



This manual contains important information about the correct usage of the product. You should therefore always have it ready to hand as long as you are using the product.

MECHATRON Serie HFS High Frequency-Motorspindles

Types: HFS-4803, HFS-6508(-AC), HFS-8015(-AC), HFS-8022(-AC,-HSC), HFS-10030, HFS-10040



MECHATRON SYSTEMS

Dorfbrunnen 1 – D-34576 Homberg, Germany

Tel. : +49(0)6151 27 33 66 7

Mail : info@mechatron-systems.com

Web : www.mechatron-systems.com

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2 Foreword

Thanks for choosing a High Frequency Spindle from Mechatron Systems!

Whether you use your spindle for milling or engraving, for soft materials like plastics or if you are going to chip mainly aluminum: In every case you will be impressed by the advantages which come with our air- and water-cooled HF-Spindles.

If you worked with cheap router milling motors in the past, you will be impressed by the running smoothness of our spindles.

Also if you are going to place a new machine into operation, you can be sure to start with the right choice for your spindle. Because next to the impressing running smoothness, our spindles convince with a wide rpm range from 6000 rpm to 24000 rpm and so offer highest flexibility for your working tasks.

And cause we know that customers satisfaction is the only way to success, we strictly deliver our spindles with factory warranty, are at your disposal for questions or extra wishes, and offer you the best service possible – also if something is not working as it should.

And if you are happy with our products: Recommend us!

Good work with your new spindle system!

A handwritten signature in blue ink, appearing to read 'P. Groß', with a stylized flourish extending from the end.

Paul Groß

CEO

Mechatron Systems

3 Symbols, acronyms, other hints

The symbols shown in this manual should advert the reader to potential hazards. However, such hints and warnings can never replace the necessary actions of the user according the directions for preventing accidents!



This symbol marks a note which is important for safe operation. Follow these notes consciously, otherwise serious injuries may be caused.



Warning of dangerous electrical voltage



Warning of hot surfaces

The content of this manual is checked for accordance with the described machine. However, mistakes and deviations cannot be excluded. Technical and content changes of this manual, as well as content and literal errors reserved.

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4 Personnel requisition for installation and operation

For installation, initial operation and maintenance of the uncompleted machine described in this manual, it is assumed, that the personnel is a trained electrician according to DIN VDE 1000-10:2009-01 and is especially experienced in electrical machines as well as frequency inverters.

If the user himself is not matching these requirements, it is imperatively necessary to consult qualified personnel for installation, initial operation and maintenance!

For the user who is working with the device it is assumed that he is trained for working with tool machines and knows all relevant safety rules and rules for accident prevention.

5 Safety instructions



Carefully read all safety instructions before first use of the motorspindle! Mistakes or disregarding of warnings or safety instructions can cause electrical shock, fire and/or dangerous injuries. Store this manual at a safe place for a later time.

5.1 Risks of electricity

Ensure protection against overload and short circuits!

In case of an overload – e.g. by a mechanically blocked shaft – or a short circuit, it has to be ensured that the spindle supply power is shut down immediately once the current exceeds the nominal current of the motor spindle. Also in case of a phase loss or an asymmetrical load, the power has to be shut down immediately. This can be reached by using matching motor protection switches or the proper programming of the variable frequency drive (VFD). It must be ensured that the spindle will not start automatically again after the protection device has been triggered once. In case that these instructions are neglected, dangerous temperatures of the motor spindle might be a consequence what can cause defects of spindle or machine or even increase the risk of fire.

Never run the machine unattended!

The motor spindle must be supervised imperatively when running! In case that the machine cannot be supervised a certain amount of time, it has to be ensured that the spindle cannot run accidentally by cutting off the power supply.

Never run the spindle with damaged wires!



In case that wires, cables or attachments are partially damaged or broken, it is strictly forbidden to run the motor spindle. The problem has to be fixed by an authorized technician! Damaged wires increase the risk of electrical shock.

Protect the motor spindle from wetness!

Liquid entry can harm the electrical safety of the device also in the long term and increases the risk of an electrical shock.

