



WMZ
MOTORSPINDELN

WMZ Spindle Technology

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**WMZ motor spindles –
Efficiency from experience**

WMZ – Werkzeugmaschinenbau Ziegenhain GmbH

As a member of the DVS TECHNOLOGY GROUP we are the central Supplier for the technology area of horizontal complete machining of shaft-shaped components. In addition to machine tools, we develop and manufacture high-quality motor spindles, multifunctional heads, loading gantries, highly complex machine beds and automation components with a high quality promise. Finally, we offer services in the area of contract manufacturing and assembly, as well as in service. We have extensive experience in the machining technologies turning, drilling, milling, gear cutting and measuring.

In the service area, we offer the „SmartSpindle“ diagnostic procedure, an innovative solution for spindle monitoring. This enables our new or serviced spindles to read out digital information on the operating status of the spindle and thus provide the operator and service department with data for reliable production handling of the component.

WMZ
MOTORSPINDELN

WMZ
WERKZEUGMASCHINEN



Machining with center drive



WMZ motor spindles

WMZ – YOUR COMPETENT PARTNER.

Higher demands put steadily the constant advancement of material qualities of work pieces and innovations in the sector of the cutting materials in machine tools and require therefore more and more efficient motorspindles.

WMZ as a supplier of motorspindles for the most modern machine tools masters this challenge and offers you:

TECHNOLOGY COMPETENCE

- As a part of the DVS Group we have direct access to the newest machining technology
- The demands of tomorrow have already moved into our spindles today
- The characteristic of the spindles is optimally tuned to your requirements

DEVELOPING COMPETENCE

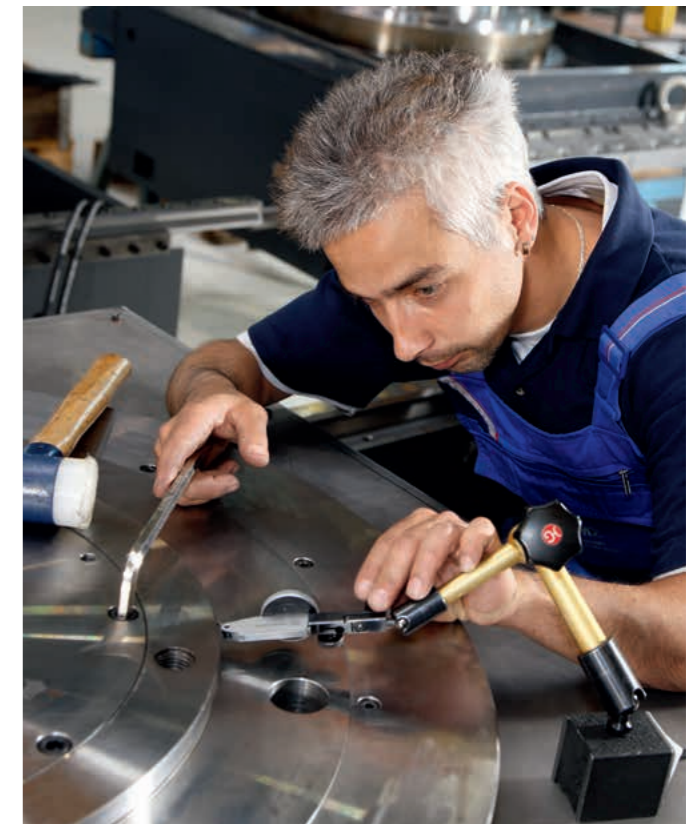
- A competitive team of highly certified engineers develop our spindle program constantly
- We develop individual solutions according to your requirements

MANUFACTURING COMPETENCE

- All key components of our motorspindles are produced at very modern DVS-machining centres
- All motorspindles pass through several tests with accordingly journals forwards to the delivery to assure highest quality of our products

SERVICE COMPETENCE

- WMZ offers a worldwide quick and competent service to the repair and servicing of our spindles



DVS TECHNOLOGY GROUP

The DVS TECHNOLOGY GROUP is made up of experienced machining companies focussing on the turning, gear cutting and grinding technologies.

The DVS TECHNOLOGY GROUP has more than 1.400 employees worldwide and is one of the leading system suppliers for machines, tools and production solutions for the machining of vehicle powertrain components before and after hardening.

DVS Machine Tools & Automation: Manufactures and sells high-precision machine tools, automation equipment and the associated services.

DVS Tools & Components: Develops, manufactures and sells customised machine components, tools and abrasives.

DVS Production: Series production of components for passenger cars and commercial vehicles using DVS machine tools.

DVS International Sales & Service: Local DVS Contact for Sales and Service on International Markets.



MOTORSPINDLES – YOUR ADVANTAGES

- More than 40 years in experience in the production of motorspindles
- Being a part of the DVS Technology Group ensures access to newest machining technology
- Wide spindle spectrum – for everybody the suitable spindle. If our product range does not meet your requirements, we can optimally match the characteristics of the spindle to your application.
- Optionally the housing can be designed individually by customer standards



WMZ – ALWAYS CLOSE TO ITS CUSTOMERS

- Always a sympathetic ear
- Quality at a fair price
- No varying contacts
- Worldwide on-site service
- Flexibility
- Individuality
- Low down-times by our worldwide quick and competent services of our engineers
- Inspection, overhaul and servicing by our field representatives on site or after dismantling in our company
- Current repair by our professional service engineers

DESIGN OF WMZ MOTORSPINDLES

FRONT BEARING / REAR BEARING

- The bearing will be individually designed for every application
- A special bearing-application lowers influence of heat generation at the spindle head

DRIVE

- The spindles are driven by water cooled synchronous motors with integrated temperature monitoring
- The motors generate less heat and are working highly efficient

MEASURING SYSTEM

- The use of direct measuring system leads to a very high steady-state control accuracy
- Spindles are ready for C-axis functionality

