	right	right	right
Power S1	P [kW]	2.2	2.2	3.0	3.0	4.0	4.0
Torque S1	M [Nm]	7.0	7.2	9.55	9.55	12.73	12.73
Nominal speed	n _N [min ⁻¹]	3'000	3'000	3'000	3'000	3'000	3'000
Motor frequency	[Hz]	50	50	50	50	50	50
Motor technology		ASYN	ASYN	ASYN	ASYN	ASYN	ASYN
Voltage S1	[V]	400	400	400	400	400	400
Current S1	[A]	4.3	4.6	5.7	5.7	7.6	7.6
Motor cooling		Self-ventilation	External fan	Self-ventilation			
Spindle housing length	L [mm]	190	190	220	405	285	400
Motor length	L [mm]	316	403	346	346	363	363
Weight	[kg]	30	42	38.5	45	51	56

FAV series with belt drive

- Standard spindle housing Ø36 to 100 mm
- Speeds up to 45'000 min⁻¹
- External taper as tool interface
- Direction of rotation right
- Labyrinth sealing system



TYPE		FAV36R125	FAV40R160	FAV45R160	FAV60R160	FAV80R250	FAV80R315	FAV100R250
Outer diameter	D [mm]	36	40	45	60	80	80	100
Tool interface		External taper 1:75	External taper 1:75	External taper 1:75	External taper 1:75	External taper 1:75	External taper 1:75	External taper 1:75
Max. speed	n _{max} [min ⁻¹]	45'000	40'000	35'000	24'000	17'000	17'000	12'000
Lubrication		Grease	Grease	Grease	Grease	Grease	Grease	Grease
Direction of rotation		right	right	right	right	right	right	right
Housing length	L [mm]	125	160	160	160	250	315	250
Weight	[kg]	0.9	1.4	1.8	3.4	9.9	11.9	15.3

SPINDLES FOR DRESSING AND PROFILING

COMPACT AND POWERFUL

AES series

Robust motorized dressing spindle with stable bearing for profiling and dressing of CBN and other grinding wheels.

- Highest concentricity and rigidity for precise dressing
- Thermal stability
- **Asynchronous motor**
- Robust, high-precision bearing system
- Permanent grease lubrication
- Labyrinth sealing, supported by sealing air



TYPE		AES-72	AES-80
Outer diameter	D [mm]	Ø72	Ø80
Tool interface		Ø40h3 x 10	Ø40h3 x 10
Max. speed	nmax [min ⁻¹]	16'000	16'000
Lubrication		Grease	Grease
Direction of rotation		right/left	right/left
Power S1	P [kW]	0.4	1.0
Torque S1	M [Nm]	0.47	1.04
Nominal speed	nN [min ⁻¹]	9'000	10'000
Motor frequency	[Hz]	533	534
Motor technology		ASYN	ASYN
Voltage S1	[V]	220	350
Current S1	[A]	2.7	4.0
Length	L [mm]	230 / 260 incl. Option	260
Weight	[kg]	6.0 / 6.1 incl. Option	7.0
Spindle cooling		Air	Water/Oil
OPTIONS			
Acoustic Emission Sensor AE		Yes	Yes
Encoder VC		-	-

FD series

Dressing and profiling of grinding wheels by means of powerful motor spindles with robust bearings.

- Highest concentricity and rigidity for precise dressing
- Thermal stability
- **Synchronous motor for high motor power**
- Robust, high-precision bearing system
- Permanent grease lubrication
- Labyrinth sealing, supported by sealing air



FD72	FD80	FD100
Ø72	□80x110	Ø100
Ø40h3 x 10	Ø52h3 x 15	Ø52h3 x 15
16'000	6'000	16'000
DLS	Grease	DLS
left & right	left & right	left & right
2.0	1.3	6.5
1.2	2.0	5.2
16'000	6'000	12'000
533	300	533
SYN	SYN	SYN
322	346	360
4.2	2.4	13.1
220	216	255
5.6	11.3	13.0
Water/Oil	Water/Oil	Water/Oil
Yes	Yes	Yes
Yes	Yes	Yes

