

IMPORTANT: Read before using



Operating / Safety Instructions

MM-800 / MM-1000 / MM-1000 DI



Call for consumer information

Customers from outside the U.S.

STEEPCRAFT GmbH & Co. KG
An der Beile 2
58708 Menden
Germany
Phone: 0049-2373-179 11 60
E-mail: info@stepcraft-systems.com

Customers from the U.S. / Canada

STEEPCRAFT Inc.
59 Field Street, Rear Building
Torrington, CT, 06790
United States
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Translation of Original Operating and
Safety Instructions

Date of 12/30/2019

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WARNING

Please read all safety instructions and directions. Failure to comply with the safety instructions and directions can cause electric shock, fire and/or serious injuries. Please retain all safety instructions and directions for future reference.

1 Signs and symbols



This symbol appears at places where you will find instructions for your own safety.

Non-compliance with these instructions may result in very serious injuries.



This symbol indicates a potentially hazardous situation.

If this situation is not avoided, the product or objects in its vicinity may get damaged.



This symbol indicates tips for the user and other useful information.

2 Product information



98/37/EG 89/336/EWG

EN 60745, EN 55014-1, EN 55014-2, EN 61000-3, EN 12100 T1, EN 12100 T2, EN 1037, EN 847-1

DD40G / DD40P

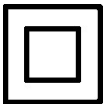
Art.-Nr. 916001, 916002, 916010, 916020, 916021, 916025, 916030, 916031, 916034, 916040, 916041, 916045

2.1 Manufacturer's data

STEPCRAFT GmbH & Co KG, An der Beile 2, 58708 Menden, Germany, Phone +49 (0)2373 / 179 11 60, Fax +49 (0)2373 / 179 11 59.

2.2 Machine identification

All details required for machine identification are available on the attached rating plate.



Protection class II



CE symbol to document compliance with the basic safety and health requirements according to Appendix I of the Machinery Directive.



For EU countries only

Do not dispose of electric tools together with household waste material!

In accordance with the European directive 2002/96/EC on waste electrical and electronic equipment and transposition into national law, obsolete electrical tools must be collected separately and recycled in an environmentally-compatible manner.



To reduce the risk of injury, please read the operating instructions.

2.3 Technical data

	MM-800	MM-1000	MM-1000	MM-1000 DI
Universal motor, radio / TV Interf. suppressed	230 V~, 50 Hz	230 V~, 50 Hz	120 V~, 60 Hz	230 V~, 50 Hz
Power input (nominal load)	800 W	1000 W	1000 W	1000 W
Current at nominal load	4.0 A	4.6 A	8.3 A	4.6 A
Idling speed	7.000 – 25.000 min ⁻¹	4.000 – 25.000 min ⁻¹	10.000 – 25.000 min ⁻¹	4.000 – 25.000 min ⁻¹
Tool holding fixture with collet Ø	3,175 mm	3,175 mm	3,175 mm	3,175 mm
Tool shank max	8 mm	8 mm	8 mm	8 mm
Tool shank min	3 mm	3 mm	3 mm	3 mm
Milling cutter Ø, max	36 mm	36 mm	36 mm	36 mm
Abrasive wheel Ø, max	40 mm	40 mm	40 mm	40 mm
Weight without mains cable	1,6 kg	1,6 kg	1,6 kg	1,65 kg
Dimensions (W x L x H)	73 x 254 x 79 mm (2.87 x 10 x 3.11 in.)	73 x 254 x 79 mm (2.87 x 10 x 3.11 in.)	73 x 254 x 79 mm (2.87 x 10 x 3.11 in.)	73 x 254 x 79 mm (2.87 x 10 x 3.11 in.)

