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Proj. No. SI / YUG / 87 / 803
Consultativ Cudostial Service for the
Mechanical Embroidery Factory
VEZIONICA, Zvornik
Jugoslavia

Contracts Officer : Mr. H. Quan

United Nations Industrial Development Organisation
Vienna

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1 / INTRODUCTION

We have been set the task to execute an examination regarding the status of the machinery equipment and the quality of goods at the embroidery factory of Messrs. VEZIONICA, Zvornik / Jugoslavia.

The result of this examination shall be a recommendation to the UNIDO what kind of steps are to be taken in order to bring the productional efficiency and quality of the embroidery goods of Messrs. VEZIONICA to an international level. In order to fulfil the task we did the research in the factory together with professional specialists and embroidery institutes and discussed and evaluated the matter in our house and in embroidery institutes.

The result is as follows:

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2 / DOMAIN SCHIFFLI-STICKMATIC

2/1 Drawing, Punching and Planning Department:

The necessary know-how status in the drawing and punching department does not correspond with the necessary technical level (50 %).
In the embroidery the technic is considerable better, however still below the necessary technical level (25 %). The knowledge of the personnel working in the planning department is insufficient.

From the planning department from which the quality of the embroidery depends very much, the possibilities on the machines for production of good quality are not considered.

The productivity of the machines could be raised if the special knowledge by basic education would exist and maintenance work would be executed periodically according to a fixed schedule, established by specialists.

2/2 Embroidery Department:

A faultless production of fabric with boring can only be guaranteed by a boring bar and borers, reserved for every machine separately. Same refers to fabric repeat of before mentioned machine. After exchange of the boring bars the borers have to be adjusted very carefully.
These boring sets have to be put into cases separate per machine and the cases have to be marked correctly.

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The production of bobbins has to be done more accurately (according to standard rules, equal in length and size). This has influence on faults, economy and stitch quality.
(Bobbins quality report is enclosed).

B/3 Quality Control, Shearing, Cutting:

Quality Control:

The marking of faults has to be done by a corresponding sign at the machine.
This marking is to be done by the operator and to be controlled by the supervisor, because the reembroiderer can concentrate only on the reembroidering and not on searching faults.

Shearing:

The shearing machines have to be equipped in order to be able to cut up and to cut off the embroidery thread.
Furthermore the shearing machines have to be removed to a closed location.

Cutting:

After embroidering however imperatively before cutting, the textiles have to be dressed and fixed. This allows simpler and better cutting as well as a better form resp. quality of the finished goods.

Clean keeping of the fabric:

The treatment of the embroidery fabric before and after the embroidery procedure has to be done carefully. While embroidering on finished goods, absolute cleanness is a must. In the embroidering department washing-basins should be installed.

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2/4 Management:

Fashion trends are not recognized. The set-up has to be built up according to the different lines and followed up systematically.

In relation to the dimension of the factory, every year a new collection of approx. 100 new patterns has to be produced. For that reason still more drawings should be designed which also are part of the offer. Thereby creations are found, which can be performed by the factory. Presentation of ideas from the patterns have to be produced (intern and extern).
The task of the management would be to compose a yearly collection which corresponds to customers' requests. Customers' requests to be submitted in such a manner - by means of original embroidered patterns - that he is able to orientate himself and decide positively. Hereto belongs not only visual modification of the pattern, but also its optimization.

The variety of these presentations is an important part of the total turnover.

2/5 Proposals:

2 5/1 Proposal to 2/1, 2/2, 2/3:

Corresponding specialists should be chosen and educated as follows:

1 drawer - 1 year special school
1 puncher - 1 year special school
1 supervisor - 1 year special school

Normal special school takes 3 years.

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The task of these specialists after visiting the school splits up as follows:

- education of other persons within the factory by full co-operation with the assigned persons.

- by intensive advanced training of the wider personnel circle by evening schooling within the factory.

- as basis hereto serves also the forwarding of the literature from the school during the education abroad.

The machines shall be devided in three groups, namely:

1. Part of the machines (approx. 20 %) shall be reserved for "ad hoc" production.

2. Part of the machines shall manufacture long term orders.

3. Part of the machines (at the beginning 2 or 3 machines) shall produce export ware.

According to the requirements, the operating personnel shall be educated and trained and the machines shall be adjusted and maintained.

It would be an advantage if a team of specialists would demonstrate on 2 or 3 machines that the efficiency of the embroidery machines, by correct adjustment and exact production of punch cards, could be raised of about 30 - 30 %. Such a demonstration can be executed on the embroidery machines, which manufacture export ware.

25/2 Proposal to item 2/4:

For the realization of these tasks a preparation work of many years is necessary (many years education, persuance of the fashion development, exhibition visits, collections of the competitors). In order to be able to close this gap in due course, we propose the cooperation with a well-known (reputed) company in form of a partnership contract.

The advantages of such a cooperation with a reputed company would be the following:

- immediate seizing to the differentest pattern requests of the customers of VEZIONICA.

- immediate settlement of punch cards for patterns chosen by VEZIONICA.

- immediate modification of customer requests regarding design and punch card.

- the arrangement (composition) of fashionable, international actual collections.

- technical help regarding education of the personnel.

- prompt disposition of eventual necessary embroidery materials (textiles, yarn etc.) for rapid execution of customers' orders, which cannot be performed in Jugoslavia in due time.

- exchange of embroidery capacities.

- possible exchange of specialists in order to reach a better and faster working process.

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2/6 Costs Budgeting:

Education of the specialists to be carried out in a professional school in Austria or in Switzerland.

Costs for accomodation and food
DM 2.500,-- / per month and person

3 persons x 12 months = 36 months	:	DM	90.000,-- / per year
Costs of the partnership cooperation approx.	:	DM	100.000,-- / per year

Costs for the 2 weeks preparation of the 2 or 3 machines which produce export ware.

1 mechanic	:	DM	7.500,--
1 puncher	:	DM	7.500,--
travel costs	:	DM	5.000,--
		DM	20.000,--

Total costs :	DM	210.000,--

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3 / Report Multi-Head-Embroidery:

3/1 Production:

As the requirements in the domain multi-head-embroidery are essentially smaller, we think that the present knowledge of the personnel of VEZIONICA is sufficient. Although it is possible to reach improvements regarding efficiency and quality, when the recommended advanced training and the technical refinements are done.
The professional knowledge regarding drawing (designing) and punching as well as also the organization running shall be further advanced.

3/2 Management:

The management of the company should strain towards more important fashionable actuality of the embroidery patterns by pursuance of the actual fashion trends and by visiting international exhibitions.

The presently existing embroidery patterns of the collection correspond only partly with the fashionable actual market requirements.
The regular machines control and maintenance should have to be pursued more consequently; which is also negatively influenced by storage of too less spare parts.

3/3 Proposals:

Proposals to item 3/1:

The advanced education of the drawer and puncher in the field multi-head-embroidery is influenced by recommended training of the schiffli-stickmatic drawer and puncher and can afterwards be promoted within the factory.

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In order to adapt the presently technical consition of the machines to the necessary requirements, it is recommended to extend resp. to complete the scope of the machines as follows:

- to equip the present electronic machines with "IDAM" intelligent disc adapter (memory)
  costs per machine approx. DM 6.600,--

- mechanical embroidery machines, which do not bring the necessary embroidering quality because of oldfashioned technic and normal wear and tear, should be replaced by new electronic efficient machines.

The necessary maintenance of the whole machinery range requires a wider stock of spare parts as presently available on stock.

Proposals to item 3/2:

The imperfect actuality of the embroidery patterns should be essentially improved by participation of the management of the factory in pursuing the fashion trend on international exhibitions. Beyond that, our proposal as given in schiffli-stickmatic, to cooperate with a reputed company, would lead substantially faster to a fashion actuality.

3 / 4 Costs planning

Exhibition visits

2 x per year à 2 persons à DM 1.500,--		DM	6.000,-- / per year
partnership contract in multi-head-embroidery	approx.	DM	25.000,-- / per year
equipment of first of all 6 embroidery machines with IDAM	approx.	DM	40.000,--

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Purchase of 3 new electronic embroidery machines according to type	
approx. DM 150.000,-- / per machine	DM 450.000,--
Extension of the spare parts stock	
approx.	DM 50.000,--
Total costs :	DM 571.000,--

4 / Conclusion:

Our opinion is that if all our proposals are pursued and consequently executed, after 1 1/2 years the result will show itself positively in form of more productivity and higher quality of the fabrics.

The functionning of the factory VEZIONICA, Zvornik on a higher level in all fields, will last a longer period of time.
Should our recommendations are pursued over a period of 5 years, it is to be expected that the company VEZIONICA is becoming a member of the European quality manufacturers in the embroidery ware.

5 / Schedule of the contributed persons, contact persons and institutes:

5/1 Contributed persons:

Afgan Ibrahim	Object leader
Josef Schwenninger	Manager of Messrs. SCHWENNINGER
Eugen Schlegel	Manager of Messrs. TEXING GmbH, Ehingen
Helmut Daum	Manager - Designer Embroidery studio DAUM
Egon Tshiderer	Specialist for embroidery machines
Embroidery technical college	Lustenau - Austria
Embroidery technical college	St. Gallen - CH

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5/2 Contributed persons:

Mile Partićić	Purchase Manager of Messrs. BEOGRADSKE robne kuce Beograd
Tihomir Dordević	Technical Director Messrs. PLANTEKS, Plandiste
Edith Weiss	Owner of Messrs. WEISS Embroidery Tailfingen, FRG
A. Lendemann	Proxy of Messrs. FORSTER WILLI St. Gallen - Switzerland
G. Brenner	Purchase Manager of Messrs. TRIUMPF-International, Heubach / FRG

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Jasminka Mehinagić	General Director of Messrs. VEZIONICA, Zvornik
Abdurahman Hadžić	Commerical Director of Messrs. VEZIONICA, Zvornik
Streten Cvijetinović	Technical Director Messrs. VEZIONICA, Zvornik
Budimir Galić	Supervisor of Design Department VEZIONICA, Zvornik
Ismail Hahilović	Puncher VEZIONICA, Zvornik
Avdo Telalović	Productional Manager of the Embroidery VEZIONICA, Zvornik

D E T A I L R E P O R T - SCHIFFLI-STICKMATIC

D E T A I L R E P O R T - SCHIFFLI-STICKMATIC

Commercial and technical research about Messrs. VEZIONICA, embroidery manufacturer ZVORNIK / SRJ, Jugoslavia.

After having thoroughly revised our records and acquired impressions we would like to state that the factory in its present preparation of work and general working method in technical and in labour-technical view is not in the position to fulfil neither the level of the requested embroideries nor the requested productivity.

The given technic of the nearly new embroidery machines as well as the rational manufacturing operation is partly inadequate up to very bad, so that with the manufactured products resp. with the present loss of the embroideries in respect of the exportation, a sales success is prospectless.

The field of the productional and non-productional staff is too big and this raises the general manufacturing costs in such an extent that it makes the sale of the embroidery products in view of the price more difficult resp. even impedes the sale. Consequently the sale cannot be realized on cost recovery basis.

Technical Analysis

The technical department for the development of embroidery samples has a staff of 8 persons. After examination of the embroidery drawings and concepts which are presently in work the following can be stated:

a) The design level of knowledge of the staff does not correspond to that level which can be expected from embroidery drawers. The execution of the drawings deviates very much from our imaginations in Austria and Switzerland.

b) It is expected that nobody of the staff has ever done an embroidery technical design apprenticeship in an embroidery technical school.

c) The result thereof is that the productivity or efficiency of this staff does only cover our imaginations up to 50 %, both the design of the drawings and the enlargement of the samples.
For the collection of embroideries which has been regarded and presented with Messrs. VEZIONICA, in Switzerland/Austria max. 4 persons would be sufficient.

In the department "Production for embroidery machine cards or also called puncher department" 2 persons have been present. The stock of machines is absolutely modern and is in lack of a good educated specialist. The punching work controlled by us confirms the following.

a) The employed person with partly bad drawings does not know the advantages of the accomplished work which are important for the production.

b) The working with the punching machine cannot be done smoothly and more or less without interruption.

c) The pattern drawings for manufacturing of punch cards have not been executed accurately with stitch, i.e. the puncher has done according to his opinion boring and wind round stitches in the individual effects how these would not be necessary. This extends the time of embroidery of the pattern and is not effective regarding the result of patterns.
(see embroidery and punch test comparison - Annex I)

d) For patterns with boring effect, always different embroidery cards have to be produced, as the factory is working with most different basic textiles. Basic textiles with a very high part of polyester threads need punch cards with more boring tours as basic textiles out of cotton, viscose or with a lower part of synthetic fibres.
The separation of these punch cards has to be done very carefully in order to avoid the use of different punch cards for the embroidery of individual textiles.

e) The efficiency of the puncher has to be, with the present punch machines, min. 16 - 17 card meters per hour on boring products and 18 - 20 meters on non-boring embroideries.

f) Records (files) about the patterns resp. of their punching manner could not be presented. In these records the puncher must state which punch card produced by him has to be used for which basic textile.

PRODUCTION OF BOBBINS

In this department 12 modern bobbin machines make CASATTI are installed and also have been partly in operation. The manufactured bobbins do not correspond to the quality used in Austria and Switzerland. With more care better bobbins can be produced on these machines. Thereby the waste of bobbin thread will be reduced considerably and also the faulty quality resulting from the bobbins, reduces the faults on the embroidery machine and so the reembroidering time. The thread quality used for the production of the bobbins is absolutely not satisfactory.
A technical analysis about the bobbins is enclosed and confirms our statement.

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EMBROIDERY THREADS

For the unwinding of big thread cones, technical unobjectionable winding automatic machines make HAKOBA are available. The used embroidering thread was nearly 100 % viscose imitation silk thread. About the quality of the thread, a technical analysis report exists. The thread windings for the embroidery machines are inadequate. The size of these could be increased for about 30 %. Thereby result less tie places and this causes less thread breaking faults on the embroidery machines. Furthermore the bobbins are not exactly produced. The winded thread is sidely unequal, i.e. the embroidery bobbin is on one side partly winded until the end of the cover, whereas on the other side the empty cover has free space up to 1,4 cm. This results in faults when embroidering by the embroidery machine, which causes tear-off of the winded thread.

Each fault of this kind, caused, besides faulty quality, also a further working effort on reembroidering. The thread length winded on the embroidery bobbins is different and contributes to further embroidery faults. On bigger repeatings as 4/4, the individual embroidery bobbins could be up to 60 % larger as they are at present. Also thereof a reduced fault number could be reached which furthermore would also reduce the a.m. defects.

CLOTHS (TEXTILES) / EMBROIDERY LENGTHS

The whole embroidery lengths will be manually rolled up and measured. This work is done in the embroidery industry by means of a cloth measuring and cutting machine. In the factory VEZIONICA/ZVORNIK however such an investment for a so-called stick and cutting machine is not necessary. This work is done by 2 women. As many of the embroidered cloths are embroidery basic cloth disposed by clients and these basic cloths have the differentest lengths, it would be necessary to adjust again and again a cloth cutting machine which would cause very much time expenditure. However 2 persons have to be in the position to accomplish the need of cloth for 3 shifts in an 8-hour-shift.

The individual cloth lengths have to be marked for each machine and each order at the cloth front on the horizontal side. These cloths have to be laid in a normal but clean plastic box in order to be protected against contamination. Hence follows cleaning work and need beside cleaning material also valuable time. The cloth lengths should be marked by the individual shift workers with initials until the shift end. Thereby executed faults on the individual machines can be repursued in the control and the working staff as well as the competent embroidery controllers can be identified.

