Maschinen Bahner für die Hutindustrie

The Finimat System Type 341 / Type 345

For the automatic treatment of the hat crown
(Edition 2017/11)

For the head finishing ◀

▶ Tool

FINIMAT

Basic Machine FK 6 ◀

With program control

◀

16 Programm dates

Be fed in 6 orders to be ◀

Fed in

FINIMAT

▶ Linear Tool ZO

FINIMAT

▶ Circular Tool ZK

FINIMAT

▶ Rapid Tool ZS

FINIMAT

▶ Band Pouncer ZB

For the brim finishing

With pouncing 100 mm FR 300

With pouncing width 150 mm FR 350

With program control

4 program dates to be fed in

3 orders to be fed in

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1. Manual work or work with automatic machines

In the broadcast sense of the word manual work is regarded as work in which a person is employed doing some sort of job connected with the entire working operation. For the working operation a mechanically driven tool is used. For example the habitual finishing of hats on velour finishing machines or on fancy finishing machines is, so to speak, manual work. Here, the hat is guided by hand. Such machines are merely tools which are mounted rigidly and driven by a motor. They cannot do any work by themselves.

Automatic machines on the other hand are machines which effectively perform a genuine hob of work and thus largely replace human labour. Automatic machines depend on the continual aid of a workman only in so far as they must be fed with material and be given the order to commence operation. The „real“ work however is performed by the machine itself.

The characteristics of manual work are, sorry to say, not very advantageous for industrial production. The quality and output of manual work depend respectively on the individual who performs the work. But even the same person is not able to achieve the same quality and output the whole time. Mental and physical condition, mind and mood as well as will and care exert influence in this sphere. Manual work is thus naturally subject to fluctuating output makes it difficult to record manual work reliable in relationship to cost.

Most operations performed by hand must first be learned. For this instruction and hence instruction personnel are required. With difficult operations it will sometimes take a long time until a result of satisfactory quality is achieved. And only after a certain training period is a satisfactory output rate also achieved. This training couses expenses which can be equated with capital investment.

The loss of trained specialized personnel will in most cases cause considerable difficulties. For rarely will you be in a position to train replacement personnel in time or to keep them on hand for such contingencies. The capacity of this type of work cannot be increased very quickly as you must first look for new people who are suitable for training.

When employing automatic machines the matter will be much different. When the machines has been programmed and thus ordered how to work the particula object, it will be able to do the operation immediately. The automat will keep the ordered program which corresponds to a work instruction firm in ist „memory“ and thus it excels the ability of all workmen. No human being is in a position to work in such a smooth manner as the automatic machine. The time required for each complete opject is exactly the same For this reason the capacity can be calculated in advance and the cost of the working operation can also be worked out precisely. If you wish to increase the capacity it is sufficient merely to put a further machine into operation.

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Like the workman, the automatic machine will also cost money. But ist costs can be calculated easily and compared with the costs incured when working without the machine. Almost always this calculation will turn out in favour of the machine. But even if this is not the case the work of the automatic machine is often prefered to manual work.

Those hatters convinced of the effectiveness of manual work argue that the automatic machine cannot adapt itself. This adaptability is necessary, they say, because each hat is an individual product and therefore must be worked individually and in a different way. This argument, however, is refuted by the experience of those factories which work with automatic machinery. You see, this type of machine automatically exercises a control over the preceding operations and hence these, too, are more carefully and smoothly carried out and hats are no longer produced imperfectly. After a short time this procedure will work on its own.

Generally speaking a high rate of industrial production, the high standard of living which is connected with it and a high quality of products can no longer be imagined without the aid of automatic machines. It is difficult to find any industrially produced article which was not made by the work of an automatic machine. Today many new articles can not be produced until a suitable automatic machine is found or developed for their production.

2. The FINIMAT System

In the first place we looked into the various methods and working operations generally used in surface finishing. As a result of this it was established that an operational law exists for each tool and operational step. In the mathematical formulation of these laws it was shown that a special automatic machine is not necessary for each operation and each tool but that a single machine suffices. You need only to equip this universal machine with a tool suitable fot the desired operation and to adjust it so that all operations can be carried out according to technological needs.

On the basis of this knowledge of operational laws it can be established which elements should be subject to adjustment and to what an extent this is necessary.

As the gears for controlling the automatic machines can be produced very economically and have reached a very high standard of reliability it is possible to equip the machine with a large variety of potential programmes without especially high expenses and without risking the reliable working method.