Don't touch grounded parts unnecessarily!

Avoid direct skin contact with grounded surfaces like water pipes, heaters, refrigerators, or the machine tool. In addition, always wear good isolating safety shoes. To be well grounded increases the risk of electrical shocks.

Ground the machine tool according to safety rules!

The machine in which the motor spindle is mounted must be grounded for every moveable machine part separately. Even if ballscrew spindles or linear guides establish an electrical connection between two moveable axes, this connection is not adequate for a safe machine grounding and must be urgently supplemented by a separate grounding wire for each axis according to national safety rules. The protective conductor must be tested pursuant to the IEC 60601 standard before the unit is used.

During maintenance and installation: DIN VDE 0105

During maintenance or installation work, dangers might occur by electrical shock as well as accidentally start of the device. Therefore always follow the five safety rules when installing or maintaining the device:

Disconnect from power supply

Protect against power connection (e.g. covering the power socket)

Check for zero potential between all phases

Ground and short circuit all phases

Cover all other energized devices and machines in the surrounding area

It is also imperative to note:



VFD's use huge power caps which are still at high voltage even the device has been disconnected from the power supply for minutes. Therefore wait for at least 15 minutes after Step 2 (protect against power connection) before continuing with the safety steps as work preparation. In particular, follow the rules of the manual of the VFD.

5.2 Risks of spinning parts and bursting tools

Use a machine housing!



The high spinning speed of tools with 24.000 rpm and more causes a high risk of injuries by flying chips and bursting tools. Parts of a bursting tool act like a shrapnel which can cause injuries dangerous to life.

Therefore it is compulsory to use a machine housing which can protect the user by withstanding flying tool parts and chips and in addition to that, has a safety switch which is cutting the power supply of the motor spindle as long as the machine housing is not closed properly.

Ensure that the spindle is not running!



Before opening the machine or the machine housing, always ensure that the spindle has stopped to zero speed! The motor shaft can still rotate after cutting off the power (sometimes more than a minute). Before a tool change it must be ensured that the power supply is completely shut down to avoid an accidental start of the spindle. This should be done by unplugging the spindle or the VFD from the power supply.

Only use balanced and undamaged tools!

Because of the high rotation speed of the spindle motor, tools must be well balanced. Do not use tools with refurbished shafts. An insufficient balanced tool can cause vibrations which will lead to bearing damages or even resonances which might make the tool bursting. Therefore balance the tools in advance with proper devices like a balancing machine. Check the machine for vibrations after every tool change. If the vibrations are improper, immediately stop the spindle and change the tool. Only use sharp tools.

Only use tools designed for the rotation speed!

The maximum rotation speed of the motor spindle must not exceed the maximum nominal rotation speeds allowed by the tool manufacturer. Exceeding the allowed rotation speed can cause bursting of the tool or damages of the spindle motor.

5.3 Risks of improper cooling

Ensure that the cooling system is working well!

When you are using an air cooled spindle it must be ensured that the spindle is cooled reliably by the integrated fan. Before starting the spindle it has to be checked if the fan is undamaged, not covered in any way and an air stream is established when the spindle is running. It should be avoided constructively that an excessive amount of dust and chips can enter the ventilator slots, e.g. by installing a deflector plate.

When you are using a water cooled spindle it must be ensured that the cooling circuit is working properly and the coolant can circulate continuously. In case that this is done by an optical control with temperature sensor and flow indicator, it must be checked every 15 minutes!



An unnoticed breakdown of the cooling system can lead to improper heating of the motor spindle! This can cause danger of injuries when touching the hot surface, damage of the motor spindle or in worst case lead to a bursting cooling hose with the risk of scalding with hot coolant. In case that a manual (optical) control of the cooling system cannot be done reliably, it must be installed either an automatic indirect control with flow sensor and temperature sensor which shuts down the power when the coolant flow either goes below 1 Liter/min or the temperature exceeds 40°C after the outlet of the motor spindle. Alternatively it can be installed a direct temperature control by mounting a temperature sensor at the spindle body which shuts down the power supply when the motor housing exceeds 50°C.

