Thank you very much for buying our sewing machine.Before using your new machine,please read the safety instructions below and the explanations given in the Operation Instruction.

With industrial sewing machines,it is normal to carry out work while positioned directly in front of moving parts such as the needle and thread take-up lever,and consequently there is always a danger of injury that can be caused by these parts.Follow the instructions from training personnel and instructors regarding safe and correct operation before operating the machine so that you will know how to use it correctly.

SAFETY INSTRUCTIONS

1.Safety indications and their meanings

This instruction manual and the indications and symbols that are used on the machine itself are provided in order to ensure safe operation of this machine and to prevent accidents and injury to yourself or other people.
The meaning of these indications and symbols are given below.

Indications

⚠ **DANGER**	The instructions which follow this term indicate situations where failure to follow the instructions will almost certainly result in death or severe injury.
⚠ **CAUTION**	The instructions which follow this term indicate situations where failure to follow the instructions could cause injury when using the machine or physical damage to equipment and surroundings.

Symbols

This symbol (△) indicates something that you should be careful of. The picture inside the triangle indicates the nature of the caution that must be taken.
(For example, the symbol at left means"beware of injury".)

This symbol (⃠) indicates something that you must not do.

This symbol (●) indicates something that you must do. The picture inside the circle indicates the nature of the thing that must be done.
(For example, the symbol at left means "you must make the ground connection".)

⚠ DANGER

Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.

⚠ CAUTION

Environmental requirements

Use the sewing machine in an area which is free from sources of strong electrical noise such as high-frequency welders.
Sources of strong electrical noise may cause problems with correct operation.

Any fluctuations in the power supply voltages should be within ±10% of the rated voltage for the machine.
Voltage fluctuations which are greater than this may cause problems with correct operation.

The power supply capacity should be greater than the requirements for the sewing machine's electrical consumption.
Insufficient power supply capacity may cause problems with correct operation.

The ambient temperature should be within the range of 5℃ to 35℃ during use.
Temperatures which are lower or higher than this may cause problems with correct operation.

The relative humidity should be within the range of 45% to 85% during use, and no dew formation should occur in any devices.
Excessively dry or humid environments and dew formation may cause problems with correct operation.

Avoid exposure to direct sunlight during use.
Exposure to direct sunlight may cause problems with correct operation.

In the event of an electrical storm, turn off the power and disconnect the power cord from the wall outlet.
Lightning may cause problems with correct operation.

Installation

Machine installation should only be carried out by a qualified technician.

Contact your dealer or a qualified electrician for any electrical work that may need to be done.

The sewing machine weighs approximately 42kg.
The installation should be carried out by two or more people.

Don't connect the power cord until installation is complete, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.

Be sure to connect the ground. If the ground connection is not secure, you run a high risk of receiving a serious electric shock, and problems with correct operation may also occur.

Install the safety covers to the machine head and motor.

Hold the machine head with both hands when tilting it back or returning it to its original position.
Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.

All cords should be secured at least 25mm away from any moving parts. Furthermore, do not excessively bend the cords or secure them too firmly with staples, otherwise there is the danger that fire or electric shocks could occur.

If using a work table which has caster, the casters should be secured in such a way so that they cannot move.

Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they don't get into your eyes or onto your skin, otherwise inflammation can result.
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
Keep the oil out of the reach children.

⚠ CAUTION

Sewing

This sewing machine should only be used by operators who have received the necessary training in safe use beforehand.

The sewing machine should not be used for any applications other than sewing.

Be sure to wear protective goggles when using the machine.
If goggles are not worn, there is the danger that if a needle breaks, parts of the broken needle may enter your eyes and injury may result.

Turn off the power switch at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
·When threading the needle
·When replacing the needle and bobbin
·When not using the machine and when leaving the machine unattended

If using a work table which has casters, the casters should be secured in such a way so that they cannot move.

Attach all safety devices before using the sewing machine. If the machine is used without these devices attached, injury may result.

Do not touch any of the moving parts or press any objects against the machine while sewing as this may result in personal injury or damage to the machine.

If an error occurs in machine operation, or if abnormal noises or smells are noticed, immediately turn off the power switch. Then contact your nearest dealer or a qualified technician.

If the machine develops a problem, contact your nearest dealer or a qualified technician.