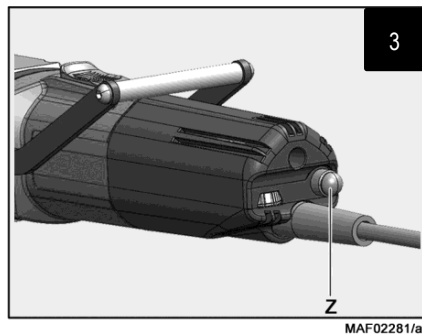
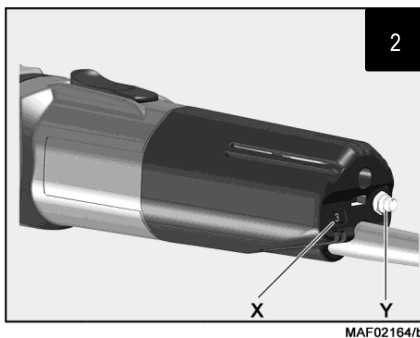
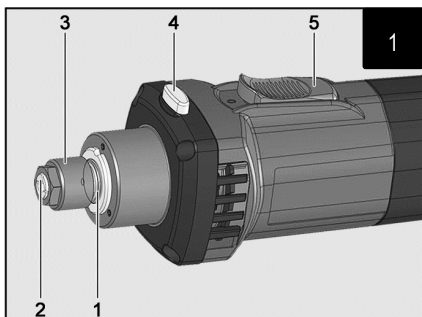


Fig. 1

- 1 Spindle
- 2 Precision collet
- 3 Unit nut
- 4 Spindle lock
- 5 Switch

Fig. 2

X	MM-800 (230 V)	MM-1000 (230 V)	MM-1000 (120 V)	MM-1000 DI (230 V)
1	7.000 min ⁻¹	4.000 min ⁻¹	10.000 min ⁻¹	4.000 min ⁻¹
2	10.600 min ⁻¹	8.200 min ⁻¹	13.000 min ⁻¹	8.200 min ⁻¹
3	14.200 min ⁻¹	12.400 min ⁻¹	16.000 min ⁻¹	12.400 min ⁻¹
4	17.800 min ⁻¹	16.600 min ⁻¹	19.000 min ⁻¹	16.600 min ⁻¹
5	21.400 min ⁻¹	20.800 min ⁻¹	22.000 min ⁻¹	20.800 min ⁻¹
6	25.000 min ⁻¹	25.000 min ⁻¹	25.000 min ⁻¹	25.000 min ⁻¹

2.4 Emissions

The values stated are emission levels. Although there is a correlation between emission and imission level, it cannot be reliably derived from this whether additional precautions are necessary. Factors influencing the current imission level existing at the workplace comprise the duration of exposure, the room characteristic, other source of noise, etc. such as e.g. the number of machines and other adjacent machining operations. In addition, the permissible imission level may differ from country to country. This information is nevertheless suitable for providing the machine user with an improved assessment of the hazard and risk.

2.4.1 Noise emission specifications

Noise emission values determined according to DIN EN ISO 3744:

Sound pressure level $L_{PA} = 71$ dB (A)

Uncertainty $K_{PA} = 3$ dB (A)

Sound power level $L_{PA} = 82$ dB (A)

Uncertainty $K_{PA} = 3$ dB (A)

The noise measurement was done without tool at idling speed.

2.5 Scope of delivery

Milling motor MM-800 / MM-1000 / MM-1000 DI complete with:

1 collet OZ

1 open-ended spanner AF 17

1 operating manual

2.6 Use according to intended purpose

- The power tool is intended for permanent installation in guiding portal systems with \varnothing 43 mm clamping collar.
- The power tool with quick tool clamping can be flanged directly to a portal system using six screws (M6 thread) according to the specifications of the portal system (Fig. 5).
- The power tool is not designed for continuous industrial operation.
- The power tool is considered an incomplete machine. The power tool must not be put into operation until it has been established that the portal system in which the power tool is to be installed complies with the provisions of the current and valid Machinery Directive. Please also observe the corresponding warranty conditions for the power tool and any additional equipment.

2.7 Residual risks



Danger

Even if used in accordance with its intended purpose and despite conforming with the safety instructions, residual risks caused by the intended use will always remain.

- Breakage of the rotating tool.
- Breakage of the tools and risk of the tools or parts of them being hurled away.
- Touching live parts with the housing open and the mains plug not removed.
- Hearing can be impaired when working for long periods without ear protectors.
- Emission of hazardous or potentially explosive dusts (all types) during longer lasting operation without extraction. Please note the safety data sheet of the material to be machined.

