DÜRKOPP ADLER AG

550 - 12 - 13; - 14; -16

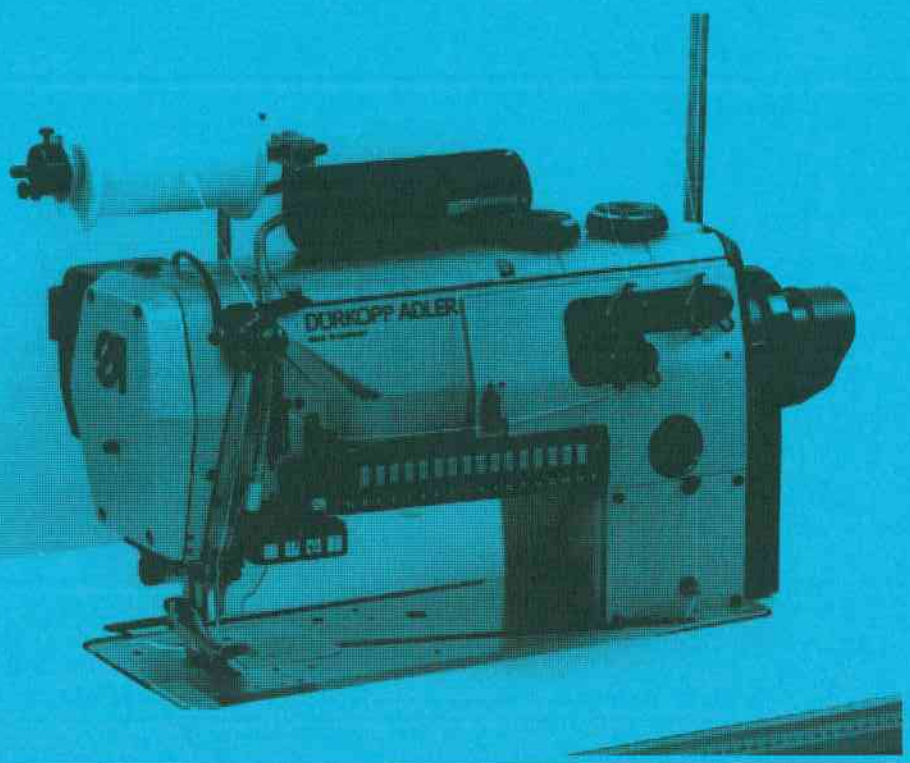
Sewing unit for the precrimping of upholstery pieces

Instructions for operating

Instructions for service

Instructions for programming DA-Microcontrol

1 2 3 4



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The following patents and registered utility models apply:

Status April 1994

DE 30 43 141

IT 209 238

KR 24 686

TW 31 498

US 4 116 145

US 4 446 803

JP 1 258 920

JP 1 339 944

JP 1 803 181

JP 1 931 464

1. Product Description

1.1 Brief Description

The 550-12-13; -12-14 and -12-16 are configured work stations for the precrimping of upholstery pieces.

The work stations are equipped with a single-needle double locked stitch machine with a differential drop feed (two independently-adjustable feed dogs) and a differentiable, alternating top feed.

Via a keypad strip 15 different crimping values and 16 intermediate values can be selected. A knee switch turns them on and off again. In order to achieve a securer drawing of the stitches a second needle thread tension is switched on when a crimping value is turned on. The moment of switching on a second needle thread tension can be preselected between crimping values 1 and 5 inclusive.

Drive and control of the work station occurs via a 3 phase motor in conjunction with a Microcontrol control.

To increase the crimping intensity the work station is equipped with an upper and /or lower tape feed and tensioning. The fixing tape width is 2,25 mm by the sub-classes 550-12-13; -12-14 and 3 mm by the sub-class 550-12-16.
The tape tension can be turned on via a key and turned off through the knee switch when the crimping value is switched off.

1.2 Proper Use

The 550-12-13; -12-14; -12-16 is a configured sewing station which can be used for sewing light to medium heavy sewing material.
Such material is, as a rule, fabric composed of textile fibers or leather. These sewing materials are used in the garment, furniture and car upholstery industries.

Furthermore, it may be possible to also execute so-called technical seams with this special sewing machine. Here, however, the operator (DürkoppAdler AG would be applications are, on the one hand, relatively rare and, on the other, their variety is immense. Depending on the results of this evaluation it may be necessary to adopt appropriate safety measures.

In general, only dry material may be worked with this special machine. The material may not be thicker than 10 mm when it is pressed together by the lowered unit could only be allowed to be operated with eye protection. Such eye protection is not available at this time.

The seam is generally made with sewing yarns of textile fibers with dimensions up to 15/3 NeB (cotton threads), 20/3 Nm (synthetic threads) or 25/4 Nm (core spun threads). Those wishing to use other threads must also first evaluate the dangers arising herefrom and, if necassary, take safety measures.

This special sewing machine may only be ainstalled and operated in dry and clean areas. If the sewing unit is employed in other areas, which are not dry and clean, other, to be agreed upon, measures may become necessary (see EN 60204-3-1: 1990).

We, as a manufacturer of industrial sewing machines, as that, at a minimum, semi-skilled operating personel work on our products so that all normal operations and, where applicable, their dangers can be presumed to be known.

1.3 Noise level Lc

Workstation related emmission according to DIN 45635-48-A-1-KI 2	
Number of stitches:	2.140 min-1
stitch length:	5,0 mm
alternating sewing feed stroke:	5,6 mm
Sewing material:	Upholstery vlies with upper cloth 674g/m^2
Lc =	**83 dB (A)**

1.4 Subclasses

550-12-13	Configured work station with pneumatic pressure foot stroke.
550-12-14	Configured work station with pneumatic pressure foot stroke and additional pneumatic edge cutter.
550-12-16	Configured work station with pneumatic pressure foot stroke, pneumatic edge cutter, tape feed and tape scissors for the partial undersewing of 3-mm-wide reinforcing tape

1.5 Technical Data

Needle system:	933
Maximum number of stitches:	3000 r/min
Maximum stitch length:	Top feed 8 mm Drop feed normal stitch 5 - 2.5 mm Drop feed differential 8 mm
Maximum pressure foot lift:	2-7 mm
Clearance under the pressure feet:	
When sewing:	10 mm
When raised:	15 mm (max. 17 mm)
Cutting clearance (only -12-14/16):	4,5 mm
Knife stroke height (only -12-14/16):	8 mm (convertible to 6 mm)
Maximum thread thickness:	20/3 Nm
Operating pressure:	6 +/- 0.5 bar
Line pressure:	7-10 bar
Air consumption per work cycle:	0,1 NL
Through-put area:	280 x 108 mm

1.6 Optional Equipment

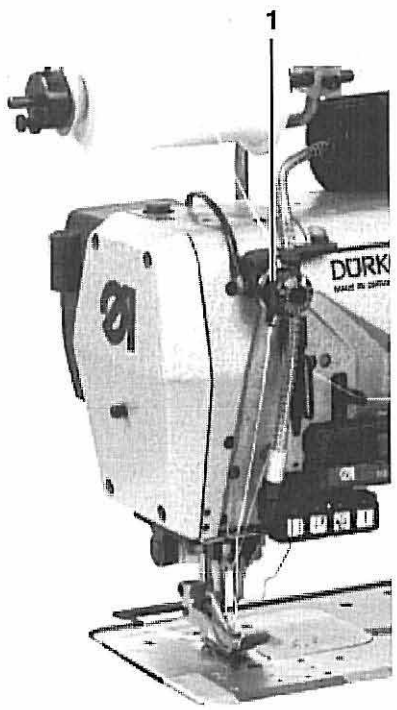
N900 040026	Edge stop for 550-12-13
N900 003471	Upper tape tensioner with Roller Holder for 550-12-13/-14
N900 003511	Upper tape tensioner with Roller Holder for 550-12-13/-14
196 104008	Rear sole of the intermittent feed foot, Teflon covered. For better glide characteristics when working leather and similar.
797 003031	The workstation is supplied without a compressed-air connection hose, coupler plug & socket and hose socket. A 9-mm connection hose 5 m long with hose socket, clamp, plug and socket can be ordered if required. Order no.: 797 003031.

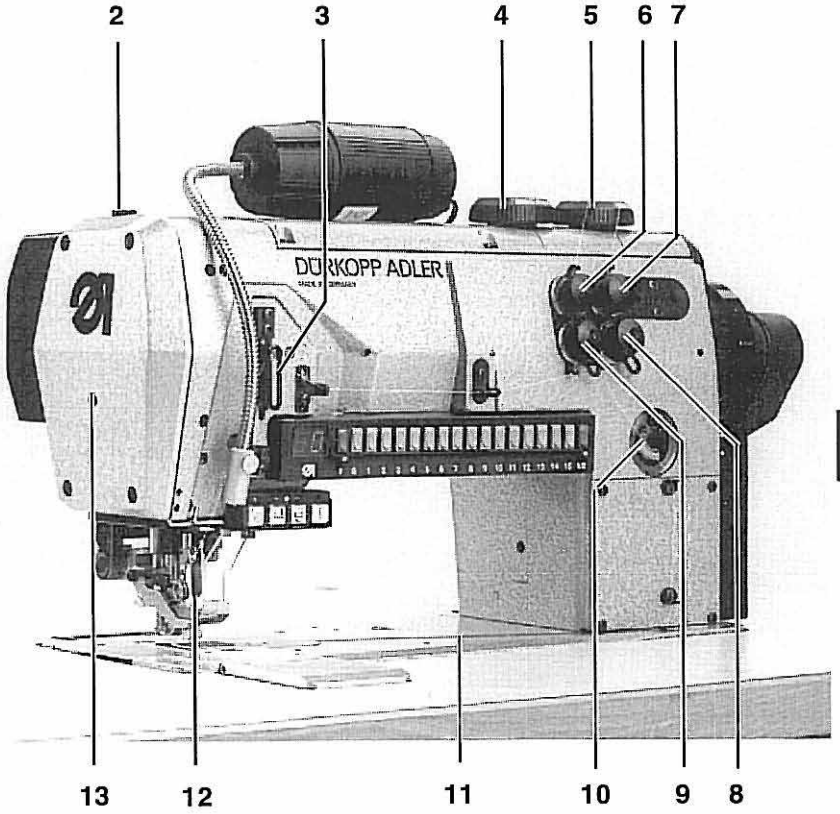
NB:

One of the tape tensioners is supplied with the workstation.

2. Operating Elements and their Function

2.1 Elements on the Sewing Head



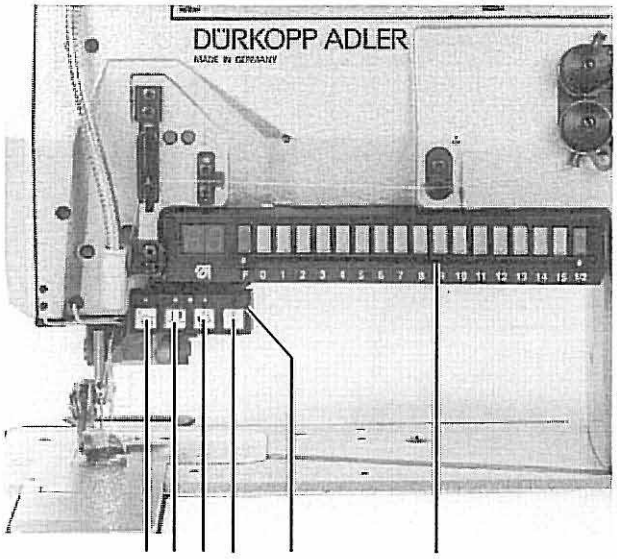


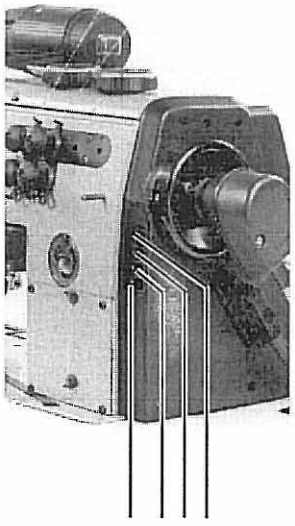
Element		Function
1 -	Knob	- Setting the upper tape tension
2 -	Screw	- Screw for the pressure foot pressure. It is completely screwed in at the factory. Do not adjust the screw!
3 -	Thread regulator	- Setting the correct needle thread quantity
4 -	Setting wheel	- Setting increased pressure foot lift height
5 -	Setting wheel	- Setting pressure foot lift
6 -	Knob	- Second needle-thread tensioner for firmer stitch drawing
7 -	Knob	- Second hook-thread tensioner for firmer stitch drawing
8 -	Knob	- Setting hook-thread tension
9 -	Knob	- Setting needle-thread tension
10 -	Viewing glass with filling opening	- Shows the oil level in the reservoir. The oil level should not fall below "MIN". If necessary fill "SP NK 10" oil to the "MAX" mark.
11 -	Plate	- Thread guide for the hook thread
12 -	Needle	- 933

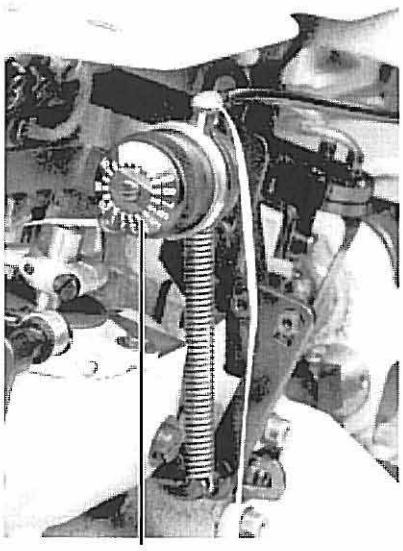
Caution Risk of Injury!

When threading or replacing the needle
it is imperative to turn the main switch off.

13 -	Button	- Arrest the pressure foot in the raised position.



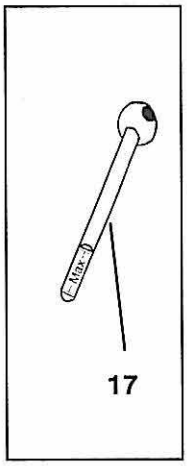


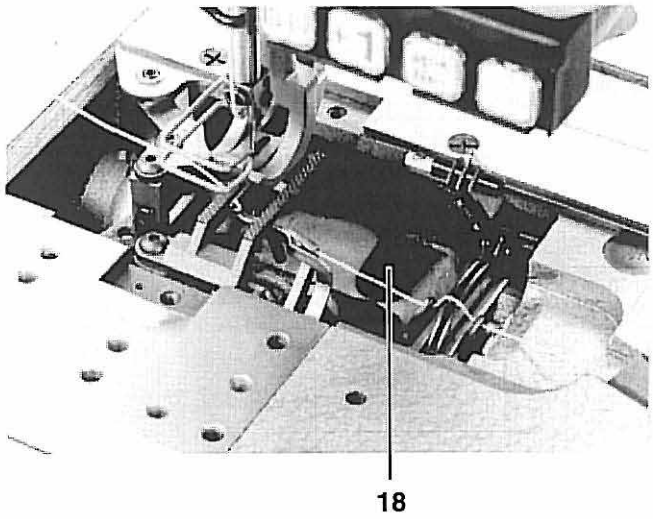


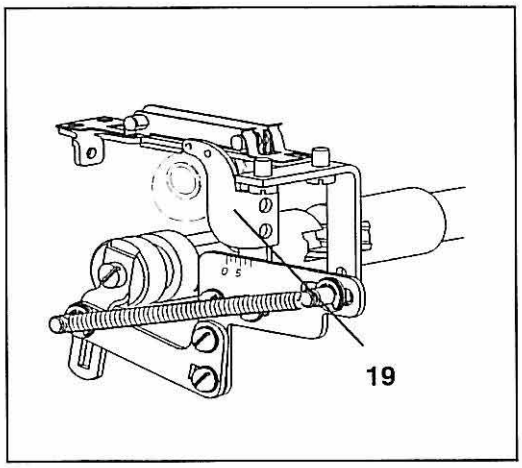
Element		Function
14 -	**Fullness block**	
	Key F	- Switching on tape tension
	Keys 1-5	- Preselecting basic stitch length while simultaneously holding down key 15a
	Keys 1-15	- Calling up crimping values
	Key 1/2	- Calling up intermediate crimping values
	Display	- Indicator of the selected crimping values 1...15 1/2/3/4/5/6/7/8/9/10/... or the selected basic stitch length 00...05 00/01/02/03/...
		Display HH: tape-feed fault Possible cause: no tape (empty), tape not sewn on
15 -	**Key block**	
a -	Key	- Needle high position / Adjusting basic stitch length
b -	Key	- Switching high pressure foot lift on/ off
c -	Key	- Switching edge cutter on/ off (-14/-16 only)
d -	Key	- Switching stitch condensation on/ off (-13/-14 only)
		- Releasing tape clamp to thread reinforcing tape. Closing tape clamp, simultaneously severing reinforcing tape lengthways.
1-4 -	**LED Indicator**	- Indicates the current rpm

Active LEDs	Max. revolutions r/min
1234	3000
234	2500
34	2000

16 -	**Dial**	- Switching on lower tape tension (-13/-14 only)





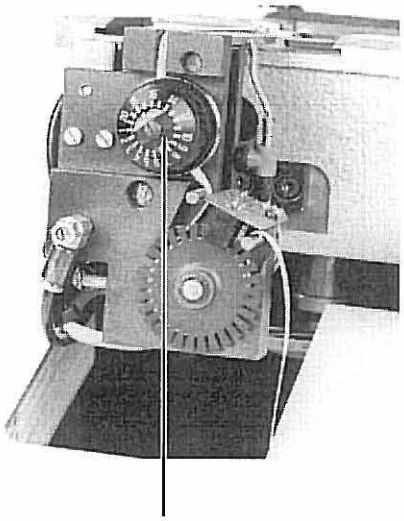


Element		Function
17 -	Dip stick	- Measuring the oil level in the hook drive housing. Dip stick is in the accessories pack.
18 -	Screw	To check the oil level screw out screw 18 and place the dip stick 17 in the opening. The oil level must lie between the markings. Only fill Esso "SP-NK 10"-type oil.

Attention!

If too much oil is filled the excess oil will exit through the vent hole in screw 18.

19 -	Thread take-up lever	- Automatic adaption of the hook thread quantity to the set stitch length. Settings for firm, normal and highly elastic seams see section 3.5.



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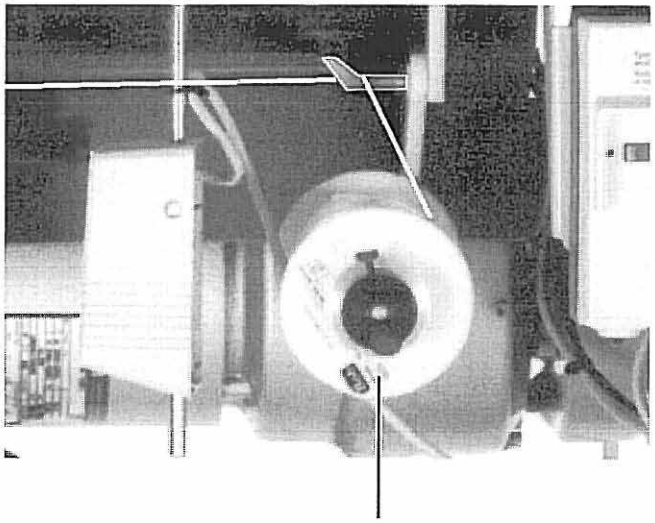

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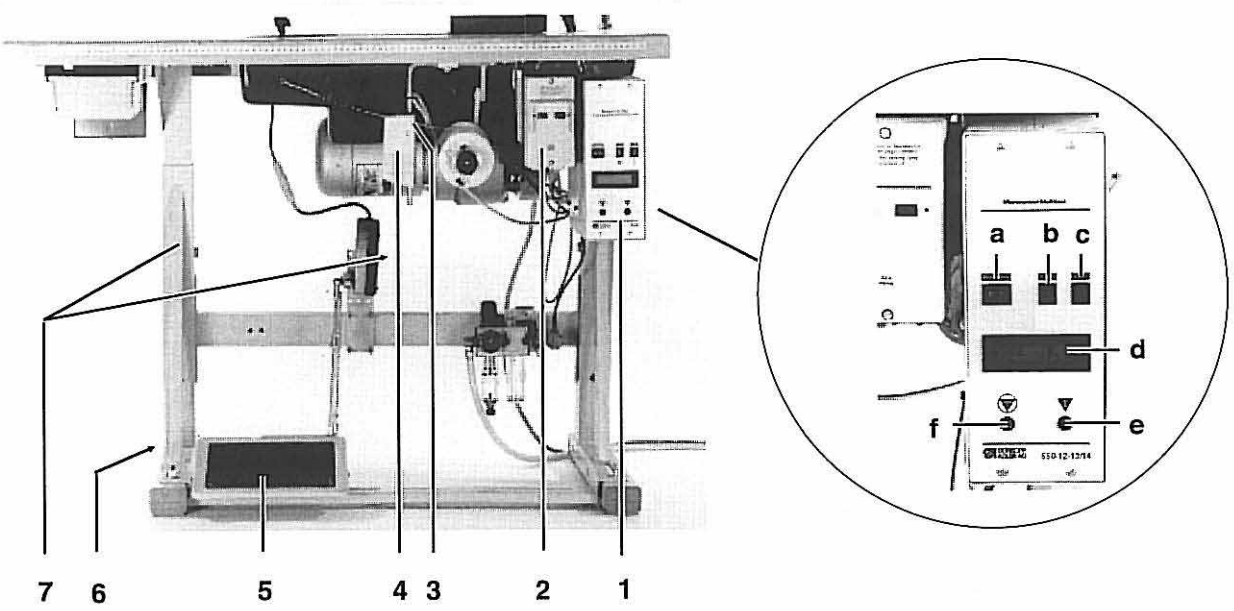
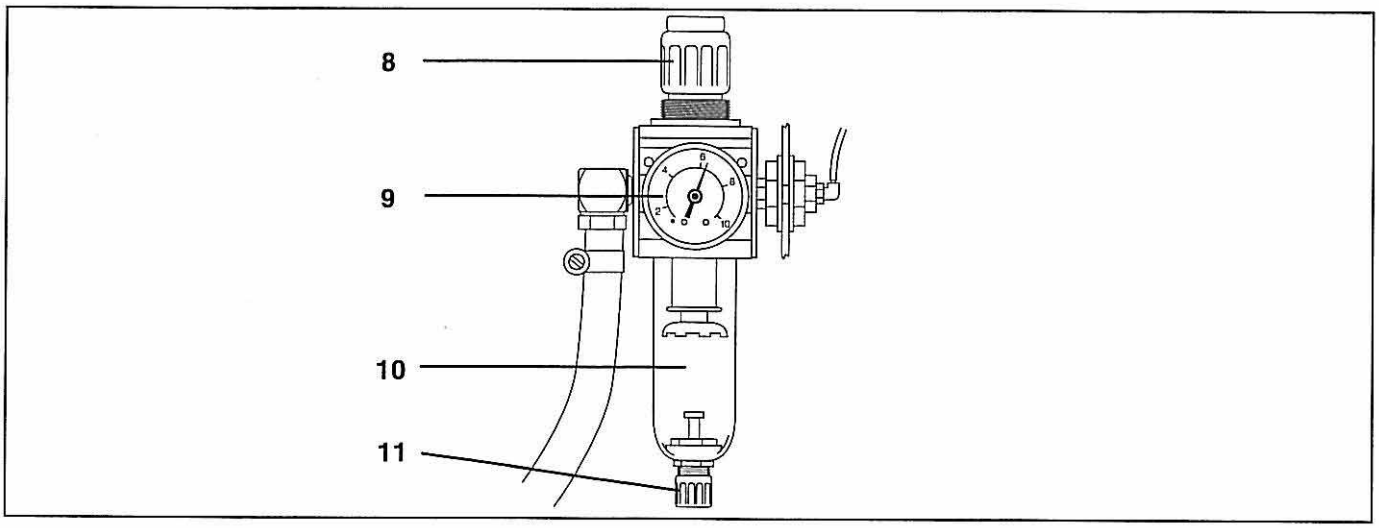
Element		Function	
20 -	Knob	-	Setting lower tape tension (-16 only)
21 -	Spool	-	Tape feed

2.2 Elements on the frame



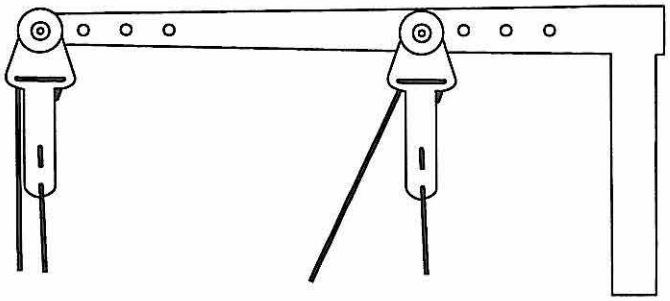
Elements		Function		
1 -	Control panel	-	Selecting the sewing program, needle and pressure foot settings during sewing stop	
	Coding switch a	-	Must be set at 01 (-13/-14 only) Must be set at 02 (-16 only) }	E-PROM version 550 A 05
	Coding switch b		Position 1 -	Needle down during sewing stop
			Position 2 -	Needle up during sewing stop
	Coding switch c		Position 1 -	Foot down during sewing stop
			Position 2 -	Foot up during sewing stop
	Display d	-	Indicates the selected parameters	
	Key e	-	Setting counter (P45, P46)	
	Key f	-	Activating changed functions	
2 -	Main Switch	-	Turning the machine on and off.	
3 -	Switch	-	Changeover switch for key b on key block 15 from key operation to flip-flop operation	
4 -	Knee switch	-	Turning the crimping value on/ off	
5 -	Pedal			
	Rest position	-	No function	
	Position forward	-	Sewing with at desired rpm	
	Position "half back"	-	Raise pressure foot when the machine is stopped	
	Press key 15d pedal forward	-	Lowering tape cutter. The tape channel is open.	
6 -	Screw	-	Compensation for uneven floors	
7 -	Screws	-	Adjusting the work height	



Element		Function
Maintenance unit		
9 -	Pressure regulator	- To set pressure at 6 bar raise and rotate sleeve 8.
10 -	Air filter and water separator	- Before the water level reaches the filter, screw in screw 11 far enough to drain the water. Do ***not*** interrupt the compressed air supply.