Cleaning

Turn off the power switch before carrying out cleaning, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.

Be sure to wear protective goggles and gloves when handing the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result.
Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
Keep the oil out of the reach of children.

CONTENTS

目录

1.Specifications

Max. sewing speed: ..... 2700min^{-1}
Feed type: ..... Intermittent
Stitch length: 0. 1–10. 0mm
Stitch type: ..... 301 (lockstitch)

Needle size in 1/100 mm:
For fine materials: 70–100
For medium-weight materials: 100–120
For medium-heavy materials: 120–140

Needle system
Subclass–1/01, –1/21, –1/31: ..... DP×5
Subclass–1/11: ..... DP×17
Needle bar stroke: 41mm

Fabric clearance: ..... max. 17mm
Max. size of sewing area: ..... 40×20mm

Power supply: ..... 220 V ± 10%, 50/60 Hz, single phase
Power consumption: 0. 55kVA
Electrical power rating: 1. 2kVA
Fuse protection: ..... 1x 16 A, inert

Noise data:
Noise emission level at workplace
With a sewing cycle of 1 sec. on and 2 sec. Off: ..... L_{pA}=74dB(A)
(Noise measurement in accordance with DIN 45 635-48-B-1, ISO 11204, ISO 3744, ISO 4871)

Sewing head dimensions
Length: ..... Approx. 700mm
Width: ..... Approx. 220mm
Height: ..... Approx. 380mm

Dimensions of standard base
Length: ..... Approx. 1060mm
Width: ..... Approx. 600mm
Height: ..... Approx. 820mm

Weights
Sewing head: ..... Approx. 42kg
Base incl. control box: ..... Approx. 45kg

2. Explanation of symbols

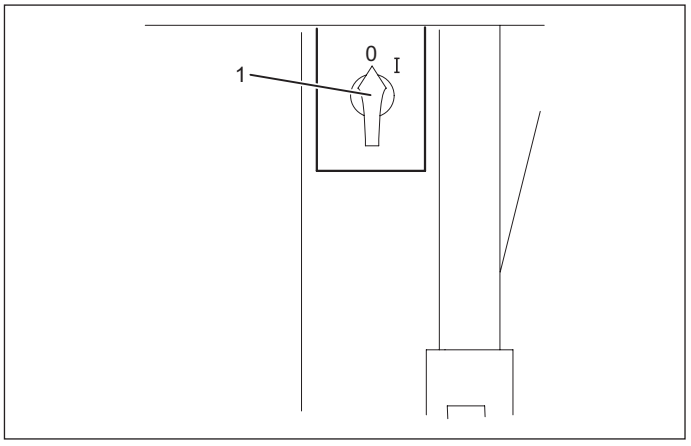
In this instruction manual, work to be carried out or important information is accentuated by symbols.
These symbols have the following meanings:

Note, information

Maintenance, repairs, adjustment, service work(only to be carried out by technical staff)

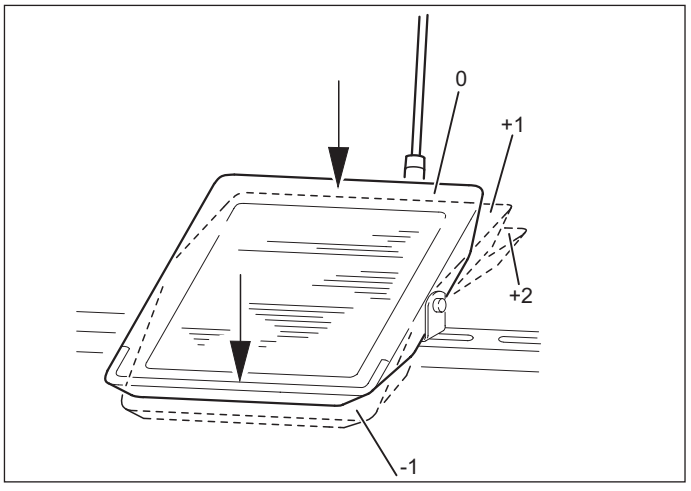
3. Control elements

3−1.Main switch



Switch the machine on or off by turning main switch 1.