3 Safety instructions



Danger

Always observe the following safety instructions and the safety regulations applicable in the respective country of use!

Allgemeine Hinweise:

- Children and adolescents must not operate this machine. This rule does not apply to young persons receiving training and being supervised by an expert.
- Never work without the portal system guards into which the power tool is inserted and that are prescribed for each operation. Do not make any changes to the portal system and the power tool that could compromise safety.
- Damaged cables or plugs must be immediately replaced. Replacement may only be carried out by STEPCRAFT in order to avoid safety hazards.
- Avoid sharp bends in the cable. Do not wind the cable around the power tool especially when transporting and storing the power tool.
- The use of the power tool with water or conductive liquids is prohibited.
- We exclude the use as hand-guided power tool.
- Keep the power tool away from rain or moisture. The penetration of water into a power tool increases the risk of electric shock.

Do not use:

- Damaged tools or tools that have changed their shape.
- Blunt tools due to the excessive motor load.
- Tools that are not suitable for the power tool speed during idling.

Instructions on the use of personal protective equipment:

- Always wear ear protectors during work.
- Always wear a dust mask during work.
- Always wear protective goggles during work.

Instructions on operation:

- Do not reach with your hands into the danger zone of the tool.
- Examine the workpiece for foreign objects.
- Monitor the speed. If an uncontrolled speed increase or speed jump occurs, the power supply must be switched off immediately.

Instructions on service and maintenance:

- Regular cleaning of the power tool is an important safety factor.
- Only original STEPCRAFT spare parts and accessories may be used. Otherwise, the manufacturer will not accept any warranty claims and cannot be held liable.

4 Setting / Adjustment

4.1 Mains connection

Prior to initial operation, make sure that the mains voltage agrees with the operating voltage stated on the machine's rating plate.

4.2 Tool change



Danger

Pull the power plug during all service work



Wear protective gloves during a tool change. The insertion tool can get very hot during longer operation and/or the insertion tool's cutting edges are sharp.

4.2.1 Tool clamping by means of collet

The spindle **1** (Fig. 1) of the milling and grinding motor is equipped with a precision collet **2** (Fig. 1) to hold the tools. The spindle lock is triggered by the locking button **4** and facilitates tightening and loosening of the union nut **3** (Fig. 1).

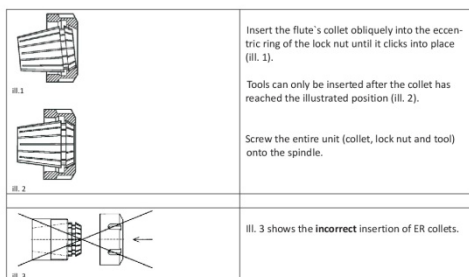
Proceed as follows for the tool change:

- Lock the spindle **1** (Fig. 1) to unclamp the tool by pressing the locking button **4** (Fig. 1).
- Detach union nut **3** with an open-ended spanner AF 17 or AF 25.
- Pull off the tool to the front.
- Push the new tool into the tool holding fixture up to the limit stop.
- Check the tool's seat.
- Spindle **1** (Fig. 1) is locked when the tool is clamped.
- Tighten union nut **3** with the open-ended spanner.

4.2.2 Quick tool clamping

The collets must snap into the clamping nut. Only then, a correct clamping of the end mill and, above all, a release of the collet are possible.

Inserting ER collets into a collet chuck



5 Operation

5.1 Initial operation

Personnel entrusted to work with the power tool must be made aware of the operating manual, calling particular attention to the chapter "Safety instructions".

This operating manual only deals with the power tool and does not take the installation situation into account. Please take note of any other operating manuals.

5.1.1 Switching on

Push the power switch **5** (Fig. 1) forward until it engages. If the power tool is connected to the mains voltage, the setting wheel **X** (Fig. 2) lights up in blue (BU) and the power tool accelerates to the previously set speed after 0.2 s with a soft start. The duration of the soft start depends on the set speed and is approx. 1.2 s at maximum speed.

5.1.2 Switching off

Push onto the rear end of the power switch **5** (Fig. 1). The switch audibly jumps back to off position. The lighting on the setting wheel **X** (Fig. 2) goes out and the motor coasts to a standstill.