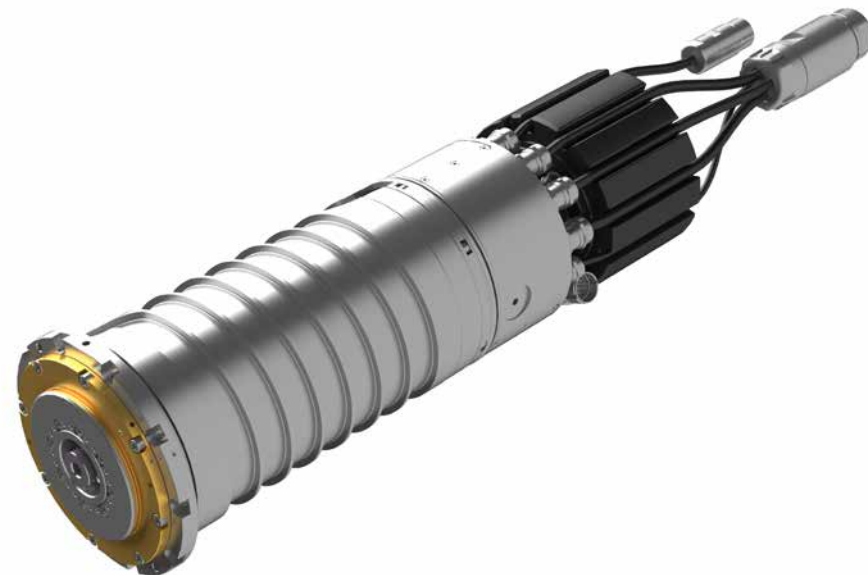
SPINDLES FOR TOOL GRINDING

HÖCHSTLEISTUNG IN KOMPAKTER BAUFORM

This is what distinguishes our high-quality FISCHER grinding spindles:

- Compact designs
- High-torque and high-performance motors
- High precision thanks to high rigidity
- Robust bearings and minimal axial shaft misalignment
- A long service life
- Developed according to the machine manufacturer's specifications

This is the only way for machines to achieve a very good cutting performance and the best surface quality of the tools to be machined



Tool grinding

- Compact design
- Asynchronous and synchronous motors
- Slide-in and direct mounting housings
- Speeds: 12'000 / 24'000 min⁻¹
- Robust, high-precision bearing system
- Automatic tool clamping system HSK-E50/F63 or double-sided tool interface
- Pneumatic and hydraulic release units
- Rotary pulse encoder
- Belt solutions with center drive

Saw blade grinding

- Compact design
- Asynchronous and synchronous motors
- Direct mounting housing
- Speeds up to 60'000 min⁻¹
- Robust, high-precision bearing system
- Manual tool interface - cylinder with face contact
- Resolver/rotary pulse encoder
- Acoustic emission detection

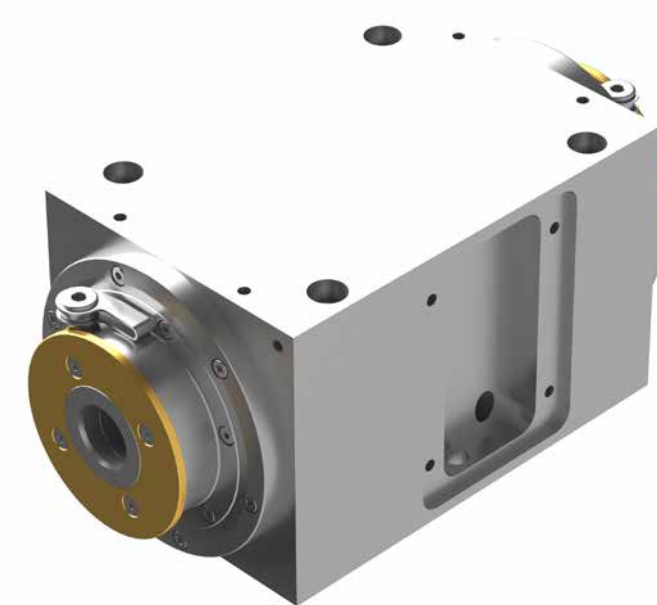
Broaching tool grinding

- Compact design
- Asynchronous and synchronous motors
- Direct mounting housing and cylindrical spindle housing
- Speeds up to 24'000 min⁻¹
- Robust, high-precision bearing system
- Manual tool interface - HSK and external taper
- Rotary encoder