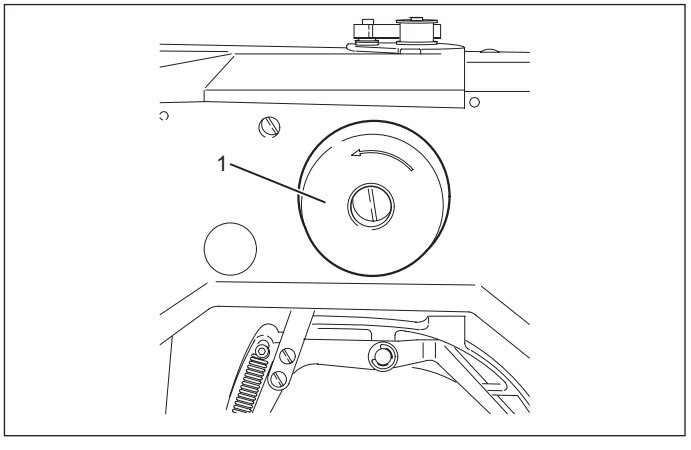
3−2.Pedal



The pedal is used to lower and raise the work clamp, and to start the sewingprogram.

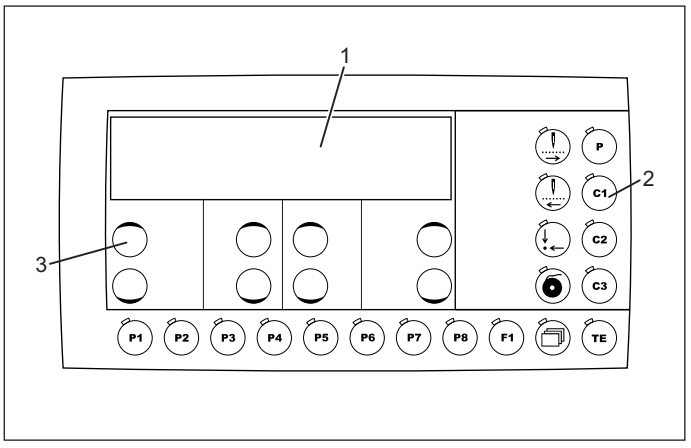
−1 = sewing interruption
0 = neutral position
+1 = lower work clamp
+2 = sewing

3−3.Balance wheel



By pressing and holding down balance wheel 1, it is possible to adjust the needle bar manually.

3−4.Control panel



The control panel is used to select seam programs, call up machine functions, change parameters, control the different operating modes, as well as for reading error signals and service settings.

The control panel consists of display screen 1 with the function keys described below. The display 1 consists of a two-row alphanumerical LCD display with 16 symbols per row. The function keys 2 are located below and to the right of the display screen. The status of the function keys and the machine operating modes are shown with LEDs in the corresponding keys. Every time the function keys 2 are operated, a key tone sounds as confirmation of the input. If the input required is invalid, e.g. because the max. permissible value for the parameter input has been reached, a double tone is audible. An SD-card reader for data transfer is integrated.

3−4−1.Screen displays

Depending on the operating mode, on the screen 1 information is shown about the machine status, program selection, sequence program progress, input parameters, as well as error signals.
Depending on the operating mode, relevant data is displayed in combination with the appropriate symbol or text, and can be altered directly.
When the parameters are entered, the number of the parameter selected is shown with the corresponding parameter value.
If faults occur in the sewing operation, a corresponding error signal appears in the display.

3−4−2.Display symbols

	Program number		Bobbin thread counter / piece counter
	Speed		Enter
X	Size factor X-direction (crosswise) in %		Machine memory
Y	Size factor Y-direction (lengthwise) in %		SD-memory card

3−4−3.Function keys

The functions keys described below are used essentially to switch machine functions on and off. When the function is switched on, the diode in the key is illuminated.
If a corresponding value has to be fixed for the activated function, this can be carried out with the corresponding +/- keys 3.
By pressing and holding the corresponding +/- key, firstly the numerical value displayed above it is altered slowly. If the +/- key is pressed longer, the numerical value changes more quickly. The respective +/- keys shown opposite are described below.

Menu
This function is used in the respective operating mode to scroll within the existing menus.

Wind
The bobbin thread winding function is called up.

Basic position
Work clamp and needle are positioned in the basic position and , if necessary, the thread trimming function is activated.