6 Purpose of use

The motor spindle is as “unfinished machine” designed to be mounted in machine tools which can be defined as stationary industrial jig. The installation has to be done by the machine tool manufacturer because the necessary knowledge for a proper installation cannot be expected by the end user. Within this tool machine, the purpose of the motor spindle is to drive and guide a rotating tool (usually drill bit, end mill) and to cut material with this tool by milling or drilling in a chipping process.

Driving of workpieces, holding fixtures (e.g. lathe chucks) or tools for other work processes (e.g. polishing tools) is forbidden!

The feeding mechanism of the machine tool must have a self-locking mechanism and be able to support the weight of the spindle motor reliably. This must be ensured especially in regard of CE-conformity of the machine tool.

It is strictly forbidden to use the motor spindle by holding it in the hand!

The motor spindle must only be used by verifiably qualified personnel. Every use differing from the purpose described in this manual is strictly forbidden. We exclude any direct or indirect liability for damages or injuries caused by using the motor spindle different as described in “purpose of use” of this manual.

7 Description of the machine

7.1 Parts

- 1. Clamping nut
- 2. Collet
- 3. Motor shaft
- 4. Motor housing
- 5. Coolant plugs / ventilator slots (air cooled models)
- 6. Power connector



7.2 Technical data / Type table

	Type HFS-4803	Type HFS-6508-AC	Type HFS-8015-AC	Type HFS-8022-AC
Nominal Voltage	75V	230V	230V	230V
Nominal Current	4,5A	4A	5A	8A
Nominal Frequency	1000 Hz	400 Hz	400 Hz	400 Hz
Maximum Frequency	1000 Hz	400 Hz	400 Hz	400 Hz
Nominal Power	0,3kW	0,8kW	1,5kW	2,2kW
Pole pairs	1	1	1	1
Insulation class (reg. DIN IEC 85)	B	B	B	B
Protection category (reg. DIN EN 61140)	I	I	I	I
Protection class	IP54	IP54	IP54	IP54
Speed range	10000-60000 min ⁻¹	6000-24000 min ⁻¹	6000-24000 min ⁻¹	6000-24000 min ⁻¹
Collet	ER8	ER11	ER11	ER16
Cooling	Water	Air	Air	Air
Coolant temperature	10...30°C	-	-	10...30°C
Tool change	manually	manually	manually	manually
Bearings (amount)	2	4	4	4
Weight	1,5 kg	2,5 kg	3,9 kg	4,8 kg

	Type HFS-8015	Type HFS-8022	Type HFS-8022-HSC	Type HFS-10030
Nominal Voltage	230V	230V	230V	230V
Nominal Current	5A	8A	8A	12A
Nominal Frequency	400 Hz	400 Hz	400 Hz	400 Hz
Maximum Frequency	400 Hz	400 Hz	700 Hz	400 Hz
Nominal Power	1,5kW	2,2kW	2,2kW	3,0kW
Pole pairs	1	1	1	1
Insulation class (reg. DIN IEC 85)	B	B	B	B
Protection category (reg. DIN EN 61140)	I	I	I	I
Protection class	IP54	IP54	IP54	IP54
Speed range	6000-24000 min ⁻¹	6000-24000 min ⁻¹	6000-42000 min ⁻¹	6000-24000 min ⁻¹
Collet	ER11	ER20	ER20	ER20
Cooling	Water	Water	Water	Water
Coolant temperature	10...30°C	10...30°C	10...30°C	10...30°C
Tool change	manually	manually	manually	manually
Bearings (amount)	3	3	3	3
Weight	3,9 kg	5,0 kg	5,1 kg	8,9 kg

8 Transport and storage

The motor spindle should be transported in its original package or similar to avoid damages during transport.

Storage must be done within a temperature range of -5°C and 50°C and a humidity <15%. The maximum storage time is 12 months, afterwards the product must be checked from authorized personnel by the manufacturer.