HOUSING

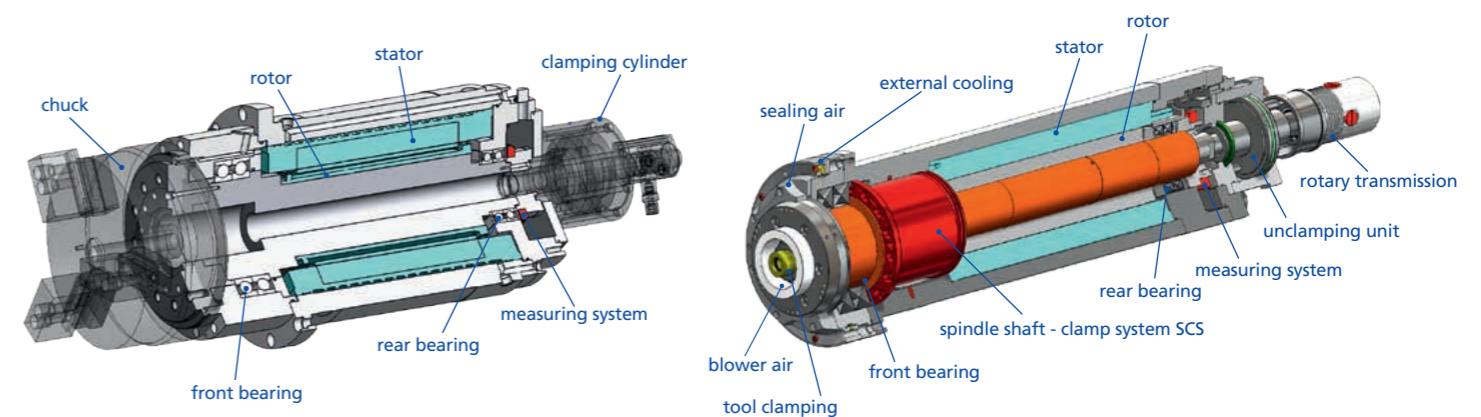
- By default WMZ motorspindles are offered as insertion spindles with round housings
- Optional it is possible to deliver customized housing-design

SEALING

- WMZ motorspindles are equipped with wearless labyrinth-air-sealing

FLUID-SUPPLY

- Distribution of coolant lubrication is done by injector-ring and optional through tool
- Tool fitting device is cleaned by air
- All connections are located at the rear



TECHNICAL DATA – TURNING SPINDLES



Type	Power [kW]		Speed of rotation [min ⁻¹]			Torque [Nm]		
	P _{S1}	P _{S6 (40%)}	rat.	max.		M _{S1}	M _{S6 (40%)}	M _{max.}
TS180-XXX/24	24	30	4.500	8.000	12.000	50	75	115
TS180-XXX/32	32	36	4.400	8.000	12.000	70	102	160
TS180-XXX/32	32	35	3.400	4.200	12.000	90	130	200
TS200-XXX/32	32	37	3.100	6.000	8.000	100	147	230
TS220-XXX/29	29	41	2.000	6.000	8.000	140	210	350
TS220-XXX/27	27	34	1.350	5.000		194	292	484
TS250-060/38	38	48	1.200	6.000		300	384	450
TS270-040/30	30	32	1.150	4.000		250	370	575
TS270-030/31	31	34	690	3.000		425	625	970
TS310-040/64	64	80	750	4.000		820	1.100	1.650
TS310-050/67	67	80	1.100	5.000		585	795	1.200
TS310-050/103	103	124	1.200	5.000		820	1.100	1.650
TS340-020/36	36	43	530	2.000		650	964	1.550
TS340-020/37	99	100	860	3.500		1.100	1.300	1.700
TS405-015/31	31	32	200	1.500		1.375	1.600	2.550
TS405-012/57	57	64	300	1.200		1.775	2.570	3.700
TS405-010/49	49	51	220	1.000		2.170	2.800	4.500

The data apply to an intermediate circuit voltage (ICV) of 600 V. Variant ICV affects performance and rated speed.
XXX – stands for deliverable speeds (e.g. MS220-080/22 equates max. 8.000 min⁻¹).

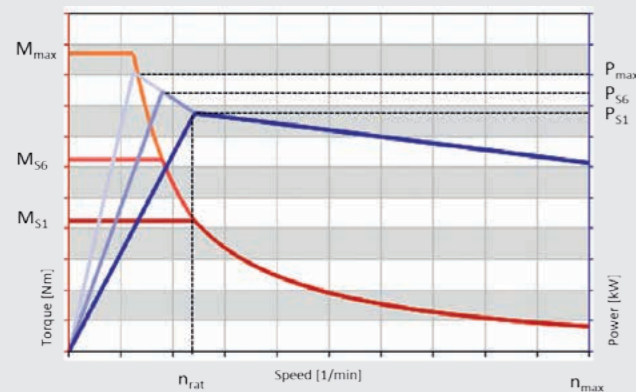
DIMENSIONS – TURNING SPINDLES



Type	Ø D	Ø D1 (h6)	Ø D2 (h6)	Ø LK	Z	L1	L2	L3	L4	L5	L6	Ø D3 ISO 702-4 DIN 6553	opt. ISO 702-1 DIN 55026	Ø D4	Ø D5	Ø D6
TS180-XXX/24	250	210	209,5	230	6xM8	282	100	255	10	85	50	140	A6	55	40	70
TS180-XXX/32	250	210	209,5	230	6xM8	332	100	305	10	85	50	140	A6	55	40	70
TS180-XXX/32	250	210	209,5	230	6xM8	382	100	355	10	85	70	140	A6	55	40	70
TS200-XXX/32	270	230	229,5	250	6xM10	340	110	300	10	105	50	220	A6/A8	80	50	80
TS220-XXX/29	300	250	249,5	275	6xM10	370	110	330	10	105	50	220	A6/A8	80	50	80
TS220-XXX/27	300	250	249,5	275	6xM10	520	110	480	10	105	70	220	A6/A8	80	50	80
TS250-060/38	320	280	279,5	305	6xM10	650	90	600	10	105	70	220	A8/A11	90	50	80
TS270-040/30	350	300	299,5	325	3xM11	390	110	350	10	105	70	220	A8/A11	80	50	80
TS270-030/31	350	300	299,5	325	5xM11	540	110	500	10	105	70	220	A8/A11	80	50	80
TS310-040/64	410	350	349,5	380	6xM12	690	120	510	10	130	70	300	A8/A11	100	70	80
TS310-050/67	410	350	349,5	380	6xM12	590	120	410	10	130	70	300	A8/A11	100	70	80
TS310-050/103	410	350	349,5	380	6xM12	690	120	510	10	130	70	300	A8/A11	100	70	80
TS340-020/36	440	380	379,5	410	6xM12	680	170	570	10	190	70	380	A15	140	70	100
TS340-020/37	440	380	379,5	410	6xM12	930	170	820	10	190	70	380	A15	140	70	100
TS405-015/31	500	440	439,5	470	6xM16	625	250	500	10	240	70	380	A15	150	100	180
TS405-012/57	500	460	459,5	485	6xM16	725	250	600	10	240	70	380	A15	150	100	180
TS405-010/49	500	460	459,5	485	6xM16	825	250	700	10	240	70	380	A15	150	100	180