Tacting backwards
Each time the key is pressed, the selected seam program is sewn stitch by stitch in reverse, and the coordinates for each stitch are shown on the control panel.

Tacting forwards
Each time the key is pressed, the selected seam program is sewn forwards stitch by stitch, and the coordinates for each stitch are shown on the control panel.

P1 to P8
Program stations
The function keys P1 to P8 are used to enter and select seam programs.

P
Direct program selection
This function is used to select a seam pattern. After selection, speed and size can be altered.

C1 to C3
Sequences
The function keys C1 to C3 are used to enter and select sequences.

TE
TE
In the sewing mode, this key is used to change to the input mode. In the input mode this key is used to acknowledge the input of program stations and sequences, and to change into the sewing mode.

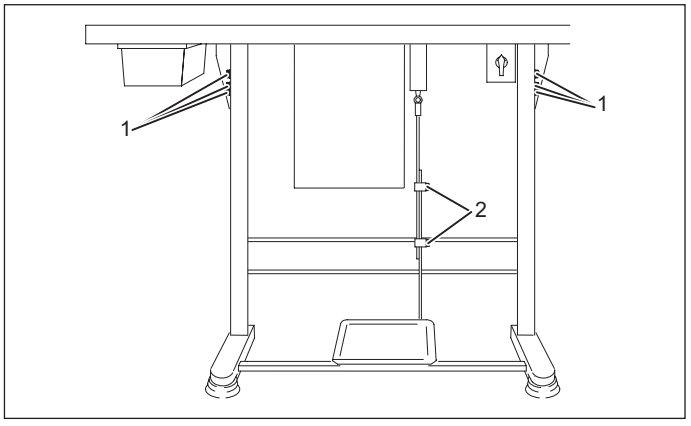
4.Installation and commissioning

⚠	The machine must only be installed and commissioned by qualified personnel! All relevant safety regulations must be strictly adhered to! If the machine is delivered without a table, be sure to use a stand and table top that can hold the weight of the machine with its motor. It is very important to ensure that the stand of the machine is firm and steady,also during sewing.

4−1.Installation

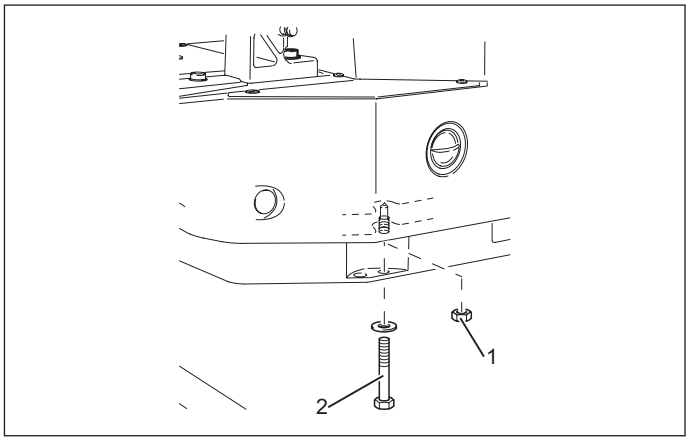
⚠	The site where the machine is installed must be provided with suitable connections for the electric current. It must also be ensured that the standing surface of the machine site is firm and horizontal,and that sufficient lighting is provided. If the machine is delivered with stand, the transit lock must be removed before commissioning.

4−1−1. Adjusting the table height



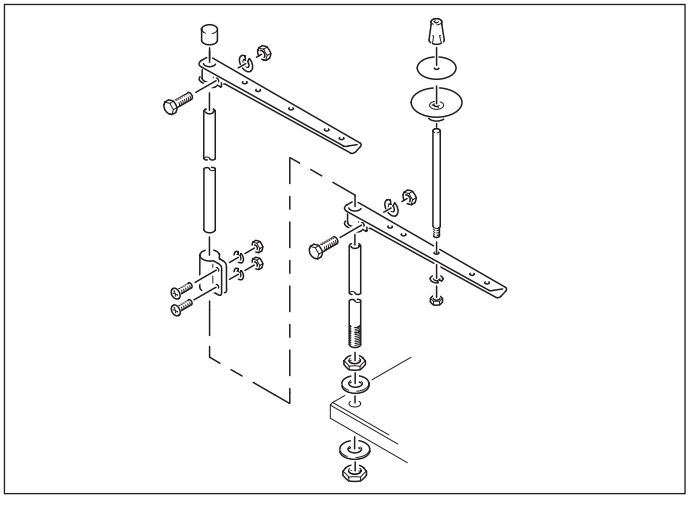
Loosen screws 1 and 2 and set the table height as required.
Firmly tighten screw 1.
Set the required pedal position and tighten screw 2.