5.2 PV design

With the PV design Y (Fig. 2) you can control the speed via the PV interface and automatically monitor the remaining runtime in the event of overload.

To protect the user and the connected systems, the PV interface is electrically isolated from the power supply of the drive train (safety isolation). All signal and operating voltages refer to the reference potential "GND".

As soon as the supply pin "U_{PV}" of the PV interface is supplied with voltage in accordance with the specification, the power tool switches to "portal mode".

The bottom status table 3 shows all possible control constellations.

Input						Output	
HS / -	U _{AC} / V	U _{PV} [V]	PS _S	U _S [V]	U ₀ / V	Operating mode	n [rpm]
OFF	N/A	N/A	N/A	N/A	N/A	Out of operation	0
ON	0	N/A	N/A	N/A	N/A	Out of operation	0
ON	198-253	<6	1	N/A	N/A	Manual mode	4000
ON	198-253	<6	6	N/A	N/A	Manual mode	25000
ON	198-253	8-56	N/A	0	0-1	Portal mode	4000
ON	198-253	8-56	N/A	10	0-1	Portal mode	25000
OFF	198-253	8-56	N/A	0-10	1,5-5	Overload mode	4000-25000

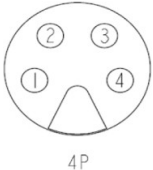

Legend:

Unit	Meaning
HS	power switch
U _{AC}	mains voltage
U _{PV}	control voltage speed specification
PS _S	position setting wheel
U _S	control voltage PV interface
U ₀	display remaining runtime (in overload mode)
GND	reference potential for voltages of the PV interface
n	speed of the working spindle
N/A	not applicable or not relevant

When the PV interface is not in use, protect it against dirt with the supplied covering cap Z (Fig. 3).

5.2.1 Assignment portal connector

All pins on the portal connector are protected against reverse polarity. At voltages above 30 V, continuous operation with reversed polarity must be avoided as this can lead to failure of the PV interface.

Pin Nr.	Parameter	Color of wire	 <p>4P</p>	
1	UPV	Brown		
2	US	White		
3	UO	Black		
4	GND	Blue		

5.3 Speed Specification

With the setting wheel **X** (Fig. 2) you can adjust the speed continuously. The concrete speed values of individual stages can be found in the table on page 5 or on the speed sticker on the housing.

Until the motor characteristic is reached, the built-in electronics readjust to the set speed.

5.3.1 Speed setting in PV design

In “portal mode”, the position of the setting wheel **X** (Fig. 2) for the speed setting is ignored. The speed can only be changed by the voltage at the pin “**Us**”. If you wish to set the speed by means of the setting wheel **X** (Fig. 2), “portal mode” must first be deactivated by switching off the power supply at the pin “**Upv**” or by removing the PV control cable.

The correlation between speed and control voltage is illustrated in formulae (1) and (2).

$$U_s = \frac{n - 4000 \text{ min}^{-1}}{2100 \frac{\text{min}^{-1}}{\text{V}}} \quad (1)$$

$$n = U_s * 2100 \frac{\text{min}^{-1}}{\text{V}} + 4000 \text{ min}^{-1} \quad (2)$$

5.4 Overload protection



Danger

If you carry out any work on the working spindle after the overload protection has triggered, the mains plug must first be removed.

To protect the power tool, the operating parameters current, speed and temperature are dynamically monitored and the power tool is switched off if necessary. Shortly before the overload protection is tripped, the illumination of the setting wheel **X** (Fig. 2) changes to a permanent red (RD).

To put the power tool back into operation, you must open and close power switch 5 (Fig. 1). The power tool goes into operation and the illumination of the setting wheel **X** (Fig. 2) changes to blue (BU).

5.4.1 Optical display of the remaining runtime

Triggering of the overload protection during operation leads to breakage of the milling tool, damage to the workpiece or even damage to the portal system. You can prevent this by paying attention to the visual output signals at the setting wheel **X** (Fig. 2).

As long as the power tool is **not** overloaded in terms of performance, the setting wheel lights up permanently in blue (BU).

If the power tool is overloaded, the calculated remaining runtime is displayed flashing in red (RD).

