

745 - 21

**Sewing unit for automatic sewing
of straight piped pocket openings
with V-corner cuts**

Instructions for operating

Installing instruction

Instructions for service

Short description of the DA-microcontrol

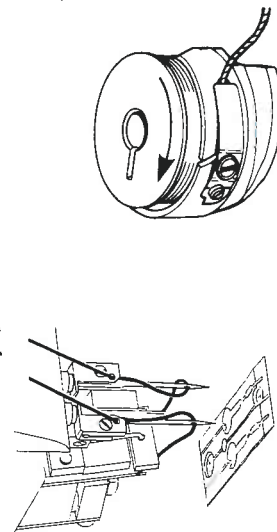
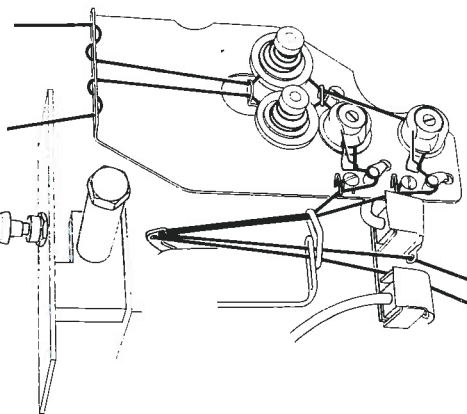
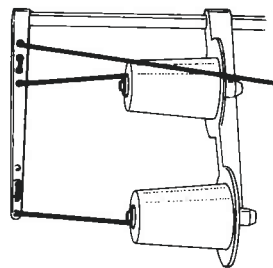
Threading

Heel back pedal to move the transport carriage into its end position.

! Main switch OFF!

Only then the fabric slide sheet can be lifted and the bobbin case cap with bobbin can be removed.

After threading pull the needle threads to the rear, clamp them with the needle thread catcher and trim. For this actuate the needle thread catcher with key 1.



Positioning and starting

The pieces are positioned and sewing is started by tipping the left pedal. This means that the positioning functions and the sewing start are operated each by pressing the pedal forwards for a short moment.

Quick switch-off

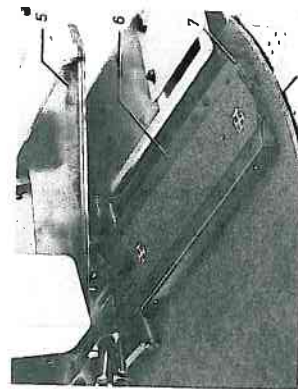
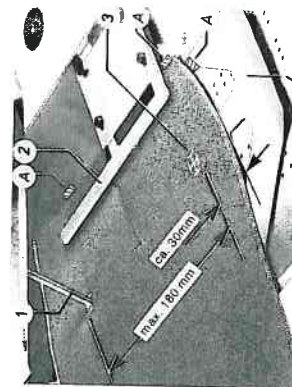
Heeling back the pedal immediately cancels the positioning functions or interrupts the sewing cycle. The same is achieved by pressing the STOP-push button. During removal of the piece main switch OFF.



When the main switch is turned on, the display first shows <---REF (reference position). By heeling back the left pedal, it is checked whether the transport carriage is at its end position. If not, it is moved into this position. Only then the machine is ready to start, which is signalled by display of the last selected adjustment.

Positioning example: Pocket opening in the right trouser back with double piping and flap.

1. Slide the pocket bag under clamping sheet 4 and position at marks.
2. Position the trouser back at rear positioning point 3 and marks A.
3. Tip right pedal. Cloth holder 1 descends. Smooth the back trouser dart area. Switch on the vacuum and lower clamp 2 by completely pressing down and holding the right pedal.
4. Tip left pedal. - The clamps 6 move forward and descend onto the piece.
5. Position the piping strip flush with the clamp front edges 7.
6. Lower the folder 5 by tipping the left pedal.
7. Place flap in shaped stop. Tip left pedal. - The right flap clamp closes (optional equipment).
8. To start sewing, tip left pedal again.



Maintenance

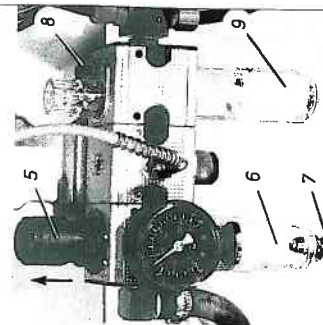
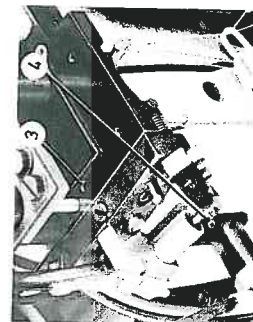
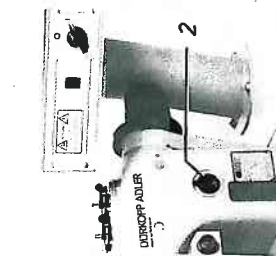
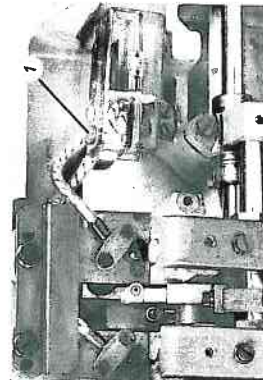
Daily cleaning or checking

- Hook area with compressed air pistol.
- Motor fan screen and after removal of the right protection sheet the filter for the step motor power output.
- Water level in water separator 6 of the maintenance unit. After having screwed in screw 7, the water must be blown off under pressure.

Weekly lubricating

Use SP-NK 10 or an oil of corresponding quality.

- Fill the oil reservoir 1 for the hook lubrication up to the mark "Max.". To achieve this tilt the machine head as described in 2.5 of the instructions.
- Fill the oil reservoir 2 for the lubrication of the machine head. Oil level should not fall below "Min".
- Oil the oiling points 3 and 4 with some drops of oil.
- Fill the oil reservoir 9 for the maintenance unit up to "Max.". Shut off the compressed air by turning handle 5 in anticlockwise direction. For filling, screw out screw 8. Then readjust the operating pressure of 6 bar.





745-21

Operating and control elements of the control box

Switch values can be entered only at end position of the transport carriage.
A change of the programme no. must be activated by STOP-push button or main switch OFF-ON.



Main switch must be off:
- When leaving the workplace/- During threading
- When exchanging the sewing tools, e.g. needle, folder, centre knife, V-corner knives, etc.

Pres selector switch for programmes

Programmes are activated by STOP-push button or main switch OFF-ON. When an illegal programme no. is entered P? appears on the display.

P01-P04 Sewing programmes

P40-P52 Programmes for adjustment aids

P57-P69 Check programmes

For adjustments and checks see short description of the Microcontrol in the appendix of the 745-21 instructions.

P01 = Sewing with or without flap

After machine start the transport carriage moves from its waiting position into the loading area.

The feeding clamps descend automatically.

The length of the pocket opening is determined by the values entered in switches L1, L2 or L3.

When sewing with flap the sewing length must be adjusted corresponding to the flap length.

Sewing lengths from 20 - 180 mm.

P02 = After sewing, automatic reversing of the transport carriage into the loading area.

The feeding clamps remain lifted.

P03 = Return transport of the material after sewing

The material is not stacked, but moves back with descended feeding clamps into the loading area. To remove and re-position the material the feeding clamps lift automatically.

P04 = Cutting the zipper after sewing

The zipper must only be positioned at the rear positioning point close to the operator. When entering P04 this point adjusts automatically.

STOP-push button for interrupting the sewing cycle.

After removal of the material, return the transport carriage by tipping the left pedal. The sewing cycle can be immediately interrupted by heeling back the left pedal.

Piece counter resetting to 0000. With main switch turned OFF the current counter reading remains unchanged.

Bobbin thread monitoring by a backwards counter that is loaded with an initial value. When 0000 is reached I - bobbin empty is displayed. After main switch OFF and bobbin change the initial value is loaded again.

When the bobbin is changed before it is empty, the initial value can be re-established with pressed Σ -push button and main switch ON.

The initial value for a bobbin load can be adjusted in P41. A bobbin thread monitor for the remaining bobbin thread (optional equipment) must be set on 0000. See short description Microcontrol.

Display with undisturbed operation:

Programme no. - sewing length in mm
 Σ = piece counter reading - I = bobbin thread reserve

In the case of an operating error or a malfunction the function sequence is interrupted and the symbol of the cause is displayed. Sewing can be restarted only after having eliminated the malfunction and the display of the piece counter reading.

<---- REF = Main switch ON and carriage not at end position. - Heel back pedal.

<----REF = Sewing cycle broken off, return the carriage. Heel back the pedal.

PEDAL STOP

<---- = Return the carriage by heeling back the pedal.

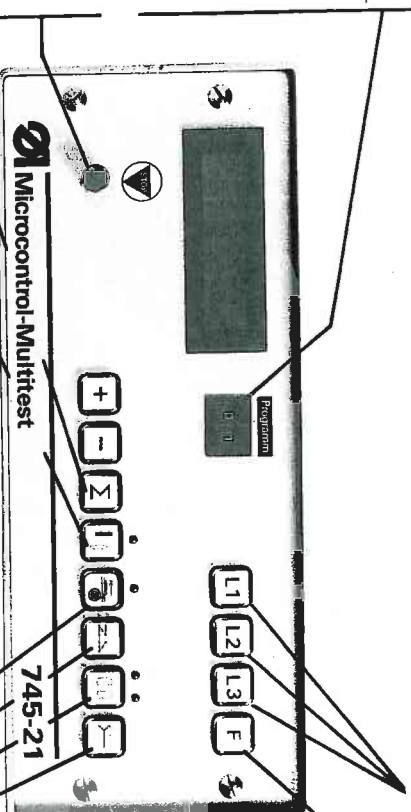
I = Bobbin empty

--x-- = Thread breakage

STOP = Protective cover not closed

For further symbols for service personnel see short description Microcontrol.

Attention! When threading, the main switch must always be OFF for safety reasons. It is only then possible to lift the fabric sliding sheet and swivel up the cover.



Positioning point for the pieces

LED luminous = positioning at front marking light (close to machine)
LED dark = positioning at rear marking light (close to operator)

Tape feeder for reinforcement strip (optional)

LED luminous = tape feeder ON
LED dark = tape feeder OFF

Seam backtracking at seam beginning and end

LED luminous = backtack ON*
LED dark = backtack OFF
* With a condensed stitch length of 1.4 mm no backtack is sewn. See short description Microcontrol.

Selecting the sewing length

Keys for the sewing lengths L1, L2 and L3.
The longest stitch length must be memorized under L1 and the shortest under L3.

Before positioning the pieces the sewing length of a selected L-key may be changed with the + or - key.

Attention! When modifying one of the sewing lengths L1, L2 or L3 the adjustment device for the V-corner knives must be readjusted.

Sequences of seams

With key F a memorized sequence of up to four seams can be called up. Any sequence of L1, L2 and L3 is possible. The seam length to be sewn next is underlined in the display.

If an asterisk * is for example behind L1, the piece is stacked after this seam length.

After having sewn the other seam lengths the piece is transported back into the loading area.

The + or - key enables one to activate a sewing length separately, for example, when the sewing cycle must be repeated after thread breakage.

For programming proceed as follows:

- Delete the previous sequence by pressing the F- and - key at the same time.
- Then, select the sewing lengths as described above.
- Press L1, L2 and L3 in the desired sequence.
- For the stacking function press the desired L-key and place the asterisk with the + key. It can be deleted with the - key.
- Memorize the selected sequence by pressing the F-key. Attention! After having pressed one of the L-keys, you have left the sequence. It can be called up again with the F-key.

Switching on and off the V-corner knives

Both LEDs luminous = V- and centre knives ON
Both LEDs dark = V- and centre knives OFF
Right LED luminous = V-knives OFF

Closing the flap clamps (optional equipment)

Left LED luminous = left flap clamp closes first.
Right LED luminous = right flap clamp closes first.
Both LEDs luminous = both flap clamps close at the same time.
Both LEDs dark = function of the flap clamps OFF.

Summary	Art.-No.		
Operating table	6075436		
Instructions for operating, installation and service			
Short description of the DA-microcontrol	6075428		
<u>Interconnection diagram</u>			
9870 745001 B	6123341		
Pneumatic circuit plan			
0797 745056	6075410		

DÜRKOPP ADLER AGPostfach 17 03 51, D-33703 Bielefeld • Potsdamer Straße 190, D-33719 Bielefeld
Telefon (05 21) 5 56-01 • Telex 932 400-0 da d • Telefax (05 21) 5 56 13 15

Art.-No.: 6070841

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The following patents and registered designs apply:

DE 26 16 738	JP 1 064 473
DE 28 03 971	JP 1 250 838
DE 28 26 426	JP 1 272 861
DE 29 35 585	JP 1 437 253
DE 32 15 408	JP 1 550 117
DE 32 43 549	JP 1 737 711
DE 34 04 758	
DE 35 12 772	TW 20 191
DE 36 44 711	TW 23 626
	TW 25 871
	TW 28 943
	TW 43 138
EP 0 006 222	
EP 0 025 181	
EP 0 025 181	US 4 137 859
EP 0 025 181	US 4 343 251
	US 4 363 105
	US 4 457 244
ES 457 858	US 4 586 123
ES 477 288	US 4 589 358
	US 4 665 843
	US 4 998 490
GB 1 530 873	
ES 457 858	
ES 477 288	
GB 1 530 873	
IT 203 069	
IT 940 618	
IT 992 959	
IT 1 077 155	
IT 1 109 783	
IT 1 160 800	
IT 1 183 205	
IT 1 191 698	
IT 1 194 222	
IT 1 194 469	
IT 1 224 423	

General safety instructions

The non-observance of the following safety instructions can cause bodily injuries or damages to the machine.

1. The machine shall only be started and operated after having read the operating instructions, and only by accordingly trained persons.
2. Use the machine only for the intended purpose.
3. Do not operate the machine without the belonging safety devices.
4. Switch off main switch or pull out the mains plug before threading, changing bobbin and change of sewing tools (such as for example needle, sewing foot, throat plate, feed dog, and, if necessary, knife and cutting block), for cleaning, maintenance work and when leaving the workplace.
In case of mechanically actuated clutch motors without actuation lock, wait until the motor stopped.
5. General maintenance work shall only be performed by accordingly trained persons, and in accordance with the operating instructions.
6. Repair, conversion and maintenance work shall only be performed by specialists or accordingly trained persons.
7. Disconnect the machine from the vacuum line in case of maintenance and repair work on the pneumatic components of the machine.
Exceptions are adjustment work and operation checkouts performed by accordingly trained persons.
8. Work on the electrical components must only be performed by skilled electricians or accordingly trained persons.
9. Work on live parts and equipment is not allowed.
Exceptions in compliance with regulation DIN VDE 0105.
10. Conversion or variations of the machine shall only be performed in accordance with all safety regulations.



It is absolutely necessary to respect
the safety instructions marked by these signs.
Danger of bodily injuries !
Please note also the
general safety instructions.



Foreword to the instruction manual

This instruction manual is intended to help the user to become familiar with the machine and take advantage of its application possibilities in accordance with the recommendations.

The instruction manual contains important information on how to operate the machine securely, properly and economically. Observation of the instructions eliminates danger, reduces costs for repair and down-times, and increases the reliability and life of the machine.

The instruction manual is intended to complement existing national accident prevention and environment protection regulations.

The instruction manual must always be available at the machine/sewing unit.

The instruction manual must be read and applied by any person that is authorized to work on the machine/sewing unit. This means:

- Operation, including equipping, troubleshooting during the work cycle, removing of fabric waste, upkeeping,
- Service (maintenance, inspection, repair and/or
- Transport.

The user also has to assure that only authorized personnel work on the machine.

The user is obliged to check the machine at least once per shift for apparent damages and to immediately report any changes (including the performance in service), which impair the safety.

The user company must ensure that the machine is only operated in perfect working order.

Never remove or disable any safety devices.

If safety devices need to be removed for equipping, repairing or maintaining, the safety devices must be re-mounted directly after completion of the maintenance and repair work.

Unauthorized modification of the machine rules out liability of the manufacturer for damage resulting from this.

Observe all safety and danger recommendations on the machine/unit! The yellow-and-black striped surfaces designate permanent danger areas, eg danger of squashing, cutting, shearing or collision.

Besides the recommendations in this instruction manual also observe the general safety and accident prevention regulations!

Part 1: Operation manual

1. Product specifications

1.1 Short description and application possibilities in accordance with the recommendations

The 745-21 is a sewing unit for automatic sewing of straight piped pocket openings with V-corner cuts. When sewing without additional parts the maximum sewing length can be 200 mm.

The sewing unit has been adjusted at the factory with a sewing length from 20 to 180 mm for sewing with additional parts.

Depending on its needle distance it is already fitted with

- a sewing equipment (E-No.),
- a folder (S-No.) for double piping,
- a folder (S-No.) for single piping,
- and the set of feeding clamps.

Thus, the sewing unit is operational with its standard equipment.

For details of the sewing equipment and folders for the different applications see the equipment sheets of the 745-21. Please direct your enquiries to our DÜRKOPP ADLER branches.

The entire work cycle of the sewing unit is controlled electronically and pneumatically in a preselected sequence of programs by means of the DÜRKOPP ADLER Microcontrol.

It incorporates the testing and monitoring system Multitest. This is enabled by a micro-computer, which does not only control, but also monitor the sewing process and shows operating errors and malfunctions on the display. Special programs facilitate mechanical adjustments and enable to check the input and output elements without additional measuring instruments.

The optimum design of the workplace and the new step motor technology contribute to the high productivity of the 745-21.

When sewing a sequence of pockets, one can predetermine, after which seam the piece will be stacked. A special sewing program with reverse material feed feeds the sewing piece back to the loading area, if it is not to be stacked. This reduces the handling time, specifically for shorter pieces that cannot be stacked.

Piping strips and additional parts, such as flap, pocket bag or facing are positioned manually on the feeding clamps. See also section 2.18 "Loading method for the trouser production".

For sewing pocket openings with flap, flap clamps with stopper are available as optional equipment. Here, the flap length must correspond to the set sewing length.

A variety of optional equipment enables to equip the machine depending on the desired application. See also section 1.3 "Optional equipment for various applications".

1.2 Technical data

Nominal voltage

The end digit of the subclass designation stands for the nominal voltage of the sewing unit, eg

745-21-11 for 3 x 380-400V + N, 50 cycle (Hz)

745-21-12 for 3 x 220-230V, 50 cycle (Hz)

745-21-13 for 3 x 220-230V, 60 cycle (Hz)

745-21-14 for 3 x 415 + N, 50 cycle (Hz)

The nominal voltage (operating voltage) of the standard version of the sewing unit is 3 x 380-400V + N, 50 cycle (Hz).

The nominal voltage (operating voltage) for which the sewing unit was designed is found on the smaller name plate, which is attached on the front to the right of the bar under the table top.

Next to it, the larger name plate is located, listing the voltage and current ranges for operating the sewing unit, when the transformers and motors are reconnected accordingly.

For the operation with other mains voltages, observe the specifications in the enclosed circuit diagram 9870 745 001B and reconnect accordingly. The conversion parts required depending on mains voltage and cycle (Hz), such as eg pulley, V-belt or protection switch insert are available on request.

In this case, the old nominal voltage specified on the smaller plate must be crossed out and the new one is to be entered.

Fluctuations in the mains voltage of $\pm 10\%$ must not be exceeded.

The transformers m253, m254 and m255 have connections for 200, 230 and 240V. Depending on whether the mains tends to over- or undervoltage, the connection 200 or 220V is used with a mains voltage of 208V, and the connection 220, 230 or 240V is used with a mains voltage of 230V.

In the case of a mains supply without neutral N, formerly called Mp, the neutral N can be generated by a neutral-producing transformer, order no. Z135 273.

With a mains supply of 230-240V the sewing lamp must be connected to the 11V connection of the transformer m252.

Sewing motor

Kobold-Posistop-Motor

Motor type: POKD 13-0/S51

3 x 220-240 / 380-415V, 50/60 cycle (Hz)

Order no. 798 3212a

Motor capacity P2: 0.55KW

Speed: 2800 rpm

Synchronizer type:

PI 42 for needle position

Motor protection switch a252:

Adjustment for 200V three-phase current 4.0A

230V three-phase current 4.2A

400V three-phase current 2.5A

415V three-phase current 2.7A

220V three-phase current 4.2A

380V three-phase current 2.5A

Machine head 935-246-11

Twin needle lockstitch version with needle bars engageable and disengageable only jointly.

Depending on the E-Nr., needle distances 8, 10 or 12 mm.

Further needle distances on request.

Large horizontal hooks.

Speed: Can be changed over to 2500 spm
2750 spm and 3000 spm.

Factory setting is 2750 spm.

For changeover see short description of the Microcontrol in the appendix.

Stitch length: Can be changed over to 2.5 or 3.2 mm.

The longer stitches lead to a shorter cycle time.

For changeover see short description of the Microcontrol in the appendix.

Stitch condensing: Can be changed over to 0.8 or 1.4 mm.

The longer stitches avoid the perforation of delicate fabrics or eg leather.

For changeover see short description of the Microcontrol in the appendix.

Seam backtacking:

By swinging the needle bar frame at the seam beginning and seam end.

To be engaged and disengaged at the front panel of the control box.

Centre knife:

Stroke 7 mm, counter knife in the throat plate.

Needle system: 2134-85

Sewing length:

20-200 mm when sewing pocket openings without additional parts.

20-180 mm (factory setting) when sewing pocket openings with additional parts.

Attention! When the sewing lengths L1, L2 or L3 are changed at the control box, the adjustment device for the V-corner knives must be set accordingly. See section 2.15.

Compressed air

Operating pressure 6 bar.

Air consumption approx. 4.7 NL per cycle.

1.3 Optional equipment for various applications

Equipment example: Trouser pockets; single and double piping, Unit Production System or production with in-house bundle trolley

Recommended optional equipment:

794 12222 Down-holder, pocket bag clamp and waistband clamp

794 2101 Table extension

794 1701 Blowing device

Further optional equipment:

792 11162 Right-hand flap clamp

792 5941 Quick clamp adjustment for frequent change between single and double piping

794 2921 Device for automatic feeding of the reinforcement strip

794 1245 Down-holder and pocket bag clamp
Here, 794 1222 is not required.

722 4241 Vacuum to facilitate positioning of the material

Cl. 722 Centrifugal blower, if no vacuum line exists in-house

794 2001 Thread monitor

794 701 Roll-off device, if the supply of compressed air for blowing out the material is insufficient, 794 1701 is not required

792 11243 Right-hand clamp of the K20 for the button loop

Optional equipment for the production with bundle clamp:

794 2151 Table extension for bundle clamp, 794 2101 is not required

794 2201 Pneumatic bundle clamp

Optional equipment for production without bundle clamp:

794 1801 Flip stacker

Equipment example: Outside and lining pockets, double/single piping with or without flap, production without bundle clamp

Recommended optional equipment:

792 11161 Left-hand flap clamp for additional parts, such as flap (with double piping) or pocket bag

794 1801 Flip stacker

794 2101 Table extension

794 2921 Device for automatic feeding of the reinforcement strip

Further optional equipment:

793 22068 3rd marking lamp for better control of the position of the pocket cut in the front piece or for the different positioning points in the lining

792 11162 Right-hand flap clamp for additional parts, such as flap (with single piping) or pocket bag

722 4202 Vacuum for easier and better positioning of the material

Cl. 722 Centrifugal blower, if no vacuum line exists in-house

794 2001 Thread monitor

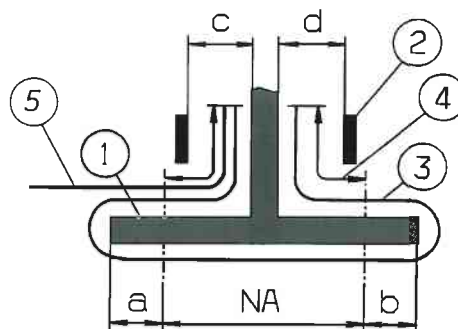
2. Operating

Prior to starting the sewing unit, make sure to observe the hints in the following sections and in the enclosed instruction sheet.

2.1 Flap and piping overlap

To assure the unhindered passage of the material pieces at the folder, the maximum overlaps of piping and flap shown in the sketch must not be exceeded. For the piping strip width see the table in section 2.3.

- ① Folder
- ② Guide sheet at the folder
- ③ Piping strip
- ④ Overlap, max. 20 mm
- ⑤ Flap



2.2 Length and positioning of the piping strip

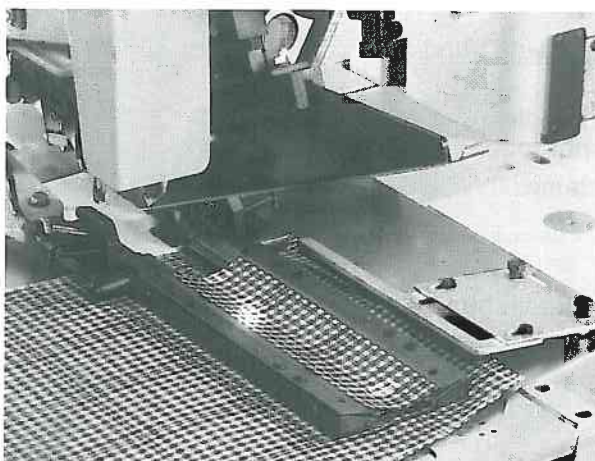
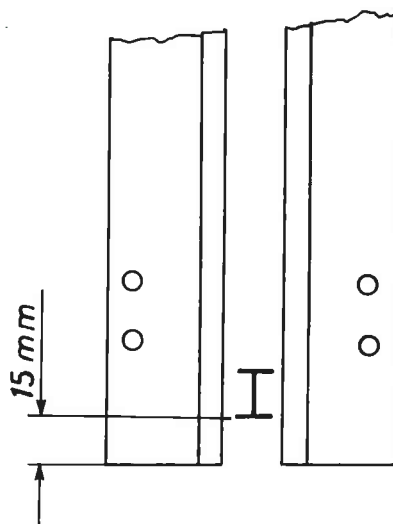
Usually, the backtrouser pieces are positioned at the "rear positioning point", and thus, the piping strip is positioned at the front edge of the clamp.

The front end position of the transport carriage has been adjusted at the factory such that a distance of 15 mm is between the "rear positioning point" (light spot toward the operator) and the front edges of the feeding clamps.

The set sewing length in mm plus 2 x 15 mm equals the piping strip length.

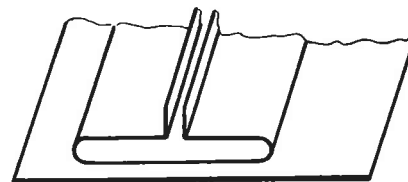
Should the piping strip project further beyond the seam beginning and seam end, the following solutions are possible:

Positioning the piping strip slightly more to the front beyond the clamp front edge or adjusting the front end position of the transport carriage slightly more to the front, as described in section 2.1 of the service manual.



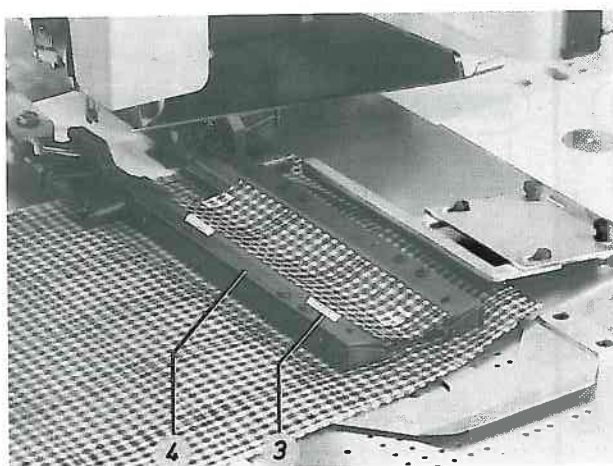
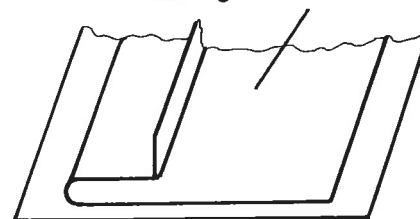
Depending on the pocket sewing method, the piping strip can be positioned in different ways.

In the case of a double piping, the piping strip is to be positioned at the centre of the feeding clamps.



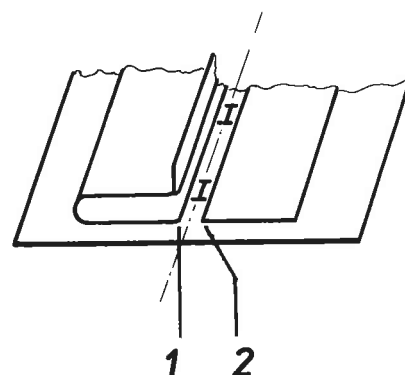
In the case of a l/h single piping with simultaneously grown-on facing, the positioning marks 3 are to be stuck on the l/h folding sheet 4. With this sewing method, it is necessary to disable the right folding sheet by pulling out the compressed air line.

simultaneously grown-on facing



In the case of a l/h single piping and a separate facing positioned on the right, their edges 1 and 2 are to be positioned up to the centre of the light spots.

Make sure that on the one hand the edges 1 and 2 are caught by the needle sufficiently and on the other are not yet cut by the centre knife.



The facing can be positioned on the material piece and clamped by the r/h feeding clamp.

In the case of other sewing methods, eg when the facing is to be turned up at the folder, it must be positioned on the feeding clamps.

This requires the optional "right-hand" flap clamp.

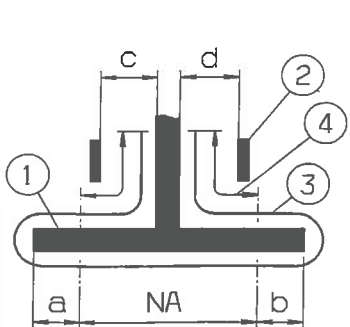
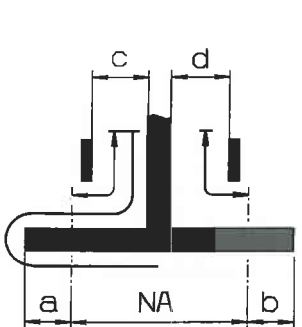
2.3 Max. piping strip widths and fabric passage at the folder

The piping strip width for double pipings follows from the needle distance NA and the piping widths a and b.
The width of a single piping must be correspondingly smaller. See "max. piping strip width" in the table.

Fabric passages to the d = right or c = left of the folder vary, depending on the needle distance and folder (S-No.), and must be taken into consideration.

The table below shows the folders (double or single piping) available at the time when this manual was printed.

Please direct your requests for further folders for your sewing unit to the DÜRKOPP ADLER branches by specifying the needle distance.

Folder (S-No.)	Double piping	L/h single piping	Fabric passage at the folder		
			max. pi- ping strip width	c l/h	d r/h
for men's tailored jackets and lining pockets					
s88		7,0 8 1,5	40	1,0	2,5**
s87	3,5 8 3,5		64	2,5*	1,0
or					
s82		8,5 10 1,5	47	2,0	3,5**
s62	4,0 10 4,0		70	3,5*	2,0
or					
s83		10,5 12 2,5	52	3,0	4,5**
s84	5,0 12 5,0		76	3,0	4,5**
for trouser production					
s82		8,5 10 1,5	47	2,0	3,5**
s85	4,0 10 4,0		70	2,0	3,5**
or					
s83		10,5 12 2,5	52	3,0	4,5**
s84	5,0 12 5,0		76	3,0	4,5**

* The larger fabric passage for flap or other additional parts is on the left of the folder

** The larger fabric passage for flap or other additional parts is on the right of the folder

① Folder

② Guide sheet at the folder

③ Piping strip

④ Max. overlap 20 mm

2.4 Sewing with flap

To enable the simultaneous attaching of flaps or other additional parts, a "right-hand" flap clamp can be mounted, when trousers are produced, and a "left-hand" flap clamp, when jackets are produced.

See section 1.3 "Optional equipment for various applications".

Should your sewing unit have both flap clamps, the following can be selected using key 00 :

- a) which clamp closes first,
- b) whether both clamps close at the same time or
- c) whether they should be switched off.

Flap clamp 3 is supplied with an unmachined part 4, which is to be worked-on to suit the flap shape and to serve as shaped stopper.

Please note! The flap length must correspond to the desired length of the pocket opening.

Sewing with r/h flap (trouser production)

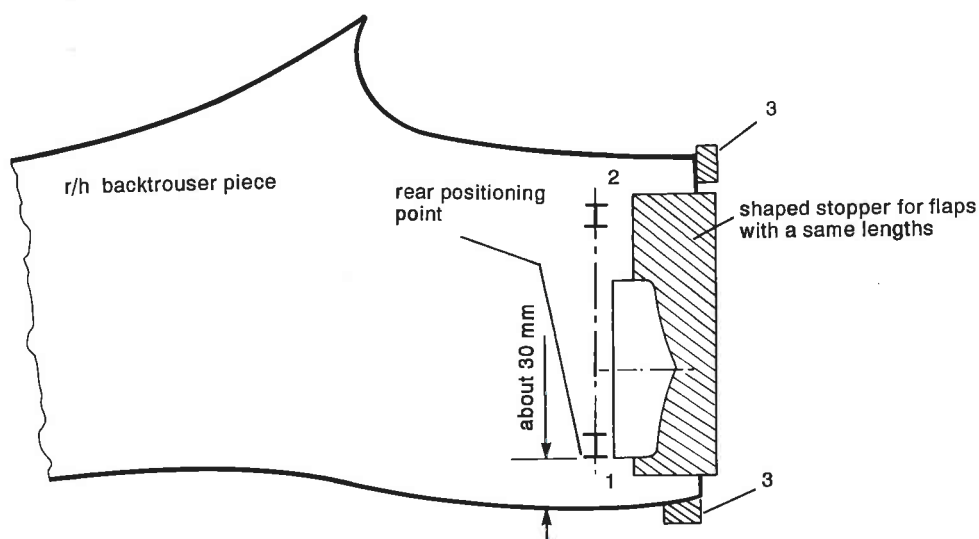
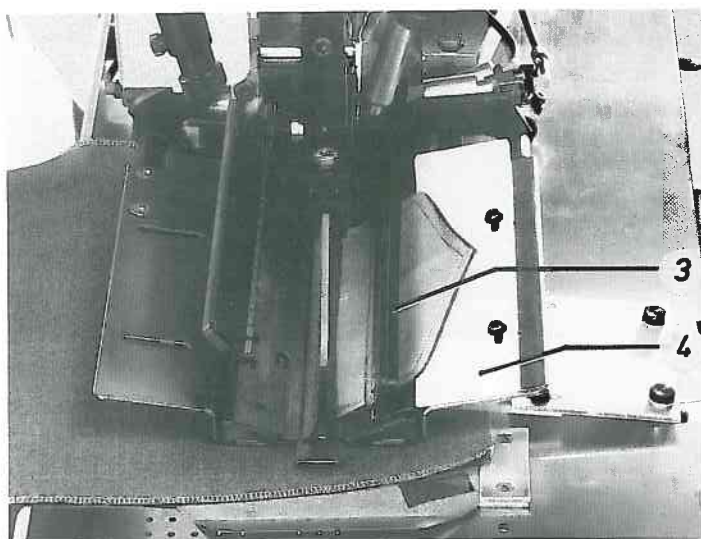
For the production of trousers the flap must always be positioned at the "rear positioning point" (light spot 1). This is independent of whether a r/h or l/h backtrouser piece is sewn.

The positioning marks 3 for the backtrouser should be stuck accordingly on the fabric sliding sheet.

The sketch shows the positioning of a r/h backtrouser piece with flap.

L/h backtrouser pieces are positioned mirror-inverted, while the flap is always positioned identically.

The "rear positioning point" is a fixed point that also applies for other sewing lengths (other flap lengths).



2.5 Swinging up the cover and removing the fabric sliding sheet

With turned on main switch, the cover 3 and fabric sliding sheet 2 are locked in position pneumatically.



For safety reasons they are only unlocked and can thus be raised, when the transport carriage is in end position and the main switch is turned off.

- With main switch On, heel back the pedal.
- The transport carriage moves into its rear end position.
- Main switch Off.

Swinging up the cover

By raising the cover, the switch b59 "cover check" opens.

All control functions are being interrupted. If the main switch is turned on when the cover is raised, STOP appears on the display.

The machine can only be started when the cover is closed.

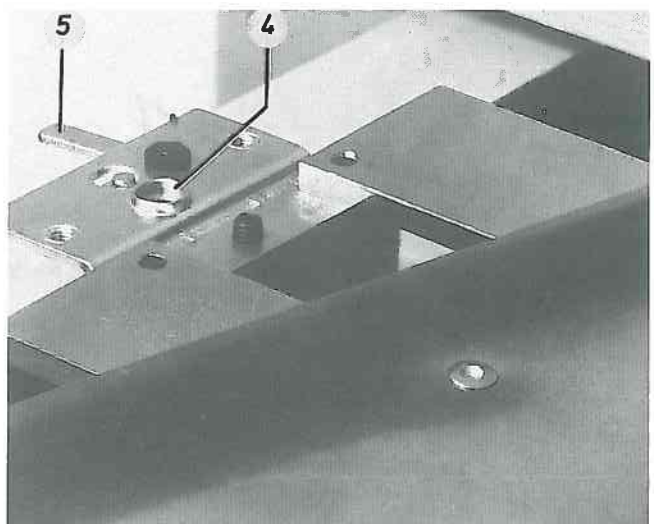
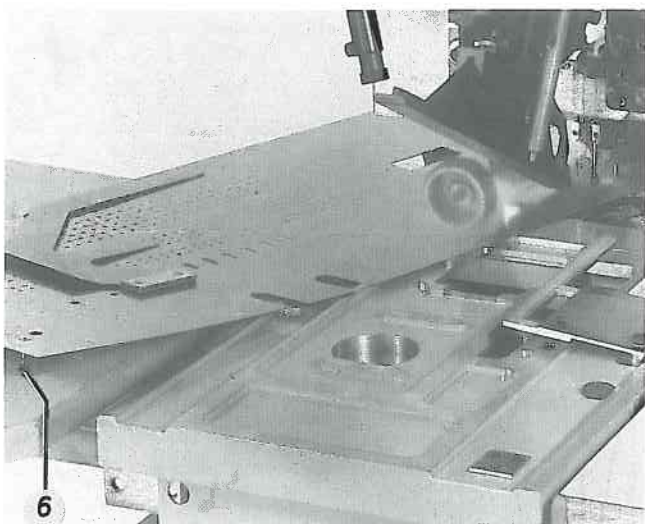
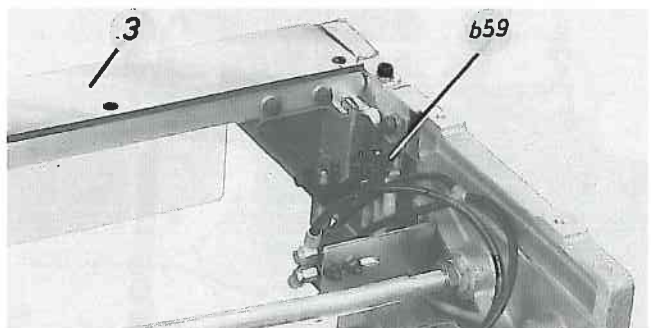
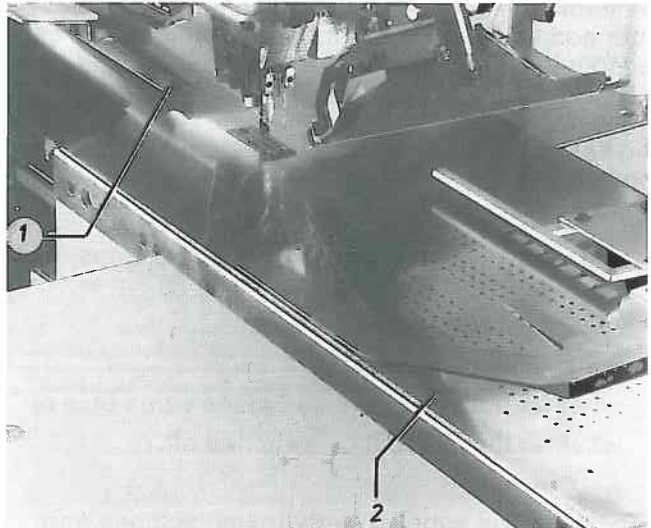
Removing the fabric guiding sheet



Caution! While removing the fabric sliding sheet, keep hands clear of the V-corner knives 1, as there is danger of cutting injury.

To change the bobbins, it suffices to raise the fabric sliding sheet in the area of pin 6 and to swing it to the left.

To remove the fabric sliding sheet altogether, operate the lever 5 and lift the sheet also at the rear from its seat 4.



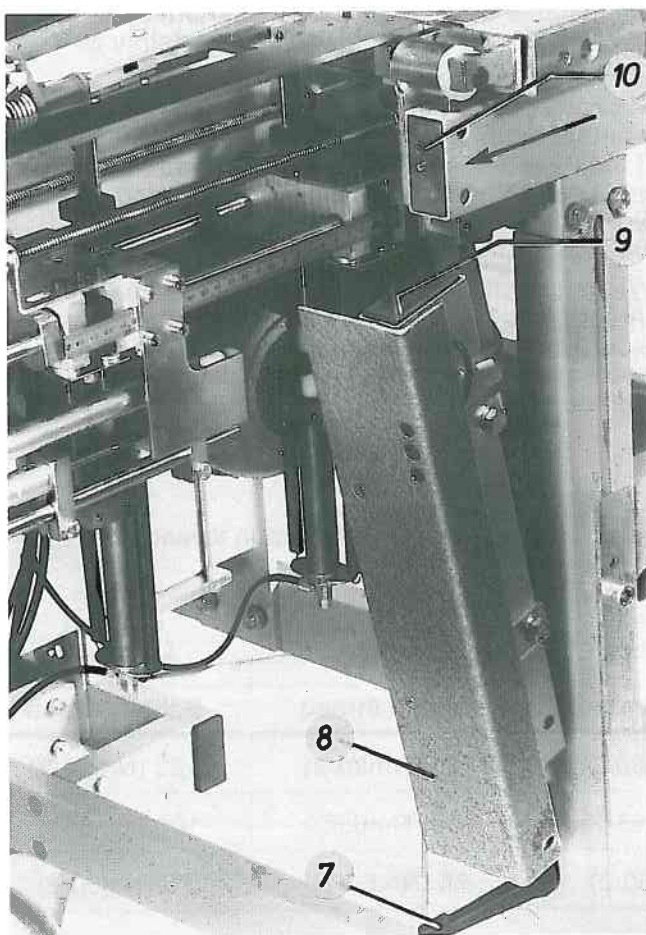
2.6 Tilting the machine head backward

Move the transport carriage into its rear end position by heeling back the left pedal.



Turn off main switch!

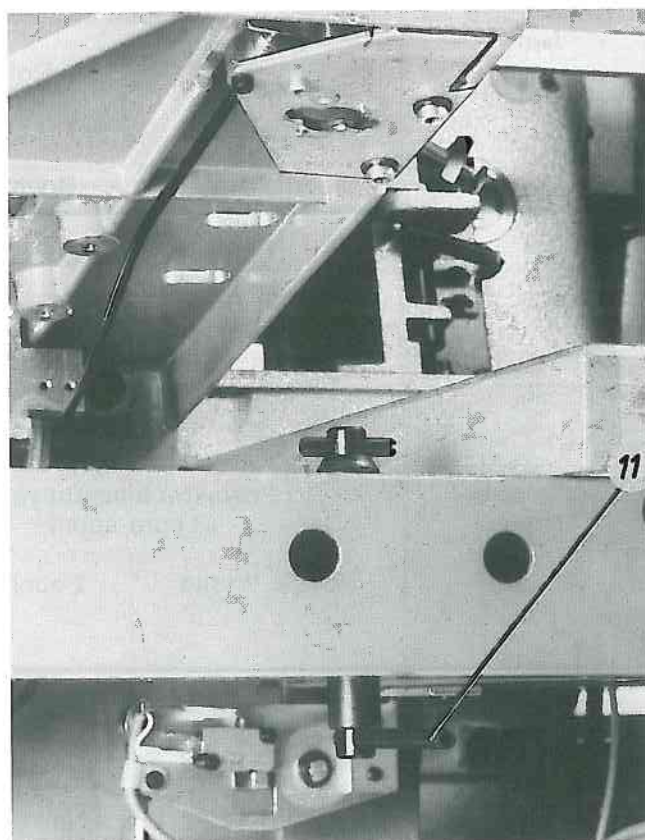
Loosen the lever 7 until the angle 8 is completely loosened. Pull the angle in the arrow-indicated direction to the rear until it stops and swing it downward.