4−1−2. Removing the transit lock



Loosen nut 1.
Remove screw 2.

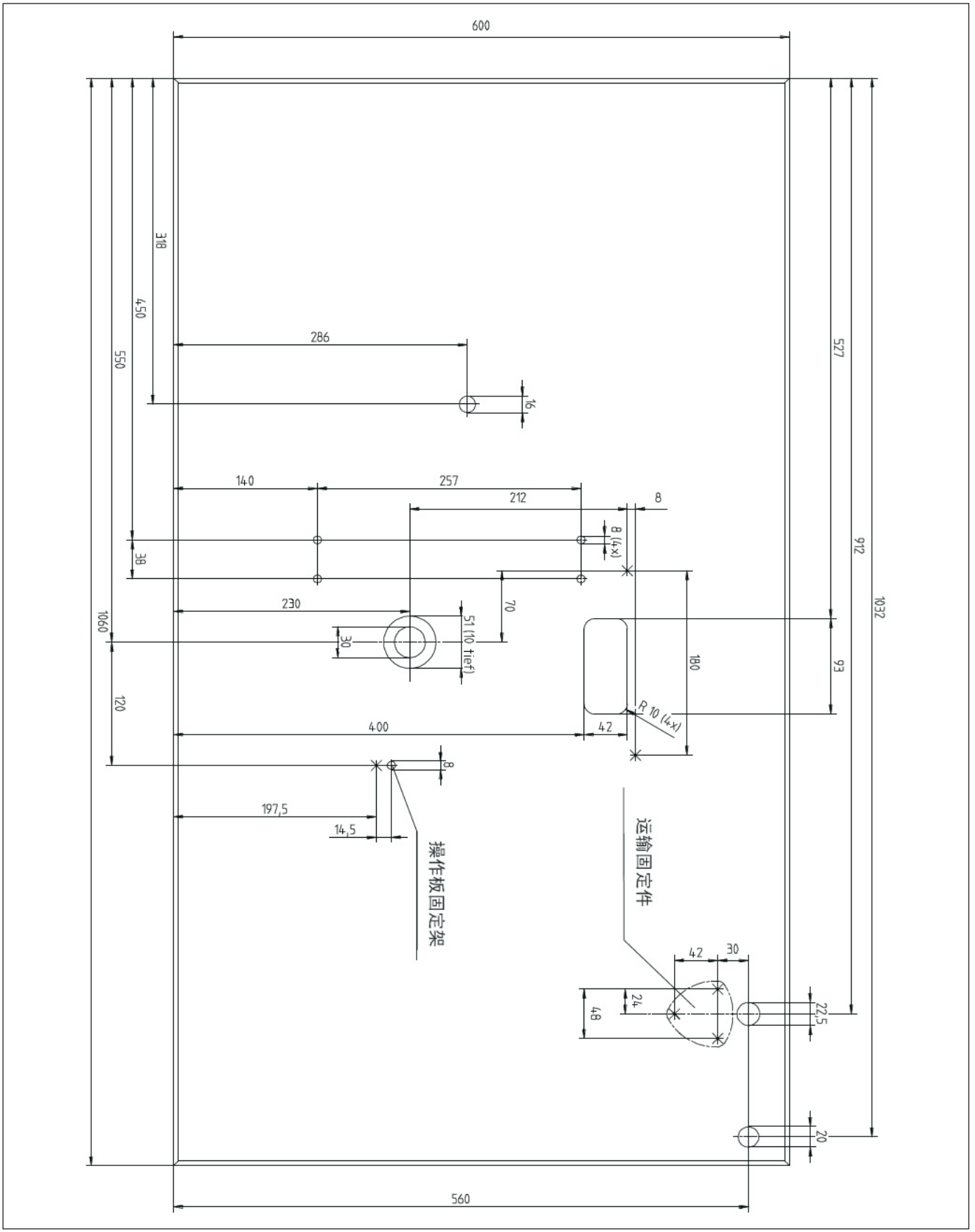
4−1−3. Fitting the reel stand