Embroidery automatic machines:

On the occasion of our research the embroidery machines have produced the following embroideries:

machine no. 25 : On a carriage 32/4 fabrics was figured. The machine was not in operation.

machine no. 24 : On both carriages a 24/4 allover embroidery with artificial silk was produced. The consumption of thread was o.k. but the boring tops were in a very bad condition. This caused an untidy embroidery with too small perforation. A small perforation has also the disadvantage that the embroidery border was too thick. A thick embroidery border means additional thread and bobbins. At this model up to 7 - 8 % front and rear thread could have to be saved with an exact execution of the embroidery, i.e. the embroidery would have been cheaper of this rate and with the same number of stitches. Furthermore the embroidery faults have not been marked as this is usually normal.
Because of the non-marking of the faults, fault-finding times in the recontrol are necessary whose prevention however would make the product cheaper.

machine no. 23 : 8/4 boring fabrics were manufactured. Also here the same situation as on no. 24. Additionally we found out that the individual needle rulers should have to be better adjusted. The shuttle stocks are unequal, so that the result of fabrics from needle to needle is not 100 % equal. The disign of the borer is likely bad.

machine no. 22 : Also here 8/4 boring fabrics were embroidered with viscose thread. The faults are the same as on machine no. 23. Unequal boring and therefore different result of fabrics.

machine no. 21 : Here 8/4 ribbon fabrics on tulle was produced. Rightwise round head needles have been used. By uncorrect thread winding too much embroidery thread was used. The share of bobbin thread is too small. By a better control of the shuttles (if the shuttles are too hard or too smooth in the stress of the thread) the front material viscose thread could be nicer fixed on the embroidery design. Also here a smaller thread consuming could be realized with the mentionned adjusting of the machines.

machine no. 20 : Produced have been 8/4 mixed batiste ribbons with artificial silk embroidered. Big faults were unequal boring tops, additionally unequal stress of front and rear thread, the result of fabrics was unsatisfactory.

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machine no. 19 : Here the same embroidery as on machine no. 20 was manufactured. The faults were the same. The quality of the embroidery was not satisfactory.

machine no. 18 : Here the same is valid as on no. 20.

machine no. 17 : The produced 8/4 ribbon embroidery was made of lead stitches and round perforation. As on this kind of punching embroidery also a bad borer can be used, the punching effects caused by the bad boring tips were still o.k. But also here the same situation is given as mentionned above. The perforation bordered with embroidery is looking too thick and causes a not necessary thread consumption. Because of non-clean machine parts, several oil spots were visible. At clean maintenance of the machines this could be prevented.

machine no. 17 : This machine manufactured 4/4 ribbons with viscose thread. In the 4/4 repeating, the faults are visible best, as here every needle can be compared with the bystanding one. Besides many thick repeatings caused by unequal boring tips it was clearly visible that the shuttle stocks are not in accordance on more than 50 % of all needles. This causes a very bad result of embroidery of the fabrics. This could be prevented with an optimal machine adjustment.

machine no. 16 : Embroidered have been also 4/4 ribbon fabrics on mixed batiste with viscoe thread. Also here the embroidery work can be compared with machine no. 17.

machine no. 15 : The machine produced 8/4 ribbon fabrics. The symptoms of the manufactured embroidery are the same as above.

machine no. 14 : The machine worked 4/4 ribbon fabrics on mixed batiste with viscose thread. Beside the same and a.m. faults, on the embroidery basic cloth a lot of oil spots have been visible.
As also already stated above, the oil points of the machine are not carefully cleaned. Thereby oil is droping somewhere on the machine and as here quite clearly visible the oil spots in the cloth and thread exist. Oil spots in the thread will be embroidered and can only be removed by a chemical treatment. Loss of time and money is the result.

machine no. 13 : This machine also manufactured 4/4 ribbon fabrics without boring. The adjustment of the machine was straightened on a good running quality, but not on an optimal thread consumption. On good and rational adjusting the thread consumption could be lowered by about 25 % also on such kind of fabrics.

machine no. 12 : On this machine it was not worked. The workers have been engaged in putting up new cloth. The machine was prepared for 8/4 embroideries.

machine no. 11 : Here 4/4 ribbons have been embroidered with viscose thread. The complaints are also the same as for example on machine no. 17.

This is the report regarding workshop no. 1 with 15 Schiffli-stickmatic machines make ZANGS type no. 115 S.

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In the workshop no. 2 5 Schiffly-stickmatic machines make SAURER type no. 2 S-55 as well as 5 units make ZANGS 115 S are installed. Regarding these machines, we would like to give our report as follows:

SAURER 2-S-55

machine no. 1 : The machine worked 4/4 ribbon fabrics non-boring with white cotton thread. The embroidery was relatively correct. In this relation it must be said that the embroidered design is one of the simplest embroidery design and also when the machine is absolutely not optimal adjusted, a good fabrics can be created. Oil spots however have also here been visible in the cloth.

machine no. 2 : This machine produced 4/4 ribbon fabrics too without technical problems. The embroidery execution was relatively good.

machine no. 3 : Also on this machine 4/4 ribbon fabrics have been manufactured. The execution was more or less good, as it was the question of really simple embroidery. Remarkable were many small embroidery faults, which could really be reduced by better embroidering material.

machine no. 4 : Here a 12/4 collar motif was manufactured. Embroidering material was viscose thread. Quite clearly visible was here also the bad adjustment of the borers. Apart from this for the individual embroidering parts too much stitches have been used Oil spots were also visible. The stressed leading of the thread would also be here as well as on all other machines visible, advantageous; not only because of the less consumption of thread but also because of a better and conspiceous total execu- execution of the embroidery.

machine no. 5 : This machine produced in 4/4 repeating ribbon fabrics. The design is the same from machine to machine. Bad boring quality, too slack thread leading, unequal repeatings etc. produce together an embroidery execution which is regarding the quality far away from the expectations.

ZANGS model 115 S

machine no. 10 : This machine produced in 36/4 repeating motifs with cotton thread on a polyester cloth. The embroidery execution was good, could however be better. In our opinion also here too many stitches have been used in the design. We are sure that with the Austrian or Switzerland stitchers here 25 % - 30 % stitches would be saved. On one side by too many stitches in the stitch effects and on the other side by use of a more coarse embroidery thread or by use of double thread.

machine no. 9 : On this machine forehand passage fabrics in 28/4 repeating were fabricated. The arrangements and the kind and manner how this special embroidery was manufactured is according to the known standard for this. Although the embroidery in production was in the whole length unusable, we have stated that also here the boring was indistinct. The embroidered perforations have been too thick, the number of the embroidery faults for such a great repeating too high.

machine no. 8 : On this machine 8/4 allover embroidery was produced. The result was good, as very few boring was in the model. The thread consumption could also here be reduced according to the above mentionned description.

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The fault quota is too high. For such embroidery patterns, the machine should have to be adjusted so correct that thread breakings appear not at all over periods of 10 - 15 minutes. Also here oil spots were visible.

machine no. 7 : This machine manufactured in 32/4 repeating collar embroidery on mixed material. Also the same is valid as on machine no. 9. Just on such big patterns with left- and right-side collar an oil spot or another contamination is double so big, as on not clear cleaning also the second embroidery part of the collar is unusable.

machine no. 6 : Here were embroidered single models on mixed material with cotton thread in 20/4 repeating. On this white embroidery clean working by the operating personnel is very important. Dirt like hand perspiration (sweat) or embroidered oil spots etc. cannot be washed out. These models fall at the end of the production only into the waste and help therefore to reduce the productional profit. Also on this machine the same is valid as on all other machines regarding boring work and stressed thread leading.

CONTROL OF GOODS / REPAIR WORKS

In this department which is situated directly in the first embroidery machines room at present approx. 20 - 25 reembroiderers and 6 controllers of goods are working. The repair works are not difficult because of the most small faults and can also be executed by semi-skilled workers. The whole control of the embroidered coupons could be reduced of about 60 - 70 % if the faults would be marked on the embroidery machines with coloured adhesives.

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As this is not the case, the 6 controllers have to look for any small embroidery fault and to give it to the reembroiderers or the reembroiderers themselves look for and repair the faults. That thereof unrefusing faults are overlooked is normal and understandable. These faults however are leading in the further treatment (on ribbon cloth by the cutting of faulty borders) to further faults and help to reduce the rentability of the production. Apart from this the loss of time when searching embroidery faults is very big. According to the normal standard here, the control of goods and repair of embroidery faults should have to be could done in one shift for three-shift-operation in the production of in total 15 women. The existing machine material of the BERNINA reembroidery machines is the best and here also nothing other is used.
The number of 15 women is real on the premises that also the embroidery and bobbin thread are in confirmity with our quality. For the used material in the factory of VEZIONICA/ZVORNIK the number of 20 persons for this work in 1-shift-operation is acceptable. The distribution of the repair works should be referred to the women, i.e. every woman receives the production of the machine/s allocated to her. The repaired goods will be proved again by the controllers and may only leave this department after this control

Shearing department:

In hall 1 and 2 each 1 shear machine is mounted. These machines correspond to the present technical standard. However in these machines still additional appliances could be installed namely a device for the cutting of the embroidery threads. It has been stated that all threads on the machine are cutted manually. This is totally wasteful and for that reason the shear or thread-on and cutting machine is serving how the name says. At present the threads are only cutted with these machines. As already said, the cutting-on is done on the schiffli-stickmatic by hand which is unintelligible.

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This time can be used for better control of the embroidery work on the schiffli-stickmatic. On a shear machine normally 3 persons are working for the whole operation, i.e. including sewing-on and separating embroidery lengths. The capacity of a shear machine should have to be could done for a 3-shift-operation of 25 schiffli-stickmatics by 1 shear machine within 10 - 12 hours.

The installation of the shear machines is chosen unhappily. Because of the dust of the machines, automatically the schiffli-stickmatics are also dusty, which partly however embroider on ready white and coloured material. This unnecessary contamination apart from the now very narrow installation of the working place is for the continuation of these shear works disadvantageous. A shear machine should be installed in a separate room in which no other production is situated. The running dust will be removed by an extraction device. This extraction is quite lack with VEZIONICA. Apart from the spatial unadequate places of the machines is in room 2 the shear machine is situated directly beside a schiffli-stickmatic. This direct proximity is not admitted because of working technical as well as accident-technical reasons. The cutters (knifes) of the shear machine in room 2 should have to be better sharpened. The work is thereby done more exactly and better.

Multi-head-embroidery Feston machines:

These machines are used for special manufacturing of Feston borders for table sets and table cloth. On these machines the manufactured embroidery models of the schiffli-stickmatics on the individual dimensions of the named articles are bordered. The machines are in good condition and bring the best capacity. For the running of the production it would be advisable to place this Feston work in piecework. Here no negative points were stated.

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Cutting-out machines

For the production of the ribbon cloth 8 units modern PERFECTA cutting-out machines PA 800 are available. The running speed of the machines is too slow and would have to be raised for about 30 %. As a big disadvantage turns out, that the cutting-out cloth is not dressed or fixed. It is normal that the embroideries are stretched after finishing by means of finishing machines. This as far as it is the question of such embroideries which are embroidered on bleached or coloured cloth. Embroideries on raw material are basically after bleaching and colouring dressed and stretched. Thereby the embroidery resp. the cloths get a finishing which simplifies the cutting-out very much and the running speed of the PERFECTA machines could be raised up to 70 - 80 %. For narrow ware additionally a rotary running of the embroidered coupons is advantageous. In other industrial factories the embroidery will be sewed together in lengths of up to 55 meters in good repeat (figure to figure) and then cutted out. This has not only the advantage that not after each embroidery length the embroidered coupon has to be put into the machine, but because of that rational rotary running, the efficiency of the machines can be doubled. A further advantage for the winding up of the individual ribbons is also thereby given that on winding up in one working turnus 50 meters on one cartoon/roll or reel can be winded up. For the efficiency of approx. 25 units big embroidery automatic machines here about 6 PERFECTA cutting-out machines of the same type in a 1-shift-operation would be necessary.

Locksmith shop / borer grinding department:

In this department one old and one new borer grinding machine type SAURER FEND - 114 are situated. This new top grinding machine was however not in operation.

This workshop is too small as it is also necessary to use it for other repair work. The grinding of the borer tops is a very exact work and cannot be executed as requested with the present conditions. The personnel has no competent professional experience and thereof has to be deducted that the tops never are grinded and adjusted as well as this is the condition for a nice (exact) embroidery work. Basically the tops have to be separately adjusted for each machine resp. for each repeating set. If it is the question of fixed tops, so these boring rulers may never be used for other machines. Every machine needs the fixed rulers. Are they one time exchanged, so the borer tops can only be fitted-in again with great efforts. The boring work at the machines have been one of the greatest complaints and can only be settled by quite exact handling of the borer tops. Movable borer tops - changing borer - can be installed in the rulers which are situated in the machine. Hereto the removing of the borer ruler is not necessary.

On each in the machine fitted-in borer tops, the top must be adjusted with a mechanical gauge exactly on the right layout of the line, as otherwise an unobjectionable function of the individual borer tops is not given. It has also absolutely to be paid attention to the fact that on used changing borers no new borers may be fitted in the rulers. These are in its thickness either in the top or in the rear part different and distort the embroidery design. The grinding of changeable borer tops and also of fixed tops in rulers is a really exact work and will never be so exact that the borer tops in the machine fit without readjusting. A regulated borer unit with borer tops may never be used for another machine. Every machine has its own boring rulers. These will also be preserved grinded or not grinded in prepared borer rulers storage cases. An exchange of rulers leads without fail to a chaos and guarantees that the boring works on the schiffli-stickmatic are executed bad up to very bad.

.../16

The borer tops must be regrinded more or less according to the basic material. Badly executed boring work is mostly a proof that the borer tops are not sharp enough. With the basic material, used by VEZIONICA an exchange of the borers/borer tops at 3-shift-operation is necessary at least every 2 months. With changeable borers it is absolutely necessary to remove the individual machine sets completely out of the machine and then to preserve them in separate storage cases.
When these borer tops are exchanged one time, then the embroidery design will be bad as then different top thicknesses are fitted in one boring unit. Also the same length of the borer tops of the changeable borers does not guarantee that now the embroidery effects are getting identical big or identical small.
New borers are thicker as already 2 - 3 x grinded tops and result in a bigger outboring of the basic material that has to be embroidered.
The work in this department could be done according to our imaginations by 2 persons in 1-shift-operation. These 2 persons should also be in the position to execute any repair work on the schiffli-stickmatics.

"Clean keeping of the fabrics - before, during and after the embroidery process"

In general it has been stated that within the factory in the embroidery rooms near the machines no washing places are situated. As practically it is embroidered only with white or coloured basic cloth, the hands should have to be washed x-fold. Also no rooms with air exhaust for the cleaning of embroideries with oil spots have been visible.
By the way this kind of cleaning is done with so-called inspection tables with air exhaust channels. When cleaning these goods, always damps proceed by the chemical cleaning components, which have to be eliminated for protection of the personnel.

.../17

"GENERALS"

What we have also stated is the fact that the individual length of fabrics are not at all sewed together on the big embroidery automatic machines. It would be impossible in Austria or in Switzerland that lengths of fabrics in the widths are not sewed together. Normally the sewed cloth width is approx. 3 - 4 meters that corresponds to cloth nature. On stitch-poorer cloth up to 8 meters breadths can be stretched on the machine. Because of this reason it is given a one-time longer working period for fixing the length of fabrics on the machine but this will cause without doubt less time as if after every length of fabric the cloth removing and the cloth fixing will cause.
After the embroidery technical completion of the cloth it shou'd be without doubt also furnished. On ready cloth (white or coloured) the goods are re-stretched or dressed quite simply. For that Messrs. VEZIONICA has a stretching frame make BRÜCKNER, which is also used of furnishing firms for the embroidery industry in Austria and in Switzerland. The prerequisite regarding machines is therefore given. The personnel has the possibility to get special knowledge with Messrs. BRÜCKNER, then also this modern stretching frame is not useful if the technical personnel and first of all the absolute necessary chemicals are lacking.
The further visible finishing machines of Messrs. MAX GOLLER and PAREX ERNST TURNER are not very important for the present produced embroideries of the factory.

.../18

Pattern room:

The presented pattern designs of the embroidery products are insufficient. The patterns have been adhesived absolutely without effort and love. The sales cards, folders and booklets are far way from the normal collection lay-out how these for example on every textile exhibition by embroidery manufacturers are shown. When this first impression of a customer is not very positive, it cannot be calculated also from this side with sales increases. Just also in this respect today very much small technical instruments exist, which are in the factory VEZIONICA still not available. A participation in international special exhibitions would not be advisable with the present collection material of embroidery products.

TOTAL IMPRESSSION:

The technical prerequisites for an embroidery factory are given. The working-technical conditions for production of quality embroideries will be observed only in restricted dimensions regarding quality and efficiency, so that in comparison to in Austria or in Switzerland manufactured embroidery quality cannot be reached under these conditions.