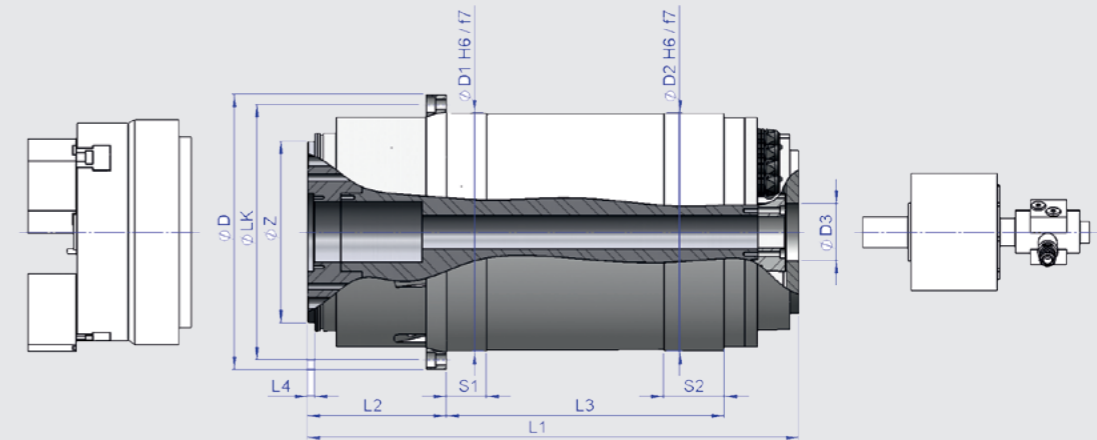
MSXXX (e.g. MS 220) = external diameter of the stator

PERFORMANCE DIAGRAM



The above-mentioned motor spindles are only a summary of our complete product range. Further spindle types are available. Please feel free to contact us.

Complete clamping cylinder and pull- and pressure rods are also available.



TECHNICAL DATA – MILLING SPINDLES



Type	Power [kW]		Speed of rotation [min ⁻¹]				Torque [Nm]		
	P _d S1	P _{kb} S6 (40 %)	rat.	max.			M _d S1	M _{kb} S6 (40 %)	M _{max.}
MS120-XXX/10	10	15	9.200	8.000	12.000	18.000	10	18	37
MS120-XXX/16	16	19	7.500	8.000	12.000	–	20	29	45
MS120-XXX/28	28	42	10.400	8.000	12.000	18.000	26	47	68
MS180-XXX/24	24	30	4.500	8.000	12.000	15.000	50	75	115
MS180-XXX/32	32	36	4.400	8.000	12.000	15.000	70	102	160
MS180-XXX/32	32	35	3.400	8.000	12.000	–	90	130	200
MS200-XXX/32	32	37	3.100	6.000	8.000	12.000	100	147	230
MS200-XXX/47	47	56	2.200	5.000	8.000	12.000	200	287	450
MS220-XXX/33	33	44	2.450	6.000	8.000	10.000	130	190	320
MS220-060/27	27	34	1.350	6.000			194	292	484
MS250-060/38	38	48	1.200	6.000			300	384	450
MS270-040/30	30	32	1.150	4.000			250	370	575
MS270-030/31	31	34	690	3.000			425	625	970
MS310-050/67	67	80	1.100	5.000			585	795	1.000
MS310-040/103	103	124	1.200	5.000			820	1.110	1.650
MS340-020/36	36	43	530	2.000			650	964	1.550
MS340-035/99	99	100	860	3.500			1.100	1.300	1.700
MS405-015/36	31	32	210	1.500			1.375	1.600	2.560

The data apply to an intermediate circuit voltage (ICV) of 600 V. Variant ICV affects performance and rated speed.
XXX – stands for deliverable speeds (e.g. MS220-080/22 equates max. 8.000 min⁻¹).