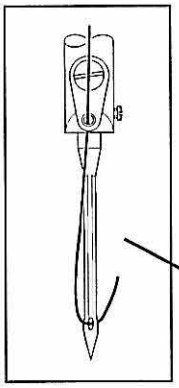
3. Operating the Sewing Machine

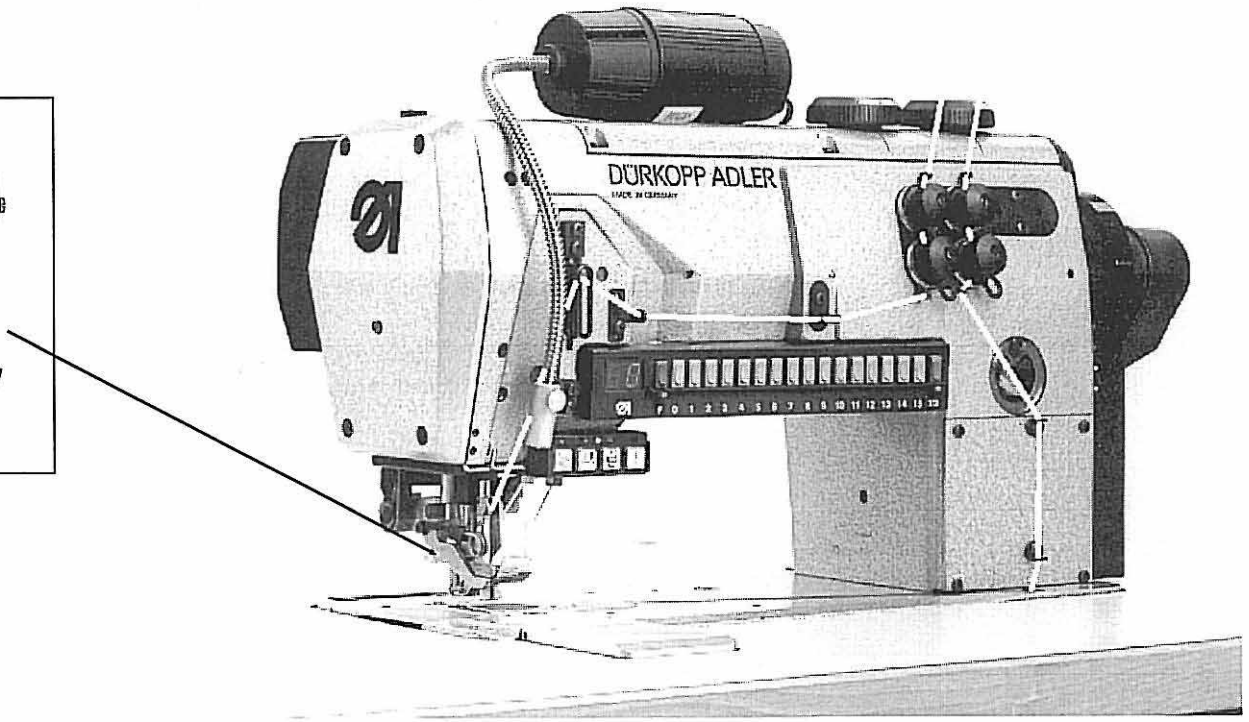
3.1 Threading Needle Thread



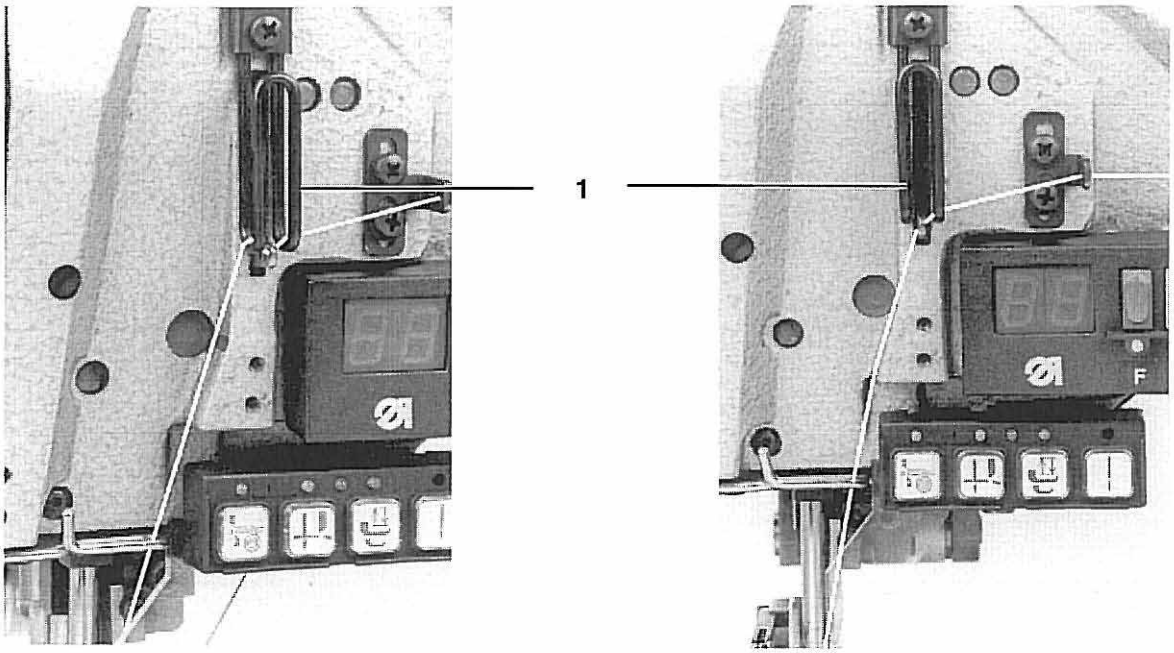
Caution Risk of Injury!
Before threading turn the main switch off.

- Thread the needle thread as shown in the illustrations.





3.2 Needle Thread Quantity for Sure Stitch Formation



a) b)

With elastic sewing threads, e.g. synthetic fiber yarns, it is necessary for sure stitch formation that a certain needle thread quantity be drawn forward.

This occurs in the low position of the thread lever in conjunction with the thread regulator 1.

For this set the thread regulator as follows:

- Bring the thread lever into the lowest position
- Adjust the thread regulator

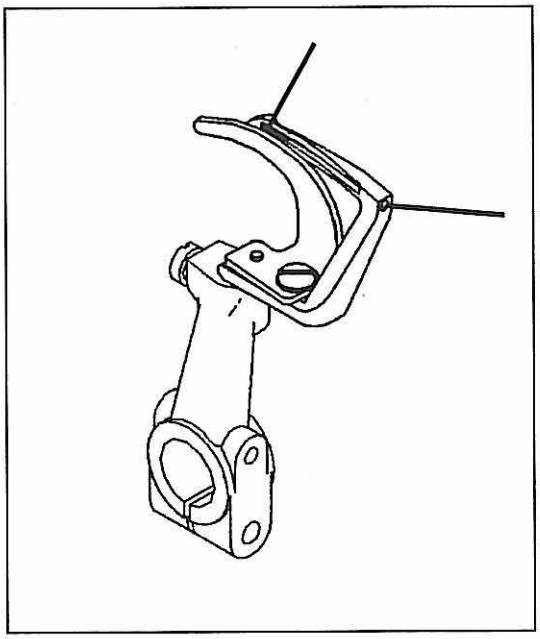
With elastic threads:

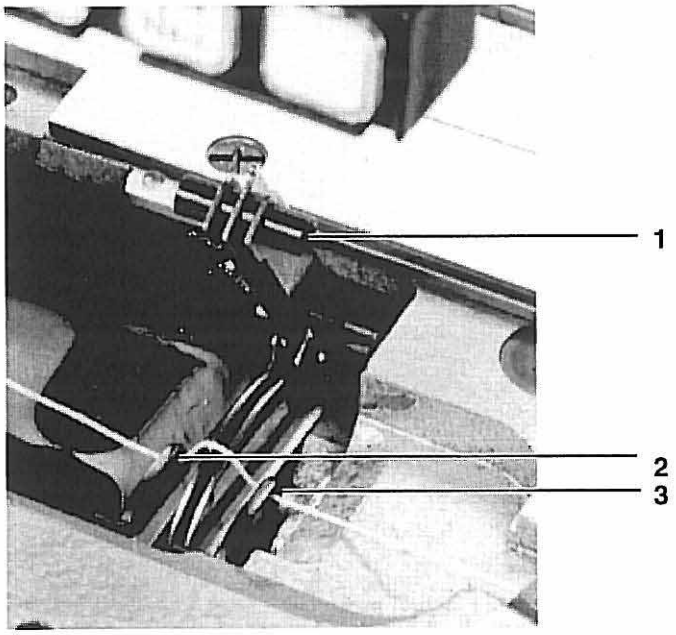
The thread hole must be visible below the thread regulator.
Thread the needle thread to the ***left*** past the bracket. Illus. a

With less elastic threads, e.g. cotton:

The thread hole should be visible above the thread regulator.
Thread the needle thread to the ***right*** past the bracket. Illus. b

3.3 Threading Hook Thread





Caution Risk of Injury !
Before threading turn the main switch off.

- Lift the thread holder 1 out of its catch
- Pull the thread through the holes 2 and 3
- Pull the thread through the hook holes
- Close the thread holder

Note:

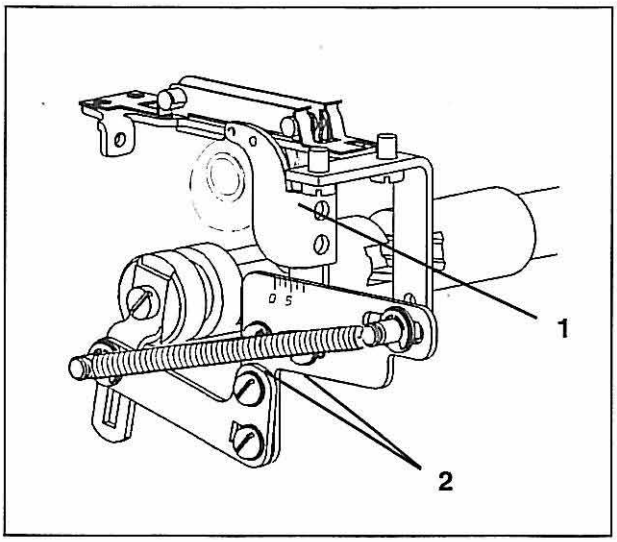
Tension in the needle thread must be greater than in the hook thread. The hook-thread tensioning knob is therefore fitted with a spring made of thinner wire.

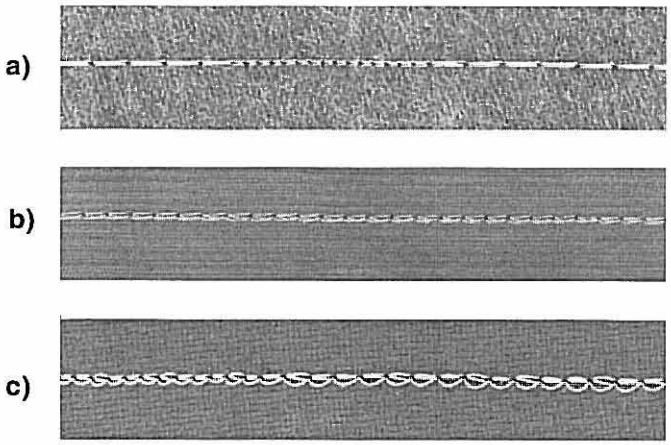
Excessive thread tension will cause fabric puckering.

Inadequate thread tension may lead to missed stitches.

See section 3.5 for increasing thread quantity in the seam.

3.4 Setting the Hook-thread Take-up Lever





The take-up lever 1 ensures that the thread quantity is automatically matched to the stitch length set.

Stitch drawing and stitch formation are therefore always perfect for every stitch length, even with stitch condensation. The drawn-in thread quantities can be changed depending on the type of seam.

Without a change in the thread tensions, the following occurs:

a) tight
b) normal
c) highly elastic (ballon stitch) seams.

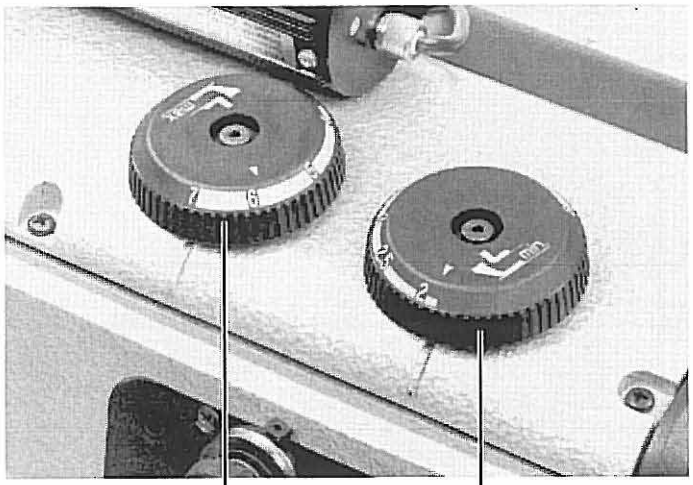
- Loosen screws 2
- Adjust the thread take-up lever
  Direction 0 tighter seam
  Direction 5 elastic seam.

Important!

1) By extreme Settings, e.g. a shortest possible stitch length and a greatest possible thread quantity (elastic seam) care is to be taken that a sure penetration of the needle into the thread triangle is still possible. With a too large hook thread quantity missing stitches can occur.

2) If with the setting values described under 1) the stitch length is greatly increased, then this requires that the thread guide be set back in the direction of 0. Otherwise a jumping off of the hook thread from the thread take-up disk can occur.

3.5 Setting Pressure Foot Lift



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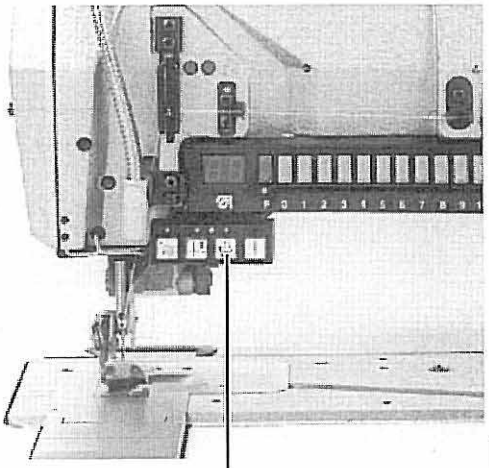

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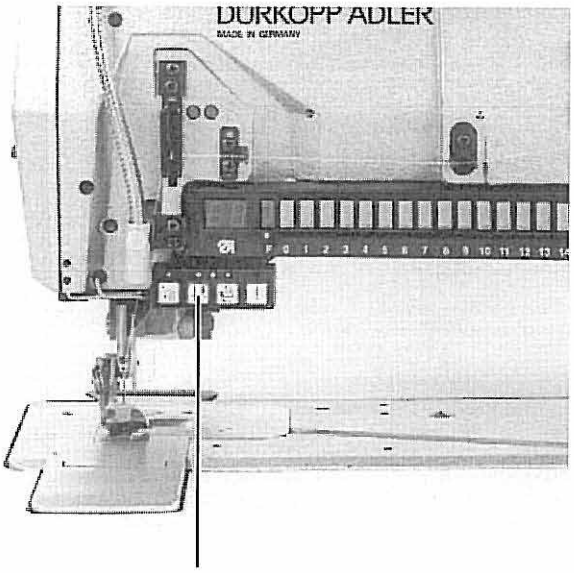
With the right setting wheel 1 the standard pressure foot lift of 2-6 mm is selected.

With the left setting wheel 2 an increased pressure foot lift of 4-7 mm can be set. It is called up as needed by operating key 3.

When changing the pressure foot lift height the maximum number of stitches is automatically changed.

Max. pressure foot lift mm	Max. number of stitches min.
2.5	3000
up to 4	2500
over 4	2000

3.6 Switching the Edge Cutter On and Off



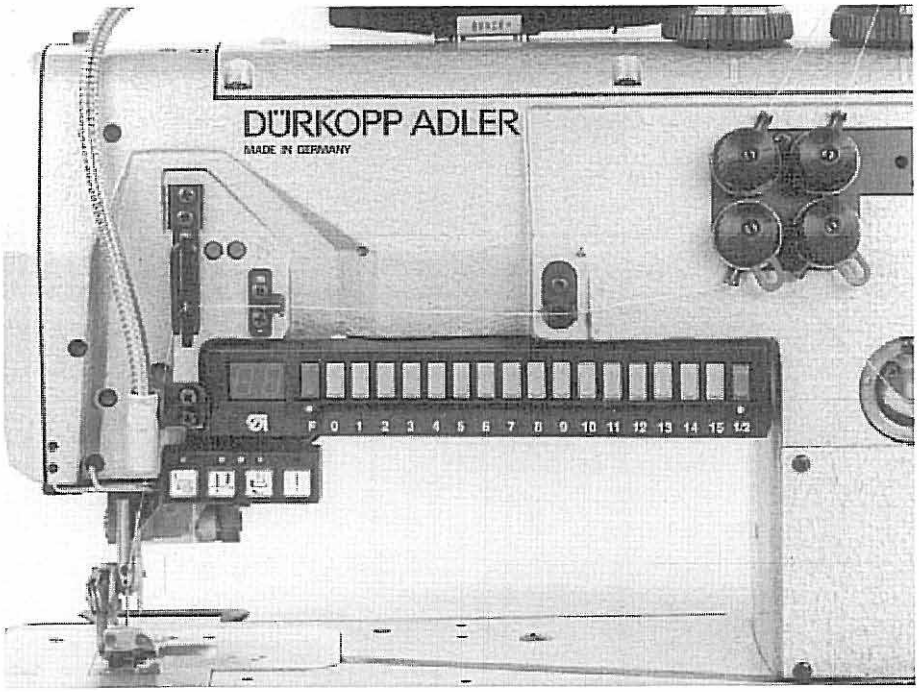
The edge cutter of the 550-12-14 and -16 can be switched in at any time. Its upper knife is so designed as to give a sure cut even when switched in during the seam.

Caution Risk of Injury!

When switching on the knife do not reach into the cutting area. Remove the finger guard only for repair work and replace immediately if damaged.

- To turn on press key 1
- To turn off press key 1 again

3.7 Calling Up Crimping Values



Key 0 = Smooth sewing
Key 1 = Smallest crimping value
Key 15 = Largest crimping value
Key 1/2 = Intermediate crimping value

e.g. Selecting crimping value 2 **plus** key 1/2 results in the crimping value $2^1/_2$

Key F = Switching in tape tension

Selecting the crimping value

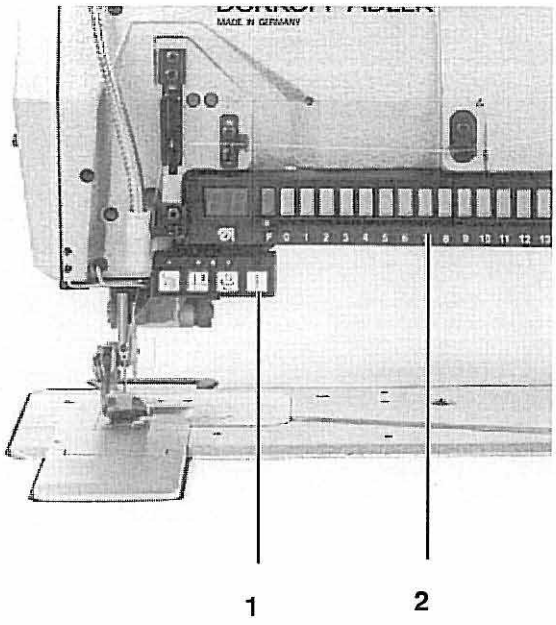
- Select the desired crimping value by pressing the keys 1 - 15 and 1/2

Calling up the crimping value

- To turn off press the knee switch
- To turn on press the knee switch again

Attention: With the knee switch the last selected crimping values are always switched to 0, also the tape tension.

3.8 Setting basic stitch length



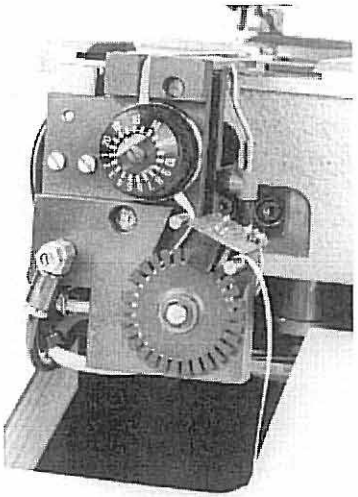
Setting

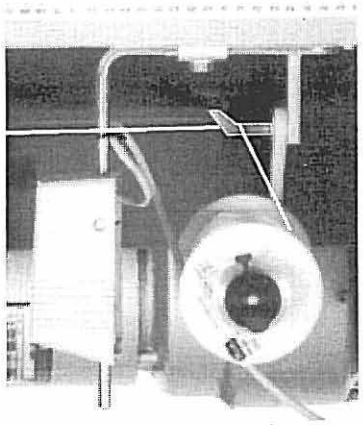
- Hold down key 1.
- Press key 1-5 on fullness block 2.

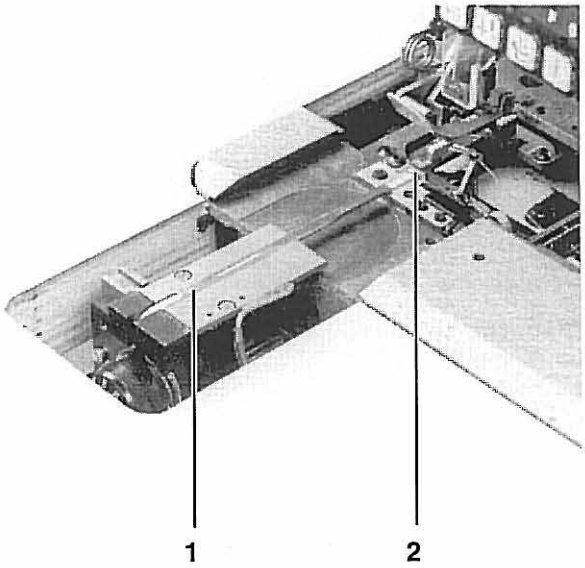
Resetting to zero

- Hold down key 1.
- Press key 0 on fullness block 2.

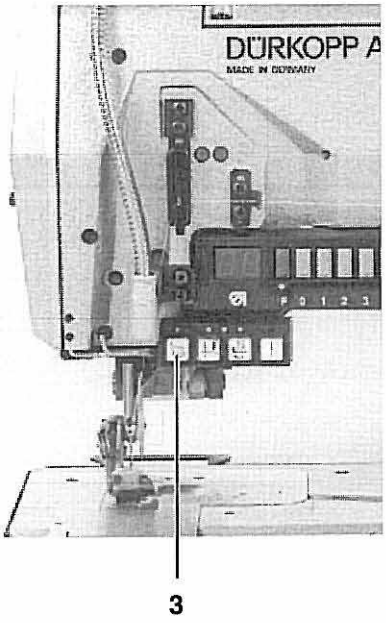
3.9 Threading lower tape feed (550-12-16 only)







Caution Risk of Injury !
Before threading turn the main switch off.



Threading the tape

- Put the roll in place.
- Pass tape over clamping lever.
- Place top in position.
- Thread tape as shown in illustration.
- Press key 3 once to release the tape clamp.
- Thread tape into channel 1 as far as the tape cutter 2.
- Press key 3 again to close the tape clamp and activate the tape cutter.
- Begin sewing.

Removing residual tape from tape channel in needle plate

- Press key 3 once.
- Push pedal forwards.
- Remove residual tape with tweezers.
- Press key 3 again.

4. Maintenance

Caution Risk of Injury !

Before cleaning the machine turn the main switch off.

The maintenance work must be conducted at the latest after the number of operating hours listed in the column "Intervals".

Shorter maintenance intervals may be required for materials with a high lint build-up.

Procedure	Intervals	Remarks
Machine head		
Removal of lint accumulations	8	Particularly at the following points: Underside of the needle plate Feed dog ridges Area around the hook The spaces of the multiple position cylinders Area around the tape feed and the tape clamp between feed dog support and bottom side of base plate.
Check the oil level in the reservoirs	40	See topic 2.1 Element 9
Maintenance unit		
Clean the insert in air filter 8	500	Vent the system first
Check all compressed air connections for leaks	500	
Hopper Foot bearing point	8	1-2 drops of ESSO SP-NK 10 oil

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1. General

ATTENTION !

The tasks described in the service instructions may only be conducted by skilled personnel or appropriately trained persons !

Caution Risk of Injury !

During repair, conversion and maintenance work turn the main switch off and disconnect the machine from the pneumatic supply.

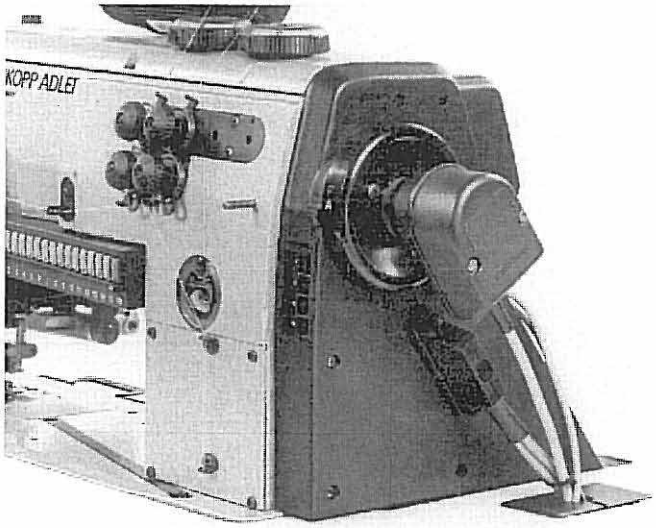
Conduct adjustment work and function testing with the machine running only under strictest observance of all safety measures and with greatest caution.

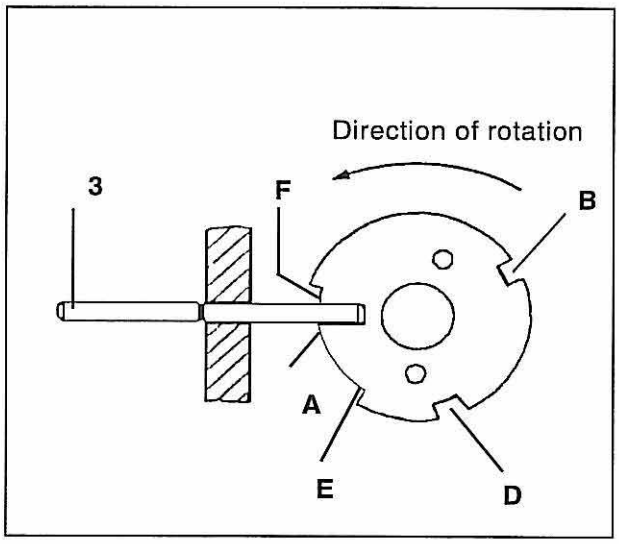
These service instructions describe the setting of the sewing machine in a practical order.

Hereby it is to be noted that different setting positions are interdependent. Therefore the settings must be conducted keeping to the described order.

For all setting work on stitch forming parts a new flawless needle must be inserted.

1.1 Setting Aids





The machine head is equipped with setting aids which make possible a quick and precise setting of all elements.

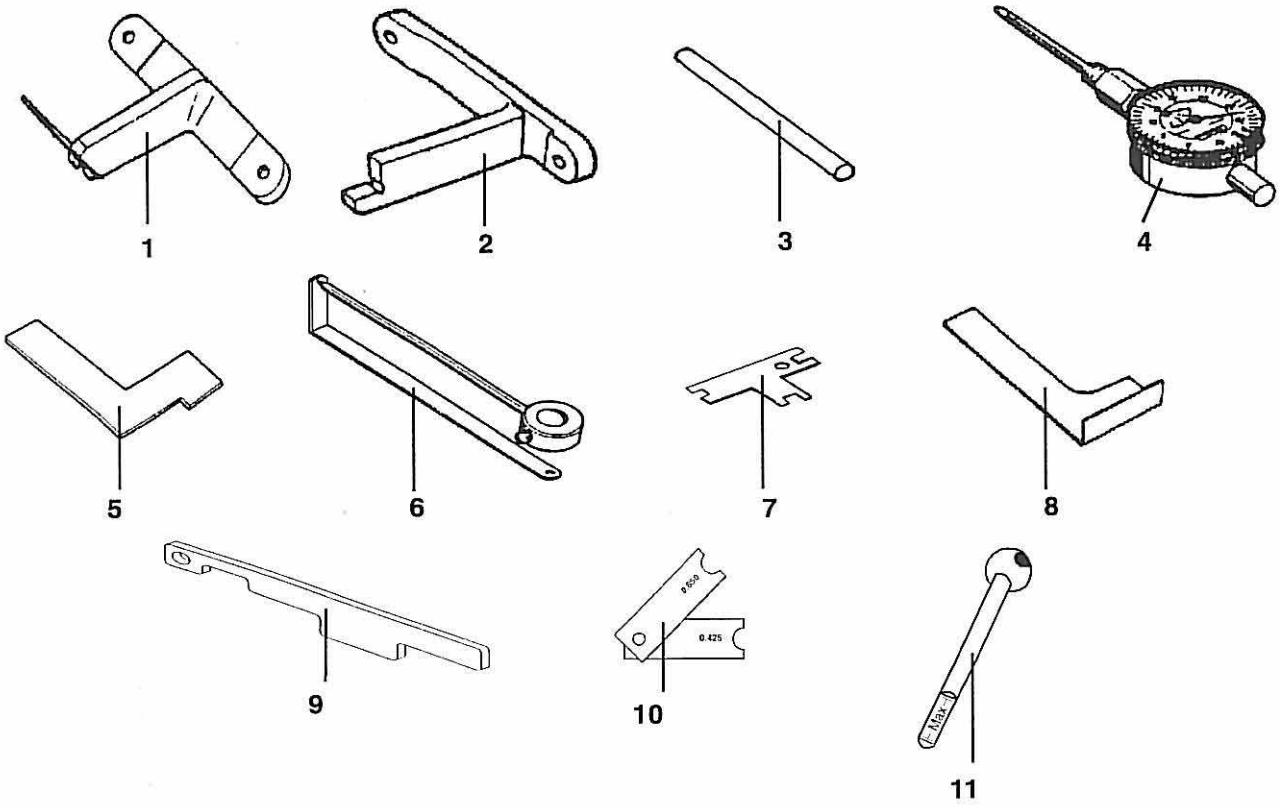
Among these setting aids is the handwheel, which is provided with the letters **A, B, D, E** and **F**, as well as a built-in adjustment disk with 5 different holes.