Warning! Before unlocking the stop lever 11 by turning it in clockwise direction, hold the machine bed, since otherwise the machine head and machine bed swing to the rear by their own weight.

The space under the machine plate is thus accessible for maintenance and cleaning.

After the machine head has swung to the front and is locked in position, re-fasten the angle 8 such that pin 9 enters hole 10. Tighten the lever 7.



2.7 Needles and threads

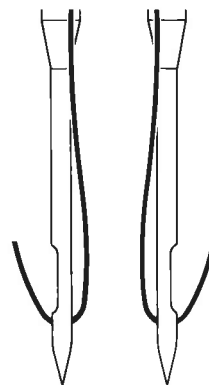
Needles of the needle system 2134-85 are to be used.

Recommended needle size:

Nm 90 thin material

Nm 100 medium material

Nm 110 heavy material



Turn off main switch!

When installing the needles make sure that, seen from the operator's side of the machine, the scarf of the left needle shows to the left and the scarf of the right needle shows to the right.

High sewing reliability and good sewability is obtained by using corespun thread, specifically

- with double polyester continuous filament cores covered with polyester fibres, eg Epic poly poly, Rasant x, Saba C and others;
- with double polyester continuous filament cores covered with cotton, eg Frikka, Koban, Rasant and others.

If these threads cannot be obtained, the polyester fibre threads or cotton threads given in the table can be sewn as well.

Depending on the needle size we recommend the following thread size:

The designation of the double corespun threads, frequently offered by thread makers under the same name as triple polyester filament core threads (3 core-spun), leads to uncertainty as regards twist and thread size.

In case of doubt, untwist the thread to find out, whether it has 2 or 3 cores.

If the thread cone of a corespun thread has eg the label no. 120, this corresponds to a thread size of Nm 80/2.

See values in brackets in the table.

When monofilament threads are sewn, needle threads and bobbin threads can have the same size. The best results are being obtained with soft and extensible threads with a thread size of 130 Denier.

Needle size Nm	Corespun thread		Corespun thread	
	Polyester continuous Label no.	<u>Polyester-</u> <u>covered</u> Label no.	Polyester continuous Label no.	<u>Cotton</u> <u>covered</u> Label no.
	Needle thread	Bobbin thread	Needle thread	Bobbin thread
90	120 (Nm80/2)	120 (Nm80/2)	120 (Nm80/2)	120 (Nm80/2)
100	100 (Nm65/2)	100 (Nm65/2)	100 (Nm65/2)	100 (Nm65/2)
110	75 (Nm50/2)	75 (Nm50/2)	75 (Nm50/2)	75 (Nm50/2)

Needle size Nm	Polyester filament yarn (3 core-spun)		Cotton thread	
	Needle thread	Bobbin thread	Needle thread	Bobbin thread
80	Nm120/3	Nm120/3	NeB 60/3-80/3	NeB 60/3-80/3
90	Nm80/3-120/3	Nm80/3-120/3	NeB 50/3-70/3	NeB 50/3-70/3
100	Nm70/3-100/3	Nm70/3-100/3	NeB 40/3-60/3	NeB 40/3-60/3
110	Nm50/3-80/3	Nm50/3-80/3	NeB 40/4-60/4	NeB 40/4-60/4

2.8 Winding the bobbin threads

The threading path for the bobbin threads from the thread stand to the bobbin winder is shown in the figures below.

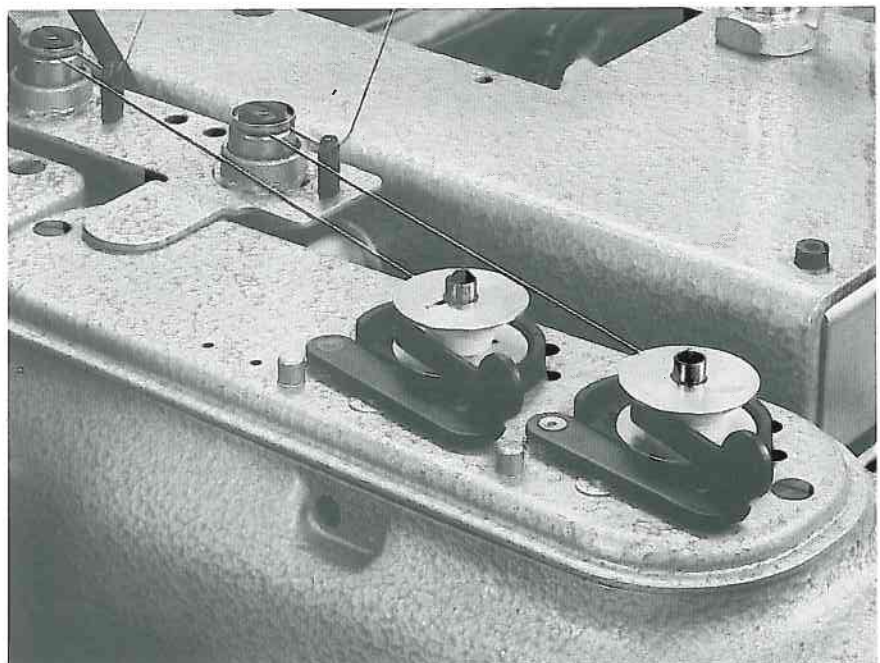
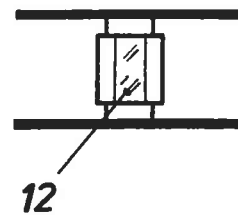
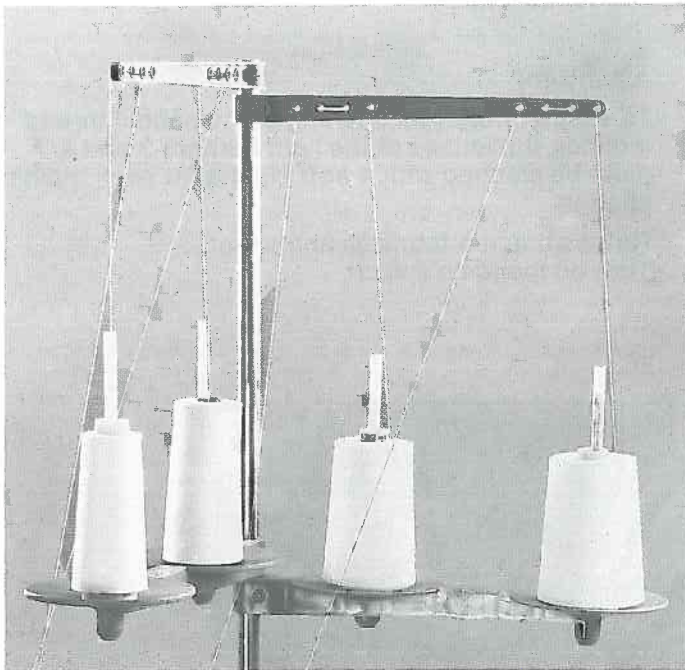
Threads still remaining on the bobbin must be removed before rewinding the bobbin.

Wind the bobbin threads in clockwise direction into the lower or upper groove of the bobbin hub. The filled groove of the bobbin hub assures a secure bobbin winding start, also with mono-filament threads.

After the message I = "Bobbin empty" from the thread monitor, this thread remainder always suffices to complete the pocket opening.

The reflecting flat 12 of the bobbin must always be kept clean.

If the thread is monitored with the standard backward counter, an initial value must be set once. See section 2.12.



2.9 Changing the bobbins

As the backward counter reaches the reading 0000, two flashing bobbins appear on the right in the bottom line of the display.

If the machine features a thread monitor, the respective bobbin flashes.

The started pocket opening is completed, the corners are cut and the piece is transported out of the sewing area and stacked.

The transport carriage moves into its rear end position, and can only be restarted after the bobbin has been changed.

 When changing the bobbin turn off the main switch!

It is only then possible to raise the fabric sliding sheet and swing it to the left, to gain access to the hooks.

Lift the bobbin case cap in the area 1. At the same time the bobbin case flap 2 is lifted as well, so that the bobbin case cap can be removed with the bobbin.

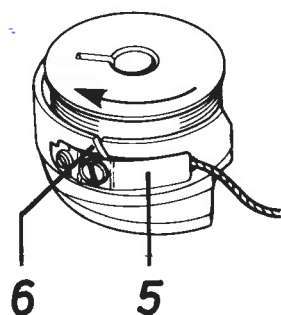
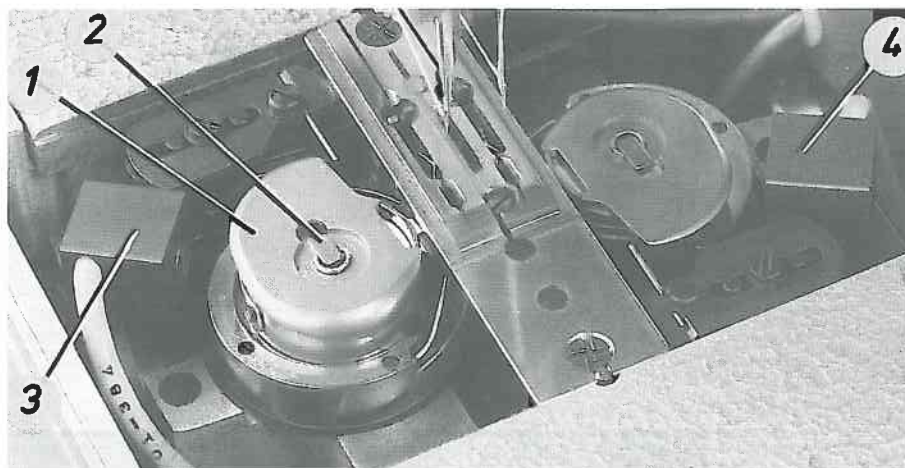
The fully wound bobbin is placed into the bobbin case cap and the thread is pulled into the slot 6 under the tension spring 5, so that the bobbin rotates against the direction of rotation of the hook. See figure.

Next, insert the bobbin case cap with the bobbin into the bobbin case base and close the flap 2. Make sure that a ca. 40-mm-long thread tail hangs out of the bobbin case.

Attention!

To ensure proper functioning of the bobbin thread monitor, the lenses of the light barriers 3 and 4 must be cleaned with a **soft** cloth after each bobbin change.

Re-position the fabric sliding sheet.
Turn on the main switch.



2.10 Threading and monitoring the needle thread

The needle thread is monitored by the switches 2 and 3. In the case of needle thread breakage that is, the thread eyelets 4 drop down and -x- appears on the display.

When the thread breaks within the seam, centre knife and V-corner knives disconnect immediately. The machine head positions. Should the thread break while it is being pulled, the V-corners will be cut and the piece stacked.

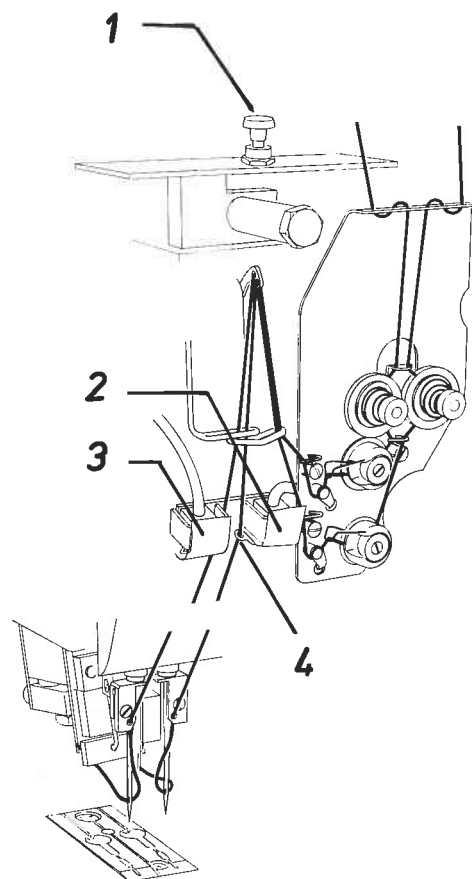
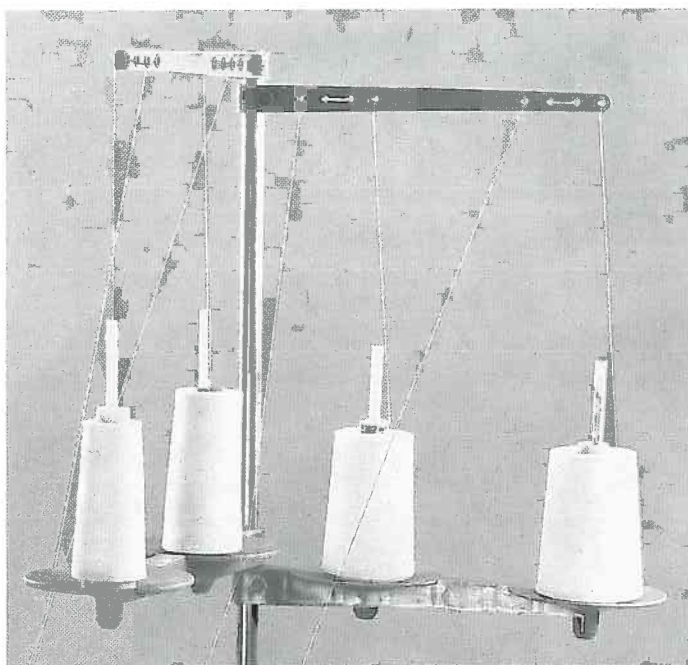
In both cases the transport carriage stops at the rear.



When threading the needle thread, turn off the main switch!

For threading proceed according to the figures below.

When threading is completed, pull the needle threads to the rear, clamp them in the needle thread catcher and trim. To do this, activate the needle thread catcher by key 1.



2.11 Regulating the thread tensions

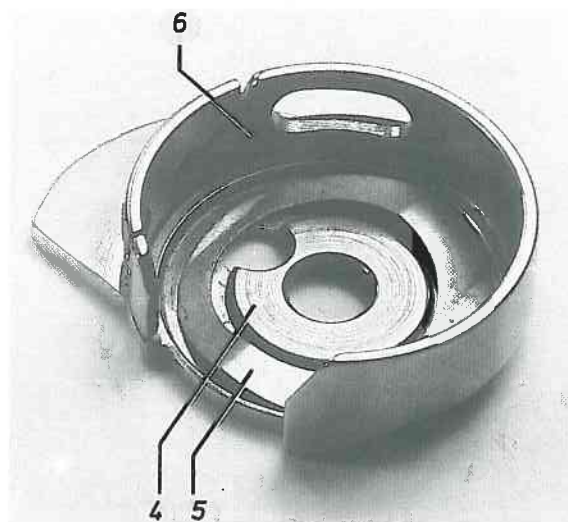
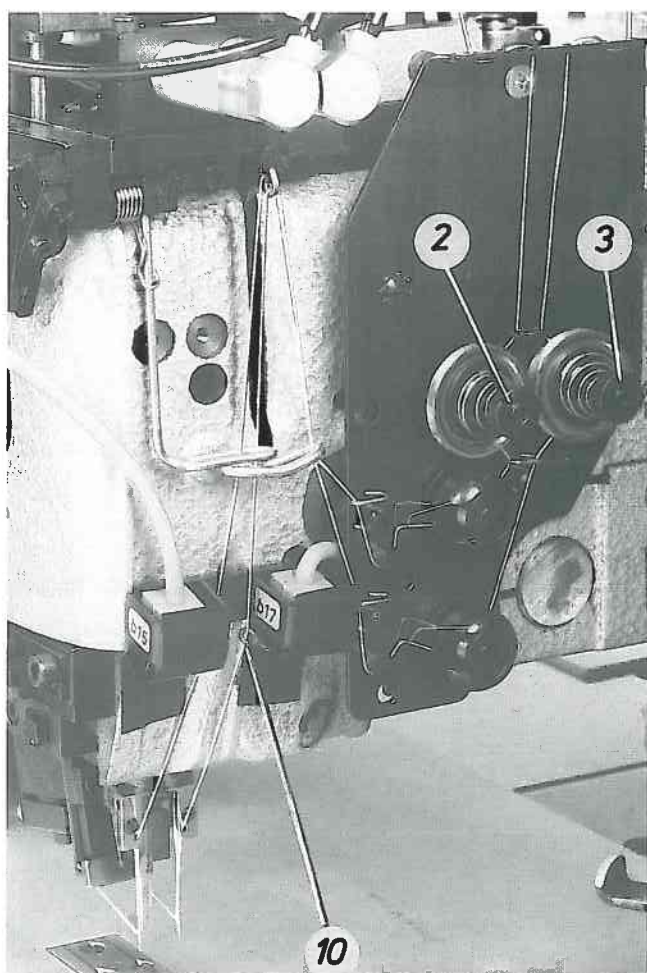
The threads should be interlaced in the middle of the material.

Thick and hard material requires tighter thread tensions than thin and soft material. In thin material, too tight thread tensions cause seam pucker and thread breakage.

Initially, set a minimum bobbin thread tension. When the bobbin has been installed and the bobbin thread has been threaded through the throat plate, regular, easy unwinding must be ensured. Tighten the needle thread tension until a regular seam pattern is obtained.

Changes in the thread tension may influence the accurate position of the V-corner cut at the knife block "seam beginning".

- Regulate the r/h needle thread by nut 3 and the l/h needle thread by nut 2.
- Turning the screw 6 to the right increases the bobbin thread tension.
- When the machine head stops to position, the brake spring 5 should prevent the bobbin from over-running.
The brake force is adjusted correctly, when the brake spring juts out from the flat 4 by approx. 1 mm.
When the bobbin thread tension is adjusted, the brake force is to be considered as well.



2.12 Monitoring the bobbin thread quantity

Backward counter

The backward counter counts every fourth stitch that is sewn with the thread on one bobbin. It counts down from the initial value, which can be entered in program 41 on the right in the bottom line of the display.

Example:

- Use of a bobbin thread 100/2
- Fully wound bobbin = 18000 stitches
- $18000 : 4 = 4500$ is the initial value to be entered.
- $18000 : 65$ stitches on a sewing length of 140 mm yield ca. 270 sewn pocket openings.

This result is influenced by the following factors: Bobbin thread size, thread tension during bobbin winding and fabric thickness.

It should be possible to complete the last pocket.

When 0000 has been reached, "I = Bobbin empty" is displayed. The transport carriage stops in rear position. After the main switch has been turned off and the bobbin has been changed, the initial value is automatically re-loaded, when the main switch is turned on again.

After an early bobbin change, eg when the colour is changed (0000 has not yet been reached), the initial value can be re-established by holding the Σ -key pressed and turning on the main switch.

Thread monitor

The optional thread monitor monitors the l/h and r/h bobbin using the infrared reflecting light barriers 1 and 2.

To do this, the backward counter must be set at 0000 in program 41. See opposite under "Please note".

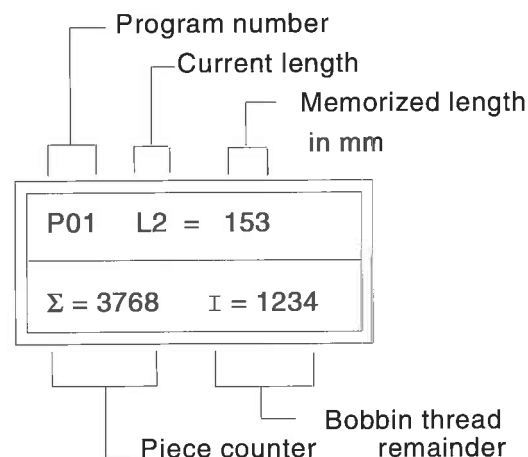
If one of the bobbins is empty, and the bobbin hub is visible, symbol "I = Bobbin empty" will appear on the control box display.

The pocket opening is completed by the remaining thread in the bobbin hub groove.

The transport carriage stops in rear position.

After each bobbin change the lenses of the light barriers must be cleaned with a soft cloth.

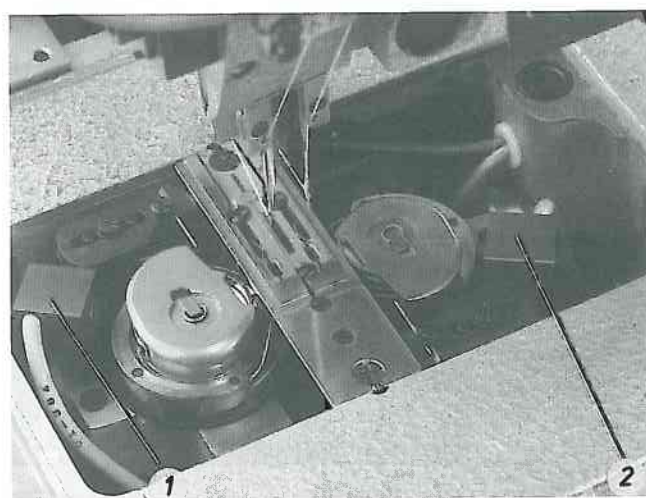
The stop signal, which is required for safety reasons during bobbin change, is deactivated by turning off and on the main switch. The sewing process can be re-started.



To activate P41 and adjust the initial value, proceed as follows:

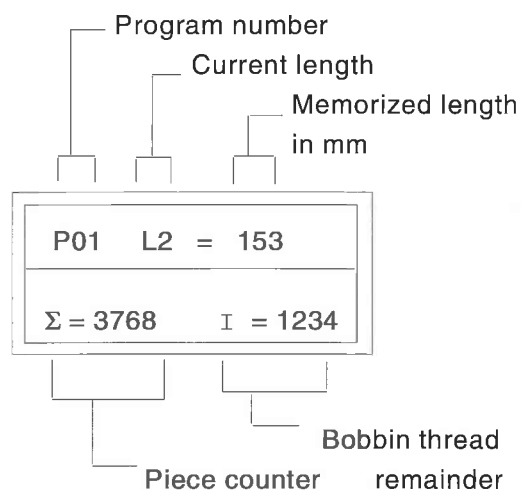
- Press "Program" key until P41 appears and activate by the STOP-key.
- The preset initial value appears on the display. The digit that flashes can be changed.
- This digit is changed using the keys + and -.
- Select the next-higher digit using the Σ -key and change just as described above.
- Re-enter the sewing program and activate by the STOP-key.

Please note! By pressing the + and - keys at the same time, the counter is set to 0000, and thus the bobbin thread monitor is deactivated.



2.13 Piece counter

The current piece counter reading is shown on the left of the bottom line on the display. The counter can be reset to 0000 by pressing the Σ -key.

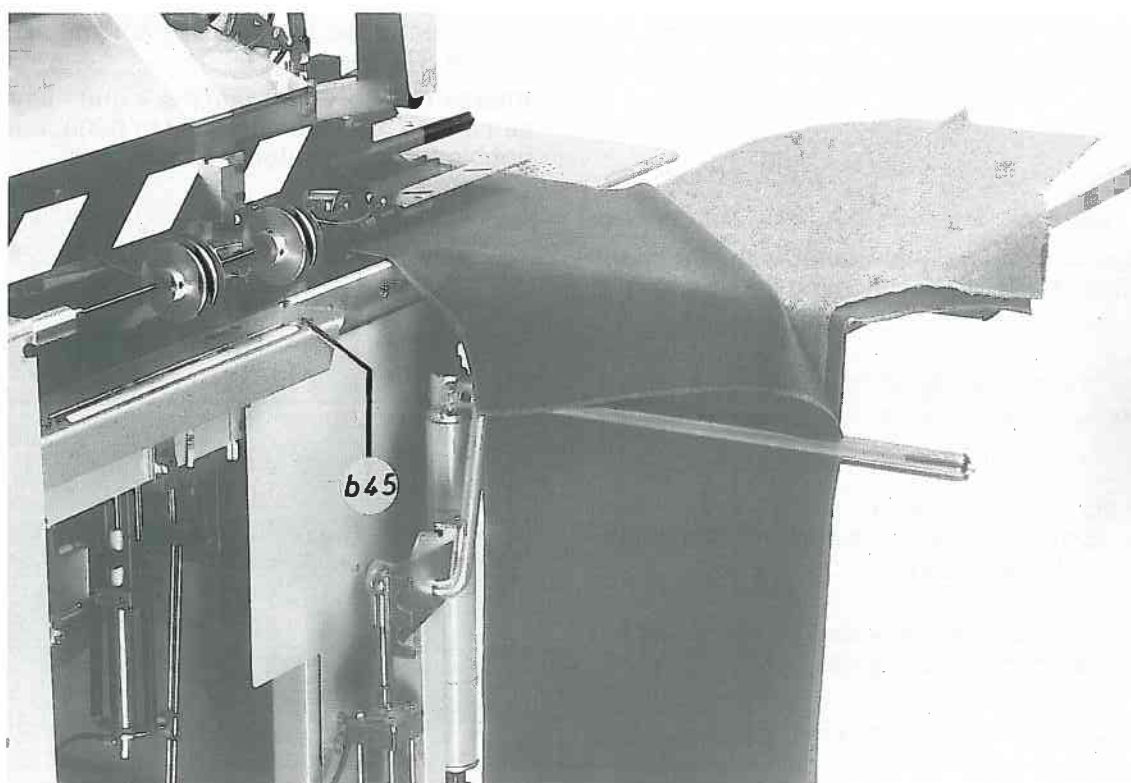


2.14 Stacker check

Stacking or blowing of the sewn piece is monitored by light barrier b45.

If the sewn piece is not fed toward the stacker, the beam between transmitter and receiver remains interrupted.

Only after the sewn piece has been removed and the beam passes freely, one can restart the machine.



2.15 Selecting the sewing length - changing the sewing length and adjusting the distance between the V-corner knives

Attention! After having changed the sewing lengths L1, L2 or L3, the corresponding distance between the V-corner knives must be reset at the adjustment device 3.

Selecting the sewing length

Three memorized sewing lengths can be called up using the keys L1, L2 and L3. The selected sewing length in mm is shown in the top line of the display.

Changing the sewing length and adjusting the distance between the V-corner knives

The sewing length can only be changed before the loading process starts and with turned on main switch.

The assignment of the three sewing lengths has been determined according to the V-corner knife adjustment device.

L1 = longer sewing length
L2 = medium sewing length
L3 = shortest sewing length

To change the sewing length, proceed as follows:

- Select the sewing length to be changed L1, L2 or L3.
- Enter the sewing length in mm using the + or - key.
- The sewing length remains memorized, until new values are entered.

The adjustment device for the V-corner knife distance features

the adjustable stopper 6 for the length L1.

the adjustable pneumatic cylinder 5 for the length L2 and

the adjustable pneumatic cylinder 4 for the length L3.

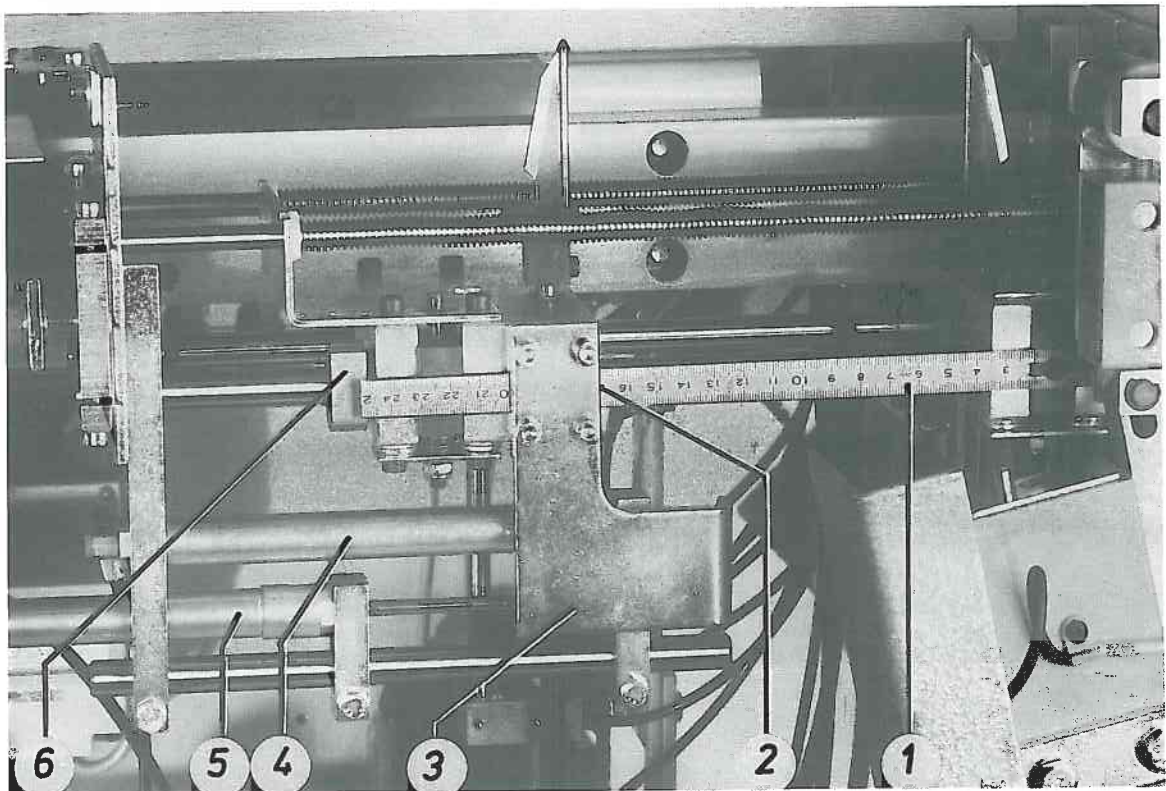
Readjustments must be made in program P50.



Caution! Keep hands clear of the V-corner knives! The quickly rising knives can cause serious cutting injury.

- Press "Program" key until P50 appears and activate by the STOP-key.
- Selecting L1. - If eg the entered sewing length 160 mm is displayed, the edge 2 of the knife block "seam beginning" must coincide with the length 160 on the ruler 1. Set stopper 6 accordingly.

For selecting L2 and L3 see next page.



- **Selecting L2-** The display shows the entered sewing length and cylinder 5 is actuated.

If the sewing length is eg 130 mm, loosen the clamping screw 10 and then set the cylinder 5 such that edge 2 and length 130 coincide on the ruler 1.

Make sure that the piston rod 8 moves parallel to the rod 9.

Tighten the clamping screw 10.

- **Selecting L3 -** The display shows the sewing length 75 mm (factory setting) and the cylinder 4 is actuated.

The sewing length 75 mm is a reference point for the control, which enables to select a sewing length from 75 mm to a minimum of 20 mm for short pockets or piped buttonholes, with no need to readjust the V-corner knives.

In this case the piece must only be positioned at the front positioning point (toward the machine head).

If under L3 a sewing length exceeding 75 mm is selected, eg 80 mm, loosen the clamping screw 7 to adjust the cylinder 4 such that edge 2 and length 80 coincide on the ruler.

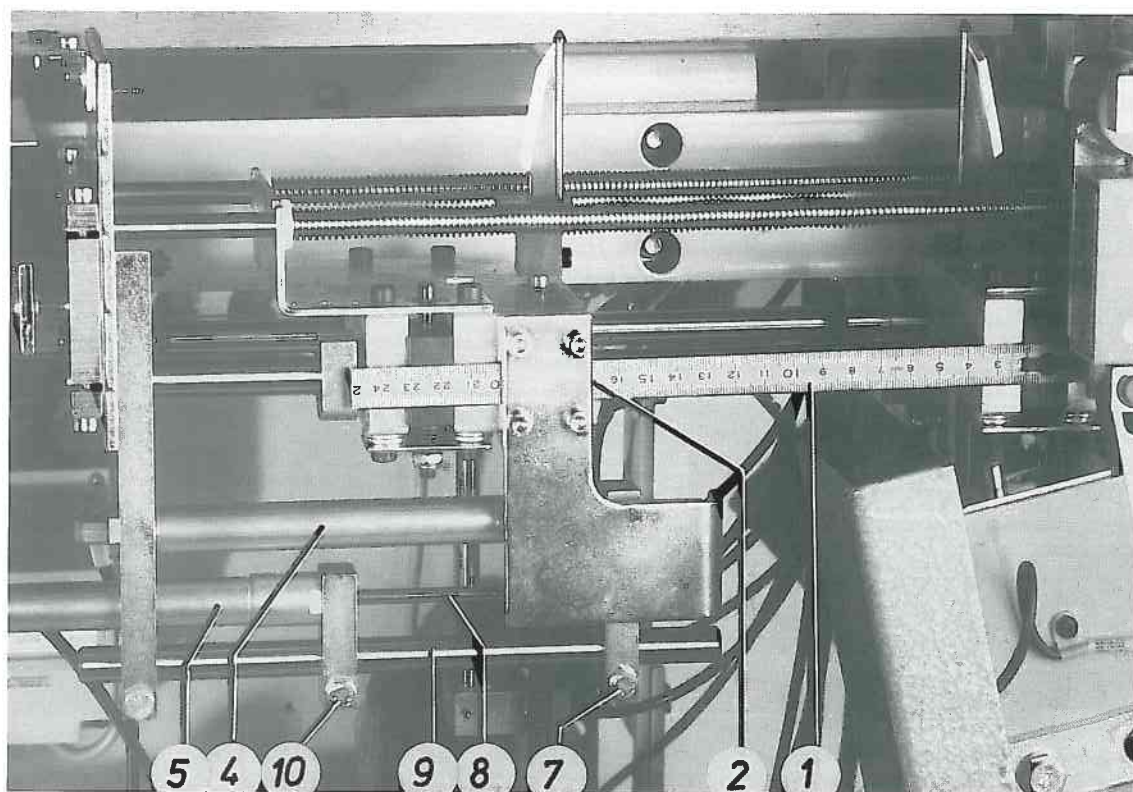
Make sure that the piston rod moves parallel to rod 9.

Tighten the clamping screw 7.

In program 50 the V-corner knives can be brought into the cutting position by pressing the Σ -key. At the same time this enables to check the distance between the V-corner knives.



Caution! Keep hands clear of the V-corner knives! The quickly rising knives can cause serious cutting injury!



2.16 Sewing different seam lengths in a sequence

With key F a memorized sequence of up to 4 seams can be called up. Any sequence of L1, L2 and L3 is possible.

The current length is underlined on the display. If an asterisk * is eg behind L1, the sewn piece is stacked after this sewing length. When the other lengths are sewn, the piece is not stacked, but is transported back into the loading area.

A sewing length can be separately activated independent of the sequence, using the + or -- key. This is required, if eg a sewing cycle must be repeated after thread breakage.

To program proceed as follows:

- If necessary, first enter the desired sewing lengths for each L-key in the control as described in section 2.15.
Set the adjustment device for the V-corner knives accordingly.

- Delete the previous sequence by simultaneously pressing the F-key and the --key.
- Select the desired sequence at L1, L2 and L3.
- To enter the stacking function, press the desired L-key and mark with an asterisk using the +-key. - It can be deleted with the --key.
- Press F-key to memorize the selected sequence.

Attention! After one of the L-keys has been pressed, the sequence is no longer activated. - It can be called up again using the F-key.



2.17 Reference position - starting the sewing cycle - quick stop

Reference position

Each time that the main switch is turned on "<---REF" appears on the display. The transport carriage must be moved into its rear end position by heeling back the l/h pedal. This reference travel is required to obtain a defined initial position of the transport carriage.

The adjustments selected last appear on the display, which indicates that the machine is ready to start.

Starting the sewing cycle

The loading and sewing process and the steps within these processes are called up by tipping the l/h pedal to the front. See also section 2.18 "Loading method for the trouser production".

The optional r/h pedal is used to lower the fabric down-holder 2 and to activate the vacuum.

Instead of the r/h pedal, the vacuum can also be activated with an optional knee switch.

Quick stop

Both, the positioning process and the sewing cycle can be interrupted at any time.

To do this, heel back the l/h pedal.

The sewing cycle can also be interrupted by pressing the STOP-key at the control box.

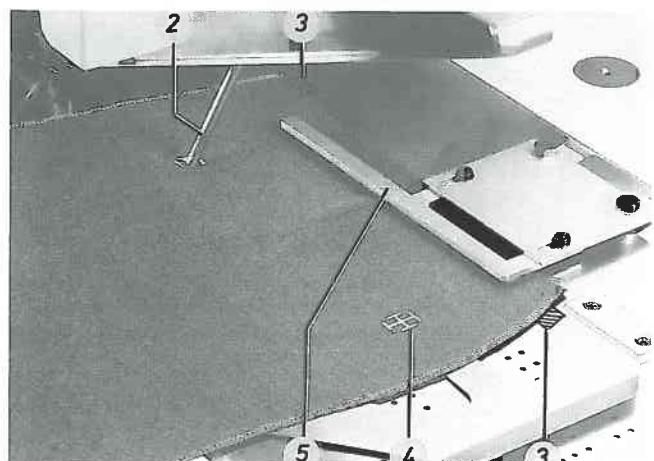
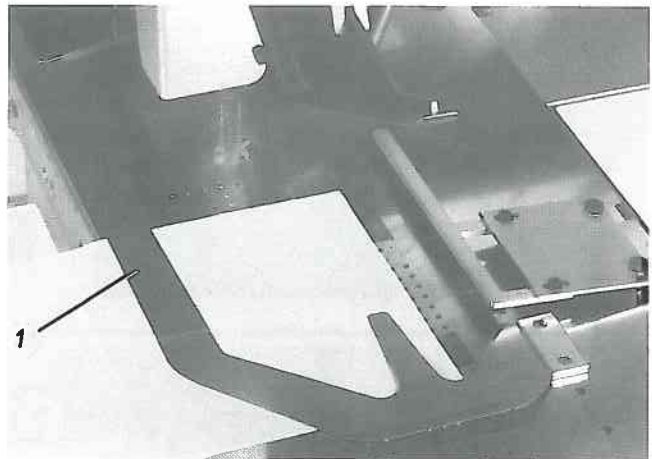
2.18 Loading method for the trouser production

Possible production variants

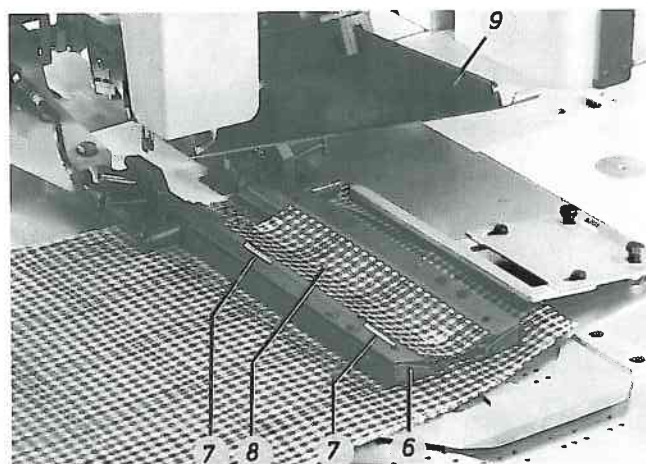
- Front trouser pockets with underlayered pocket bag.
- Hip pockets with/without flap, with underlayered pocket bag.
- Hip pockets with/without flap, with automatically fed reinforcement strip.

Loading method

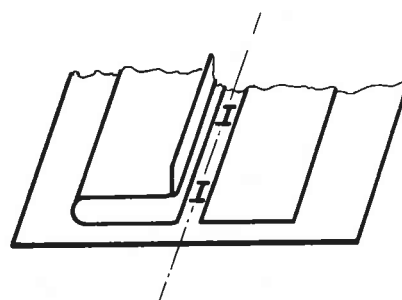
- Activate the rear positioning point using key  LED dark.
- Slide the pocket bag under clamp 1 and position at the marks.
- Position the backtrouser at the "rear positioning point" 4 (toward the operator) and at the marks 3.
- Tip the r/h pedal - accurately position the backtrouser using the fabric down-holder 2 and the waistband clamp 5.
- Should your sewing unit be equipped with a vacuum unit, activate the vacuum by completely depressing the r/h pedal and holding it in this position, and smooth the backtrouser in the dart area.



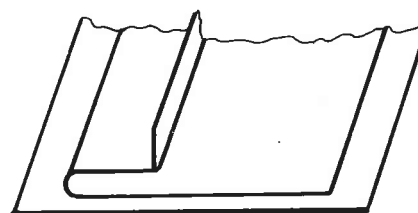
- Tip the l/h pedal. - The feeding clamps move to the front and lower onto the piece.
- To sew double piping, position the piping strip 8 at the centre of the feeding clamps and flush with the edge 6



or
to sew single piping, position the piping strip on the l/h feeding clamp and the facing on the r/h feeding clamp flush with the cutting line



or
to sew single piping with grown-on facing, position the piping strip at the marks 7 on the l/h folding sheet.

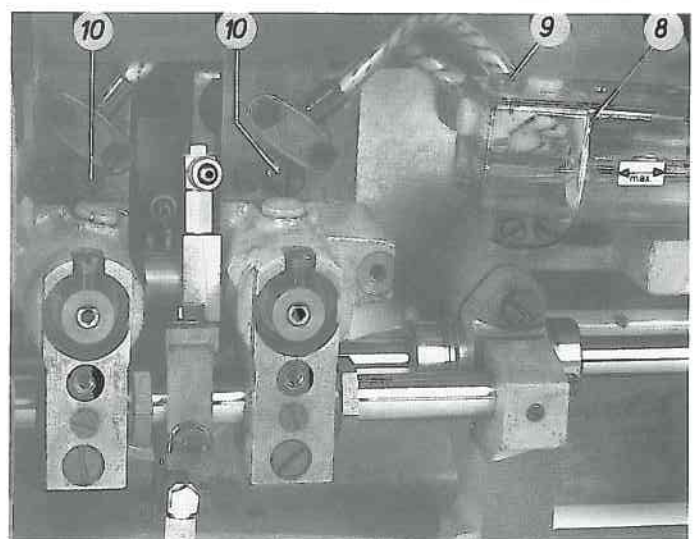
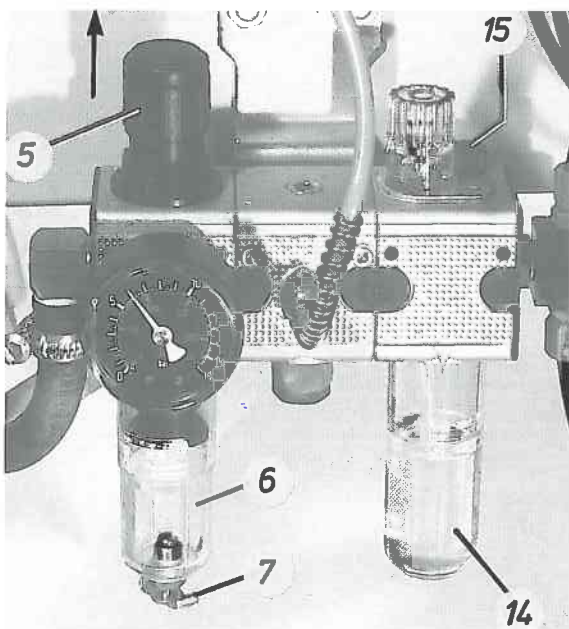
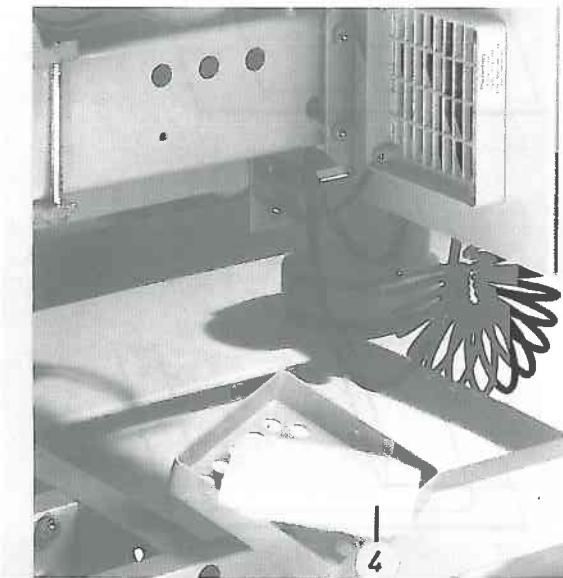
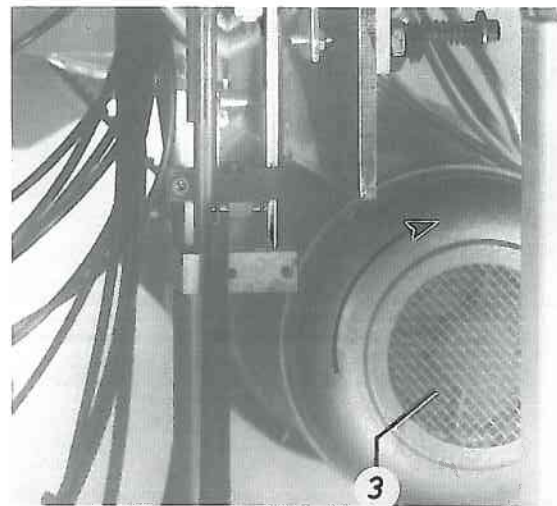
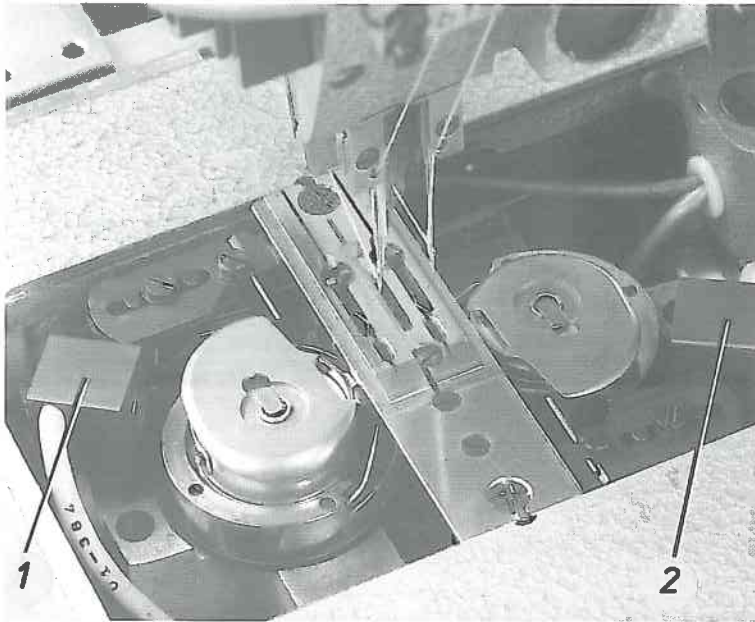


Please note!

