

MICRO MILLING SPINDLE

THE WORLD OF MICROMACHINING





TECHNOLOGY LEADER

FOR PRECISE, FAST AND POWERFUL ROTATION

We are the world leader in precise, fast and high-performance rotation. Our more than 85 years of experience is reflected in our technical innovations. As an international technology leader, we distinguish ourselves through our expertise in the areas of development, simulation, production and performance testing. Market leaders from all over the world rely on FISCHER products.

FISCHER Deutschland GmbH, part of the FISCHER Group since 2006, is a specialist in high-precision spindle solutions with an outer diameter of up to 100 mm. We act as a center of excellence for compact spindles with the highest speeds. Our focus is on the development, manufacture, and sale of precision spindle systems that meet even the most demanding customer requirements in terms of quality, reliability, and precision.

The combination of professionalism, traditional values, many years of expertise, and the high motivation of our employees makes FISCHER Deutschland GmbH a reliable partner for first-class spindle solutions.

SPINDLE FEATURES

PRODUCTION OF SMALL AND INTRICATE COMPONENTS

APPLICATIONS AND MARKETS

- **Medical technology:** Manufacture of stents, micro-implants, and surgical instruments
- **Electronics:** Manufacture of printed circuit boards and micro components
- **Aerospace:** Precision components for sensors and control systems
- **Watch industry:** Production of fine gears and case components as well as bracelet links and clasps



REQUIREMENTS

Micro-machining is a precise manufacturing process for producing components with the highest requirements for dimensional accuracy and surface quality. It is used in industries such as microelectronics, medical technology, and precision engineering, which rely on miniaturization and precision.



It involves the use of tiny tools made of extremely hard materials such as diamond or carbide, which are used in high-precision micro-machining machines for milling, turning, drilling, or grinding. The processes require stable machine control, precise cooling, and special cutting materials, as even the slightest vibrations or temperature changes can affect accuracy.

OUR ADVANTAGES

- Highest standards for compact design
- High power density
- Optimal integration into the machine axis
- Highest precision in the machining of gold, titanium, platinum, stainless steel, ceramics, and plastics
- Thermal stability and long-term process accuracy for perfect surface finishing
- Spindle with precise concentricity and minimal vibration at high speeds
- Controlled systems for optimal speed utilization even at low speeds



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MICRO MILLING SPINDLE

HIGHEST PERFORMANCE IN A COMPACT DESIGN

TYPE		MLW-360	MFW-650	MFW-650	MFW-660
Outer diameter	D [mm]	35	61.91	61.91	60 / 61.91
Tool interface		HSK-EZ15	HSK-E25	HSK-E25	DS / SK10
Max. speed	nmax [min ⁻¹]	60'000	50'000	50'000	60'000
Lubrication		Grease	Grease	Grease	Grease
Direction of rotation		left & right	left & right	left & right	left & right
Power S1 / S6 40%	P [kW]	0.5	1.2 / 1.8	2.3 / 3.45	1.2 / 1.8
Torque S1 / S6 40%	M [Nm]	0.08	0.29 / 0.43	0.55 / 0.82	0.19 / 0.29
Nominal speed	nN [min ⁻¹]	60'000	40'000	40'000	60'000
Motor frequency	[Hz]	1'000	834	834	1'000
Motor technology		SYN	ASYN	SYN	ASYN
Voltage	[V]	46	220	270	200
Current S1	[A]	6.8	5.5	7.0	5.0
Length	L [mm]	255	356	356	297
Weight	[kg]	1.48	5.0	7.5	4.5
Shaft cooling system		-	-	-	-
Coolant Through Unit		-	Yes	-	-
Encoder		Yes	Yes	Yes	-
Options					
Dilation sensor		-	Yes	Yes	-
Vibration sensor		-	-	-	-

TYPE		MFW-1040	MFW-1045	MFW-1028	MFW-1030/50
Outer diameter	D [mm]	100	100	100	100
Tool interface		HSK-E32, HSK-A32	HSK-E25	HSK-A40	HSK-E32
Max. speed	nmax [min ⁻¹]	40'000	45'000	28'000	50'000
Lubrication		Grease	Grease	Grease	DLS
Direction of rotation		left & right	left & right	left & right	left & right
Power S1 / S6 40%	P [kW]	6.3 / 9.45	6.3 / 9.45	14.0 / 18.5	12.0 / 16.0
Torque S1 / S6 40%	M [Nm]	2.0 / 3.0	2.0 / 3.0	9.0 / 11.8	4.0 / 5.4
Nominal speed	nN [min ⁻¹]	30'000	30'000	15'000	30'000
Motor frequency	[Hz]	1'333	1'500	1'400	1'667
Motor technology		ASYN	SYN	SYN	SYN
Voltage	[V]	350	355	444	410
Current S1	[A]	18.0	17.0	31.0	28.0
Length	L [mm]	413	245	442	415
Weight	[kg]	13.5	7.6	13.5	14.0
Shaft cooling system		-	-	-	-
Coolant Through Unit		-	Yes	Yes	-
Encoder		Yes	Yes	Yes	Yes
Options					
Dilation sensor		Yes	Yes	Yes	Yes
Vibration sensor		-	-	-	-