The individual setting positions are set with a timing pin. It is included as standard in the machine accessories pack.

- Turn the handwheel into the position described for the setting.
- Insert the timing pin 3 into the hole of the machine housing.
- Turn the handwheel a little back and forth until the pin catches in the appropriate hole.
- Slot **A** on the adjustment disk is the deepest.
  The slots **B** to **F** have the same depth.

Slot	Position	Setting
A	Needle bar 2 mm behind the lower dead center	- Position the adjustment disk on the arm shaft - Timing the advancing movement of the transport foot - Reference point of the sychronizer
B	Needle bar in the upper dead center	- Thread take-up disk - Stroke and advance eccentric - Clearance of the transport foot bar to the pressure foot bar - Idle for the feed dog and transport foot when the stitch regulator guide is operated
D	Thread lever just in front of lower dead center	- Eccentric for the stroke gearing - Timing of the stroke movement of the transport foot
F		- Position of the lower timing belt pulley, looping stroke and needle bar height
E and **F**		- Symmetry of looper motion

1.2 Gauge Set



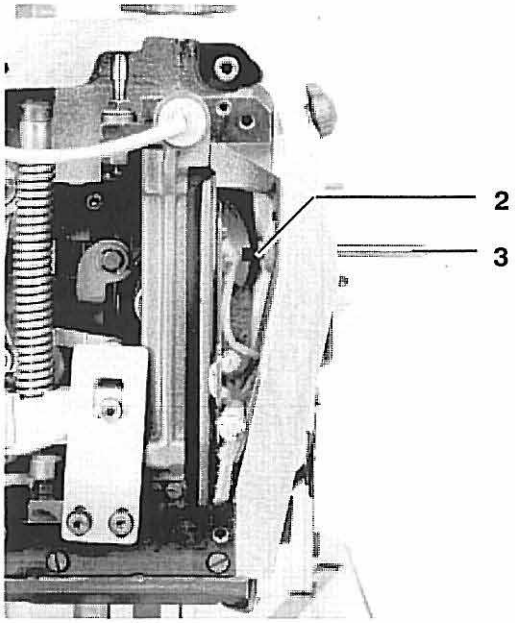
The setting gauges listed below make possible a precise setting and checking of the machine.

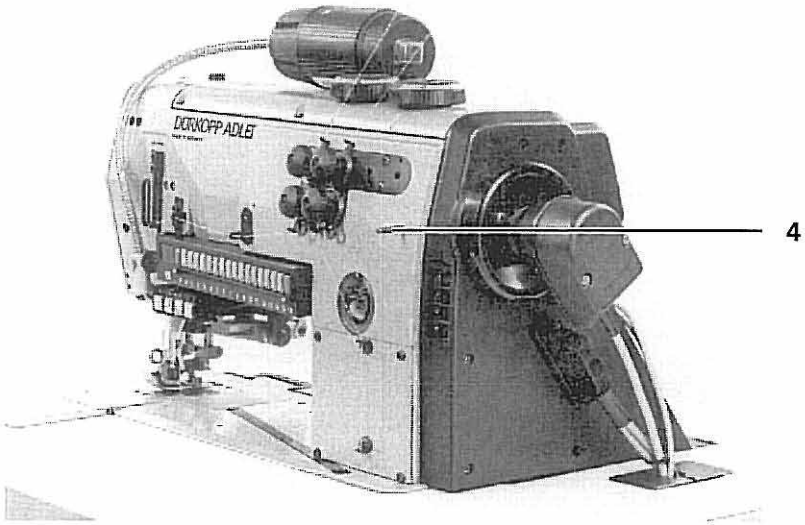
The timing pin no. 3 is incliuded as standard in the accessories pack of every machine. With it the handwheel positions **A** to **F** necessary for the settings can be locked in place.

Gauges	Order no.	Setting
1 - Gauge	0195 002962	- Position of the left lower shaft bearing (Alternatively also 933 000735 + 2 mm)
2 - Gauge	0195 002966	- Position of the hook drive housing (Alternatively also 933 000739K + 2,5 mm)
3 - Timing pin (in the accessories pack)	0791 001152	- Arresting the handwheel in one of the individual positions A to F
4 - Dial gauge	0196 002972	- To measure the needle avoidance movement of the hook drive, the ellipse width and stitchlengths of the transport dogs and of the transport foot
5 - Gauge	0171 000975	- Incline of the hook from 89° 30'
6 - Gauge	0933 080192	- Equal hook movement at reverse point
7 - Gauge	0933 000740	- Height of the thread take-up lever disk
8 - Gauge (in the accessories pack)	0933 000758	- Advance eccentric for the feed dog
9 - Gauge	0491 079996	- Stroke adjustment range of the pressure feet
10 - Adjustment plates	0196 002971	- Setting the multiposition cylinders
11 - Oil dip stick	0965 000871	- Checking the oil level in the hook drive housing

2. Setting the Machine Head

2.1 Adjustment Disk to the Arm Shaft Crank





The slot **A** on the adjustment disk must be inline with the groove 2 in the arm shaft crank.

Only in this position are all other settings made with the adjustment disk correct.

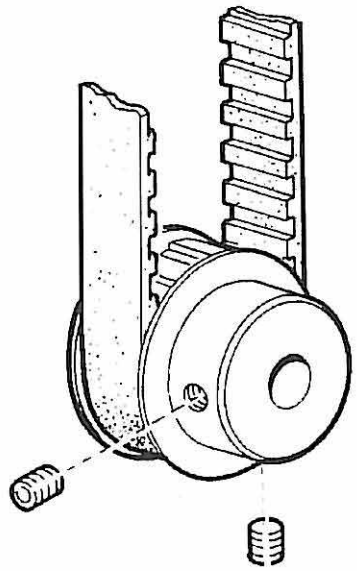
Caution Risk of Injury!

Before adjusting turn the main switch off.

- Insert the timing pin 3 of the gauge set through the hole in the housing into groove 2 on the arm shaft crank.
- With a second timing pin (or 5 mm drill bit) check if, in this position, the timing pin 4 catches in position **A** of the adjustment disk.

- Screw off the arm cover.
- Push the timing belt to the left on the belt pulley and loosen the screws.
  For this procedure use a rounded peg and turn the handwheel.
- Insert the timing pin 3 of the gauge set through the hole in the housing into the groove 2 on the arm shaft crank.
- Arrest the adjustment disk in position **A**.
- Press the timing belt pulley to the right against the timing pin and tighten the screws.
- Remove the timing pins.
- Turn the handwheel until the timing belt is again in the middle of the timing belt pulley.

2.2 Position of the Lower Timing Belt Pulley



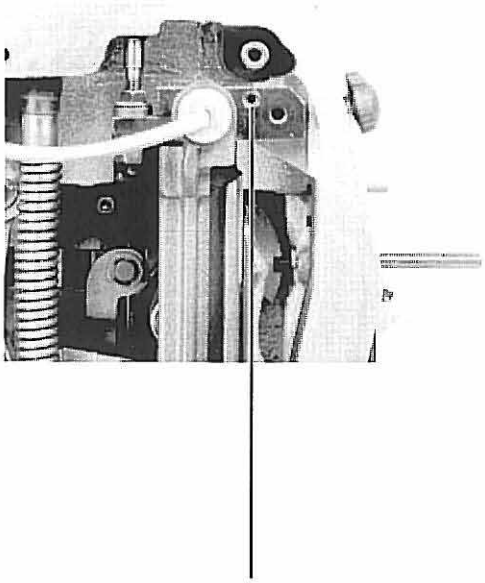
The screws of the lower timing belt pulley should be in the position shown when the machine is arrested in position **F**.

Caution Risk of Injury!
Before adjusting turn the main switch off.

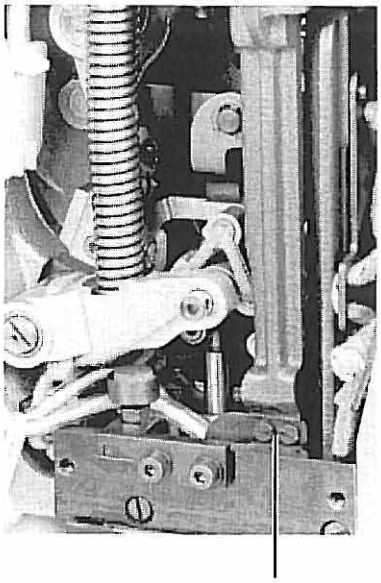
- Arrest the machine in position **F**.
- With an incorrect position of the screws first set the position of the upper timing belt pulley (Chapter 2.1).
- Remove the timing belt from the upper timing belt pulley.
- Turn the lower timing belt pulley until both screws take the position shown.
- Place the timing belt again.
- Check all following settings or reset.

2.3 Needle Bar Guide

2.3.1 General Information



1



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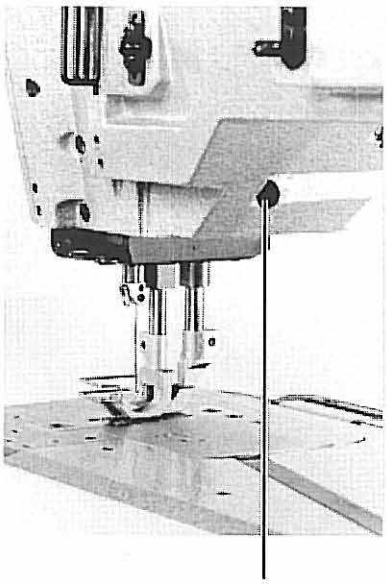


3

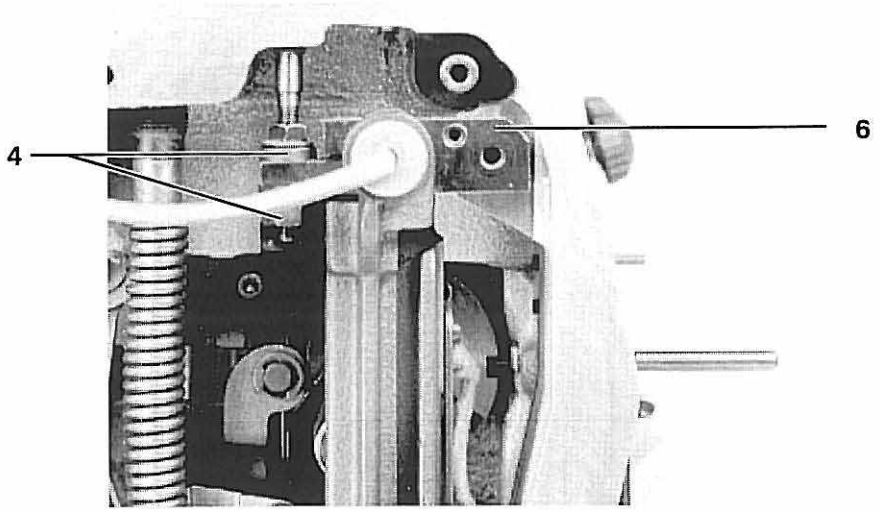
The 550-12-13; -14; -16 series is equipped with a split needle bar guide.

The fixed part with the needle bar is screwed directly onto the cast body. The second part with the transport foot bar is attached movably.

The, with yellow paint and through adhesive secured against turning, screw 1 must touch in the arm.

The guide bolts 2 (in the guide) and the right guide bolts 3 in the arm have been set at the factory so that the guide can move easily and without play.
The positions of the two guide bolts may ***not*** be altered.

2.3.2 Setting of the Guide Holder

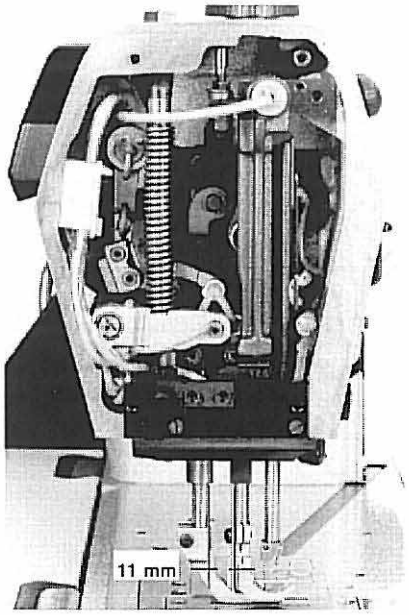


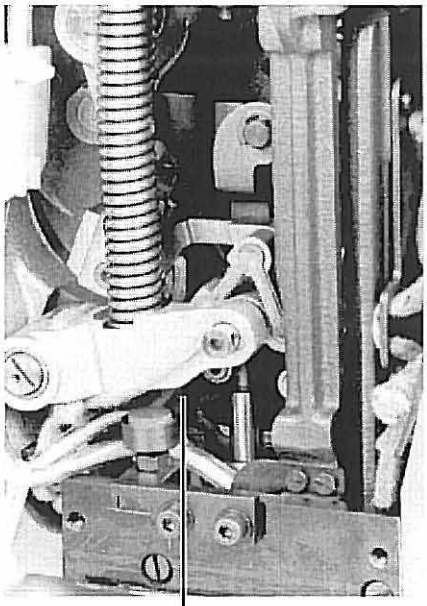
The guide holder 6 must lie parallel to the bottom edge of the arm head.

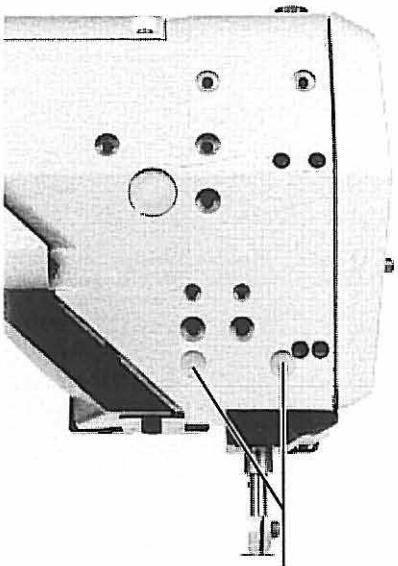
Caution Risk of Injury!
Before adjusting turn the main switch off.

– Set the screws 4 so that the guide holder lies parallel to the bottom edge of the arm head.

2.3.3 Clearance of the Transport Foot Bar to the Material Presser Bar





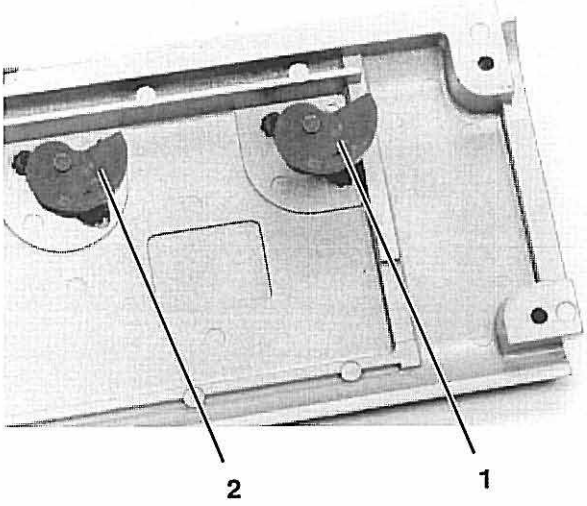


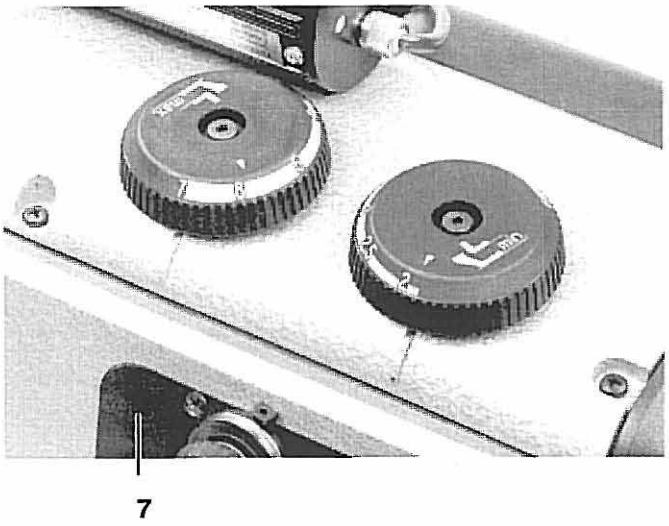
The clearance between the transport foot bar and the material presser bar should be 11 mm with the machine arrested in position **B.**

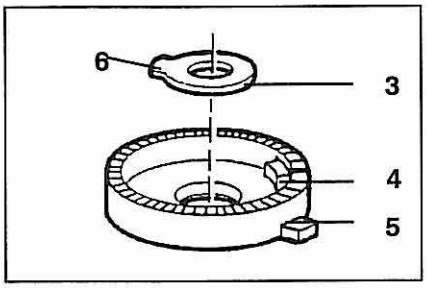
Caution Risk of Injury!
Before adjusting turn the main switch off.

- Arrest the handwheel in position **B.**
- Pull out plugs 9 and loosen the screws lying behind them.
- With the eccentric 8 set the clearance appropriately.

2.4 Setting Wheels for the Pressure Foot Lift Height







The setting wheels can only be turned so far to the right or left until the stop ring 3 touches the effected cam side of the catch ring 5.

When the setting wheel is turned fully to the right:

- The smallest value should be shown.
- The setting wheel should have the least play.

Caution Risk of Injury!

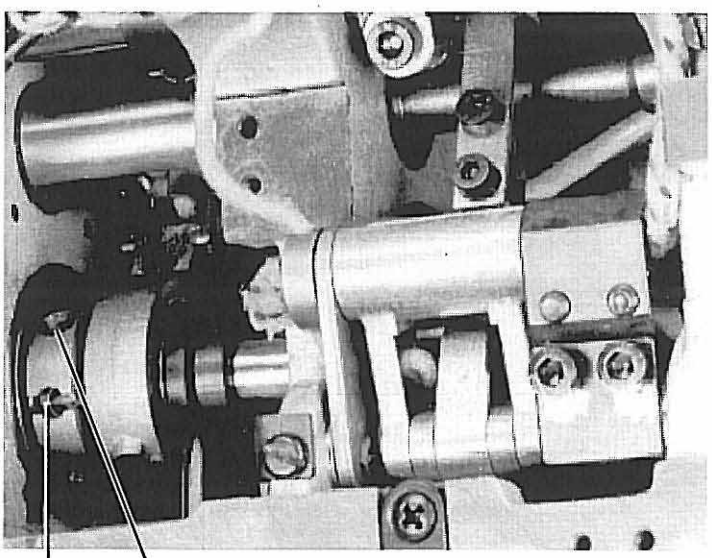
Before adjusting turn the main switch off.

- Remove the tension plate 7.
- Screw off the "MIN" setting wheel.
- Reach through the opening behind the tension plate and turn the worm wheel 1 so that it touches the ball pin.
- Align the stop ring 3 so that its right side 6 touches the cam 4 of the catch ring 5.
- Screw on the setting wheel so that the smallest value is shown. (White arrow on the setting wheel)

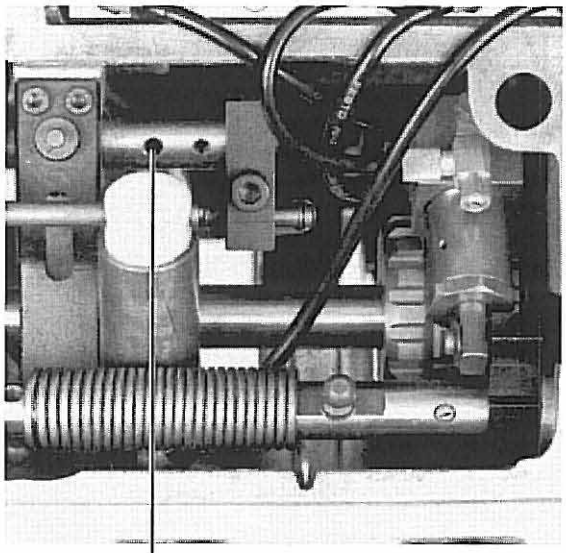
- Turn the "MIN" setting wheel to value -4-.
- Screw off the "MAX" setting wheel.
- Reach through the opening behind the tension plate and turn the worm wheel 2 so that it touches the ball pin.
- Align the stop ring 3 so that its right side 6 touches the cam 4 of the catch ring 5.
- Screw on the setting wheel "MAX" so that the value -4- is shown. (White arrow on the setting wheel)

2.5 Pressure Feet

2.5.1 Timing of the Advancing Movement of the Transport Foot



2 1



3

The pressure foot may not move when, with the greatest possible stitch length and the machine arrested in position B, the upper guide is operated.

Attention!

The greatest stitch length is only effective when the machine is switched on.

Caution Risk of Injury!

With the machine switched on proceed with greatest caution. Do not touch the foot pedal.

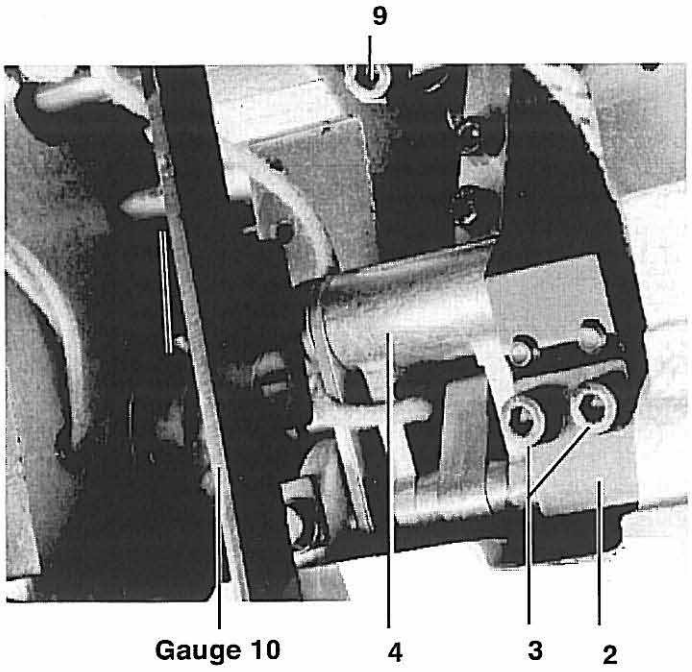
Setting with gauge

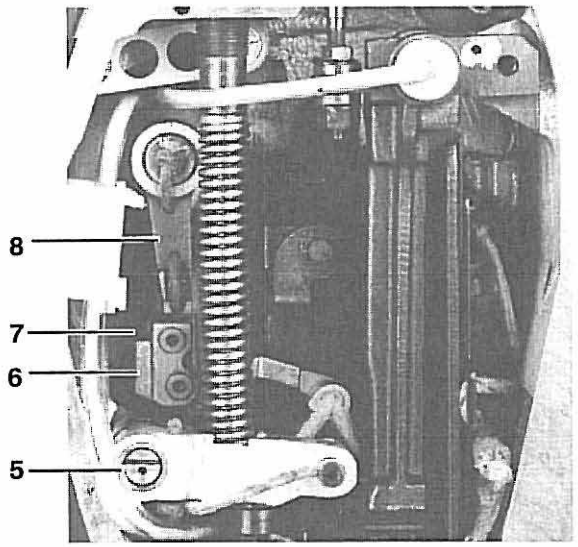
- Turn the machine on.
- Loosen the screws on the advance eccentric 1.
- Arrest the machine in position A.
- Insert the timing pin 3 from the gauge set into the set out hole 2 of the advance eccentric 1 and bring into a verticle position.
- Tighten the screws again.

Setting without gauge

- Arrest the machine in position B.
- Loosen the screws on the advance eccentric 1.
- Insert the pin into the hole 3 on the guide.
- Turn the advance eccentric on the arm shaft so that, when the stitch regulator is operated through the pin on the guide, the transport foot is immobile.

2.5.2 Stroke Adjustment Range and Timing of the Stroke Movement of the Transport Foot





In the position "2 mm" of the stroke height setting wheel both pressure feet should conduct the following strokes:

Pressure foot: 2 mm

Hopper foot: 1,8 mm

Caution Risk of Injury!

Before adjusting turn the main switch off.

Stroke adjustment range

- Loosen screws 3.
- Place gauge 10 on the two cast walls of the arm.
- Swing block 2 until the bolt of the stroke rocker 4 touches the gauge 10.
- For the axial fixing of the shaft push the block against the bush.
- Tighten the screws again.
- Remove the gauge.

Attention!

After the setting is made at the factory the screws 3 are secured with yellow paint and may no longer be altered.

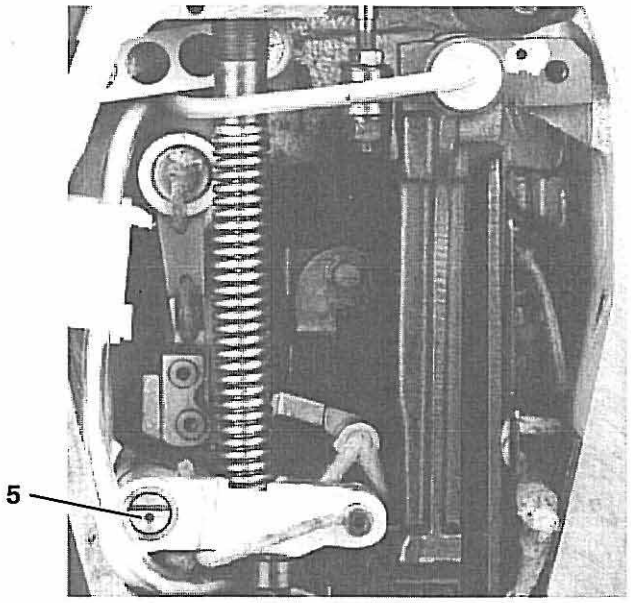
Stroke timing

- Arrest the machine in slot D.
- Loosen the screws on the stroke eccentric.
- Turn the stroke eccentric on the arm shaft so that when the stroke rocker 4 moves the stroke lever 8 remains at rest.
- Insert a second timing pin 7 into the set out hole of the arm head. Loosen screw 9. Turn stroke lever 8, that the glide pad 6 of the rocker touches the set out pin 7.

Attention!

The eccentric 5 in the arm head must be in its base position. Its slit should be horizontal in the upper semicircle.