9 Installation

9.1 Check for transport damages

Before installing, please carefully check the motor spindle for damages caused by the transport. Especially the power connector should be checked for bent pins or foreign particles or entrance of liquids. Also check the motor shaft for mechanical damages.

9.2 Mounting of the motor spindle

To mount the motor spindle, a clamping holder must be used which clamps the housing of the motor spindle. In case a special holder is made by the end user, it must be ensured that:

- The holder is able to carry the weight of the motor spindle
- The holder is furthermore able to absorb the static forces during working processes
- The holder is furthermore able to absorb the dynamic forces and machine oscillations during working processes
- The clamping force is not initiated punctual but on a cylindrical surface. The minimum height of the holder should be $\frac{1}{2} * \text{Spindle Diameter}$

Clamping is not allowed in the area of the main spindle bearings. This can lead to bearing damages and an increased power dissipation! The motor spindle is marked with a line on the critical area.

It should also be ensured that the clamping force is not decreasing after some time, e.g. caused by vibrations. Therefore the screws should be locked with matching elements like loctite or lock washers.



A spindle holder which is not stable enough, or a spindle which is getting loose during work, can cause heavy damages of the machine and are increasing the risk of an accident! Therefore always ensure that the spindle is mounted safely!



The holder as well as the machine where the holder is mounted at must not be made of flammable material! Otherwise, the risk of fire in case of a fault is increased.

9.3 Installation of the cooling system

Air cooled motor spindles:

Ensure that the ventilator slots are not covered (at least 30mm distance to other surfaces) and no foreign particles or liquids can enter the spindle. In case that the environment makes it necessary (e.g. workshop environment with other machines which produce chips) it is recommended to install deflector plates to avoid that foreign particles can unnecessarily enter the ventilator slots.

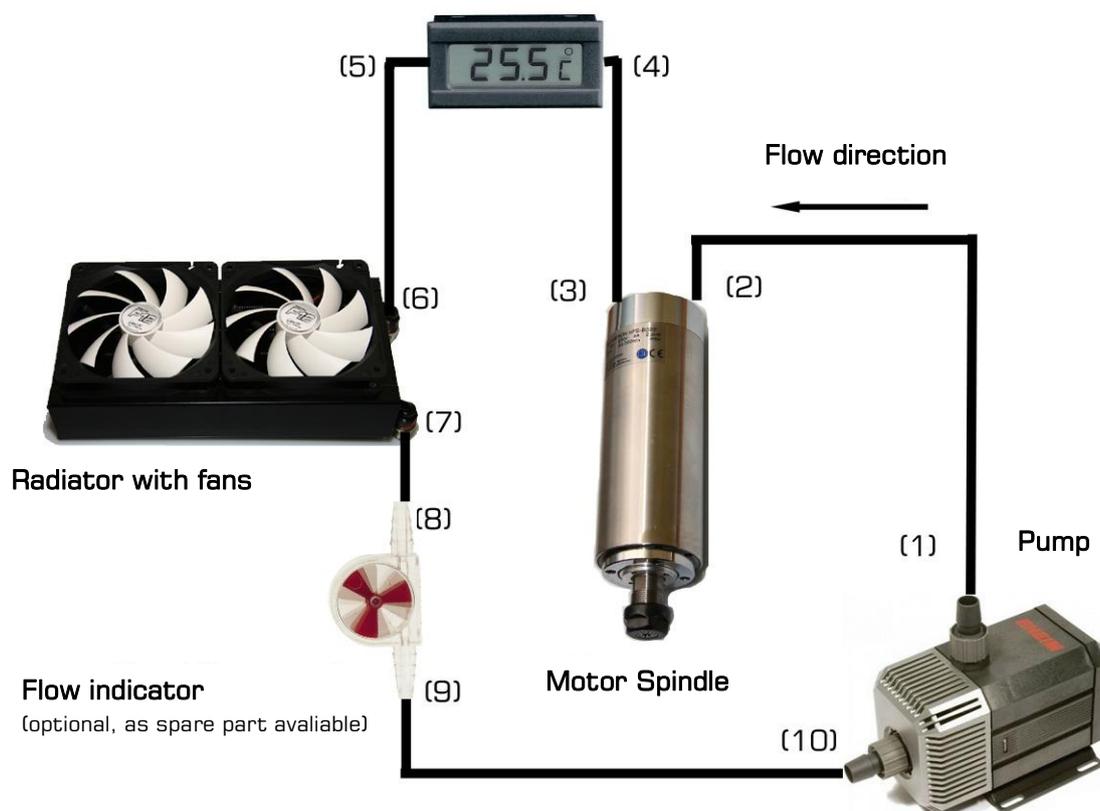
Water cooled motor spindles:

When dimensioning the cooling system it must be ensured that the maximum temperature at the outlet of the motor spindle does not exceed 30°C.

The coolant circuit must have a temperature display and a flow indicator in case that no direct temperature control and automatic shutdown is applied (see 5.3). In case no direct temperature control is applied, the temperature and flow has to be checked every 15 minutes by the user. If the temperature exceeds 30°C or the flow indicator doesn't indicate any coolant flow, the motor spindle has to be stopped immediately and the system has to be checked for the reason of the fault.

The coolant liquid must be a special coolant which ensures protection of corrosion, does not dissolve rubber gaskets and has a low electrical conductance. Only use coolant which is approved by the manufacturer.

Temperature Sensor (optional, available as spare part)

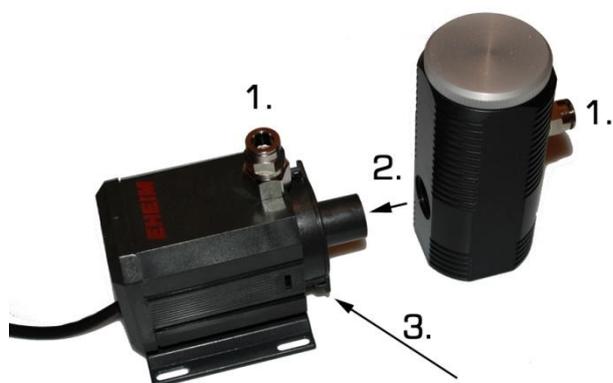


Scheme 1: Coolant circuit with temperature sensor and flow indicator

It is important that the coolant circuit is de-aired properly to ensure a reliable work of the cooling aggregates.

If you use accessories of our product range, the de-airing can be made very easy and safe thanks to a pump with integrated compensation tank. Therefore follow the described steps:

1. Prepare the pump as described:



Insert the threaded hose plugs (1.).

Mount the compensation tank at the inlet of the pump (2.). We recommend to apply some grease at the rubber gasket to simplify the mounting.

Ensure that the bayonet enclosure of the inlet is locked (3.).

2. Connect the coolant circuit according to scheme 1
3. Open the screw closure of the compensation tank

4. Switch on the coolant pump and fill coolant into the compensation tank. The coolant will now be sucked in by the pump immediately. Continue filling the compensation tank until it is full and the coolant is circulating continuously.
5. Finally, turn and knock slightly at the radiator so air bubbles can be released. Check the compensation tank and refill if necessary. The system is now air free and ready to use. Check the fill level of the compensation tank continuously.

9.4 Electrical connection



Follow the notes described here with special care! A faulty electrical connection or deficient protection can lead to dangerous situations in case of a fault!

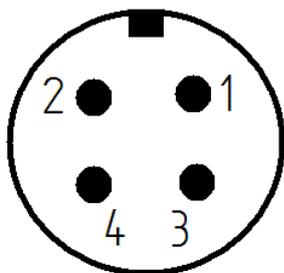
The following protections must be ensured when using the device:

- Protection against short circuit
- Protection against overload when exceeding the nominal current
- Protection against under voltage
- Protection against asymmetric phases or phase loss
- Protection against self-initiating restart after shutdown

These protections can be realized by using proper motor protection switches or, if possible, proper programming of the VFD.