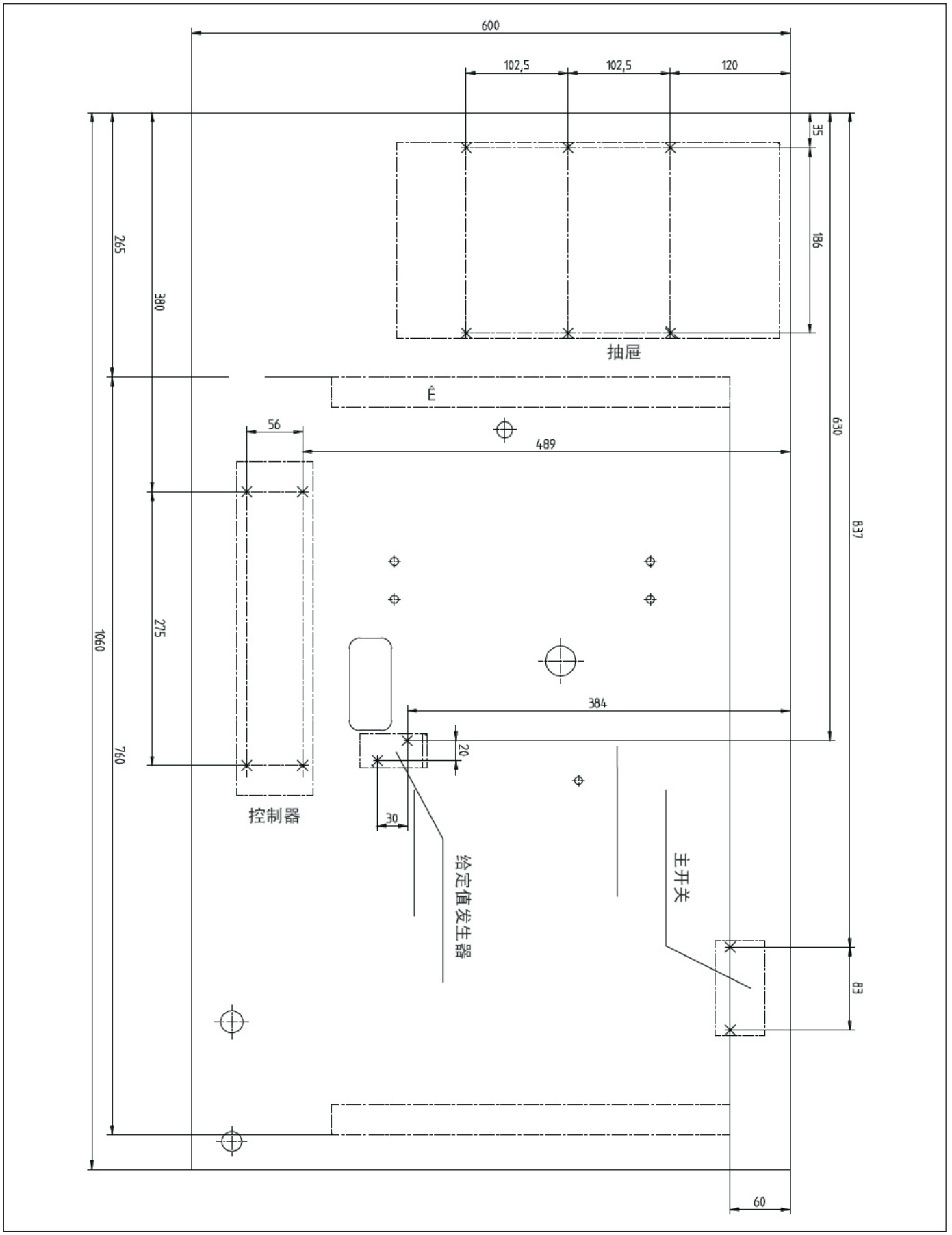
Fit the reel stand as shown in the left Fig.
Afterwards insert the stand in the hole in the table top and secure it with nuts provided.