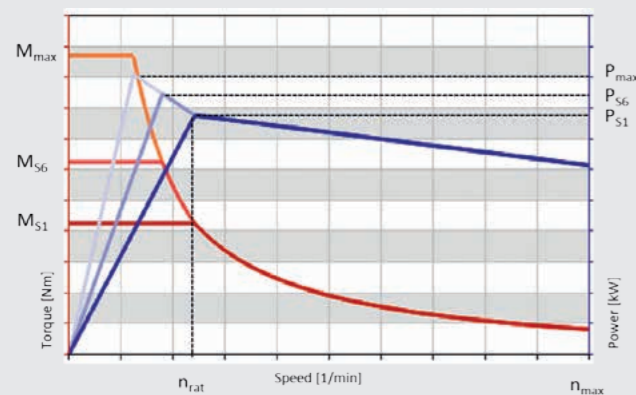
DIMENSIONS – MILLING SPINDLES



Type	Ø D (h6)	Ø D1 (h6)	Ø D2	Ø LK	Z	L1	L2	L3	S1	S2
MS120-XXX/10	180	150	149,5	165	6xM6	389	105	236	50	50
MS120-XXX/16	180	150	149,5	165	6xM6	448	105	286	50	50
MS120-XXX/28	180	150	149,5	165	6xM6	548	105	386	70	70
MS180-XXX/24	250	210	209,5	230	6xM8	282	100	255	50	50
MS180-XXX/32	250	210	209,5	230	6xM8	332	100	305	70	70
MS180-XXX/32	250	210	209,5	230	6xM8	382	100	355	70	70
MS200-XXX/32	270	230	229,5	250	6xM10	432	120	260	50	50
MS200-XXX/47	270	230	229,5	250	6xM10	582	120	410	70	70
MS220-XXX/33	270	230	229,5	275	6xM10	460	110	330	50	50
MS220-060/27	300	250	249,5	275	6xM10	610	110	480	70	70
MS250-060/38	320	280	279,5	305	6xM10	560	110	500	70	70
MS270-040/30	350	300	299,5	325	6xM10	540	110	400	70	70
MS270-030/31	350	300	299,5	325	6xM10	690	110	550	70	70
MS310-050/67	410	350	349,5	380	6xM12	710	120	570	70	70
MS310-040/103	410	350	349,5	380	6xM12	810	120	670	70	70
MS340-020/36	440	380	379,5	410	6xM12	790	130	650	70	70
MS340-035/99	440	380	379,5	410	6xM12	1.040	130	900	70	70
MS405-015/36	500	440	439,5	470	6xM16	650	130	520	70	70

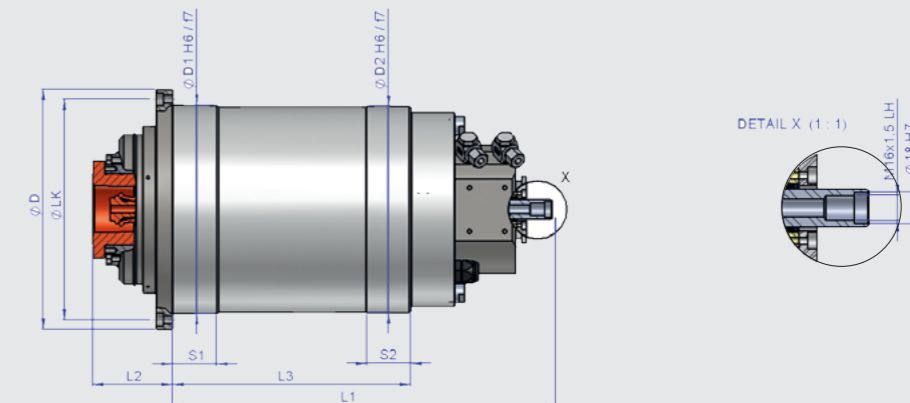
MSXXX (e.g. MS 220) = external diameter of the stator

PERFORMANCE DIAGRAM

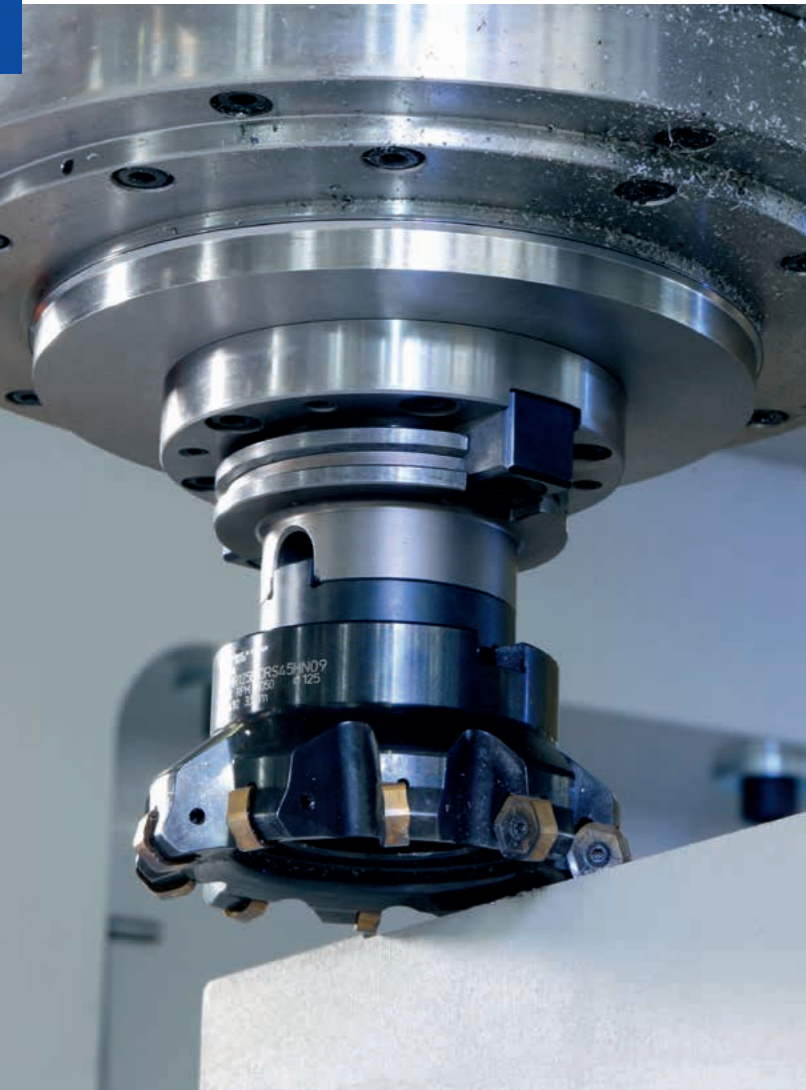


The above-mentioned motor spindles are only a summary of our complete product range. Further spindle types are available. Please feel free to contact us.

Complete clamping cylinder and pull- and pressure rods are also available.