In addition it has to be ensured that the motor spindle can only be used in the nominal rpm range (for example: 100Hz – 400Hz or 6.000rpm to 24.000rpm). Especially with air cooled spindles it must be taken care that the minimum speed of 6.000 rpm is not underrun because the cooling air stream might be too weak for a proper cooling.

Connector assignment



- 1: U
- 2: V
- 3: W
- 4: PE

The connector is assigned as shown in the scheme. Only use shielded cables which are approved for the use in drag chains. The cross section must be sufficient for the nominal current. The shield must be connected to ground on both ends!



The person installing the system bears responsibility for correct and safe installation! Especially the correct connection of grounding (PE) and the following grounding test must be done according to national rules and by qualified personnel!

Adjustment of the VFD

The VFD has to be programmed according to the protection rules listed above if this is not already covered by other protection devices.

The VFD has to be programmed in V/F mode according to the nominal current of the motor spindle. For detailed information about programming the V/F curve, please contact us. Wrong adjustments of the frequency inverter can cause heavy damages and increase the risk of an accident!

Connecting the Spindle to the VFD

The cables 1, 2 and 3 must be connected to clamps U,V and W of the VFD. The PE grounding contact must be connected to the PE clamp of the VFD. The wire shield must be connected to the grounding plate where the VFD is mounted at, or the aluminum heat sink of the VFD by a grounding bracket. If the shield is not connected, this can lead to potential differences which cause EMI problems or even electrical shock!

Connecting the VFD to the power supply

First, connect the PE wire to the PE clamp of the inverter. Then connect L (brown) to clamp R of the VFD and N (blue) to clamp T of the VFD.

Electrical connection of the cooling system

With water cooled motor spindles, the connection of the cooling system has to be done in a way that running the motor spindle is only possible if the cooling system is also running.

In case you purchase the cooling system as attachment from us, the coolant pump must be connected in parallel with the VFD (Power supply of the VFD and pump power supply are connected to the same power on switch) and the cooling fans must be connected to the 24V – COM supply of the VFD.

10 Initial operation



Before first operation of the motor spindle, the machine in which the motor spindle is mounted has to be checked for CE conformity by the machine manufacturer!

10.1 Checklist for every time the motor spindle is used (initial operation as well as regular operation)

The following checks must be done before every operation of the motor spindle, operation is only allowed in case that there are no faults detected.

1. Does the cooling system work properly? Are ventilator slots or radiator ribs whether clogged nor covered? Is the coolant circulating properly and no foreign particles or air bubbles are in the coolant?
2. Is the electrical connection of the spindle done properly and undamaged? Are all cables and wires in proper condition?
3. Is the motor spindle mounted safe and the fixtures are tight and safe?
4. Is the used tool appropriate for the nominal rpm of the motor spindle and is it balanced correctly?
5. Can the spindle shaft turn free and is not blocked by other parts? Is the tool not in contact with the workpiece?

10.2 Running-in of the spindle

A cold motor spindle has to be runned-in carefully before working with it to ensure that the bearings reach operation temperature slowly. The running-in times must be doubled if the spindle is factory new, not used for over one week or a change of the bearings has taken place.

For running in, the speed has to be adjusted to the minimum (e.g. 6.000rpm) and to be run for at least 1 minute at this rpm. After one minute, the rpm can be increased in steps of 25% of the nominal rpm for another minute. The increase in these steps is done until the spindle is running at nominal speed.

For spindles with a rpm of more than 24.000rpm, additionally a grease dispension run is necessary:

Adjust the rpm to 33% nominal speed (e.g. 14.000 rpm at a 42.000rpm spindle). Let the spindle run for 1 minute at this speed. Then pause for 2 minutes. Repeat this run-pause interval 5 times overall.

Now increase the speed to 66% of the nominal value. Also make 5 times a run/pause interval of 1 minute / 2 minutes.

Then increase the speed to the nominal value, and repeat the same run/pause interval again for 5 times.

After this, let the spindle run for 30 minutes at the nominal speed without load. After 30 minutes, pause for 5 minutes, then let the spindle run again at nominal speed for 30 minutes.