The personnel is obliged according to our observations to produce a good quality. This is under the given conditions hardly or not possible, as quite simple the technical empirical values are missing. The working cadre staff (leading staff) is in no department educated on the embroidery-technical areas. Here it is absolutely necessary that special workers and supervisors have to be educated for dispose of an only embroidery-technical education in the traditional embroidery special schools of Austria or of Switzerland. So far this is relating to the department mechanics, also in this department 2 educated locksmith workers have to be available, who are also in the position to overcome the immense problem of the right adjustment of the borers.

According to our opinion it is not advantageous if in the next time specialists travel to ZVORNIK and try to solve the problem in short time. Because of the non-existing educated specialists we are sure that the machines in 2 - 3 months produce again the same quality as today. This proves yet the fact, that every individual machine after assembling and first-class production running resp. after passing over by the producer was brought after some time in a condition which never corresponded with the condition when passing over.
This is the reason why it is necessary to execute a longer education in the necessary direction in a german-languaged region. With educated leading specialists it would have to be possible that repair works of all kinds, machine adjustments, borer changings etc. in the production-technical area as well as pattern lay-out and production of punching cards in the technical area could be executed better and faster as this is the case at present. By a cleaner and faster work on the Schiffli-stickmatics beside reduction of personnel also the total efficiency could be raised. Quite apart from this fact, that by a better and cleaner output of goods at least at an average of 5 - 7 % embroidery material like thread and bobbins could be saved.

In total it must be possible at the moment to produce the manufactured embroidery at a total of about 15 % cheaper in the fixed costs under the conditions of better utilization of the production, of technical better adjustment of the machines and without reduction of personnel. This is valid how remarked before, especially in

- thread consumption, connected with a better boring work
- bobbin consumption, by optimal utilization of the bobbins in running out and exchanging,
- by better resp. qualitative more optimal punching work
- by stretching-on of 2 - 3 lengths of fabrics together
- by eventually of 3 - 5 % higher running speed.

.../20

We have given the disposed front thread qualities in cotton thread and slack-silk to a technical laboratory for examination and give you the test results in the enclosed test sheets (Annex II).

The thread is relatively good, although the values of the resistance to breaking of the slack-silk are lying at an average of approx. 10 % under our values. The cotton thread has an equivalent resistance of breaking; the breaking elongation is also comparable with our used cotton. The twisting tours are very different. They would have to be substantially more uniform.

The main problem is lying in the largeness of the embroidery bobbins. They should be more uniform and bigger. Here you can do the best comparison with embroidering threads, how these are used in Switzerland and Austria. More thread meters on a bobbin means also less faults resp. thread breakings on the machine.

Annex I

Embroidery and punch test comparison to the model T 1818 of VEZIONICA

On the occasion of our visit we have taken over from VEZIONICA the model T 1818 with drawing and punch card for test embroidery resp. for new construction of a better drawing with corresponding punch card.

Enclosed please find now 3 models of art. T 1818 namely:

Model A : produced with the card of VEZIONICA
= 26,50 card meters
Model B : = 18,10 card meters
Model C : = 15,40 card meters

The model A is from VEZIONICA and is simply too coarse and too thick = 26,50 card meters.
Model B is a new card from us and has about 46 % less card meters as model A.
Model C is also newly produced from us and has about 72 % less card meters as the original model.

Furhtermore an original model with no. T 1818 is enclosed which had been embroidered from VEZIONICA.

According to our opinion all models have been embroidered with relatively blunt borer tops. Here we would only like to prove that with relatively blunt borer tops on good adjustment of the boring rulers still nearly good embroidery can be produced. We used for this embroidery KS NM 120/1x2 coloured.

Most extremely is however the difference of the card meters. Here it can be seen quite clearly that for the production of the drawings resp. for the making of the punch cards no educated personnel is disposed.

.../2

You see that the same product with a card meter reducing of up to approx. 70 % can be manufactured eleganter, nicer and cheaper. You can explain it yourself very simply that this is an immense point of the not economical production at VEZIONICA.

A

A

B

B

C

C

ANLAGE II Großstick

Textiltechnische Garnuntersuchung

Garn/Zwirn: Bobinen (mitgebracht von Fa. TEXING GmbH)

Rohstoff: Polyester Qualität: _____

Spinner: _____ Zwirner: _____

Aufmachung: Cops Konen Kl. x-Spulen 2 Bobinen

Ausrüstung: rohweiss

Bemerkungen: _____

Untersuchungsdatum:		n	24.1.89
Sortierung:	Ne $\bar{x}$	2	65.6/2
	s ±		0.7
	CV %		1.-
Drehungen:	T/m $\bar{x}$	20	740.-
	s ±		20.-
	CV %		2.7
Reisskraft:	g $\bar{x}$	80	524.6
	Rkm		29.2
	CV_F %		10.1
Bruchdehnung:	E_F %	80	13.5
	CV_F %		5.5
Reibwert:	μ		

Garnspiegel: liegt bei schlechter Spiegel, sehr viele Unreinigkeiten

Beurteilung: Das Material ist vom Zwirnaussehen her schlecht. Die zwei Bobinen haben eine Längendifferenz von 18.- m (137.2 und 119.2 m) Sie sind auch viel zu weich gespult. Die Werte Drehungen, Reisskraft und Dehnung sind für Polyester normal.

Geprüft: _____ USTER DYNAMAT

Hülse Nr. 1

REISSFESTIGKEITSPRUEFUNG Datum 6.2.89

Rohmaterial Viscose — Lfz. Nr. —

Zwirn 133/1 x 2 — Rez. Nr. —

Messart Kontrollmessung — Ursprung —

Anzahl. Mess. 50 — Firma —

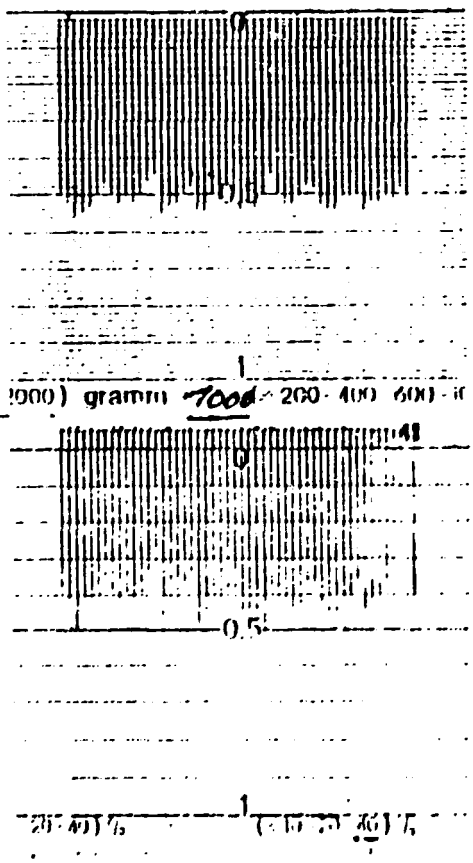
Bemerkungen gefärbt, gelegentl.

dtex 271, wenig R'km, einige Fibrillenbrüche

Reissfestigkeit $\frac{244}{50} \times 10 + 2{,}6$ = 51,4 g

Reissfestigkeit $51{,}4 \times 10$ = 514 gr.

Reisskilometer $\frac{514 \times Nm\,(\ )}{1000}$ = 19,0 R'km



Bruchdehnung $\frac{54 \times 10}{50} + 0{,}8$ = 17,1 %

Zwirnfestigkeitsmessung:

1. Zw	2. Zw.
S 550	/ Z 520

Hülse Nr. 2

REISSFESTIGKEITSPRUEFUNG

Datum 6.2.89

Rohmaterial	Viscose	Lfz. Nr	–
Zwirn	167/1×2	Rez. Nr	–
Messart	Kontrollmessung	Ursprung	–
Anzahl. Mess.	50	Firma	–

Bemerkungen gefärbt braun

dtex 335 1. Zwirn wenig. [illegible]

Reissfestigkeit = 70 %

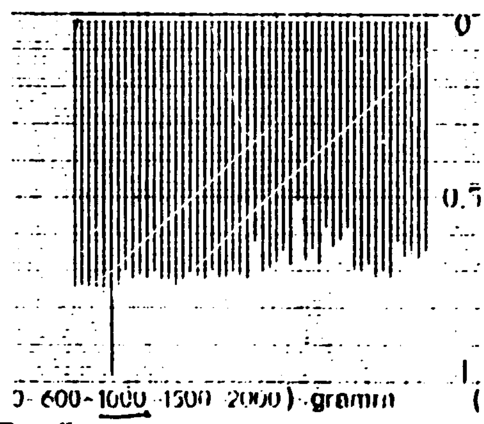
$\frac{337 \times 10}{50} + 2,6$

Reissfestigkeit = 700 gr.

70×10

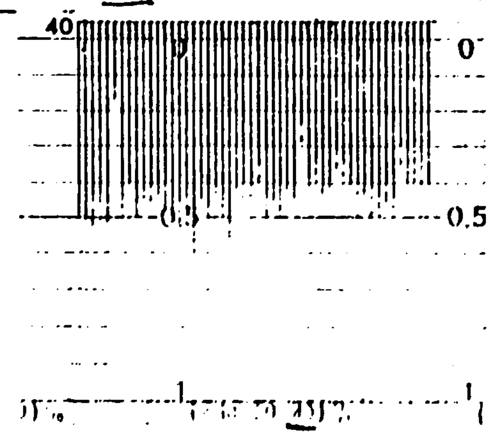
Reisskilometer = 20,9 R'km

$\frac{700 \times Nm\ (335)}{1000}$



Bruchdehnung = 18,5 %

$\frac{91 \times 10}{50} + 0,3$



Zwirntourenmessung:

1. Zw	2. Zw
S 300	Z 340

Hülse Nr. 3

REISSFESTIGKEITSPRUEFUNG Datum 6.2.89.

Rohmaterial Viscose Lfz. Nr

Zwirn 133/1x2 Rez. Nr —

Messart Kontrollmessung Ursprung —

Anzahl. Mess. 50 Firma —

Bemerkungen gefärbt rost

dtex 220 wenig R'km

Reissfestigkeit = 52,2 %

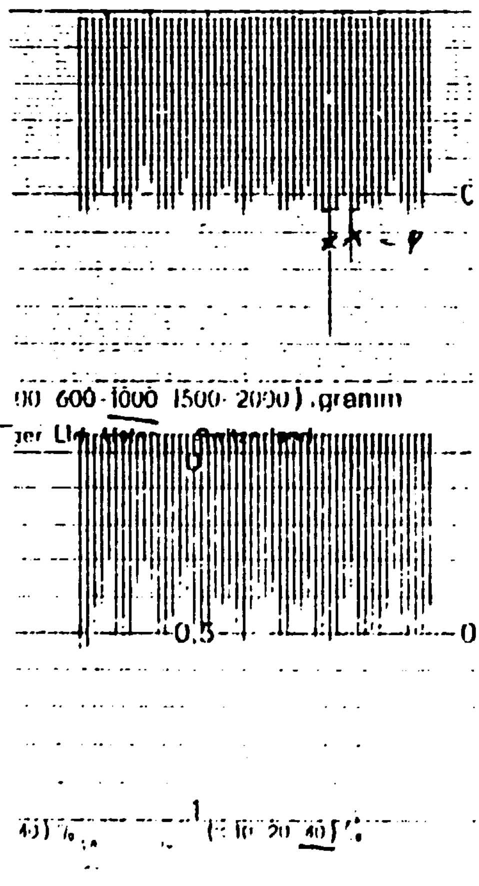
$\frac{248 \times 10}{50} + 2,6$

Reissfestigkeit = 522 gr.

52,2 x 10

Reisskilometer = 19,3 R'km

$\frac{522 \times Nm(\ )}{1000}$



Bruchdehnung = 19,1 %

$\frac{94 \times 10}{50} + 0,1$

Zwirntourenmessung:

1. Zw.	2. Zw.
S 560 /	Z 560

Weise Nr. 4

REISSFESTIGKEITSPRUEFUNG Datum...6.2.89..

Rohmaterial	..Baumwolle....	Lfz. Nr	..........–..
Zwirn	.Nc 60/2......	Rez. Nr	......–......
Messart	..Kontrollmessung	Ursprung	......–.....
Anzahl. Mess.	.........50.......	Firma	......–.....
Bemerkungen	.gefärbt blau..		

.....Endhiler den 200.........

Reissfestigkeit = ...54,8...%

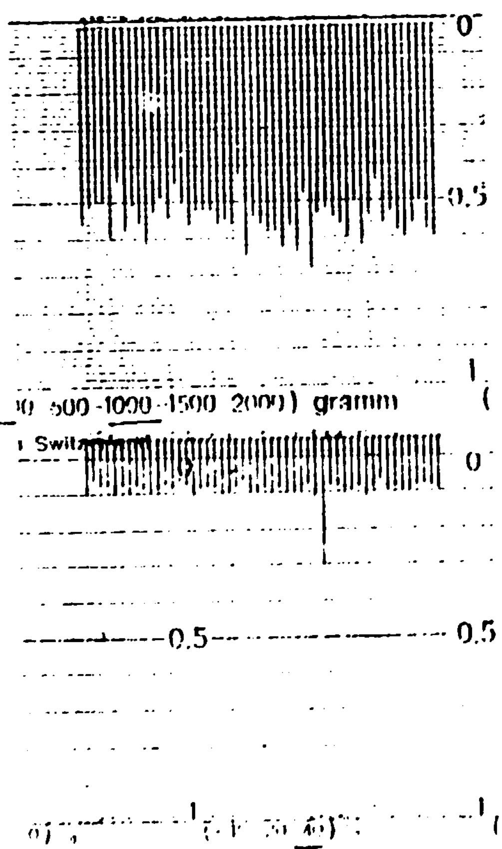
$\frac{261 \times 10}{50} + 2,6$

Reissfestigkeit = ...548.....gr.

54,8 × 10

Reisskilometer = ...24,6...R'km

$\frac{548 \times Nm\ (45)}{1000}$



Bruchdehnung = ...4,9...%

$\frac{23 \times 10}{50} + 0,3$

Zwirntourenmessung:

Nc 60/2 Z 900

Muster Nr 5

REISSFESTIGKEITSPRUEFUNG

Datum ...6.2.82...

Rohmaterial ..Baumwolle...

Lfz. Nr. ...–...

Zwirn ..Nr. 60/2....

Rez. Nr. ...–...

Messart ..Kontrollmessung

Ursprung ...–...

Anzahl. Mess. ......50........

Firma ...–...

Bemerkungen ..gefärbt..1050

.Fixdibler den 180.............

Reissfestigkeit = ...43.....g

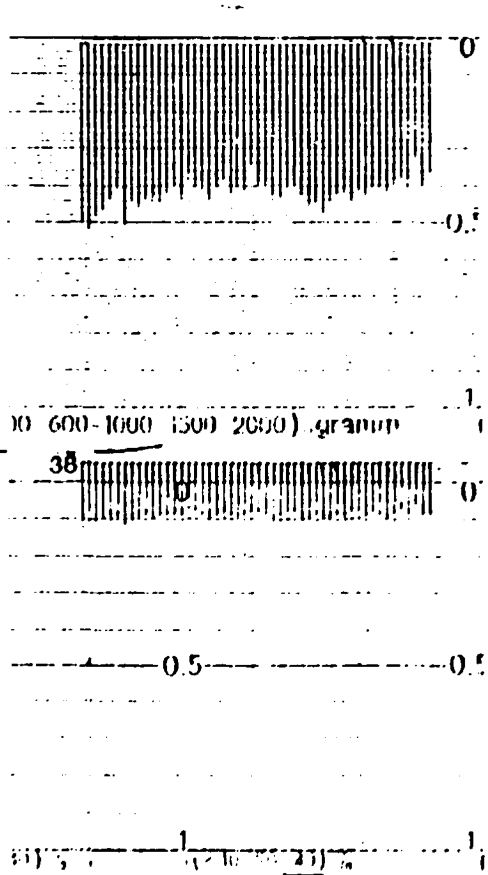
$\frac{202 \times 10}{50} + 2,6$

Reissfestigkeit = ...430.....gr.