2.5.3 Fine Adjustment of the Alternation Timing of the Pressure Feet



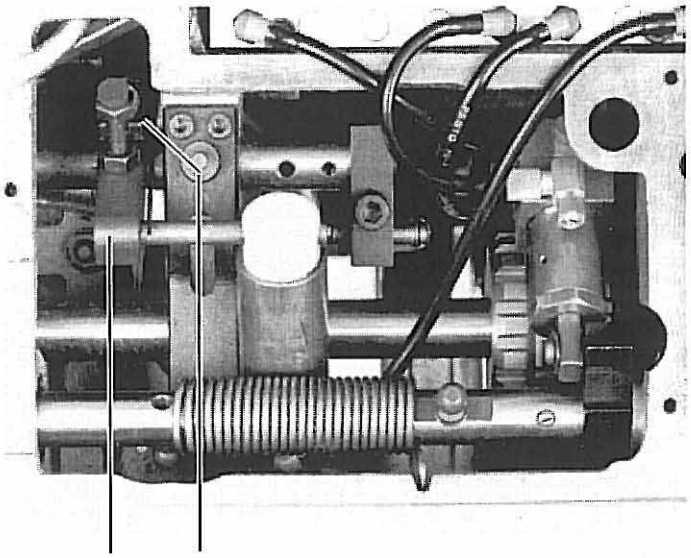
With the machine arrested in position D both pressure feet should touch on the needle plate.

Caution Risk of Injury!
Before adjusting turn the main switch off.

- Arrest the machine in position D.
- Adjust the eccentric 5 slightly out of its base position (slit horizontal).

2.6 Pressure Foot Lift

2.6.1 Play in the Lift Mechanism

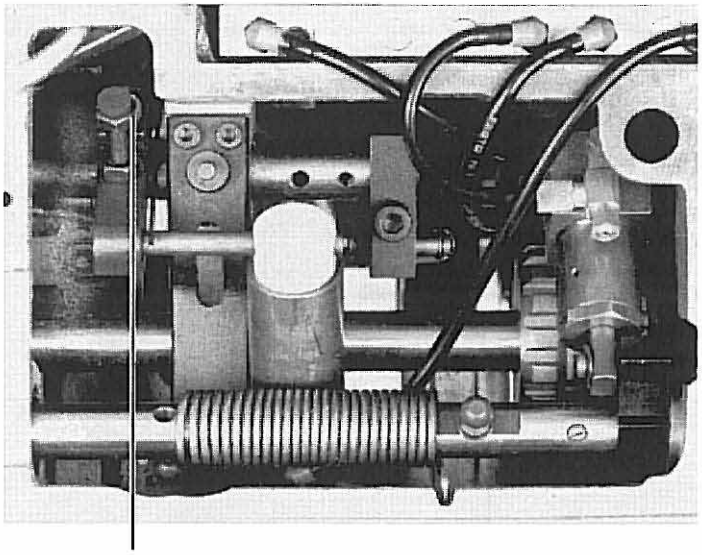


The play in the lift mechanism should be 1 mm when at least one of the two pressure foot lays onto the needle plate or the feed dog.

Caution Risk of Injury!
Before adjusting turn the main switch off.

- Loosen screw 1 and alter the position of the clamping block 2 on the shaft appropriately.
- Tighten screw 1.

2.6.2 Height of the Raised Pressure Feet, Lift Limitation



1

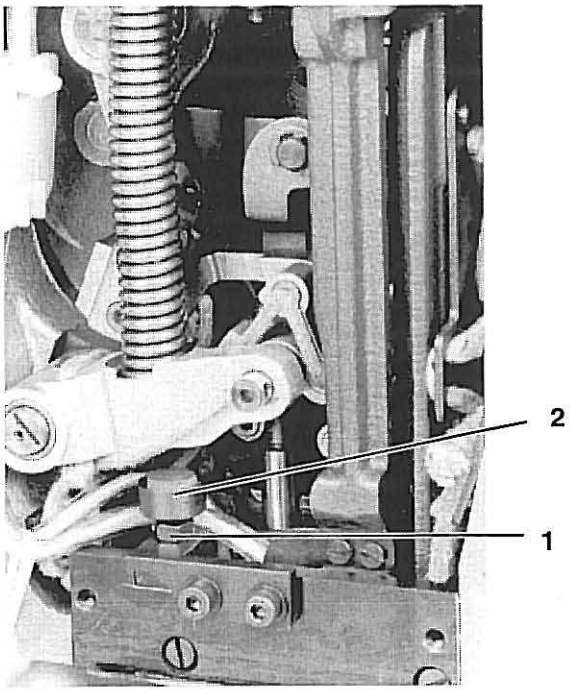
The pressure feet can be raised by stepping back on the pedal.

The "free through-put" between the raised pressure feet and the needle plate must be 15 mm. The lift height may, however, be set so that with the needle at top dead center the lift height is 17 mm but the needle point does not extend under the pressure feet.

Caution Risk of Injury!
Before adjusting turn the main switch off.

– Alter the stop screw 1 appropriately.

2.6.3 Setting of the Intercept Buffer



The intercept buffer 2 prevents the pressure feet not laying directly onto the needle plate.

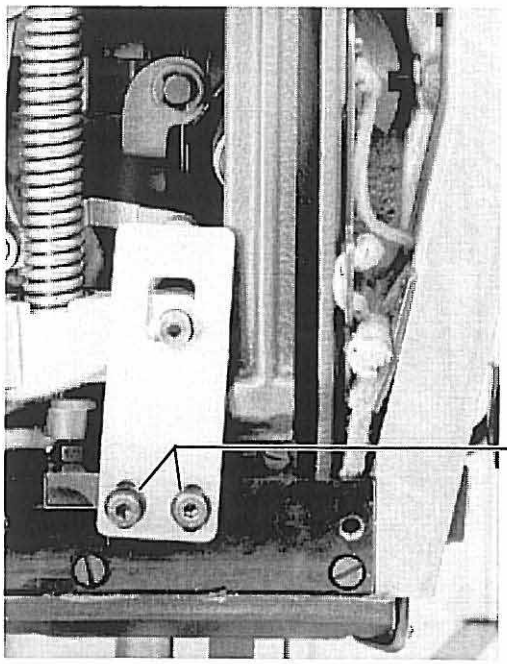
The clearance between the needle plate and pressure feet should, depending on material thickness, be 0,2 - 0,8 mm.

Caution Risk of Injury!

Before adjusting turn the main switch off.

- Turn the handwheel until the pressure feet are at the same height.
- Check to see if there is a forceful transport of the material.
- Loosen lock nut 1 and adjust the intercept buffer appropriately.

2.6.4 Height of the Pressure Feet Arrested in the Raised Position



The pressure feet can be arrested in the raised position with the button on the head cover.

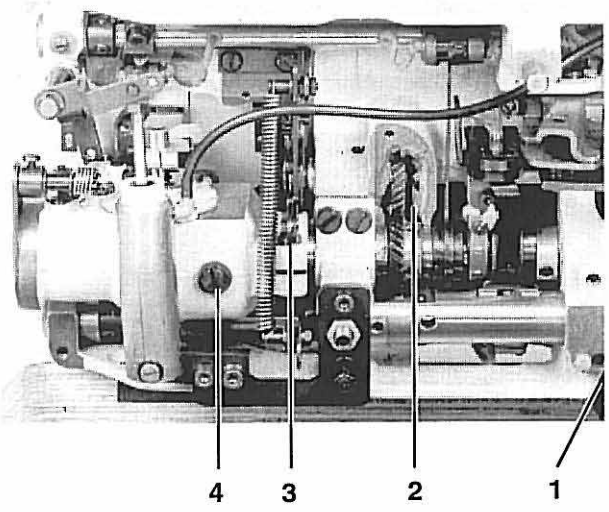
The clearance of the arrested raised pressure feet to the needle plate should be 10 mm.

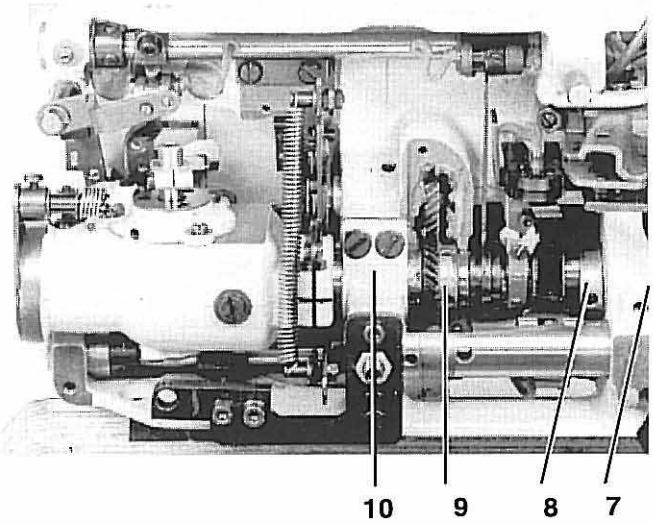
Caution Risk of Injury!

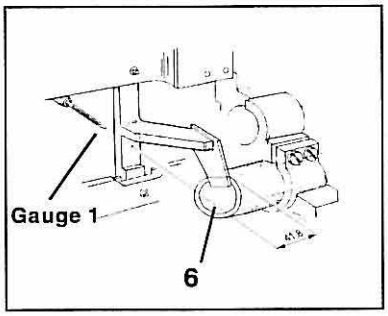
Before adjusting turn the main switch off.

– Loosen screws 3 and alter the position of the support plate appropriately.

2.7 Left Lower Shaft Bearing





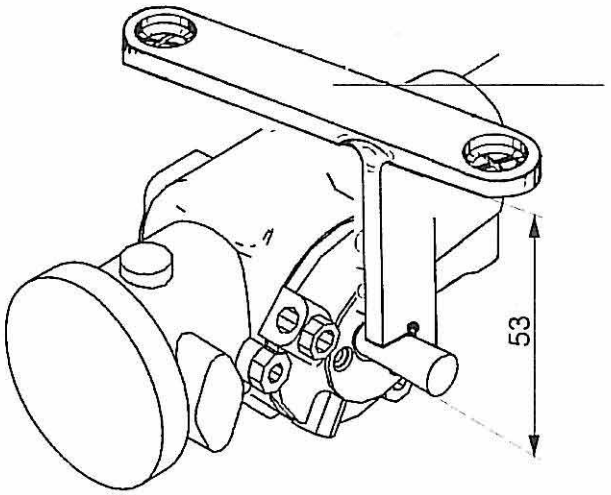


The clearance from the middle of the needle to the beginning of the left lower shaft bearing 6 should be 41,8 mm.

Caution Risk of Injury!
Before adjusting turn the main switch off.

- Remove the needle plate, needle guard and hook with hook carrier.
- Screw out screw 4 and drain the oil in the hook housing. (For this set the machine upright)
- Screw off the grease cap 2 and oil baffle 1.
- Loosen the clamping screw 3 and all elements screwed onto the lower shaft (7, 8, 9) and carefully pull off the hook housing together with the lower shaft.
- Screw gauge 1 onto the needle plate support.
- Loosen screws 10, press the lower shaft bearing 6 onto the gauge and tighten the screws again.
- Mount the hook drive housing and lower shaft and adjust as per the setting information in these service instructions.
- Fill the hook drive housing with Esso SP-NK 10 oil. Check with the oil dip stick.

2.8 Setting the Hook Drive Housing



The needle point should point to the middle of the hook shaft. The lower edge of the hook shaft runs parallel to the underside of the needle plate.

The clearance from the upper edge of the needle plate seat to the lower edge of the hook shaft is 53 mm.

Caution Risk of Injury!

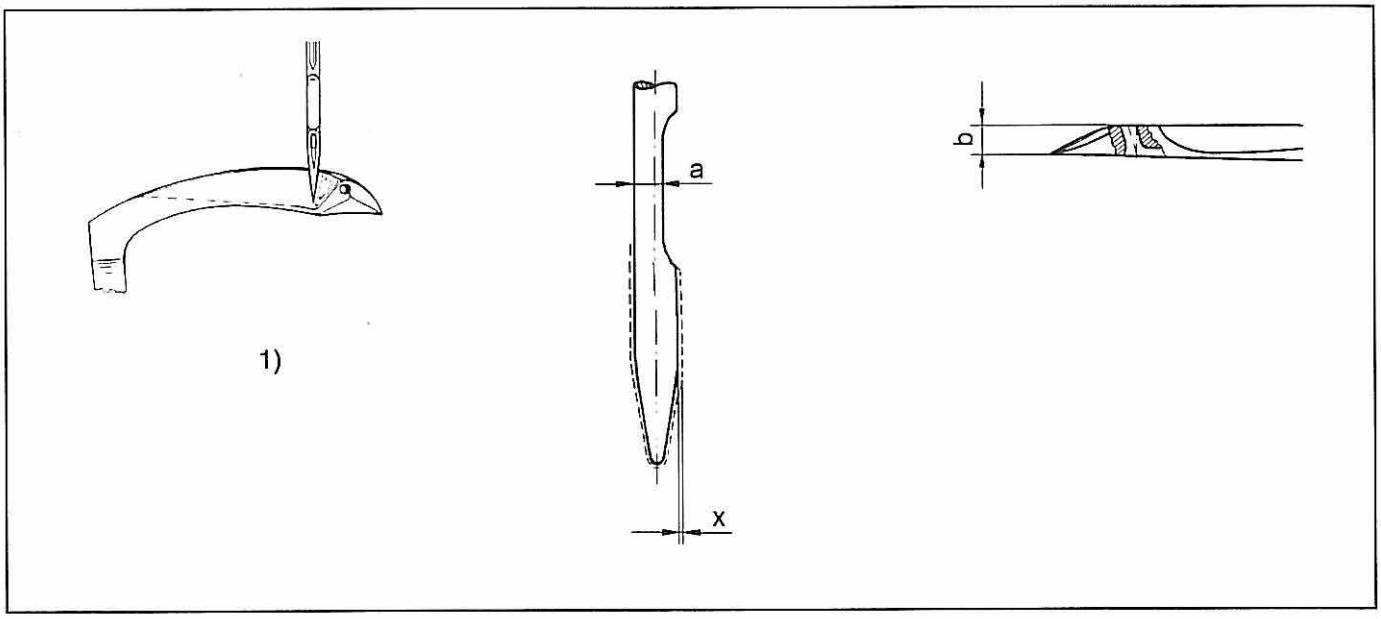
Before adjusting turn the main switch off.

- Remove the needle plate, thread trimmer, needle guard and hook with hook carrier.
- Screw gauge 2 onto the needle plate seat.
- Press the hook shaft onto the gauge and screw the hook housing fast.
- Remount the other parts removed.

Attention!

During mounting the setting information in these service instructions are to be observed.

2. 9 Needle Avoidance Movement of the Hook (Ellipse Width)



With needle avoidance movement (ellipse width) is meant that movement which the hook conducts in order to move past **behind** the needle during its movement from right to left and **in front of** the needle from left to right.

The ellipse width is dependent on the needle system and the needle thickness.

The ellipse width is correctly set when, with hook movement **from right to left,** there is a clearance of 0.1 mm between the hook tip and the needle.

With hook movement **from left to right** the point of the downward moving needle should touch the back of the hook at that moment when the hook and the needle are in the position shown in illustration **1)**.

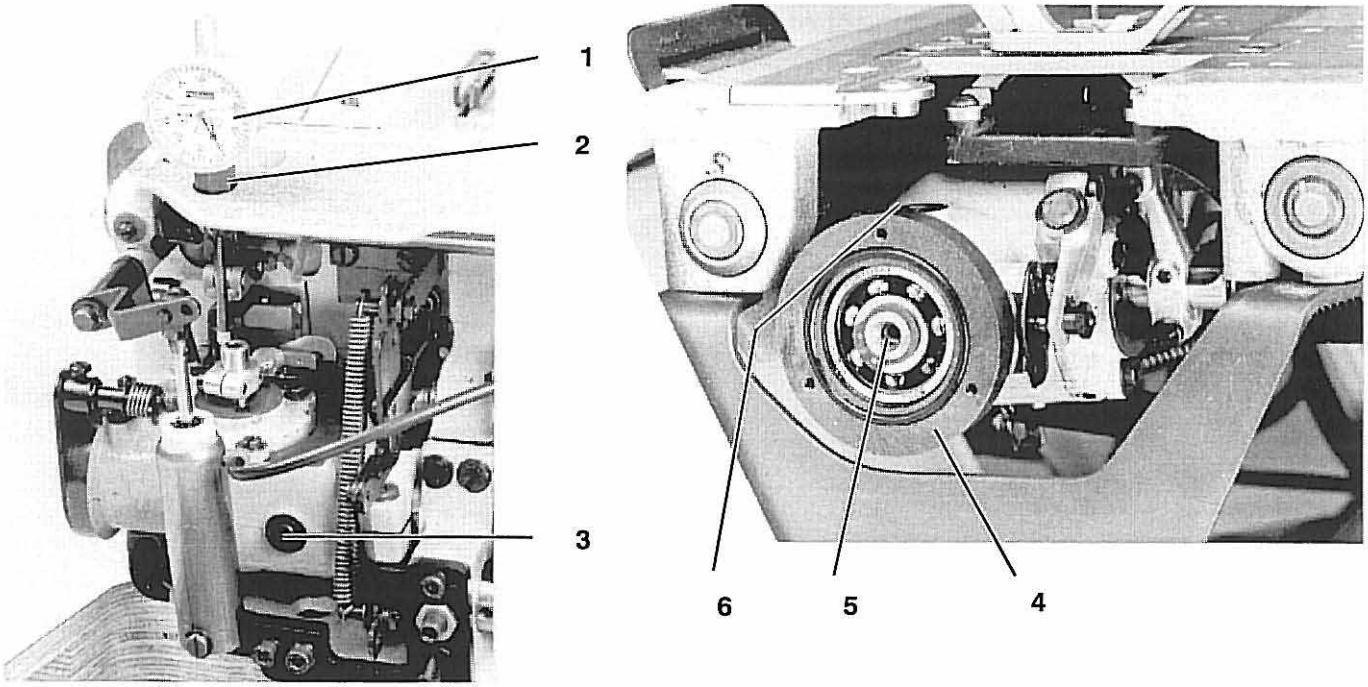
Calculation of the ellipse width

$$E = a + b + 0{,}1 + x$$

E	[mm]	ellipse width
a	[mm]	needle thickness in the area of the furrow
b	[mm]	hook thickness in the area of the thread guide hole on the hook tip
0,1	[mm]	Clearance between the hook tip and needle by movement from right to left
x	[mm]	Quantity by greater needle thicknesses
		x = 0 for needles up to Nm 100
		x = 0,1 for needles up to Nm 120
		x = 0,2 for needles up to Nm 130

Example for a needle 933 Nm 120

E = 0,7 + 1,4 + 0,1 + 0,1 = 2.3 mm



Caution Risk of Injury!
Before measuring and setting turn the main switch off.

Measuring the ellipse width

- Insert a straight, undamaged needle.
- Screw in the clamping bush 2 and insert dial gauge 1 (Order no. 171 981).
- Through turning the handwheel bring the hook shaft into its **lowest position**. Set the value "0" on the gauge.
- Through turning the handwheel bring the hook shaft into its **highest position**. The difference must agree with the previously calculated ellipse width.

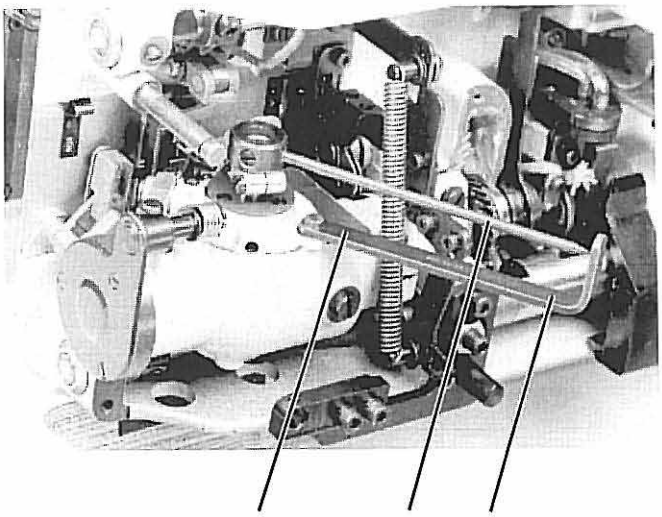
Setting the ellipse width

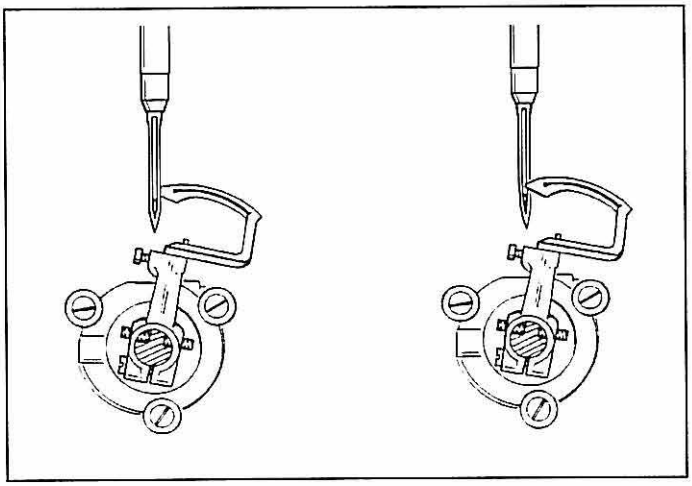
Push the rocker bolt in the hook housing axially.
The ellipse width changes by only half of the amount by which the position of the rocker bolt is altered!
Example: Sliding the rocker bolt 0.2 mm changes the ellipse width by 0.1 mm.

To the right: The ellipse width becomes smaller
To the left: The ellipse width becomes larger

- Screw out screw 3 and drain the oil from the hook housing. (For this set the machine upright.)
- Remove lid 4 and screw the M4 screw into the face of the rocker bolt 5.
- Loosen screw 6 and slide the rocker bolt by pushing or pulling on the M4 screw appropriately.

2.10 Symmetry of Looper Motion





The setting symmetry of looper motion means that the hook tip lies at the middle of the needle with the machine arrested in slot **E** as well as also in slot **F**.
The hook tip in slot **E** should be in front of and in slot **F** behind the needle.

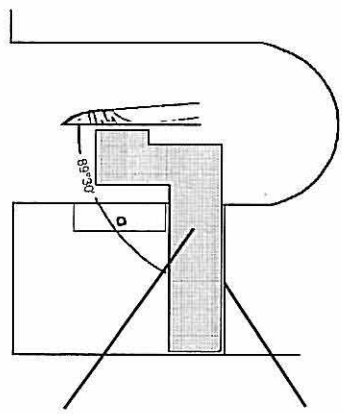
The hook movement is set with the gauge 6.

Caution Risk of Injury!
Before adjusting turn the main switch off.

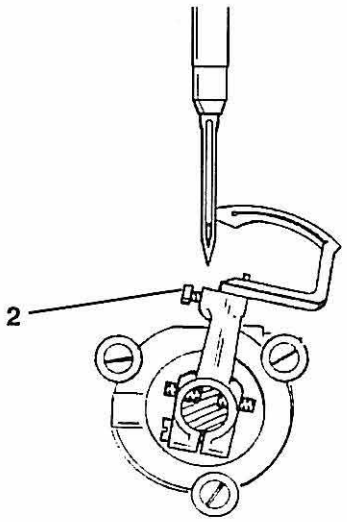
- Attach angle 1 and pointer 2 as shown in the illustration.
  Arrest the machine in position **E**.
- Align the pointer to the line marking on the angle.
- Turn the handwheel to position **F**.
  The pointer should make a pendulum movement to the **left** and back to the line marking.

- Loosen the attachment screws on the timing belt.
- Turn the lower shaft so that the pointer 2 in slots **E** and **F** are always over the line mark on the gauge.
- Tighten the attachment screws of the timing belt pulley again.

2.11 Hook in the Hook Carrier



Gauge 5



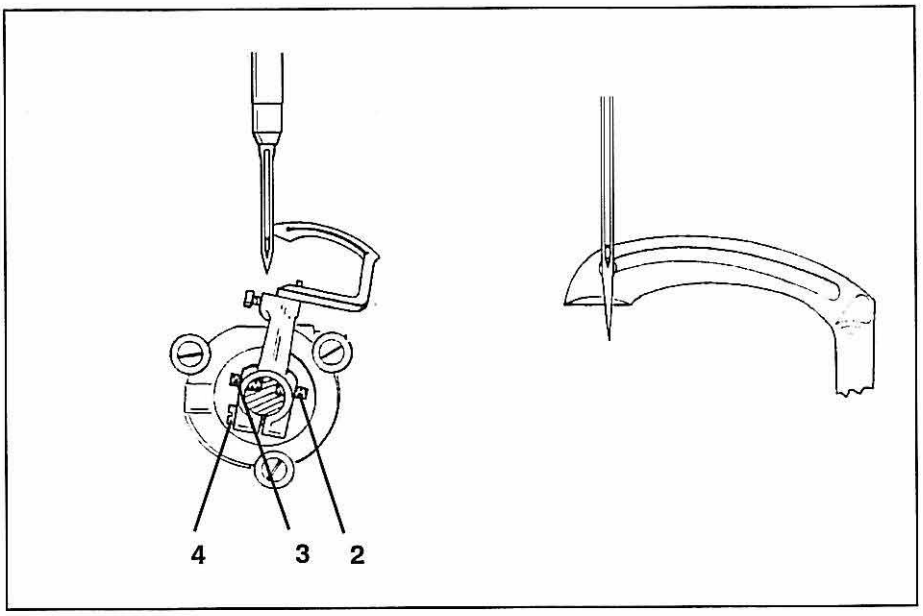
1

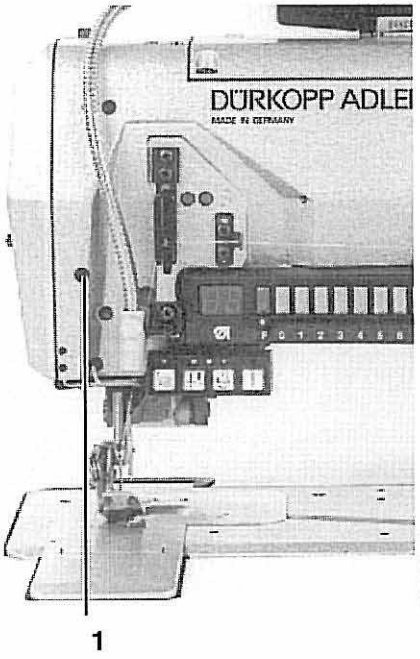
The front of the hook should lie to the edge 2 of the apparatus recess at an angle of 89° 30'.

Caution Risk of Injury!
Before adjusting turn the main switch off.

- Loosen screw 2 on the hook carrier.
- Place gauge 5 on the edge 1 and bring the hook into the correct position.
- Tighten screw 2 again.

2.12 Looping Stroke and Needle Bar Height





The looping stroke is 3,5 mm.

This means:

When the needle has risen 3,5 mm from the lowest point in the direction of run, the hook tip must lie at the middle of the needle.

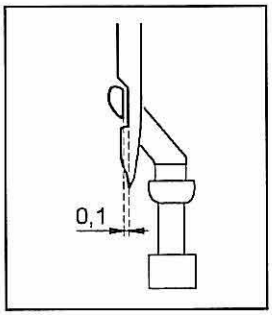
When the hook eye lies at the middle of the needle, the lower edge of the needle eye and the upper edge of the hook eye should be at the same height.

Caution Risk of Injury!

Before adjusting turn the main switch off.

Looping Stroke

- Insert new needle into the needle bar.
- Position and secure the machine in position **E** with timing pin.
- Pull plug 1 out of the hole
- Position hook tip behind the center of the needle.
  For this loosen screw 4 and adjust srews 2 and 3 accordingly.