SPINDLES FOR GRINDING AND POLISHING OF OPTICS AND GLASS

SPECIAL SOLUTIONS FOR DEMANDING MACHINING PROCESSES

The very high and special requirements of the optical industry demand a high degree of technological competence and many years of experience competence and many years of experience - with over 80 years of experience, FISCHER is your best partner.



Customized solutions according to the machine manufacturer's specifications.

- Machines for spectacle and precision optics
- Flat glass edge grinding machines
- Crystal glass decor grinding machines
- Corrosion-resistant design
- Highest concentricity and rigidity for precise polishing and grinding
- Housing shape and tool interface according to customer requirements
- Motor and externally driven precision spindles

PERIPHERALS

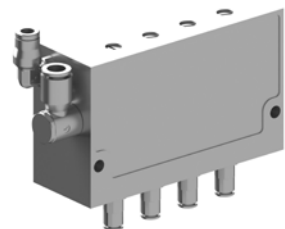
PERFECT FOR YOUR SPINDLE



Oil-air central lubrication unit

Pre-assembled central lubrication unit on aluminium base plate with the following components:

- Lubrication pump with level control
- Main shut-off valve
- Ultra-fine filter for oil
- Air treatment for central lubrication unit and sealing airt



Oil-air dosing unit

- Used for oil metering in spindles with oil-air bearing type
- 100 % tested and certified
- Compatible with current competitor product



Exhaust air filter

- For collecting waste oil coming out of spindle oil return path
- Dampens the air noise of the lubrication system



Frequency converter

The correct design of the converter is decisive for the smooth running, power development and heat generation of your spindle unit. FISCHER has been working closely with the leading converter manufacturers for years and regularly exchanges experience. As a result, we offer you optimum conditions when defining the inverter and are happy to support you in choosing the suitable supplier.



Filter choke

When using pulse width modulating (PWM) frequency inverters in the low-cost price segment, the interposition of a motor choke is mandatory. The FISCHER test center supports you in the design of the motor choke.

The ideal frequency inverter/choke combination results in less heat loss in the rotor and stator and higher power output. Results were measured and documented on the FISCHER test bench.



Operating fluids

Proven auxiliary and operating materials such as lubricating oil, hydraulic oil, coolant and coolant additives for maximum service life of FISCHER products.



Accessories

Our accessories can be found on our website at: www.fischerspindle.com/accessories

SERVICE AND REPAIRS

THE RIGHT OFFER FOR EVERY NEED

SERVICE AND SUPPORT

- On-site support: Support for commissioning of spindle systems
- Maintenance training and application consulting
- Service visits for minor repairs or optimizations
- On-site vibration and bearing analysis
- Trainings

REPAIRS OF FISCHER SPINDLES AND MILLING HEADS

- FISCHER Spindle Group has service centers and production facilities around the world
- Repair FISCHER spindles with original parts; refurbish key components as needed; bring spindle to like new condition.
- Express repairs
- Repair of FISCHER milling heads

THIRD PARTY SPINDLE REPAIRS

- We repair all brands of spindles in our worldwide group companies
- Analysis, repairs and retrofits of all your spindles
- FISCHER quality, service and advice
- All from one source

SERVICES

Spindle hotel

Your spindle is stored at FISCHER and checked for proper function at regular intervals. The warranty begins with the call-off and delivery of the spindle.

Spindle pool for machine manufacturers

While your spindle is being repaired, you can benefit from one of our pool spindles. You can continue adding value without interruption and keep production going.