43 × 10

Reisskilometer = ...21,5....R'km

$\frac{430 \times Nm\ (50)}{1000}$



Bruchdehnung = ...4,7 %..%

$\frac{22 \times 10}{50} + 0,3$

Zwirnlauenmessung:

Nr 60/2 S 750

[illegible]

REISSFESTIGKEITSPRUEFUNG

Datum...6.1.89.

Rohmaterial	..Baumwolle...	Lfz. Nr............	
Zwirn	Ne. 60/2......	Rez. Nr............	
Messart	..Kontrollmessung	Ursprung...........	
Anzahl. Mess.	........50......	Firma	....

Bemerkungen gefärbt..weiss.

.[illegible] dun RS....flüssig.

Reissfestigkeit = ...49,6....%

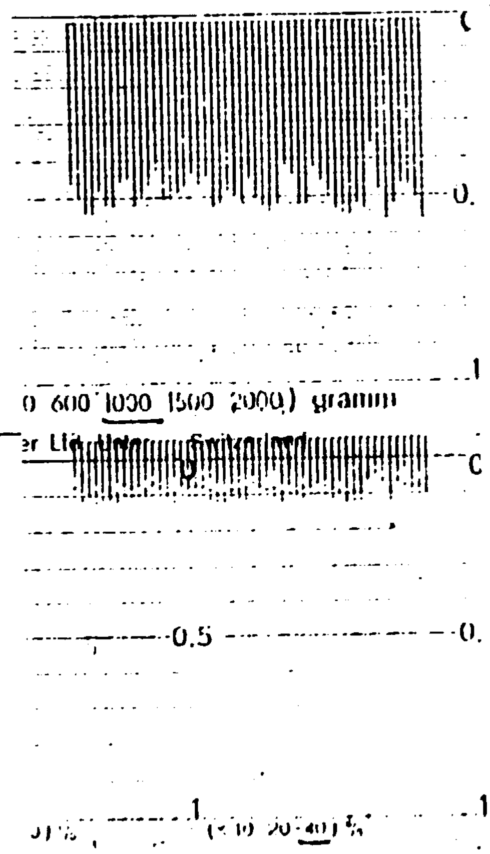
$\frac{235 \times 10}{50} + 2,6$

Reissfestigkeit = ...496....gr.

49,6 x 10

Reisskilometer = ...24,1..R'km

$\frac{496 \times Nm (48,6)}{1000}$



Bruchdehnung = ...4,5...%

$\frac{21 \times 10}{50} + 0,3$

Zwirntourenmessung:

Ne 60/2 Z 430

"D E T A I L L E D R E P O R T - MULTI - HEAD - EMBROIDERY"

Commercial and technical research about Messrs. "VEZIONICA",
embroidery factory ZVORNIK/SRJ, Jugoslavia

Design department

The design department should be devided in:

a) Supervisor
b) Constructional designer (drawer)
c) Designer (drawer) for department multi-head embroidery
d) Designer (drawer) for department schiffli-stickmatic

To item a) Supervisor

The supervisor should manage everything, beginning with the operations scheduling (preparation/planning) until the end control.

That means: which works are to be done?
who is appropriate for to do it?

According to these facts to coordinate, control and improve the work.
To give explanations to improvements.

The supervisor should give instructions (verbally and in writing) what has to be considered with the work.

Important facts thereby are:

basic material (kind, colour, texture)
thread width (colours)
dimension of the pattern

as well as other specials.

The running during working is also to be controlled. The punchers are to be instructed about the details.

.../2a

Furthermore in the production (embroidery) the output of the patterns has to be controlled. The embroidery output to be critically controlled and analized again with the individual designer and puncher.

b) Constructional Designer

He/she works closely with the clients and the drawer. Eventually shall he/she also work still as drawer.

He/she makes resp. constructs plans according to the instructions of the clients.

The design procedure will be done together with the client as well as with the help of existing designs.

As existing material serve ready patterns, catalogues, illustrations or already finished designs.

Here a record-office should be established resp. should come into action. As far as possible to work alphabetically in order to guarantee a rapid finding of the necessary documents.

When constructing, also the technical running of the finished pattern as well as the colouring and the basic material/thread thickness and dimension of the pattern are to be considered.

An important fact is also the price (number of stitches).

.../2b

c) Drawer (designer) for multi-head-embroidery

The multi-head embroidery drawer has the task to convert the plan (sketch) or the individual design in the stencil plate.

The drawing-on

Thereby the design will be projected several times bigger with pencil - off hand - on the stencil plate paper by means of a projector. Hereby every requested anlargement factor of minimum 3 to approx. 6-fold as big as the original embroidery can be used.

The bigger the enlargement factor is, the exacter the embroidery will be.

This depends however still on the exact work of the puncher.

The, we say, 6-fold enlargement will be projected from top onto the table by means of a photographic projector, which is situated in a darkroom (laboratory).
On this table one should be able to work (design) good and comfortable.
The designing is done by pencil, so that later on it is possible to remove the design by rubber.

After designing, the pattern will be laid on.
Laying on means to improve the designed pattern according to all important aspects.
Aspects are : optical harmony of the pattern
symmetrical arrangement with the help of pencil compass, divider, ruler, rubber and folding-stick (bone-folder).

The symmetrical laying on if necessary with folding-stick "to adjust" so that both sides are adjusted.

.../2c

"To adjust" means that the pencil drawing is folded in the middle and the left side is compared and adjusted with the right side, so that an equal symmetrical drawing is the result.

"Making black (blackening)"

Signification:

The layed on pattern is marked with felt-tip. At best one takes coloured felt-tips - for every embroidery colour a felt-tip colour - in order to avoid faults when later punching.

Also here corrections of the drawing are still possible.

At the end the 6-fold enlarged pattern is rubbered with a big rubber, i.e. the pencil drawing is removed so that only the felt-tip drawing remains.

Now the nearly finished stencil plate is provided with a middle axle as well as the place in the embroidery area is marked (i.e. the embroidery heads are drawn or stamped on the stencil plate).

The beginning and the end of the pattern is marked.

The pattern is painted.

The technical running is stated: 1. red, 2. blue, 3. applicaton I, 4. etc.

The drawer occupies himself already with the later running of the embroidery and with the punching of the drawing, whereas he gets a better insight (knowledge) in punching of a model and considers when drawing, punching and embroidering-technical aspects.

The good intellectual cooperation of the correlated working groups excludes sources of errors.

The individual stitch widths of the pattern are marked.

.../3a

Stitch widths specifications are made in the dimension of the embroidery, i.e. in tenth millimeters for the computer: the computer calculates in 1:1 dimension.

For learning of this point the cooperation with the individual puncher would be important.

The finished stencil plate is controlled by the supervisor and passed on for punching.

Our proposal:

To send new drawers to the professional school to Dornbirn/Austria, for a 3 years' education, in order to guarantee a qualified, well-founded expert knowledge from the beginning.

The puncher

He is controlling the stencil plate.

According to basic material, thread thickness and colours of the pattern he is fixing the stitch widths resp. is controlling the specifications of the drawer (designer).

He controls the colours and the technical program as well as beginning and end and also the place of the pattern in the embroidery area.

The pattern is fixed on the punching board according to the X/Y line as well as according to the place in the embroidery area (pay attention to embroidery heads).

The data like dimension of the pattern, beginning of the pattern and all other necessary specifications for the individual type of the computer resp. computer program (soft ware) will be put into the computer.

The puncher is programming the pattern by X/Y coordinates on a disc.

In respect of the variety of the pattern here one cannot enter into particulars of the individual pattern.

It is however important that for the individual basic material and the thread thickness the right stitch distance is chosen, which one can chose. if one has corresponding experience, better and more optimal. The later embroidery may not be too hard, i.e. the stitches may not be programmed too narrow.

Also the later embroidery may not be too slack, i.e. the stitches may not be programmed too far.

After 15 years experience of a puncher this requirement is no more a problem for him.

.../4a

Punch machine

Additionally to the 9836 calculating punch device it would be advisable to connect an "IDAA" (intelligent disc adapter studio device) in order to copy the embroidering data from the existing 5 1/4" disc onto 3,5" discs in the event that later "IDAM" is to be connected with the present MSC electronic embroidery machines.

(see Annex E - F)

Embroidery

Personal splitting according to:

a) Supervisor, who leads the supervision of the whole embroidery production.

b) Service engineers who maintain the embroidery machines.

c) Embroiderers who operate the embroidery machines.

to a)

The supervisor has to distribute the current work according to the kind of the embroidery to the embroidery machines provided for that.

He has to control the putting out of the embroidery and if necessary to take steps for quality improvements - negotiation with the embroidery, the puncher, drawer resp. supervisor of the design department or if necessary with the management.

He should give instructions regarding maintenance and repair to the service engineers - as far as it is necessary -.

to b)

He has the task to maintain the embroidery machines according to plan. Maintenance drawings are enclosed as Annex C, D.

For the repair work always a checklist should be kept so that spare parts can always be ordered in due course.

Enough spare parts should always be on stock. Orders shall be forwarded to the supervisor resp. to the management.

.../5a

Further the service engineer should consult the supervisor regarding the thread thickness and consequently the connected adjustment of the under-thread oscillating shuttle, which embroidery machine is suitable for which embroidering thread.

The embroidery machine has to be adjusted accordingly.

to c)

The embroiderer has to lead embroidery works, to serve orderly the embroidery machine and to take care of the quality of the embroidery.

Further the following has to be attended to:
To control thread thicknesses, basic materials, correct stretching as well as tensions of the top-feed-thread and under-thread on each embroidery head.

The observation of the technical specifications regarding the embroidery program like for example colour cyclus, place in the embroidery area as well as beginning and end point of the pattern are to be attended to by her furthermore to control the exactness.

On series cards one should especially attend to, that for the series patterns which are cut out, border frames are used in order to reach an optimal utilization of the basic material being embroidered. (see Annex B).

Besides this is not so much time expenditure, i.e. the embroiderer has time during embroidering in serie for other important tasks for example the new stretching of cloth.

.../5b

However hereby no cloth remainders can be used, but there must be used always bigger (larger) fabric lengths as the border frame extends over the whole embroidery fields.

It is a very big fault, when basic material being embroidered is too small cutted for the embroidery frame. This we unfortunately had to observe.

The embroidery gathers the basic material with its tension so strong that the finished embroidery design of the embroidery looks totally displaced.

This appeared in such a manner that contours which are situated beside a broad stitch either are embroidered over the broad stitch or are lying a too big distance near by it.

It is very important that the basic material being embroidered is held from all sides of the embroidery frame. If possible to be strengthened with a fibrous web line (fleece) which is of course also together with the basic material stretched and kept from the embroidery frame.

The placing of the embroidery machines in square is to be valued with good.

Embroidery - embroidery machines -

In the facotry VEZIONICA it is embroidered around the clock, i.e. 24 hours in 3 shifts.

The 8-channel-laser of the electronic embroidery machines are because of the 24 hours utilization very much contaminated. Also the 8-channel-embroidery line is enormeously stressed as it is read at each embroidery process anew.

For these existing embroidery machines it would be recommandable to establish a memory.

Thereby the 8-channel-lines would have to be read in only one time.

As these embroidery machines are working around the clock, this embroidery data would be ready for embroidery at any time without reading in of the embroidery card again.

This memory is called "IDAM intelligent disc adapter".

It would be connected with embroidery machines having MSC control system (price approx. 6.600,00 DM).

The possibilities of "IDA" (intelligent disc adapter):

8-channel-lines will be read in from 8-channel-lasers on the 3,5" disc of the connected "IDA". Proceeding from the internal memory of the "IDA" patterns then can be turned, reflected in every imaginable position or changed in the dimension.
It is possible to join an 8-channel-punching unit and it is also possible to punch every 8-channel-card again.

.../6a

A backward-embroidering when faults resp. thread-breaking have occured can be executed via the "IDAM". It is possible to go back unlimitedly in order to embroider again the faulty pattern. One "IDAM" memory contains approx. 43.000 stitches (see Annex E - F).

The position of the embroidery machines should to be preserved in such a manner that a rational working is possible. This was the case - positioning in a square - in the middel a working tabel. Thereby rational working renders possible.

But not too many embroiderers should hinter themselves or derange when working. Eventually the number of the embroiderers to be reduced.

It is recommended to replace the mechanical embroidery machines by modern 174 colour change electronic machines.

Regarding the embroidering speed such a 174 machine replaces approx. 2 mechanical units.

The exactness of the 174 is additionally guaranteed at the one side because of the better mechanic and at the other side because of the new steering.

Besides, it is fitted with 7 needles so that a continous re-threading can be eliminated (see Annex H).

In the electronic of the 174 one can choose for every stop a determined needle which shall go on in embroidering after having changed the needles. Of course however stops which are programmed can again be adjoined to other stops.

.../6b

Special equipment

Also with the 174 embroidery machine it is possible to embroider backwards (approx. 800 stitches) for example when breaking of threads.

The pattern dimensions can be changed in both directions (X/Y).

The embroidering speed is adjustable from 0 to 750 revolutions. The embroidery quality can hereby of course be improved.

An automatic upper and lower thread cutter is cutting after changing of needles automatically the upper and lower thread if it is correctly programmed in the electronic.

Also you can make cutting after a special thread length.

.../6c

Proposal to improve the upper-thread tension

In order to keep the upper thread tension smooth-running (important for metal thread) at the upper thread leading a felt should be pressed in between. - see demonstration drawing -

Felt 0 to provide with a hole

To screw out the thread leading.
To lay a felt amongst and to screw together again.

(see Annex D)

The mechanical embroidery machines

They are in need of new scanning needles which are produced in one part. The scanning needles are scanning the mechanical embroidery cards (68 mm - Ban) and transfers this scanning in the jacquard head which translates the scanning into the pantograph movement.

These scanning needles often break off on this enormeous load between needle bar and blade and have to be dismantled and soldered troublesome.
This can be prevented if in the jacquard heads needle bars are installed which are produced in one part, i.e. the bars are no longer soldered to the plate.

Our recommendation is, to order these needle bars with the embroidery machines manufacturer ZSK Krefeld Germany and to install these bars.

The constant cleaning of the jacquard head from paper dust of the jacquard cards has not in our opinion to be mentionned specially, as we - regarding the general good maintenance - have not statet any essential points on that. Although drawings with descriptions regarding maintenance are enclosed. (see Annex C)

.../7a

Endless transport

Bigger order quantities which need more than 1 day embroidering time should be bobbined via the 68 mm cards on the mechanical embroidery machines on "endless". These endless bobbinings we nowhere could establish:

Endless bobbinings are devices which also can be delivered by the machines manufacturers.

The line hereby will be bobbined over two bigger rolls which are mounted on the rear side on top of the embroidery machine and frontly fitted in the jacquard head, as normal.