The practical proof of these experiments is shown in the FINIMAT-System

FINIMAT – Basic Machine FK 6

and

FINIMAT Tool Type ZO Linear Pouncer

or **Type ZK** Circular Pouncer

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or **Type ZS** Rapid Pouncer

or **Type ZB** Band Pouncer

The FINIMAT – System means for the hatter that he can now do any sort of surface finishing with just one type of machine. The hatter no longer needs to have a number of different special machines i.e. automatic buffing machines, pouncing machines, etc., but only the Type FINIMAT Basic Machine FK 6 and the various FINIMAT tools.

The FINIMAT – System makes it possibel, without uneconomically hight investment costs, to carry out any surface finishing automatically. The mechanical equipment is not at all rigid. The FINIMAT can do a different job in a matter of few minutes simply by exchanging the FINIMAT – Tool. Thus the factory becomes more flexible and can be adapted in a short time to work with different surface qualities and still works them economically. With this greater flexibilities in production the merchant can also be more flexible.

The rapid adaption to the demands of fashion, which even the hat must be subject to so that it remains „en mode“, is thus now possible.

All aspects of the FINIMAT – System were out of principle so designed and harmonized with each other that in all operations the best possible result might be achieved. Hat surfaces finished by the FINIMAT – System are of the best quality and each hat is finished uniformly from the top of crown to the bandline. No longer are there any pouncing or greasing spots, flecks, or stripes or even badly finished bandlines. As the appearance of a hat, ist quality and even ist visual appeal depend essentially on the quality of the surface this characteristic of the FINIMAT – System is an important factor.

The FINIMAT – System has advantages also in the production of the machines themselves. The Finimat Basic Machine is always the same and can thus be produced in large numbers. This fact lowers the production costs and thus allows more to be spent on the technical design which in turn helps for example in the perfecting of a reliable working method and operational safety and in the reducing to a minimum of the need for maintenance.

3. The FINIMAT Basic Machine FK 6

a). The FINIMAT Oval Tool

The FINIMAT Oval Tool is fully adjustable to excentricities e between 0 and 10 mm, so that you can work with every shape from round (e = 0) to oval with a difference in the axes of the oval of up to 40 mm (e = 10). The FINIMAT oval tool is a tool specially constructed to create the ovals needed by hatters. The speed per revolution at the operationcentre is exactly constant and the operation centre is always on the same level as the tool and hence a smooth working method is guaranteed.

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It is possible to program the speed of the oval tool shaft and its direction of rotation as well as the automatic reversal of the direction of rotation (i.e. when the support is running back).

The oval tool is equippes with a mechanism which automatically fixes the block on the oval tool shaft and releases it also automatically when the program has come to ist end. However, light pressure on the foot pedal fixes the block on the shaft, whilst the machine is at rest and a harder pressure in addition switches on the drive motor for the oval tool.

b). The FINIMAT Support

The FINIMAT Support, on which the FINIMAT tool is placed and which guides the tool along the surface of the hat, possesses a mechanism which accelerates ist speed automatically when the tool has reached the top of the hat. The degree of acceleration is fully adustable. When using this equipment with standard hat shapes it is very simple to achieve uniform finishing of both top and crown of the hat.

The acceleration can be set at zero so that the support will run at a constant speed which for example, technologically speaking, is necessary. The said mechanism is of simple construction and functions very reliably.

The speed of the support (= finishing of the hat) is fully adjustable within broad limits.

c). The Variation in the Working Pressure

For special operations and in particular for unusual shapes the FINIMAT possesses additional equipment which can vary automatically the pressure of the tool during the working operation in order to ensure a uniform finish in these cases too. The pressure of the tool is therefore not constant but varies according to ist function and the time involved. The degree of pressure a well a the type of function can be adjusted and programmed. The function is represented by a graduated curve.

In addition there is also a piece of equipment which allows the tool to be raised temorarily from the felt at any place so that in that place no finishing is carried out. This piece of equipment is in principle similar to and also combined with that one for varying the pressure of the tool against the surface of the hat.

d.) The FINIMAT Program Control

The Program Control of the FINIMAT is based on the electro-mechanical principle and works absolutely reliably. The complete program is carried through automatically. The operator merely has to place the hat on the machine and push the button marked „Auto“.

All the other jobs are performed by the machine. ‚Any uskilled workman can learn how the machine operates and be able to work with it himself within a few minutes. As the FINIMAT works automatically one operator can have several machines in his care. The number of FINIMATs placed under the care of one man depends on his

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working method and on the amount of time for which the program has been set. It is also possible to arrange groups of FINIMATs to that several operations can be carried out simultaneously.

The fundamental FINIMAT program is drawn up in such a way a s to achieve the best results. In the standard program the operation starts on the bandline of the hat, not on the top of the hat, and ends there as well.