If the remaining runtime is not sufficient for your application, reduce the load or feed rate to be able to switch back to continuous operation.

5.4.2 Display of remaining runtime in the PV design

If the power tool is in “portal mode”, the remaining runtime can be queried via the PV interface in addition to the visual display.

The bottom table shows the correlation between the remaining runtime and the associated output variables.

Operating mode	Remaining runtime / s	Display remaining runtime U_0 / V	Setting wheel illumination
Continuous operation	unlimited	0	Blue (BU), permanent
Overload mode (motor is running)	< 160	1,5	1 x red pulse (RD)
	< 80	2,5	
	< 40	3	2 x red pulse (RD)
	< 20	4	
	< 10	4,5	
< 5	5	3 x red pulse (RD)	
Switch-off	0	5	Red (RD), permanent

Correlation between the remaining runtime and the associated output variables

6 Service and maintenance



Danger

Pull the power plug during service work.

STEEPCRAFT machines are designed to be low in maintenance.

Replace the carbon brushes at the latest after 125 - 150 operating hours. The spare parts can be referenced in chapter 9.

The ball bearings used are greased for life. When the machine has been in operation for a longer period of time, we recommend to hand the machine in at an authorised STEPCRAFT customer service shop for inspection.

6.1 Storage

If the power tool is not used for a longer period of time, it has to be carefully cleaned. Spray bright metal parts with a rust inhibitor. Close the portal connector with the supplied covering cap Z (Fig. 3).

7 Troubleshooting



Danger

Determining the causes for existing defects and eliminating these always requires increased attention and caution. Pull the mains plug beforehand!

Some of the most frequent defects and their causes are listed in the following chart. In case of other defects, please contact your dealer or the STEPCRAFT customer service directly.

Defect	Cause	Elimination
Power tool cannot be switched on. The setting wheel does not light up.	No mains voltage	Check power supply
	Mains fuse is defective	Replace mains fuse
Power tool cannot be switched on. The setting wheel lights up in blue (BU).	Carbon brushes are worn	Take power tool to the STEPCRAFT customer service
Power tool stops during operation. The setting wheel does not light up.	Mains failure	Check mains back-up fuses
Power tool stops during operation. The setting wheel lights up in red (RD).	Overload protection was triggered	Switch off the power switch. Clear the working spindle before initial operation Switch on the power switch and continue operation with reduced load/feed rate.
Speed cannot be adjusted at the setting wheel.	Power tool is in portal mode	Switch off the power supply of the PV interface. Remove the external connection of the PV connection.
Speed cannot be controlled via the PV interface.	Power supply of the PV interface is missing / is inadequate	Switch on the power supply of the PV interface in accordance with the specification
	Contacting to the portal connector is insufficient	Check contacting
	PV control cable is defective	Replace the PV control cable
	Assignment of the PV interface is incorrectly connected with the portal system	PV-Steuerkabel gemäß Kapitel „Belegung Portalstecker“ anschließen

8 Declaration of Conformity



EC Manufacturer's Declaration of Conformity

in terms of the directive 2006/42/EC, appendix II part 1 A

Manufacturer: STEPCRAFT GmbH & Co. KG
Address: An der Beile 2, 58708 Menden, Deutschland
Type of product: STEPCRAFT Milling Motor
Type designation: MM-800 / MM-1000 / MM-1000 DI

Hereby we declare that the device named above is consistent with the following relevant regulations:

- EU machine directive 2006/42/EC
- EC EMC directive 2014/30/EU
- The machine observes the protection targets of the EC low voltage directive (LVD) 2006/95/EC.

Applied harmonized standards, whose references have been published in the Official Journal of the European Communities:

EN 62841-1:2015 12000 EN-60204-1:2018
Safety of transportable motor-operated electric tools,
Part 1: General requirements

Representative for the compilation of the technical documentation is the signatory of this declaration.

This declaration becomes void if not authorized modifications are made to the device.

Menden, 30th of December 2019

STEP CRAFT GmbH & Co. KG,
An der Beile 2, 58708 Menden

Markus Wedel
Kaufmännischer Geschäftsführer

Peter Urban
Technischer Geschäftsführer