OPTIONS

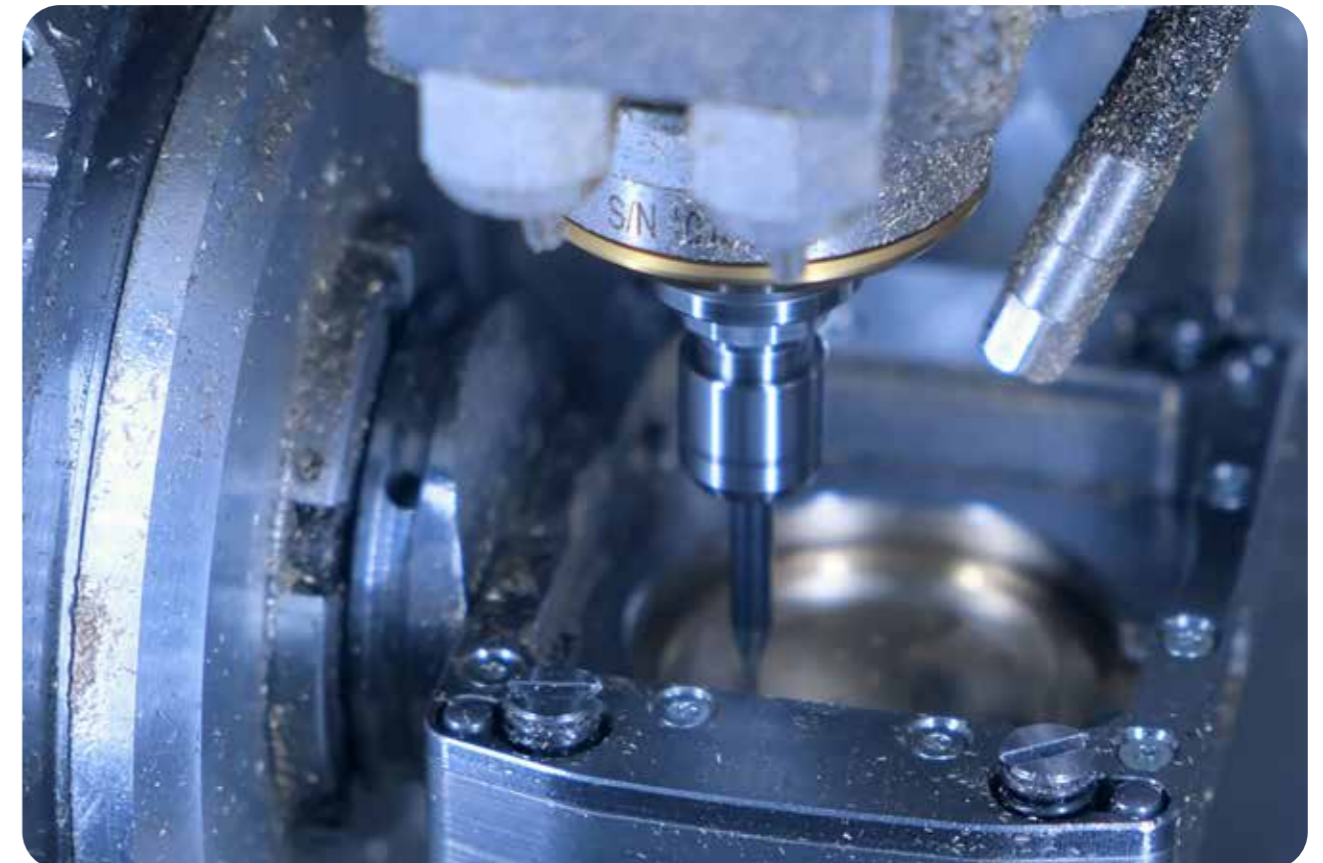
The **dilation sensor** is a spindle-integrated length measuring sensor, which determines the axial shaft expansion and enables length compensation on the machine.

The **vibration sensor** integrated into the spindle can be used to detect imbalance and provides the signals essential for process and spindle monitoring.