- Should button loops be attached at the same time, a r/h clamp K20 (792 11243) with special stopper for the button loop should be used.
- Tip the l/h pedal. The folder 9 lowers. The grown-on facing must not close the r/h folding sheet. Remove the hose coupling from the r/h clamp.
- Tip the l/h pedal. - The sewing cycle starts.

Please note!

By switching on both diodes at key , the sewing cycle is started immediately after the folder has been lowered without another tipping of the pedal.



3. Maintenance

Regular maintenance assists in trouble-free sewing and high performance.

3.1 Daily cleaning and checking

- The hook area using the air pistol.
- If are present, clean the lenses of the light barriers 1 and 2 after each bobbin change using a soft cloth.
- The motor fan screen 3 using the air pistol.
- After removal of the r/h guard plate, the filter 4 for the step motor power output.
To mount the lateral guard plates, first hang them into the lower spring locking pieces, then press the entire sheet up and lift it over the upper locking pieces.
- The water level in the separator 6 of the maintenance unit. It must by no means rise up to the filter insert. Screw in screw 7 and blow off the water under pressure.

The filter insert separates dirt and moisture from the compressed air.

If filter container and filter insert are dirty after a certain operating period, they must be cleaned with petroleum and compressed air. Do not use solvents! They destroy the filter container.

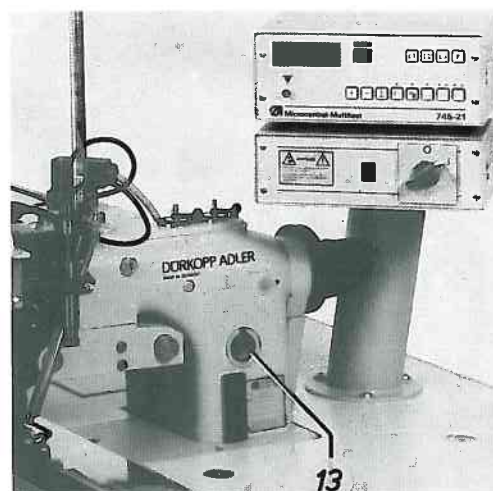
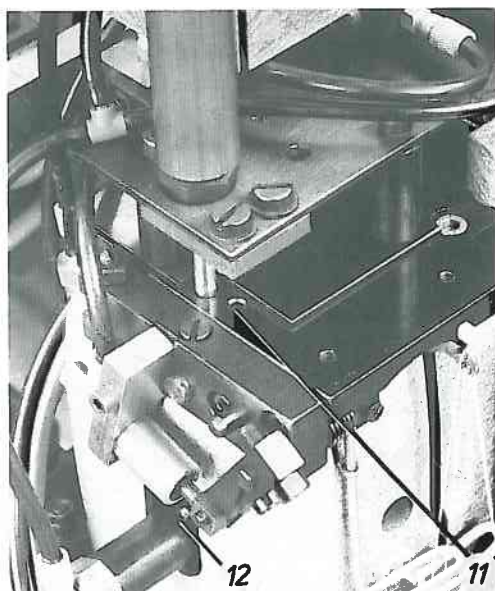
3.2 Weekly lubrication

Use lubricating oil SP-NK 10 or an oil of the same quality.

- Fill the oil reservoir 8 for the hook lubrication up to the mark "Max." To do this, tilt the machine head as described in section 2.5 and fill the oil into the inlet 9.

The necessary oil quantity was regulated at the factory with the screws 10. It should only be reduced or increased in special cases.

- Lubricate the oiling points 11 and 12 with some drops of oil.
- Fill the oil reservoir 14 for the maintenance unit up the mark.
To do this, shut off the compressed air by turning the handle 5 in anti-clockwise direction. To fill, unscrew screw 15.
Then readjust the operating pressure of 6 bar.
- Check the oil level of the oil reservoir 13 for the lubrication of the moving parts in the machine head, and if necessary, fill up to the mark "Max.". The oil level must not drop below the mark "Min."

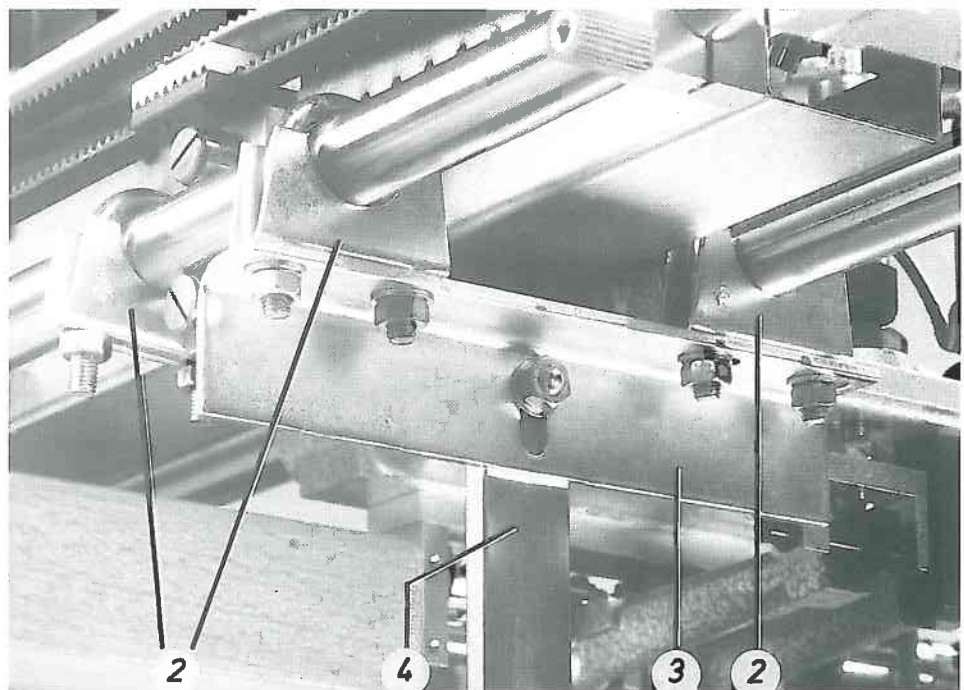
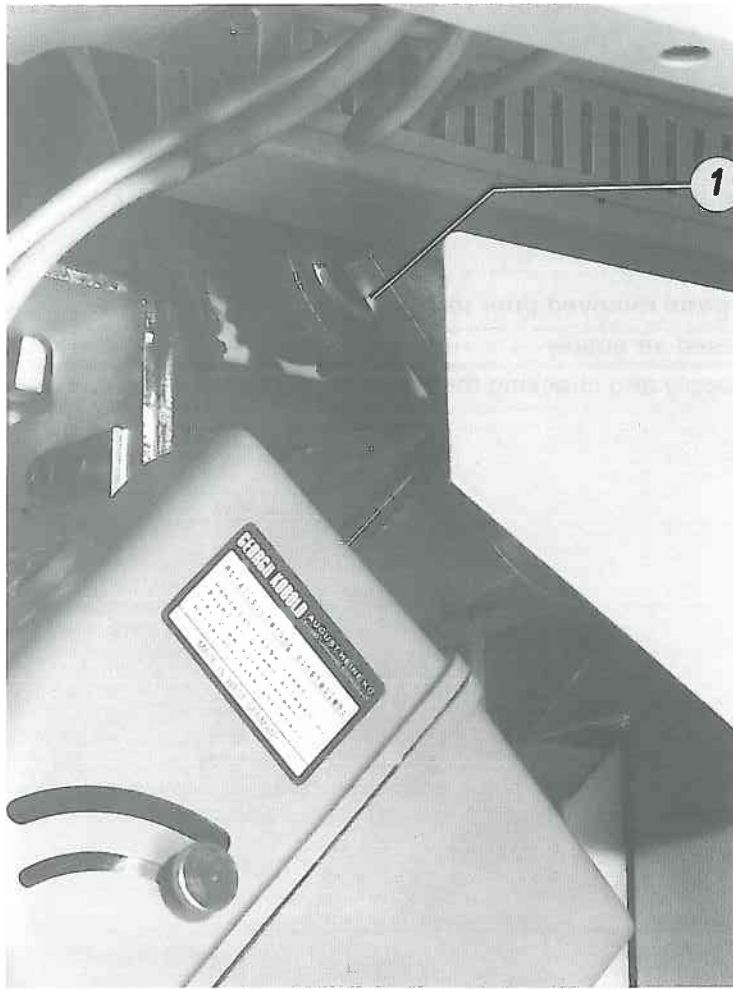


Part 2: Installation manual

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Installation of the 745-21

The sewing unit is to be installed according to the description below. All parts required can be found in the accessories.



For your special attention! The mains voltage and nominal voltage (operating voltage) specified on the bar under the table top must be identical.

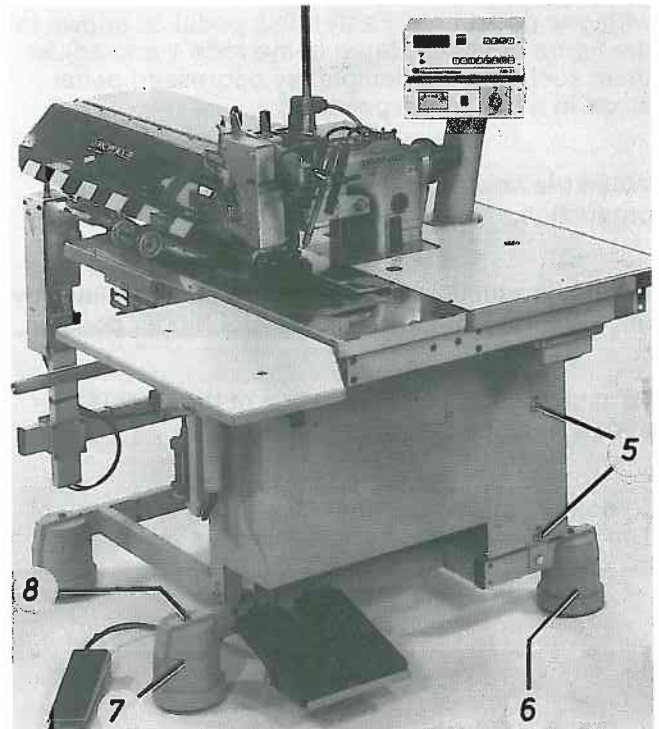
Any work on the electrical components must only be performed by authorized personnel and with pulled out mains plug.

Observe the safety instructions!

1. Movable machine stand

The machine stand for transporting the sewing unit is equipped with rollers. They are located under the cover 7.

To obtain a steady stand during installation, lower the sewing unit by turning the screws 8 to the left until it is balanced.



2. Transport safety device

Machine head, machine bed and transport carriage are assembled to form an unit.

To tilt the sewing unit, loosen a stop lever mounted in front at the underside.

During dispatch the sewing unit is, therefore, supported by the transport safety device 3.

The transport safety device prevents the

- a) entire sewing unit from swinging up and
- b) the transport carriage from moving back due to centrifugal forces.

To remove the transport safety device, loosen strut 4 at the lower cross bar and loosen the brackets 2.

3. Working height

The stand of the sewing unit is adjustable in height. To do this, loosen the screws 5 on all four legs.

During dispatch, the sewing unit is set at its lowest height.

The working height depends on

- a) the type of production, eg jackets or trousers (see section 5 "Pedal")
- b) bundle trolley or
- c) the operator.

4. Checking the V-belt tension

The tensions of the V-belts running from the sewing motor to the speed reducer unit and from there to the machine head have been adjusted at our factory, but need to be checked after shipping, when the sewing unit is installed.

If the tension is correctly adjusted, it must be possible to compress the V-belt centre by approx. 10 mm.

If necessary, loosen the motor fastening and belt tensioner 1 to make the adjustment accordingly.

5. Re-mounting the machine parts removed prior to shipping

Pedal

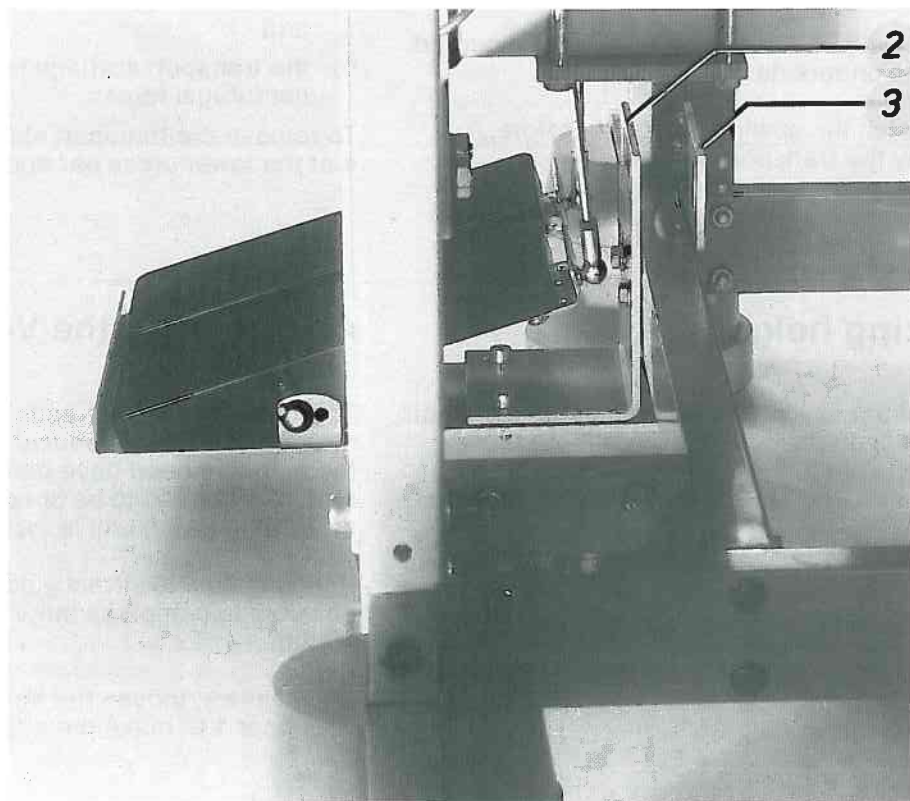
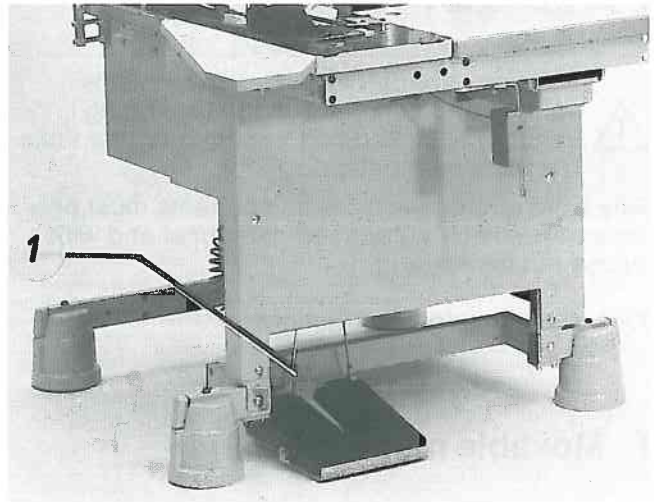
Sewing units for the jacket production are equipped with one pedal only. Fasten this pedal as shown in the figure opposite. Snap in the rods 1 and adjust them such that the completely depressed pedal stops in a horizontal position.

When the sewing unit is equipped for the trouser production, it has a r/h and l/h pedal.

For the production with in-house bundle trolleys the entire sewing unit must be set at a higher position.

To assure ergonomic operation of the pedals, the pedals must be set higher as well.

To do this, fasten the angle 3 at a higher position. The enclosed second angle 2 serves as support.



Control box

For quick installation and removal, the control box is equipped with the screws 4 and the locking plate 5.

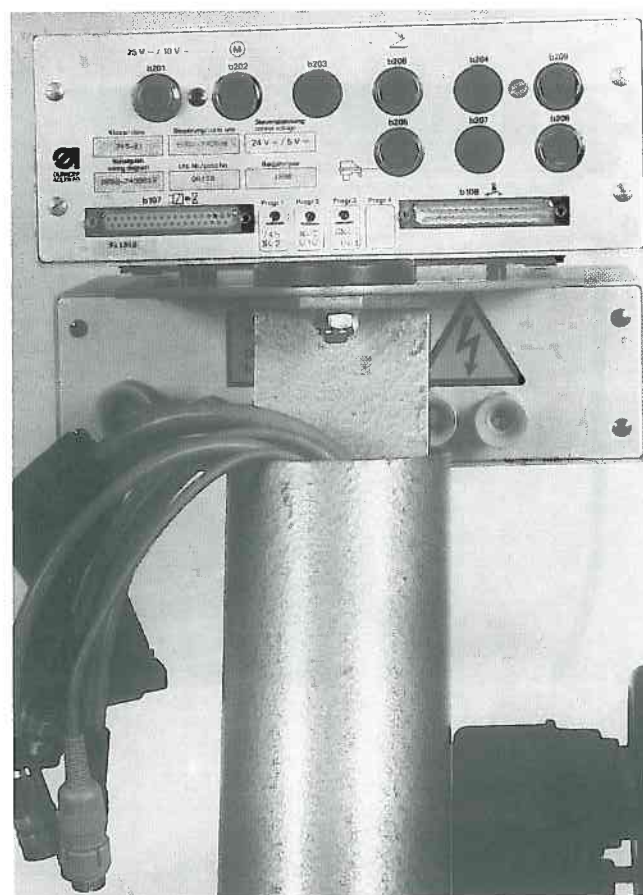
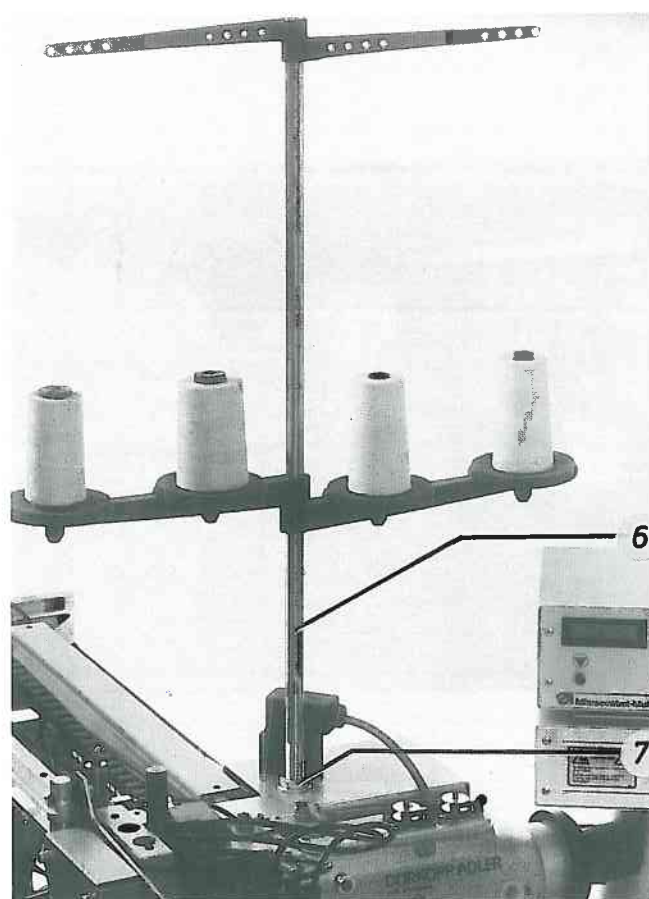
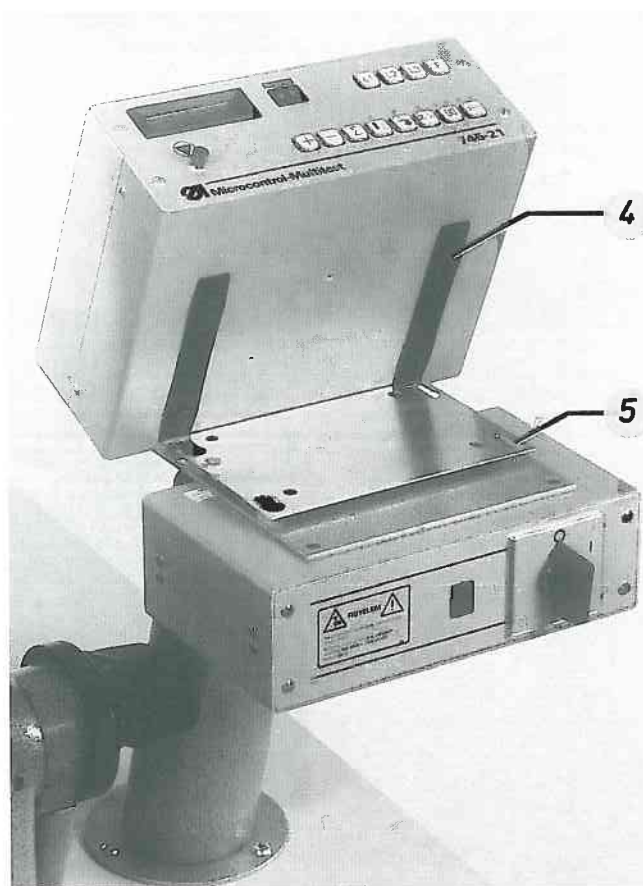
Please note!

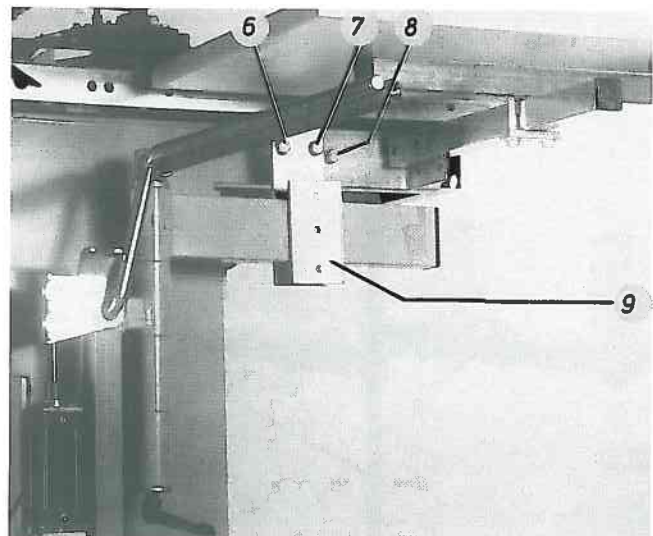
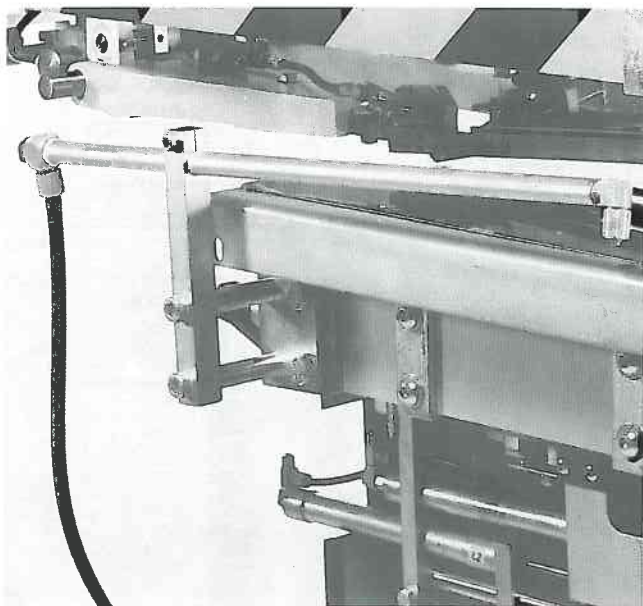
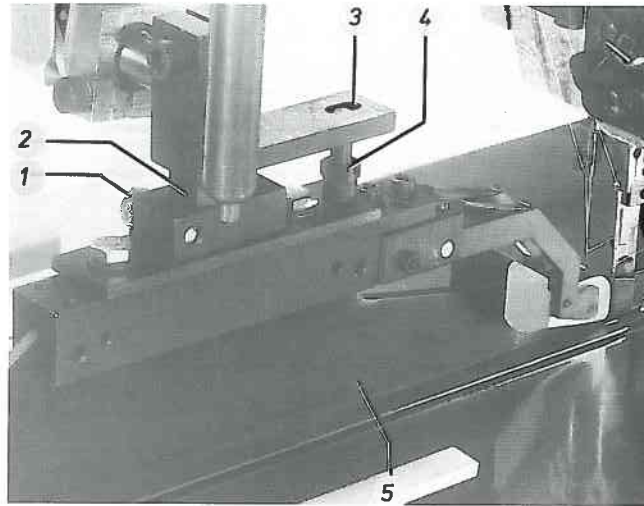
Carefully insert the plugs into the back panel of the control box. Be sure that the designations on cable and back panel are identical.

Also note that the plugs have either contact pins or sockets as well as the number and arrangement.

Thread stand

Screw the thread stand pipe 6 into the housing and lock with the nut 7. Mount the cone plates and unwinder arms as shown in the figure.





Folder

Slip the recess of folder 5 on the pin 2. At the same time pin 4 must enter the elongated hole 3.

After screw 1 has been tightened, the adjustment made at the factory is obtained. For more details as regards the folder adjustment see section 3 of the service manual.

Blowing device (optional equipment)

The figure below shows how to mount the blowing tube.

Bundle clamp (optional equipment)

Fasten the holder with the screws 6 and 7 and with a shackle located behind the bar.

Loosen the screw 9 and then set the bundle clamp to the edge of the table extension such that the pieces are securely guided into the opened clamp.

Table extension (optional equipment)

The table extension for backtrouser pieces is fastened with the screws 8 and a shackle located behind the bar.

To assure the unhindered passage of the positioned pocket bag, adjust a distance between the table extension and table top.

The table extension may be shifted to the rear or front depending on the workplace requirements. To do this, loosen the screws on the upper side of the table.

The table extension 10 for jacket fronts is fastened directly to the rest table by screws that are accessible from the table underside.

Stacker (optional equipment)

Fasten the holding pipe 12 to the machine stand.

Move the stacker toward the machine so that the bar 13 enters the holding pipe 12. After the sewing unit has been started and when the stacker is open, adjust the distance for secure entry of the pieces and tighten the clamping lever 11.

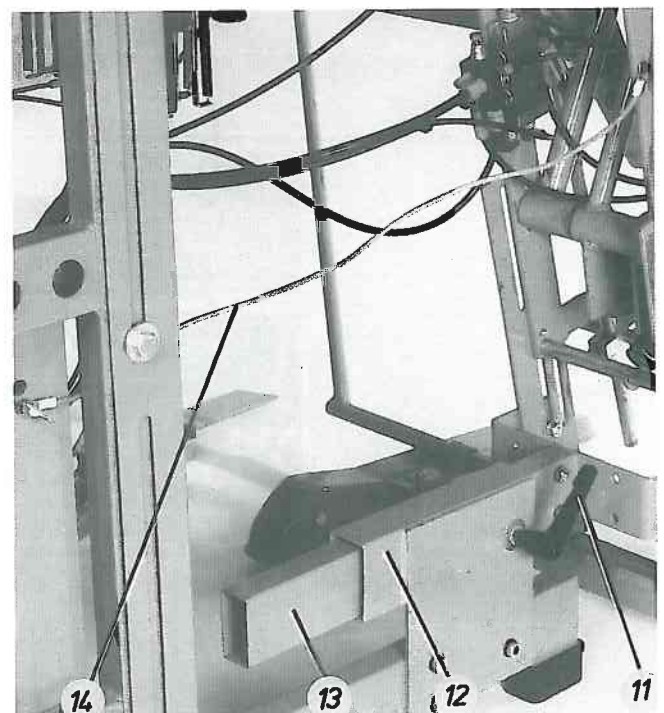
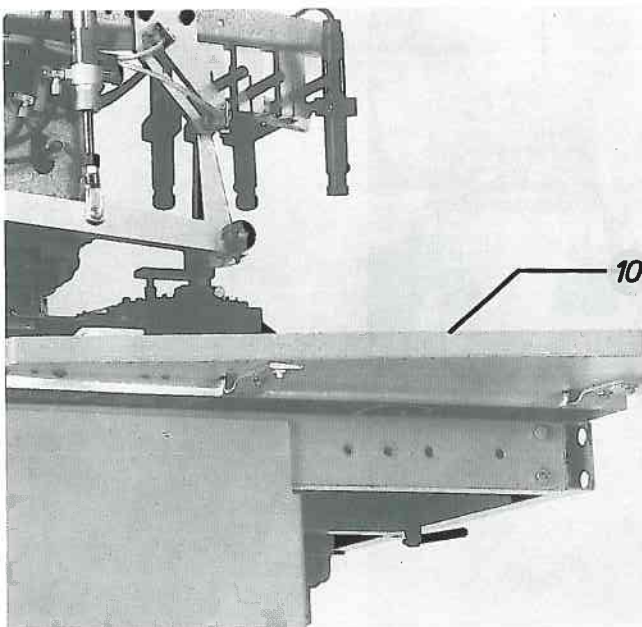
Insert the compressed air lines into the hose couplings located to the right of the maintenance unit.

Fasten the cable 14 between the machine stand and stacker using the existing wing nuts. Cable 14 conducts static charges to the ground.

The stacked pieces are removed by pressing down the stacker opening pedal.



Caution! During the stacking process keep hands clear of all moving parts of the stacker.



6. Connecting to the compressed air supply

To assure proper functioning of the pneumatic operations, it is absolutely necessary to observe the following specifications and to supply water-free, slightly lubricated compressed air.

Operating pressure and air consumption

Operating pressure = 6 bar (kg/cm²)

Air consumption of the sewing unit

approx. 4.7 NI ¹⁾ per cycle

approx. 25 NI per minute

1) NI = Air quantity under normal atmospheric pressure.

At the moment of the greatest air consumption, the pressure must not drop below a minimum of 5 bar.

Therefore, check the reading on the manometer 6 when the sewing unit is running.

In the case of a too high drop in compressed air, increase the output of the compressor and the diameter of the compressed air line.

Behind the filter 7 the cleaned compressed air is branched off for cleaning machine parts and for blowing on sewing pieces.

Oil particles in this branched off air result in malfunctions and soiling of the pieces.

Set the 6-bar-operating pressure by turning the dial 2 at the pressure regulator.

Turning to the left = Pressure decrease

Turning to the right = Pressure increase

Connecting the maintenance unit

Connect the connecting hose, inner diameter 9 mm and designed for a pressure of 10 bar, with the air supply, using the enclosed hose coupling R 1/4".

Unscrew the screw 4 and fill the oil SP-NK 10 or an oil of the same quality into the lubricator up to the mark "Max.".

The lubricator (Micro mist lubricator) supplies the compressed air with an oil spray, required for the lubrication of the valves and cylinders.

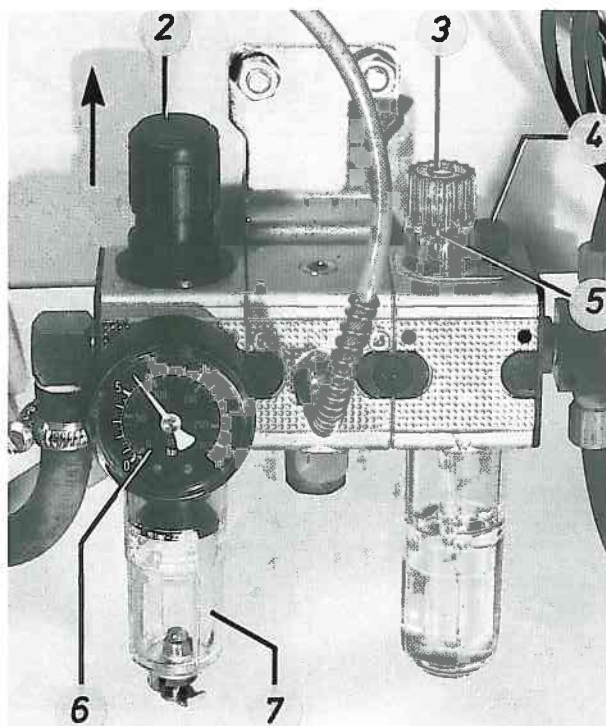
Please note!

Lubricated air from the compressed air supply of the factory must not be used.

Under operating pressure, check whether a drop of oil drops from the pipe underneath sight glass 5 after every 10th cycle.

Should this be more often, oil may accumulate in the air supply lines, possibly causing a malfunctioning of the valves.

The amount of the oil spray can be regulated at screw 3.



7. Connecting to the mains supply and checking the direction of rotation



Any work on the electrical components must only be performed by authorized personnel and with pulled out mains plug. Mains voltage and nominal voltage (operating voltage) must be identical.

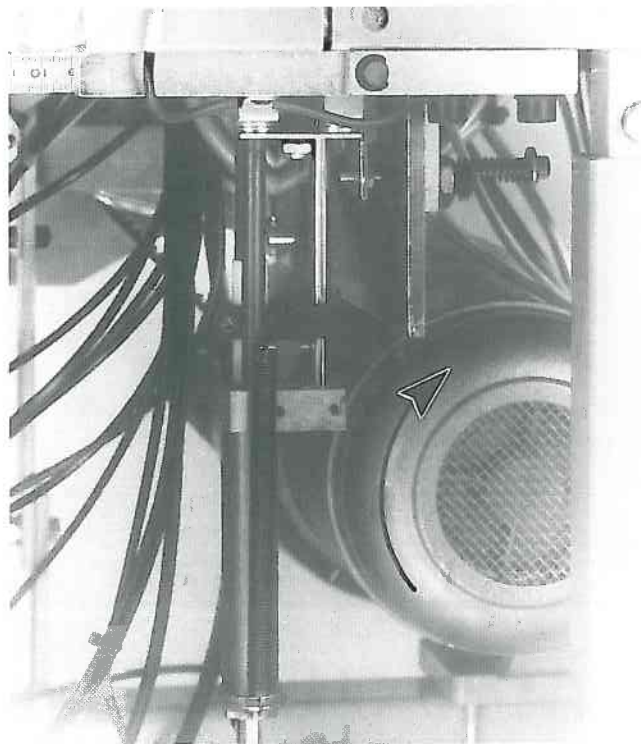
The smaller name plate specifying the nominal voltage and a larger name plate listing the voltage and current range are located in front on the bar under the table top.

Prior to starting the machine, observe the nominal voltage specified on the smaller name plate! See also 1.2 Technical data.

Danger of breakage due to wrong direction of rotation!

Therefore, initially only plug in the mains plug and turn on and off the main switch. The fan wheel located behind the motor fan screen must then rotate in the arrow-indicated direction.

If necessary, exchange 2 phases in the mains plug.



8. Starting the machine

Each time that the main switch is turned on "<---REF" appears on the display.

By heeling back the l/h pedal the display is deleted or at first a reference run takes place, which defines the accurate starting position of the transport carriage.

Then, the adjustments entered into the control box last appear on the display.

The steps of the positioning process and sewing start are called up by tipping the l/h pedal.

At the sewing start, material must lie under the feeding clamps. Feeding motion without underlaid material damages the covering of the feeding clamps.

For the choice of sewing program and further adjustments of the control box, see enclosed instruction sheet.

Positioning and loading are described in part 1 of the manual.

Part 3: Service manual

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1. Recommendations to be observed prior to the adjustments

This service manual is a description of how to adjust the sewing unit in the appropriate order.

Do not forget that some adjustments are interdependent. For adjustments, therefore, always proceed in the described order.



Attention: Risk of breakage! After disassembly and before re-starting the sewing unit, the necessary adjustments as described in this manual must have been made.

The sewing unit must not be started with the wrong direction of motor rotation.

To prevent damage to the clamp covering, move the lowered feeding clamps into their rear position only, when fabric is underneath.



Attention: Danger of personal injury!

If adjustments are made near to the V-corner knives, centre knife and the needle, and these parts are not absolutely necessary to make the adjustments, they must be removed to avoid personal injury.

The main switch should always be turned off. With the exception of adjustments that must be made with the checking, adjusting or sewing programs of the control box.

Attention! Should the pedal be pressed down by mistake, when a sewing program is called up, the sewing unit will be started.

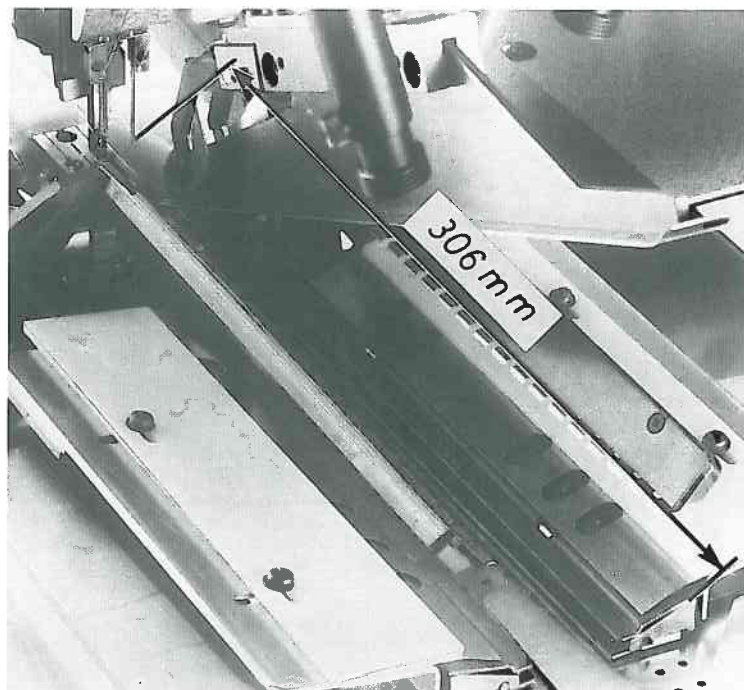
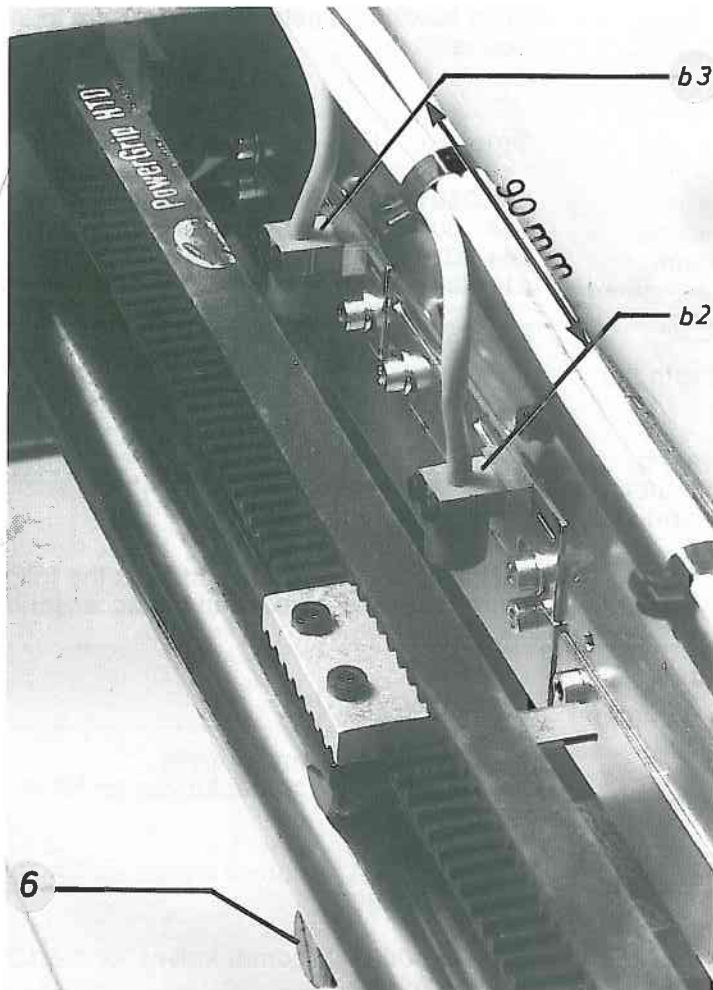
For all adjustments of stitch-forming parts, a new flawless needle must be inserted.

The following adjustment gauges are available on request:

Order no.	Use
246 2591	Crankshaft journal to the arm shaft
244 1001	Hook shaft height
244 4070	Stop pin for the loop stroke position
212 4942	Measuring bridge for the needle holder height
216 1070	Measuring pin for the needle holder height
244 1014	Adjustment pin for the lateral hook distance
246 919	Gauge for the frame - needle bar clearance

Besides the usual parts and tools the following spare parts are included in the accessories:

Order no.	Use
2 x 246 2553	Centre knives
2 x 746 60693	V-corner knives for NA 8 mm
2 x 746 60694	
or	
2 x 746 60689	V-corner knives for NA 10 mm
2 x 746 60690	
or	
2 x 746 60691	V-corner knives for NA 12 mm
2 x 746 60692	
6 x 246 3058	Special bobbins also for use of a thread monitor



2. Transport carriage



Caution! Keep clear of all moving machine parts!

The transport carriage is guided on the extension pipes by ball sleeves on the left and by track rollers on the right.

They have been set tight at the factory. To remedy an axial play, just loosen one of the excentrically borne rollers 6 and set tight.

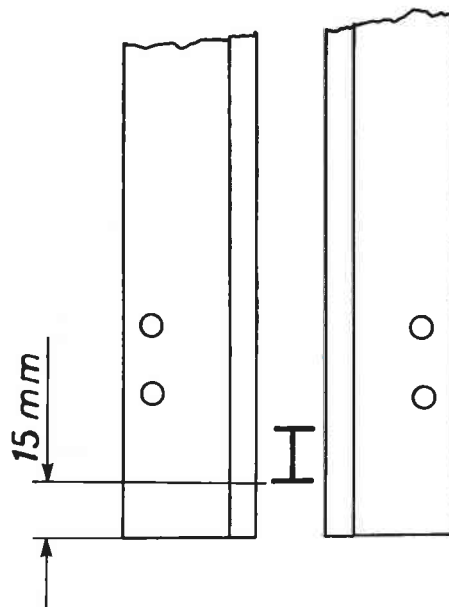
The transport carriage is advanced by a step motor for the speeds: stitch condensing, normal stitch length and return travel of the transport carriage.