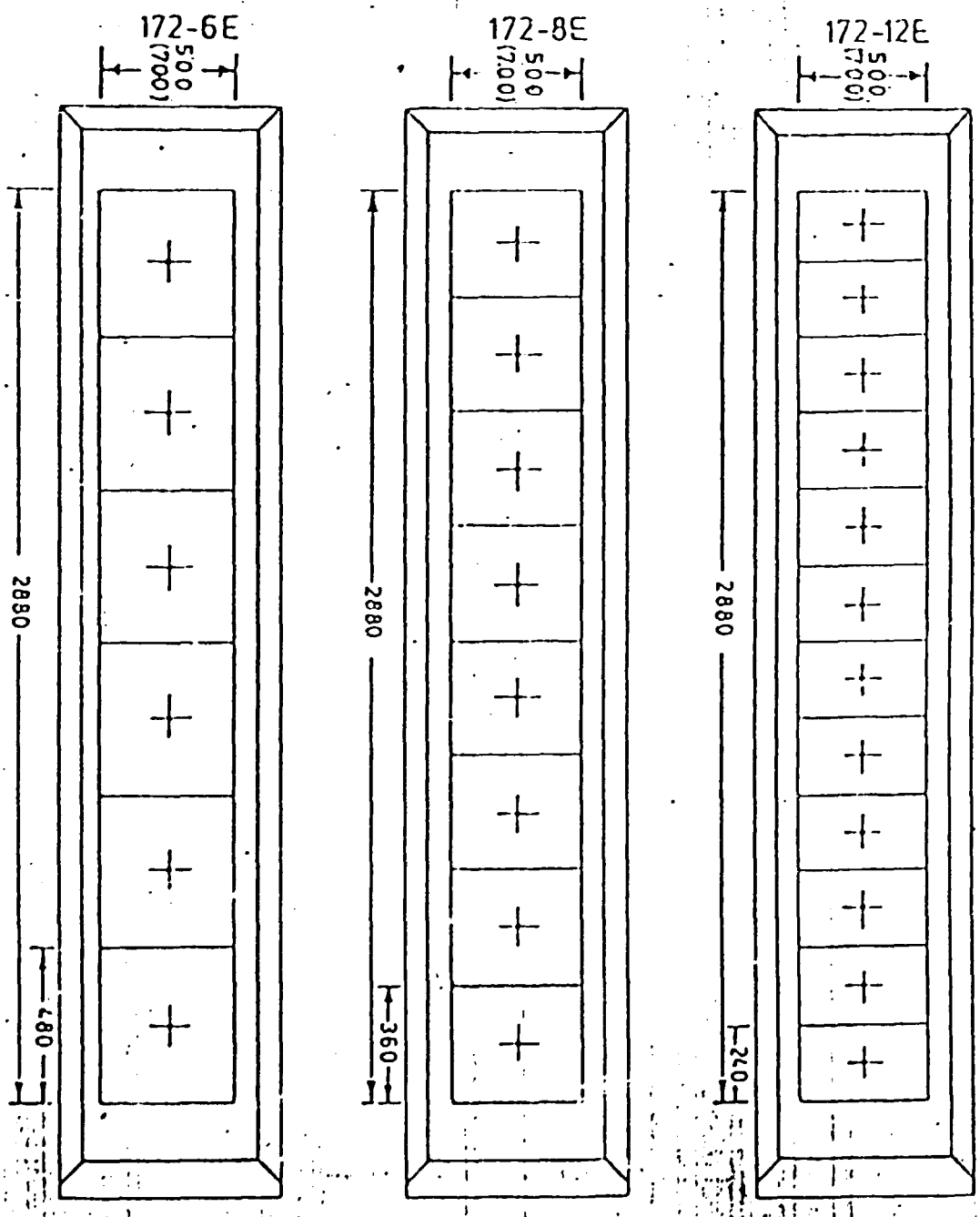
Only the end of the jacquard card now is adhesived to the beginning of the card, so that by the endless transport the card always is repeated without a continuous repeated bobbining by hand.

The integration of an endless transport lasts - on ability - 3 - 4 x as long as the one-time bobbining of the line, and is therefore time saving (example: if on one working day the punched card line should have to be bobbined 50 times, so this is with an endless transport device a time saving of 46 x bobbining).

This time could be used for example for better and more exact stretching of the part to be embroidered.

4.6 Stickrahmen bei 172 E

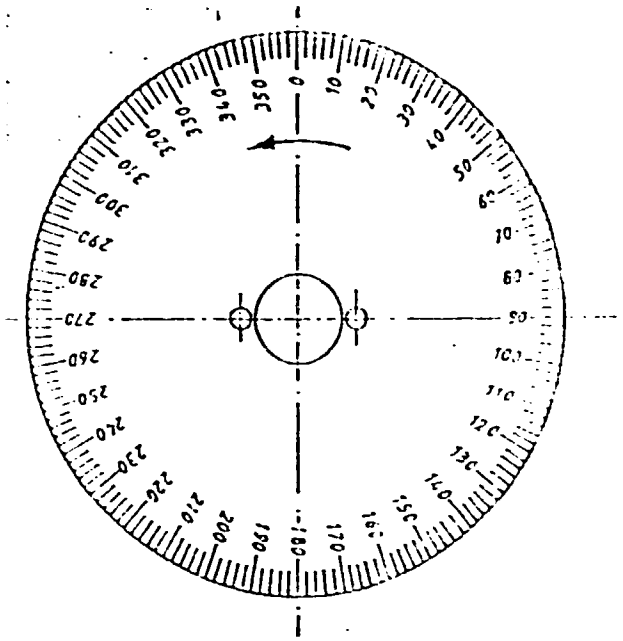
a) Bordürenrahmen



6.2 Überprüfen der Greifereinstellung

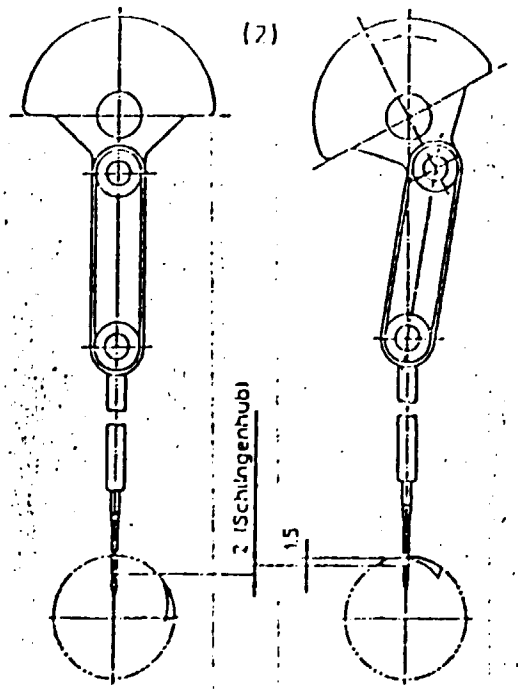
6.2.1 Schlingenhub einstellen

- Um den Schlingenhub einzustellen, ist zunächst zu prüfen, ob der obere Totpunkt der Nadel - 0° bzw. der untere Totpunkt der Nadel - 180° richtig eingestellt ist. Er ist auf der Skalenscheibe (1) (in der linken Stütze ablesbar.

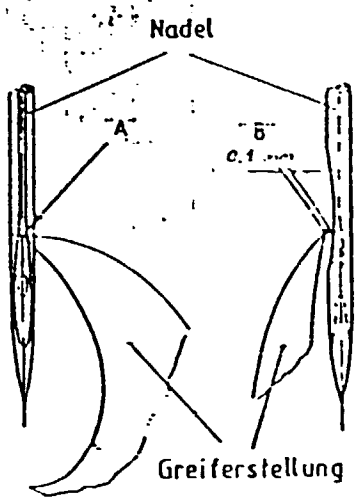


- Jetzt die Nadel mit Handrad in Tiefstellung fahren, dann weiterdrehen, bis die Nadel sich wieder um 2 mm nach oben bewegt hat (2).

  Dies entspricht 203° + 1° auf der Skalenscheibe.



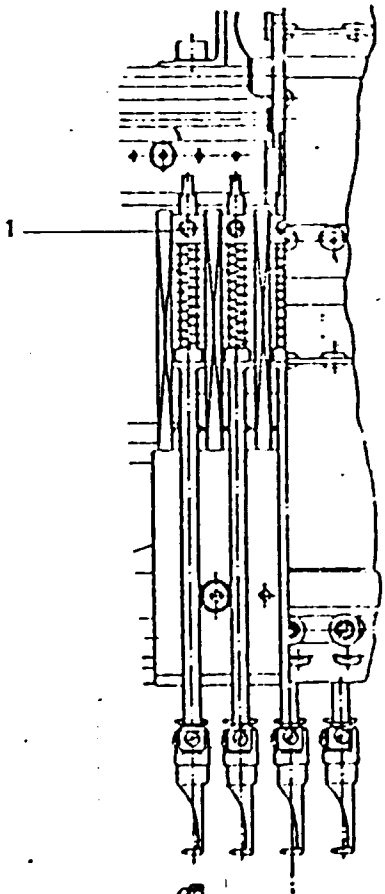
6.2.2 Greiferstellung zur Nadel

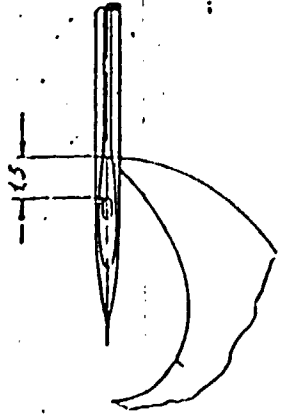


- Nachdem der Schlingenhub eingestellt ist, muß der Greifer so stehen, daß die Greiferspitze genau auf der Nadelmitte steht ("A") und der Abstand zwischen Greiferspitze und Nadel 0,1 mm beträgt ("B").

- Zur Korrektur beide Stellschrauben am Greifer lösen, Einstellung vornehmen und Stellschrauben festziehen.

6.2.3 Höhe der Nadelstange

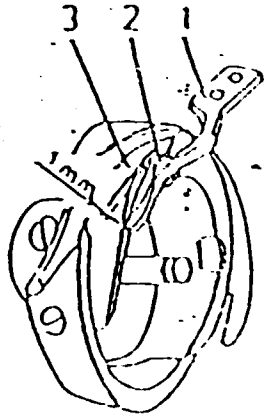




- Nach Einstellung des Schlingenhubs (6.2.1) muß der Abstand zwischen Oberkante des Nadelöhrs und der Greiferspitze 1,5 mm betragen (2).

- Zur Korrektur Schraube (1) lösen, Nadelstange einstellen und Schraube (1) wieder festziehen.

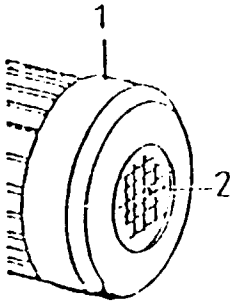
6.2.4 Haltefinger



- Sind die Einstellbedingungen 6.2.1 und 6.2.3 erfüllt, muß der Haltefinger (1) so eingestellt sein, daß der Finger (2) auf Nadelmitte steht und der Abstand zur Spulenkapsel (3) ca. 1 mm beträgt.

- Zur Korrektur Schrauben des Haltefingers lösen, Einstellung vornehmen und Schraube festziehen.

6.2.5 Hauptmotor



- Das in der Schutzkappe (1) befindliche Sieb (2) sollte bei Verschmutzung mit einem Lappen oder Pinsel von Staub befreit werden, um so eine gute Lüftung zu gewährleisten.

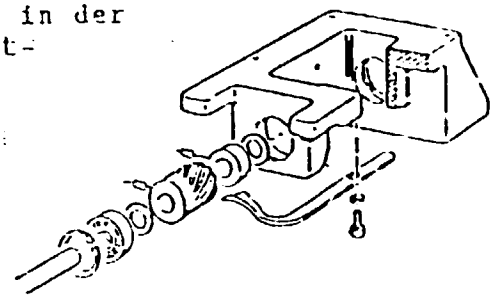
6.2.6 Keilriemen

- Bei einem unregelmäßigen Lauf der Maschine bzw. ungenauer Stopposition sollte die Keilriemenspannung überprüft und ggbfs. die Keilriemen nachgespannt werden.

- Je nach Zustand der Keilriemen (z.B.Risse) müssen diese erneuert werden.

6.2.7 monatlich

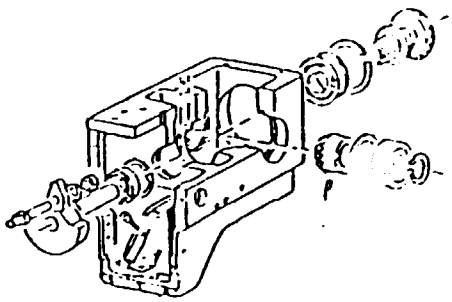
- Die Schraubenräder (1) in der Fußplatte sollten monatlich gefettet werden. Hierzu ist das im Normalzubehör befindliche Aviaticon-Fett WZ-02, oder das in der Schmierstofftabelle angegebene Fett Nr F9 zu verwenden.



Es ist darauf zu achten, daß alle Zähne eines Zahnrades gefettet werden.

6.2.9 halbjährlich

- Die Kegelräder (1) im Oberteil sind halbjährlich mit dem gleichen Fett wie unter 6.2.8 beschrieben zu fetten.

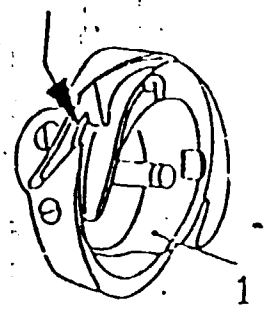


Es ist darauf zu achten, daß alle Zähne eines Zahnrades gefettet werden.

7.1 Wartung der Stickmaschine

7.1.2 Täglich:

- Greifer (1) reinigen und mit 1 Tropfen Nähmaschinenöl ölen.



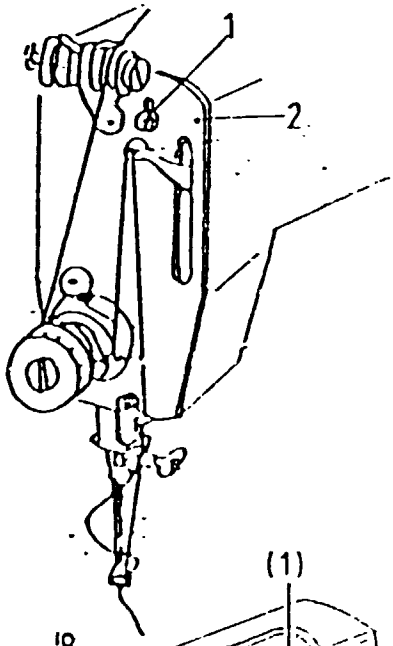
7.1.3 Wöchentlich:

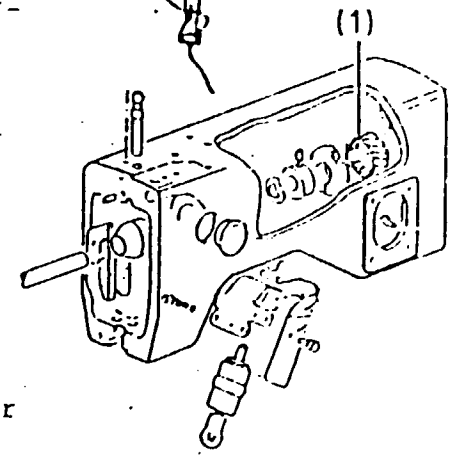
- Stickköpfe werden zweimal pro Woche nach Arbeitsende durch die rot gekennzeichneten Schmierstellen mit Öl gemäß Nr. 4 der Schmierstofftabelle versorgt.

- Die Schraube (1) lösen und den Stirndeckel (2) abnehmen.

- Die Nadelstange ist jetzt frei und kann von Staub befreit werden.

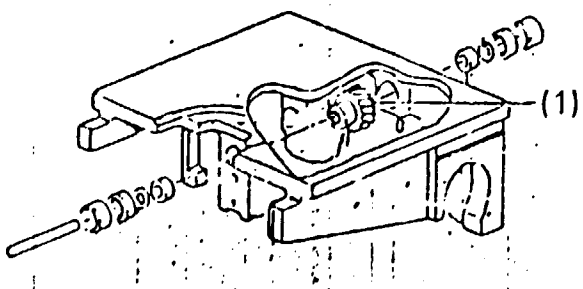
- Die Schraubenräder (1) im Oberteil sind wöchentlich mit dem gleichen Fett wie unter 7.1.4 beschrieben zu fetten. Es ist darauf zu achten daß alle Zähne eines Zahnrades gefettet werden.





7.1.4 Monatlich:

- Die Schraubenräder (1) in der Fußplatte sollten monatlich gefettet werden. Hierzu ist das im Normalzubehör befindliche Aviatcion-Fett WZ-02 oder das in der Schmierstofftabelle angegebene Fett Nr. F9 zu verwenden.



7.1.5 Allgemein

Unterfadenwächter

- Der Unterfaden ist desöfteren von Staub und/oder Garnflusen, besonders bei Verarbeitung von Baumwolle, zu reinigen.

- Es kann sonst zu Fehlern in der Schaltung führen, z.B. nicht Abstellen.

Springstichmagnet

Der Springstichmagnet ist wartungsfrei.