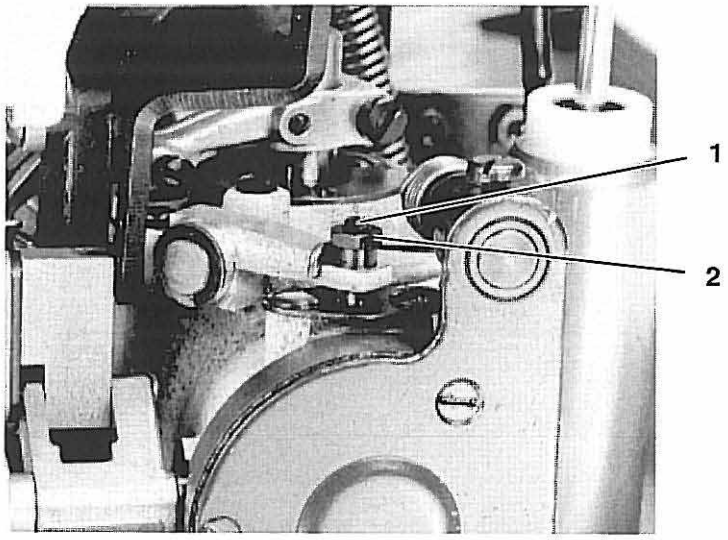
Needle-bar Height

- Remove timing pin.
- Pull plug 1 out of the hole and loosen the needle bar securing screw.
- Adjust needle bar height such that the lower edge of the needle eye and the upper edge of the hook eye are at the same height.
- Tighten the needle bar securing screw.

Distance of hook from needle

- By axial displacement of the hook carrier adjust a clearance of 0,1 mm between the hook tip and the needle scarf.
  Tighten screw 4.
- Check hook position as shown positions E + F (Section 2.10).

2.13 Needle Guard and Needle-guard Plate



2.13.1 Needle Guard

The movable needle guard 1 should hinder a deflection of the needle into the path of the hook.

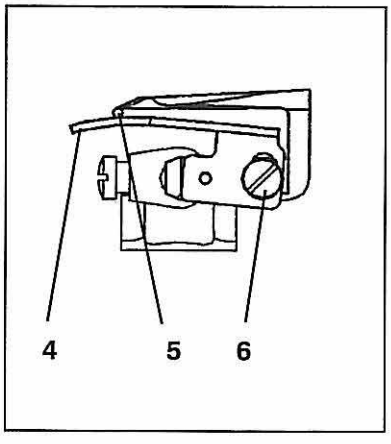
When the hook tip moves to the left and reaches the needle, the needle guard automatically swings toward the needle. In this position the needle must touch the needle guard.

The movement timing of the needle guard cannot be altered.

Caution Risk of Injury!
Before adjusting turn the machine off.

- Turn the machine in the direction of run so far that the hook moves to the left and has reached the needle.
- Loosen the lock nut 3 and, with the threaded screw 2, set the needle guard so close to the needle that it does not let itself be pressed into the area of the hook.
  The needle may not be deflected more than necessary.

2.13.2 Needle-guard Plate



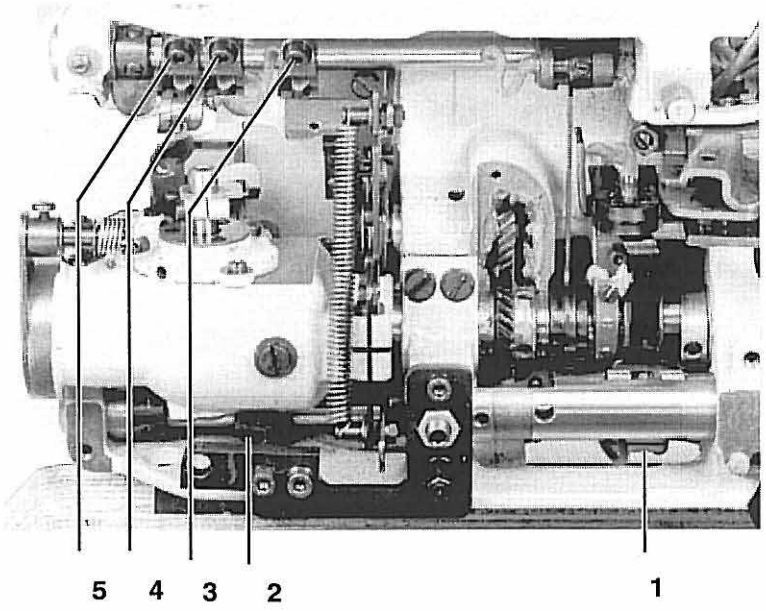
The purpose of the needle-guard plate is to prevent the needle from being deflected when it picks up the loop and open the thread loop behind the hook.

When the hook tip moves to the left and reaches the needle, it must not be possible to press the needle against the direction of sewing.

- Undo screw 6.
- Adjust the needle-guard plate 4 so that the needle 5 passes freely between the hook and the needle-guard plate.
- Tighten screw 6.

2.14 Feed Dogs

2.14.1 Position of the Feed Dogs in the Needle Plate Slot



The feed dogs should be so aligned that at the greatest possible stitch length the feed dogs strike no side of the needle plate.

Caution Risk of Injury!
Before adjusting turn the main switch off.

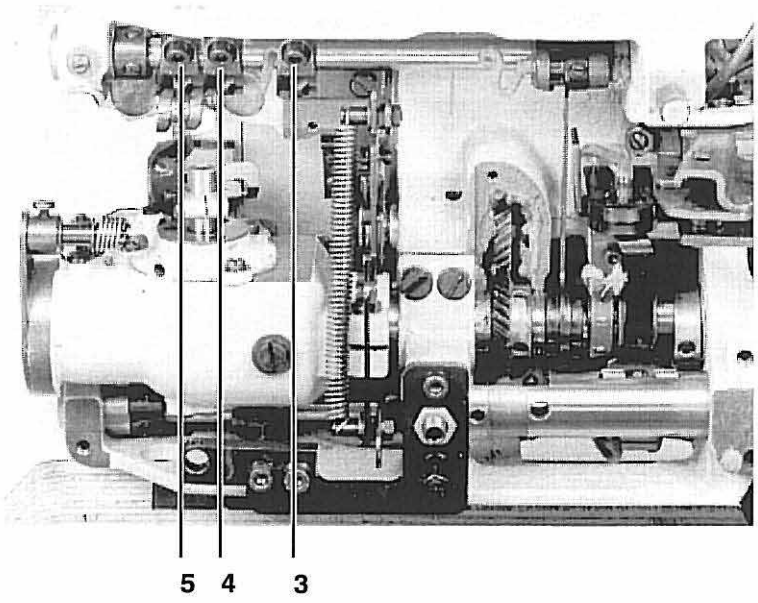
Setting in the direction of transport:

- Loosen screw 2 for the left and screw 1 for the right feed dog carrier and set the feed dog carriers appropriately.

Setting in the lateral direction:

- By a small deviation alter the position of the feed dogs on their carriers appropriately.
- By greater deviations loosen screws 3, 4 and 5 on the stroke levers and screws 1 and 2 on the advance levers. Alter the position of the feed dog carriers.

2.14.2 Height of the Feed Dogs



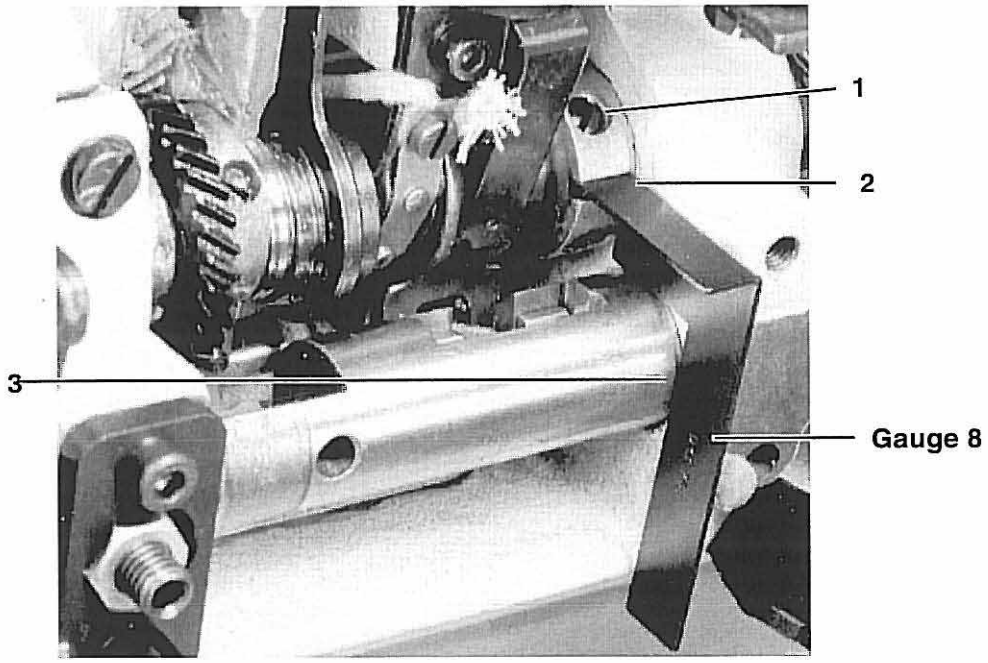
The feed dogs in their highest position should protrude 1.2 mm out of the needle plate. (slot **B**)

Caution Risk of Injury!
Before adjusting turn the main switch off.

- Arrest the pressure feet in the raised position.
- Arrest the handwheel in slot **B**.
- With a feeler gauge check the height.
- Loosen screws 3, 4 and 5 on the stroke levers and alter the height of the feed dog carriers.

Attention!
When tightening screws 3 and 5, take care that the feed dog support is set close at the side.

2.14.3 Advancing Movement of the Feed Dogs



For good stitch drawing the feed dogs should, after exceeding the upper needle bar dead center, still conduct a slight "subsequent advance".

Caution Risk of Injury!
Before adjusting turn the main switch off.

Advance eccentric for the rear feed dog

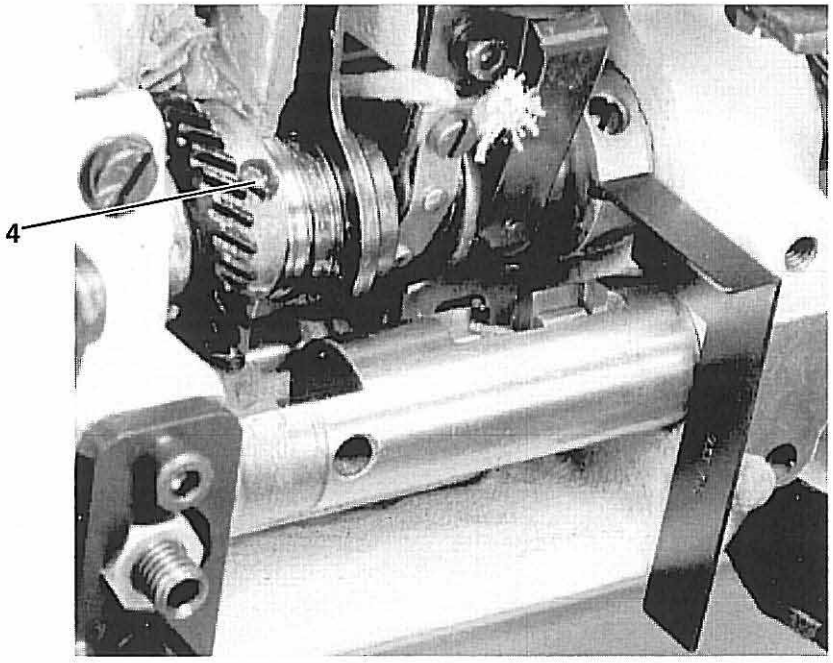
- Loosen the screws of the advance eccentric 1.
- Arrest the handwheel in position **B**.
- Insert gauge 8 into the slit 2 on the advance eccentric.
- Turn the advance eccentric so that the edges of the gauge touch on the stitch regulator guide 3.
- Tighten the screws of the advance eccentric again.
- Check the axial play of the lower shaft.

Attention!
By maximum transport length the feed dog may not strike the needle plate slot.

Advance eccentric for the forward feed dog

- Set the slit of the advance eccentric parallel to the left advance eccentric.

2.14.4 Stroke Movement of the Feed Dogs

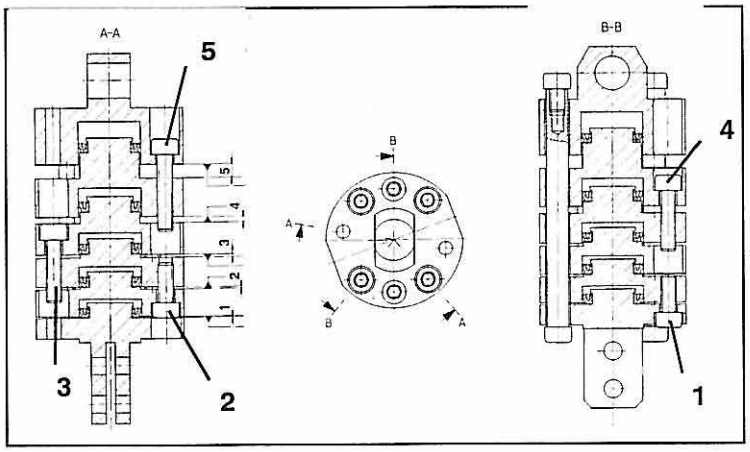


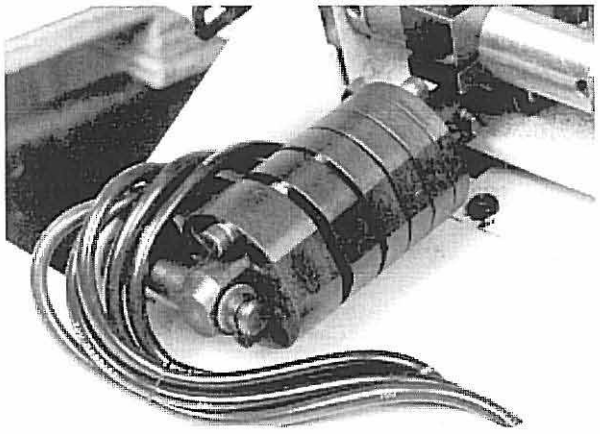
When the needle point reaches the needle hole the downward moving teeth of the feed dogs should be at the same height as the needle plate surface.

Caution Risk of Injury!
Before adjusting turn the main switch off.

- Remove the grease cap and oil baffle.
- Arrest the machine in position **B**.
- Turn the stroke eccentric 4 so that, in the direction of run, the 1st screw lies at the same height as the 2nd screw of the advance eccentric.

2.15 Setting the Multiposition Cylinders





Attention!
The spaces of the multiple position cylinders must be cleaned daily.

The multiposition cylinders in their individually extendable stages must each conduct the same stroke. They are set removed from the machine.

Following values apply. (Values in mm)

Stage	Stroke setting	
1	0,225 +/- 0,02	These values are set in the factory
2	0,450 +/- 0,02	by a measuring clock. Do not change
3	0,900 +/- 0,02	them, because otherwise, in case of
4	1,800 +/- 0,02	several machines, it would be
5	3,600 +/- 0,02	impossible set the same ruffling values.
Sum	**6,975**	

Caution Risk of Injury!
Before removing the multiposition cylinders turn the main switch off.

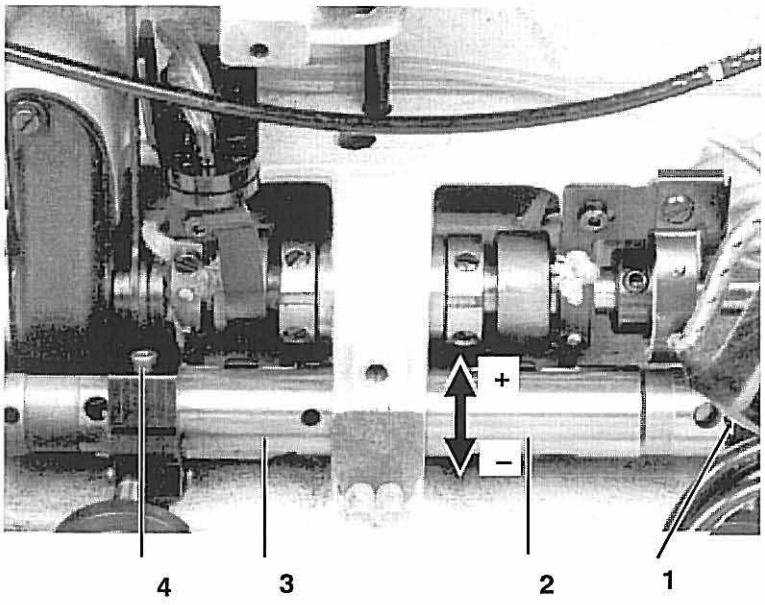
For a rough checking, it is possible to use the gauge set 11 (part no. 0196 002971).

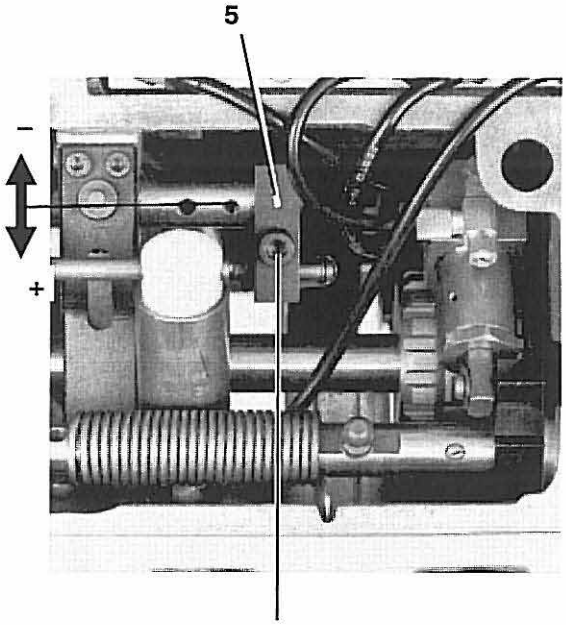
- Remove the multiposition cylinders
- Pull the cylinders apart
- Insert the gauges left and right between the individual stages.

Stage 1	Gauges 0,225 mm
Stage 2	Gauges 0,450 mm
Stage 3	Gauges 0,900 mm
Stage 4	Gauges 1,800 mm
Stage 5	Gauges 3,600 mm

- With a 3 mm Allan key set the stages at the screws 1 to 5 appropriately

2.16 Setting the stitch regulator crank





When setting the stitch regulator crank, the machine must be switched on. Ensure before setting, that the maximum step of the ruffling value cylinder has been mouved out.. In this position, both feed dogs and the feeding foot must produce the following stitch lengths.:

Programm-Version (EPROM)	Programm-number	Feed dog rear pos.	Feed dog Front pos.	Feeding foot
550 A 05	01 (-13/-14) 02 (-16)	5,5 mm 5,0 mm	5,0 mm 5,0 mm	5,0 mm 5,0 mm
550 B 01 MOT B 01	15	5,0 mm	5,0 mm	5,0 mm

These values are set in the factory by a measuring clock.
(part no. 0196 002972)

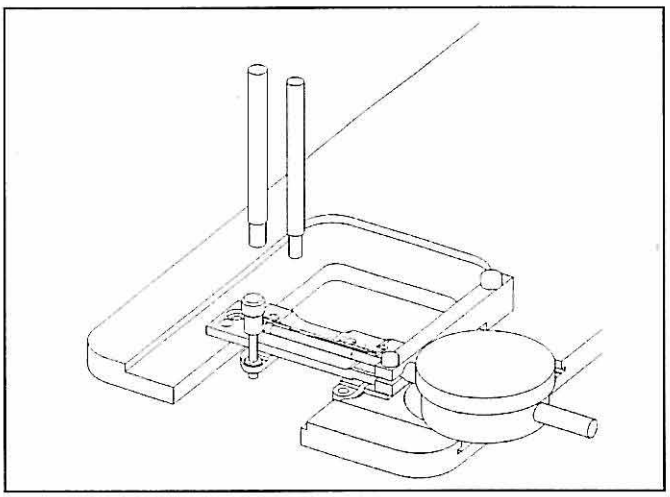
Caution Risk of Injury!

With the machine turned on do not come in contact with the foot pedal or the keys for single stitches.

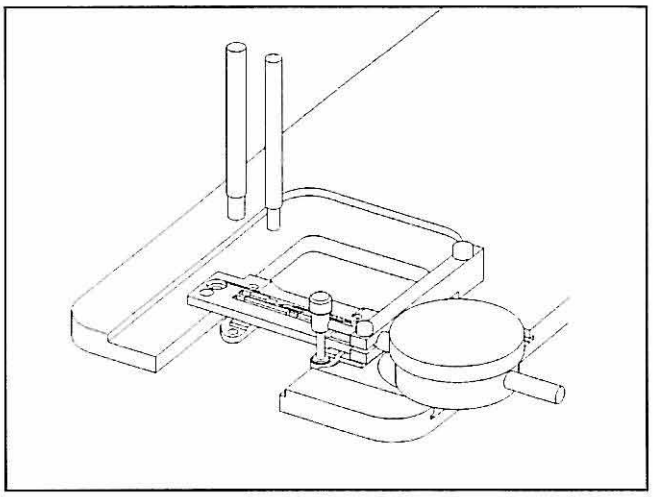
Setting

- For the rear transport adjust the left guide 3, for the forward transport the right guide 2 and for the transport foot the guide 5 appropriately.
- Loosen screw 4, screw 1 or screw 6 respectively
- Insert a 5 mm pin into the hole in the guide and turn the guide
  Direction + = Greater stitch length
  Direction – = Smaller stitch length
- Tighten screw 4, screw 1 or screw 6 again.

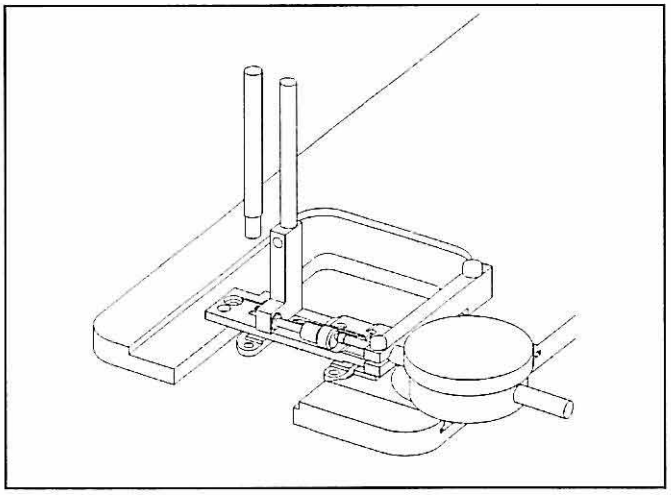
2.16.1 Adjustment by a measuring clock (precise adjustment)



Feed dog in rear position



Feed dog in front position



Feeding foot

- Switch on the machine
- The measuring clock and the knurled screw must be mounted as shown by the ilustration.
- Proceed to the adjustments as described under **Adjustments**

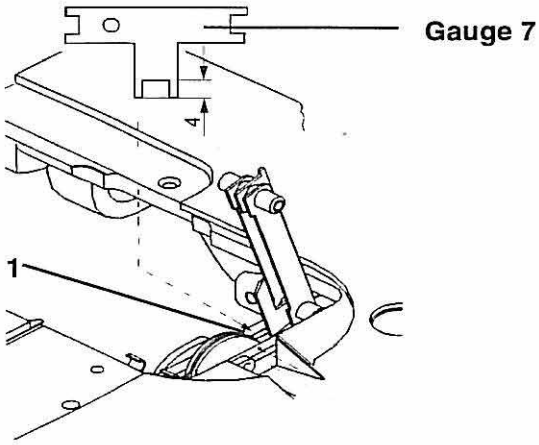
Note:

If you want to adjust several machines for the same ruffling values, then, following the basic adjustment, change slightly only the crank 3 for the read feed dog.

2.16.2 Adjustment by a caliper calliper gauge (rough adjustment)

- Turn the machine on.
- Turn the handwheel until both feed dogs are in their forward position.
- With a *caliper gauge* measure the clearance between the rear edge of the feed dog and the needle plate slot. Note the value 1.
- Turn the handwheel farther until both feed dogs are in their rear position.
- With a *calliper gauge* measure the clearance between the rear edge of the feed dog and the needle plate slot. Note the value 2. This value subtracted from the first gives the executed stitch length.
  (value 1) [mm] – (value 2) [mm] = stitch length [mm]
- The feeding foot must be synchronized with the front feed dog. Set the crank 5 in the arm accordingly.

2.17 Thread Take-up Disk



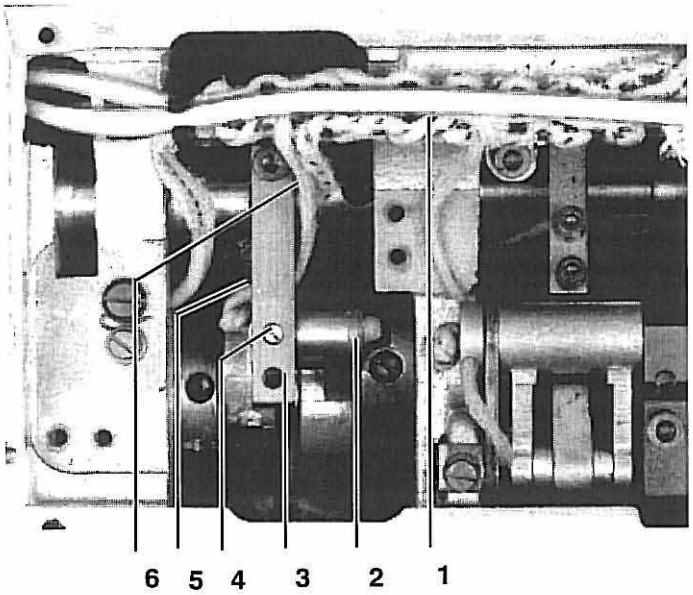
The thread take-up disk should, with the machine arrested in slot B (upper dead center), lie 4 mm above the support plate 1.

Caution Risk of Injury!
Before adjusting turn the machine off.

- Loosen the screws on the thread take-up disk.
- Arrest the machine in position B.
- Turn the thread take-up disk appropriately. With the gauge 7 set the correct dimension.
- Set the disk close and tighten the screws.

2.18 Setting of the Edge Cutter (models -14/-16 only)

2.18.1 Changing the Knife Stroke



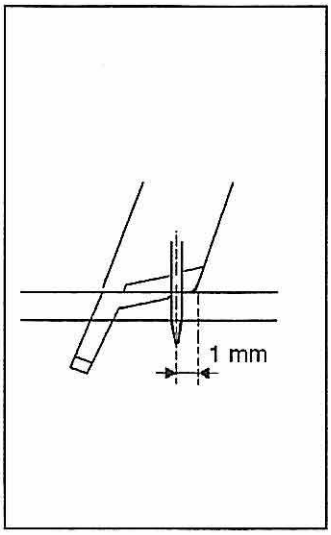
At the factory the knife stroke is set at 8 mm.