Exchange spindles for end customers

We offer exchange spindles available in short notice with your defective spindle. This depends on the spindle type and availability.

Spindle repair service

We offer a professional and binding repair service. On request we provide a detailed analysis of the defective spindle as well as individual quotations.

Spindle Taxi

Your spindle will be picked up free of charge in Europe.

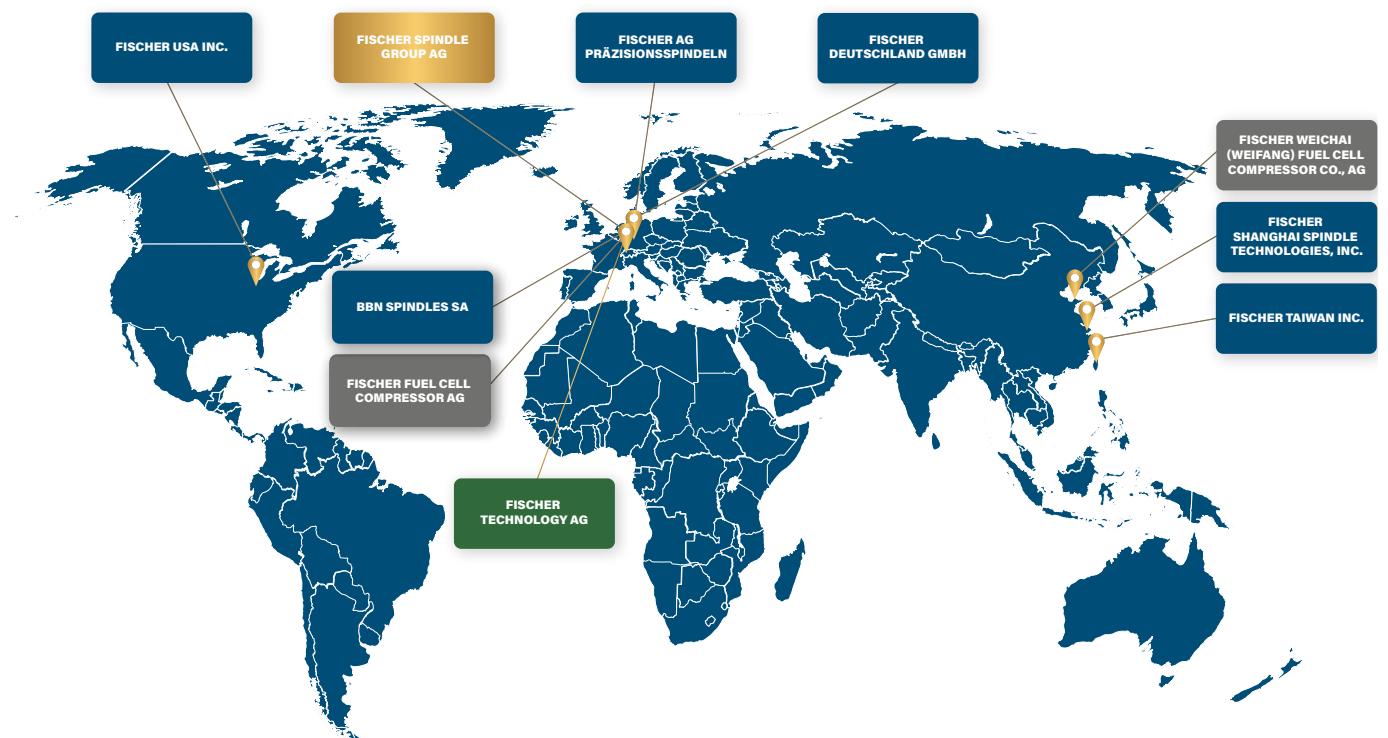
Spindle periphery

We support you in the selection and design of the appropriate periphery for a safe operation of the spindle.

LOCATIONS WORLDWIDE

OF THE FISCHER GROUP

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