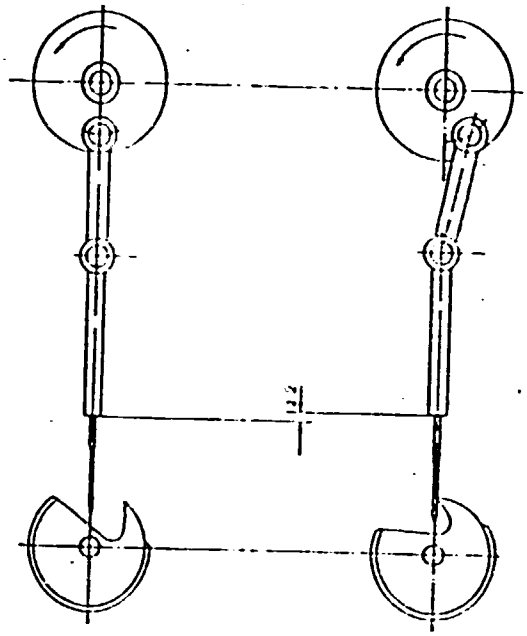
Wichtig!

Der Springstichmagnet darf nicht geölt werden!

7.2 Überprüfen der Greifereinstellung

7.2.1 Schlingenhub einstellen

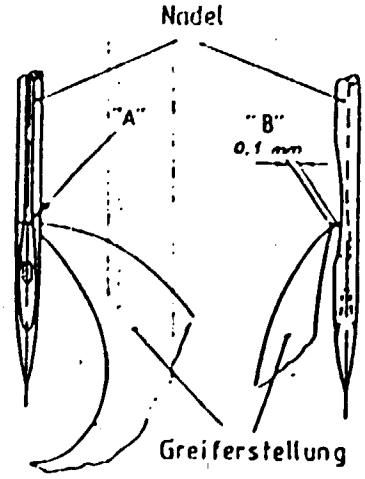
- Nadel mit Handrad in Tiefstellung fahren, dann weiterdrehen, bis die Nadel sich wieder um 2,0 mm nach oben bewegt hat.



7.2.2 Greiferstellung zur Nadel

- Nachdem der Schlingenhub eingestellt ist, muß der Greifer so stehen, daß die Greiferspitze genau auf Nadelmitte steht (A) und der Abstand zwischen Greiferspitze und Nadel 0,1 mm beträgt (B).

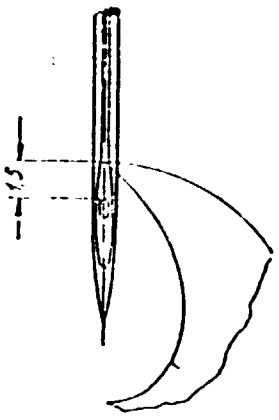
- Zur Korrektur beide Stellschrauben am Greifer lösen, Einstellung vornehmen und Stellschraube festziehen.



7.2.3 Höhe der Nadelstange

- Nach Einstellung des Schlingehubes 7.2.1 muß der Abstand zwischen Oberkante des Nadelöhrs und der Greiferspitze 1,5 mm betragen.

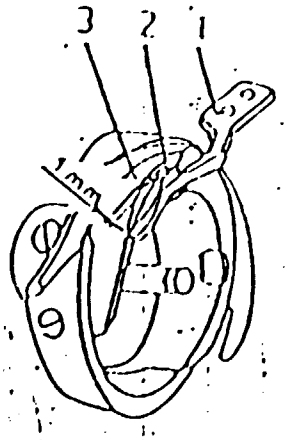
- Zur Korrektur Schraube für die Befestigung der Nadelstange lösen, Nadelstange einstellen und Schraube wieder festziehen.

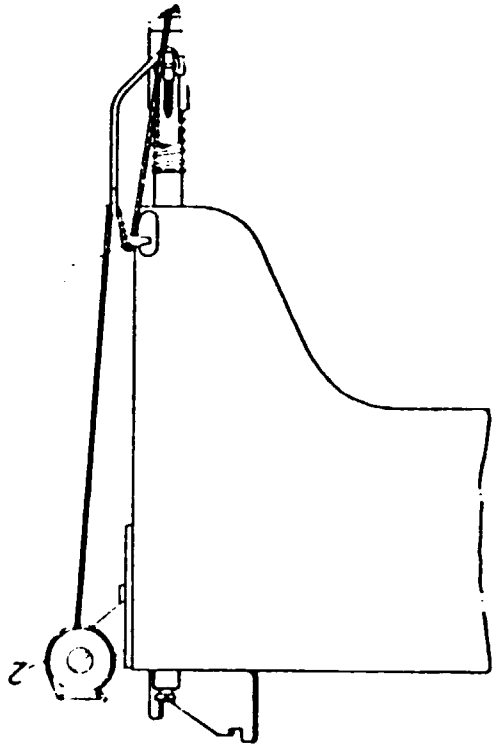


7.2.4 Haltefinger

- Sind die Einstellungen 7.2.1, 7.2.2 und 7.2.3 erfüllt, muß der Haltefinger (1) so eingestellt sein, daß der Finger (2) auf Nadelmitte steht und der Abstand zur Spulenkapsel (3) ca. 1 mm beträgt

- Zur Korrektur Schrauben des Haltefingers lösen, Einstellung vornehmen und Schraube festziehen.





Annex E

IDA/A system

Intelligent disc adapter for the studio with the following scope of supply:

Basic equipment:

Casing incl.
- keyboard with 24 alpha-numberical keys
- 2 3 1/2" disc mechanisms for double-side discs
- central computer unit for data communication and administration
- computer working memory for 43.688 stitches
  (larger patterns are buffered worked over disc).
- reader interface
- RS 232 serial interface
- reader-off-interface
- punching unit-on-interface

Employment (use):

- The reader interface renders the connection of the transportable readers TR 400.

- The punching unit interface renders the connection of FACIT 4070 resp. GNT-puncher.

Annex F

IDA/M system

Intelligent disc adapter for machines connectable to steerings PA2 and MSC

Hardware scope of supply; standard:

Casing incl.
- keyboard with 24 keys for the control
- double-spaced LCD-display with 80 signs
- 3 1/2" disc mechanism for double-side discs
- RAM memory for 43.688 stitches buffered
- integrated interface for an 8-channel-perforator (FAZIT or GNT)
- serial interface for the CSC and plotter connection
- integrated interface for the 8-channel-punched tape reader TR 400

Software description

Basic menue

The IDA/M basic menue offers four different program groups as follows:

Embroidering, this program group contains all programs which are necessary for embroidering or modifying of patterns. This is valid either for the embroidering from the memory or from the punched tape and disc.

Disc, in this group programs for formatting and copying of the disc, for cancelling and copying of patterns and for presentation of the contents are offered.

Punching, with this program the punching of patterns, which are memoried on disc in the current codes is possible.

.../2

Annex F

System, contains programs for setting the time and the date, as well as test programs and parameters for the limitation of the stitch lengths and for the reader speed.

Models, - to mirror and to turn with any angle
- to enlarge and to reduce
- to put together of severals
- to duplicate on disc or punching tapes

stitches/special functions,
- to insert, to cancell or to modify in the memory or on disc.

In preparation is the online connection to the CSC system:

- to call-off patterns from the CSC system
- to record and to analyse production times in the CSC system.

Anlage H

ZSK

171

ZSK-Multi-Sticktronic®

171/12 171/8 171/6 171/4

Technische Daten / Technical Data

Maschinentypen/Machine Types	171/12	171/8	171/6	171/4
Anzahl der Stickköpfe Number of heads	12	8	6	4
pro Stickkopf per embroidery head				
Nadeln needles	1	1	1	1
Bohrer borer (Option option)	1	1	1	1
alternativ alternatively				
Kordelstickeinrichtung (Option) cord embroidery device (option)	1	1	1	1
Kopfabstand (mm) Distance of heads (mm)	200	320	400	600
max. Stickfeld (mm)				
max. embroidery field (mm)	300 x 2 400	300 x 2 560	300 x 2 400	-
Bordure border	420 x 2 400	420 x 2 560	420 x 2 400	-
Einzelmotiv single motif	450 x 200	450 x 320	450 x 400	450 x 450
Einzelmotiv- und Bordurenrahmen frames for single motifs and continuous border designs	siehe separates Rahmenblatt „R 171" / see separate frame sheet „R 171"			
Stichlänge (mm) Stitch length (mm)	0.1 9.0 mm (größer als 9.0 Springstiche) 0.1 9.0 mm (longer than 9.0 floating stitches)			
Stichleistung min Stitches min	750 (je nach Stickmuster) 750 (according to embroidery design)			
Elektr. Anschlußwert (kVA) Electric connected load (kVA)	1.67	1.67	1.67	1.67
Maschinenlänge (mm) machine length (mm)	3 675	3 675	3 675	3 675
Maschinenbreite (mm) machine width (mm)	1377	1377	1377	1377
Tischhöhe (mm) height of table (mm)	900	900	900	900
MSCM Steuerschrank (mm) MSCM control unit (mm)	565 x 600 x 1 250			
Netto-Gewicht (kg) net weight (kgs)	1 250	1 075	985	895
Kolli-Daten (ca.) pro Einheit (mm) shipping dimensions (approx.) per unit (mm)	3 360 x 1 570 x 1 610			
Brutto-Gewicht (kg) gross-weight (kgs)	1 780	1 685	1 595	1 505
Kubage (m³) cubage (m³)	10	10	10	10

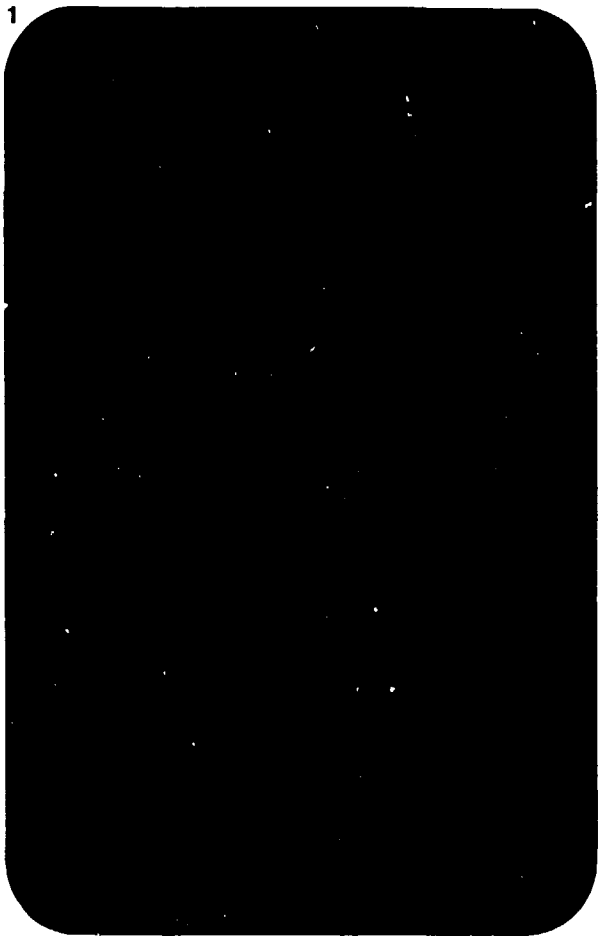
ZSK Stickmaschinen Gesellschaft mbH
Elbestraße 31
D-4150 Krefeld-Bockum
Tel. (02151) 44120
Telex 8531539 zsk d
Telegr. stickpoint

ZANGS

MSC
MSC-M
176 L

Multi-Sticktronic®-Control

1



2

3

Abb. 1:
MSC-Pantographen-Steuerung (Multi-Sticktronic-Control)
Abb. 2:
MSC-M-Pantographen-Steuerung (Multi-Sticktronic-Control-Memory-Stickdatenspeicher)
Abb. 3:
Kodier- und Programmiergerät Typetronic 176 L

Fig. 1:
MSC-Pantograph Control (Multi-Sticktronic-Control)
Fig. 2:
MSC-M-Pantograph Control (Multi-Sticktronic-Control-Memory for embroidery designs
Fig. 3:
Coding and Programming Device Typetronic 176 L

Zangs liefert für seine elektronisch gesteuerten Mehrkopfstickautomaten alternativ die MSC-Pantographen-Steuerung oder die MSC-M-Pantographen-Steuerung mit Datenspeicher für die Stickmuster. Beide Steuerungen sind in Kombination mit dem Kodier- und Programmiergerät Typetronic 176 L zum Sticken von Monogrammen und Schriften aller Art lieferbar.

Zangs supplies for their electronic embroidery machines alternatively the MSC-Pantograph-Control or the MSC-M-Pantograph-Control with memory for embroidery designs.
Both controls can be delivered in combination with Coding and Programming Device Typetronic 176 L for embroidering all kinds of monograms and letterings.

MSC-Pantographen-Steuerung

Die MSC-Steuerung bietet folgende Möglichkeiten:
- Sticken von Lochstreifen aller Codes und gleichzeitiges Duplizieren durch Anschließen eines Lochstreifenstanzers (Ausgabe Zangs-Code)
- Duplizieren und Kode-Konvertierungen von Lochstreifen ohne Stickvorgang
- Mustervergrößerung (Faktor 1,65)
- Musterspiegelung

MSC-Pantograph-Control

The MSC-Pantograph-Control offers the following possibilities:
- Embroidering of tapes of all codes and contemporary duplicating by connecting the tape puncher (output Zangs-Code)
- Duplicating as well as Code-Converting of tapes without embroidering
- Pattern enlargement by factor 1,65-
- Pattern tilting (mirror possibilities)

MSC-M-Pantographen-Steuerung mit Stickdatenspeicher

Die MSC-M-Steuerung mit Datenspeicher beinhaltet alle Möglichkeiten der MSC-Steuerung. Der 8-Kanal-Lochstreifen wird darüberhinaus in den Speicher eingelesen und gleichzeitig abgestickt. Beim weiteren Absticken des Stickmusters erfolgt dann lediglich noch der Abruf aus dem Speicher. Mit der MSC-M-Steuerung ist es weiterhin möglich, bei Fadenbruch im Stickmuster Stich für Stich zurückzufahren, um eine entsprechende Korrektur auszuführen. Außerdem gestattet die Steuerung beliebige Muster-Größenveränderungen. Die max. Kapazität des Stickdatenspeichers beträgt 63.000 Stiche.

MSC-M-Pantograph Control with memory for embroidery designs

The MSC-M Control with memory covers all possibilities of the MSC-Control. Furthermore, the 8-channel tape is read into the memory and embroidering is done at the same time. The following embroidery design is controlled out of the memory. The MSC-M-Control also facilitates backing up stitch by stitch if thread breakage occurs in the embroidery design, in order to make corrections. Furthermore, the control allows various alterations of design sizes. The max. capacity of the memory is 63.000 stitches.