In this way any eventual damage to the top of the hat is avoided. Also the intensity with which the bandline is finished is regulated by an adjustable timing relay so that the area of the bandline is finished to the same degree as the other parts of the hat`s surface. This is a very important factor when working with narrow hat bands and capelines.

16 different types of data can be fed into the FINIMAT: they are as:

Summary of the Program Data which can be fed in:

No.	Element	Function
01	gear lever, fully adjustable	speed of the oval tool shaft
02	gear lever, fully adjustable	finishing time
03	crank, fully adjustable	acceleration of support
04	crank, fully adjustable	main working pressure of the tool
05	slide bar, fully adjustable	reduction in pressure
06	bends variable	position of pressure reduction
07	set screw, fully adjustable	distance which the tool is raised
08	bends variable	posiion at which the tool is raised
11	switch A (L - R)	direction in which the oval tool shaft rotates
12	switch B (0 - 1)	reversal of the direction of the oval tool shaft
13	switch C (0 - 1)	automatic feeding of the finishing band
14	scale button, fully adjustable	amount of automatic feeding of the finishing band
15	timing relay, fully adjustable	intensity with which the bandline is finished
16	switch P (0 - 1 - 2)	speed of the tool
17	slide bar L, fully adjustable	position of the reverse point of the support
18	slide bar R, fully adjustable	position of the bandline

The combination of the data gives a large number of different programmes so that all working operation can be carried out with the FINIMAT. The enormous program variations both make it possible for the hatter to carry our individual finishings of various different qualities and also allow him enough scope to follow his own initiative.

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In addition the FINIMAT also has manual control. You can control the FINIMAT at your own discretion by means of 6 orders which can be fed into the machine by buttons and by the foot pedal. By using these orders the running program can be changed at will.

No.	Element	Function
21	push button AUTO	program sequence introduced
22	push button HALT	a) program stopped b) to raise the tool from the hat c) to switch off the support
23	push button Uv	support switched on in forwards direction
24	push button Ur	support switched on in reverse direction
25	push button MAN	band feed switched on
26	foot pedal	a) to apply tensions on the block b) to switch on the oval tool c) to stop the support d) to stop the program sequence

The manual control is used for the special finishing of particular hats and for the making patterns and experiments. The FINIMAT possesses a foot pedal for the carrying out of short intermediate operations before or after the program sequence has come to an end e.g. for the brushing of the hat with a hand brush or the powder bag.

The foot pedal is also used for the rapid setting up of the hat on the block and ist rapid removal from the block.

The FINIMAT Tools

The following stated FINIMAT Tools are developed in series for use in the FINIMAT – System:

The FINIMAT Linear Pouncer ZO

with a straight oscillating rubber pad,
with automatic band feed,
oscillation frequency: 50 Hz

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The FINIMAT Circular Pouncer ZK

with a translatorily circulating rubber pad, with automatic band feed, oscillation frequency 25 Hz

The FINIMAT Rapid Pouncer ZS

with a translatorily circulating rubber pad, with automatic band feed,
oscillation frequency adjustable between 5 and 75 Hz, that means, it may run very fast, and with attached dust aspirator.

The FINIMAT Band Pouncer ZB

with a rotating band,
with variable speed from 2.5 m/sec. to 10 m/sec.,
with special devices for free-band pouncing, contact pouncing, and pouncing with pad or roll, with attached dust aspiration.

All FINIMAT Tools are fixed to the FINIMAT Basic machine FK 6 simply by 3 screws. The electricity supply is carried via a plug. Only a few seconds are required to exchange the FINIMAT Tools and this can also be done by unskilled workers.

The FINIMAT Pouncing Tools are so designed that any material required by the hatter for the pouncing process (pouncing paper and band of all qualities and makes, cotton band, grease band, felt, felt cloth, rubber cloth, etc.) can be employed. The operational width is a uniform 50 mm (= 2″) for all FINIMAT Tools.

The FINIMAT Tools are solidly constructed and of reliable design. All the gears run in an oil bath.

All the fast-rotating tools are perfectly balanced statically and dynomically, by the quality of their design. After being mounted the tools are controlled and corrected by balancing machines. Thus the FINIMAT tools run smoothly and without vibration. Not only is this good for the ears but as experience will teach you it brings better results a well as increasing the life span of the tool.

The FINIMAT Tools Linear Pouncer ZO, Circular Pouncer ZK, and the Rapid Pouncer ZS, all possess a sturdy feed mechanism for the pouncing band. At the end of the program the band feed, under automatic control by the program itself performs ist job again for a similar remaining amount of material. The feed in the program is fully adjustable by means of a scale button from 0 to

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about 40 mm per work cycle. The automatic feed mechanism can be switched off and activated at will by a button.