MFW-665	MFW-680	MFW-840/60	MFW-850	MFW-825	MFW-1032
60	60 / 61.91	80	80	80	100
HSK-E20	DS	HSK-E25	HSK-E25	HSK-E32, HSK-A32	HSK-E32, HSK-E40, HSK-F40
65'000	80'000	60'000	50'000	25'000	32'000
Grease	Grease	Oil-Air (DLS)	Grease	Grease	Grease
left & right	left & right	left & right	left & right	left & right	left & right
2.0 / 3.0	1.0 / 1.5	3.4 / 4.2	3.4 / 4.2	7.5 / 11.25	9.0 / 13.5
0.3 / 0.48	0.12 / 0.18	0.83 / 1	0.83 / 1	4.0 / 5.97	3.5 / 5.22
60'000	80'000	40'000	40'000	18'000	24'700
1'083	1'333	1'333	1'667	833	1'067
SYN	ASYN	ASYN	ASYN	SYN	ASYN
209	200	380	380	380	350
7.3	4.7	16.0	10.0	17.0	28.0
289	266	449	417	410	433
4.5	4.8	11.2	11.2	11.2	15.0
-	-	-	-	-	-
-	-	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
Options					
Yes	-	Yes	Yes	Yes	Yes
-	-	-	-	-	-

ASYN = Asynchronmotor
 SYN = Synchronmotor
 DLS = Direct Lubrication System
 CSC = Compact Shaft Cooling

Product overview not exhaustive. Other products / data on request.





PERIPHERALS

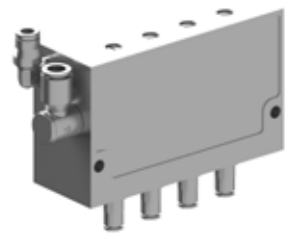
PERFECT FOR YOUR SPINDLE



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 air



Oil-air dosing unit

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



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

- Support for commissioning of spindle systems
- Maintenance training and application consulting
- Service visits for minor repairs or optimizations
- Vibration and bearing analysis
- Individualized Trainings

REPAIR 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.

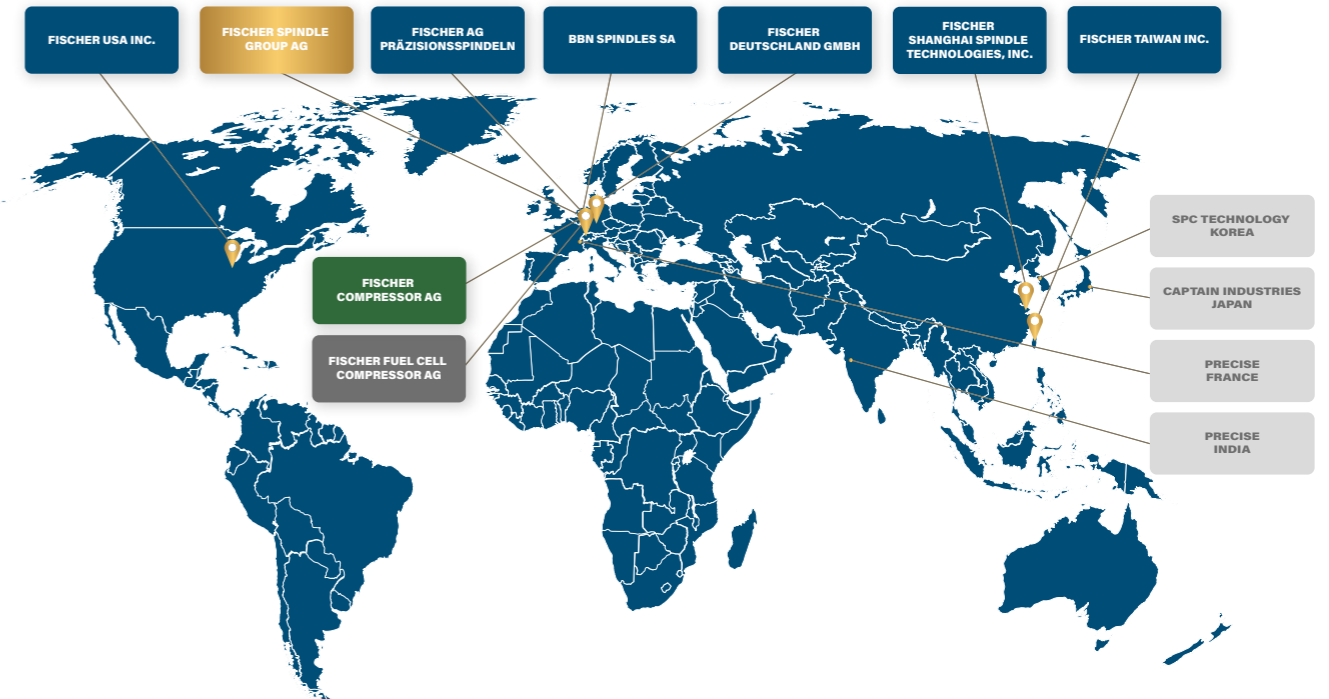
Spindle periphery

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

The FISCHER family is present at six locations worldwide and employs over 450 people. A strong global team with the greatest enthusiasm for technology, ensuring customer satisfaction through successful, innovative products and outstanding service.



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Precision.



Speed.



Power.

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