Kodier-/Programmiereinrichtung Typetronic 176 L

Die Typetronic 176 L bietet in Verbindung mit der MSC oder MSC-M-Steuerung folgende Möglichkeiten:
- Eingabe und Absticken von Schriftzügen und -zeichen in einer Vielzahl von geometrischen Anordnungen direkt über die Tastatur ohne 8-Kanal-Lochstreifen; wenn erforderlich auch gleichzeitiges Erstellen des Lochstreifens (Zangs-Code) über eine angeschlossene Stanze
- Schriftzug-Anzeige über Display
- Schriftgrößen- und Schriftlängen-Veränderung
- automatisches Ausmitteln des Schriftzuges
- Schriftform-Veränderung durch Austausch der Schriftkassetten
- Möglichkeit der Vergrößerung bzw. Verkleinerung beim Absticken von 8-Kanal-Lochstreifen aller wesentlichen Codes
- Ausgabe der Lochstreifen aller Codes im Zangs-Code über den Stanzer

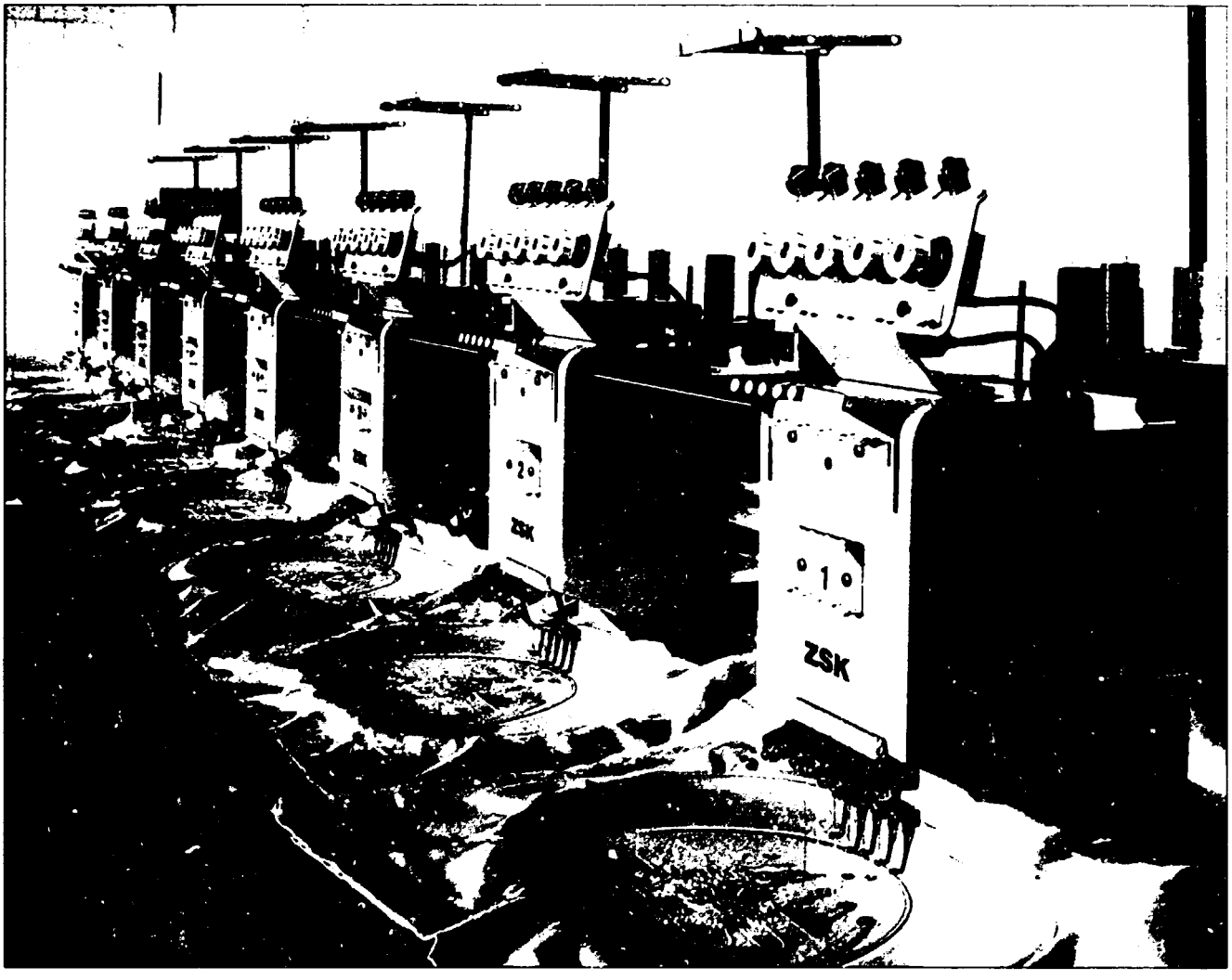
Coding and Programming Device Typetronic 176 L

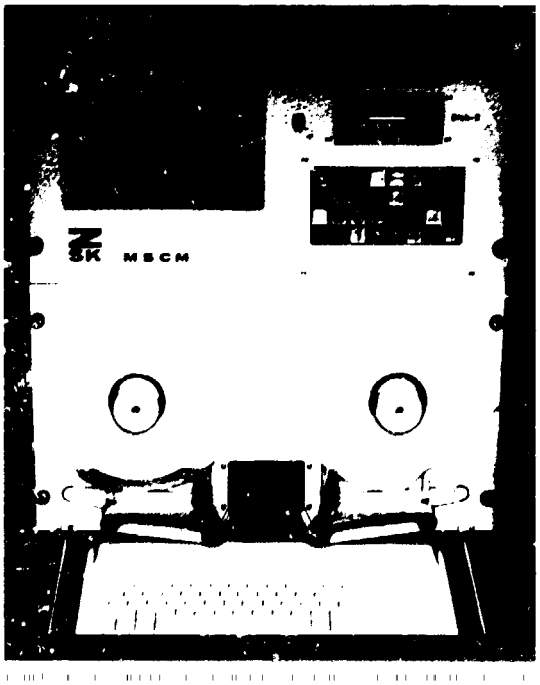
The Typetronic 176 L in connection with the MSC or MSC-M-Pantograph Control offers the foilowing possibilities:
- Input of lettering and single characters in numerous geometrical arrangement directly from the keyboard without 8-channel-tape, if necessary imultaneous producing of a tape (Zangs code) by connected puncher.
- chosen lettering shown on the display
- variable height and width of lettering
- different types of lettering by changing cassettes
- automatic enlarging- resp. reducing of designs when embroidering from 8-channel tape, all important codes
- tape output of all codes in Zangs codes via puncher

Maschinenfabrik Carl Zangs Aktiengesellschaft
Oberdießemer Straße 15 · D-4150 Krefeld/Bundesrepublik Deutschland/Federal Republic of Germany
Telefon (02151) 8251 · Telex 0853729 · Telegramme Zangstexma Krefeld · Telefax (02151) 825200

MSC MSC-M 176 L - 7.83 - 2.500 D.E

MULTI-STICKTRONIC 169





Technische Daten — Technical Data

Maschinentypen/Machine Types	**169/8**	**169/6**
Anzahl der Stickkopfe/number of heads	8	6
pro Stickkopf/per embroidery head		
Nadeln/needles	5	5
Bohrer/borer	1*	1*
Kordel- resp. Schlaufenstickeinrichtung (Option) cord- resp. loop embroidery device (option)	1 pro Stickkopf 1 per embroidery head	
Nadelabstand (mm)/distance of needles (mm)	490	550
max. Stickfeld (mm) Einzelmotiv max. embroidery field (mm) single motif	230 x 300	230 x 350
Einzelmotivrahmen frames for single motifs	siehe separates Rahmenblatt „R-169" see separate frame sheet „R-169"	
Stichlange (mm) stitch length (mm)	0.1-9.0 (größer als 9.0 = Springstiche) 0.1-9.0 (longer than 9.0 = floating stitches)	
Stichleistung/min. stitches/min.	bis 750 (je nach Stickmuster) up to 750 (according to embroidery design)	
MSCM-Steuerschrank (mm) allseitig plazierbar MSCM control unit (mm) allround positioning	565 x 600 x 1.250	
Stickdatenspeicher (Option) memory (option)	max. 200 000 Stiche max. 200 000 stitches	
Elektr. Anschlußwert (kVA) electric connected load (kVA)	1.67	1.67
Maschinenlänge (mm) machine length (mm)	4.780	4.070
Maschinenbreite (mm) machine width (mm)	1.290	1.290
Tischhöhe (mm)/height of table (mm)	900	900
Netto-Gewicht (kg)/net weight (kgs)	1.150	945
Kolli-Daten (ca.) pro Einheit (mm) shipping dimensions (approx.) per unit (mm)	4.880 x 1.480 x 1.750	4.400 x 1.480 x 1.750
Brutto-Gewicht (kg) gross-weight (kgs)	1.760	1.610
Kubage (m^3) cubage (m^3)	12,6	11,4

* im Austausch gegen Nadel Nr. 3
against replacement of needle No. 3

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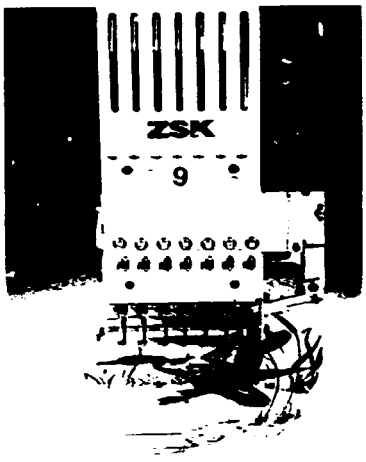
ZSK

MULTI-STICKTRONIC

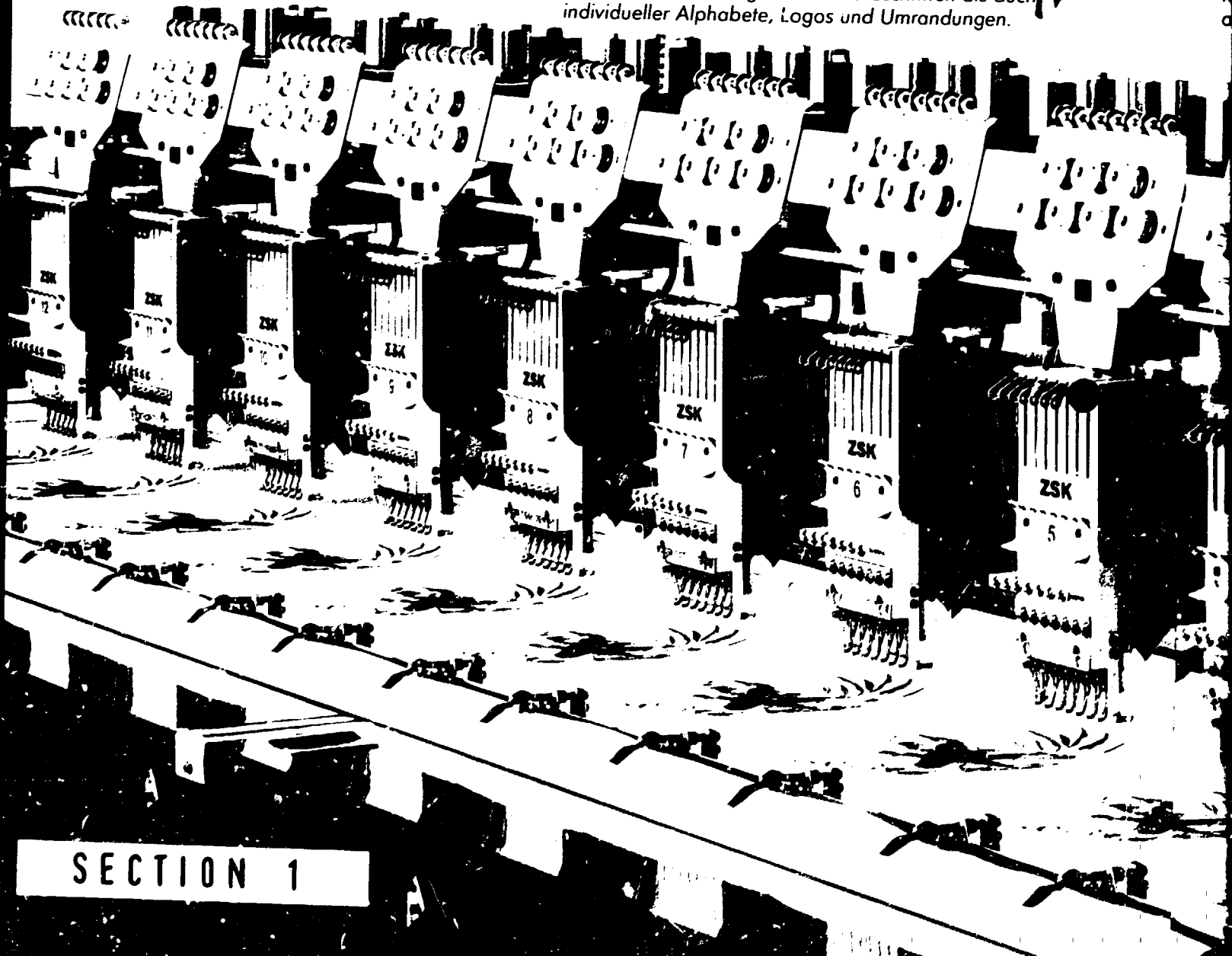


SERIE 172 SERIE 174

Die Universal-Stickmaschinen der Serien 172 und 174 repräsentieren den zukunftweisenden Entwicklungsstand der Sticktechnologie unserer neuen Hochleistungsmaschinen des ZSK Multi-Sticktronic-Programms. Maschinentechnik und elektronische Steuerung bieten nahezu unbegrenzte Möglichkeiten für die wirtschaftliche Fertigung hochwertiger Einzelmotive, Bordüren oder Flächenmuster mit höchster Präzision.

Für den Einsatz variabler Bordüren- und Einzelstickrahmen sind die Serien 172 und 174 als Portalmaschinen konzipiert und wahlweise mit 12, 8 oder 6 Stickköpfen ausgerüstet. Die jeweils 7 Nadelstellen pro Stickkopf für die Mehrfarbenstickerei werden automatisch angesteuert und lassen sich auf Wunsch mit einer Fadenschneideinrichtung ausstatten. Mit Sondereinrichtungen für Bohren-, Schlaufen- und Kordelsticken wird auf die in der Praxis geforderten sticktechnischen Möglichkeiten eingegangen.

Die software-orientierte, elektronische Steuerung übernimmt die gesamte Funktionsüberwachung der Maschine und bietet dem Bediener mit dem Dialog-Bildschirm ein modernes Kontroll-Medium. Die Maschinenfunktionen werden ebenso angezeigt wie die Speicherverwaltung für 6 verschiedene Stickmuster. Neben dem Festwertspeicher für bis zu 210.000 Stiche bietet die Steuerung ein Doppel-Disketten-Laufwerk für 3½-Zoll-Micro-Disketten mit einer Speicherkapazität von 200.000 Stichen. Die Diskettentechnik ermöglicht zusammen mit der integrierten alphanumerischen Eingabetastatur sowohl die Verarbeitung von Standardschriften als auch individueller Alphabete, Logos und Umrandungen.



SECTION 1

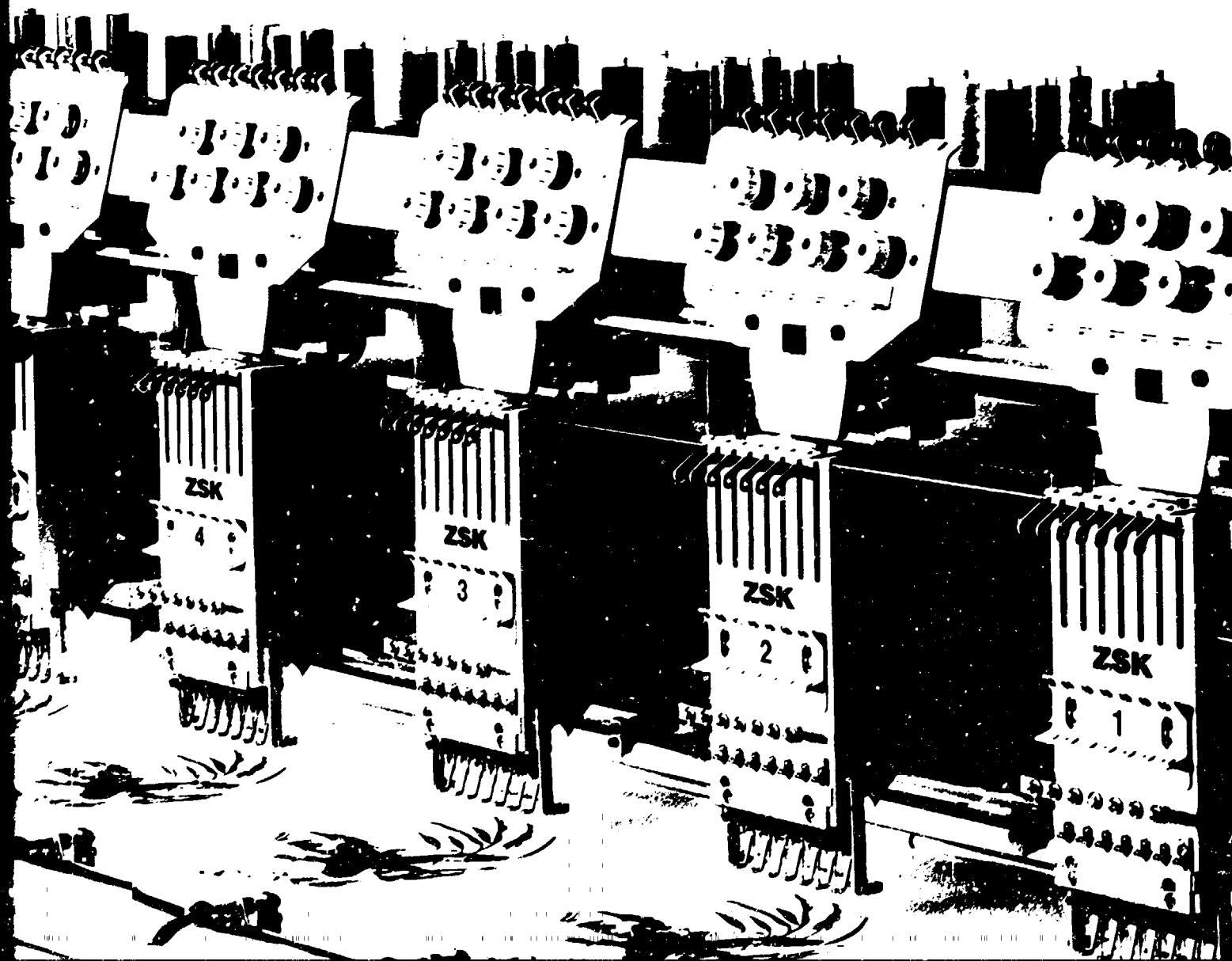
The 172 and 174 series of ZSK embroidery machines are extremely versatile and represent a new generation of embroidery machines pointing to a new concept in machine embroidery design and technique. High precision engineering and up-to-date electronic technology offer unlimited possibilities for economical production of fine, high-class embroidery whether in badge production, single motifs, fashion embroidery or continuous border design.