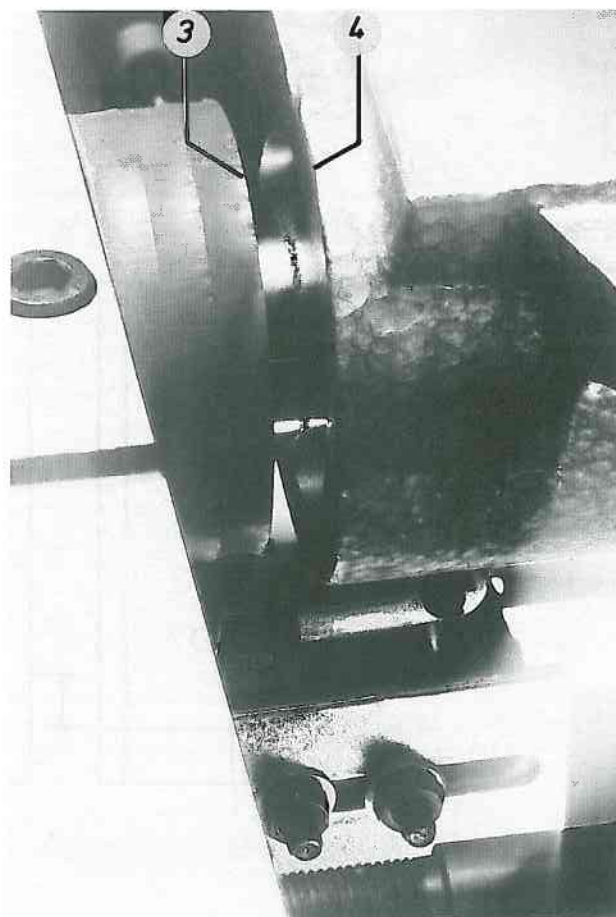
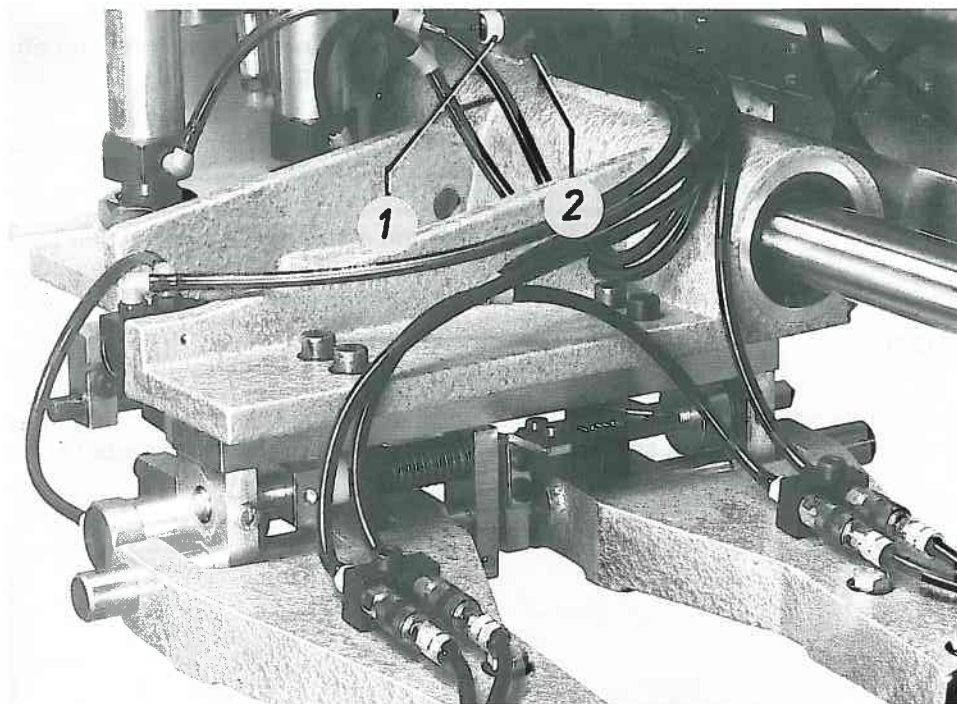
2.1 Front end position

In front end position, the distance between the front edge of the feeding clamp and the H-light spot should be 15 mm.

This corresponds to 306 mm from the front edge of the needles located at the front to the front edge of the feeding clamps.

- Move the transport carriage to the rear by heeling back the pedal, and then move it to the front by pressing the pedal forward. During its fast return travel it crosses switch b2 as a reference position. It then continues its travel for about 80 mm and stops in its front end position.
- Loosen the screws of switch b2 and adjust the switch accordingly.
- Make trial runs by heeling back the pedal or pressing it forward.
- Check the measure 306 mm, when the transport carriage is in its front end position and the feeding clamps are lowered.
- The switch b3 has been built in as a safety switch, and in proper front end position must be located at a distance of 90 mm to the switch b2. It prevents the transport carriage from colliding with the machine head.





2.2 Rear end position

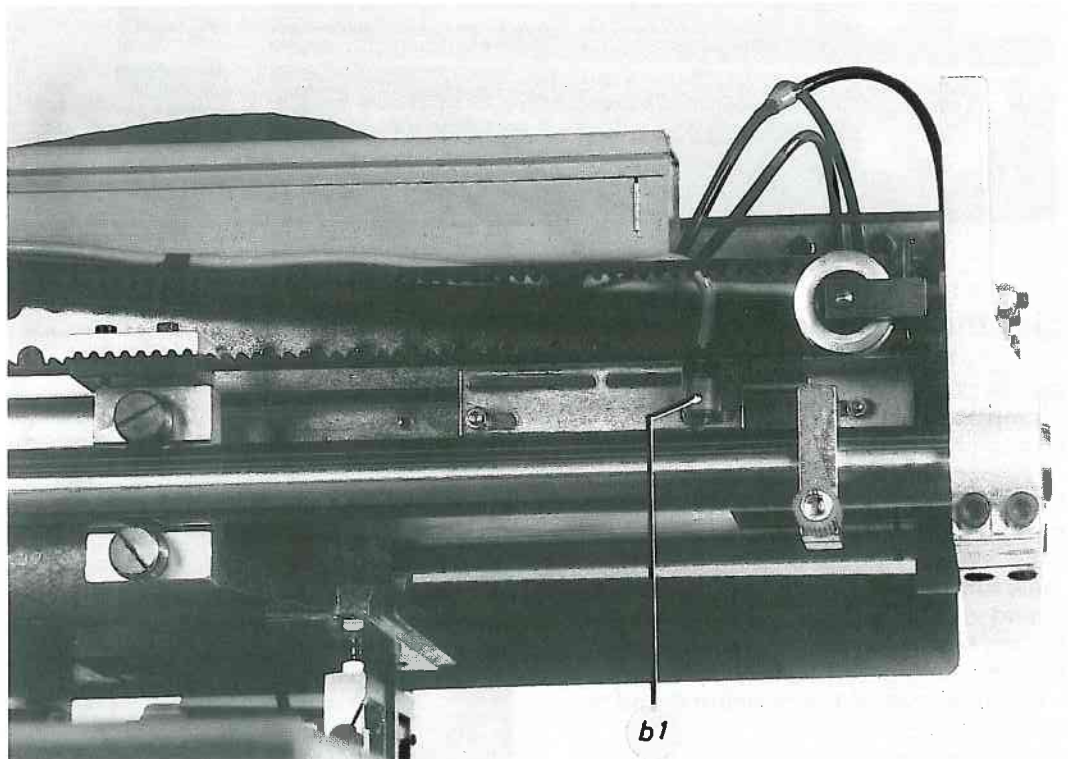
The transport carriage only moves into its rear end position, after the pedal has been heeled back.

During normal sewing operation the transport carriage stops depending on the entered sewing length.

The rear end position is determined by the position of the switch b1. It is to be adjusted such that the distance between the buffers 3 and the transport carriage 4 is 5 mm.

In the rear end position the pneumatic valve 1 must be opened by the flat 2 of the transport carriage. With turned off main switch and open valve 1, the cover and fabric sliding sheet are unlocked.

- Turn on main switch.
- Move the transport carriage into its rear end position by heeling back the pedal.
- Check the distance and adjust the switch b1 accordingly after having loosened its screws.
- Make trial runs by pressing forward and heeling back the pedal.
- Adjust valve 1 such that it is opened by the flat 2.



2.3 Tensioning the timing belt

Too high tensioning reduces the life and causes running noise.

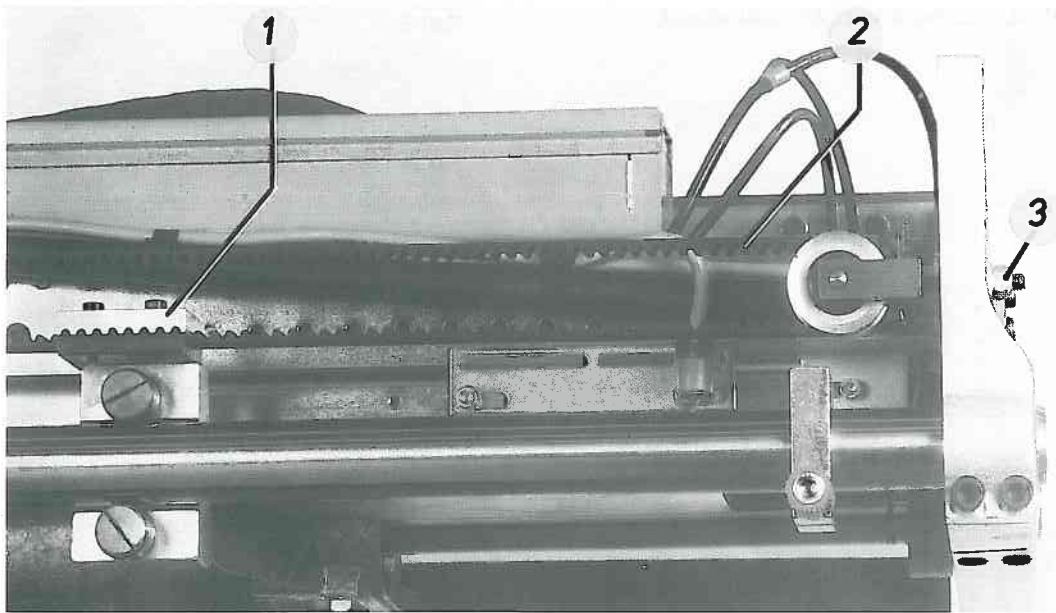
If the tensioning is too low, it may be that the belt teeth do not mesh properly with the pulley teeth, or even skip under load.

Under a proof load of $F_v = 500g$, the timing belt 2 should be deflected by 13 mm from the straight line on the half length S.

This is the case, when the upper belt half just touches the lower belt half under proof load.

One can check this using a spring balance.

The tensioning is to be made at the nut 3 that has a self-locking thread.



2.4 Changing the timing belt

The timing belt is split. It is held together by the timing belt clamp 1.

This facilitates to change the timing belt.

After the profile jaws have been loosened, the timing belt can be easily removed.

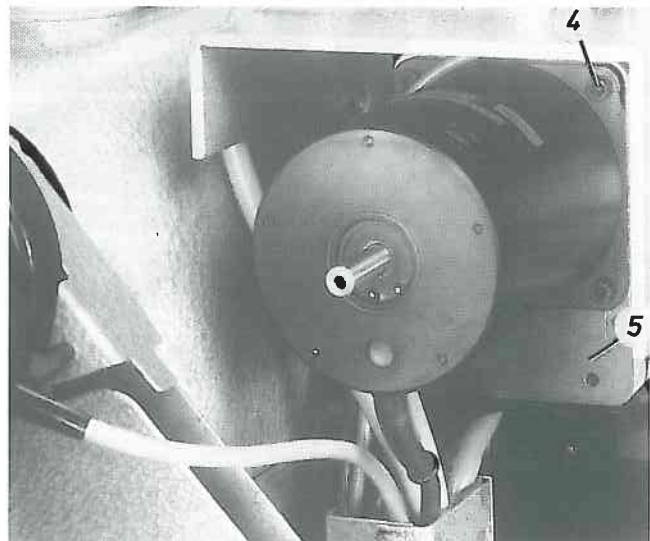
To lay on a new timing belt it is advisable to turn out the fastening screws 4 of the step motor using a sufficiently long Allen screw.

The motor with the timing belt pulley and thrust bearing can be pulled out of the housing 5 and the timing belt can be positioned.

Re-mount the step motor.

To fasten the timing belt ends, preliminarily loosen the tensioning slightly using nut 3.

Next, adjust the tensioning as described in section 2.3.



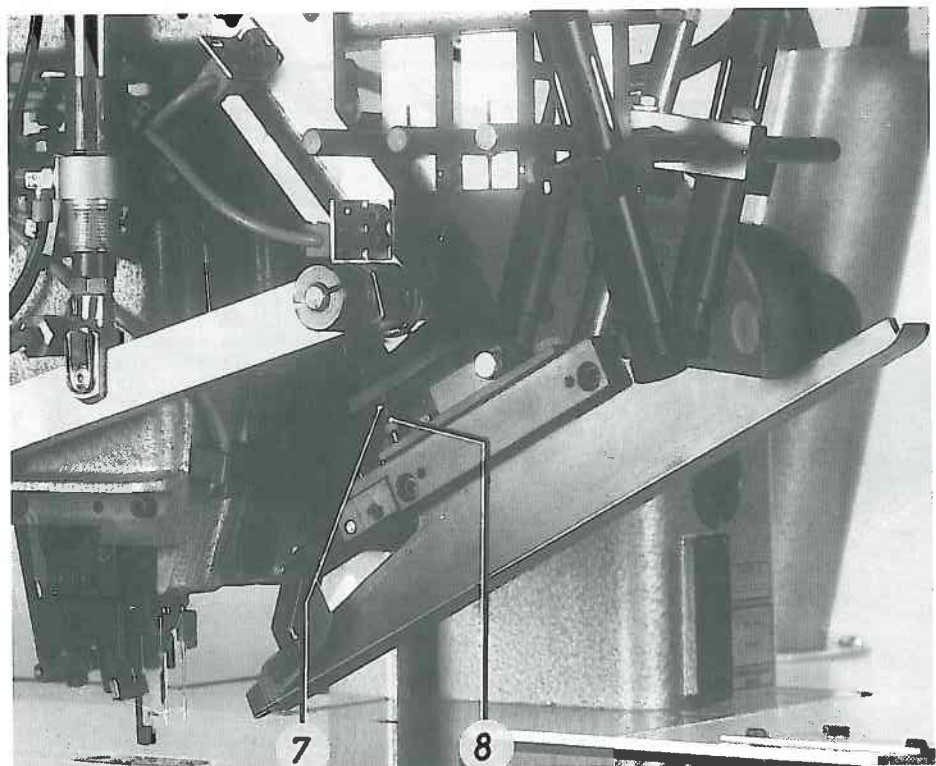
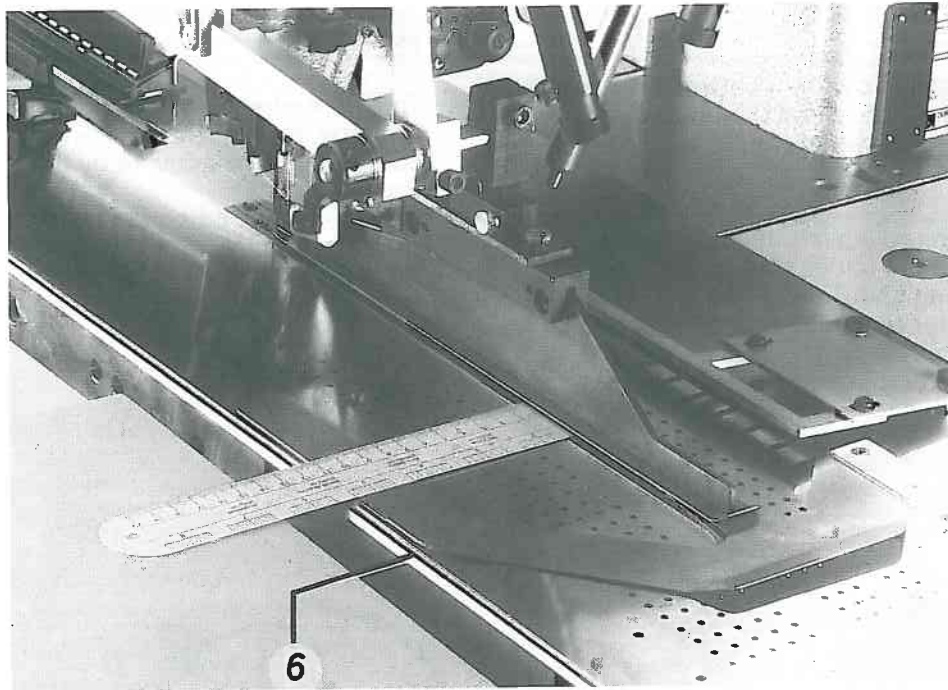
3. Folder

For unhindered feeding of the material and accurate finishing of the pocket opening, the folding and cutting tools as well as the marking lamps must be aligned with the pocket opening centre.

The cut of the centre knife is considered to be the pocket opening centre.

The measuring line 6 has been traced on the machine bed at the factory. It runs at a distance of 125 mm parallel to the pocket opening centre (centre cut).

If the folder is fastened properly that is, pin 8 enters the elongated hole 7, it may be aligned with respect to the pocket opening centre, using this measuring line, as described in 3.2.



3.1 Stroke motion of the folder

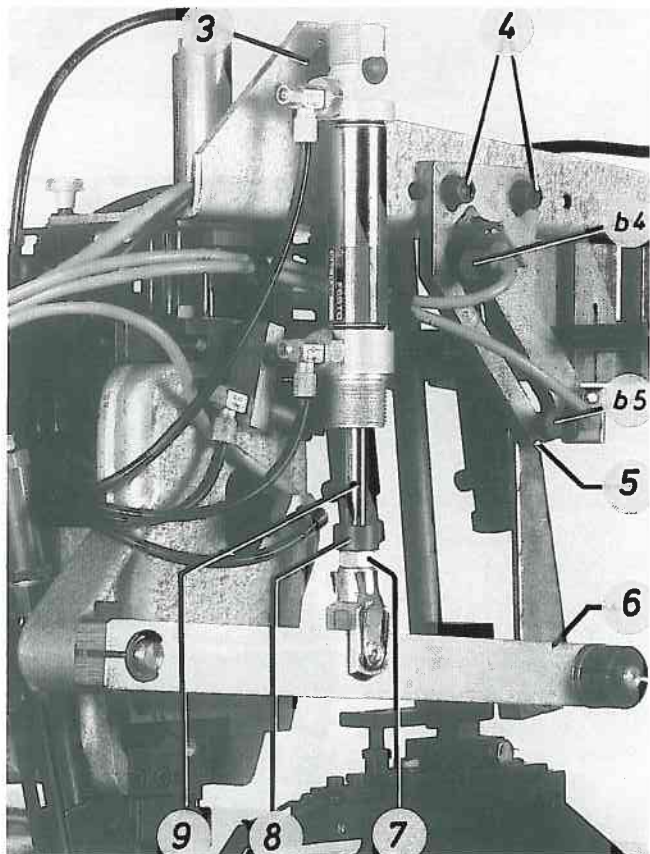
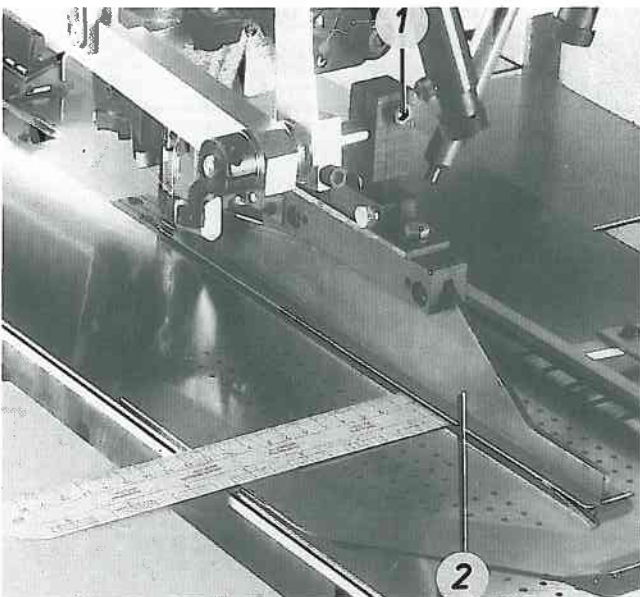
When the folder is raised, a safety distance of 3 mm should be between the lever 6 and the underside of the curve part 5.

In lowered position of the folder 2, the parallel distance between the folder sole and fabric sliding sheet should be 2 mm on the entire length.

- Loosen the nut 3.
Hang up the cylinder higher or lower accordingly.
Tighten the nut 3.
- Check the distance of 3 mm between the lever 6 and the cam part 5, when the lever 6 is raised right up to the distance piece 8.
- Loosen nut 7.
Turn the piston rod 8 such that a distance of 2 mm is between the folder sole underside and the fabric sliding sheet.
Should the roller rest against the lowest point of the cam, the cam part 5 should preliminarily be set lower after loosening the screws 4.

- Loosen screw 1 and swing the folder until the folder sole is parallel to the fabric sliding sheet on the entire length.
Tighten screw 1 and nut 7.
- In bottom position of the folder adjust the cam part such that the distance between the roller and the lowest point of the cam groove is still 0.5 mm.
- Proximity switch b4 monitors the upper position of the folder and proximity switch b5 its lower position.
- To check whether the switches are positioned properly, press "Program" switch until program 63 appears and activate by the STOP-key.
Enter 4 or 5.
Status - or + is being shown on the display.

Align the switch b4 or b5 with the roller such that + appears on the display.



3.2 Aligning the folder to the pocket opening centre

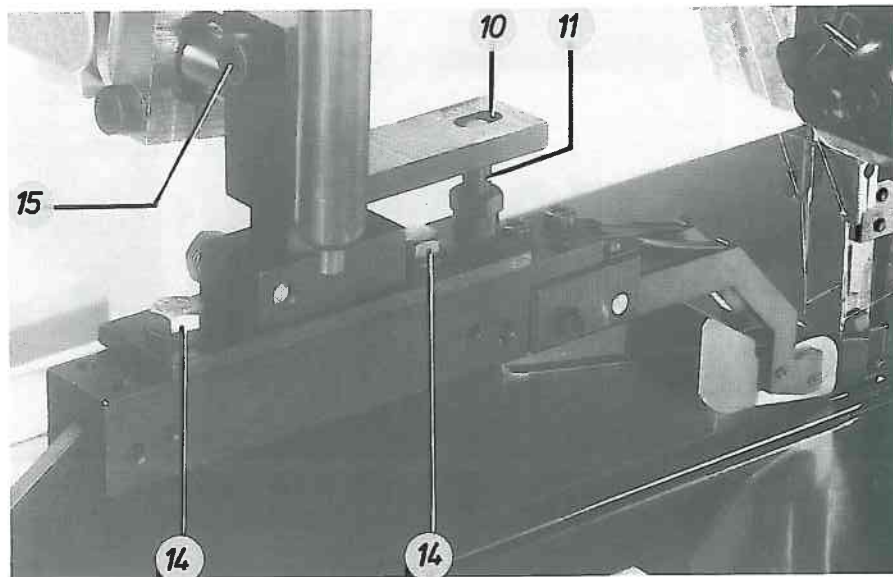
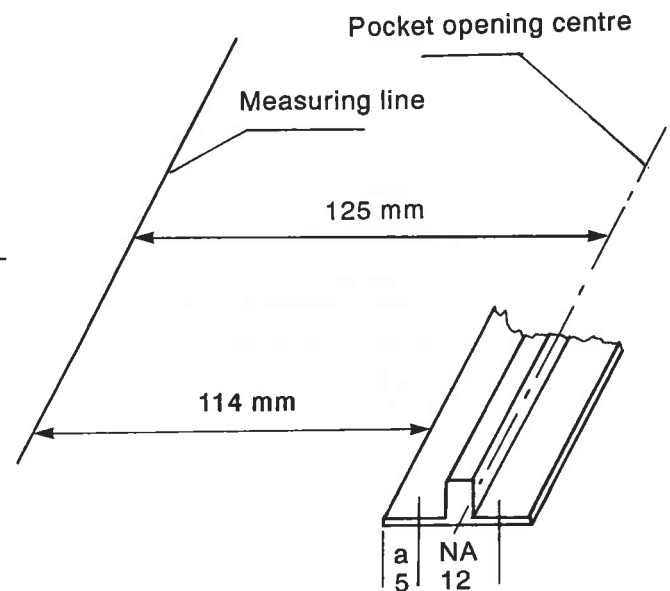
Depending on the width of the folder sole, it is possible to determine a measure, which enables to align the folder accurately to the pocket opening centre and parallel with the measuring line.

- Subtract the piping width a and $1/2$ of the needle distance (NA) from the measure 125 mm.

See the sketch: $125 - 5 = 120$
 $120 - 6 = 114$ mm

For piping widths and seam margins of other folders see section 2.3 of the operation manual.

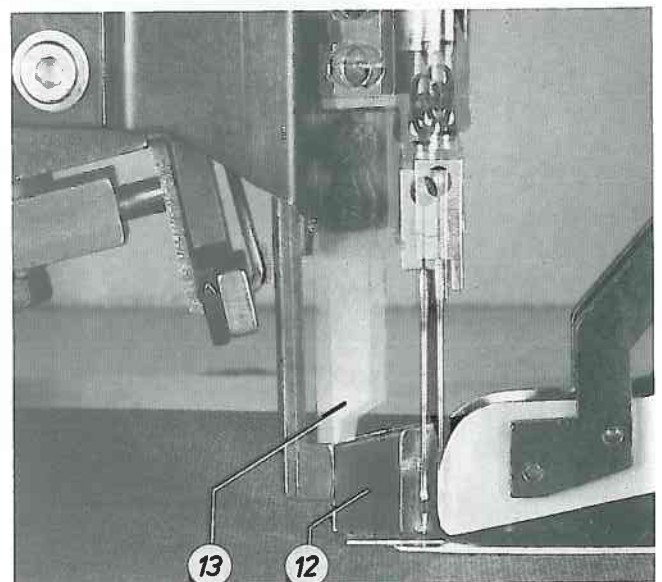
- Loosen the screws 14 and set the folder sole parallel with the measuring line using a ruler.
- Loosen screw 15.
Precisely adjust the pocket opening centre.-
In this example, the distance 114 mm between the measuring line and the left edge of the folder sole.

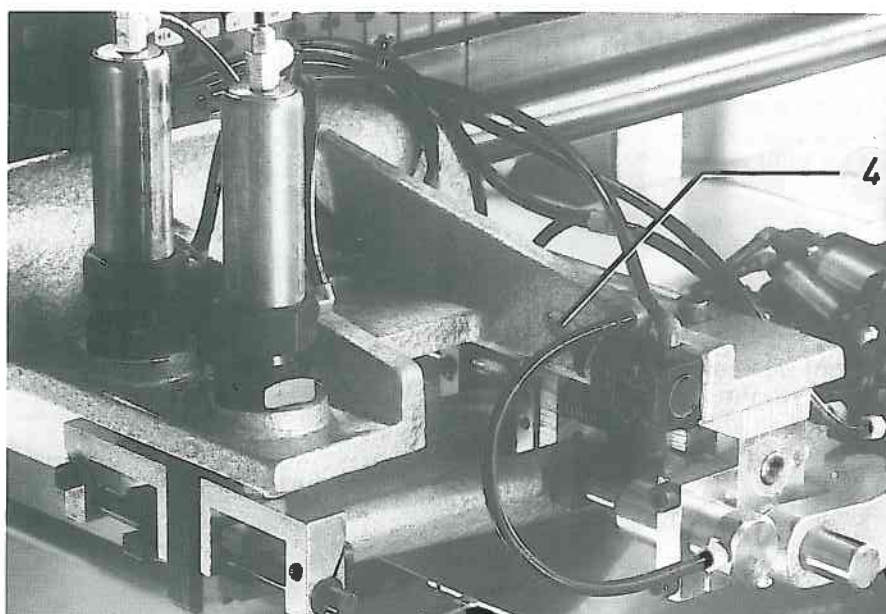
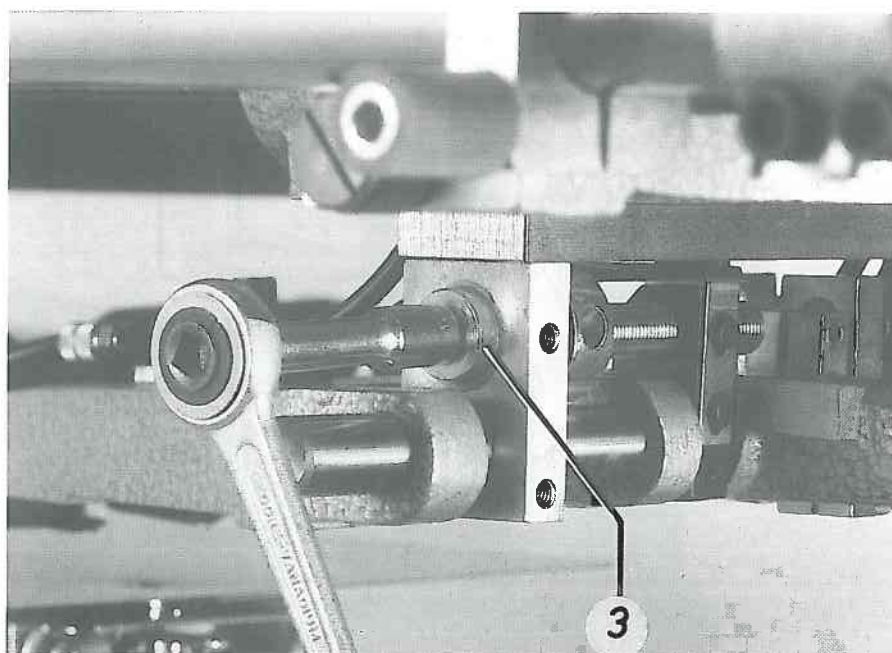
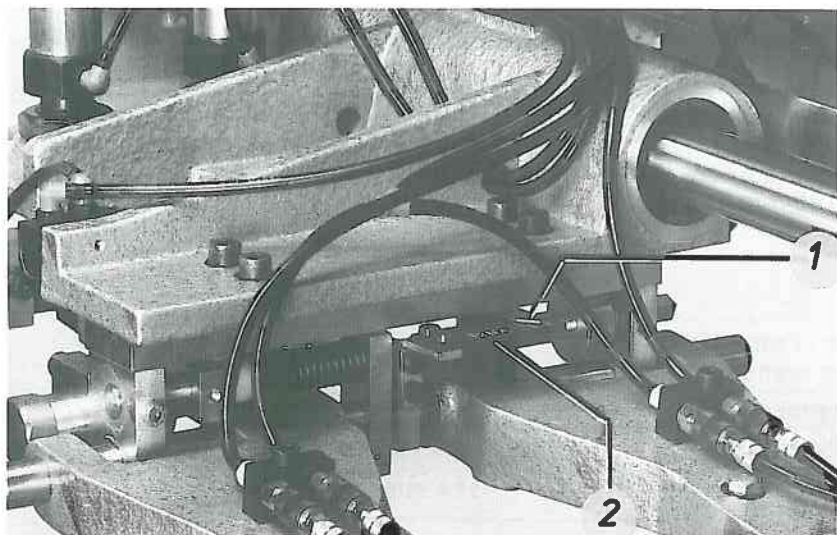


3.3 Position of the folder to the needles and centre knife

With properly fastened folder that is, when it is pushed up until it stops and pin 11 enters the elongated hole 10, the following must be fulfilled:

- In front position, the needles must enter the folder slots unhindered and without being deflected.
- When the centre knife 13 is in its front position, and then plunges into the knife guard 12, the distance between the knife front edge and knife guard must still be 0.5 - 1 mm.

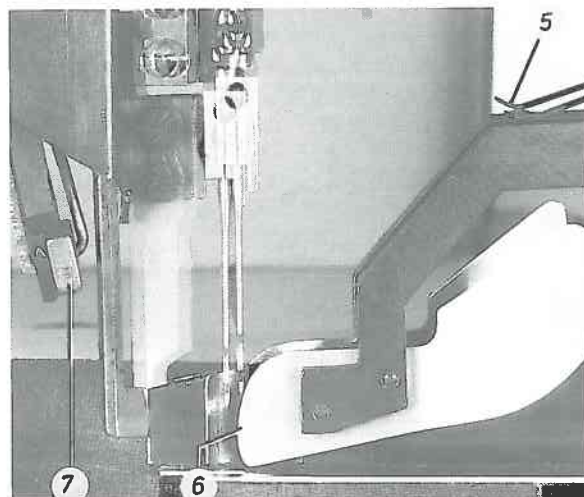




3.4 Guide sheets at the folder

When the needle bar frame is in its front position, the edges 6 of the guide sheets should jut out from the needles by approx. 1 mm to the rear. This is required to assure the secure passage of the piping strip, when the needle bar frame is in its rear position.

The leaf springs 5 apply low pressure on the guide sheets to hold them down on the folder sole. The pressure should be such that the flexible guide sheets can still be slightly lifted by the entering piping strip or by the flap.



4. Distance between the feeding clamps and folder sole

To assure identical piping widths on both sides of the pocket and unhindered feeding of the material, a certain distance must be between the outer edges 8 of the folder soles and the inner edges 9 of the feeding clamps, depending on the material thickness. For a medium weight fabric it should be 1-1.5 mm.

The distance can be changed by turning the square head screws 3 using the ratchet and extension from the accessories.

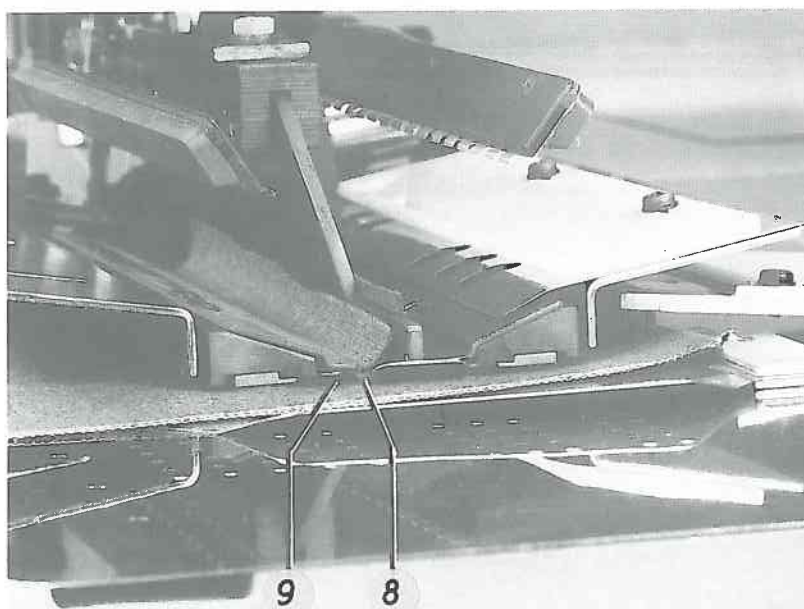
The rulers 2 have been positioned at the factory such that the correct distance is adjusted for sewing double piped pocket openings in medium weight material, when the pointers 1 point on the 0-mark.

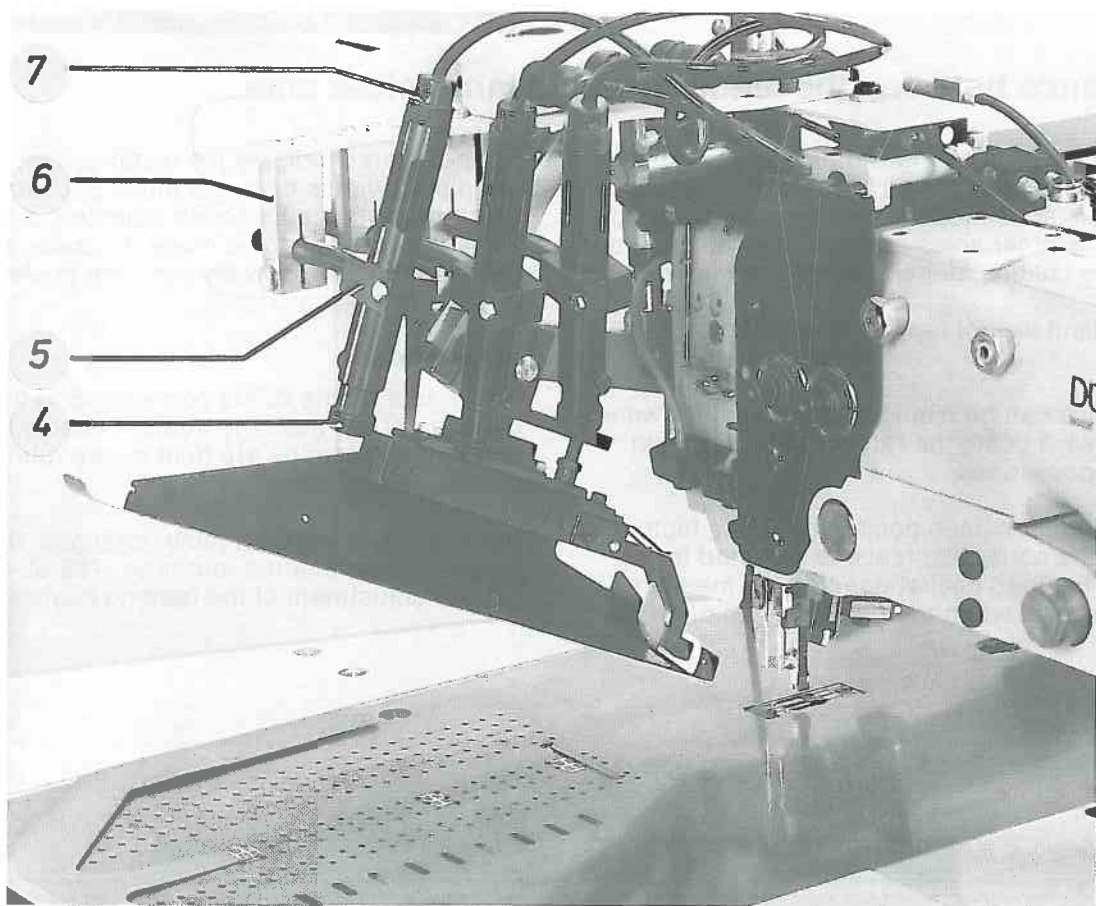
Further marks indicate the distances for sewing larger piping widths or single piped pocket openings. After the distance has been adjusted, move the transport carriage in tip mode, to check whether the feeding clamps freely pass the guide sheets 6 and the thread catcher 7.

Please note!

The marks on the rulers correspond to the needle distance of the machine head. If needle holders for other seam margins are built in, the rulers must be exchanged as well.

In the case of frequent folder changes, the pneumatic quick adjustment 4, order no. 792 5941, facilitates the adjustment of the feeding clamps.





5. Marking lamps

As a pre-adjustment the distance between the light spot 1 and the needles located in front should be 111 mm.

All light spots are to be aligned with respect to the cutting line (pocket opening centre). To do this, one adjusts a distance of 125 mm to the measuring line. See sketch.

The accurate position of the light spots is to be checked as follows, and if necessary, corrected:

Light spot 1:

- Set key  on "front positioning point". LED is luminous.
- Mark the desired seam beginning on the material with a chalk line.
- Position the piece with the chalk line at the front line of light spot 1.
- Start a sewing cycle. - The seam must begin at the chalk line.
- If necessary, position the marking lamp accordingly after having loosened its holders.

Check light spot 2 for the seam end analogously by entering "Rear positioning point" into the switch .

The multiple mask built-into the lamp lens enables the following:

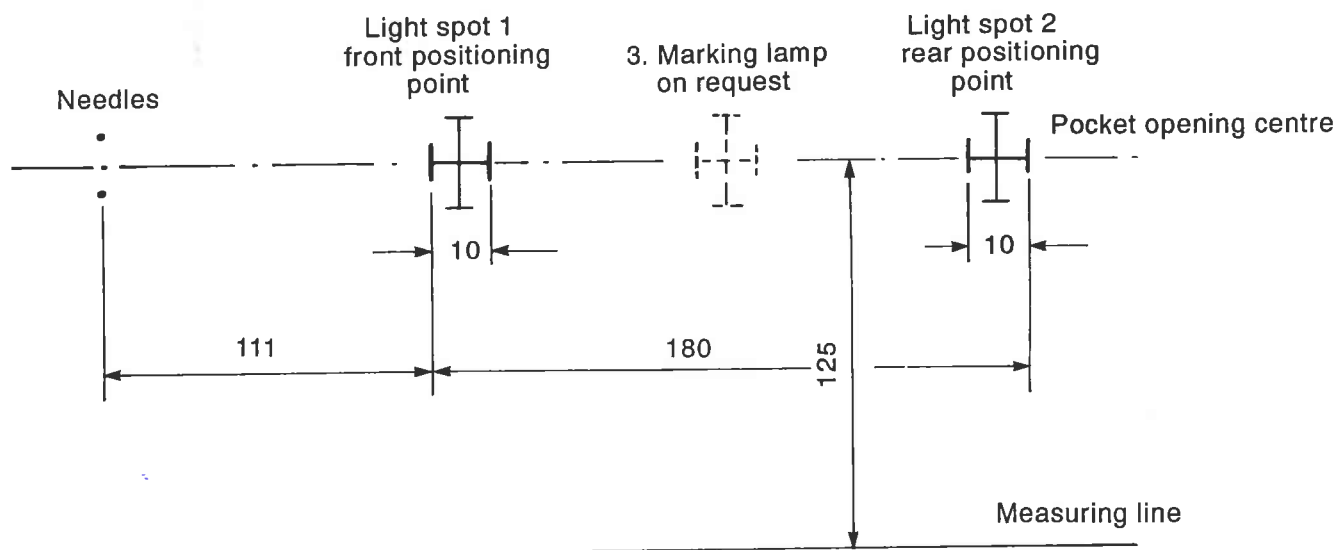
- The distance can be increased up to a maximum of 15 mm by raising the marking lamps.
- With the large H-light spot, distances from 15 up to a maximum of 25 mm can be adjusted by turning the marking lamp by 90° and by accordingly raising or lowering it.

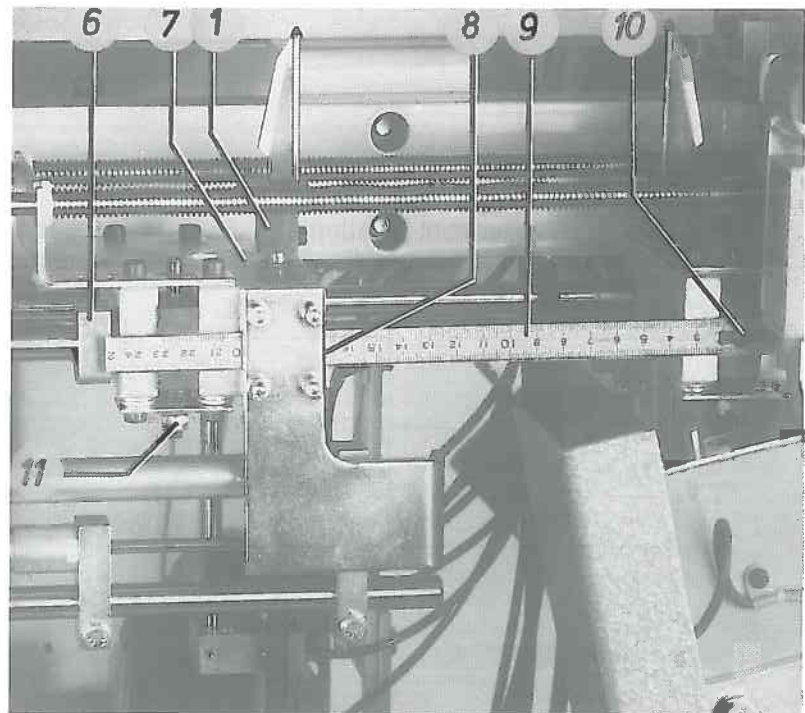
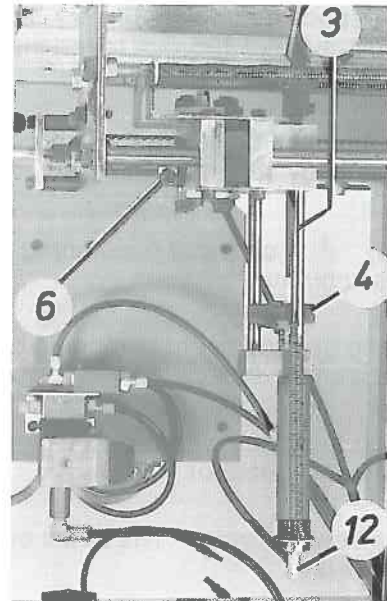
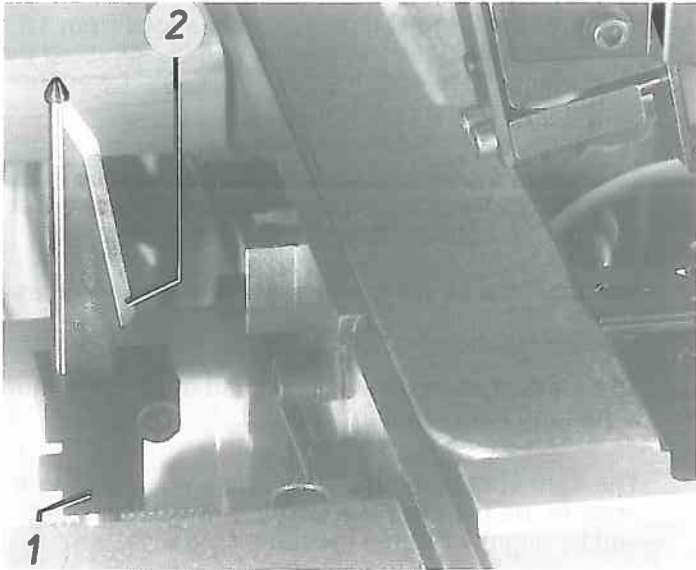
To change the H-light spots it is by all means necessary to readjust the lamp holders and to congruently align the light spots with the pocket opening centre. The maximum sewing range must be observed as well.