4-1-4.Table top drill hole plans

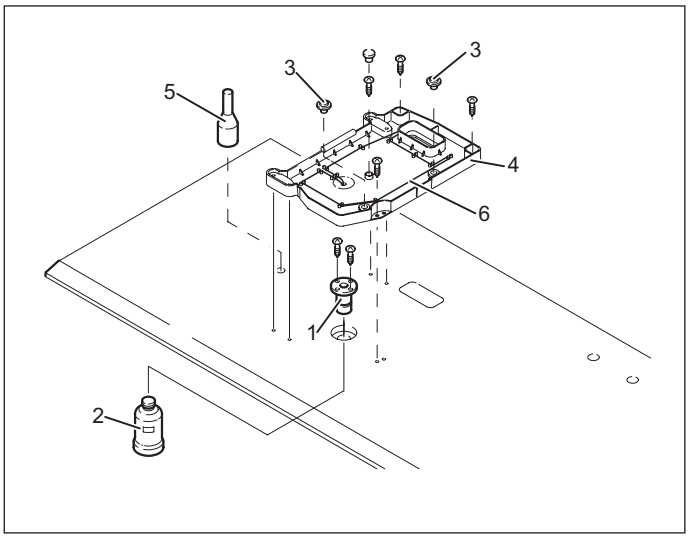
Top view



Bottom view

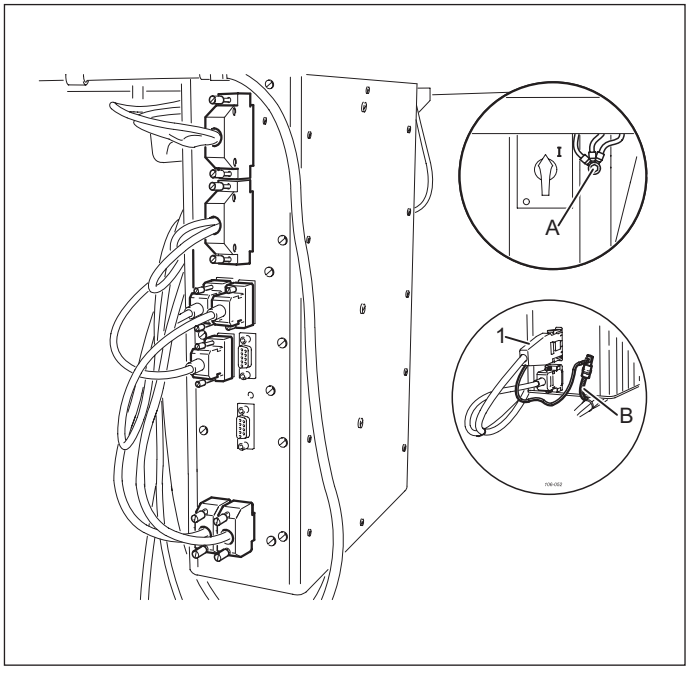

600
102,5
102,5
120
35
186
265
380
抽屉
630
56
489
837
1060
275
384
760
20
30
控制器
给定值发生器
主开关
83
60

4−1−5. Mounting the table top (for deliveries without stand)



Drill holes in the table top as shown in the drawing.
Screw on the oil outlet 1.
Screw the oil tank 2 to oil outlet 1.
Set the rubber pads 3 in the fastening holes of the oil pan 4 and screw oil pan 4 to the table top.
Set support 5 in the appropriate hole.
Place wick 6 iin the holders of oil pan 4.

4−1−6.Connecting the plug-in connections and earth cable



Connect all plugs as labelled in the control box.
Screw the earth cable from the machine and the main switch to earth point A.
Connect earth point A and earth point B with an earth cable.
Screw the earth cable of plug 1 to earth point B.

4−2.Commissioning the machine

Clean the machine thoroughly.
Check the oil level.
Check the machine, especially the electric wires, for any damage.
Have specialists check, whether the machine's motor can be used with the existing mains voltage.