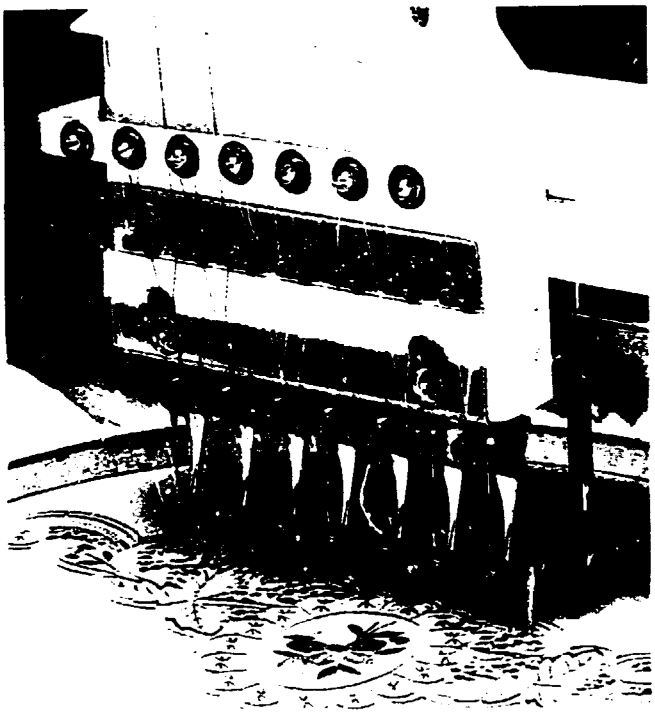
ZSK embroidery machines of the series 172 and 174 are specifically suited for operations requiring single as well as variable portal frames and can be supplied as 6, 8, or 12-head machines comprising 7 needles per head. These machines are electronically operated and are available with thread trimming device, boring device, cord embroidery device and loop-pile embroidery device as optional extras.

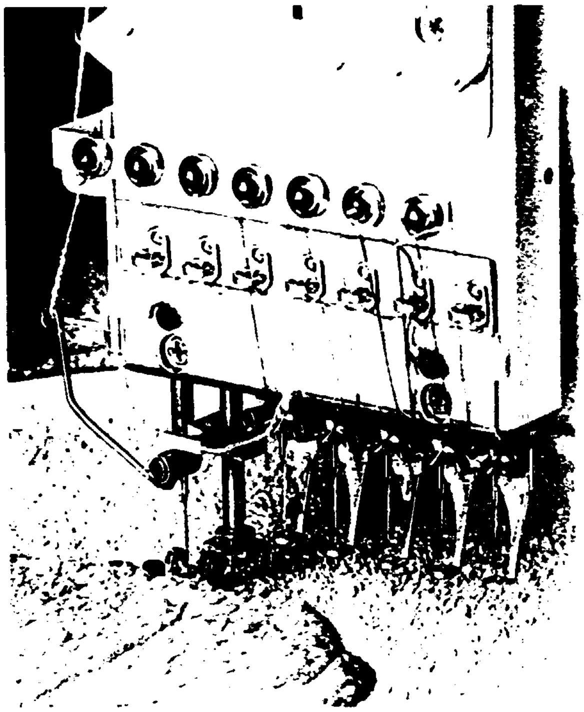
The software-orientated electronic control unit affords smooth and simple operation of the machine and offers current visual display as a modern control medium. The monitor displays the operations of the machine as well as the solid state memory of 64 individual designs up to a total of 210.000 stitches. Apart from its solid state memory the control unit offers a twin-disc drive of 3½"-micro-disc each capable of storing 200.000 stitches.

Latest software technology allows for operations combining standard design on disc as well as keyboard use to achieve greater flexibility in badge and logo production.

SECTION .2





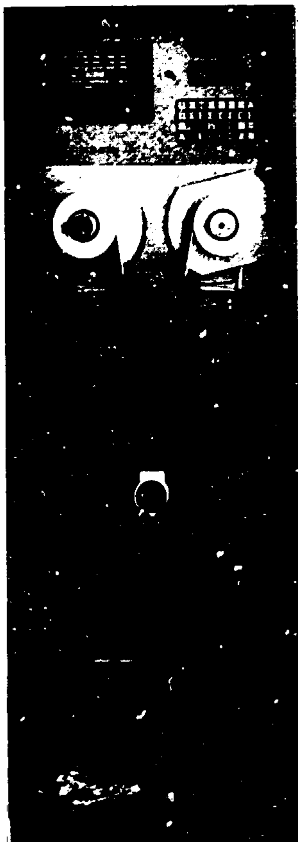


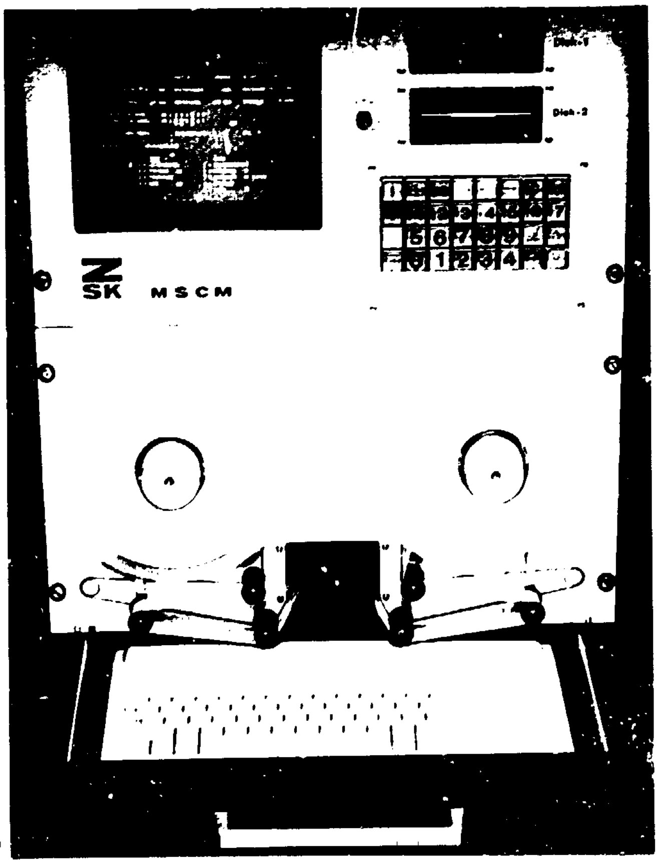
Bohreinrichtung in Verbindung mit 7-Nadel-Technik für die Herstellung von hochwertigen Stickereien ohne Einschränkung der Farbenvielfalt.

Kordel- und Schlaufenstickeinrichtung für das Auftragen und Versticken … nach vorgegebenen Konturen oder als Schlaufeneffekt in Kombination … gen Stickereien.

Boring device in conjunction with 7-needle automatic colour change technique for production of fine embroidery without loss of multi-colour choice

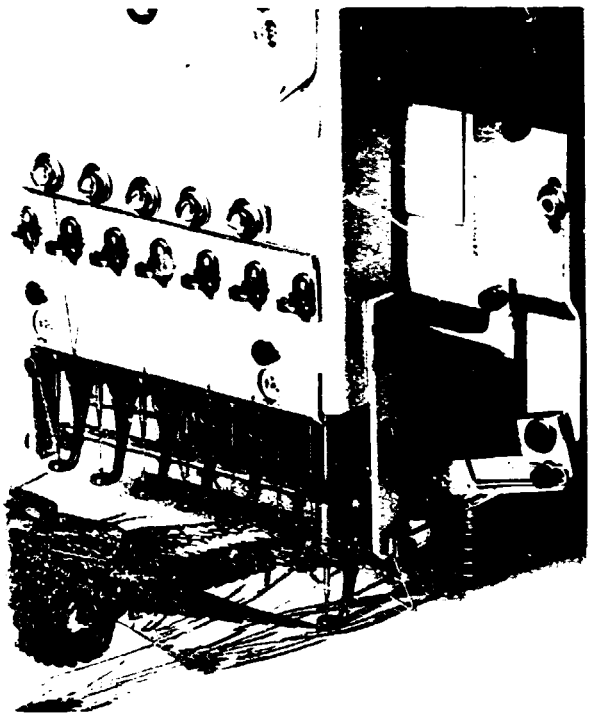
Cord and loop-pile embroidery device in combination with multi-colo…

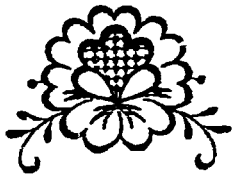




Maschinensteuerung MSC… Sticktronic-Control-Memo… Monitor) ermöglicht:

- Fehlerfreie Eingabe der … durch bedienergeführte D… über Monitor (z. Z. in de… lisch, französisch, ita… nisch
- zentrale Funktionskontr… beitsabläufe
- Stickdatenspeicher 21 000 … weiterungsfähig bis zu … Stichen in Modultechnik
- Anschluß einer 8-Kanal-… Stanze zum Duplizieren … von 8-Kanal-Lochstreifen
- Einsatz der 3-Zoll-Diskett… ke mit Eingabetastatur … grammtechnik und Spe… tung
- Eingabe bis zu 64 verschie… muster, unabhängig von der … kapazität
- Mustervergrößerung bzw. … rung auf das Doppelte bz… Hälfte (Faktor 2 bzw. 0,5
- Musterdrehungen in Schritte… Bereich von 0 bis 360 sow… spiegelungen
- Verarbeitung aller markt… Codes
- Rückfahrautomatik für F… bung bei Fadenbruch bis z… Stichen
- Anschluß von 8-Kanal-Ausga… zum Duplizieren von Datent… wie Umsetzen aller markt… Codes in Zangs-Marco-Code





...ter unter Beibehaltung des Unterfadenwächters für den Einsatz von ... mit häufigem Farbwechsel, ohne nachträgliches Versäubern der Stickerei.

...ng device by multi-colour embroidery saving hand-trimming time witho... thread control.

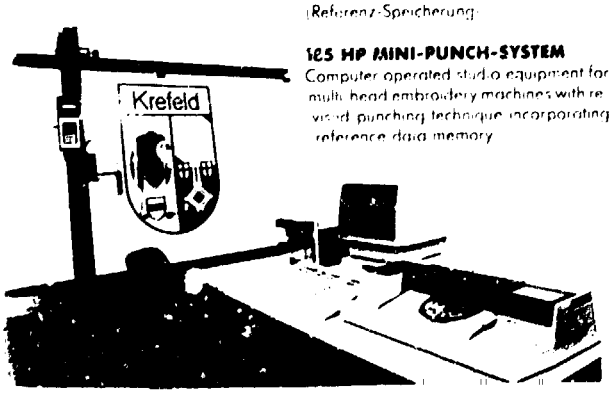
M... Control unit (Multi-Stick- ...ontrol Memory Monitor) ...ss:

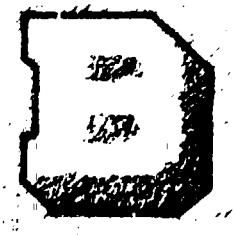
- ...ity for accurate production ... at present available in ... English, French, Italian and ...
- ...control of all operations
- ...tion memory which can be en... to a maximum of 210 000 ...
- ...ner for duplication of tapes ...connected to machine. 8-track ... be recorded on memory and ... or simultaneously as work ... are carried out
- ...drive and keyboard control ...programme production with ... facilities
- ... of 64 individual designs or ...pendent of 210 000 stitch mem... ...

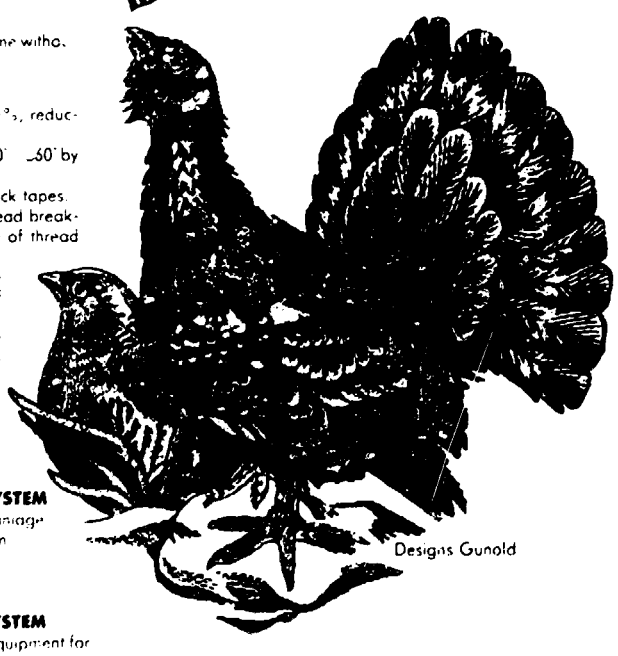
- Design enlargement by 100 %, reduction by 50 %.
- Rotation of design between 0° ...60° by degrees and mirror effect.
- Use of all commercial 8-track tapes.
- Automatic backstitch by thread breakage to 400 stitches in case of thread breakage.
- Adaption of 8 track tape punch for duplicating of data carriers as well as for conversion of all competitiv codes into Zang-/Marco-Code.

185 HP MINI-PUNCH-SYSTEM
Computergesteuerte Ateleranlage für Mehrkopf-Stickmaschinen mit neuer Aufnahmetechnik (Referenz-Speicherung)

185 HP MINI-PUNCH-SYSTEM
Computer operated studio equipment for multi-head embroidery machines with revised punching technique incorporating reference data memory







Designs Gunold

Technische Daten / Technical Data

	172/12	172/8	172/6	174/12	174/10	174/8
	12	8	6	12	10	8
	240	360	480	330	400	495
	700 × 2 880 500 × 2 880	700 × 2 880 500 × 2 880	700 × 2 880 500 × 2 880	700 × 3 960 500 × 3 960	700 × 4 000 500 × 4 000	700 × 3 960 500 × 3 960
	700 × 240 500 × 240	700 × 360 500 × 360	700 × 480 500 × 480	700 × 330 500 × 330	700 × 400 500 × 400	700 × 495 500 × 495
	0,1 – 9,0					
	bis 750					
	1,6			1,6		
	auf Wunsch für jeden Stickkopf					
	auf Wunsch für jeden Stickkopf					
	auf Wunsch für jeden Stickkopf					
	1 250			5 400		
	1 860 1 460			1 860 1 460		
	900			900		
	565 × 600 × 1 560					
	1 530 1 470	1 490 1 410	1 430 1 380	1 690 1 650	1 730 1 610	1 690 1 570
	4 200 × 2 200 × 1 900 4 420 × 1 800 × 1 900			5 600 × 2 200 × 1 900 5 600 × 1 800 × 1 900		
	2 870 2 570	2 790 2 500	2 710 2 450	3 110 2 820	3 070 2 730	3 030 2 680
	18,5 15,1			23,0 19,0		

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