The marking lamps can be aligned after having loosened the lamp holders 5 and 6.

The light spot is focussed by raising or lowering the body of the tube 4. Fine tuning of the lines is achieved by slightly turning the lamp holder 7.

A spare halogen lamp is available under order no. 798 281510.





6. Knife blocks for the V-corner cuts



Caution! Keep hands clear of the V-corner knives, as the quickly rising knives can cause serious cutting injury.

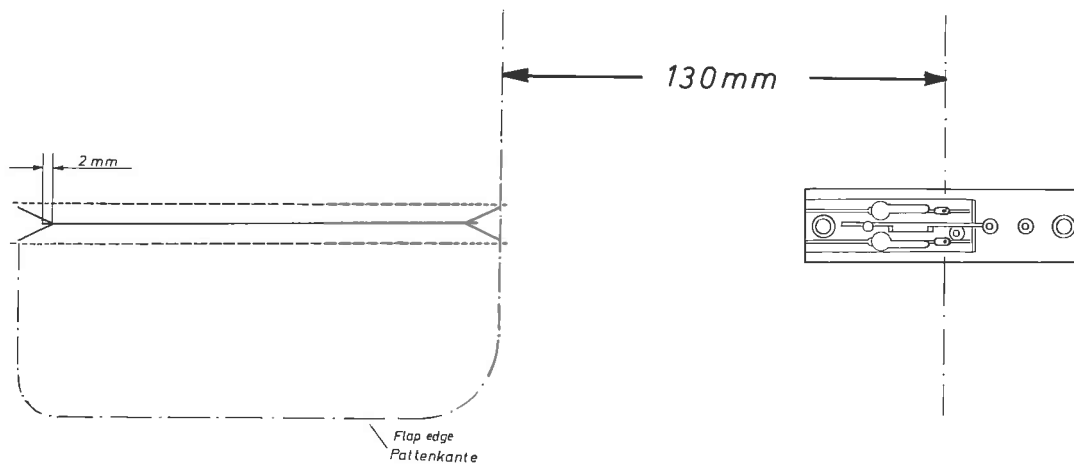
A distance of 130 mm should be pre-adjusted between the cutting edges 2 of the knives in the knife block "seam end" and the needles located in front.

Make the measurements and adjustments at the widest point of the knives 2, when the rod 1 is lifted, by turning the stop screw 5.

This is considered to be a pre-adjustment.

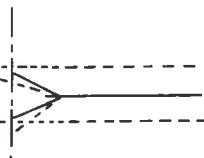
As shown in the sketch, at the seam beginning the cuts should end before the first stitch and at the seam end before the last stitch.

With an attached flap, this corresponds to the flap front edge and rear edge.



6.1 Adjusting the adjustment device for the knife block "Seam beginning" and the accurate position of the V-corner cuts

- Turn on the main switch and select the longest seam to be sewn, eg 170 mm, at key L1 of the control box.
- Sew a trial seam.
To enable better visibility of the V-corner cuts, a piece of Vilene should be ironed on the material.
- Carry out the following tasks according to the seam pattern and cut pattern:
 - a) Adjust the distance of the V-corner cuts at stopper 6 such that the knife block "seam beginning" cuts up to before the 1st stitch. See sketch.
 - b) If necessary, correct the V-corner cuts of the knife block "seam end" at stop screw 5 so that the cut ends before the last stitch.
 - c) Loosen screw 10 and set the length 170 on the ruler 9 congruently to edge 8.
Now the ruler is correctly positioned, also to change over to the sewing lengths L2 and L3, as described in section 2.15 of the operation manual.
 - d) The cuts should be located symmetrically with respect to the seams. See sketch.
Loosen screw 4.
Turn the rod 3 accordingly.
To prevent the piston rod from hitting the inner side of the cylinder, adjust a distance of ca. 5 mm between the block 1 and the knife block 7, when the knives are located below.
Tighten screw 4.
 - e) To adjust two identical distances between the end of the centre cut and the seam, turn the lock nut 11 to the left or right accordingly.
 - f) The lifting motion of the knives can be adjusted at the throttle check valve 12.
The lifting motion should be fast, but not abrupt.



6.2 Changing the V-corner knives



Turn off main switch!

When the knives become less sharp after a certain period of service, they can be exchanged for a set of knives, which is included in the accessories.

Order numbers for sets of V-corner knives are listed in section 1 of this service manual.

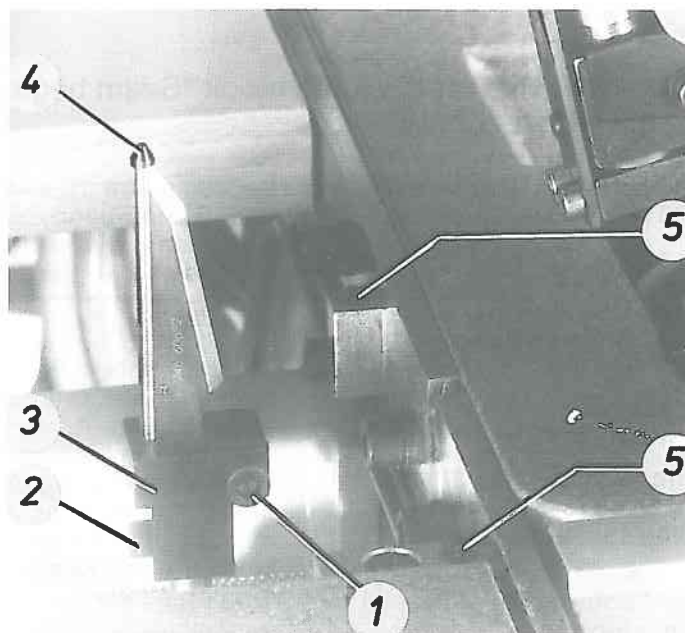


Warning! Keep hands clear of the V-corner knives, as the quickly rising knives can cause serious cutting injury.

- Unscrew screw 2. Remove the knife holder 3 with knife and V-corner knife pin from the knife rod.
- To facilitate working, clamp the knife holder 3 in a vice.

Loosen screw 1 and thus the clamping ring located in the knife holder. The V-corner knife pin and both knives can be removed.

- Install the new V-corner knives in the slots of the knife holder such that their obliquely ground blades show outwards.
- Insert the V-corner knife pin 4 into the provided hole.
- Push both knives down to the base of the knife holder and shift to the rear against the pin. Tighten screw 1.
- After the knife holder has been slipped on until it stops and screw 2 is tightened, it is correctly positioned.

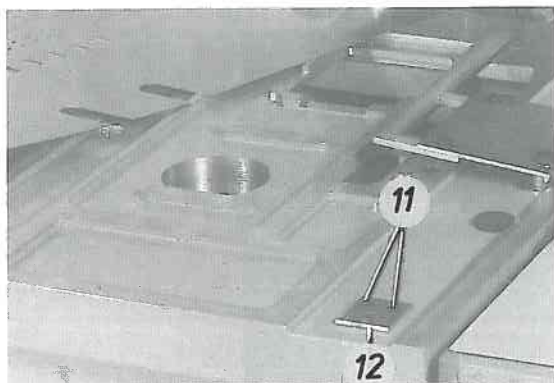


7. Fabric sliding sheet and rest plate

Align the fabric sliding sheet such that its cutout has an identical distance to both sides of the throat plate elevation.

The rest plate 6 should be level with the machine bed.

- Loosen screws 11.
The front edge of the fabric sliding sheet can be set accordingly by displacing the holding plate 12.
- Loosen the screws located under plate 7.
The rear edge of the fabric sliding sheet can be set accordingly by displacing the plate.
Re-tighten the screws.
- Set the rest plate level with the upper side of the table by turning the set screws 5.



8. Stroke height of the feeding clamps

When the flap clamps (optional equipment) are closed, the lifted feeding clamps must pass the machine arm without hitting it.

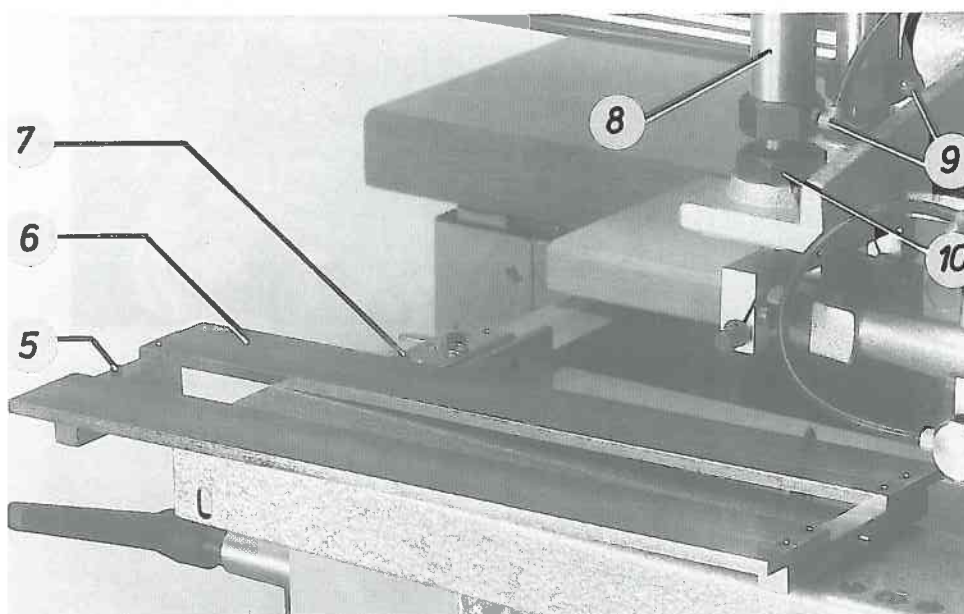
This is the case, when a distance of 30 mm is between the front edges of the lifted feeding clamps and the fabric sliding sheet.

- Move the transport carriage into its front position by heeling back the pedal.
- Turn off the main switch.
Remove the hose connections 9.
Loosen the lock nut 10.

To increase the stroke, screw in the cylinder 8.
To decrease the stroke, unscrew the cylinder 8.

Re-mount the hose connections 9.
Tighten the lock nut 10.

- Check the stroke height, when the main switch is turned on and the feeding clamps are lifted.
When the main switch is turned off, shift the transport carriage by hand to check the free passage under the machine head and at the folder.



9. Synchronizer



Warning! Keep hands clear of all moving machine parts!

Position 2 (needle up)

When the needle bars were disengaged at their top position, the take-up lever should position 2 mm behind its upper dead point.

To adjust position 2, loosen the synchronizer and turn it on the handwheel flange.

Position 1 (needle down)

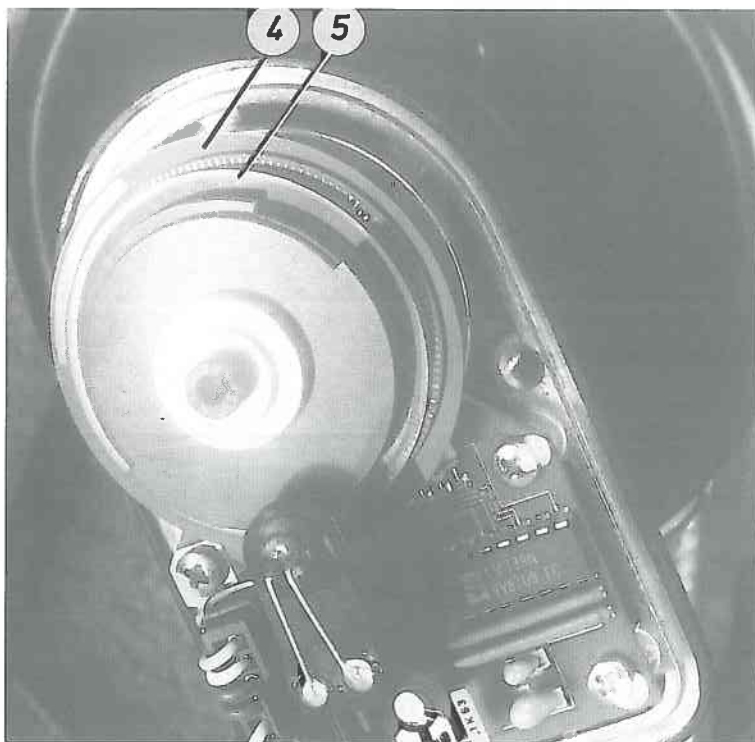
Position 1 determines the timing of the swinging motion of the needle bar frame for seam back-tacking at the seam beginning and seam end.

It is determined by the position of the light aperture 4.

The frame should perform its swinging motion, when the needles are outside the material.

After position 2 has been adjusted, and the light slot 4 is set exactly opposite of light slot 5 (shifted by 180°), the timing of the swinging motion is correct. Do not change the position of light slot 5.

In the programs P66 (position 2) and P67 (position 1) the adjustments may be checked by pressing the Σ -key.



10. Optional equipment / Function - Operating - Adjusting

10.1 Roll-off device (order no. 794 701) and bundle clamp (order no. 794 2201)

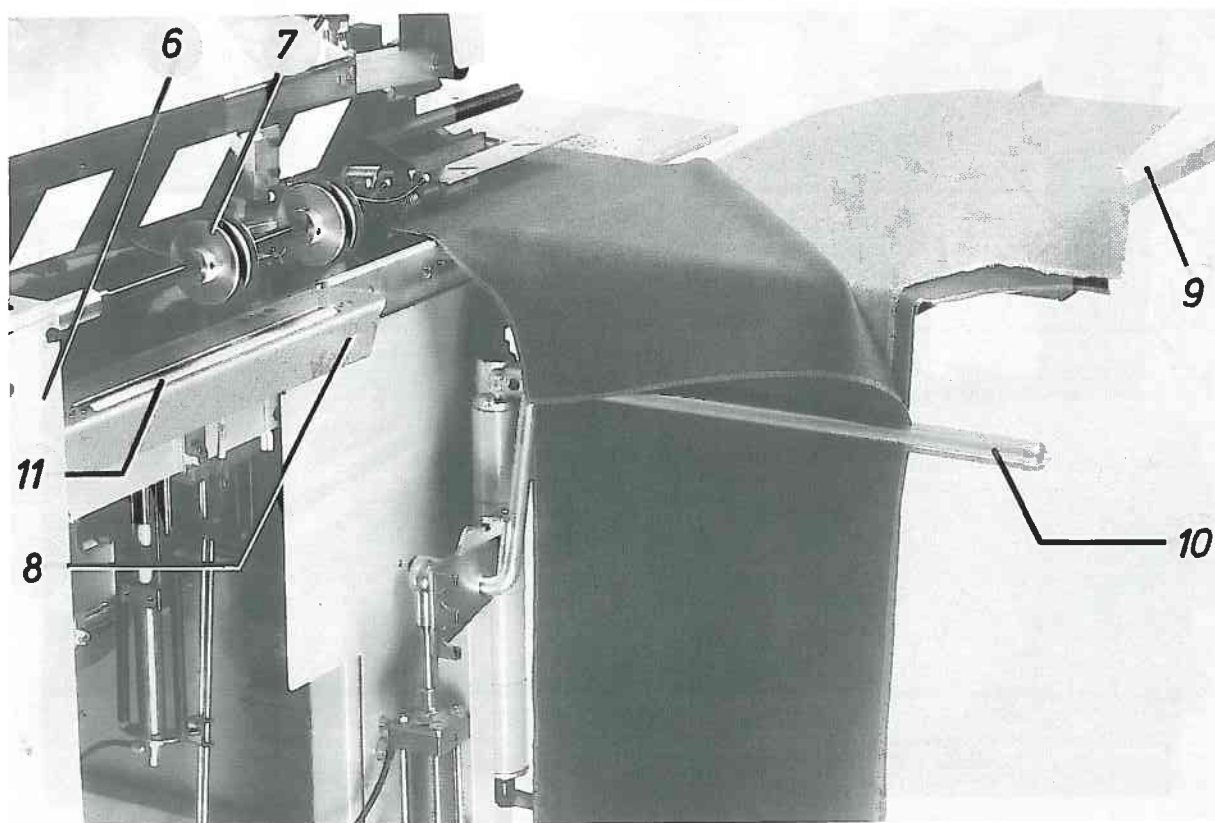
The roll-off device 6 is used, for sewing backtrousers in conjunction with the bundle clamp 10 or an in-house bundle trolley.

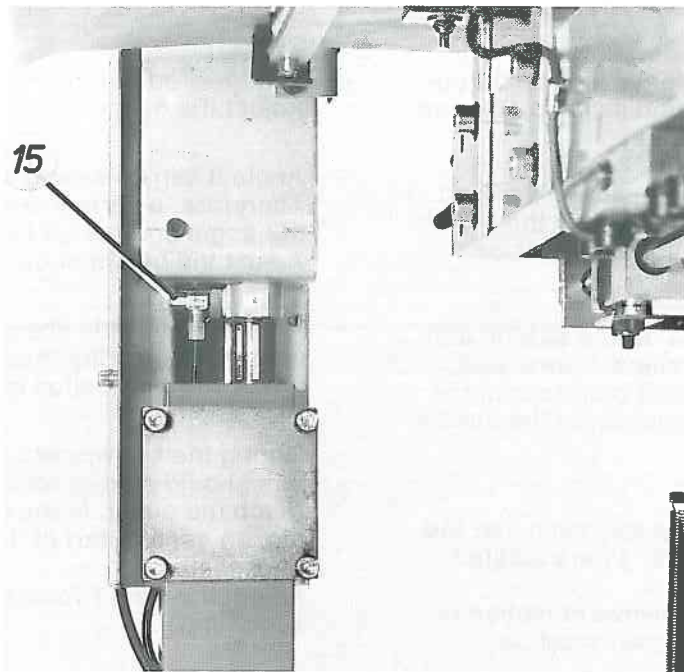
After the pneumatic foot valve has been pressed down, hang the backtrouser pieces into the bundle clamp 10. Pre-position the clamped pieces on the table extension 9.

When the feeding clamps lift after the sewing and cutting process, the feeding rollers 7 lower and quickly transport the backtrouser piece out of the sewing unit, so that it hangs down from the bundle clamp.

- Align bar 12 (see fig. next page) such that the feeding rollers and the puller 11 are located vertically above each other. Unhindered upward and downward motion of the rollers or tilting of the cover must be possible.

- The lowered rollers should rest on the puller. Adjust the height of the bar 12 accordingly.
- Angle 8 can be swung out. Therefore, a certain distance must be between the angle and roll-off device. Adjust the height of bar 12 accordingly.
- Adjust the throttle check valve 13 (see figure next page) and the throttle valve 15 such that the downward motion is fast, but not abrupt.
- During their downward motion, the feeding rollers should start to rotate ca. 3 mm before they reach the puller. In the case of very thick materials, an earlier start of the puller rotation may be necessary. Adjust the switch located inside the device accordingly.





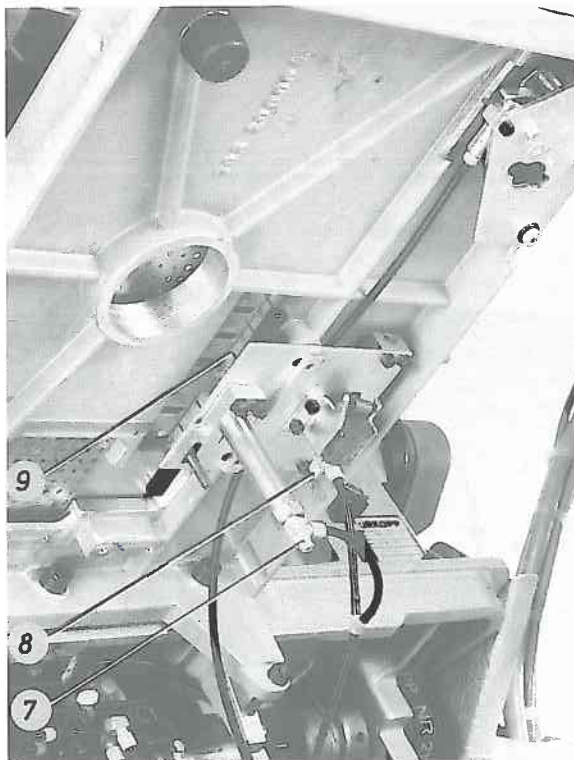
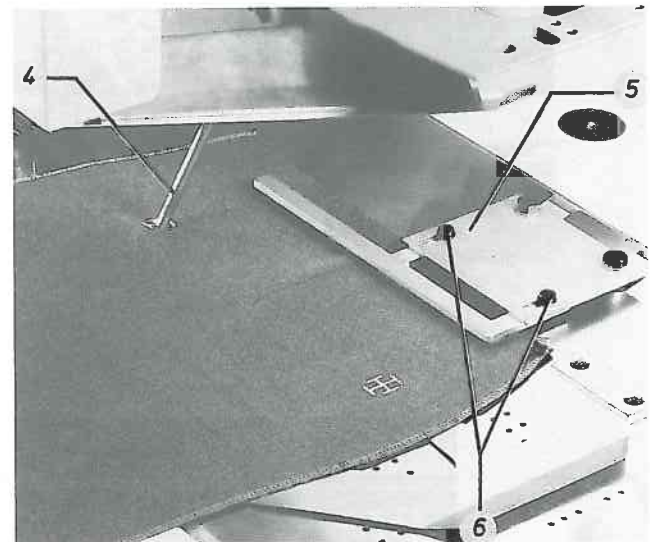
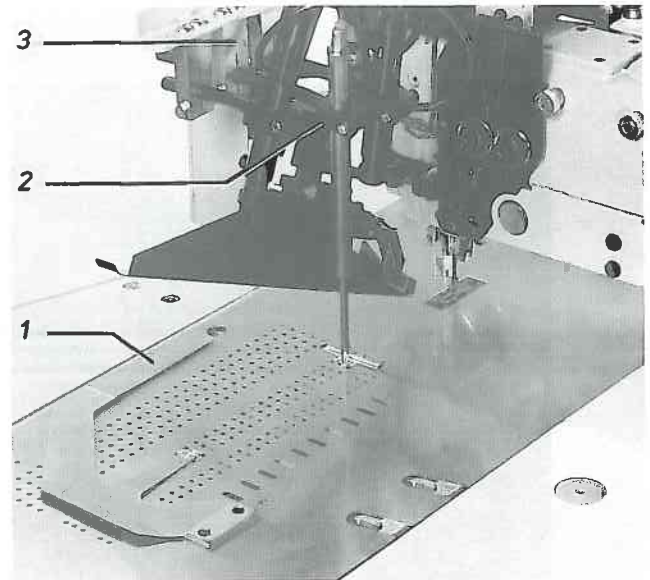
10.2 Down-holder, pocket bag clamp and waistband clamp (order no. 794 1222 or order no. 794 1245 without waistband clamp)

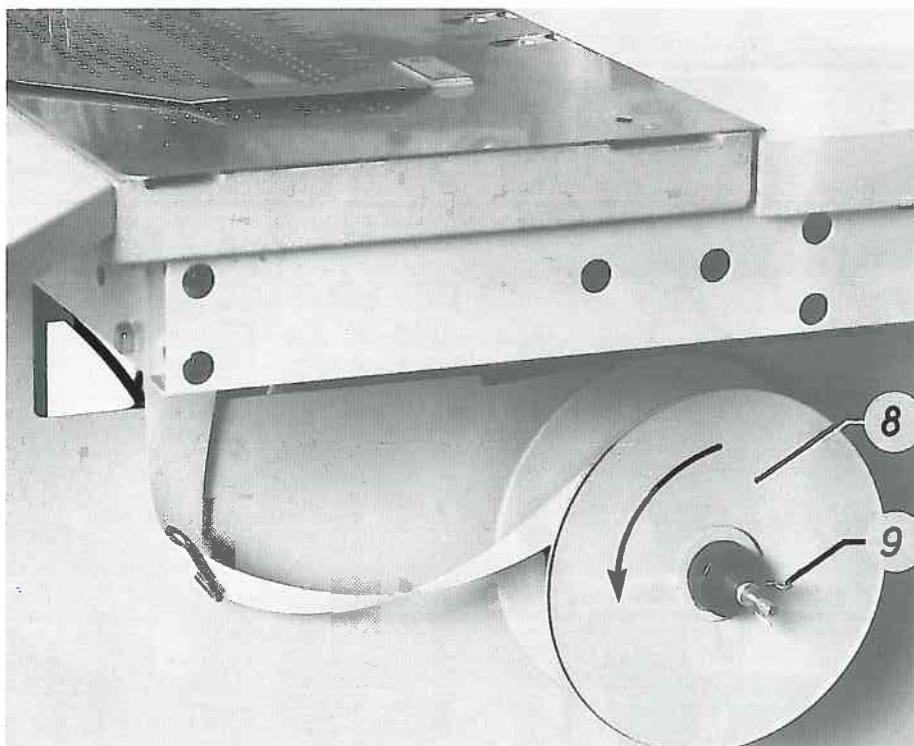
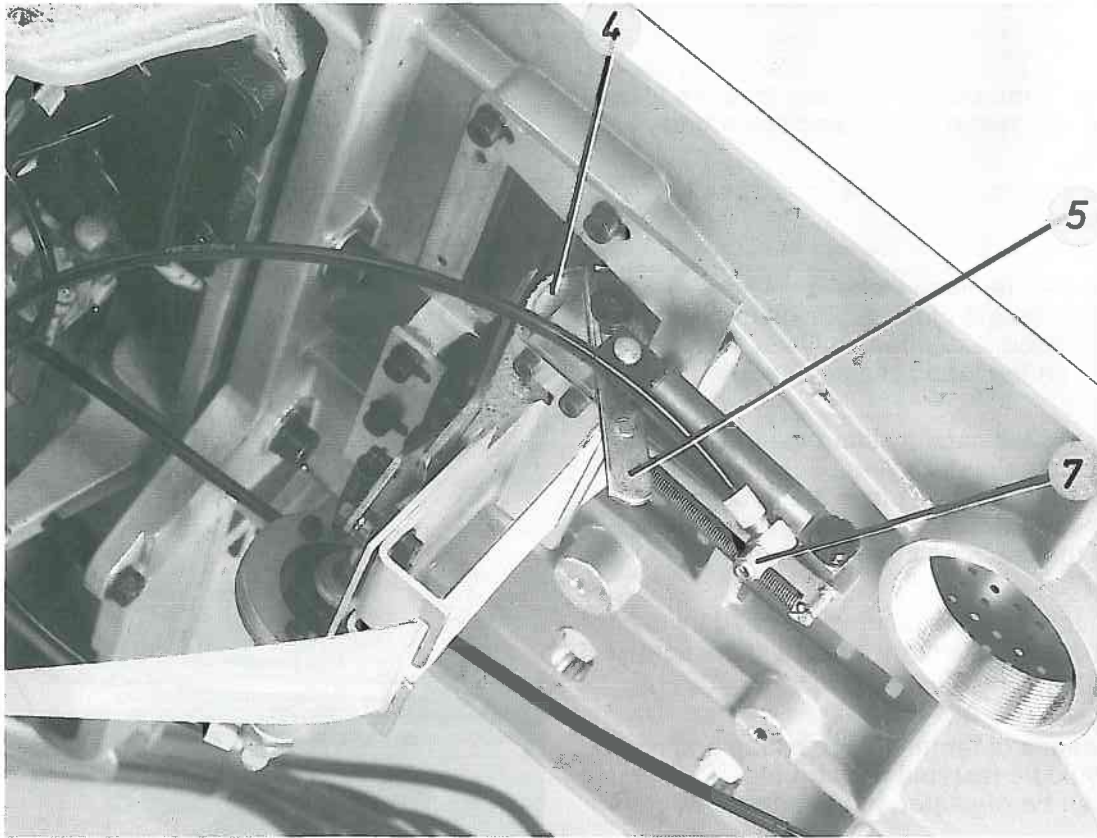
They consist of the fabric clamp 4 that can be lowered, the clamping sheet 1 for pocket bag pieces and the waistband clamp 5 with the needles 9.

The fullness in the pocket opening area produced by darts can be securely held and smoothed.

For positioning the backtrouser pieces see instruction sheet.

- Loosen the clamping piece 2. Adjust the height of the fabric clamp such that the piston rod, extended via knee switch, presses on the fabric sliding sheet.
- The piston rod should clamp the backtrouser piece, not the underlying pocket bag. Loosen the clamping piece 3 and align the fabric holder accordingly to the rear that is, toward the machine head.
- How much the waistband is clamped by clamp 5 can be determined by loosening the screws 6 and aligning the clamp.
- The motions of fabric holder, clamp and needles should be fast, but not abrupt. They can be regulated at the throttle valves 7 and 8.





10.3 Length-controlled feeding and cutting device for reinforcement strips (order no. 794 2921)

The length-controlled feeding and cutting device has been designed for a strip width of 50 mm and pocket openings up to a max. sewing length of 180 mm.

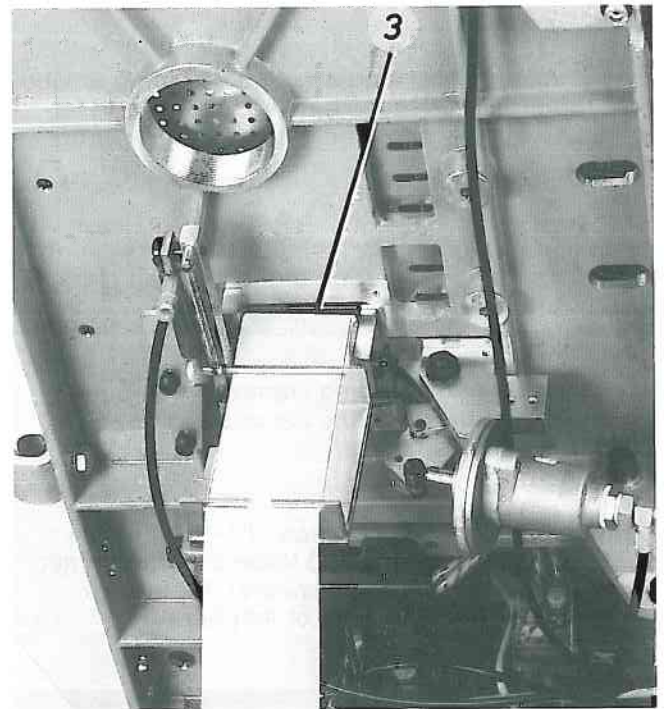
For ordering this optional equipment, the seam margin must be specified so that the proper fabric sliding sheet can be supplied.

8 and 10 mm = order no. 794 2971
12 and 14 mm = order no. 794 2972

The automatic device can be switched on and off using switch  of the control box. See instruction sheet.

Prior to the next sewing cycle, the roller 4 feeds the reinforcement strip slightly forward so that it can be attached while the pocket opening is sewn and cut according to the adjusted sewing length.

This takes place during the machine cycle time without any additional positioning and non-productive times.



Loading of the reinforcement strip

To load a new roll, compress the wire clamp 9 and pull off the disc 8. Make sure that the roll is unwound in the arrow-indicated direction.
To feed the strip manually via the feeding roller 4, operate the lever 5.

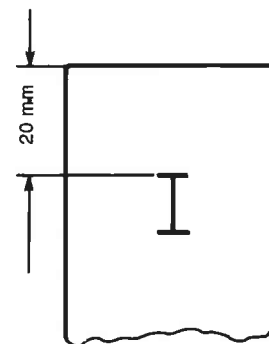
For the 1st cycle, feed the strip onto the fabric sliding sheet by ca. 20 mm.

Adjusting the feeding roller and the clamping pressure for the reinforcement strip

Set the control valve 7 such that the reinforcement strip is advanced quickly by the feeding roller 4, but does not dart out uncontrolled.

During its forward motion the reinforcement strip is clamped by the pneumatic clamping sheet 3.

During feeding and sewing the clamping sheet is raised. Adjust the clamping pressure just enough that the reinforcement strip is fed securely.



10.4 Quick clamp adjustment

Single or double piped pocket openings require folders with different widths.

When changing from single to double piping or vice versa the proper distance between clamp and folder can be quickly adjusted by switching over the valve 49.

For medium weight material the distance between the folder sole and the edge of the lowered clamp should be 1-1.5 mm.

Should the r/h or l/h feeding clamp be equipped with a quick adjustment, the set of parts 792 5941 needs to be ordered twice.

For double piping, the distance of 1-1.5 mm between the feeding clamp and folders is determined by the position of the aired cylinder 35, and for single piping by the position of stopper 40.

Shift the transport carriage such that the feeding clamp is opposite the folder sole for fouble piping. Air the cylinder 35.

When the piston rod is fully extended, adjust a distance of ca. 3 mm between the clamping arm 20 and clamping piece 42. Shift the clamping piece accordingly, adjust the distance of 1-1.5 mm by shifting the cylinder.

For this, it is recommended to vent the cylinder 35.

Install the folder for single piping. When the quick adjustment is vented and rests against the stopper 40, check the distance of 1-1.5 mm. Set the stopper 40 accordingly.

For this, it is recommended to air the cylinder 35.

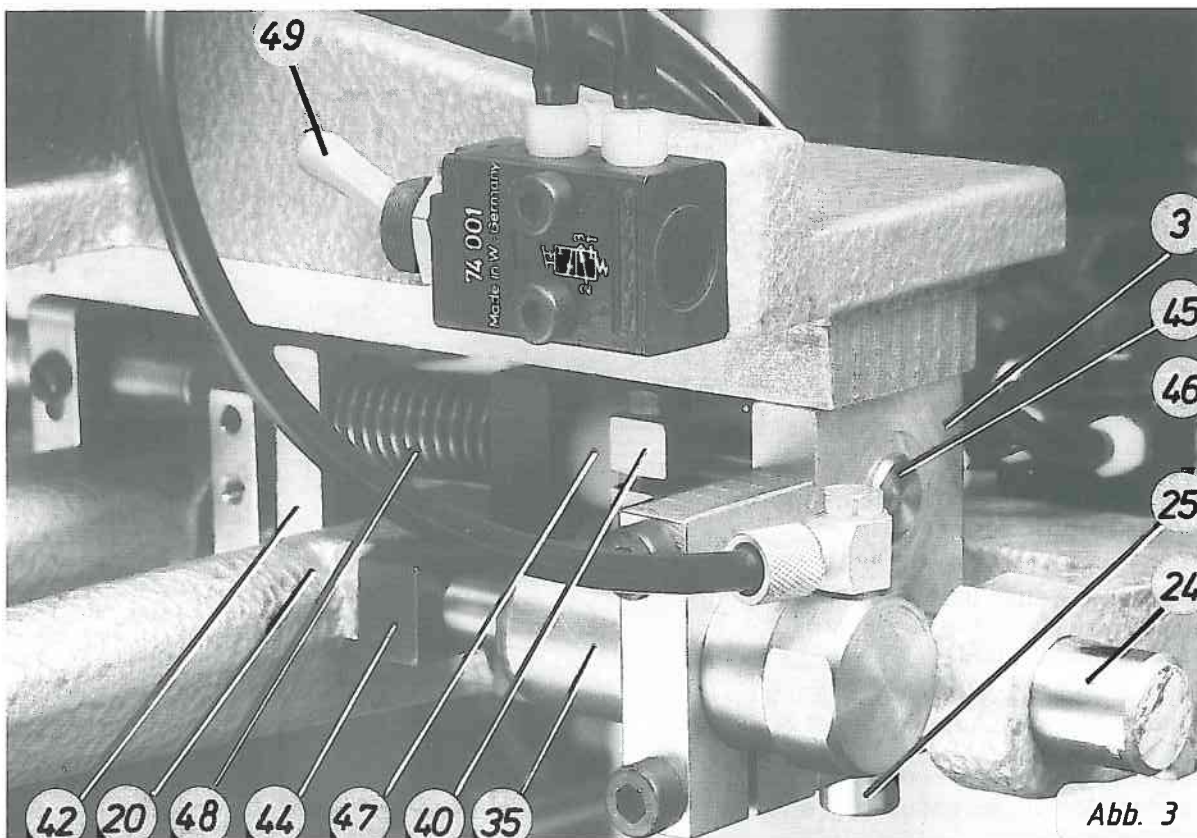
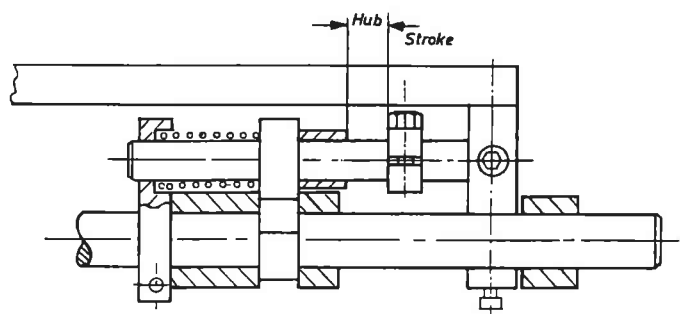


Abb. 3



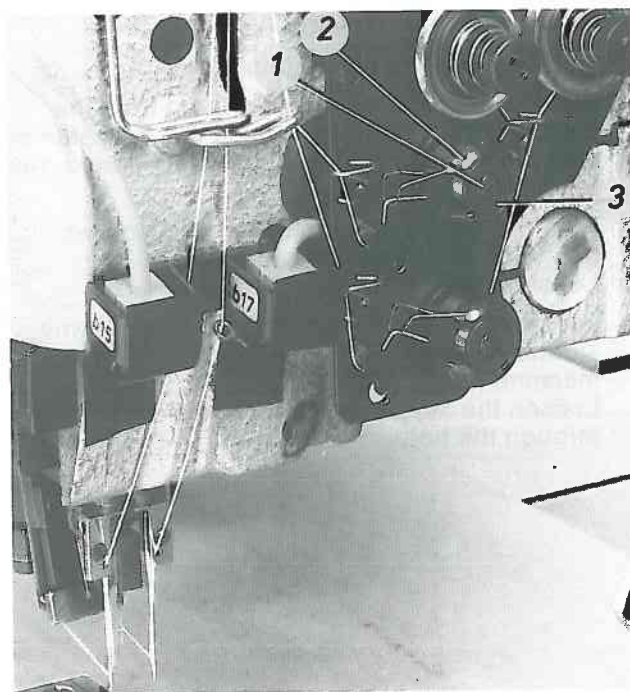
11. Adjustments on the machine head

11.1 Check springs

The check springs should keep the needle threads under a low tension until the needle points enter the material. If the needle threads are already loose at this moment, the descending needles may stitch their own threads.

- To adjust the path of the check spring, loosen screw 1 and turn the regulator 3 accordingly.
- To adjust the tension also loosen screw 1 and turn the bushing 2 accordingly.

Turning to the right - tension increased
Turning to the left - tension decreased



11.2 Crankshaft journal at the arm shaft

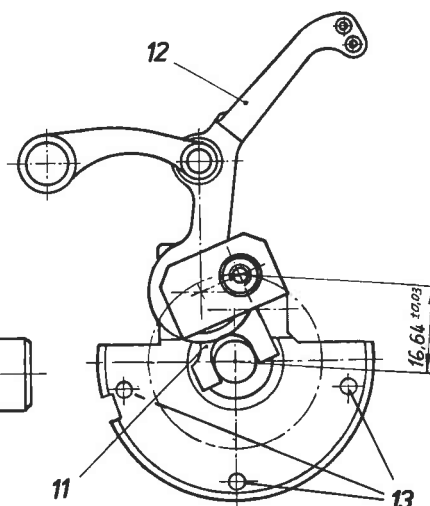
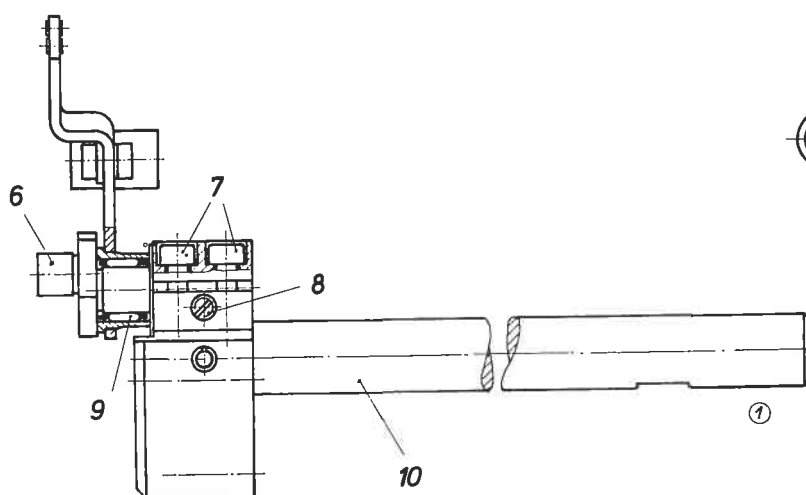
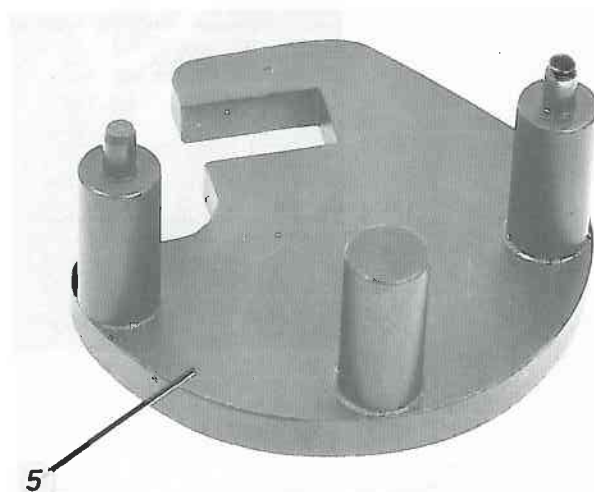
The distance between the eccentric crankshaft journal 6 and the arm shaft 10 determines the size of the needle bar stroke, and thus the upper dead point of the needle bars.

The crankshaft journal has been precisely adjusted at the factory!

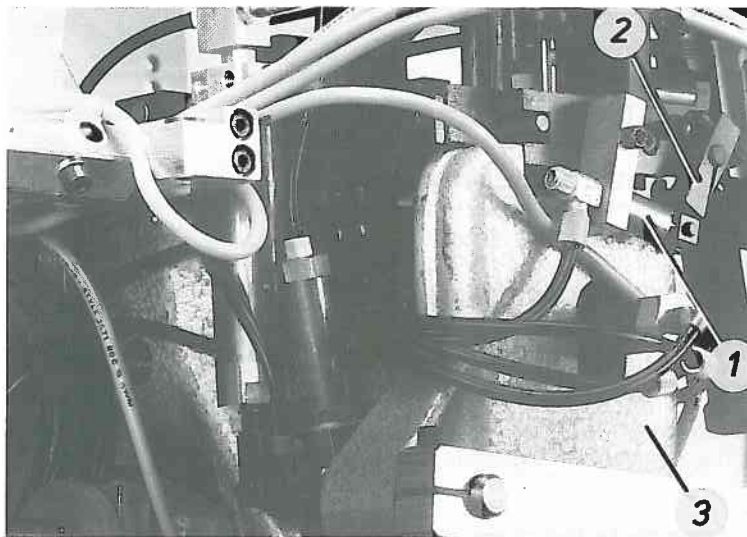
See figure opposite.