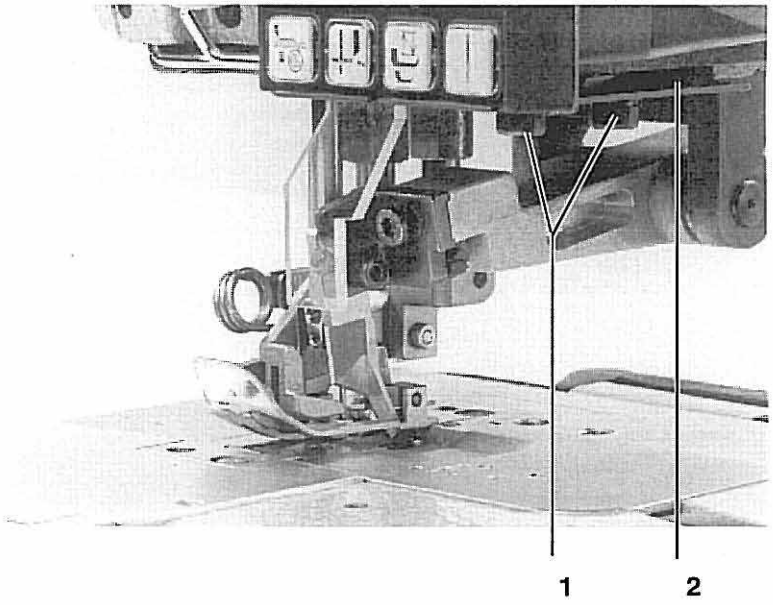
It can be changed to 6 mm.
This makes the machine quieter.

Caution Risk of Injury!
Before converting turn the main switch off.

- Take the wick 6 out of the mounting 1.
- Loosen screw 4.
- Pull out bolt 2 with the wick and insert into the hole 3.
- Tighten screw 4 again.
- Pull wick 6 through the hole 5 again and place in the mounting 1.

2.18.2 Setting of the Upper Knife in the Direction of the Seam



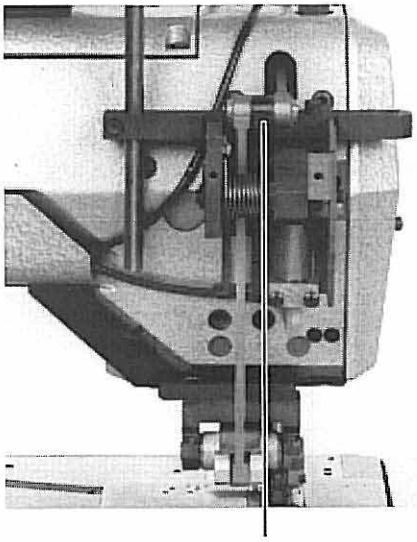


When the upper knife, with the edge cutter turned on, is in its lower dead center, the forward tip of the knife blade should be about 1 mm in front of the needle.

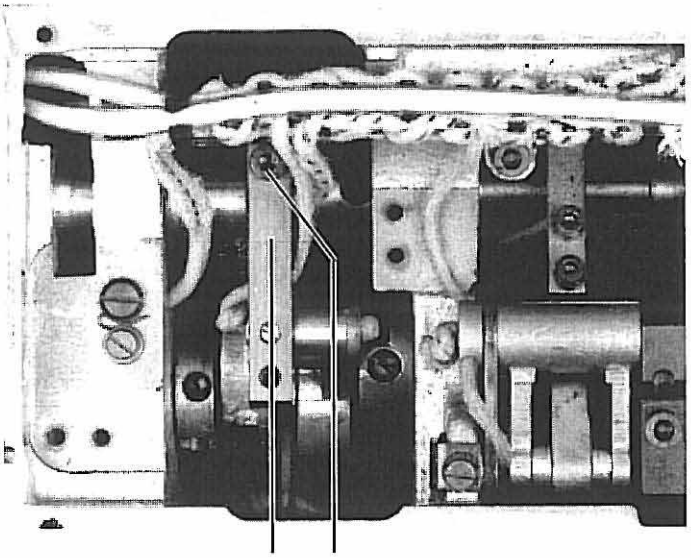
Caution Risk of Injury!
Before adjusting turn the main switch off.

- Turn the handwheel until the knife is in its lower dead center.
- Loosen screws 1 so far that the fastening plate 2 still touches flat on the cast body, but can be slid.
- Slide the fastening plate so to the front or back that the forward tip of the knife blade is about 1 mm in front of the needle.
- Tighten the screws again.

2.18.3 Idle of the Cutter Bar when Shut Off



3



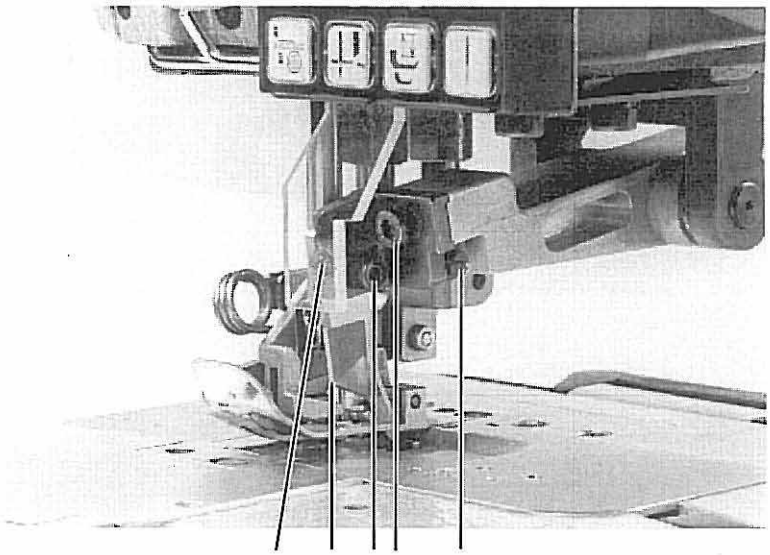
2 1

With the edge cutter switched off the cutter bar should have minimal movement. (An absolute idle is not possible)

Caution Risk of Injury!
Before adjusting turn the main switch off.

- Loosen clamping screw 1 on the clamping piece 2.
- Adjust the tension bar 3 so that the cutter bar has the smallest possible movement when the handwheel is turned.
- Tighten clamping screw 1 again.

2.18.4 Height Setting and Lateral Adjustment of the Upper Knife



At the lower dead center of the activated edge cutter, the forward tip 3 of the upper knife should reach the blade of the lower knife.

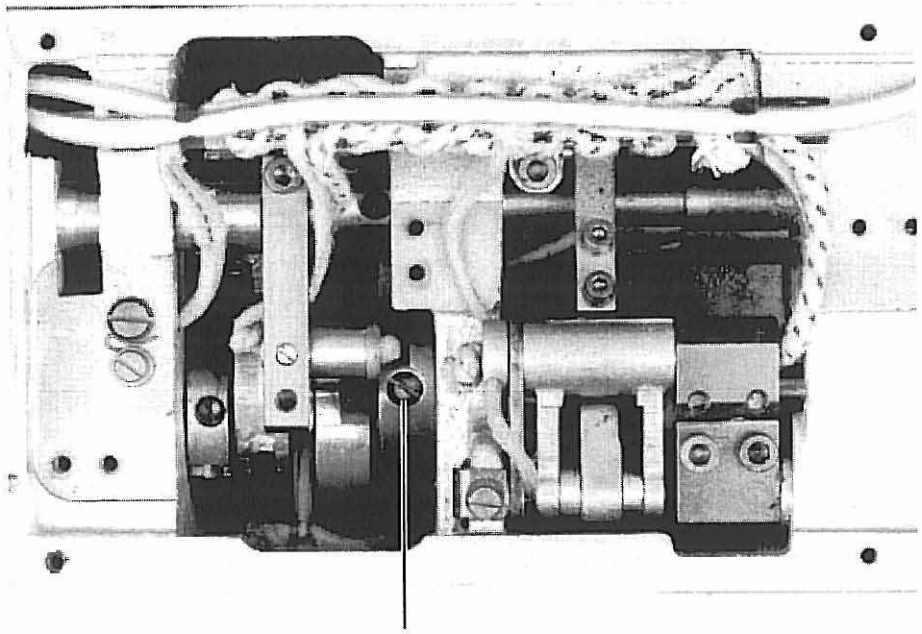
Sideways, the upper knife should be aligned so that the pilot, at the upper dead center, touches on the lower knife.

Caution Risk of Injury!

Before adjusting turn the main switch off.

- Switch the edge cutter on.
- Turn the handwheel until the upper knife is at its lower dead center.
- Loosen screw 3 and 5 and adjust the upper knife so that the forward tip 4 reaches the blade of the lower knife.
- Tighten screw 3 and 5 again.
- Turn the handwheel until the upper knife is in its upper position.
- Loosen screw 2.
- Set the knife tip closer to the counter knife with screw 1.
- Tighten screw 2 again.
- Conduct a cutting trial, adjust slightly, if necessary.

2.18.5 Setting of the Eccentric on the Upper Shaft



1

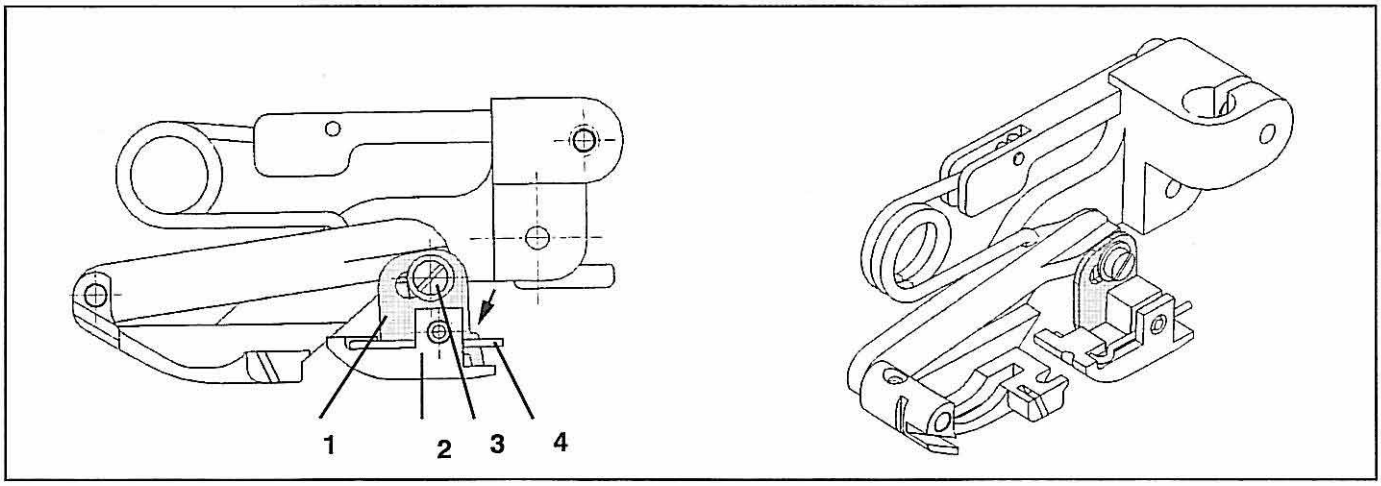
In the first needle position (bottom edge of the needle eye at the height of the upper edge of the needle plate), the 1st screw in direction of run of the eccentric should be congruent with the tension bar.

Caution Risk of Injury!

Before adjusting turn the main switch off.

- Loosen the screws on the knife drive eccentric 1.
- Turn the handwheel until the machine is in the first needle position.
- Adjust the eccentric so that the first screw is congruent with the tension bar.
- Tighten the screws again.

2.19 Setting the Pressure Foot



Caution Risk of Injury!
Before adjusting turn the main switch off.

Replacing the sole on the sewing foot

Order no. Teflon foot 196 104008
steel foot 196 104010

- Press spring 4 down.
- Replace the foot.

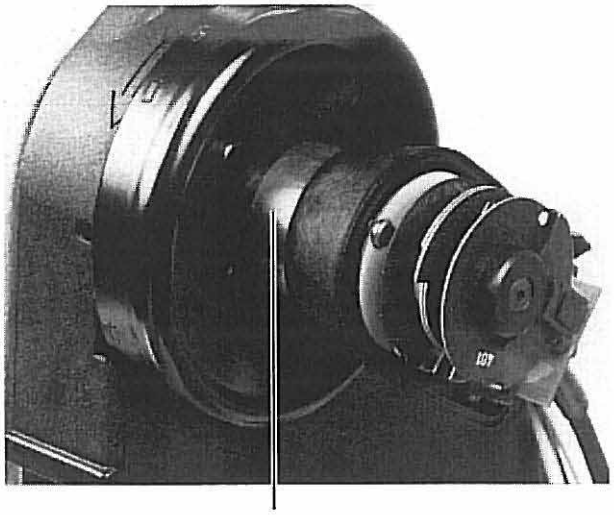
Adjusting the sewing foot

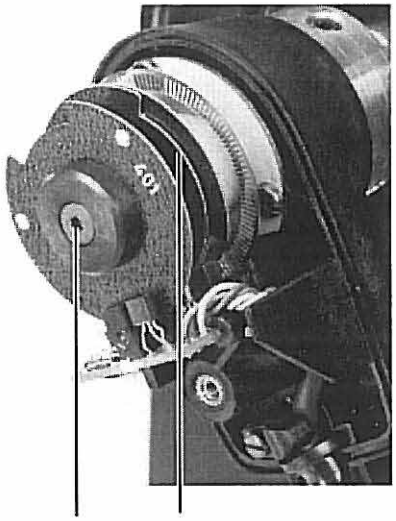
IMPORTANT
Adjustments must always be carried out with the Teflon foot in place.
This ensures that the settings for the steel foot will also be correct.

With the feed dog at top dead centre (position B) the Teflon foot 2 must be in flush contact with the feed dog.

- Stop machine in position B.
- Undo screw 3.
- Align teflon foot 2.
- Tighten screw 3.
  When the screw 3 is tightened, the plate 1 must be pressed down (see arrow) so that the stop makes contact with the base plate.

2.20 Setting the Synchronizer.





Caution Risk of Injury!
Before adjusting turn the main switch off.

First needle position:

The machine should stop at the seam end and within the seam when the hook has securely taken up the loop. This means that the needle should rise above its lower dead center until the hook tip has moved approx. 6 mm above the needle to the left. (Bottom edge of the needle eye at the upper edge of the needle plate)

- Loosen the threaded pins in the synchronizer.
- Hold the synchronizer ring 1 tight.
- By turning the handwheel bring the hook into the position described above.
- Check the positioning again.

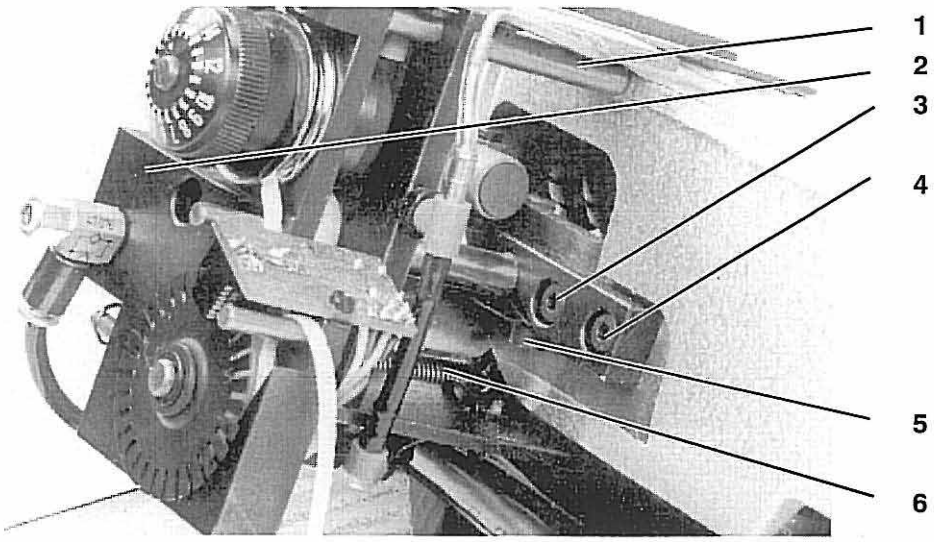
Second needle position:

The machine should stop when the needle bar is in position B (upper dead center).

- Arrest the machine in position B.
- Loosen screw 3 and turn the disk cam 2 until the desired position is reached.
- Pull the timing pin out.
- Check the positioning again.

3. Setting the Tape Feed and Cutter (model -16 only)

3.1 Tape Advance



The fabric-advance setting should be such that the fabric channel can be inserted into the needle-plate slot without touching the needle plate.

Caution Risk of Injury!
Before adjusting turn the main switch off.

- Remove the tension spring 6.

Horizontal adjustment

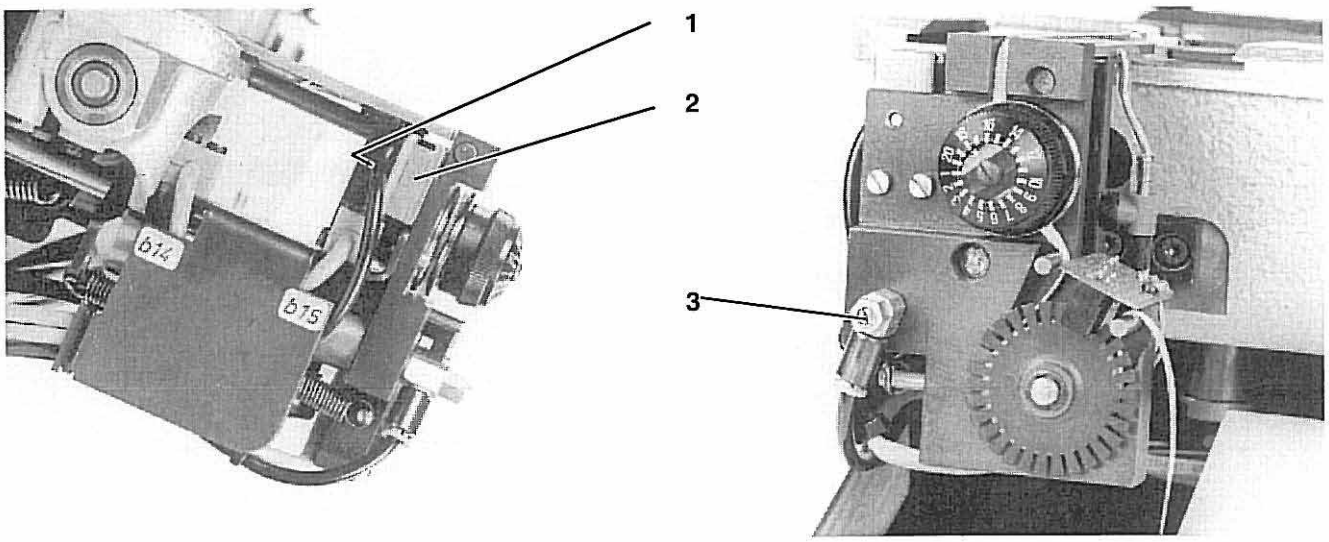
- Undo locking screw 5.
- Alter the position of the fabric advance by rotating block 2. Bolt 1 must make contact with the base plate.
- Tighten locking screw 5.

Vertical adjustment

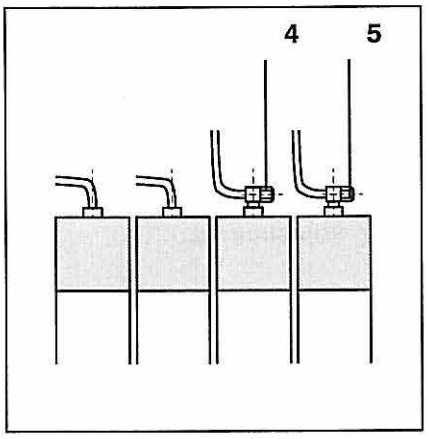
- Undo screws 3 and 4.
- Alter the position of the fabric clamp. The alignment of the fabric clamp must be such that it runs centrally in the needle-plate fabric channel.
- Tighten screws 3 and 4.

Vertical adjustment

- Fit the tension spring 6.



Caution Risk of Injury!
Before adjusting turn the main switch off.



Adjusting Speed of Tape Advance

The operation of the advance must be rapid but not spasmodic.

- Forward motion is adjusted with control 3 on the cylinder.
- Reverse motion is adjusted with control 4 on the magnetic valve. The magnetic valves are located beneath the base plate.

Adjusting Blower air in the tape channel and guide axle

The blower air in the tape channel stabilises the tape when it is moved towards the needle.

The blower air on the guide axle keeps it free of dust and fluff.

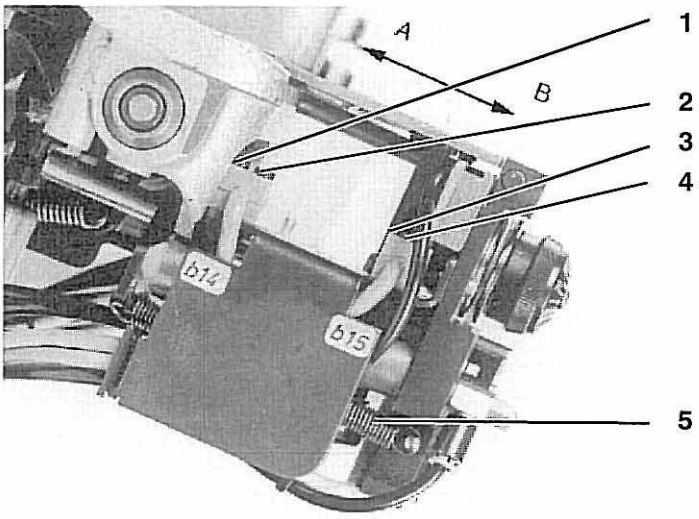
- Adjust control 5 on the magnetic valve.
  The air flow must be such that there are no whistling noises when the tape is advanced.
  The magnetic valves are located beneath the base plate.

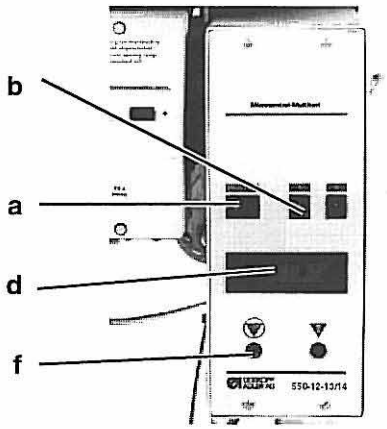
Adjusting the magnet

The setting of magnet 2 must be such that the cover plate runs parallel with the table.

- Undo screw 1 on the magnet.
- Adjust magnet 2.
- Tighten screw 1 on the magnet.
- Check that the slider can move freely beneath the cover plate.

3.2 Tape Clamp





The limit switches for the tape clamp must both be set to operate 1 mm from the end of the advancing movement.

Caution Risk of Injury!

Always take the greatest care when the machine is switched on.
Do not touch the foot pedal.

- Remove tension spring 5 before making adjustments.
- Set dial 'a' to 62 and press button 'f'.

Forward switch

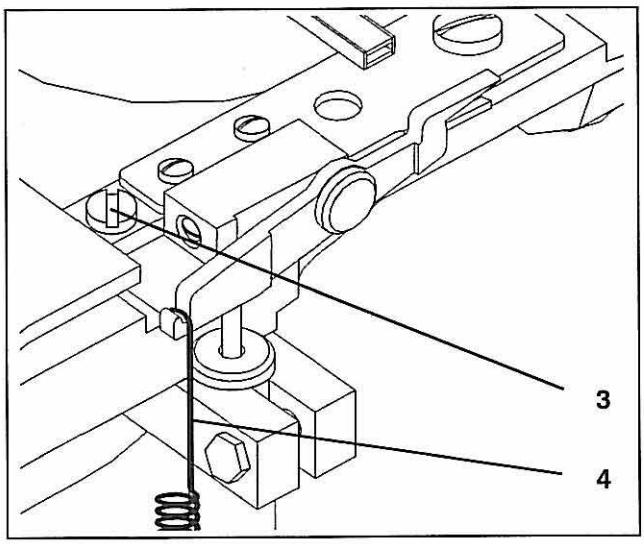
- Push tape advance manually in direction A.
  Switch b14 must operate 1 mm from the end position.
  Display 'd' changes from -b14 to +b14.
- Adjustments are made by undoing screws 1 and 2 and altering the position of switch b14 as required.
- Tighten screws 1 and 2.

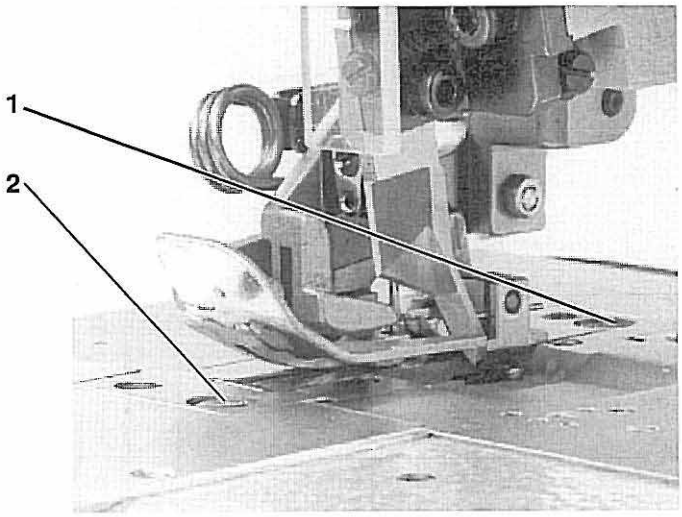
Rear switch

- Push tape advance manually in direction B.
  Switch b15 must operate 1 mm from the end position.
  The display changes from -b15 to +b15.
- Adjustments are made by undoing screws 3 and 4 and altering the position of switch b15 as required.
- Tighten screws 3 and 4.

- Replace tension spring 5.
- Set dial 'a' to 02 and press button 'f'.

3.3 Tape Cutter

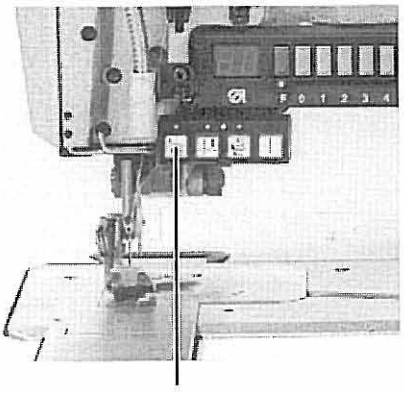




The cutter severs the tape when the crimping value is changed from between 1 and 15 to 0. Its setting must be such that it severs the strip cleanly, the top edge of the moving blade does not project from the needle plate and the tape channel can pass freely between the static and moving blades.

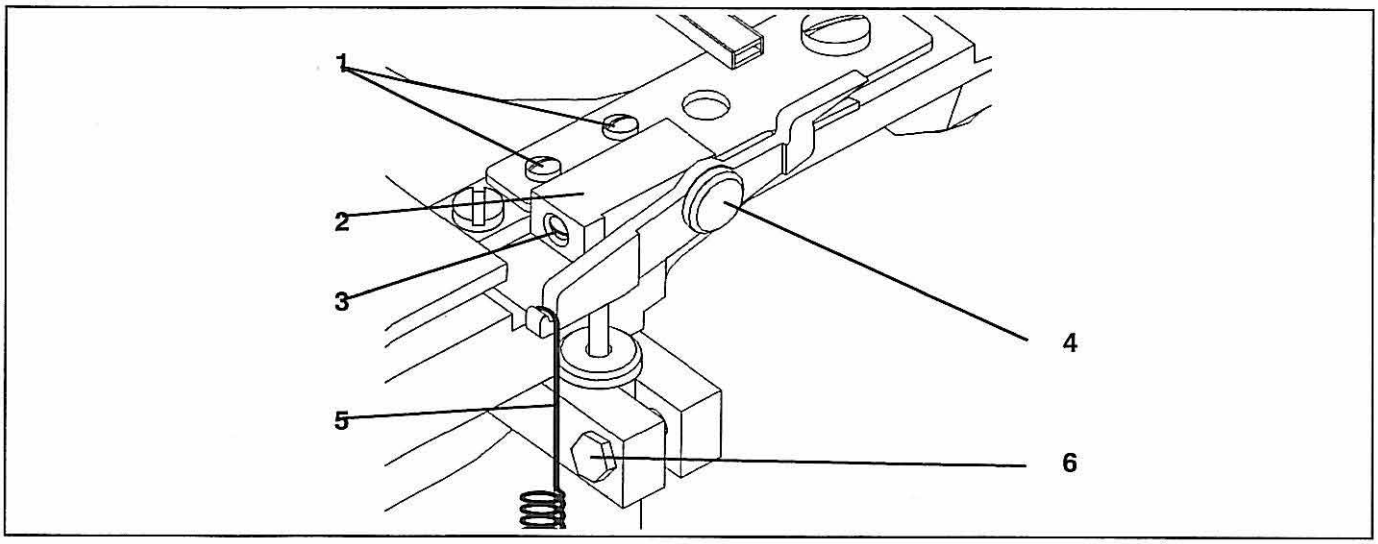
3.3.1 Replacing the Tape Cutter

Caution Risk of Injury!
Before adjusting turn the main switch off.