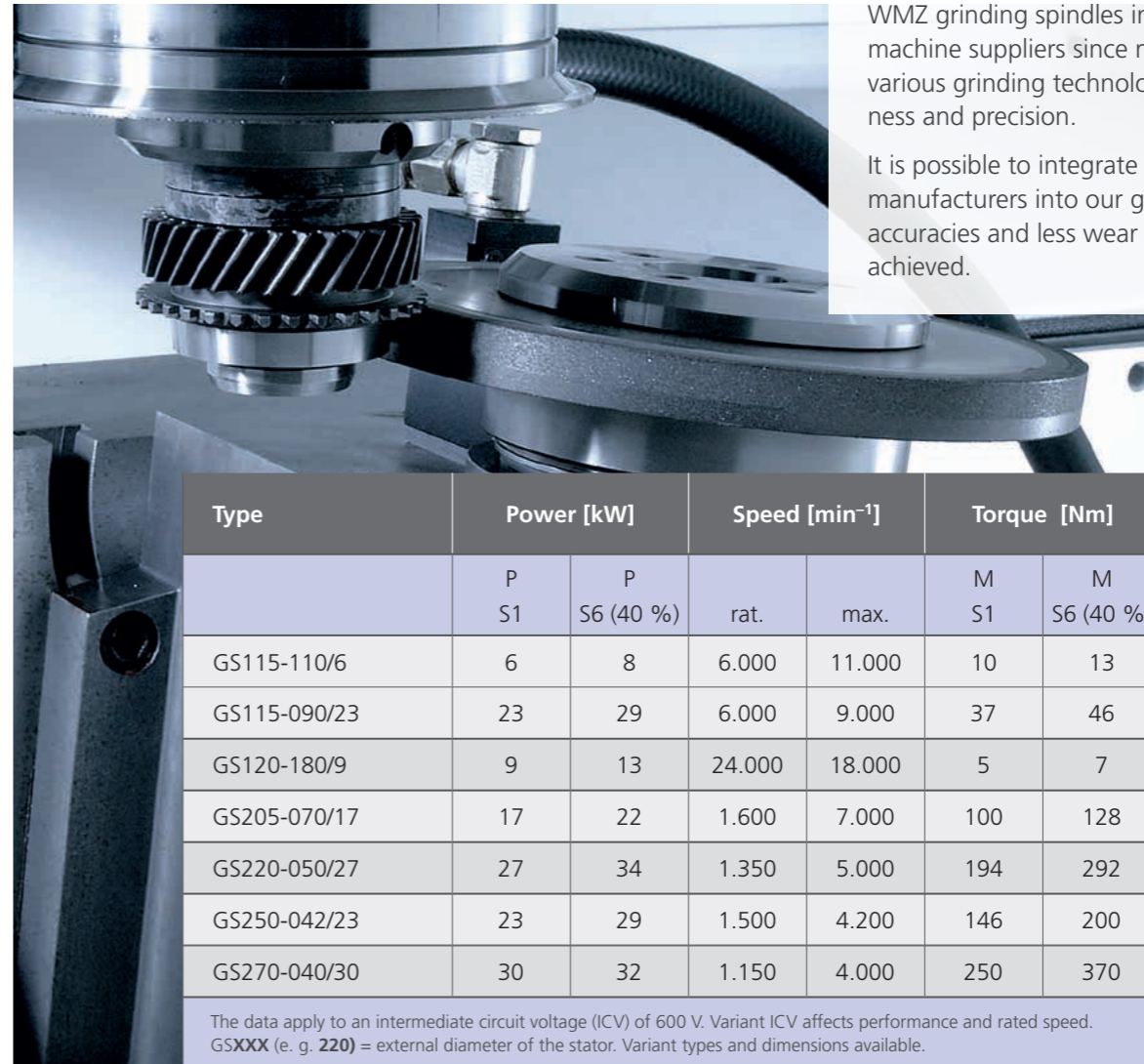


TOOL FITTING / CLAMPING SYSTEM



Type	HSK	SK	BT	Capto
MS120-XXX/10	40/50/63	30/40	Available on request	C4/C5
MS120-XXX/16	40/50/63	30/40		C4/C5
MS120-XXX/28	40/50/63	30/40		C4/C5
MS180-XXX/24	40/50/63	40		C5/C6
MS180-XXX/32	40/50/63	40		C5/C6
MS180-XXX/32	40/50/63	40		C5/C6
MS200-XXX/32	50/63	40/50		C5/C6
MS200-XXX/47	50/63	40/50		C5/C6
MS220-XXX/33	63/100	50		C6/C8
MS220-060/27	63/100	50		C6/C8
MS250-060/38	63/100	50		C6/C8
MS270-040/30	100/125	50		C8/C10
MS270-030/31	100/125	50		C8/C10
MS310-050/67	100/125	50		C8/C10
MS310-050/103	100/125	50		C8/C10
MS340-020/36	100/125	50		C8/C8X/C10
MS340-030/99	100/125	50	C8/C8X/C10	
MS405-015/36	100/125	50	C10	

WMZ – GRINDING SPINDLES

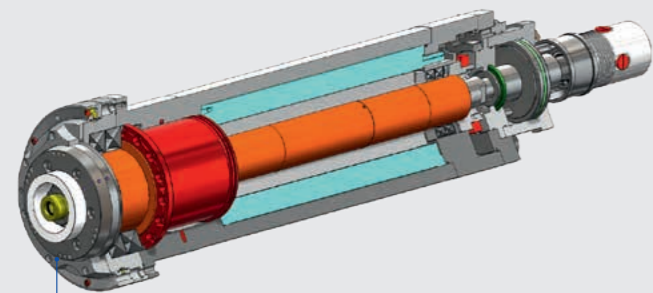


WMZ grinding spindles in use at successful grinding machine suppliers since many years. They are used for various grinding technologies and distinguish by robustness and precision.

It is possible to integrate balancing systems from leading manufacturers into our grinding spindles. Thus higher accuracies and less wear of grinding wheels can be achieved.