After change of the take-up lever or other work on the arm shaft, re-adjust the crankshaft journal.

This can be done without removing the crank and arm shaft, using the gauge 5, order no. 2462591.



- Main switch a1 off.
- Remove the cylinder 1, the swing lever 2 for the thread puller and the front cover plate 3.
- Remove the frame according to 11.3.
- Loosen the needle connecting rod from the crankshaft journal 6 by turning out its fastening screw, and remove it with the needle cage. (Attention l/h thread!)
- Turn the handwheel, until the Allen screws 7 point downward and are accessible. Loosen the Allen screws 7.
- Loosen the thread tension plate 4 and swing sideways so that the underneath hole in the machine arm is accessible. Loosen the support screw 8 now accessible through the hole.
- Insert the gauge 5 with its pins into the holes 13.
- Turn the crankshaft journal 6 such that it enters the cutout of the gauge 5. Press on the crankshaft journal until the take-up lever 12 is set so tight that only a drop of oil can pass.
- Tighten the Allen screws 7 and support screw 8 securely. Remove the gauge and turn the handwheel to check the smooth running of the machine.
- Slip the needle connecting rod with the needle cage onto the crankshaft journal and tighten the screw. (L/h thread!)
- Install the frame as described in 11.3 and adjust.
- Re-mount all removed parts.



11.3 Needle bar frame

Seam beginning and seam end of the pocket opening are secured by condensed stitches or by backtacking (swinging the needle bar frame).

The seam backtacking can be activated and deactivated using key .

When a stitch length of 1.4 mm has been adjusted for condensed stitches, the seam is not backtacked. See short description of the Microcontrol.

Swinging motion of the frame

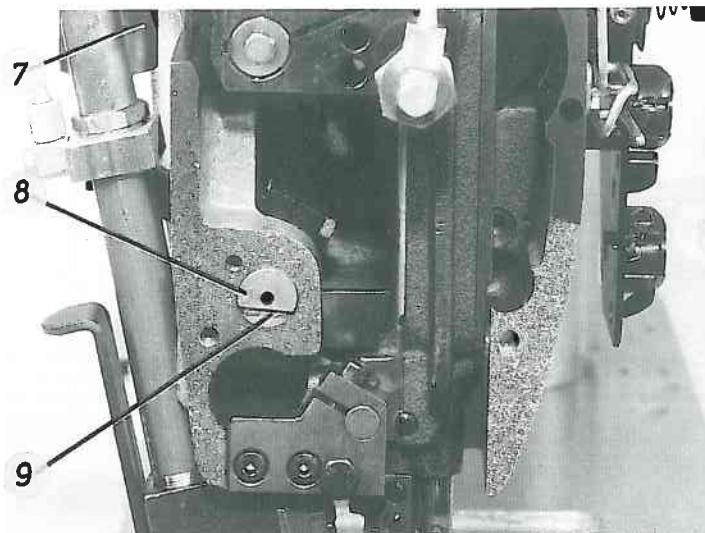
The frame is swung at the seam beginning and seam end by cylinder 7.

After the eccentric axle 8 has been adjusted, seam backtacking plus needle feed result in a swinging range of ca. 3.5 mm.

The slot 9 in the eccentric must be located in the bottom half of the circle section of the eccentric axle 8.

When the cylinder 7 is in its idle position (spring in initial position), the distance between the needles (needle size Nm 100) and the front edges of the needle hole should be 0.2-0.3 mm.

The needle feed is obligatory after the needle has entered the material. The timing of the swinging motion must be adjusted on the synchronizer according to section 9, so that it takes place when the needle is outside the material.

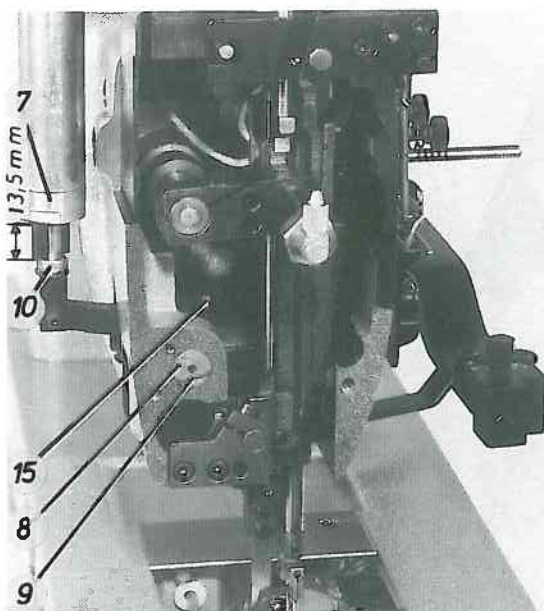


To adjust proceed as follows:

- Move the transport carriage into its rear end position.

⚠ Turn off the main switch for safety reasons!

- Remove the guard plate, cylinder 2 and front cover plate with the folder.
- Clamp a 13.5-mm-thick object between the piston rod 10 and cylinder 7.
- Lower the needle bars into their bottom position by pressing down the catch and turning the handwheel.



Loosen the clamping screw 15.

Turn the eccentric axle 8 such that the needles enter at the centre of the needle holes. Make sure that slot 9 is in the bottom half of the circle section of the eccentric axle.

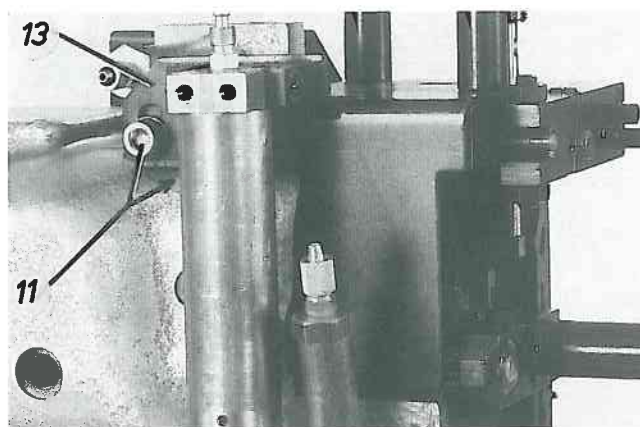
Tighten the clamping screw 15.

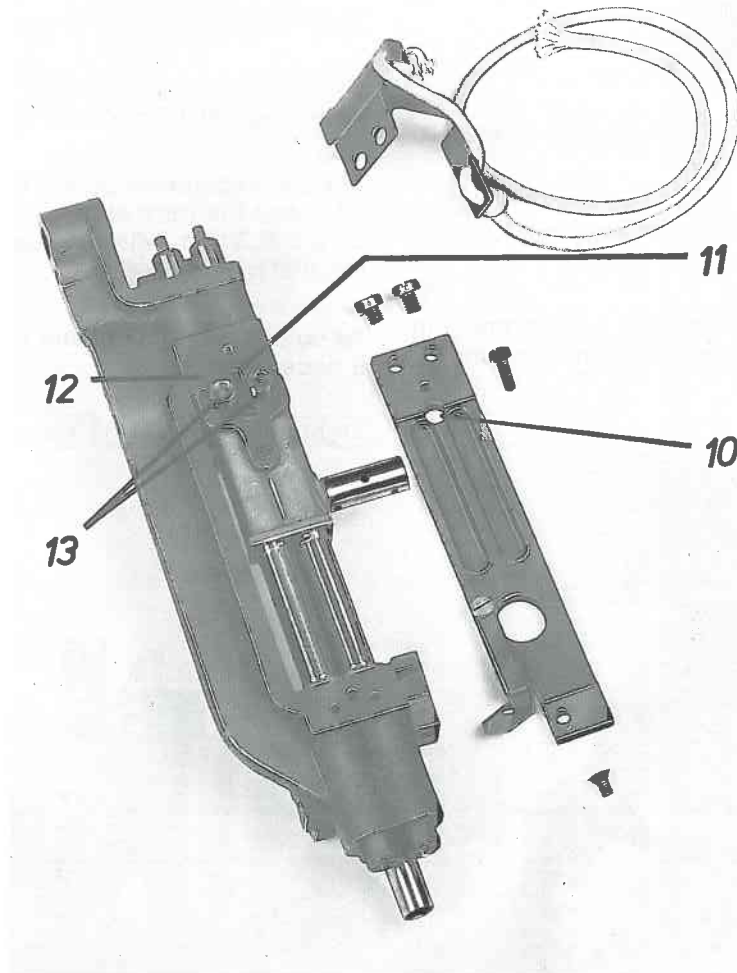
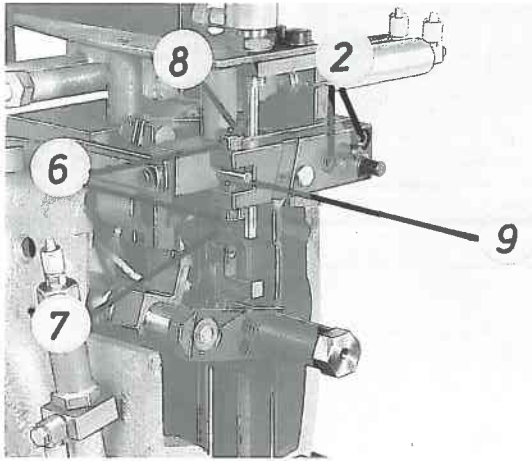
Bring the needles into their front position by removing the 13.5-mm-thick object.

The distance between the needles (needle size Nm 100) and the front edge of the needle hole should be 0.2-0.3 mm, when the needle has just entered the material.

To do this, set the holding plate 13 higher or lower, if necessary.

Tighten the screws 11 securely.





Adjusting the frame to the needle bars

For secure engaging and disengaging of the needle bars, the frame must be very accurately adjusted with respect to the needle bars, using the gauge 5, order no. 246919.

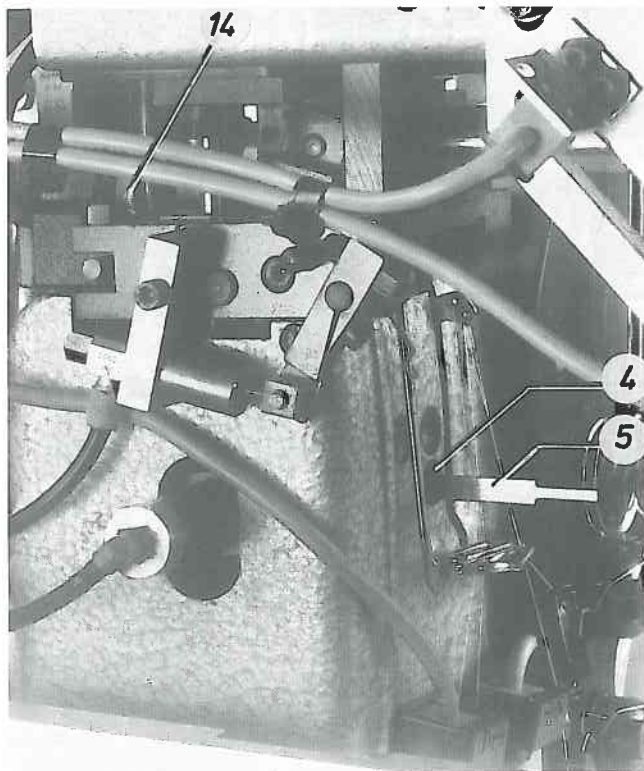
When the needle bars are engaged and in their upper position, it must be possible to slide the gauge 5 with its 2.6-mm-high adjustment side through the holes 4 and 10 into the groove 11 without play between the frame 12 and the clamping rings 13 of the needle bar.

If the adjustment is correct, the 2.8-mm-high side of the gauge with the hole cannot be slid between the frame and clamping rings.



Turn off main switch!

- To engage the needle bar press down the catch 14 and turn the handwheel.
- Loosen the screws 2 and the lock nut 6.

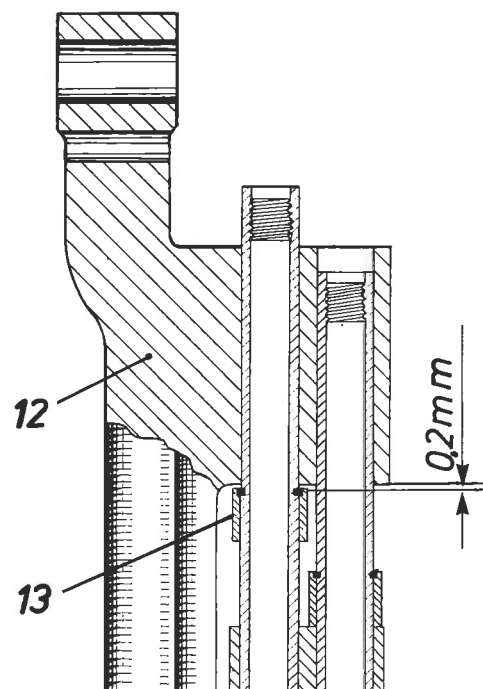


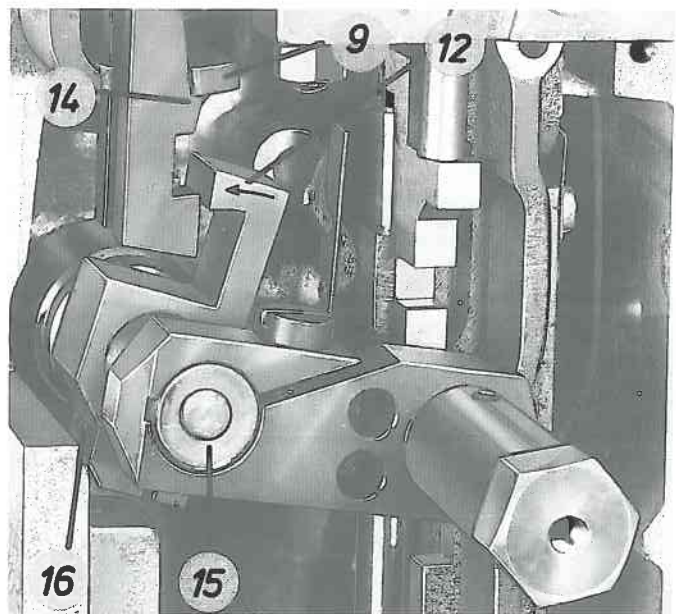
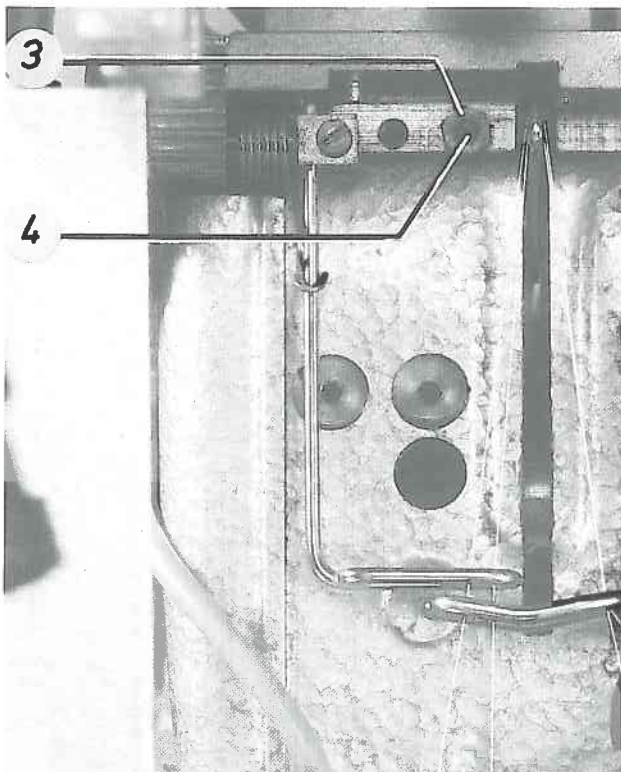
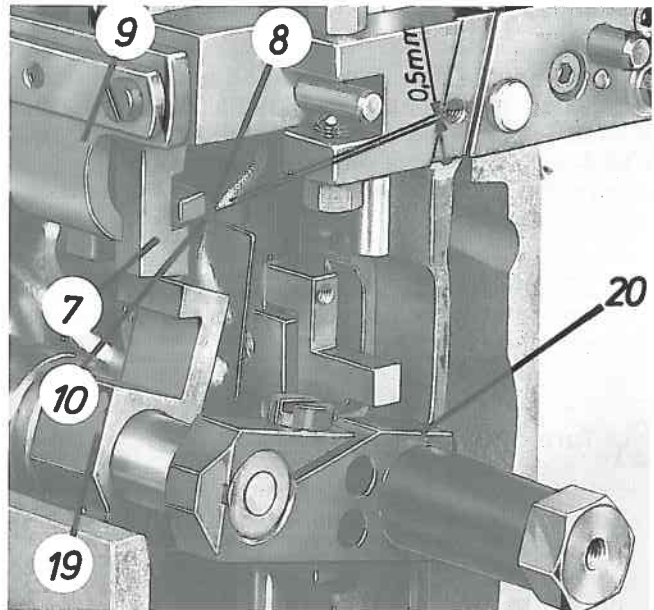
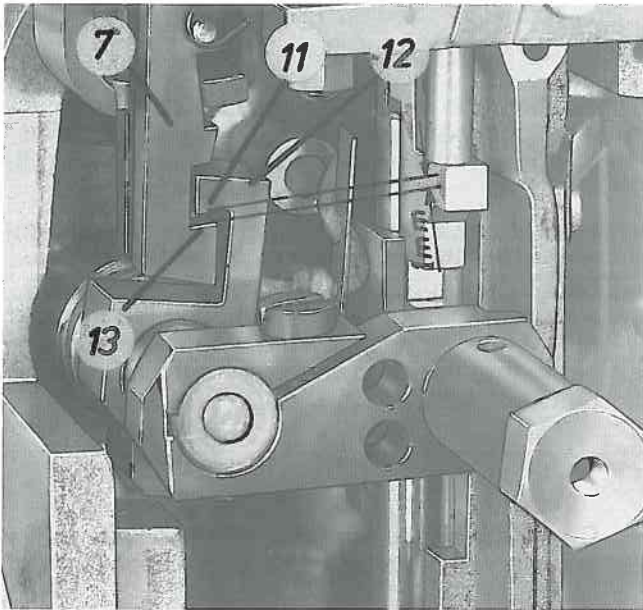
Turning the lower set screw 7 to the right = The distance between the frame and clamping rings decreases.

Turning the upper set screw 8 to the left: The distance between the frame and clamping rings increases.

Prior to this, the respective set screw opposite must be loosened, and when the adjustment is completed, it must be rescrewed against the pin 9.

- Insert the 2.6-mm-high adjustment side of gauge 5. Turn the handwheel to raise the needle bars to their upper position. A slight tightness should be perceptible. When the 2.8-mm-high adjustment side is inserted, it must be impossible to turn the handwheel beyond the upper dead point.
- Tighten the screws 2 and lock nuts 6 securely.
- Check the adjustment of the centre knife as described in section 11.12, and if necessary, re-adjust.
- Re-mount all removed parts.





Engaging the needle bars

When the cylinder 2 is deactivated, the needle bars are disengaged and are locked in their top position.

If the cylinder 2 and thereby the catch 7 is activated, the needle bars are engaged, when the cross-head reaches its upper dead point.

To engage the needle bars by hand, press the catch 7 down into its bottom position and turn the handwheel to engage the needle bars.

If the catch 7 is not held pressed down, the needle bars will disengage during the next rotation, when they are in their upper position.

In top (deactivated) position of the catch 7 a distance of 0.5 mm should be between the bottom edge 8 of the lock 9 and the edge 10 of the catch.

In bottom (activated) position of the catch the edge 11 of the swing lever 12 should pass above the edge 13 of the catch at a distance of precisely 1 mm. Measure both distances with a feeler gauge.

Position of the swing lever 12. After the cylinder has been deactivated, the catch rests under the lock 9 with its lug 14.

Set the swing lever 12 on the shaft 15 such that the catch 7 is just pushed off the lock 9 by the widest lever deflection to the rear (arrow-indicated direction).

The needle bars should move roughly opposite to the centre knife that is, when the needles are down, the drive lever 20 should be in upper position. The precise adjustment must be made as described in section 11.12.



Turn off main switch!

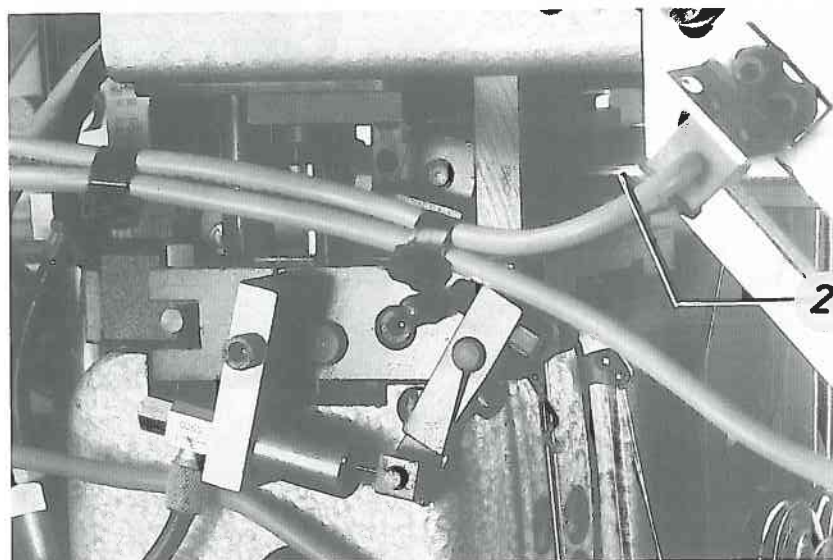
- Adjust the cylinder 2 such that a distance of 0.5 mm is between the bottom edge 8 of the lock 9 and the edge 10 of the catch.
- Loosen the lock nut 3. Pull the catch 7 to the rear against the lock 9, press down by hand into its bottom position and hold pressed.

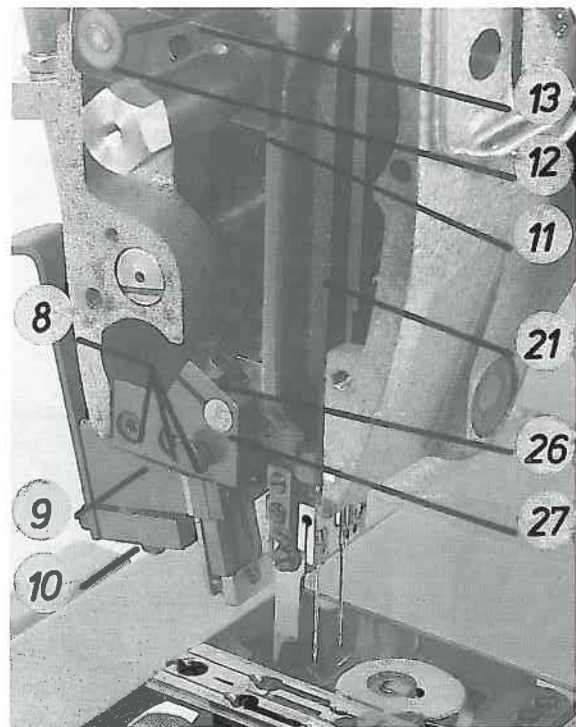
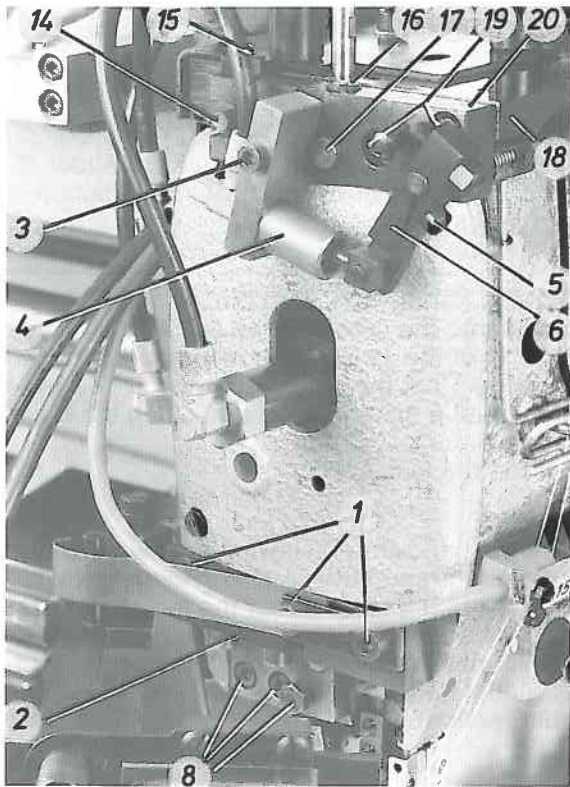
Turn the handwheel, until the swing lever 12 moves into the cutout of the catch 7, and the edge 11 of the swing lever is located opposite the edge 13 of the catch. Turn the set screw 4 and adjust a distance of 1 mm using the feeler gauge. Tighten the lock nut 3.

Turn the handwheel to swing the swing lever 12 out of the area of the catch 7. Release the catch so that it rests under the lock 9 with its lug 14. Loosen the screw 16. Turn the handwheel until the swing lever 12 has completed its widest deflection to the rear (arrow-indicated direction).

Turn the swing lever 12 on the shaft 15 into the position that just suffices to push the lug 14 off the lock 9. Tighten screw 16.

Re-mount all removed parts.





Removing and installing the frame



Turn off main switch!

Removing

- Loosen screw 5.
- Unscrew screw 3, remove the cylinder 4 with the swing lever 6 for the thread puller and the front cover plate with all parts.
- Loosen screw 13.
- Remove the knife drive lever 11 from the shaft 12. (Attention wedge!).
- Unscrew the screws 8 and remove the guide plate 9. When the r/h screw is unscrewed, the needle thread catcher 10 is loosened.
- Unscrew the screws 19. Carefully remove the holding plate 20 with the frame 21 from the stop pin 14. If necessary, loosen a set screw 15.

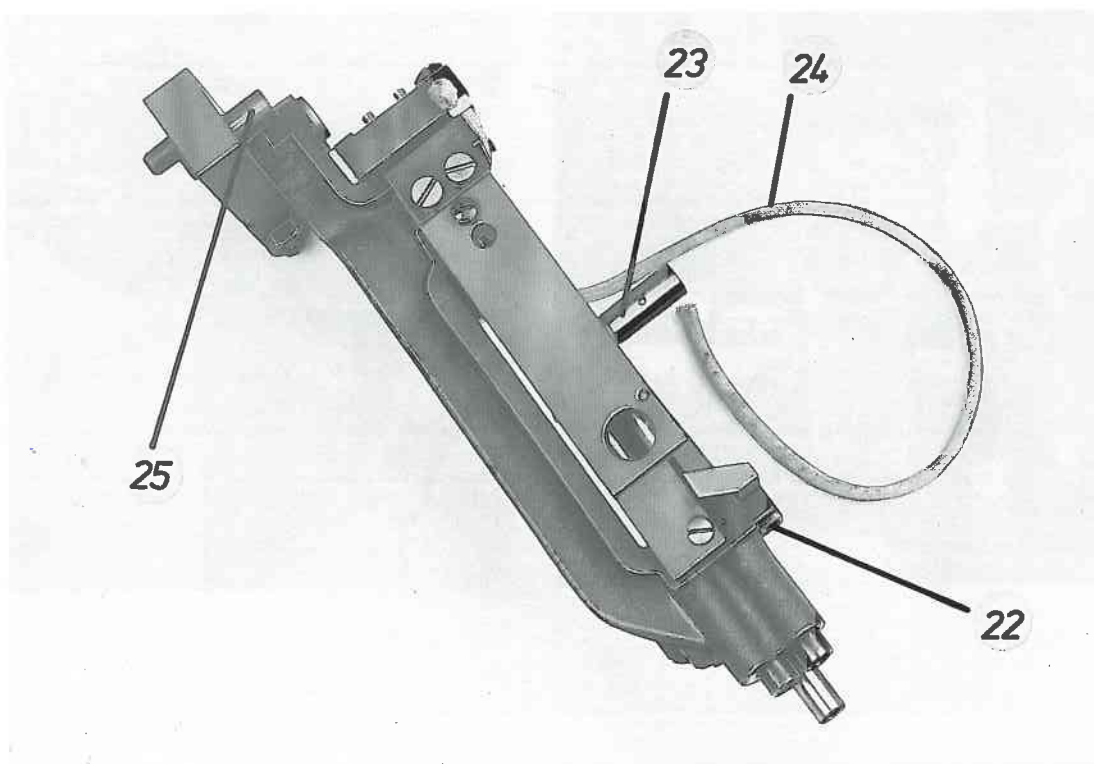
Attention! Do not loosen both set screws. The frame has been adjusted at the factory with these screws such that the cross-head does not touch it.

To facilitate removal, slightly turn the hand-wheel forward and backward.

- After having loosened the screw 16 and removed the bearing bolt 17, the holding plate can be removed from the frame.

Mounting

- Fasten the frame 21 with the bearing bolt 17 at the holding plate 20.
- Tighten the screws 16. Holding plate and frame should be set so tight that a drop of oil can pass.
- Install the frame such that the pin of the cross-head 23 enters the needle connecting rod, the pin 25 enters the plate 18 and the hole in sliding block 22 slips over the pin of the connecting rod for the frame swinging motion.
- Screw in the screws 19 and tighten them only slightly, as the precise adjustment will be made later.
- Remove the top cover plate. Slip the oil wick 24 for the needle bar lubrication under the oil felt in the machine arm using a screwdriver.
- Fasten the guide plate 9 with the screws 8. At the same time, fasten the needle thread catcher 10 with the r/h screw.
- Loosen the screws 26. Press in the bolt 27 until the frame 21 is set tight that only a drop of oil can pass. Tighten the screw 26.
- Turn the handwheel to check the smooth running of the machine.



11.4 Hook shaft height



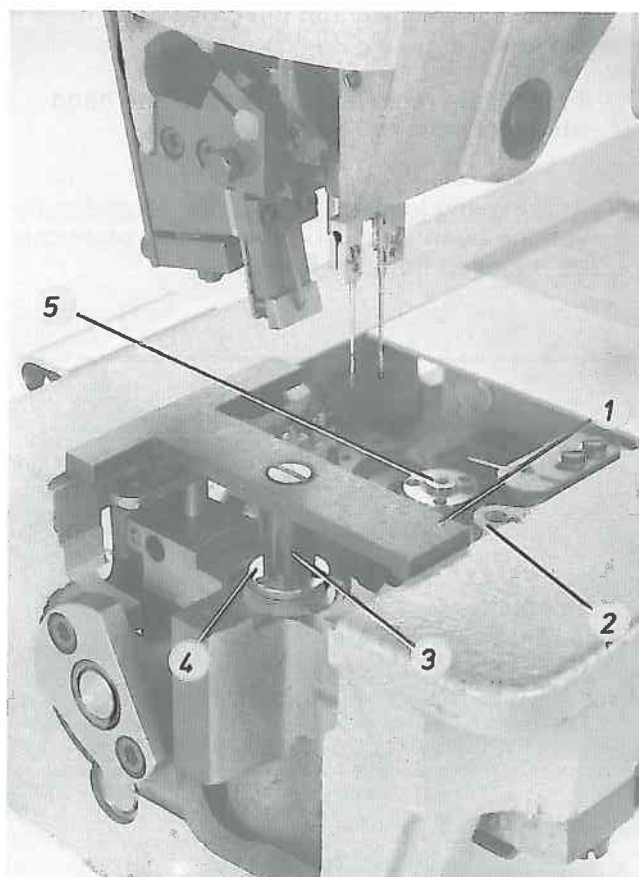
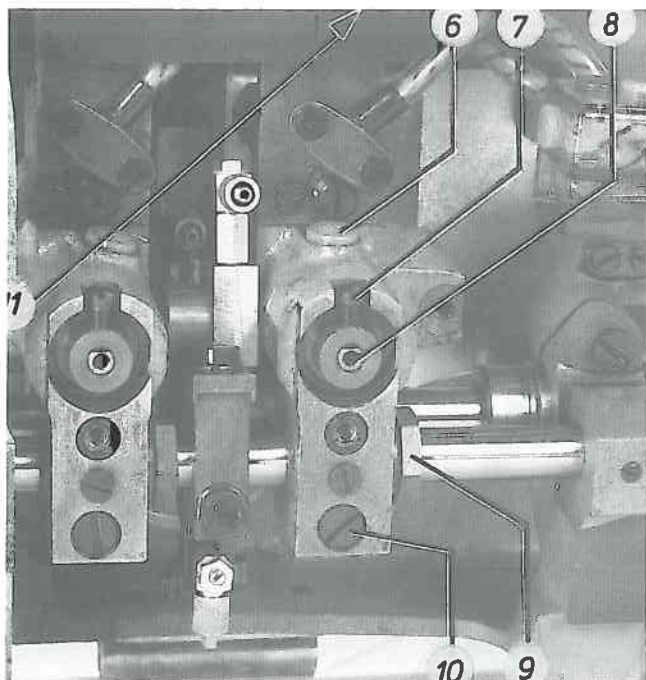
Turn off main switch!

The distance between the throat plate rest 2 and the shoulder 4 of the hook shaft should be 17.7 mm.

The exact height of the hook shafts 5 can be adjusted using the gauge 1, order no. 244 1001.

- Remove the throat plate and both hooks as described in 11.10.
- Lay the gauge 1 on the throat plate rest as shown in the figure so that the measuring sleeve 3 of the gauge slips over the pin 5 of the hook shaft.

- Remove the plastic plug 6 and loosen the gearwheel screws located underneath.
- Loosen the screws 7 and remove the pressure pins 8. Slide the hook shaft shoulder under the measuring sleeve 3 of the gauge. In this position tighten the gearwheel screws securely.
- Push the pressure pin all the way in until it contacts the hook shaft and tighten screw 7 on the flat of the pressure pin 8.



11.5 Adjusting the meshing of the teeth of the hook drive



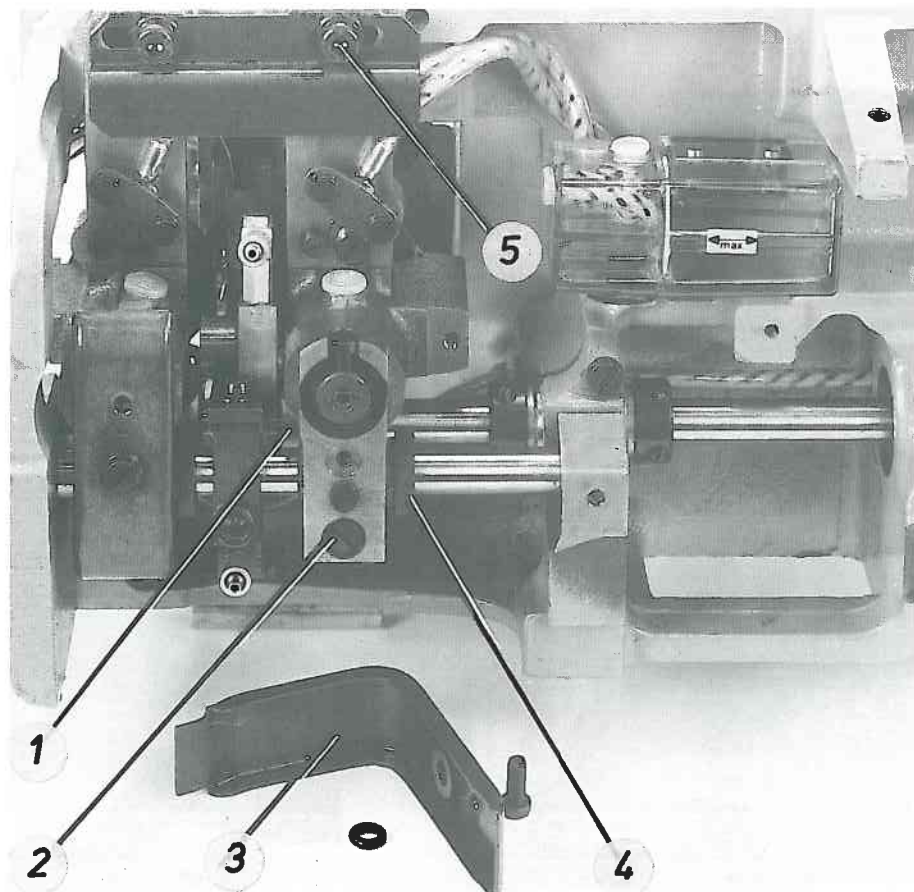
Turn off main switch!

The play between the worm and worm gear should be as small as possible; smooth running, however, must be guaranteed. Therefore, after each hook drive adjustment in axial direction, the meshing of the teeth needs to be readjusted. Loop stroke and hook point - needle clearance must have been adjusted as described in sections 11.6 and 11.8.

- Remove the oil drip pan 3, loosen screws 2 and 5 (screw 5 only slightly). Loosen the screws of the worm gear 1.
- Shift the worm gear 1 axially such that a distance of 0.3 mm is between the gear and the inner side of the hook housing.

For the r/h hook housing this distance must be measured on the right of the worm gear, and for the l/h hook housing on the left using a feeler gauge.

- Turn the eccentric bushing 4 to adjust a slight but perceptible basic play everywhere between worm gear and worm.
Turning the bushing 4 up - meshing of the teeth loosened
Turning it down - Meshing of the teeth tightened.
- Check the loop stroke and hook point - needle clearance, and if necessary, correct.
- Tighten the hook housing screws 2 and 5, fasten the oil drip pan 3.



11.6 Loop stroke



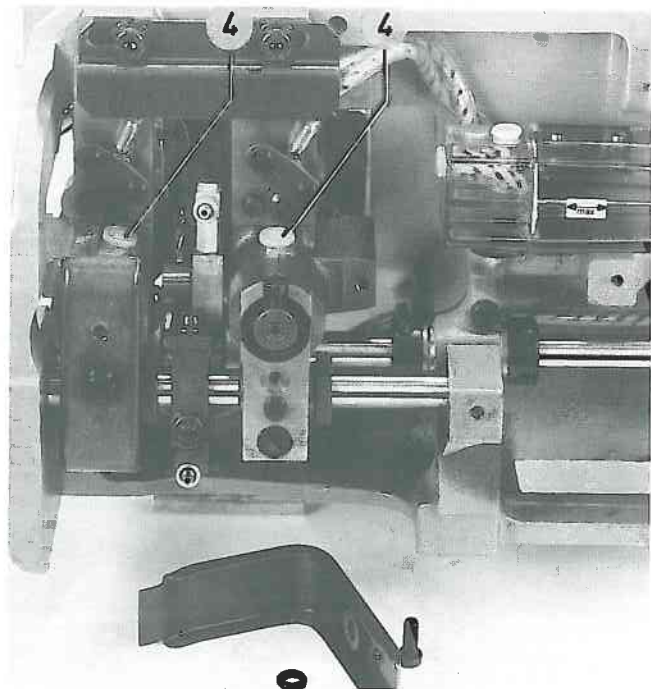
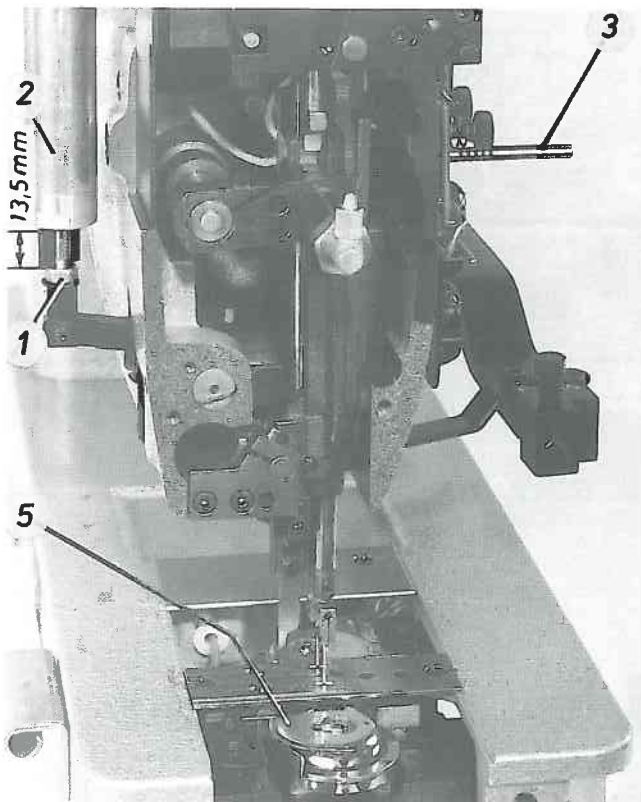
Turn off main switch!

Loop stroke is the following:

When the needles have swung to the needle hole centre and, by turning the handwheel in direction of rotation, have risen from their lower dead point by 2 mm, the hook points must be at the centre of the needle. The stop pin 3, order no. 244 4070 included in the accessories, is used to determine the loop stroke position. To do this, the pin is inserted into the groove of the arm shaft crank.

- Remove the folder, the throat plate and the bobbin case caps 5 with the bobbins.
- Swing the needles to the centre of the needle hole. To do this, clamp a suitable object (13.5 mm) between the piston rod 1 and the cylinder 2.
- Tilt the machine head backward.

- Remove the plastic plug 4 and loosen the gearwheel screws located underneath.
- Tilt the machine head forward.
- Slide the stop pin 3 through the hole of the machine arm and lock into place in the groove of the arm shaft crank.
- Turn the hooks by hand so that their points are at the centre of the needle.
- Tilt the machine head backward, tighten the first gearwheel screw.
Remove the stop pin 3.
Tighten the second gearwheel screw.
- Press the plastic plug 4 into the holes again and remove the 13.5-mm-object



11.7 Height of the needle holders

To adjust the needle holders 5, the needle must be located above the centre of the stitch hole and in loop stroke position.

At this moment, the distance between the upper edge of the needle eye and the hook point should be 1.5 mm. See sketch.

The adjustment can be made using the measuring bridge 7, order no. 2124942, available on request, and the adjustment pin 6, order no. 2161070.

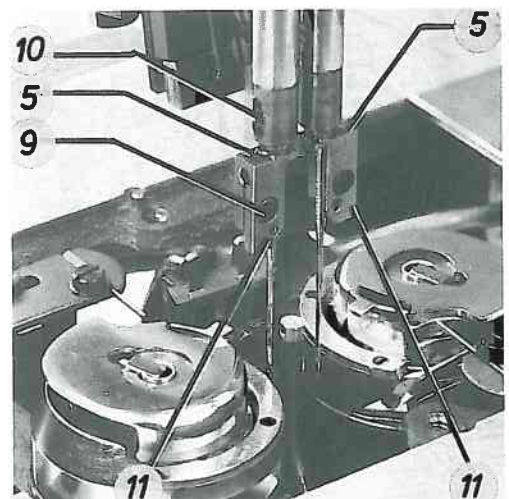
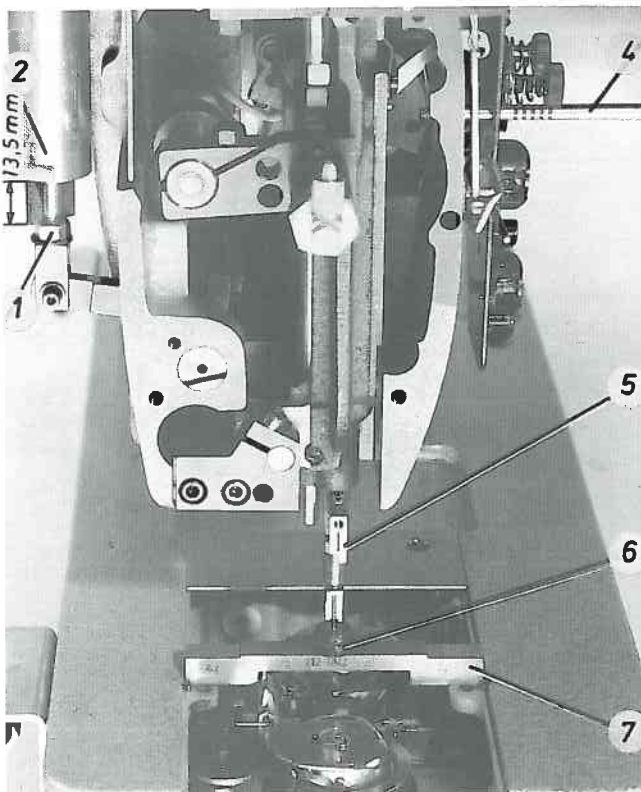
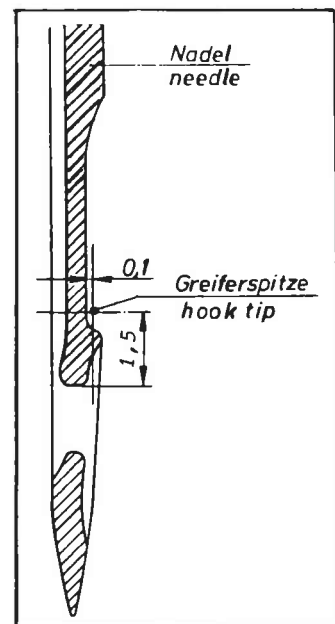
- The loop stroke must have been adjusted according to 11.6.
- Swing the needle to the centre of the needle hole.
To do this, clamp a 13.5-mm-long object between the piston rod 1 and cylinder 2.
- Remove the needles from the needle holders 5.
- To turn the needle holders, disengage one of the needle bars.