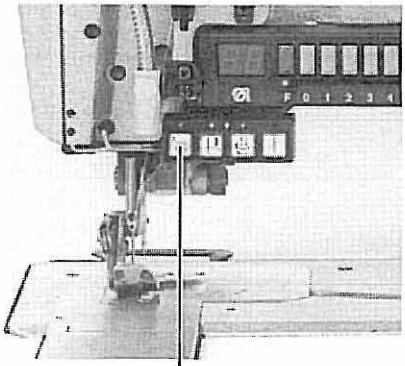


- Raise the sewing feet.
- Secure the sewing feet in the raised position.
- Switch the machine off.
- Undo screws 1 and 2 on the needle plate.
- Remove needle plate and slider.
- Unhook screw on tape cutter.
- Undo screw 3 and remove cutter.
- Insert new cutter.
- Tighten screw 3.
- Replace hook.
- Replace slider and needle plate.
- Secure needle plate with screws 2 and 3.
- Switch on machine and test cutter function by pressing button 5.

3.3.2 Changing Cutter Blades



Caution Risk of Injury!
Before adjusting turn the main switch off.



- Dismantle cutter as described in 3.3.1.
- Undo screw 1.
- Replace the static blade and fix it in place so that the longer edge of the slot is in contact with block 2.
- Undo threaded pin in block 2.
- Withdraw bolt 4 and replace the moving blade.
- Replace bolt 4 by pressing lightly on the moving blade and tighten threaded pin.
- Re-assemble cutter as described in 3.3.1.
- Switch machine on and test cutter function by pressing button 7.
- If necessary increase pressure on the moving blade.

3.3.3 Cylinder for Tape Cutter

- Undo locking screw 6.
- Adjust the cylinder height so that the tape channel can pass freely between the static and moving blades.
  The top edge of the moving blade must not project from the needle plate.
- Tighten locking screw 6.
- Adjust tension spring 5 on the cylinder so that after severing the fabric the moving blade returns to its limit position.

Contents **Page:**

Part 3: Instructions for programming class 550-12-13; -14; -16

1. General

The DÜRKOPP-ADLER-MICROCONTROL controls have integrated the comprehensive MULTITEST testing and monitoring system. This is made possible by a microcomputer, which, along with the control tasks, conducts the monitoring of the sewing process and indicates operator errors and malfunctions. A number of specialized programs simplify mechanical settings and make possible the rapid testing of input and output elements without additional measuring devices.

Errors and testing results are shown in an 8-digit display. In the left half of the display the number of the currently selected program is shown. With an operator error or malfunction the function sequence is interrupted and the cause shown with a symbol. In most cases the error symbol disappears when the error cause is remedied. In some cases the main switch must be turned off during error correction for safety reasons. Some error messages are of interest only to maintenance personnel.

Already when the unit is turned on several comprehensive selftests are conducted which, among other things, check the program and data memories and the display for faultless functioning.

1.1 Setting the Sewing and Testing Programs

The programs listed below are set with the selector switch "PROGRAM" on the front panel. The selected program is activated by turning on the main switch or by operating the "STOP" key. If the symbol " P? " appears in the display, an invalid program number was set. A sewing sequence running at the time of operation of the "STOP" key will be broken off.

1.1.1 For the E-PROM version 550 A05

Switch Setting	Program	Function
00	P00	Display of the program version
01	P01	Sewing program without tape feed
02	P02	Sewing program with tape feed
40	P40	Motor test program 1
41	P41	Motor test program 2
42	P42	7-segment display test
43	P43	Testing the key panel
44	P44	Testing pedal operation
45	P45	Programming stitch length for stitch condensation
46	P46	Setting additional thread tensioning from crimping value "0-9"
59	P59	Timer test and memory test
61	P61	Test of the front panel elements
62	P62	Test of the input elements
63	P63	Selecting input elements
64	P64	Selecting output elements
65	P65	Sewing drive: pedal operation
66	P66	Sewing drive: nominal value X, position 2
67	P67	Sewing drive: nominal value X, position 1
68	P68	Sewing drive: nominal value X, pos. 1, pos. 2
69	P69	Sewing drive: nominal value X, position 2

1.1.2 For the E-PROM version 550 A06

Switch Setting	Program	Function
00	P00	Display of the program version
03	P03	Sewing program without tape feed, basic stitch length 3 mm
04	P04	Sewing program the same as P03, basic stitch length 4 mm
05	P05	Sewing program the same as P03, basic stitch length 5 mm
06	P06	Sewing program the same as P03, basic stitch length 6 mm
09	P09	Sewing program the same as P05 with the stitchcondensation of the crimping value = 0
13	P13	Sewing program with tape feed, basic stitch length 3 mm
14	P14	Sewing program the same as P13, basic stitch length 4 mm
15	P15	Sewing program the same as P13, basic stitch length 5 mm
16	P16	Sewing program the same as P13, basic stitch length 6 mm
40	P40	Motor test program 1
41	P41	Motor test program 2
42	P42	7-segment display test
43	P43	Testing the key panel
44	P44	Testing pedal operation
45	P45	Programming stitch length for stitch condensation
46	P46	Setting additional thread tensioning from crimping value "0-9"
59	P59	Timer test and memory test
61	P61	Test of the front panel elements
62	P62	Test of the input elements
63	P63	Selecting input elements
64	P64	Selecting output elements
65	P65	Sewing drive: pedal operation
66	P66	Sewing drive: nominal value X, position 2
67	P67	Sewing drive: nominal value X, position 1
68	P68	Sewing drive: nominal value X, pos. 1, pos. 2
69	P69	Sewing drive: nominal value X, position 2

2. Description of the Programs

2.1 Sewing Programs

2.1.1 Sewing without tape feed

Base setting

After the main switch is turned on or the stop key operated the microcomputer checks the base setting of the machine. If an error is found this is shown in the display. (Error messages see below). After the error is remedied the main switch must be turned off and on again or the stop key pressed in order to start a new check.

After the machine is turned on the controls automatically run the needle to the upper dead center of the needle bar.

Starting the sewing sequence

By operating the pedal in one of the forward settings the sewing sequence is started.

Stepping back on the pedal raises the pressure foot.

Setting the needle bar base setting

With the aid of the NEEDLE switch (b406) the base setting of the needle bar can be switched on.

Switch setting 1: Needle positions at the seam end in pos 1

Switch setting 2: Needle positions at the seam end in pos 2

All other switch settings are invalid and cause the needle symbol in the display to blink. Additionally, the note "EE" appears in the 7-segment display of the supplimentary keypad.

To remedy the error a valid setting must be selected with aid of the NEEDLE switch.

Setting the pressure foot base setting

With the aid of the PRESSURE FOOT switch (b404) the base setting of the pressure foot can be switched on.

Switch setting 1: Pressure foot down

Switch setting 2: Pressure foot up

All other switch settings are invalid and cause the pressure foot symbol in the display to blink. Additionally, the note "EE" appears in the 7-segment display of the supplimentary keypad.

To remedy the error a valid setting must be selected with aid of the PRESSURE FOOT switch.

Operating the multiposition cylinder with aid of the key panel

With the aid of the key panel the multiposition cylinder can be adjusted. The adjustment of the cylinders can occur anytime, that is, also during sewing. The set value remains until a new value is set. The selected stage is shown in the two-position 7-segment display.

Through operation of the knee switch the multistage cylinder is reset, the 7-segment display reads "00". Renewed operation of the knee switch sets the multistage cylinder back to the previously set value.

Extension value

An extension value of "00" to "05" is set by pressing the "needle up" key and one of keys 0 to 5 on key strip. This value is displayed on the 7-segment display. The extension value thus set is maintained until a new extension value is entered.

Thread tensioning

Additional thread tensioning can be switched in from crimping value "0" to "9". For adjustment see program P46.

Stitch condensation key

With the aid of this key stitch condensation can be turned on at anytime. First, however, with the aid of the program P45, a valid stitch condensation must be selected.

The stitch condensation remains switched on until the key is released again.

Vertical cutter key

By operating the vertical cutter key the vertical cutter can be switched on. The vertical cutter remains switched on until the key is operated again.

Stroke adjustment key

By operating the stroke adjustment key the stroke adjustment can be switched on and off.

On the back of the knee switch there is a toggle switch. With the aid of this switch two different modes for the adjustment of the stroke can be set.

In the first type of operation the stroke adjustment remains active until the stroke adjustment key is released again.

In the second type of operation the stroke adjustment remains active even after the release of the stroke adjustment key. Here the cancellation of the stroke adjustment occurs through a renewed operation of the key.

Needle up key

By operating of the needle up key the needle is run out of position 1 (needle down) into the position 2 (needle up).

Needle cooling

As soon as the sewing drive is turned on the NEEDLE COOLING is switched on. The needle cooling is switched off automatically approx. 2 sec. after the motor stops running.

2.1.2 P02 Sewing with tape feed

Function as with P01, but without stitch compression and with tape feed.

Tape feed

The tape feed is activated by pressing a key (1/2-15) on the key strip. The tape is moved forwards. If the key was pressed with the sewing machine at a halt, the tape is not moved forwards until after sewing has begun. If the tape transport is forward, the tape clamp is opened. The crimping value is not switched in or the tape advance moved to ist initial position until 12 stitches after tape transport has started. Once the "0" key has been pressed crimping is reset to the basic crimping value "00-05" and the tape is severed. The tape feed can be resumed only after the residual tape has been sewn.

Threading the tape

The new tape must be threaded with the machine at a halt. Pressing the "tape/stitch compression" key opens the tape clamp so that the tape can be brought to the cutter manually. The sewing foot is raised by pulling the pedal back. The tape can be severed by "pushing the pedal forwards". Pressing the "tape/stitch compression" key again closes the tape clamp and severs the tape at an appropriate point.

2.1.3 P03 Sewing without tape feed, basic stitch length 3 mm

Instruction for programming from the **program P01**

P04 Sewing without tape feed, basic stitch length 4 mm
Function lapse the same as P03, however with basic stitch length 4 mm

P05 Sewing without tape feed, basic stitch length 5 mm
Function lapse the same as P03, however with basic stitch length 5 mm

P06 Sewing without tape feed, basic stitch length 6 mm
Function lapse the same as P03, however with basic stitch length 6 mm

P09 Sewing without tape feed, basic stitch length 5 mm
Function lapse the same as P03, however with the stitch condensation of the crimping value = 0. The stitch condensation key is without function.

2.1.4 P13 Sewing without tape feed, basic stitch length 3 mm

Function lapse the same as P03, however without stitch compression, again with tape feed.
Instruction for programming from the **program P02**

tape monitoring
The sewing on of the tape is monitored by a tape monitor. If the tape has not been sewn on, a flashing "HH" appears on the key display. This is cleared when the tape is laced.

P14 Sewing with tape feed, basic stitch length 4 mm
Function lapse the same as P13, however with basic stitch length 4 mm

P15 Sewing with tape feed, basic stitch length 5 mm
Function lapse the same as P13, however with basic stitch length 5 mm

P16 Sewing with tape feed, basic stitch length 6 mm
Function lapse the same as P13, however with basic stitch length 6 mm

2.2 Service Programs

These programs are meant only for the service technicians.

P40 Motor test program 1

With the aid of this program the acceleration and braking characteristics of the motor between two different speeds can be checked. Here the stroke adjustment may be a maximum of 2.5mm.

After the program is activated two speed levels between 1 and 13 are set with the aid of the two program switches (b408/b407) and the two switches (B406) and (b404). The set speed levels are shown in the display; if invalid values are set the display shows the indicator "SW ?".

To start the motor operate the COUNTER SET key. The motor now automatically runs a speed profile according to the set nominal values.

P41 Motor test program 2

With the aid of this program all speed levels from SW1 to SW13 and then from SW13 to SW1 are run through. To start the program operate the COUNTER SET key. Here the stroke adjustment may be a maximum of 2,5mm.

P42 7-segment display test

This program automatically checks the 7-segment display of the additionally installed keypad. Subsequentially all possible characters are shown in the two positions of the display.

P43 Checking the keypad

With the aid of this program the external keypad can be tested in conjunction with the 7-segment display. To test press any key, the appropriate number value (between 0 and 15) is shown in the 7-segment display. A response message for the two keys "F" and "1/2" occurs via the light diodes on the external operating panel.

P44 Testing pedal operation

The program serves for the testing of the pedal operation. After this program is selected the drive can be operated with the pedal. The sewing drive regulator works in program P43 with special parameters designed for pedal operation.

P45 Setting stitch condensation length

With the aid of this program the length of the stitch condensation, which can be switched on during sewing by operating the stitch condensation key, is set.

After selection of this program a value between 0 and 5 must be set with the aid of the front panel switch B406. When the desired value has been set the B132 COUNTER SET key must be operated until the note "OK" appears in the right half of the display. Then one can change to the sewing program. The values 0 to 5 correspond to the following multiposition cylinder settings.

Front panel value	Multiposition cylinder stage
0	10
1	10 1/2
2	11
3	11 1/2
3	12
4	12 1/2
5	13

46 Setting additional thread tensioning from crimping value "0-9"

This program enables additional thread tensioning to be set as required from crimping value "0-9". The programming procedure is as with P45.

2.3 Testing Programs

P00 Display of the program number and the check sum

In the display appear the program number and a check sum.
The program number consists of

- the class designation of the unit
- an identification letter
- and two numbers

e.g. 196V01. If the identification letter remains the same, the programs are exchangeable downwards. Thus, for example, the program 196A03 replaces the programs 196A02 and 196A01.

The check sum shows specialists if the program memory (EPROM) of the unit controls is okay.

P59 Memory test / timer test

When the working memory (RAM) and all timer switchings of the controls are working flawlessly the message "OK" appears after a short period. With an error the display shows the error messages "ERROR 0", "ERROR 6" or "ERROR 7".

P61 Checking the front panel elements

When any selector switch on the front panel is changed the display shows the current setting value of the selector switch last changed. When one of the keys on the front panel (Exception: STOP-key) is operated, the numbers (1 or 2) associated with this switch are shown.

Switch	Function	Designation
b408/407	Program switch	PROGRAM
b406	needle bar base setting	NEEDLE
b404	pressure foot base setting	PRESSURE FOOT

Key	Function	Designation
b132	Counter set	COUNTER SET

P62 Checking the input elements

If any input element is operated the display shows its circuit diagram designation and switching status, e.g. "+B25" until the switching status of some other input element is changed.

The switching status "+" means:

Switch with contact	--	Contact open
Proximity switch	--	Metal in front of the switch

P63 Selecting input elements

After activation of the program any input element can be selected by setting a code number. The switching status of the selected element is shown in the display along with the corresponding code number. The code number is the short designation on the circuit diagram. This does not apply for the keys on the front panel (see Table). The code numbers are set with the selector switch "PROGRAM" . The meaning of the switching status corresponds to the switching statuses in P62.

Input elements

b1	Stitch condensation key
b2	Vertical cutter key
b3	Stroke adjustment key
b4	Needle high key
b5	Knee switch: Crimping interruption
b6	Toggle switch for type of stroke adjustment operation
b7	Switch DB2380
b8	Switch DB2600
b9	Pedal 3
b10	Pedal 4
b11	Pedal 1
b12	Pedal 2
b14	Tape-advance switch forwards
b15	Tape-advance switch back
b16	Light barrier tape monitoring
b35	Synchronizer position 1 (needle down)
b37	Synchronizer position 2 (needle up)
b38	Synchronizer position 3

P64 Selecting output elements

After the activation of the program every the output element can be selected by a code number. The selected element is switched on and off by tapping on the "COUNTER SET" key. The code numbers are the short designations on the circuit diagram. They are selected at the "PROGRAM" switch.

Output elements

s1	Solenoid valve thread tension
s2	Thread-tension magnetic valve
s3	Tape-clamp magnetic valve
s4	Tape-cutter magnetic valve
s5	Solenoid valve stroke adjustment
s6	Solenoid valve for the vertical cutter
s7	Tape-advance/blower magnetic valve
s8	Raise pressure foot
s9	Light diode for stitch condensation
s10	Light diode for vertical cutter
s11	Light diode for stroke adjustment
s17	Multiposition cylinder II setting 1
s18	Multiposition cylinder II setting 2
s19	Multiposition cylinder II setting 4
s20	Multiposition cylinder II setting 8
s21	Multiposition cylinder II setting 16
s22	Multiposition cylinder I setting 1
s23	Multiposition cylinder I setting 2
s24	Multiposition cylinder I setting 4
s25	Multiposition cylinder I setting 8
s26	Multiposition cylinder I setting 16
s27	Needle cooling

65 Sewing drive: Pedal operation

After the activation of this program the unit can be operated at a speed selected via the pedal. Here the stroke adjustment may be a maximum of 2,5 mm.

When stepping forward on the pedal the drive runs at the rpm corresponding to the pedal setting. After a few seconds the right half of the display shows the current speed (actual rpm of the machine head). If the pedal is brought into the base setting, the machine head is stopped without positioning.

P66 Sewing drive: Speed test

With this program different speeds of the motor can be tested. Here the stroke adjustment may be a max. 2,5 mm. After activation of this program the right half of the display shows the Symbol "SW?".

With the program switch different speeds of the drive can be preselected. With a valid nominal value the right half of the display of the first display line shows "0000", with an invalid value "SW?". A total of 13 speed levels are available.

With the pressing of the "COUNTER SET" key the drive runs at the selected speed. After a few seconds the right half of the display shows the current speed (actual rpm of the machine head). After the release of the "COUNTER SET" key the drive is stopped in position 2.

P67 Sewing drive: Speed test

Operation as in P66, however, stop for the drive in positon 1.

P68 Sewing drive: Speed test

Operation as in P66, however, stop for the drive first in positon 1 and then in position 2.

P69 Sewing drive: Speed test

Operation as in P66

3. Display symbols

3.1 Displays of operating aids

P?	Invalid program selected
550A05	Program number
	Pedal pressed at machine start
	Needle bar base setting display
	Pressure foot base setting display
O.K.	Valid value for stitch length stitch condensation programmed
?ST?	Invalid value stitch length stitch condensation programmed

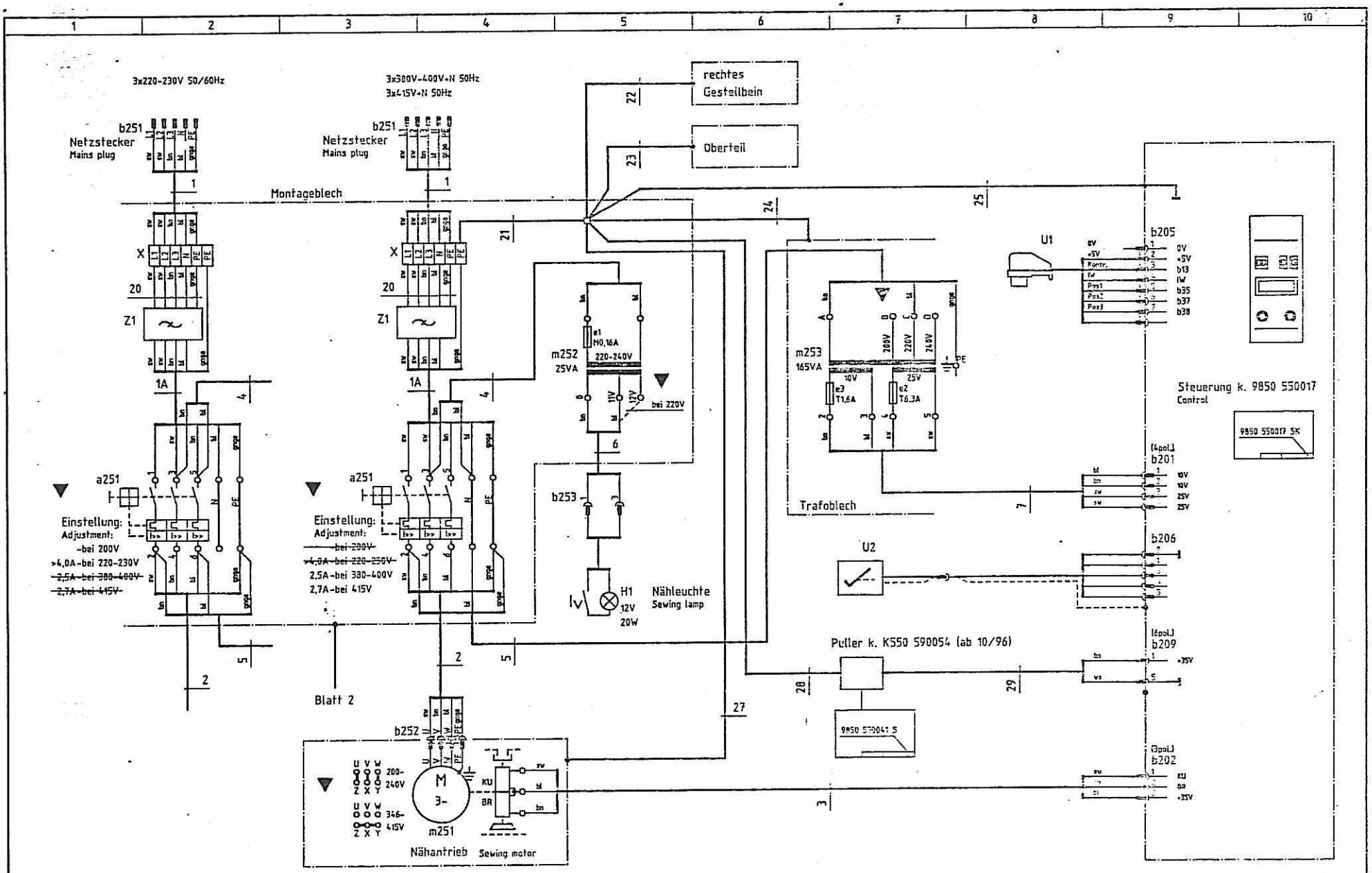
3.2 Displays of Malfunctions

E2	Fuse e2 in the transformer defective (24V)
V?	Error message in P60
STOP	Stop key defective or termination of the sewing sequences
--<>--	Synchronizer not plugged in
POS2	Needle is not in the upper position
STRT-ERR	Short in the pedal installation
POS-ERR	Motor does not run, check the motor protection switch or the pedal was already operated when the main switch was turned on
XRAM-ERR	Controls have lost the programmed value for length of the stitch condensation, program new value with the aid of P45

3.3 Error Messages of the Controls

PROM-ERR	EPROM check sum faulty during start up
RAM-ERR	RAM test faulty during start up
DISP-ERR	Display error during start up
ERROR 0	RAM error
ERROR 1	Error in reading the input elements
ERROR 2	Error in reading the front panel elements
ERROR 3	Program switch defective
ERROR 4	Regulator card for the sewing drive defective
ERROR 5	Short voltage dropouts in the mains
ERROR 6	Timer 1 defective
ERROR 7	Timer 2 defective
ERR B..	Error in reading the input elements: Defective or wrongly set (no excess stroke) limit switches or proximity switches are shown in the display by their circuit diagram designation, e.g. "ERR B31".

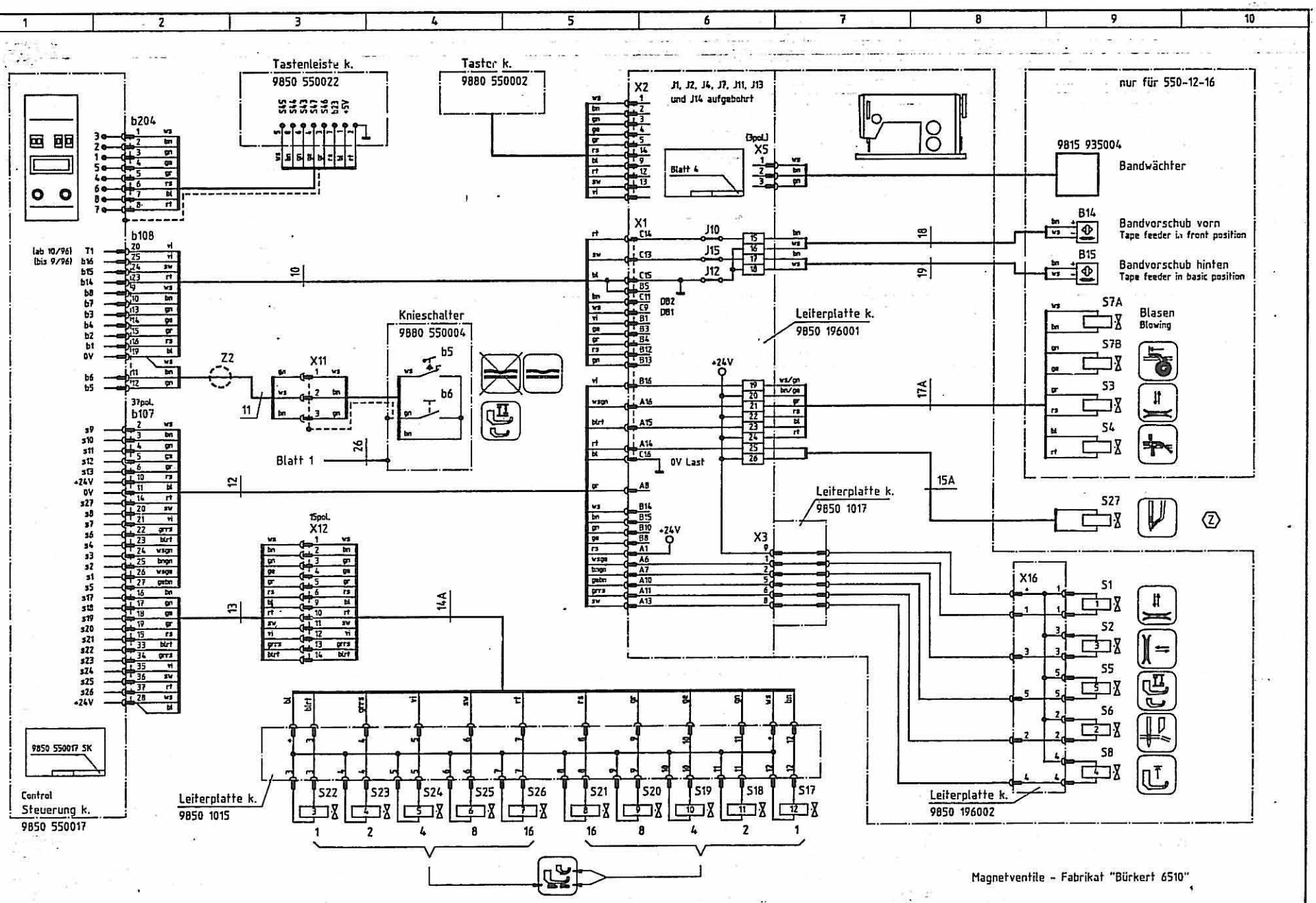
If the display remains blank after turning the main switch on, then check the 1.6 A fuse (on the underside of the mains unit).