By the special FINIMAT equipment and the development of various FINIMAT Tool it is now possible to carry out completely automatically operations which formerly could only be done by hand. In addition it is now possible to carry out operation with the operations with the FINIMAT which were previously unheard of in the hat industry. The Free-Band Pouncing and the Contact Pouncing carried out by the FINIMAT Band Pouncer ZB are examples of these new operations.

FINIMAT Brim FR 3

The FINIMAT Brim FR 3 has been developed for the finishing of hat brims within the FINIMAT – System.

This machine is closely connected with the FINIMAT FK 6 in ist working method. Both the upper and lower brim are pounced simultaneously in a perpendicular plain – so the working method is the same as with the FINIMAT FK 6. The hat itself is turned around s horizontal axis. The pads swing in a linear fashion with a hight frequency / 50 Hz) and in a broad amplitude. The band feed is worked automatically for each cycle and can be adjusted from 0 to 40 mm by means of a scale button. The FINIMAT Brim FR 3 also has a built-in dust aspirator.

We deliver the FINIMAT Brim FR 3 in two pouncing widths:

FR 300 with a pouncing width of 100 mm / 3,9 inch

FR 350 with a pouncing width of 150 mm / 5,9 inch

The following things are progammable:

01 operational pressure
02 operational time
03 automatic band feed
04 degree of automatic band feed

The FINIMAT Design

All components of the FINIMAT System are sturdily constructed. We attach especial value to the reliable and dependable working methods of our machines as work with automatic machines can only be satisfactory when the machines themselves function correctly. If one machine is out of service you will often suffer great losses as nearly always this has repercussions in other places on the production line. Each tool is subject to

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an acceptance test bevor being delivered.

Our electrical equipment, program controls, and motors are all supplied by Siemens and this firm has branches all over the world. All the important gearing machinery runs in an oil bath. The joints are equipped with self-lubricating bearings or ball-bearings. Thus our FINIMAT machines are, except for occasional oil changes, practically maintenance-free.

The FINIMAT is delivered complete and ready for operation. One protected plug for 3 phase current is sufficient to carry the electricity supply.

To conclude-some more important points

In the development of the FINIMAT System hatters all over the world have available a new, modern technique for the finishing of hat surfaces. The development of the FINIMAT System was only possible by the close co-operation of interested hatters and hat machine constructors. Progressive hat firms and responsibel businessmen have participated in the development of this system and also helped in ist popularising.

Without the help and co-operation of the owners of hat firms the FINIMAT System would never have been realized.

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Technical Data

Type	Measurements						Weight net kg / lbs	Installed Capacity N
	Height		Width		Depth			
	mm	inch	mm	inch	mm	inch		
FINIMAT Basic Machine FK 6	1400	55,1	630	24,8	950	37,4	595 / 1311,75	0,59 kW
FINIMAT Linear Pouncer ZO	830	32,7	500	19,7	470	18,5	92 / 202,83	0,55 kW
FINIMAT Cirbular Pouncer ZK	860	33,9	500	19,7	460	18,1	90 / 198,42	0,55 kW
FINIMAT Rapid Pouncer ZS	980	38,6	500	19,7	480	18,9	83 / 182,98	0,2 kW
FINIMAT Band Pouncer ZB	1060	41,7	520	20,5	430	16,8	74 / 163,14	0,2 kW
FINIMAT Brim FR 3	1300	51,2	450	17,7	500	19,7	450 / 992,08	0,91 kW
Wooden Cases for								
FINIMAT Basic Machine FK 6	1680	66,1	1100	43,1	850	33,5	115 / 253,53	
FINIMAT Brim FR 3	1680	66,1	1100	43,1	850	33,5	115 / 253,53	
FINIMAT Tools	1300	51,2	800	31,5	600	23,6	75 / 165,35	

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After long research work and practical trial lasting over years, we are putting on the market our new

BAHNER Head Crown Finishing Machine

With the following we would like to make you familiar with the machine and to show you ist advantages.

The machine is fournished in two types:

The BAHNER Head Crown Finishing Machine Type 341 ZO

possesses an oscillating rubbing cushion which is perfectly qualified for greasing and rubbing. But this type can also serve for pumicing.

The BAHNER Head Crown Finishing Machine Type 341 ZK

Possesses a rotating rubbing cushion and, therefore, is applied especially for after-pumicing and for obtaining special effects as well as a perfect surface.