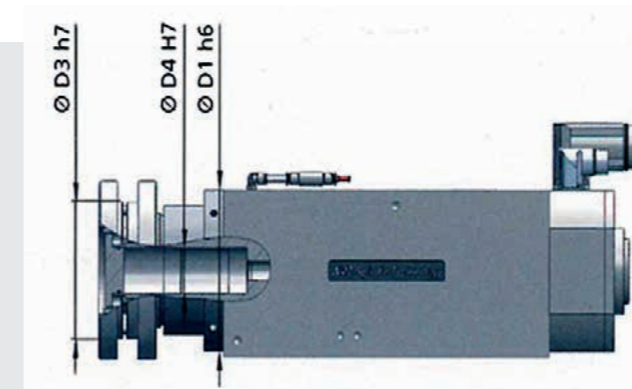
Type	Power [kW]		Speed [min ⁻¹]		Torque [Nm]		Dimensions [mm]		
	P S1	P S6 (40 %)	rat.	max.	M S1	M S6 (40 %)	Ø D1 (h6)	Ø D3 (h7)	Ø D4 (H7)
GS115-110/6	6	8	6.000	11.000	10	13	150	76	42
GS115-090/23	23	29	6.000	9.000	37	46	150	127	42
GS120-180/9	9	13	24.000	18.000	5	7	150	47	32
GS205-070/17	17	22	1.600	7.000	100	128	230	102	60
GS220-050/27	27	34	1.350	5.000	194	292	250	250	152
GS250-042/23	23	29	1.500	4.200	146	200	300	152	70
GS270-040/30	30	32	1.150	4.000	250	370	300	203	90

The data apply to an intermediate circuit voltage (ICV) of 600 V. Variant ICV affects performance and rated speed. GSXXX (e. g. 220) = external diameter of the stator. Variant types and dimensions available.

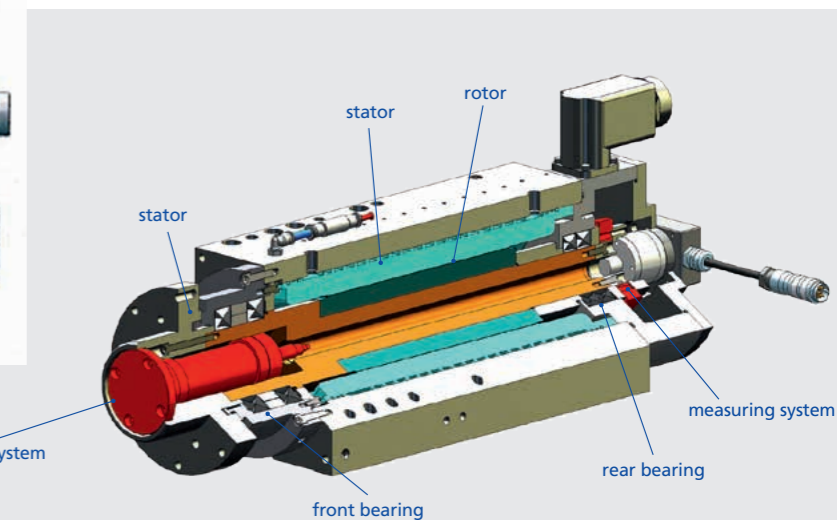


tool clamping

Depending on customers requirements WMZ motorspindles can be equipped with different clamping systems.



Ø D3 h7
Ø D4 H7
Ø D1 h6



balancing system

front bearing

rear bearing

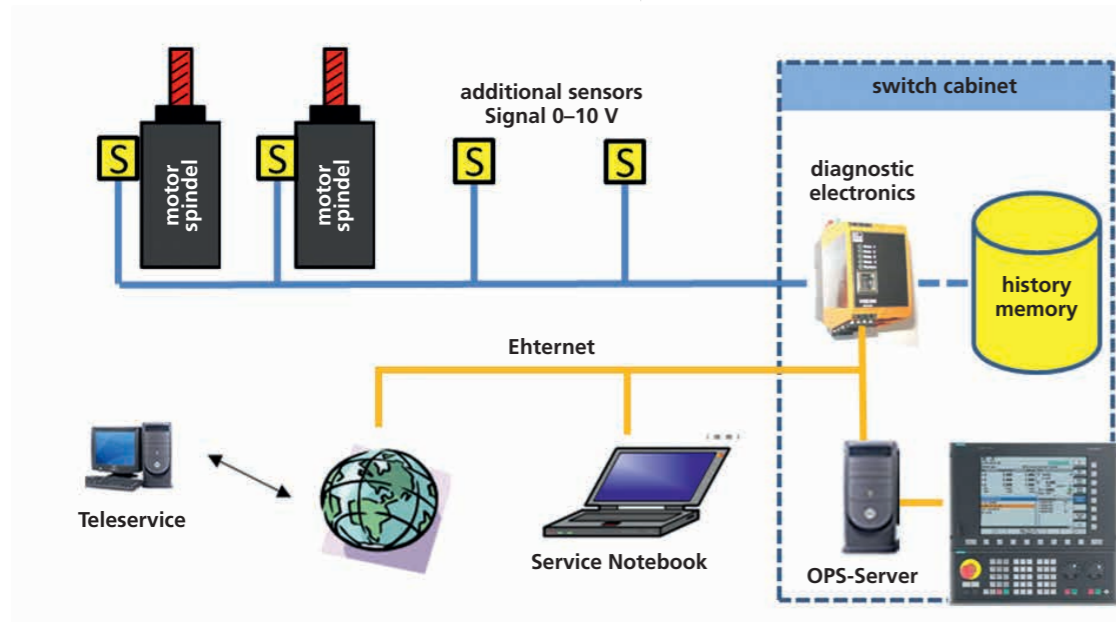
measuring system

SPINDLE MONITORING SYSTEM SMS (optional)

WMZ motorspindles can optionally be equipped with a permanent spindle monitoring system (SMS). Bearing defects can be detected weeks before breakdown. The measured values can be checked worldwide in real time via the internet.