First, to do this, press down the catch and turn the handwheel to engage both needle bars.

Continue to turn the handwheel and, before its upper dead point, press with your hand under the needle holder of the needle to be disengaged.

A slight tightness is perceptible. Continue to press and turn the handwheel backward. - The needle bar disengages!

- Set the needle bar in its loop stroke position and insert the stop pin 4 into the groove of the arm shaft crank.
Slide the adjustment pin 6 into the needle holder until it stops.
Tighten screw 9.
Unscrew screw 10.
- In this position, turn the needle holder down so far that the measuring bridge 7 can be slid under the adjustment pin 6 with a minimum possible play.
- If necessary, turn the needle holder up accordingly, thereby taking into account that the face sides 11 must point to the front and be located at the same level.
- Screw the screw 10 into the needle holder and tighten. Remove the pins 4 and 6 and the object (13.5 mm).



11.8 Clearance between the hook points and needles

The clearance between the hook points and needles should be 0.1 mm.

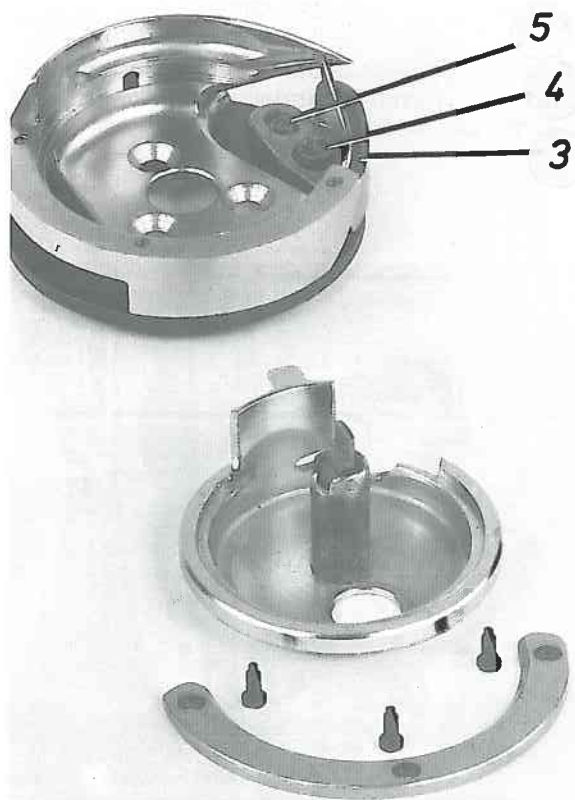
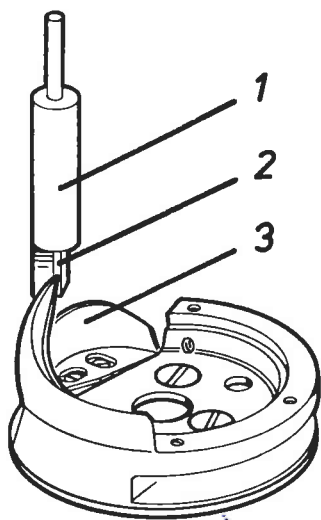
Adjust the l/h hook point, when the frame is swung to the front, and the r/h one, when the frame is swung to the rear.

The clearance has been adjusted accurately at the factory, using the adjustment pin 1, order no. 2441014.

It is thus possible to change needles of the size Nm 90 - Nm 110, without having to readjust the clearance. To change the needle, only the needle guard 3 must be readjusted as described in 11.9.

- Loop stroke and needle holder must be adjusted according to 11.6 and 11.7. Set back the needle guard 3 by loosening the screw 4 and turning the eccentric bolt 5.

- Insert the adjustment pin 1 into the needle bar.
- Tilt the machine head backward.
- Remove the oil retainer sheet 7.
- Loosen the screws 8 and 9.
- Laterally adjust the hook support 10 so that the hook point slightly touches the measuring surface 2 of the adjustment pin 1, without deflecting it.
- First tighten screw 8 and then screw 9.
- Fasten the oil retainer sheet 7.



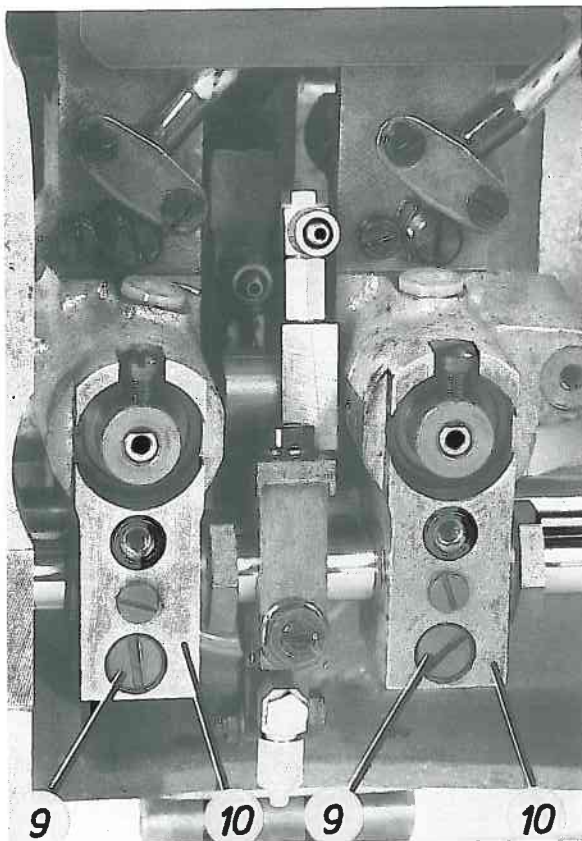
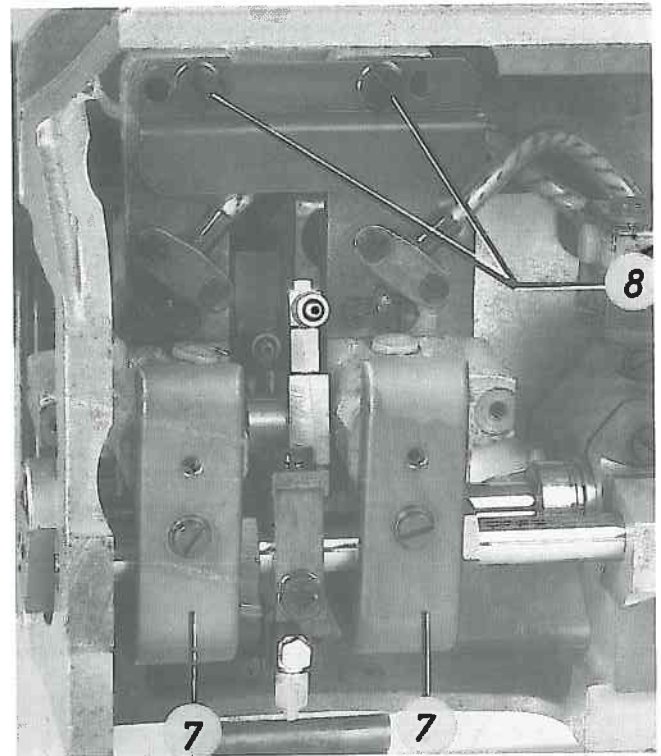
11.9 Needle guard

The purpose of the needle guard 3 is to stabilize the needle and prevent it from being deflected into the path of the hook point.

Before the hook point reaches the needle, the needle point should already rest against the needle guard. The needle, therefore, cannot be pressed into the path of the hook point.

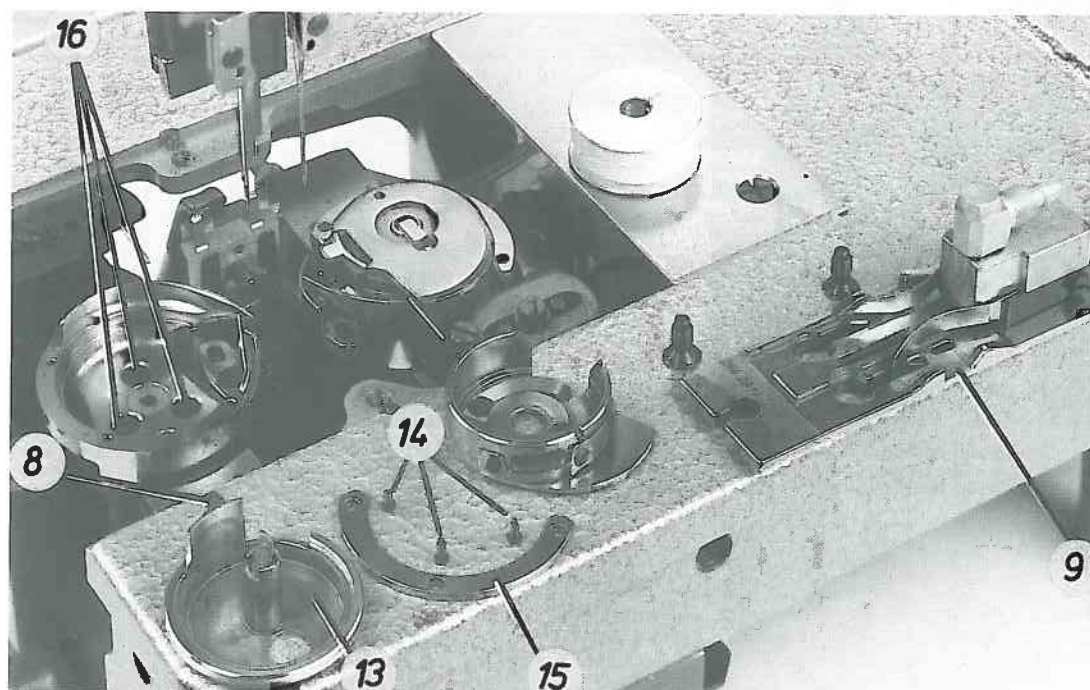
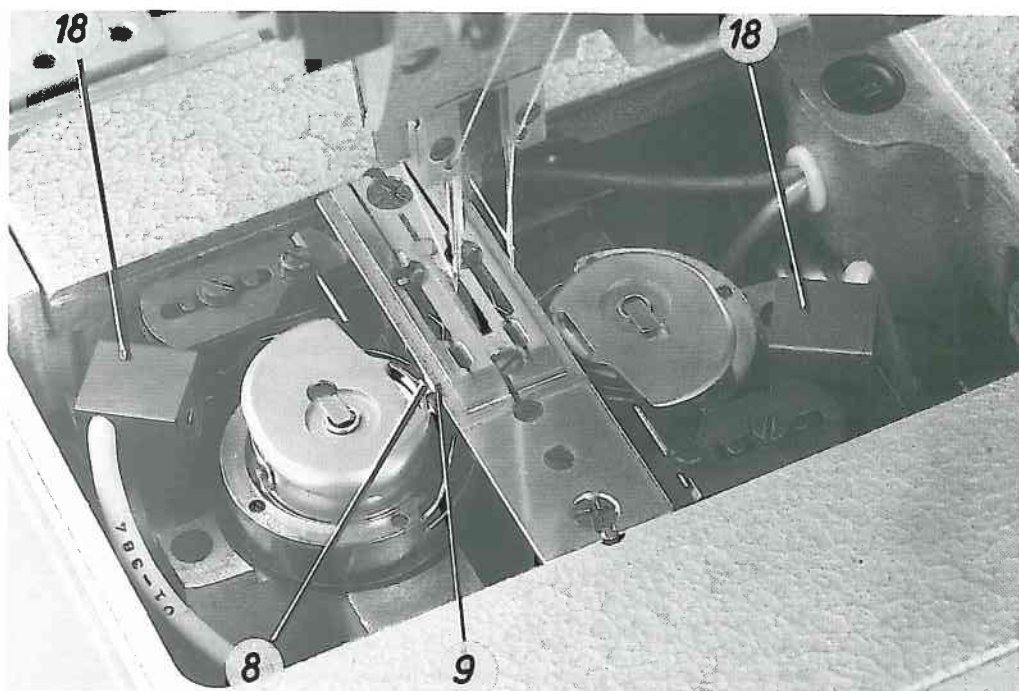
If the hook point is at the centre of the needle, a clearance of 0.1 mm should be between the hook point and the needle.

- The loop stroke and height of the needle holder must have been adjusted according to 11.6 and 11.7.
- Loosen screw 4.
- Turn the eccentric bolt 5 accordingly.
- Tighten screw 4.



11.10 Changing the hooks

- Unscrew the screws 14 of the hook cover ring.
- Remove the hook cover ring 15.
- Remove the bobbin case base 13 from the hook by slightly turning the handwheel backward and forward. Do never use any force.
- Turn out the screws 16.
The hook can be lifted from the hook shaft and changed.
- The holes in the hook base are arranged such that the new hook can only be fastened in a certain position on the hook shaft. It is thus assured that the hook point is again at the centre of the needle after the loop stroke has been completed.
- When re-installing the bobbin case base, make sure that its holder nose 8 enters into the recess 9 of the throat plate.



11.11 Bobbin case holding wire

The bobbin case holding wire 6 keeps the bobbin case cap and base in a fixed position against the direction of rotation of the hook.

After the needle thread loop that encircles the hook has been pulled between the flexible holding wire 6 and edge "a" of the bobbin case cap, the holding wire enables the thread to pass unhindered and freely across the nose 8 of the bobbin case base and through the recess of the throat plate.

When the bobbin case rests against the holding wire, a thread passage gap of 0.6 to 1 mm should exist between the edge 8 of the holding nose and the edge of the throat plate cutout. In this position, the edge 7 of the bobbin case cap is about parallel to the throat plate.

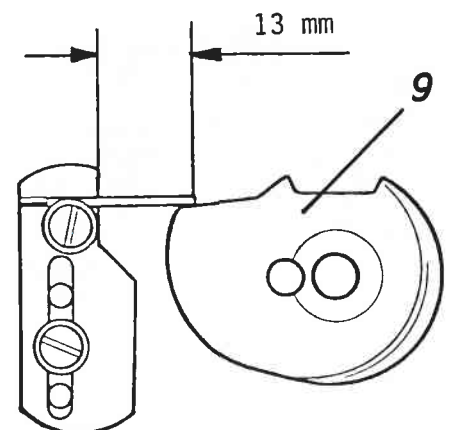
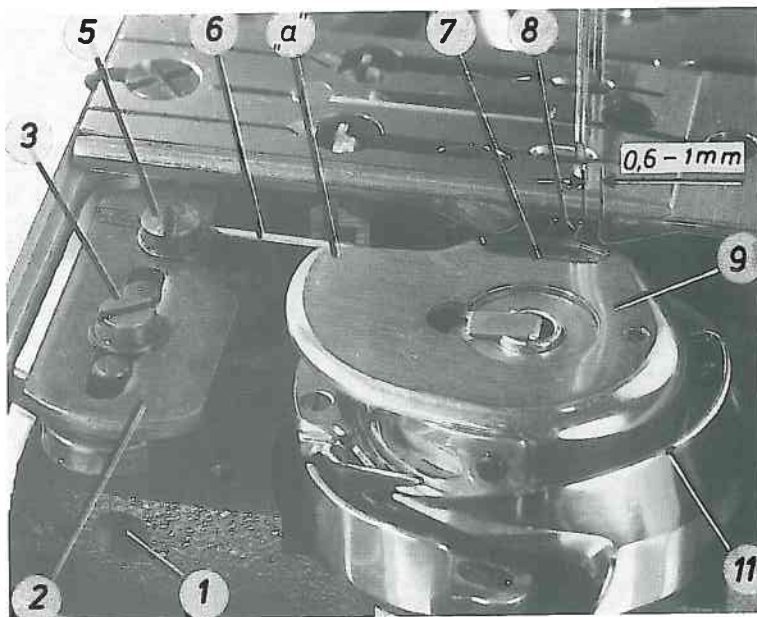
Thicker sewing threads can, therefore, pass as well and at the same time, the bobbin case cap moves back sufficiently, when the thread passes the edge "a".

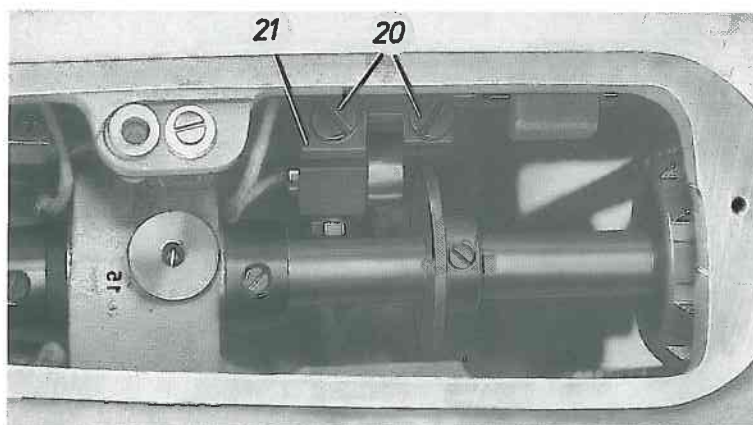
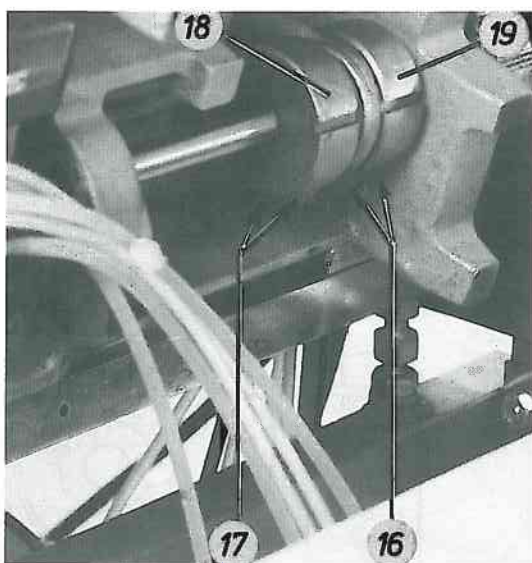
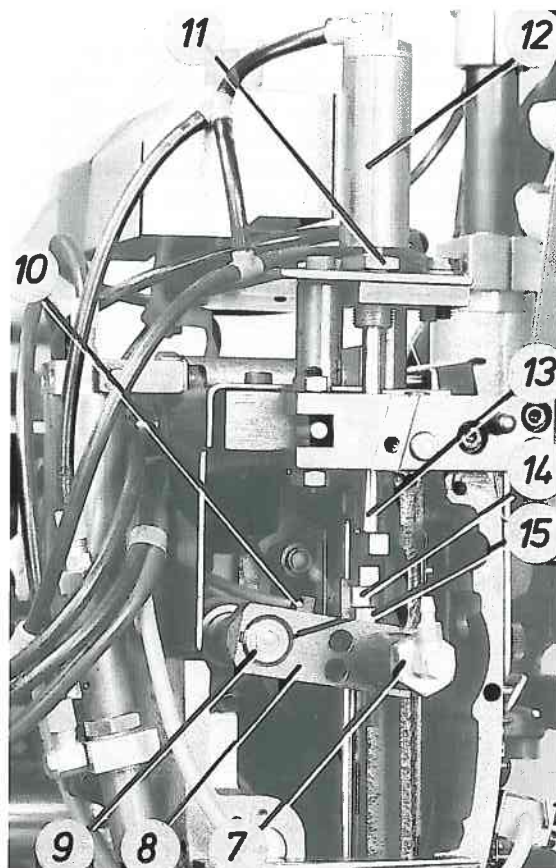
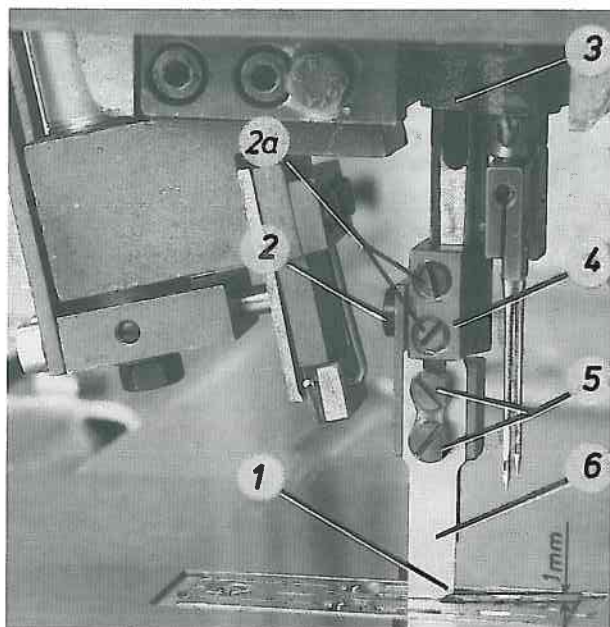
The holding wire should jut out from the plate 2 by 13 mm and rest exactly in front of the edge of the bobbin case cap 9.

- Loosen screw 1.
To assure that the holding wire 6 rests exactly in front of the bobbin case cap 9, adjust the height of the plate 2 accordingly.

During the rotary hook motion, the back 11 of the hook must not hit under the holding wire.

- Loosen screw 3.
Displace the plate 2 such that a distance of 0.6 - 1 mm exists between the nose 8 and the edge of the throat plate cutout.
Tighten screw 3.
- Loosen screw 5.
Set the holding wire 6 such that it juts out from the plate 2 by 13 mm or 9 mm.
Tighten screw 5.





11.12 Centre knife

The centre knife 1 should move opposite to the needle bar motion that is, when the needles are in their lower dead point, the knife bar drive lever 8 should be in its upper dead point.

Set the knife bar drive lever 8 in axial direction on the shaft 9 such that the distance between the piston rod (in home position) of the cylinder 7 and the knife bar bridge 15 is 0.5 mm.

The piston rod 13 of the cylinder 12 should press down the knife bar bridge 15 by 0.5 mm. Check the measurement between the knife holder 4 and the frame 3.

When the piston rod of the cylinder 7 has locked into position in groove 14 and the drive lever 8 is located in its upper dead point, the distance between the actuated piston rod 13 and knife bar bridge 15 should be 0.5 mm.

The front edge 1 of the movable knife should in its lower dead point be located 1 mm above the cutting edge of the stationary knife.

- Loosen the screws 17.
Turn the eccentric 18 such that the centre knife moves opposite to the needle bar motion.
Tighten the screws 17.
- Loosen the screws 16.
Turn the counter disk 19 into the same position as the eccentric 18 that is, the grooves of the eccentric and disk should be adjacent.
Tighten the screws 16.
- Set the knife bar drive lever 8 into its lower dead point by turning the handwheel.
Loosen screw 10.
Shift the drive lever 8 in axial direction on the shaft 9 such that a distance of 0.5 mm exists between the deactivated piston rod of the cylinder 7 and the knife bar bridge 15.
Check the distance using a feeler gauge.
Tighten screw 10.
- Loosen nut 11.
Screw in the cylinder 12 until the piston rod 13 has pressed down the knife bar bridge 15 by 0.5 mm. Check the measurement between the frame 3 and the knife holder 4 using a feeler gauge.
Tighten the nut 11.

Attention!

To make an accurate adjustment it is necessary to push the knife holder 4 all the way up to the collar of the knife bar.

- Set the drive lever 8 into its upper dead point by turning the handwheel.
Loosen the screws 20 of the stroke lever 21.

Air the cylinder 7 and cylinder 12.

To do this, press program key until program 64 and 13 (solenoid valve s13) appear, activate by STOP-key and turn on or off by the Σ -key.

The piston rod of the cylinder 7 locks into position in groove 14.

Turn the drive lever 8 such that a distance of 0.5 mm exists between the knife bar bridge 15 and the actuated piston rod 13, when the drive lever is in its upper dead point.

Tighten the screws 20.

Thus, the knife bar bridge 15 cannot hit the piston rod 13 during the stroke motion.

Attention! The swing lever for engaging the needle bars is adjusted at the same time. It is to be readjusted as described in section 11.3 Needle bar frame "Engaging the needle bars".

- When the piston rod of the cylinder 7 is located in groove 14, turn the handwheel to set the knife bar bridge 15 in its lower dead point.
Check the smooth motion at the frame.
- Loosen the screws 5.
Adjust the centre knife 6 such that the front edge 1 moves toward the cutting edge of the counter knife up to a distance of 1 mm.
Tighten the screws 5.
- Loosen screw 2 and screws 2a.
Set the knife holder 4 with the centre knife to the left against the stationary knife in the throat plate. The centre knife should be parallel to the stationary knife and rest against it with a slight pressure.

Tighten screw 2 and screws 2a. Make a cutting test. If necessary, set the centre knife in cutting position by slightly turning the knife holder 4 to the left.

11.13 Device for trimming and clamping the needle threads

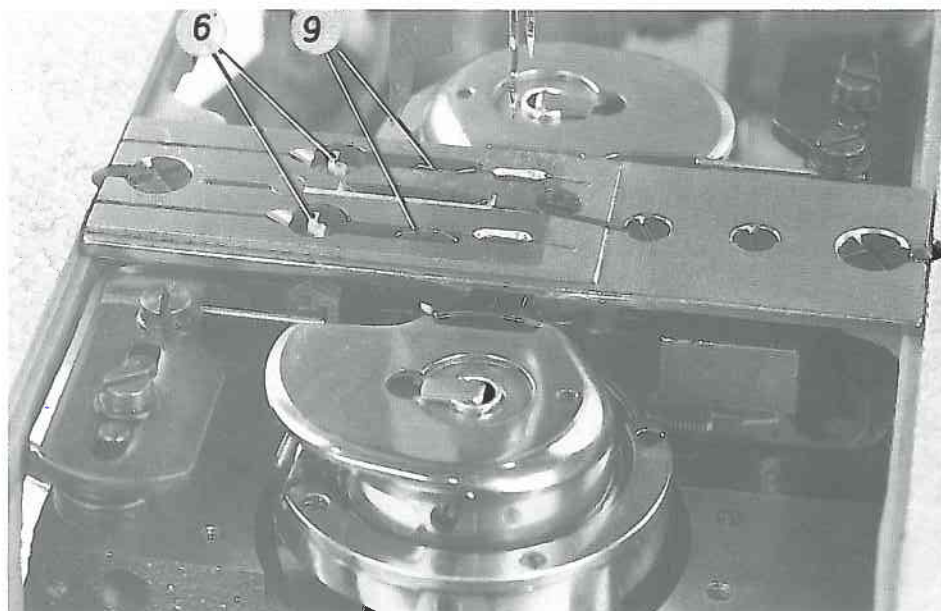
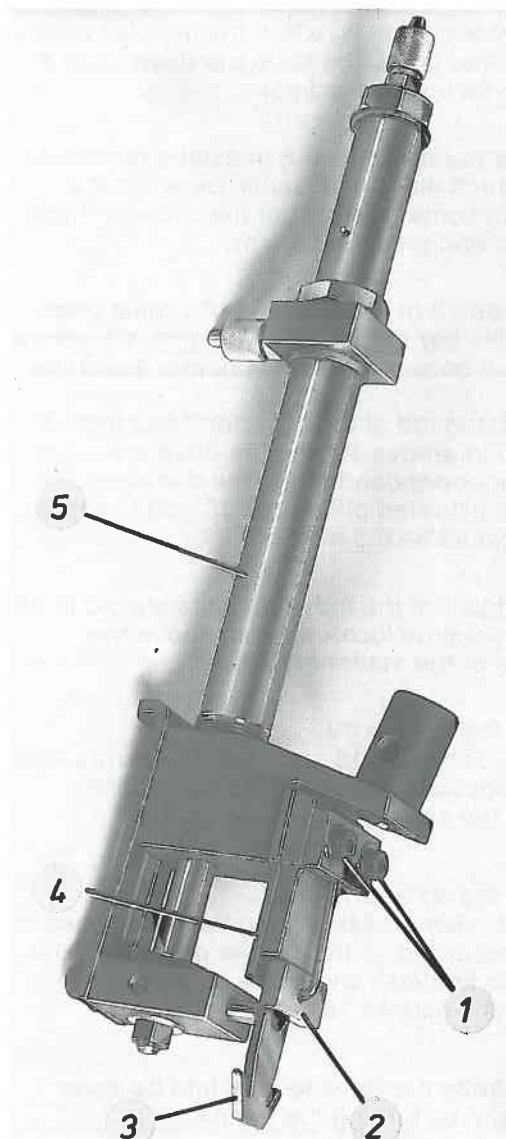
After the seam end and during thread pulling the long stroke of the cylinder 5 is released. The thread catcher 3 moves downward and catches the needle threads.

After a defined period of time the thread catcher shoots up as the cylinder is pulled back by a spring, clamps the needle threads at clamping piece 2 and trims them at knife 4.

After the first stitches of the next seam, the clamped needle thread is released by the short stroke of the cylinder 5.

The spring-suspended clamping piece 2 presses the thread catcher 3 flat against the knife 4. The knife is automatically in cutting position and must, therefore, not be adjusted.

To re-sharpen the knife or change the thread catcher for another needle distance, just unscrew the screws 1.



11.14 Device for trimming and clamping the bobbin threads

When the sewing cycle is completed, the bobbin threads are pulled through the thread grooves of the throat plate, while the thread is being pulled, and are thus pulled into the open bobbin thread scissors 6 and bobbin thread clamp 9.

The upper edge of the bobbin thread scissors should be level with the upper side of the throat plate.

When the bobbin thread scissors are set too high, the material may be damaged, when they are set too low, the bobbin threads are not trimmed.

The pneumatic bobbin thread clamping device is located under the throat plate. The bobbin threads are pulled between the wall of the throat plate slot and the opened clamping sheets 9. When the needle thread catcher is actuated, the clamping sheets close. Next, the bobbin threads are trimmed.

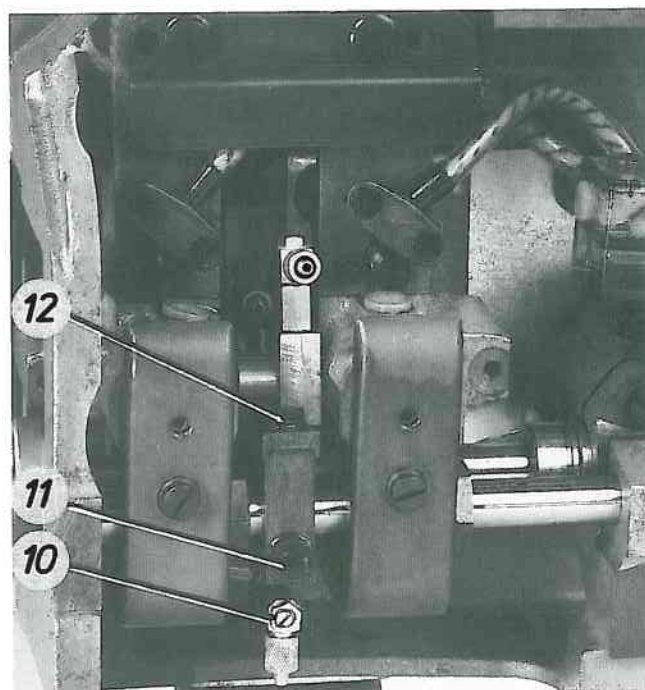
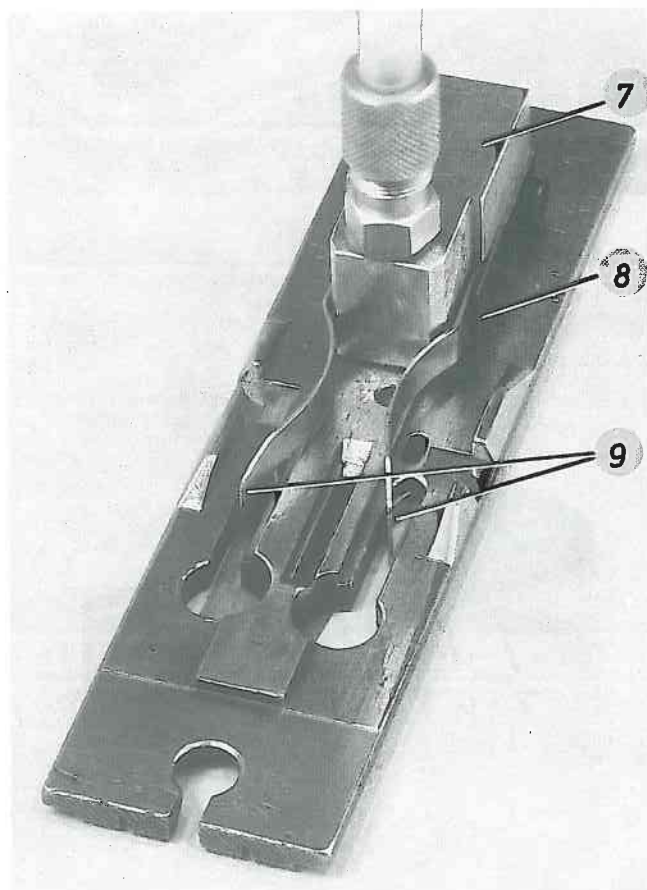
- Loosen screw 11.
Centre the openings of the bobbin thread scissors with respect to the thread grooves of the throat plate.
Tighten screw 11.
- Loosen screw 12.
Set the bobbin thread scissors higher or lower so that the upper side of the bobbin thread scissors is level with the upper side of the throat plate.
Tighten screw 12.

- Align the clamping sheets 9 such that they rest flat and with slight spring pressure against the wall of the throat plate slot.

- The limit sheets 8 fastened to the cylinder 7 determine the opening width of the clamping sheets.

When the clamping sheets are open, check, whether both hook points pass them at a secure distance. If necessary, rectify the limit sheets 8 accordingly.

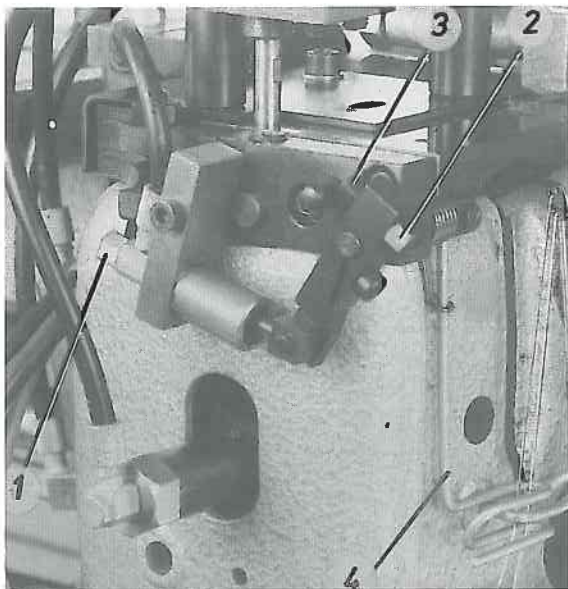
- To exchange the bobbin thread scissors, unscrew the screw 12.
After removal of the pressure spring, the knives can be removed with the guide ledge.
- During each working cycle, the bobbin thread scissors are cleaned by an air jet.
This avoids jamming by fluff and thread tails.
If necessary, reduce the air jet using throttle valve 10 so that the stitches are formed properly, and lightweight pieces (eg lining fabrics) are not blown up from the throat plate.



11.15 Needle thread puller

On the one hand, the thread puller 4 should pull enough needle thread from the open thread tension so that the descending needles do not pull the needle threads out of the needle thread clamp at the seam beginning, on the other hand, however, stitches should be tightened securely at the seam beginning.

- Loosen the lock nut 2.
- Adjust the path of the thread puller accordingly by turning the stop screw 3. Tighten lock nut 2.
- The motion of the thread puller 4 should be fast, but not abrupt.
- Set this accordingly at throttle valve 1.



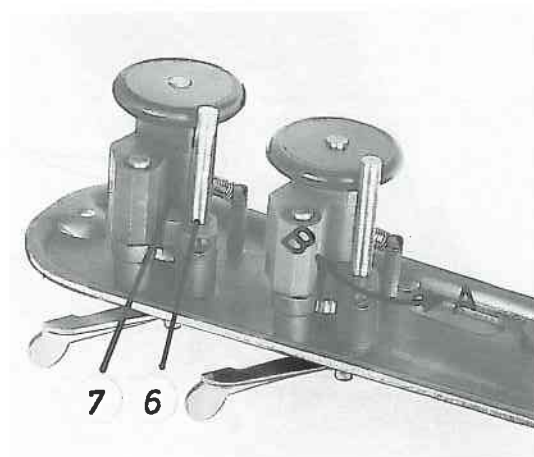
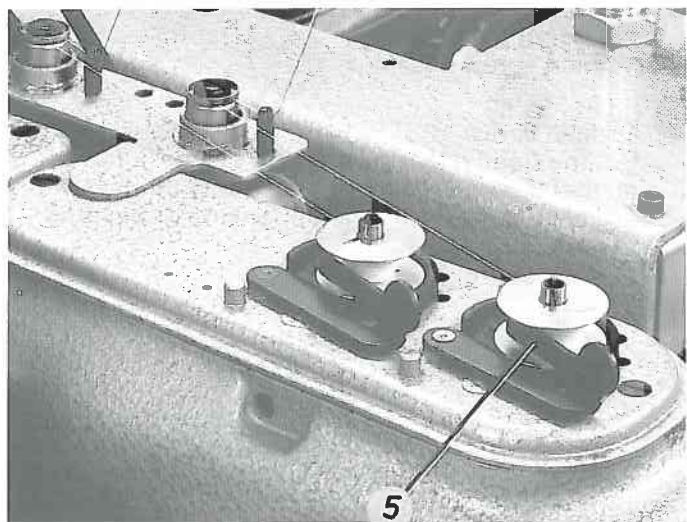
11.16 Bobbin winder

Bobbin winding should stop automatically, when the bobbin is filled up to about 0.5 mm from its rim.

The filling quantity can be slightly modified by rectifying the bobbin winder flap 5 using pliers.

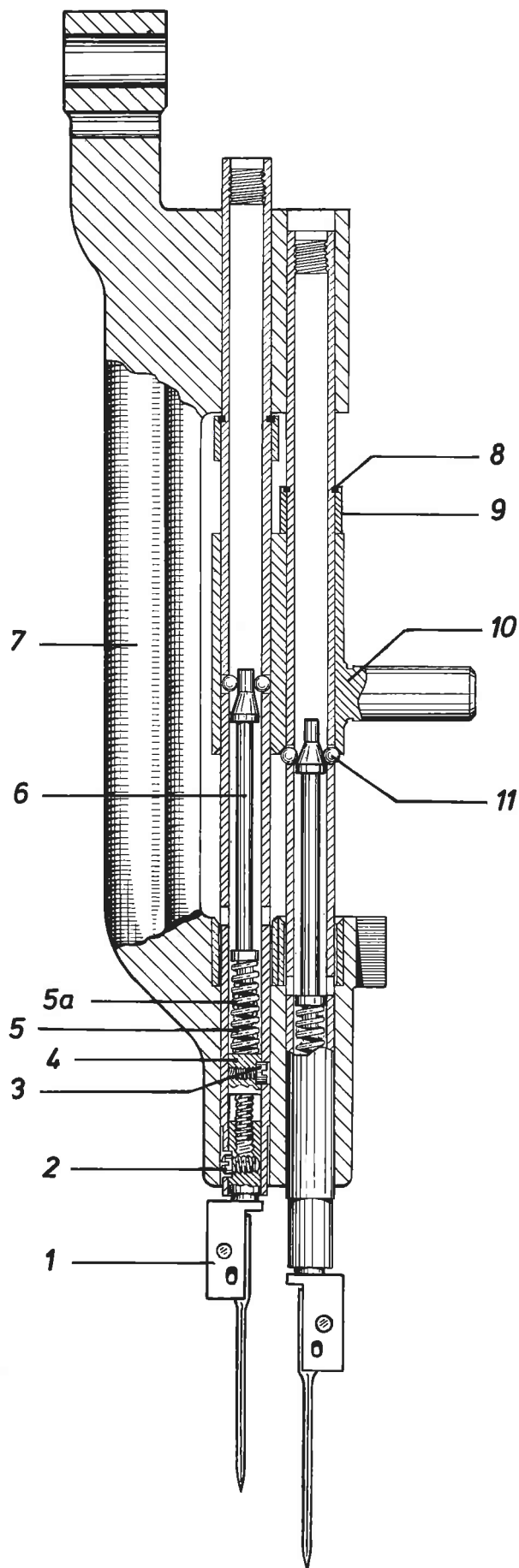
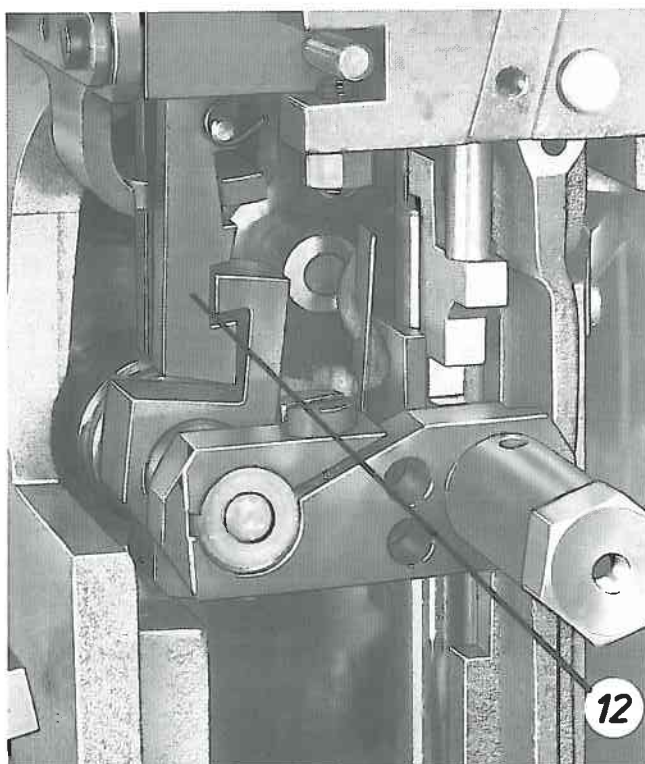
For greater modifications proceed as follows:

- Remove the bobbin winder cover. Loosen the screw 6 and turn the cam 7.
- By turning in the arrow-indicated direction A the filling quantity is reduced, by turning in the arrow-indicated direction B it is increased.
- Tighten screw 6 and fasten the bobbin winder cover.



11.17 Changing the needle holders

- Move the transport carriage into the rear end position. Main switch off. Loosen the clamping screw to remove the folder. Remove the needles from the needle holder 1.
- Engage one of the needle bars.
To do this, press down the catch 12 and turn the handwheel. Now both needle bars are engaged.
Continue to turn the handwheel and, before reaching the upper dead point, press your hand under the needle holder of the needle bar to be disengaged. A slight tightness is perceptible. Continue to press and at the same time turn the handwheel backward. The needle bar disengages.
- Loosen screw 2.
- Unscrew the needle holder 1 from the needle bar.
- Screw a new needle holder into the needle bar. Set the height of the needle holder as described in 11.7. Tighten screw 2.
- Check the entry of the needle into the needle hole. Check or adjust the lateral distance of the needle to the hook according to 11.8.
- To change the second needle holder, proceed analogously.





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Version 745 N03

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1. General Information

The Dürkopp Adler Microcontrol control system includes the extensive test and monitoring system MULTITEST. A microcomputer conducts all control functions as well as the monitoring of the sewing process and displays operating errors and malfunction.

A series of special programs facilitate the mechanical settings and permit a fast check of the input and output elements without additional measuring units.