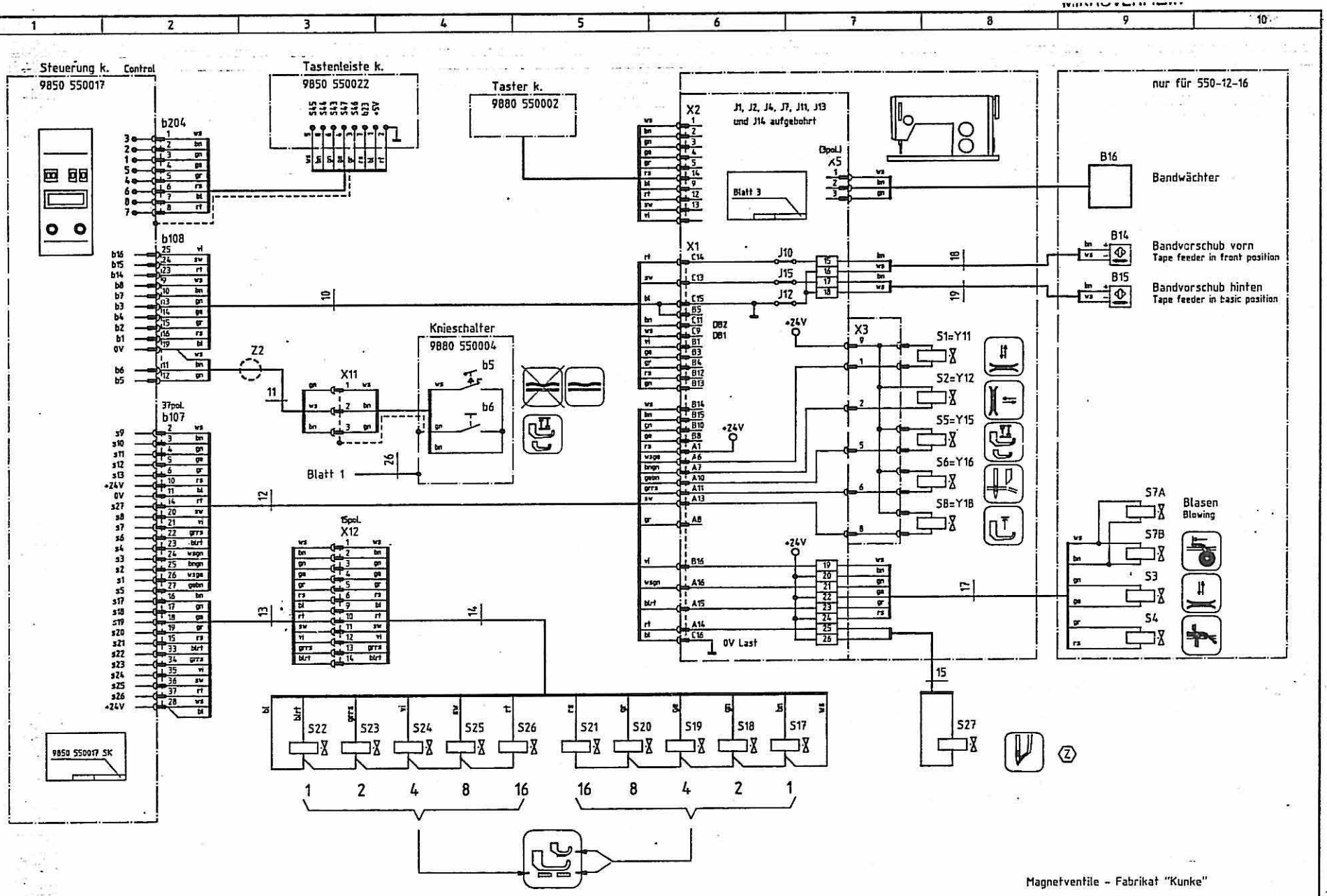


▼ Hinweise für Umschaltung auf andere Netzspannung beachten!
Observe the notes for changeover to other mains voltages!

550-12-13, -14, -16
gebaut ab 1/96

Bauschaltplan
9870 550010 B1
Blatt 1/5


Tastenleiste k.
9850 550022
Taster k.
9880 550002
X2
J1, J2, J4, J7, J11, J13
und J14 aufgebohrt
Blatt 4
X5
nur für 550-12-16
9815 935004
Bandwächter
B14
Bandvorschub vorn
Tape feeder in front position
B15
Bandvorschub hinten
Tape feeder in basic position
S7A
Blasen
Blowing
S7B
S3
S4
S27
b204
b108
b107
X1
J10
J15
J12
DB2
DB1
Leiterplatte k.
9850 196001
Knieschalter
9880 550004
b5
b6
Z2
X11
Blatt 1
+24V
0V Last
Leiterplatte k.
9850 1017
X3
X16
S1
S2
S5
S6
S8
X12
15pol.
37pol.
Leiterplatte k.
9850 1015
S22
S23
S24
S25
S26
S21
S20
S19
S18
S17
1
2
4
8
16
16
8
4
2
1
Leiterplatte k.
9850 196002
Control
Steuerung k.
9850 550017
9850 550017 SK
Magnetventile - Fabrikat "Bürkert 6510"
Zusatzeinrichtung
Optional equipment
DÜRKOPP ADLER AG
Bielefeld
550-12-13, -14, -16
gebaut ab 4/96
Bauschaltplan
9870 550010 B1
Blatt



c				Datum	21.12.95
b	02.0	04.10.96	Hd/Kl	Bearb.	Harder
a	01.0	20.03.96	Harder	Gepr.	
	Änderung	Datum	Name	Norm	

DÜRKOPP ADLER AG
Bielefeld

Teilefamilie

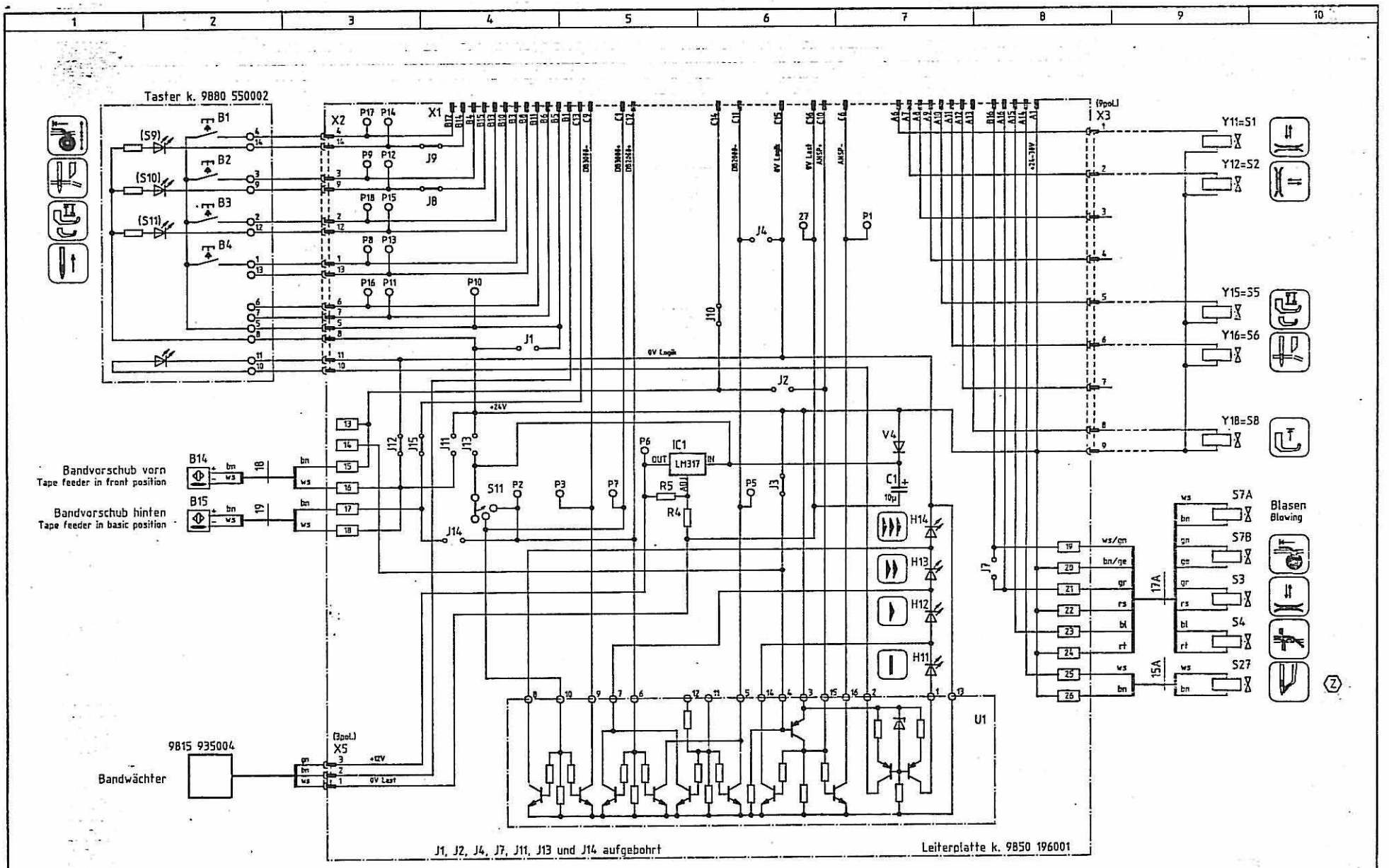
Freigabe 1180 / 96

550-12-13, -14, -16
gebaut ab 1/96 bis 03/96

Bauschaltplan

9870 550010 B1

Blatt 3/5



Zusatzeinrichtung
Optional equipment

c			Datum 21.12.95
b 02.0	04.10.96	Hc...	Geard. Harder
a 1.1.0	20.03.96	Hardert/Ger.	

DÜRKOPP ADLER AG Bielefeld

Teilefamilie

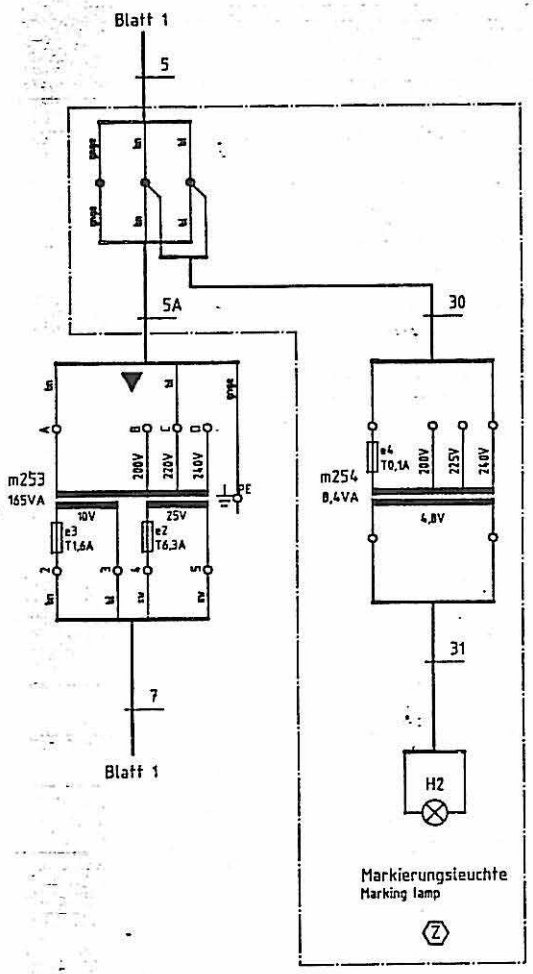
Freigabe 1.96 / 96

550-12-13, -14, -16
Oberteil
gebaut ab 1/96

Bauschaltplan

9870 550013 B1

Blatt 1/5



Kurz-zeichen	Benennung	Abmessung	Teilenummer	Bemerkung
a251	Schalter,schutz	Einsatz 2,5-4,0A	9815 590007	
		Einsatz 4,0-6,3A	9815 590008	
B14,B15	Induktivgeber		9815 710002	
	Klemmstück		798 424203	
B16	Lichtschranke k		9815 935004	
C1	Kondensator	10µF/63V	9810 110605	
e1	Sicherung	M 0,16/250G 5x20mm	9825 810302	
e2	Sicherung	T6,3/250D 5x20mm	9825 810417	
e3	Sicherung	T1,6/250D 5x20mm	9825 810413	
e4	Sicherung	T 0,1A/250B 5x20mm	9825 810401	
H1	Nähleuchte	Waldmann	9822 510125	
	Lampe	24V, 20W	9822 642023	
H2	Leuchte, Mark.		9822 550014	
	Lampe	4,6V 8,4W	9822 641010	
H11	Leuchtdiode	grün	9805 330001	
H12	Leuchtdiode	gelb	9805 320001	
H13	Leuchtdiode	gelb	9805 320001	
H14	Leuchtdiode	gelb	9805 320001	
IC1	IC-Regler	LM317T	9805 511002	
J1	aufgebohrt			
J2	aufgebohrt			
J4	aufgebohrt			
J7	aufgebohrt			
J8	Leitungsbrücke		798 422603	
J9	Leitungsbrücke		798 422603	
J10	Leitungsbrücke		798 422603	
J11	aufgebohrt			
J12	Leitungsbrücke		798 422603	
J13	aufgebohrt			
J14	aufgebohrt			
J15	Leitungsbrücke		798 422603	

Kurz-zeichen	Benennung	Abmessung	Teilenummer	Bemerkung
m251	Nähantrieb	POKD13-0/551	798 3212 A	
	Kupplungskopf k.	99/04	002 7504 1020	
	Kuppl.scheibe	99/01	002 7504 1015	
	Bremsring k.	POK Georgii	9800 360001	
m252	Nähllichttrafo	25VA	798 500088	
m253	Transformator	10/25V 165VA	798 500445	
m254	Transformator	4,8V 8,4VA	798 500090	
R4	Widerstand	2k2	9810 321109	
R5	Widerstand	240R	9810 321085	
S11	Schleiferkontakt		798 422615	
U1	Positionsgeber	PI 42	798 3216	
U2	Ext. Betätigung	EB301	9800 330001	
U3	Hybridschaltung		9835 191001	
V4	Diode	1N4007	9805 111001	
X	Klemmleiste	5pol	9825 570002	
X1	Steckleiste	48pol.	9825 354800	
X2	Steckleiste	14pol.	9825 351402	
X3	Buchsenleiste	9pol.	9825 360901	
X5	Steckleiste	3pol.	9825 350301	
Z1	Netzfilter	3 Phasen, 6A	9810 711002	
Z2	Ferrit-Joch		9810 719001	
15-26	Flachstecker		9825 555001	
Z7	Lötöse		9840 108001	

Z Zusatzeinrichtung
Optional equipment

c			Datum	21.12.95	
b	02.0	04.10.96	Hd.	Bearb.	Harder
a	01.0	20.03.96	Hardorf	Gen.	
	Änderung	Datum	Name	Norm	

DÜRKOPP ADLER AG Bielefeld

Teilefamilie

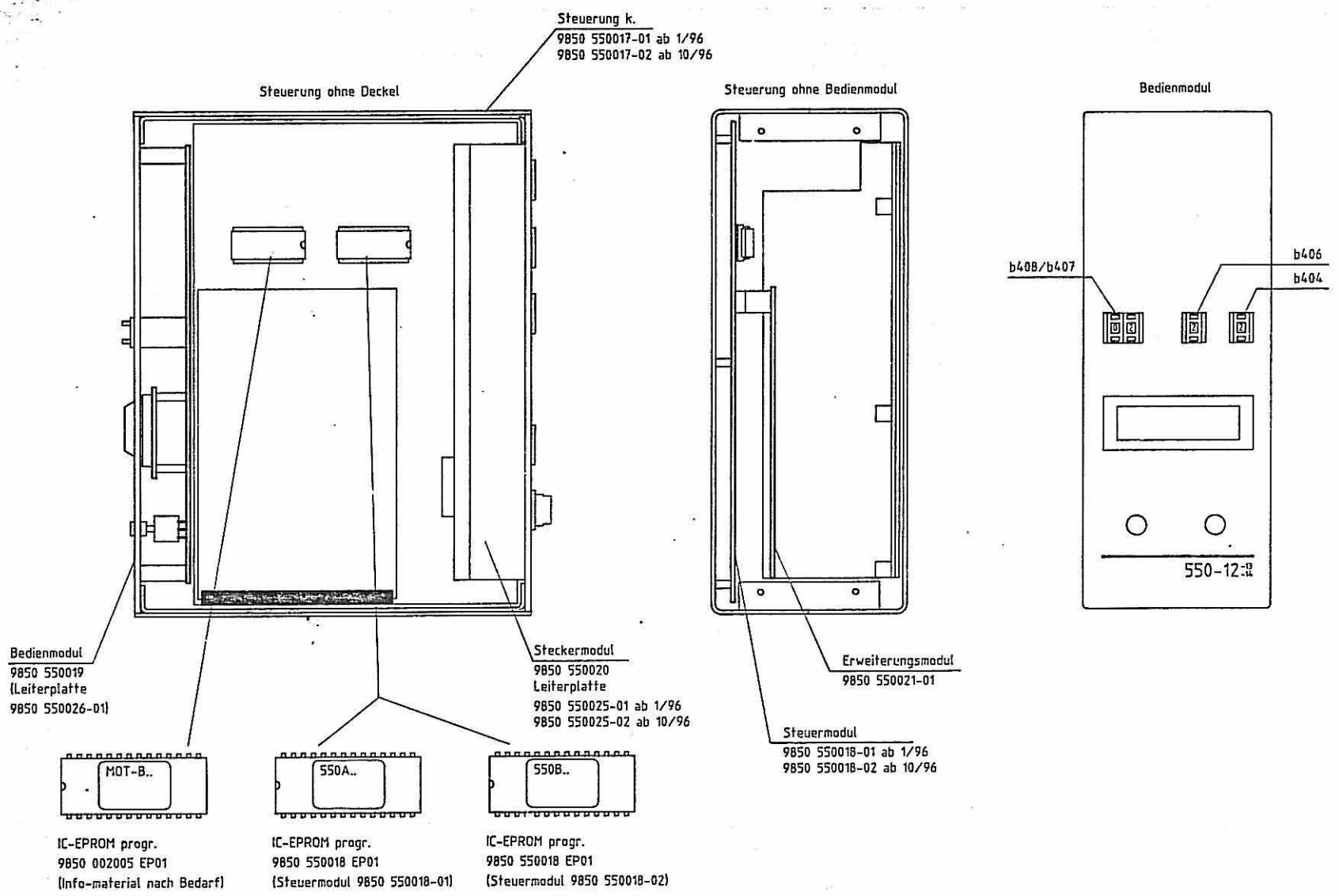
Freigabe 1441/95

550-12-13, -14, -16
Teileliste
gebaut ab 1/96

Bauschaltplan

9870 SE[illegible] 131

Blatt 5/5



c	03.0	04.10.96	Hd	Datum	16.06.93
b	02.0	16.01.96	Harder	Bearb.	Berger
a	01.0	09.12.94	Harder	Bearb.	
	Änderung	Datum	Name	Norm	

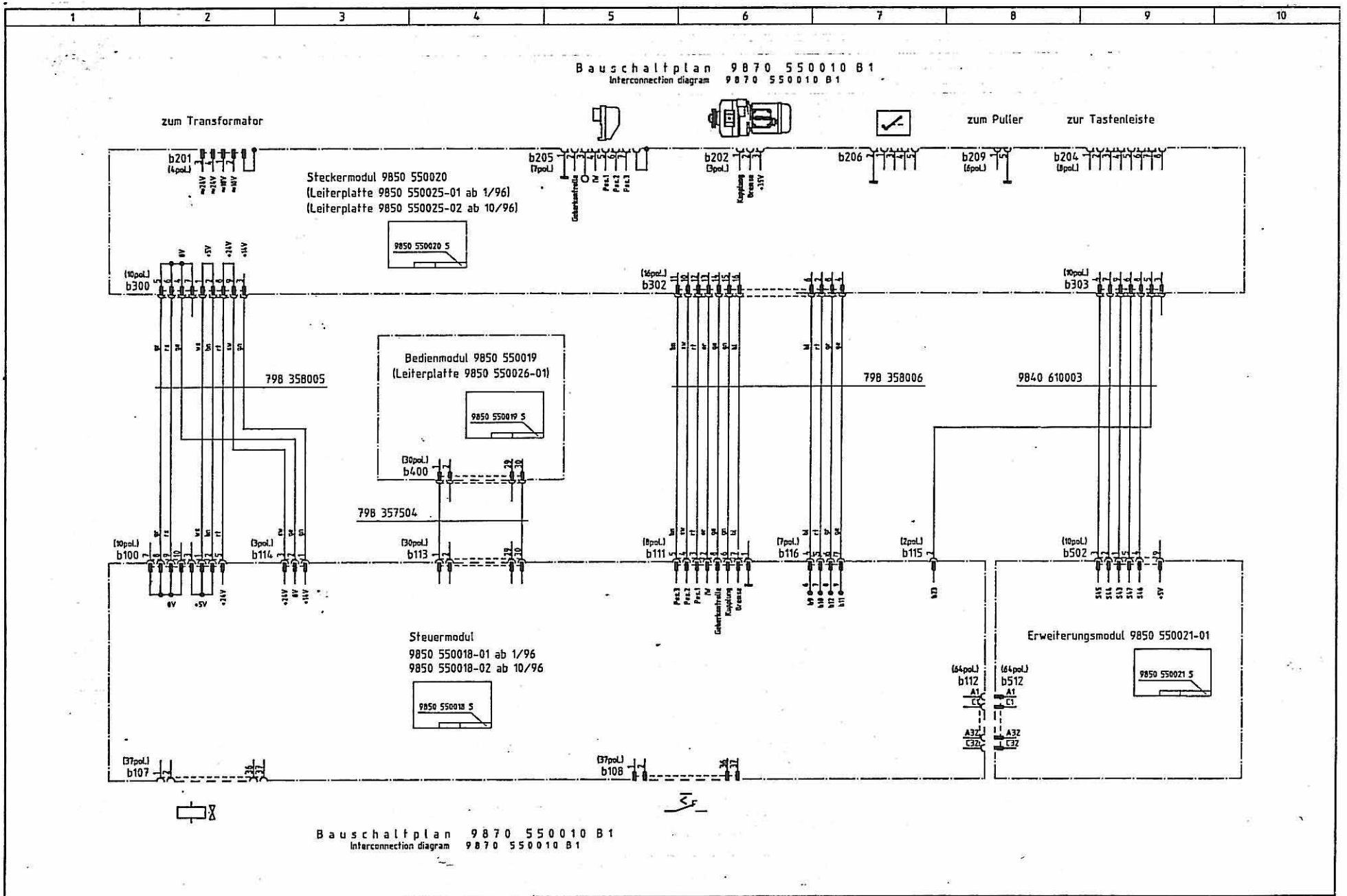
DÜRKOPP ADLER AG
Bielefeld

Teileramme

freigegeben 1096 / 96

550-12-13, -14, -16
Steuerung k. gebaut ab 1/96
9850 550017-02

Stromlaufplan k.
9850 550017 SK
Blatt 1/2



c	03.0	04.10.96	Hd	Datum	18.08.93
b	02.0	15.01.96	Harder	Bearb.	Harder
a	01.0	09.12.94	Harder	Gepr.	

DÜRKOPP ADLER AG Bielefeld

Teilefamilie

Freigabe 1100 / 96

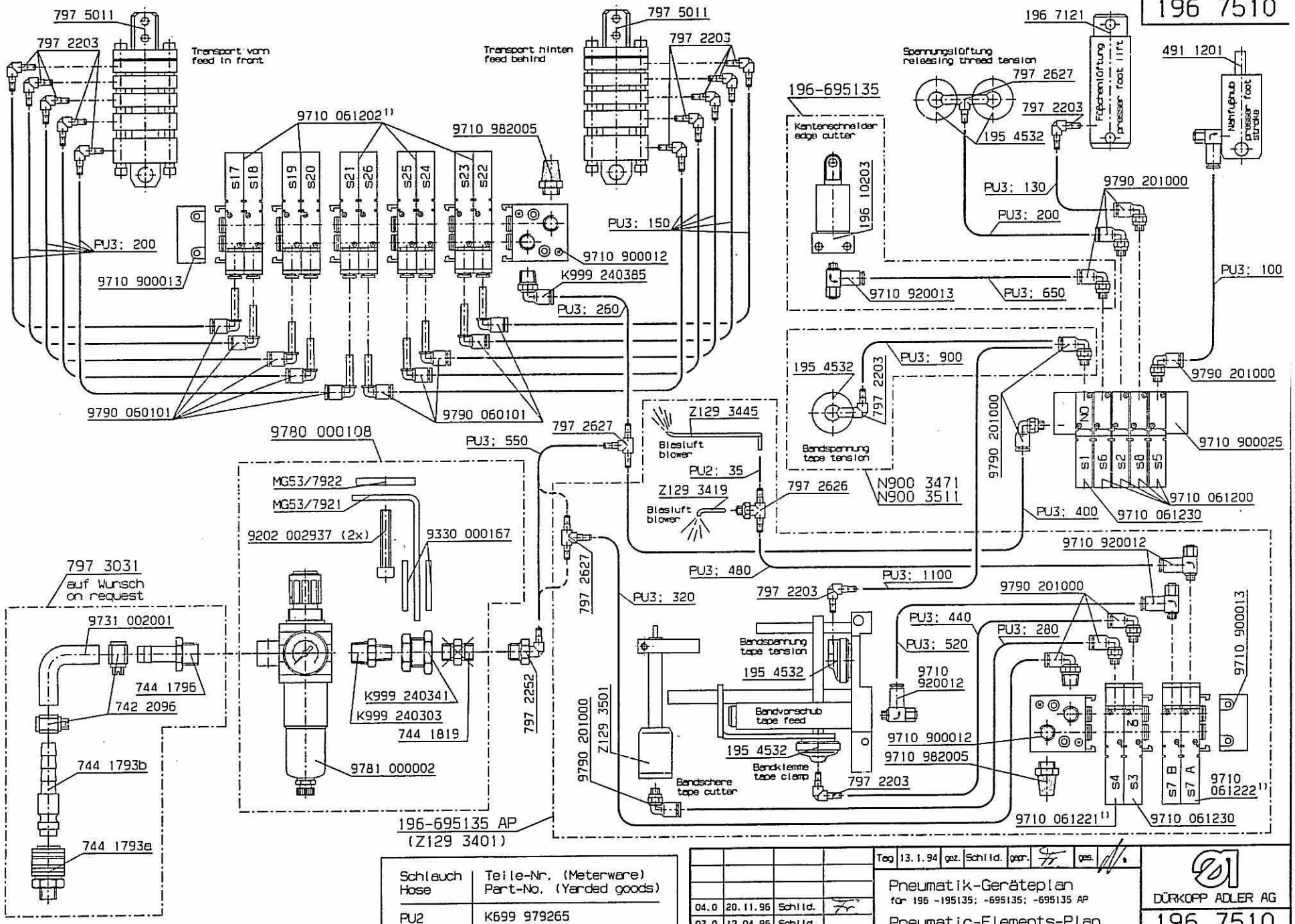
550-12-13, -14, -16
Steuerung k. (Int. Verdrahtung) gebaut ab 1/96
9850 550017-02

Stromlaufplan k.

9850 550017 SK

Blatt

196 7510



Schlauch Hose	Teile-Nr. (Meterware) Part-No. (Yarded goods)
PU2 PU3	K699 979265 9731 005004

04.0	20.11.96	Schild.	
03.0	12.04.96	Schild.	
And.	Tag	gez.	gepr.

Tag	13.1.94	gez.	Schild.	gepr.		ges.	

Pneumatik-Gerätеplan
for 196 -195135; -695135; -695135 AP

Pneumatic-Elements-Plan
for 196 -195135; -695135; -695135 AP

DÜRKOPP ADLER AG

196 7510

Blatt 1 | Blattz. 1

1) Ersatzventil ohne Montageplatte 9710 061200
Replacement valve without mounting plate 9710 061200