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01/21

MANUAL FSM-15/20

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A combination faceting/surface grinding machine. It is made of sturdy cast aluminium. With its large dimension slip ring, for uptake of flat lap with a diameter of 150mm, 200mm, or 22mm (aluminium, as carrier for grinding and polishing disks or sheets, 22 cm made of steel for working with loose powder), it is suitable for faceting as well as for larger flat grinding. Dimensions: +/- 45 x 40cm. Weight +/- 15kg (without faceting head, +/- 18kg with head).

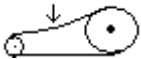
First read these instructions carefully and if necessary the additional information sheets from beginning to end, because this is very important for proper use and application of these devices and for the safety of the machine, and your safety as well. Store the documentation in a secure place. The device must only be used for the intended purposes.

To assemble the machine, look for a clean, well-ventilated, and dry spot with good lighting that is not located in direct sunlight or near a heat source. The machine must be placed on a sturdy table in a horizontal position. Please make sure the work height is right for you!

Slide the drain hose well over the visible outlet nozzles on the bottom of the device and guide the hose end into a bucket/tub on the floor.

The machine is supplied with a 230V 50Hz single phase alternating current motor (90W) and three v-belts. The revolutions are adjustable with a **three-step v-pulley**. Large step = slow, middle = medium, small step = fast.

To switch out or adjust the v-belts (in the bottom of the housing), the motor fastening screws must be loosened so that the motor can be moved. To do so, the device must be placed on its side. Now attach the desired v-belts to the desired step on the v-pulley so that the v-belt has slight tension (approx. 1.5cm play when you press with your finger). Then tighten the fasteners again.



To **PROCESS STONES** (gemstones, semi-precious stones or non-gemstones, fossils, glass, ceramic, etc.), we recommend our silicon carbide (abbreviated SiC) powder in various grains as the most affordable abrasive. Possible start from 80 grain (=coarse), if the surface of the object to be polished is not yet entirely flat/cut, otherwise use a grain from 220 to 400 or even 800 (or 1000 = finest). The polishing abrasives that follow are explained further on in the document.

You can work with a grain of the SiC directly on our steel flat lap, meaning 80 grain SiC or even 220 grain SiC. First moisten the flat lap with water using a spray bottle or, even better: Spray the surface of the flat lap with our CC-12 (cooling agent for sawing with diamond circular saw blades) because this will help the abrasive stick to the flat lap better than water, and it makes rinsing/removing easier during cleanup with water.

Scatter some SiC polishing agent on the moistened flat lap. Carefully place the object to be polished with its flat surface more or less in the middle on the running flat lap, and with slight pressure move it slowly over the running disk. Move the object continuously with constant forward and backward movements. Never stop in one spot or scoring could occur.

FIRST WORK with a SMALL object, perhaps the size of a fist, in order to get accustomed to the device.

If needed, spray a bit of moisture, scatter abrasive now and then, or use a plastic slider (e.g. short plastic ruler) to distribute the abrasive that was moved to the edge during polishing back over the disk.

Check the polished surfaces of the object now and then in a dry condition. If you cannot see any improvement in the fineness of the polishing (possibly use a microscope), switch to the next finest abrasive. There should not be any visible scratches, because you can hardly polish them away with the finer polishing abrasive!

In the case of scratches, continue to use the previous abrasive but start again, i.e. remove all of the grinding sludge and dirt (on objects and hands, from the flat lap and from the tub) because it is possible that an impurity from somewhere got on the flat lap and caused the scratches.

When switching abrasive to a finer grain:

Cleaning: Here everything (object, flat lap, tub, and hands) must be cleaned very well, and of course the machine must be switched off and unplugged (with dry hands). Before rinsing with water, be sure that the drain hose is open and that a collecting tank is ready at the other end.

After cleaning with water, dry the tub and flat lap (with clean sponge and then with a clean cloth). Also check whether the exterior of the device is dry.

Please note: Do not spray/clean with a water hose attached to the water line as there is a risk of overflowing the tub or unintentional spraying of the electric motor and electrical wires. We recommend a smaller indoor plant watering can that can easily be controlled.

At any rate, if you bought the motor from us, it is protected against splashes!

Starting with 400 grain silicon carbide, because the grain is almost like dust, we recommend putting a bit in a small bowl with water (or with CC-12) to make a slurry. You can then use a paint brush to spread some of this grinding sludge on the running flat lap. If needed, add a bit of moisture with the spray bottle while polishing or spread new sludge on with the paint brush.

You can continue this way with continually finer SiC polishing abrasive.

Polishing

With a Politex mat of 15 or 20 cm diameter on the flat lap. This mat is temporarily "fastened" to the dry flat lap (=with adhesive, but without hardening of the adhesive). This is done by briefly and lightly spraying the upper side of the flat lap with the "adhesive" spray bottle. Don't spray twice! A thin coating is enough! Be careful with the absolute flatness of the Politex mat! There must not be any visible air bubbles or waves on the surface of the Politex mat!!! Otherwise your polishing object would bump and hang/stay hooked and that is dangerous! It is important that you bond the parts together right after a minimum of 20 minutes so that the mat can be detached later; not immediately! If you bond them right away, then they are permanently bonded.