During the running-in, always control the temperature of the front partition of the spindle. In case it gets warmer than 40°C, immediately stop the run and let the spindle cool down to room temperature. Then continue the run.

After successful dispersion run, the spindle can be used normally.

Note: During the dispersion run, the bearings get warmer than usual and the speed can fluctuate irregularly. This effect is normal and will disappear after some hours.

10.3 General operating condition in regular use



It has to be ensured, that no collisions happen during using! Collisions can be caused on one hand by touching rotating parts without blade (tool shaft, motor shaft, clamping nut) with solid parts (workpiece, machine), on the other hand by wrong cutting parameters (rpm too low, feed rate too high), improper tools or too hard workpiece materials. Unnoticed collisions can cause heavy damages at the machine and lead to an increased risk of accident. Especially because of this reason it is necessary, to never let the machine run unsupervised. In addition to this it always has to be ensured that the motor spindle reaches working speed before the tool is cutting the workpiece at first time.

Temperatures of coolant and spindle housing

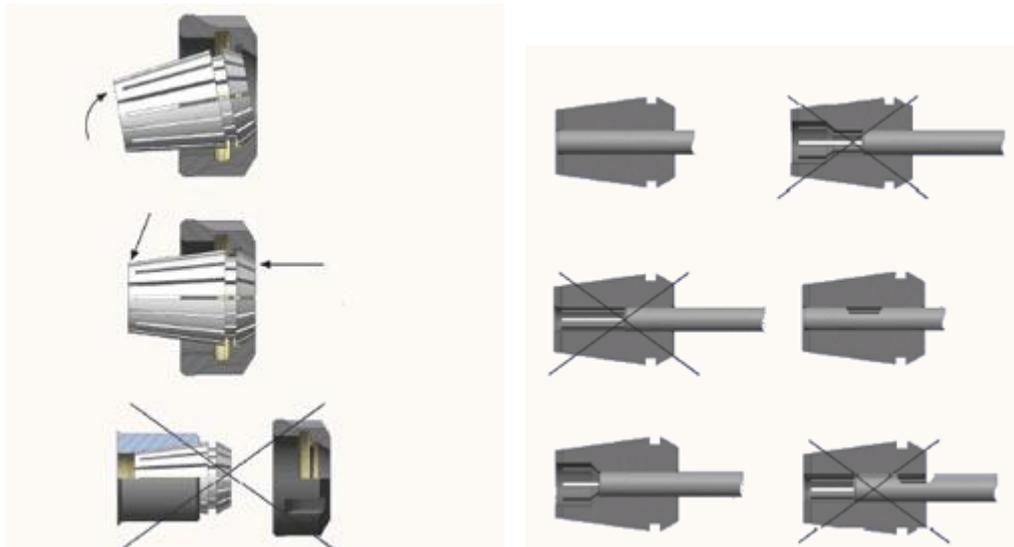
The allowed temperature of the coolant must be between 10°C and 30°C in normal working condition. If the coolant temperature increases to more than 40°C, the spindle has to be stopped immediately and the reason for overheating must be clarified. In case that the coolant temperature is below 15°C, the running-in times need to be doubled. The maximum allowed pressure of the coolant pump is 2 bar.

Tool change



It has to be ensured that the motor spindle does not spin and cannot be started accidentally (pull the plug) before any tool change is done!

The tool change and clamping of tools must be done as described in the following pictures. In case the tool cantilevers for more than 80mm, collets with a runout of less than 0,005mm must be used!



Vibrations

Vibrations can be caused by bad balanced tools or imprecise collets and will lead to an increased wear of the front spindle bearings. The maximum allowed oscillation amplitude is 2,5mm/sec.

11 Maintenance

Note: The bearings of the motor spindle are life time lubricated! Relubrication is strictly forbidden and will lead to a significant reduction of the bearing life time.

11.1 Maintenance and control after initial operation

After initial operation (new motor spindle as well as modification of a used system or machine), all fixtures and bolted connections of mechanical and electrical parts as well as all plug connections (electrical and coolant plugs) have to be checked and retightened if necessary. Also the coolant level has to be checked and refilled if necessary. The cooling system must be checked for leakage.