Advantages

- Better scheduling of upcoming reparations because of early detection
- Optimal utilization of maintenance-intervals lead to lower revision-cost
- Prevention against secondary damages by opportunemaintenance
- Collision caused defects can be ascertained

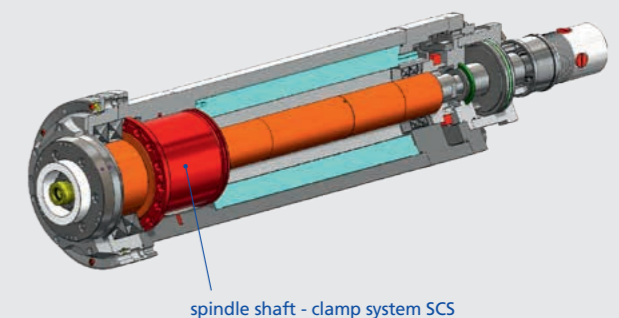
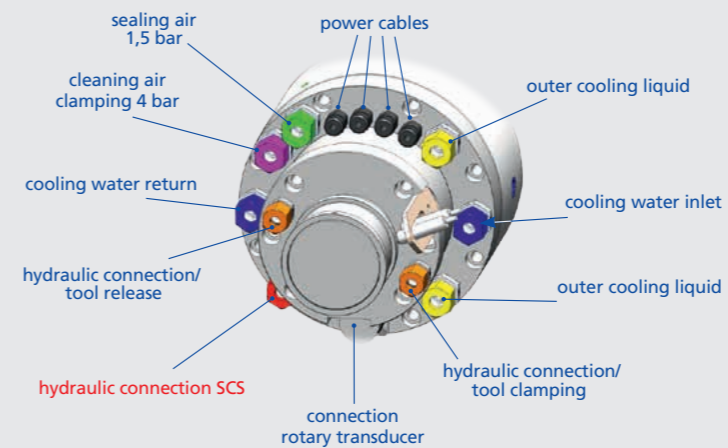
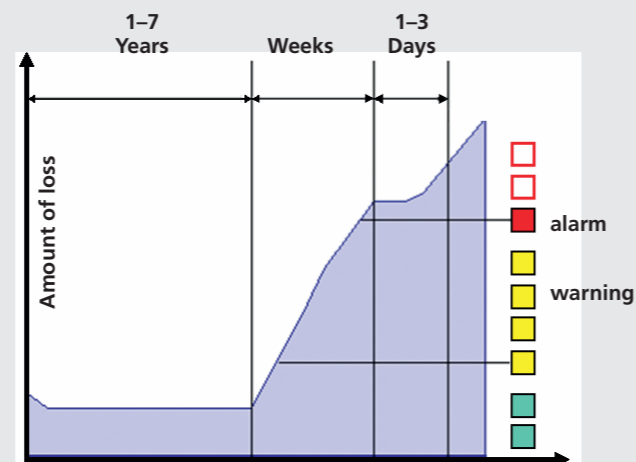
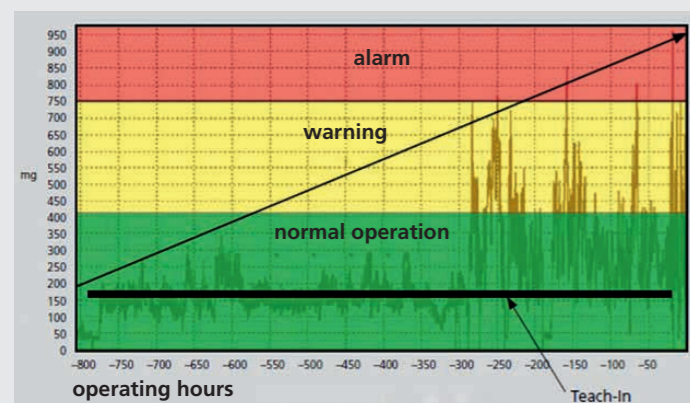
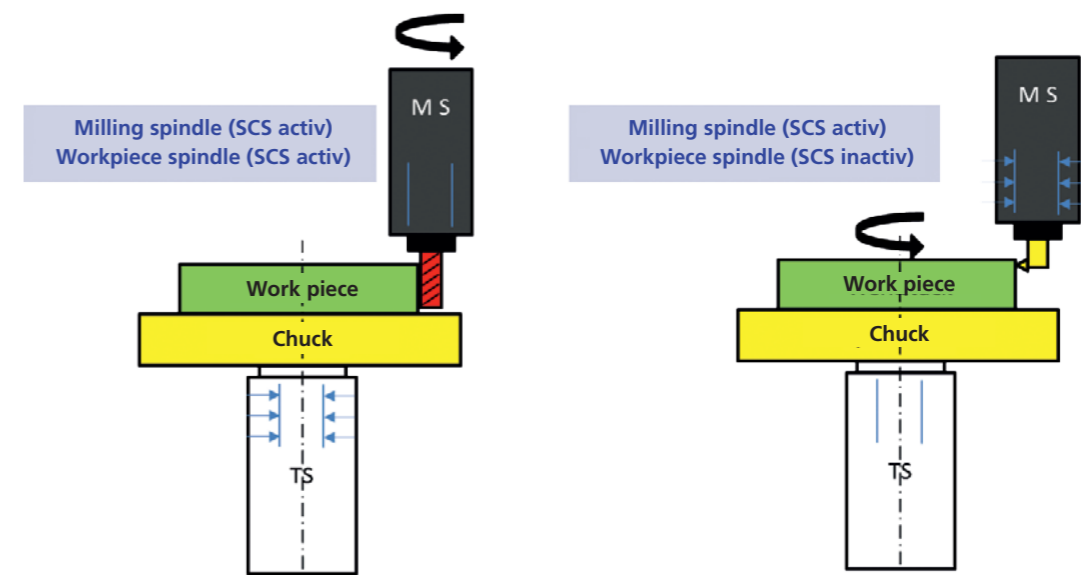


SPINDLESHAFT CLAMPING SYSTEM SCS (optional)

WMZ motorspindles can optionally be equipped with a hydraulic driven spindleshaft clamping system (SCS). That gives the possibility to fix the spindle shaft with max. 10.000 Nm in every position. This is an assumption for complete machining processes.