In a cup, prepare a mixture of polishing powder and water in the form of mud, which you can apply to the POLITEX fabric with a large brush. The fabric should not be soaked, but only moistened to achieve a good result. We recommend our popular X3 polishing powder, which has been proven to work on most stones Here it is ONLY moistened with water! (Not with CC-12 !) The moisture is also retained longer. The mat must NOT be WET, only its surface must be kept WET. (Otherwise you won't achieve polish). Make sure that the (precious) stone does not get hot, otherwise cracks can occur! Each type of powder/grain size requires its own Politexmatte! Therefore, mark each mat. When changing the powder, the mat must be carefully pulled off the planter plate with clean hands and can be laid down for further reuse, lying flat, drying, clean and protected from contamination with other powder grains and dust.

REMOVING the ADHESIVE is possible with cleaning petrol.

(**polishing with SiC paper** is also possible, again with our adhesive. Possible sizes are 15 or 20 cm diameter.

Another option is professional GRINDING on DIAMOND sanding paper or disks:

In terms of expectations, these require a larger investment, but the benefits of the service life and the easy and significantly faster and cleaner working methods can sometimes be crucial for this decision. For the available standard grain sizes, see the price list under "Diamond discs in 15 or 20 cm Ø". If different grain is needed, please ask us or let us know exactly what you need. The sandpaper is attached using temporary bond adhesive. It is also possible (for an additional charge), to provide the diamond sheets with a magnetic backing. Then they are attached to our magnetic discs using temporary bond adhesive on the diamond discs. On the aluminium flat lap, a carrier plate is to attach with contact adhesive. If you use our diamond flat lap (1.5 mm thick) for grinding, simply attach our magnetic discs to the aluminium flat lap with temporary bond adhesive.

The revolutions of the flat lap must be increased somewhat when working with diamond.

With diamond tools, you should always make sure you perform plenty of cooling/rinsing with running water so that the polisher is constantly being rinsed and the diamond surface always maintains its full polishing effect. It must first be broken in by processing good stones. The grain information HB80 means very coarse. HB220 = coarse and HB600 = medium, and the grain continues to get finer as the designation gets closer to HB1.

An **alternative** to diamond sandpapers is grinding with **diamond pastes** directly on the steel disc.

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Disposal

The device is long life. If the motor is defective, it can be replaced. Disposal of electronic devices.

We hope you have a lot of fun working with this device!

Your H+B –Team

Warnings:

- Read the operating instructions carefully and observe all safety instructions!
- Check that the information on the label matches your power supply.
- The machine / equipment must not be exposed to the weather or stand in a damp room and must not stand/run with flammable liquids or gases.
- Do not place the device and cable on heat sources (e.g. stove, heater).
- Before using the machine, make sure that there are no loose items on or in the machine.
- Remove the plug from the socket when the machine is not in use, also before mounting plates or discs on the machine and before cleaning.
- Only remove the plug from the socket with dry hands. Also keep this in mind when plugging the plug into the socket.
- If it smells burnt, unplug it immediately. Determine if the smell comes from this device or if it is due to the socket. Have it checked by a specialist (electrician).
- Do not use multiple sockets.
- Do not use extension cables.
- Plug into grounded socket only.
- Do not pull the machine by the cable, never unplug the plug from the socket by the cable.
- Do not use the machine if the power cord or plug is damaged, the machine is not working properly, has fallen or is otherwise damaged.

- Do not leave the running machine unattended.
- Keep your workplace clean
- Never operate the machine if the electric cable or plug is damaged, the machine malfunctions, has been dropped or in any other way is damaged.
- Wear tight-fitting clothing. Remove loose clothing, ties, rings, bracelets or anything else
- Do not wear jewelry as it may get caught in the moving parts of the machine.
- Sturdy shoes with non-slip soles are required.
- A hair band or hair net is recommended for long hair.
- Use safety goggles. Note: Everyday glasses with non-impact resistant glass are not suitable as protective goggles.
- Do not cut dry.
- Wear hearing protection while cutting.
- Set up the machine so that it is upright and cannot tip over.
- Only use quality diamond cutting discs.
- Do not modify the machine and only use it for the recommended objects, such as semi-precious stones.
- This machine is not suitable for construction work
- Use the machine out of the reach of pets.
- Do not allow minors, course participants or groups to work on the machine unsupervised
- Since you are working with water and electricity, we recommend to use a Personal Protection Safety interconnector DI. It plugs directly into the wall outlet and protects the grinder additionally.
- Never attempt to get something out of the tub or search there while the machine is running. With dry hands, move the switch on the machine to OFF and then pull the plug out of the outlet.
- For all work that has nothing to do with grinding (e.g. cleaning), do not only switch off the switch on the machine, but also unplug it from the socket. (Do not pull the power cable, just pull directly on the plug!)
- In case of unknown / disturbing noises that you cannot assign: Switch off the machine and use it again only after clarification.
- Use only suitable tools and do not make do with unsuitable or sharp aids. These could cause accidents or injuries.

CE– Certificate Of Conformity



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FSM– 40

Flat lapping machine for gemstones, semi-precious-stones

with asynchronous single phase motor,

KW 0,3. 4 Poles V.230/50Hz, frame size 71.

65db

2014/30/EU on the approximation of the laws of Member States relating to electromagnetic compatibility.

2014/35/EU on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, RoHS

The machine is herewith declared to conform with the following guidelines:

Machine guidelines 98/37/EWG, 2006/42/EU

Safety of machinery– General principles for design– Risk assessment and risk reduction EN ISO 12100:2011-03

Kirschweiler, 2018

Kitty Homberg, Owner