Errors and test results are shown with symbols on a 2 - 16 digit display. The left half of the upper line indicates the number of the on-line program. When there is no malfunction, the right half of the upper line and the lower line show operation displays for the sewing process. In case of errors or malfunctions, the operating process is interrupted and symbols are displayed. In most cases, the error symbol disappears after error has been corrected. In some cases, the main power switch has to be turned off for safety reasons when checking for errors.

2. Setting of the sewing and testing programs

The programs listed below are being set with the preselector switch "PROGRAM" on the front plate. The selected program is activated by turning on the main switch or by pressing the "STOP" key. If the display symbol "P?" shows, a wrong program number has been set.

Switch position	Program	Function
00	P00	Display of program version
01	P01	Sewing program
02	P02	Same as P01 but with autom. carriage return
03	P03	Same as P01 but with fabric feed after sewing
04	P04	Same as P01 but with zipper cutter
05	P05	Same as P04 but with automatic return
06	P06	Same as P04 but with fabric feed after sewing
40	P40	Set cuts for center knife
41	P41	Set meter for lower thread supply
50	P50	Adjust corner knife setting
51	P51	Set thread monitor (light barrier)
52	P52	Check zipper cutter
53	P53	Test engagement of needles and center knife
54	P54	Checking the positioning process
57	P57	Test step motor controls
58	P58	Testing of serial interface
59	P59	Test timer and storage functions
60	P60	Continuity check
61	P61	Test front plate elements
62	P62	Test input elements
63	P63	Select input elements
64	P64	Select output elements
65	P65	Starting machine: pedal operated
66	P66	Starting machine: set value X, position 2
67	P67	Starting machine: set value X, position.1
68	P68	Starting machine set value X, pos.1, pos.2
69	P69	Starting machine: set value X, position 2 with thread trimming function



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3. Setting of the parameters

The control system behind the display contains the preselectors for setting the various parameters of the unit.

These switches are interpreted only once after turning on the sewing unit. If the switch positions have to be adjusted, the unit must be turned off and on again or the "STOP" is to push.

DIP switch b417

b417	Function	OFF	ON (gekippt)
.1	Stitch length	2,5 mm	3,2 mm
.2	Stitch length of condensed stitches	0,8 mm	1,4 mm
.3	Max. sewing length	180 mm	200 mm *
.4	Thread monitor	ON	OFF
.5	Vacuum locked (b8/s14)	OFF	ON
.6	Later opening of the flap clamp	OFF	ON
.7	Vacant		
.8	Continuous operation Only combined w. 4.OFF	OFF	ON

* with piping strips, without addtl. parts

Rotary switch b401: Sewing speed

b401 = 1 2500 1/min
 = 2 2750 1/min
 = 3 3000 1/min supplied ex factory

Rotary switch b402: Vacant



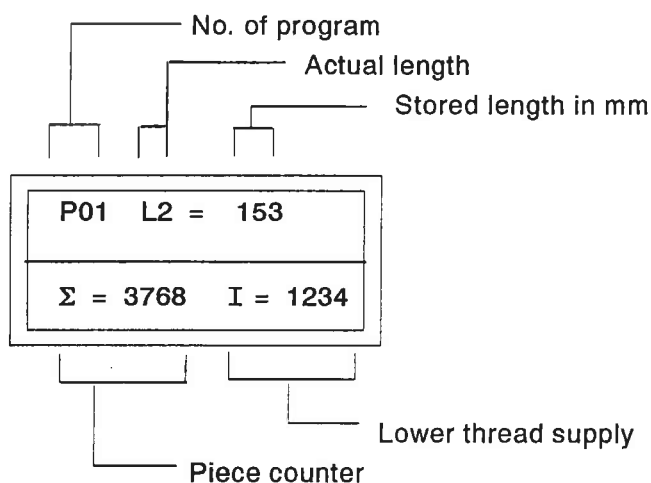
4. Sewing programs

Program PO1

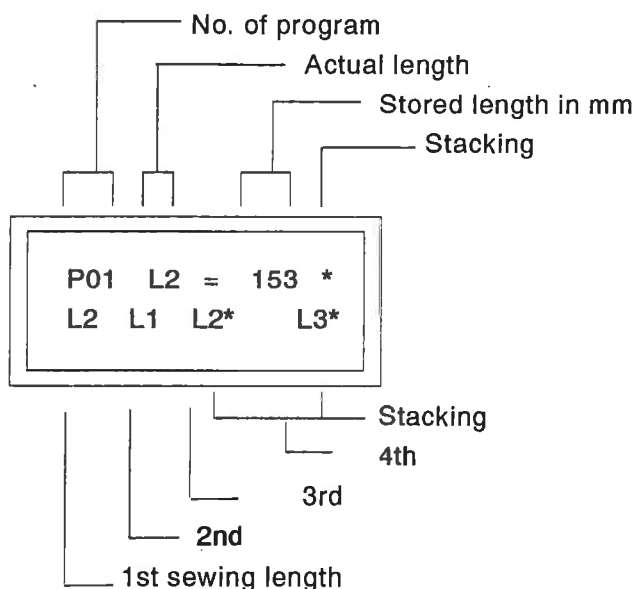
After unit has been turned on, the lower display shows "<---Ref". By pushing back the left pedal, the feeding clamps are lifted and the feed carriage moves into rear position. The display of the parameters shows that the unit is ready for operation (see examples below). The display shows the setting which has been selected last before turning off unit.

In a step by step motion, the carriage return, the loading process and the start is activated with the left pedal. During the loading process, the operator may cancel previous steps by heeling back the pedal. **After starting the machine, the sewing process may be stopped by heeling back the left pedal.** If the sewing unit is equipped with a right pedal, this is used to operate the down-holder and vacuum. If the sewing unit is fitted with a knee switch, this operates the vacuum.

Example display 1: Selected sewing length



Example display 2: Programmed length sequence





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Select and adjust sewing length

Operator may select among 3 stored sewing lengths with the keys L1, L2, L3 in the control unit. The selected length shows in the upper line of the display (see example 1 above).

After having selected a sewing length, it may be changed by pushing the keys "+" and "-". The now selected length is and remains stored until it is changed again. If a sewing length key is selected without stored value, the display shows "L?", which means that an admissible value has to be stored by pushing the "+" or "-" keys or another sewing length has to be selected.

The sewing lengths can only be changed before the loading process.

Attention: When selecting the sewing lengths L1, L2, L3 the corner knives must also be adjusted.

The longest sewing length should be stored in L1 and the shortest in L3.

When changing from L1 to L2 to L3 or vice versa a pneumatic mechanism adjusts the corner knives. For sewing lengths of less than 75mm the distance of the corner knives has to be adjusted at 75mm and the corner knife for the seam start has to be controlled through valve s3 (optl. equipment).

If the rear positioning point (toward the operator) is selected for a sewing length of less than 75 mm the error message  Error appears on the display. In this case the front positioning point (toward the machine head) must be chosen instead.

Sewing in sequence:

By activating the "F"-key in the control unit, a stored sequence of up to 4 seams may be requested. This sequence may change at random from L1 to L3 and vice versa. The display in the lower display line shows the requested sequence. The actual length is underlined and is shown simultaneously on the right side of the upper display line with the appropriate value in millimeters (see example 2 above). If there is an asterisk "*" behind the length data, the material is stacked after sewing; otherwise the material is carried back to the loading position. Then, the next length is activated is activated automatically. With the keys "+" (to the right) and "-" (to the left) any length within the sequence may be activated. If any of the keys L1, L2, L3 is activated, the sequence is interrupted and the selected sewing length is sewn.

In order to program a new sequence, the "F"-key and the "-"key have to be pressed simultaneously. This cancels any previous sequence. By pressing the keys L1, L2, L3 in a desired sequence, up to 4 seams may be requested. If the "+"key is pressed after pressing a sewing length key, the material is stacked after sewing. By pressing the "-"key, the last request may be cancelled. For a new start of the sequence, the "F"-key has to be pressed again. The control system automatically selects the 1st length. The values of the lengths programm have to be selected before the sequence mode (see: Select sewing length and adjust).

Piece counter

The current pieces account is shown in the lower line of the display (see: example 1 above). By pressing the  -key, the counter may be switched back to position 0000.

Lower Thread counter

The lower thread may be monitored by a backward counting piece counter. Its value is shown in the lower line of the display (see: example 1 above). When value "0" is reached and corners are cut, the fed carriage moves to its rear position. The display then shows two flashing lower thread bobbins. In order to exchange the bobbins, the sewing unit has to be turned off. The counter is automatically reloaded with the stored values.

If the bobbins are changed before due, the counter of the unit may be set to its initial value by pressing the "-" key when turning on. The display shows the current account as long as the key remains pressed.

The adjustment of the counter is activated through the program P41. For a more precise monitoring of the lower thread supply, a thread monitor (two reflecting light barriers) is available as optional equipment.



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Positioning point

According to the nature of the garment, there is a front and a rear positioning point. It may be changed with the key.  If the LED shows above of the key, the front positioning point of the machine head has been selected.

Tape feeder

The tape feeder may be switched on and off with the key . When the LED shows above the key, the tape feeder is switched on.

Backtack

The backtack is switched on and off with the key . If the LED shows above the key, the backtack is switched on.

With a condensed stitch length of 1,4 mm the backtack is always switched off.

Flap clamps

The timing of the flap clamp opening in the loading area can be determined with the preselector switch b417.6 inside the control box. If the switch is OFF, the flap clamps open after the feeding clamps have lowered. In the ON-position the flap clamps open after the folder has been lowered.

With the key  the sequence for the closing of the flap clamps may be determined. If both LEDs show above the key, both clamps close simultaneously. If only the left LED lights, the left flap clamp closes first and then the right one. If the right LED lights, it's the opposite sequence. When no LED shows, the flap clamps are not being used (most efficient loading sequence). By pressing the key, any of the four above modes may be requested.

Corner and Center Knives

The key  activates the corner and center knives. They are switched on when both LEDs over the key show. If only the right LED shows, the corner knives are turned off. None of the knives work, when there is no LED showing. By pressing the key, any of the four above modes may be requested.

Program PO2 : Automatic carriage return after sewing. The feed clamps remain lifted.

Same as program PO1. After stacking, feed clamps are automatically moved back to loading area.

Program PO3 : Material return after sewing

Same as program PO1. After sewing, the material is not stacked but returned to the loading area by feed clamps.

Program PO4 : Cut zipper after sewing

Same as program PO1. After sewing, the zipper is cut to length. Rear positioning point is used (toward the operator). The shortest sewing length is 75 mm.



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Program P05 Automatic carriage return after sewing. The feeding clamps remain lifted.
Same as program P04, after stacking the feeding clamps automatically move back into the loading area.

Program P06 Material feed after sewing

Same as program P04, the material is not stacked after sewing, but is transported back with the feeding clamps into the loading area.

5. Programs for setting and adjusting

P40 Center knife setting

The lower line of the display shows the current setting for the center knife cut. With the keys "+" and "-" these values may be altered. When a higher value is selected, the cut moves to the ends of the pocket opening, a lower value produces a shorter cut. The center value is 19.

P41 Set lower thread counter

The lower display line shows the current value. The point to be adjusted is flashing. With the key "Σ" the next higher value may be requested.

The keys "-" and "+" change the actual value.

By pressing the keys "+" and "-" at the same time, the counter may be switched to 0000. This turns off the thread counting.

P50 Adjust corner knives setting

According to the selected sewing length (L1, L2, L3) the corner knives are adjusted. The actual sewing length is shown on the lower right side of the display. The lower left display shows the symbol for "adjustment". The flashing symbol is part of the current sewing length display.

For sewing lengths of less than 75mm, the distance between the corner knives has to be set to 75mm. The corner knife for the seam start has to be controlled by the valve s3 (optl.equipm.).

After pressing the "Σ" key, the corner knives lift. If the key is pressed one more time, the knives come down.



Caution danger of personal injury! Keep hands clear of the quickly rising corner knives!

P51 Setting of thread monitor (Reflecting light barrier)

This is the program for adjusting the reflecting light barriers.

The lower display line shows in the middle a symbol with two bobbins. If the left light barrier is so adjusted that a reflection occurs while the bobbins rotate, the lower display shows ']->>'. Accordingly, the right light barrier shows the symbol '<<-['.



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P52 Test zipper cutter

This program activates the cutting process of the zipper cutter by pressing the "-" key. If the feed carriage is not in its rear position, this is indicated with the symbol "<----". By heeling back the pedal, the carriage is moved to the rear position.

P53 Test engagement of needles and center knife

Through the program switch, the desired sewing speed (1-13) may be selected. The speed and the set value are shown in the lower display line. By pressing the "Σ" key, the machine drive is started until the "Σ" key is pressed again. The process is stopped with a positioning motion into the upper position. The needles may be engaged/disengaged with the key "L1", the center knife may be engaged/disengaged with the key "L2" at any time.

ATTENTION Before leaving this program, it is advisable to operate the machine head for a moment with disengaged needles and center knife, otherwise the following seam will not be performed correctly.

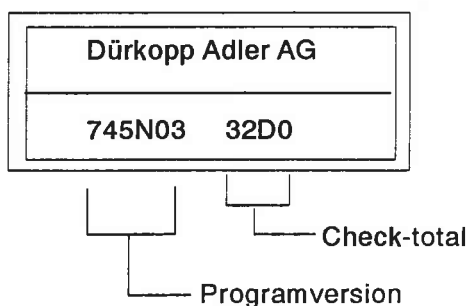
P54 Testing the loading process

After the reference travel, the transport carriage can be moved into the loading station by pressing the pedal. The loading process takes place, same as in a sewing program. Next, the symbol '<---' appears on the display and the transport carriage can be moved into its rear position by repeatedly tipping the Σ-key. When the rear edge of the feeding clamps is located under the needles, the zipper cutter is actuated. In the rear position the sequence of the flap clamps can be selected at the key □□

6. Control programs

P00 indicator shows the program number and the check total.

The display shows the program version and the check total.
Display in program P00 :



The program version includes:

- Machine class number
- Call letter
- two-digit number

Example: 745N01

If the same call letter continues, the programs become exchangeable, which means that the program 745N03 replaces the programs 745N01 and 745N02.

The check total shows the service professionals that the program storage (EPROM) of the sewing unit functions all right.



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P57 Check step motor control

This program tests the step motor control and the high stage contact of the step motor. The display shows the result of these tests (see following chart)

AMP ERR	Error in high stage contact or transmission cable not plugged in.
LINK OK	Transmission into step motor control OK
LINK ERR	Error in transmission to step motor control
EPROM OK	EPROM on step motor board OK
XCOU OK	Component for impulse count of step motor board OK
XCOU ERR	Error in component for impulse count of step motor board.
SCOU OK	Component for impulse generator on step motor board OK
SCOU OK	Error in component for impulse generator on step motor board

P58 Testing the serial interface

This program tests the SIO component of the control unit. Before the test is started, the SIO-test plug has to be plugged into the connector b109 on the main board. This test plug connects the sender with the receiver and enables a test loop. If there is no error, the display shows OK. If the SIO-component does not work or the test plug is not plugged in, the display shows "Err" for malfunction. If the control unit does not include a SIO component (optional equipment), the display message will not show SIO.

P59 Test timer and storage functions

When the main storage (RAM) and all timer circuits of the control unit function well, the message OK shows after a little while. If there is an error, the display shows the error message **ERROR 0, ERROR 6, ERROR 7, ERROR 8 or ERROR 9.**

P60 Continuity Check

This program checks the 24 V voltage supply and the output elements. If there is current while the output drivers are switched off, a short circuit in the installation or a defective output driver may be the cause. The display then shows "V?".

If no such error can be detected, all available output elements (incl. the output driver and installation) are being checked for continuity. If all circuits indicate continuity, the display shows "OK". If there is a circuit without continuity, the display shows a symbol of the diagram of the defective circuit. If, for example, there is a disruption in the circuit of the magnetic valve s17, "**S17**" shows on the display. Possible error: A disruption of the magnetic valve, in its installation or its driver, or s17 is not integrated, as it is part of the "optional equipment". After pressing the key "Set counter" (" Σ "/b815) the test is continued with s18.

P61 Test front plate elements

If any of the preselectors of the front plate are adjusted, the display always shows the value of the pre-selector that has been set last. By pressing any key of the front plate (with the exception of the "Stop" key), the numbers coordinated with the preselectors (1,2,4 or 8) are displayed.

The light diodes of the front plate may be selected through code-numbers and are activated with the key " Σ " 'Set counter'.

For code numbers, please use the abbreviations of the circuit diagram (1-8):



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Switch	Function	Description	
b417	Function switch		
b401	Speed		
b402	Vacant		
b413/412	Program switch	PROGRAM	
b416	Stop(key 13)	STOP	
Key	Function	Symbol	Message
b814	Positioning point front	I □	LED
b815	Set counter	Σ	Display
b816	minus	-	
b817	plus	+	
b818	Corner+ center knives on/off		LED/LED
b819	Flap clamp sequence		LED/LED
b820	Bartack on/off		LED
b821	Tape feeder on/off		LED
b826	Sequence	F	Display
b827	Length 3	L3	Display
b828	Length 2	L2	Display
b829	Length 1	L1	Display
LED	Message		
H1b	Positioning point front		
H3c	Flap clamp left		
H4c	Corner knife		
H5b	Center knife		
H6b	Flap clamp right		
H7a	Bartack		
H8a	Tape feeder		

P62 Test input elements

If any input element is activated, the display shows its symbol from the circuit diagram and its actual position (example: +B25) until any other input element has to be set.

Switch position "+ " indicates:

Contacting switch	-->	Open contact
Proximity switch	-->	Metal in front of switch
Reflecting light barrier	-->	No reflection
Transmitted light barrier	-->	Rays not disrupted



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P63 Select input elements

When the program is activated, each input element may be selected by setting a code number. The switch position of the selected element is shown on the display with its coordinated code number. The abbreviations of the circuit diagram serve as code numbers. This does not apply for the keys of the front plate (see chart). The code numbers are being set with the preselector **PROGRAM**. The switch positions are the same as in **P62**.

Input elements

b1	Carriage rear position
b2	Reference point
b3	Carriage front position
b4	Fold stamp above
b5	Fold stamp below
b8	Lower downholder/vacuum ON (second pedal / optl.equipment)
b9	Pedal 3
b10	Pedal 4
b11	Pedal 1
b12	Pedal 2
b13	Transmitter control
b14	Thread monitor left
b15	Thread monitor right
b35	Pos. 1 (needle low)
b37	Pos. 2 (needle high)
b39	Pos. 3 (vacant)
b45	Stacker control
b46	Thread supply monitor left(optl. equipment)
b47	Thread supply monitor right(optl. equipment)



**Short description of the Microcontrol system
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DÜRKOPP-ADLER sewing unit 745-21**

**791745113EN
Art.Nr.6075428**

P64 Select output elements

After the program is activated, each output element may be selected by setting a code number. The selected element may be turned on and off with the key "Σ Set counter". The abbreviations of the circuit diagram serve as code numbers. The code numbers are being set with the preselector **PROGRAM**.

Output element

s1	Lift left flap clamp
s2	Swing needle bar lever
s3	Corner knife short seam (optl.equipment)
s4	Corner knives
s5	Close fold sheets
s6	Flattener to front (optl.equipment)
s7	Lift flap clamp right
s8	Flattener to rear (optl.equipment)
s9	Stack/blow
s10	Lift feed clamp
s11	Lower feed clamp
s13	Center knife
s14	Vacuum/downholder (optl.equipment)
s15	Release thread tension
s16	Open thread clamp
s17	Close zipper cutter
s18	Draw thread
s19	Roll off lints
s20	Lower fold stamp
s21	Lift fold stamp
s22	Return zipper cutter (optl.equipment)
s23	Thread catcher
s24	Thread cutter
s25	Needles on
s27	Tape cutter (optl.equ.)
s28	Feed tape (optl.equ.)
s29	Needle cooler (optl.equ.)
s30	Zipper cutter to front
s31	Corner knife adjustment for sewing length 2 (optl.equ.)
s32	Corner knife adjustment to sewing length 3 (optl.equ.)

P65 Starting machine: Pedal operated

After activating the program, the sewing unit may be operated at a speed, which has been preselected by pedal.

When moving forward the pedal, the machine runs at an rpm coordinated with the pedal position. After some seconds, the actual speed (speed of machine head) is shown on the display. When the pedal is set to "0", the machine head is stopped without a positioning operation.



Short description of the Microcontrol system
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P66 Set machine head to 2nd needle position

This program serves to set the 2nd needle position (needle up). After the main switch is turned on, the display shows "SW?".

The program switch preselects various machine drive speeds. If the value is acceptable, the display shows 0000. If it is not acceptable, the display shows "SW?". There is a total of 13 speed steps.

Speed	1/min.
13	3000
12	2750
11	2500
10	1700
9	1000
8	720
7	540
6	410
5	310
4	230
3	170
2	130
1	100

When pressing the key "Σ Set Counter" the machine moves with the selected speed. After some seconds, the right display side shows the actual speed. When key "Σ" is released, the needle remains in position 2 (lifted up).

P67 Set machine head to 1st needle position

Same as P66, however, the machine head is set to needle position 1 (needle down). The slits of the position transmitter for both needle positions should face each other.

P68 Set machine head to cutting speed

Same as P66, however, the machine head is set to 1st needle position (needle down). After a brief stop, the needle is taken to upper position. (Only for machine heads with thread cutter).

P69 Set machine head with thread cutter

Same as P66, however, the machine head is set to 2nd needle position and to thread cutting mode. (Only for machine heads with thread cutter).



Short description of the Microcontrol system
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7. Display Symbols

Indicators for operational help

P?	Selected program is unacceptable
745N02	Program number
<---- REF	Carriage is not in rear pos. when activated (reference drive)
<---- REF PEDAL STOP	Sewing cycle broken off, return the carriage (heel back the pedal)
<----	Carriage moves back (heel pedal)
F?	
----	New programming of sequence is expected
L?	Inadmissible sewing length (eg. P04-P06 shorter than 75 mm)
I Error	Positioning error, rear positioning point selected for sewing lengths under 75 mm
I	Left lower thread bobbin empty(flashing left)
I	Right lower thread bobbin empty(flash.right)
I	Bobbins empty (flashing)
--X--	Thread break (flashing)
Σ = xxxx	Piece counter
I = xxxx	Lower thread supply
]-->>	Left lower thread monitor with reflexion
<<-[	Right lower thread monitor with reflexion
SW?	Driving speed unacceptable
SMC-TEST	Step motor controller is tested
LINK OK	Transmission to step motor OK
XCOU OK	Component for impulse count of step motor OK
SCOU OK	Comp. for impulse generator of step motor OK
EPROM OK	EPROM on step motor board OK

Indicators for errors

E2	Fuse e2 in transformer defective (24V)
V?	Error message in P60
STOP	Hood open, hood control or "stop"key defective
POS2	Machine head is not positioned
POS-Err	Positioning transmitter not attached, Motor safety switch off.
--<>---	Positioning transmitter not plugged in
START ERROR	Disconnected pedal switch or pedal has already been activated when turning on main switch
ERROR --> [b3	Feed carriage has bumped into front stop
ERROR b1] <--	Feed carriage has bumped into rear stop
?<----> ?	Feed carriage has moved into wrong direction during reference drive
REF ERROR	Error during reference drive
PROG ERROR 1	Error in stored program values. Activate STOP and control values (same in P40)
PROG ERROR 2	Error in storage of check total. Test RAM in P59.
? b417 ?	b 417.8 only in connection with b417.4
? b401 ?	Unacceptable switch position for speed select.



**Short description of the Microcontrol system
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Error messages of the control system

DISP-Err	Error in display when activated
ERROR 0	Error in RAM P59
ERROR 2	Error in reading front plate elements
ERROR 3	Program switch defect
ERROR 4	Control board for sewing motion defect
ERROR 5	Brief voltage loss in power supply
ERROR 6	Timer 1 defect
ERROR 7	Timer 2 defect
ERROR 8	Timer 3 defect on extension board
ERROR 9	Timer 4 defect on extension board
ERR B..	Error in reading of input elements: Defect or maladjusted end switch (no overstroke) or proximity switches are shown with their diagram symbol, e.g. "ERR B31".
No SIO ERR	The control unit does not contain SIO comp. Disruption of SIO sender/receiver loop
AMP ERR	Error in step motor high stage
SMC ERR	Step motor controller defect
LINK ERR	Error in transmission to step motor
XCOU ERR	Defective component for impulse counting on step motor board
SCOU ERR	Def.comp.for impulse generator of step motor board
EPRO ERR	Defective EPROM on step motor board

8. Step motor highstage

Program switch at front panel of step motor

- All four flip switches should be in lower switch position
- The turn switch should be in C - position

Indicators at front panel of step motor

LED 6 O...red	SPEED CONTROL Shows when set value and actual value of the motor diverge for more than + 16 resp. -17
LED 5 O...red	PHASE DISRUPTION Shows when there is a discontinuation in the motor circuit
LED 4 O...red	LOW- HIGH VOLTAGE Shows when voltage is at 35 VDC and 85 VDC.
LED 3 O...red	OVERHEATING Shows when cooling temperature is at approx. 85°C
LED 2 O...red	SHORT CIRCUIT, OVERLOAD Is displayed when when phase circuit exceeds the value of 10A for 2s.
LED 1 O...green	READY FOR OPERATION Is displayed when there is no malfunction.

In the case of a malfunction, the green LED goes out and the corresponding red LED indicates the fault.
The step motor only runs, when the step motor highstage works faultlessly.

Benutzungsvermerk
nach DIN 34
beachten
Bei Mikro-
verfälschung
Haftungs-
übernahme

9870 745001 B

* 3 400V+N 50Hz=neue, internationale Normspannung(IEC).
Maschinen für 220 und 230V bzw. 380 und 400V sind gleich.
Machines for 220 and 230V as well as 380 and 400V are similar.

Spartransformator zur
Anpassung an Netzspannungen
ohne Mittelpunktsleiter (N)
Transformer to adjust to main
voltages without neutral conductor (N)

3~380V+N 50Hz
3~400V+N 50Hz *
3~415V+N 50Hz
3~220V 50/60Hz
3~230V 50/60Hz

3~380V 50Hz
3~400V 50Hz

③ Netzstecker
b251
Mains plug

19 Tür door

18 Schaltschrank k.

U1 17 Leistungssteuerkarte für Schrittmotor
Power control card for step motor D550

D550

16 Lüftungsmotor
Ventilation motor

15 Schrittmotor
Step motor

14 Haubenverrastung
Cover catch

13 Blatt 2/2
Sheet 2/2

12 Steuerung
Control

b202

b201

b208

Bauschaltplan für
KI. 745-21
Circuit diagram for class 745-21

Bauschaltplan

9870 745001 B 1/2

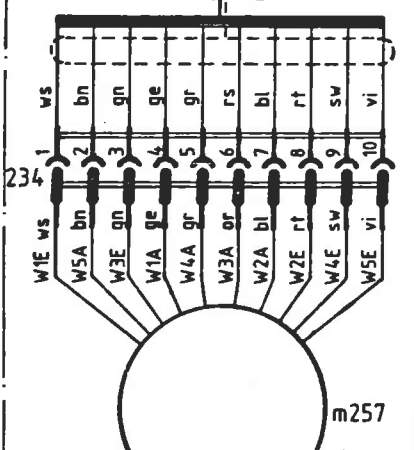
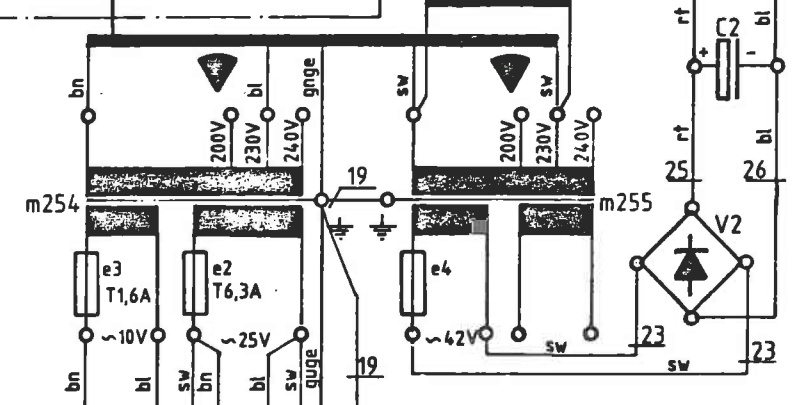
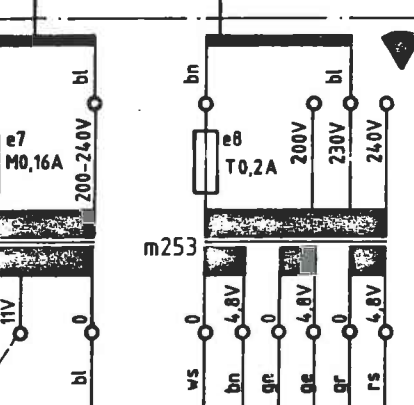
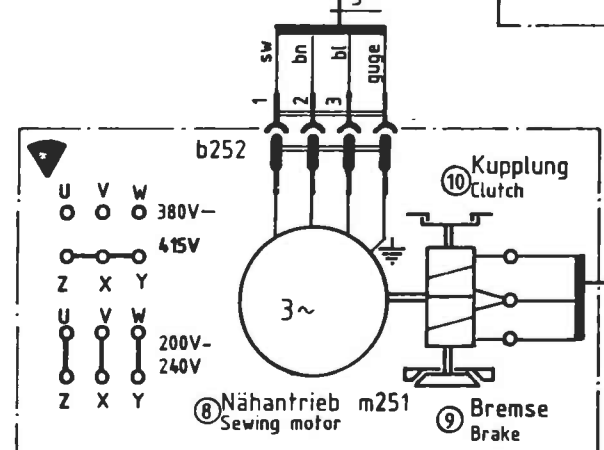
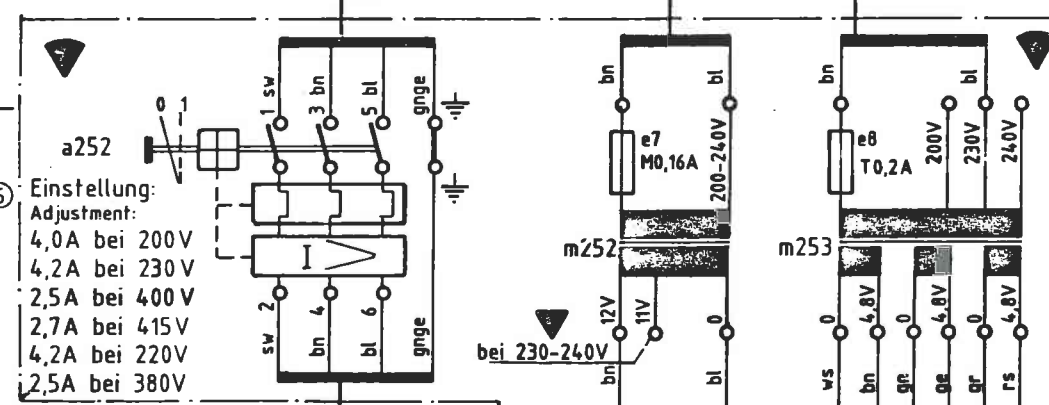
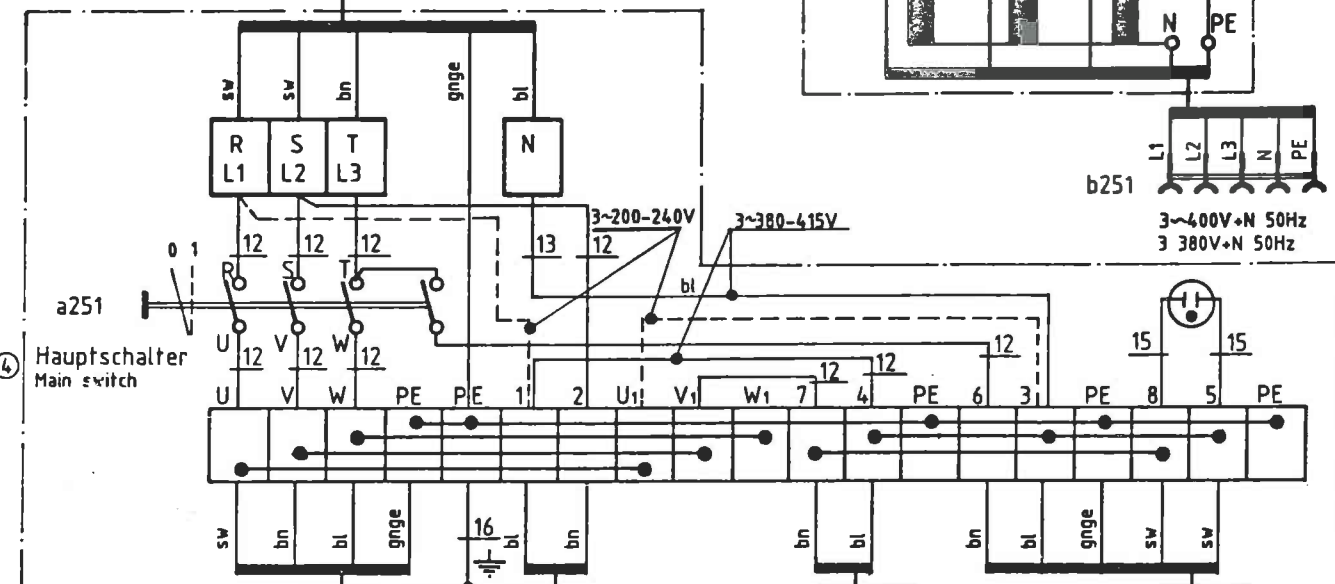
Zur Beachtung !
Die Texte an den eingekreisten Positions-No.
sind auf einem gesonderten Blatt in die
jeweilige Fremdsprache übersetzt.

Note:
The texts beside the encircled position
numbers are translated on a separate sheet.

Observation:
Les textes à côté des chiffres de position
encerclés ont été traduits sur une feuille
séparée.

Observación:
Los textos al lado de las cifras de posición
encerradas han sido traducidos sobre
una hoja separada.

Bei Änderung beachten:



6 Hinweise für Umschaltung auf andere
Netzspannungen beachten!
Observe the notes for changeover to other
main voltages!

7 Zusatzeinrichtung
Optional equipment

01.0	0726/91	13.11.91	Bearb.	gepr.
A-Kennz.	Freigabe	Datum	gez.	gepr.
Klassifizierung	Freigabe			
	0726 / 91			
DURKOPP ADLER AG Bielefeld	Bearb.	20.08.91	Gepr.	Norm
		4.10.91		

-

- 

-

- b47 

ws	5	V3 (A)
bn	6	V3 (K)
gn	7	b45 (E)
ge	8	b45 (C)
gr	9	b8
rs	10	b7
bl	11	b6
rt	12	b5
sw	13	b3
vi	14	b4
grrs	15	b2
blrt	16	b1
wsgn	19	0V
bnqn	21	INT1
wsgc	23	b14
qebn	24	b15

0V	1	0V
+5V	2	+5V
Geberkont.3		b13
1W	4	1W
Pos.1	5	b35
Pos.2	6	b37
Pos.3	7	b39

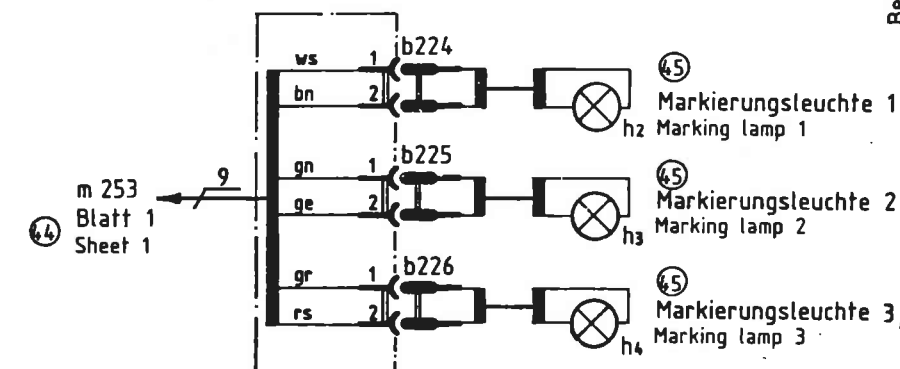
Pinout diagram for the b209 connector:

Pin	Label	Value
1	ws	0V
2	bn	C (b47)
3	gn	C (b46)
4	ge	A

b107:

s9	2	ws
s10	3	bn
s11	4	gn
s12	5	ge
s13	6	qr
s14	7	rs
s15	8	bl
s16	9	rt
+24V	10	sw
0V	11	vi
s32	12	qrrs
s28	13	blrt
s27	14	wsgn
s21	15	bn gn
s17	16	wsge
s18	17	gebn
s19	18	wsg r
s20	19	grbn
s8	20	w srs
s7	21	rsbn
s6	22	wsbl
s4	23	bnbl
s3	24	wsrt
s2	25	bnrt
s1	26	ws sw
s5	27	bn sw
+24V	28	grgn
0V	29	gegr
s29	30	rsqn
s30	31	gers
s31	32	gnbl
s22	33	gebl
s23	34	gnrt
s24	35	gert
s25	36	qnsw
s26	37	gesw

		sw/grgn +24V	
wssw	s1	17	Pattenklemme links anheben Lifting left flap map
bnrt	s2	18	Kulisse schwenken Swivelling linkage
wsrt	s3	19	Eckenmesser kurze Naht V-knife short seam
bnbl	s4	20	Eckenmesser V-knife
bsnw	s5	21	Faltbleche schließen Closing folding sheets
rsbn	s7	22	Pattenklemme rechts anheben Lifting right flap clamp
ws	s9	23	Abstapeln/ Ausblasen Stacking/blowing clear
bn	s10	24	Transportklammer anheben Lifting feeding clamp
gn	s11	25	Transportklammer absenken Lowering feeding clamp
gr	s13	26	Mittel messer Centre knife
rs	s14	27	Vakuum/ Niederhalter Vacuum/down-holder
bl	s15	28	Fadenspannung lösen Releasing thread tension
rt	s16	29	Fadenklemme öffnen Opening thread clamp
wsge	s17	30	Reißverschlußschere schließen Closing zipper cutter
gebn	s18	31	Faden vorziehen Pulling thread
wsg	s19	32	Flusen ausblasen Blowing clear fluff
grbn	s20	33	Faltstempel absenken Lowering the folder
bngn	s21	34	Faltstempel anheben Lifting the folder
gebl	s22	35	Reißverschlußschere zurück Zipper cutter moved back
gnrt	s23	36	Fadenfänger Thread catcher
gert	s24	37	Fadenschere Thread cutter
gns	s25	38	Nadeln ein Needles engaged
wsgn	s27	39	Bandschere Tape cutter
blrt	s28	40	Band verschieben Feeding tape
rsgn	s29	41	Nadelkühlung Needle cooler
gers	s30	42	Reißverschlußschere vor Zipper cutter moved forward
gnbl	s31	43	Eckenmesserverstellung zu Adjustment of V-knives to Nählänge 2 sewing length 2
grrs	s32	43	Eckenmesserverstellung zu Adjustment of V-knives to Nählänge 3 sewing length 3
wsbl	s6	44	Ausstreifer vor smoother forward
wrs	s8	45	Ausstreifer zurück smoother back



Note:
The texts beside the encircled position
numbers are translated on a separate sheet

Observación:
Los textos al lado de las cifras de posición
encerradas han sido traducidos sobre
una hoja separada.

01.0	0726/91	13.11.91	Berlin		
Ä-Kennz.	Freigabe	Datum	gez.	gepr.	
Klassifizierung		Freigabe			
		0726 / 91			



**DURKOPP
ADLER AG
Bielefeld**

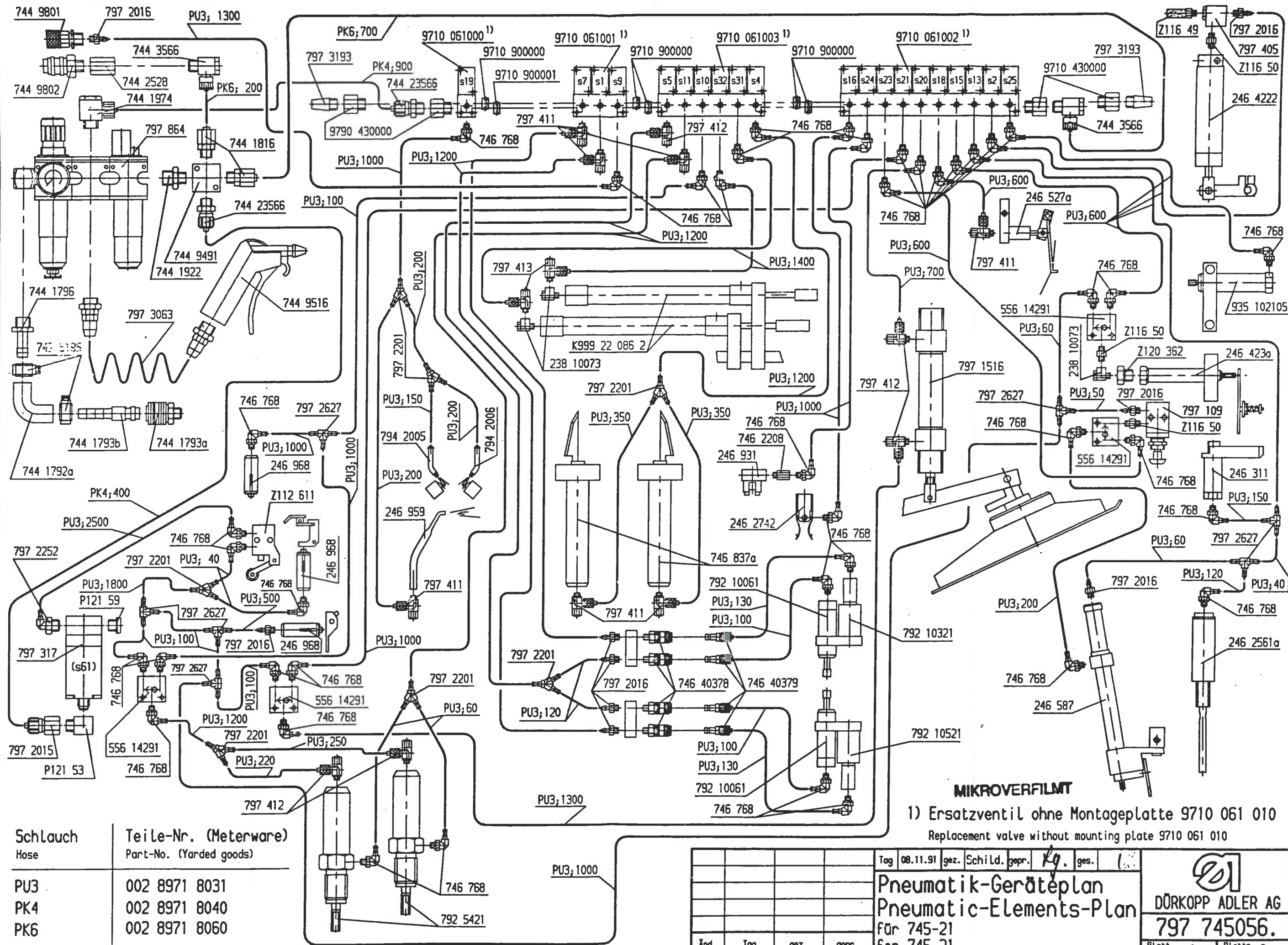
Bearb.

Gepr.

Norm

20.08.91	<i>g</i>		Benennung	Teilenummer	Blatt
	<i>g</i>		Bauschaltplan	9870 745001 B	2/2
4.10.91	<i>g</i>	<i>at</i>			

Unterlage behalten wir uns
den Urheberrechtsschutz gemäß
DIN 34, Absatz 2.1 vor.



Schlauch Hose	Teile-Nr. (Meterware) Part-No. (Yarded goods)
PU3	002 8971 8031
PK4	002 8971 8040
PK6	002 8971 8060

MIKROVERFILMT

1) Ersatzventil ohne Montageplatte 9710 061 010
Replacement valve without mounting plate 9710 061 010

Tag	08.11.91	gez.	Schild.	gepr.	Kg.	ges.	1
Pneumatik-Geräteplan Pneumatic-Elements-Plan							
Für 745-21 for 745-21							
Änd.	Tag	gez.	gepr.				

DÖRKOPP ADLER AG	
797 745056.	
Blatt 1	Blattz. 2

Für diese technische Unterlage behalten wir uns den Urheberrechtsschutz gemäß DIN 34, Absatz 2.1 vor.