Advantages

- The use of turning tools with our milling spindles is possible
- High accurate milling processes are possible while fixation of the workpiece by clamping of the turning spindles
- High flexibility of the machine
- Optimal utilization of c-axis-functionality



PREVENTION



Machine downtimes cost time and money. You can prevent this – with our **on-site spindle inspection**. Our technicians use special measuring processes to inspect your spindles for signs of wear. If they find anything, you receive a precise fault analysis with a list of the measures to be taken and a cost estimate. Following work assignment, the more minor repairs are even carried out on site.

REPAIR



No-one knows your spindles better than we do – after all, we designed and built them. We provide fast and reliable help with **genuine spare parts**, our flexible on-site service and in the WMZ Spindle Service Center.

Advantages
■ Repair to technically “value as new”
■ Retrofitting of advanced technological developments
■ Use of genuine spare parts
■ Repairs of standard spindles usually within 5 working days
■ 24h service hotline*

WMZ TAG-NUMBER

Every WMZ spindle is assigned an individual **WMZ TAG-number**. On the basis of this number, we can identify all the details of your spindle:

- Revision level on assembly
- Test protocols of all components
- Pre-delivery measuring protocols
- Documentation of service work
- Post-repair measuring and test protocols
- Overview of the components replaced



OPTIMIZE

Production workflows change.

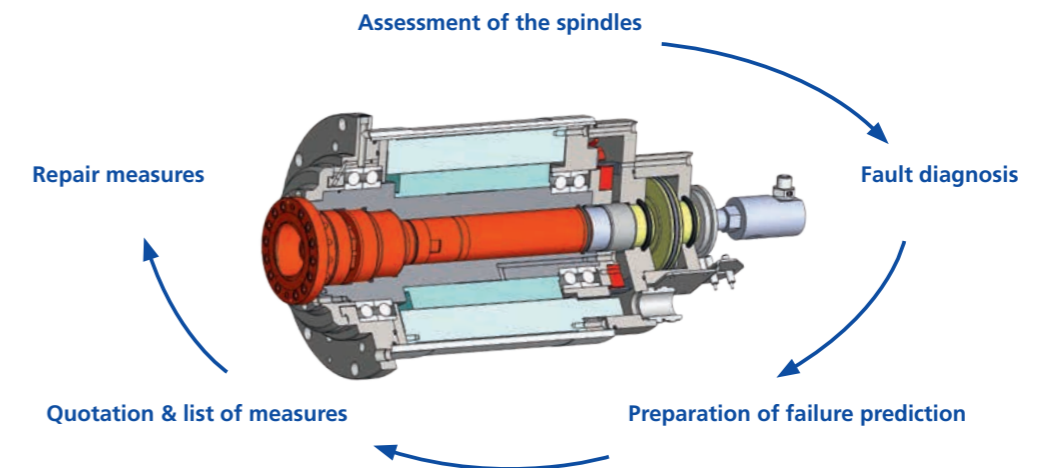
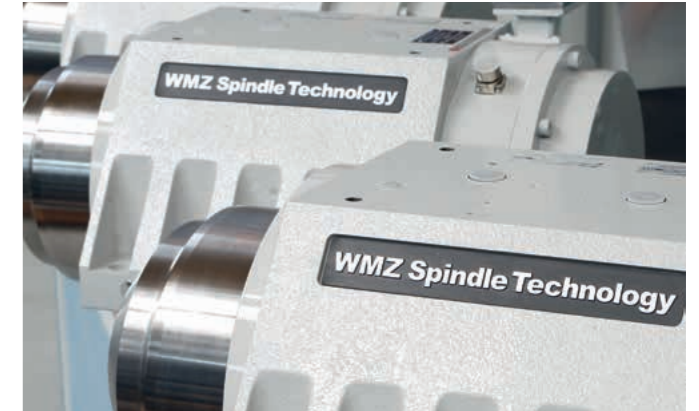
Technologies change.

Processes change.

Would you like to adapt your spindle to new processes? **Avoid** any major **risks** and talk to us first.

We can upgrade your used spindles to the latest **technical standard** and adjust them for new processes if possible.

In close cooperation with the specialist departments of our associated companies, we always look for the most productive solution for your manufacturing line.



TRAININGS

Within the context of **customised training**, we teach you about the core of your machine in terms of both **theory and practice**.

You can either come to the WMZ Spindle Service Center or book a training event on your own premises.

Experienced trainers will explain the following subjects:

- General handling of spindle units
- Carrying out minor repairs
- Spindle replacement
- How to carry out spindle maintenance yourself
- Checking the sealing air
- Checking the coolant flow
- Inspection of the tool interface
- Concentric and axial run-out as fault indicators



Members of the DVS TECHNOLOGY GROUP

Members of the DVS TECHNOLOGY GROUP

DVS MACHINE TOOLS & AUTOMATION



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DVS TOOLS & COMPONENTS



DVS TOOLING GmbH | www.dvs-tooling.de
Werkzeuflösungen und Technologiesupport für das PRÄWEMA Verzahnungshonen
Tool solutions and technology support for PRÄWEMA gear honing



NAXOS-DISKUS Schleifmittelwerke GmbH | www.naxos-diskus.de
Konventionelle Schleifwerkzeuge – CBN und Diamantwerkzeuge
Conventional grinding tools – CBN and Diamond tools

DVS PRODUCTION



DVS Production GmbH | www.dvs-production.de
DVS Technologien in der Serienfertigung für PKW-Komponenten
DVS Technologies in mass production for passenger car components



DVS Production South GmbH | www.dvs-production-south.de
DVS Technologien in der Serienfertigung für Nutzfahrzeug-Komponenten
DVS Technologies in mass production for commercial vehicle components



DVS Precision Components (Taicang) Co. Ltd.
Präzisionskomponenten des Antriebsstrangs in der Serienproduktion für Pkw und Lkw auf DVS-Maschinen
Precision powertrain components in series production for passenger cars and trucks on DVS machines

DVS INTERNATIONAL SALES & SERVICE



DVS Technology America, Inc. | www.dvs-technology.com
DVS Sales & Service in USA, Canada & Mexico



DVS Technology (Taicang) Co., Ltd. | www.dvs-technology.com
DVS Sales & Service in China



DVS Technology Europe GmbH | www.dvs-technology.com
DVS Sales & Service in South Europe

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