11.2 Daily maintenance

Motor spindle and tool cone must be cleaned with a clean scarf. After that, put some grease on the tool cone as protection against corrosion, then always insert a tool afterwards. Never clean the motor spindle with compressed air to avoid foreign particles get into the inside of the spindle. Check the ventilator slots and cooling ribs of the radiator for dust and foreign particles and clean if necessary.

11.3 Weekly maintenance

Check the coolant circuit for air bubbles, if necessary, replace the coolant completely.

Check for leakage (water cooled spindles)

Check the plug connections of the coolant hoses. The hoses must be whether cracked, nor porous or brash. If necessary, replace the whole coolant hose. Ensure that the coolant can circulate well.

11.4 Monthly maintenance

Check the coolant for foreign particles or deposits. Deposits can block the coolant hoses. Therefore replace defiled coolant immediately.

11.5 Spare part replacement

Changes, repairs or replacement of spare parts must only be done by qualified personnel, authorized by the manufacturer. Opening the spindle housing and damaging the warranty seal will lead to exclusion of all liability and warranty rights.

12 Terms of warranty

We guarantee a state of the technology faultless condition of the purchased product during a time of 12 months after purchasing date except the spindle bearings which are covered with 6 months warranty after purchasing. We accentuate that we check the bearings for abnormal use and abnormal dust deposit, caused by wrong cleaning or missing extraction system. In case that a defect is caused by one of these here described improper reasons, we can charge parts or the overall cost of the replacement to the customer.

While excluding all other claims, we will cover material faults, construction faults, and mounting faults in warranty. We commit to exchange or repair faulty parts on our cost if they did not get damaged by improper use or were modified by the customer.

Basis for a warranty treatment is that this manual is followed consequently during use of the product. In case that the manual is not followed in any way, we can refuse a warranty treatment.

All damages or abnormal characteristics have to be submitted to the manufacturer immediately. The defect devices or parts must be sent back to us for free. A repair will be done as fast as possible. Faulty parts will be replaced without charging material and working cost by replacement or reparation. The replaced parts become our property. Direct or consequential damages are not covered by our responsibility. The cost of repairs or spare parts from third parties will only be paid by us, if we agreed to this in advance in written form. We reserve the right of construction changes without informing the customer.

We reject warranty claims in any way:

- If the fault or its consequences (e.g. aggravation of the fault) were caused by the reason, that the customer did not inform us immediately about it to give us the chance of repairing it and avoid consequential damages.
- If the product was repaired or maintained by a non authorized person or company
- If parts were mounted at the product which we did not agree with explicit
- If the product was modified in any other way without our agreement
- If the product was not maintained or installed as described within this manual
- If regular wear is caused by excessive use

13 EU declaration of incorporation

The manufacturer: MECHATRON SYSTEMS
Dorfbrunnen 1
D-34576 Homberg

Hereby declares that the following product:

Product designation: Motor Spindle
Type designation: HFS-4803, HFS-6508(-AC), HFS-8015(-AC), HFS-8022(-AC,-HSC), HFS-10030, HFS-10040

complies with the following basic requirements of Machinery Directive (2006/42/EG):

Annex I, Article 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4 and 1.5.1.

The partially completed machinery also complies with all requirements of the Electrical Equipment Directive (2006/95/EG)

The partially completed machine must not be put into service until it has been ascertained that the machine into which it is to be incorporated complies with the requirements of the Machinery Directive (2006/42/EG) as well as, if necessary, complies with the requirements of Electromagnetic Compatibility (EMC) Directive 2004/108/EC/EMC.

The manufacturer undertakes to transmit to national authorities the relevant documentation on the partially completed machinery, in electronic form and on request.

The relevant technical documentation for the machine as specified by Annex VII Part B has been created.

Person authorized to compile the relevant technical documentation: Paul Groß
Address: See manufacturer address

Homberg(Efze), February 2012