The rubbing aggregates are interchangeable. A machine of the Type 341 ZO can be transformed into a machine of the Type 341 ZK by exchanging the rubbing aggregate, and on the other hand Type 341 ZK into Type 341 ZO.

The basic machine of both types is exactly the same. The exchange of the aggregates is very simple, for only three screws have to be loosened. We are in a position to fournish the rubbing aggregates separately.

The BAHNER Head Crown Preparing machine distinguishes itself by the fact that a perfectly regular working of the hats of any form is possible and that you can obtain a first-class surface of the hats. False pumicing of the hats or over-oiling e.g. on the crown are not possible. The working of the whole hat is excellent and it is not necessary to apply a finishing touch to the hat.

Our machines are constructed according to a new principle which is based o scientific reflections and that we have protected by patent.

The construction of the machine is very simple. The regulation of the machine is also easy so that the person who works at the machine is familiar with it in a short time.

The BAHNER Head Crown Finishing Machine works automatically. By means of a modern push button steering, the time used to handle the machine could be reduced on a mimimum. The person who handles the machine has only to put the hat or the form with the hat on the oval spindle and, afterwards, to press the EIN –(START) push button. All the other operations are automatically carried out by the machine.

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Automatic Working Method

This working method reduces the service on a minimum:

a) The head form, together with the hat, is to be put on the oval spindle and, then, the EIN –(START) button is to be pressed
b) By pressing the button RETOUR the rubbing cushions runs backward to the band if it is moving forward.
c) If the rubbing cushion is running backwards, it is possible by pressing the EIN-(START) push button to reverse the movement
d) By pressing the AUS-(STOP) push button, the rubbing cushion lifts itself wherever you wish
e) By turning off the main switch „19“ on the left side, the machine stops immediately
f) By pushing the tumbler switch „W3“ upwards, the automatical band resp. Paper adjustment device is switched off
g) By pressing the push button „D“ is possible to put forward deliberately the rubbing band i.e. the pumice paper at any length you wish. This can be done whether the machine runs or stops.
h) The pressing of the foot pedal „18“ causes a tightening of the head form while the machine stops. So, it ist possible to put off a hat from the head form which is still on the machine. It si important to note that the foot pedal should only be pressed till a certain resistance is felt.
i) If the foot pedal „18“ is pressed totally i.e. farther than the resistance described under h) the head forms begins to rotate.
j) By pressing the button RETOUR the direction of twist can be reversed, if the switch „W2“ is on the right side. (This arrangement makes it e.g. possible to powder the hat directly on the machine).

On this occasion we would like to mention that we have taken special care of the development and construction of the band arrangment. The mechanism is of an extremely solid construction and, therefore, safe in working. The moveable place are running in solid self-oiling bearings, so that it is not necessary to lubricate these bearings. Grease spots on the hat are impossible.

The excentricity of the oval mechanism can be set without intermediate phases from 0 – 40 m/m axial difference. Therefore, it is possible to work all hat ovals in the same way.

The BAHNER Head Crown Finishing Machine has been constructed after the most recent aspects of engineering.

The oval mechanism with drive, the rubbing aggregate, the support gear, and servo gear are running in a tightly closed oil bath. Levers, leverage, and motors are arranged dust-proof in the interior of the machine but they are easily accessible if one removes a big cover on the back of the machine. The electrical

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switchboard is arranged in an organically installed and totaly closed switch box. The electrical elements and motors are fournished by Siemens – Schuckert.

The machine runs very silent. The fast-running rubbing aggregates are balanced so that it is not necessary to screw the machine on the floor and the building is not effected by vibrations. All operations are easily and fast to handle so that unskilled persons are able to serve the machine very soon.

We fournished the machine ready for service including cable and plug.

Technical Data

Basal Surface	950 x 630 mm / 37,4 x 24,8 inch
Height	1.370 mm / 53,9 inch
Weight lbs	about 510 kgs / 1124,36

Motors		
Rubbing Aggregate Motor	0.4 kW, n= 1500 rot./min.	ZK
(Pumice Motor)	0.55 kW, n= 3000 rot./min.	ZO
Head motor (Oval Mech.)	0.2 kW, n= 1000 rot./min.	
Support Motor	0.2 kW, n= 1000 rot./min.	
Servo Motor	0.1 kW, n= 1500 rot./min.	

Normal construction for 380 Volts three phase alternating current (working voltage).

Running time adjustable without intermediate phases from	20 – 120 sec.
Band adjustement adjustable without intermediate phases from	0 – 80 mm / 3,2 inch
Pressure adjustable without intermediate phases from	0 – 6 kgs / 13,23 lbs

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