4−3.Switching the machine on/off

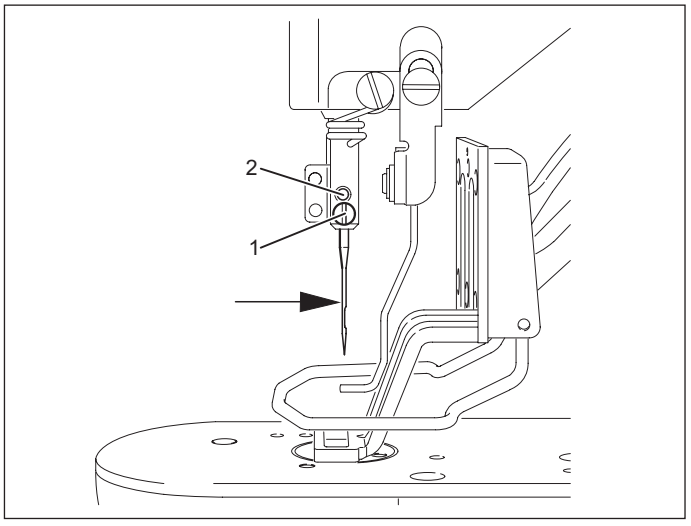
Switching the machine on/off, see the Chapter of Main switch.

5. Setting up

⚠	All instructions and regulations in this instruction manual must be observed. Special attention must be given to all safety regulations!
⚠	All setting-up work must only be done by personnel with the necessary training. For all setting-up work the machine must be isolated from its power supply by turning off the on/off switch or removing the machine plug from the electric power socket!

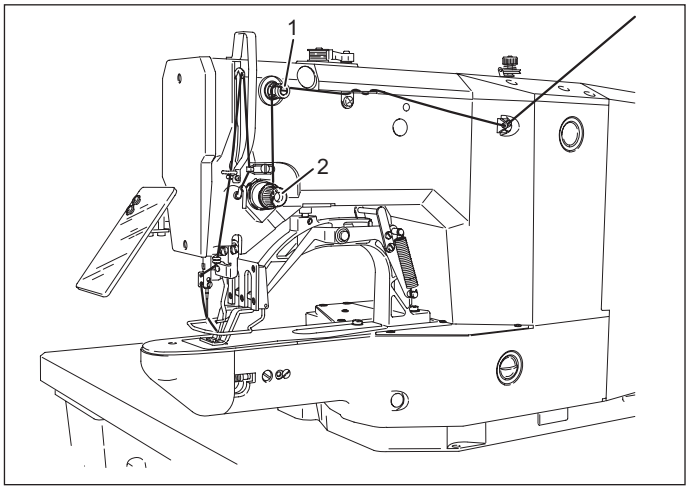
5−1. Inserting the needle

⚠	Switch off the machine! Danger of injury if the machine is started accidentally! Only use needles from the system intended for the machine.



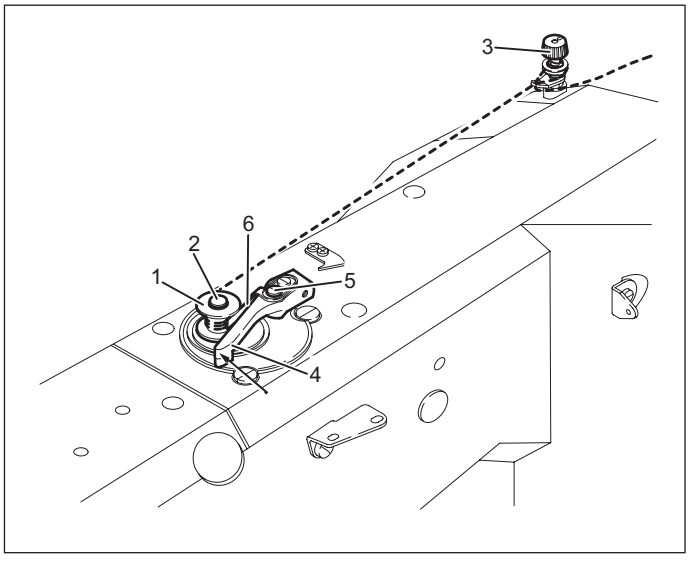
Loosen screw 1.
Insert the needle as far as possible. The long needle groove (see arrow) must be facing forwards.
Tighten screw 1.

5−2. Threading the needle thread/adjusting the needle thread tension



Thread the needle thread as shown in the Fig.
Adjust the needle thread tension by turning milled nuts 1 and 2.

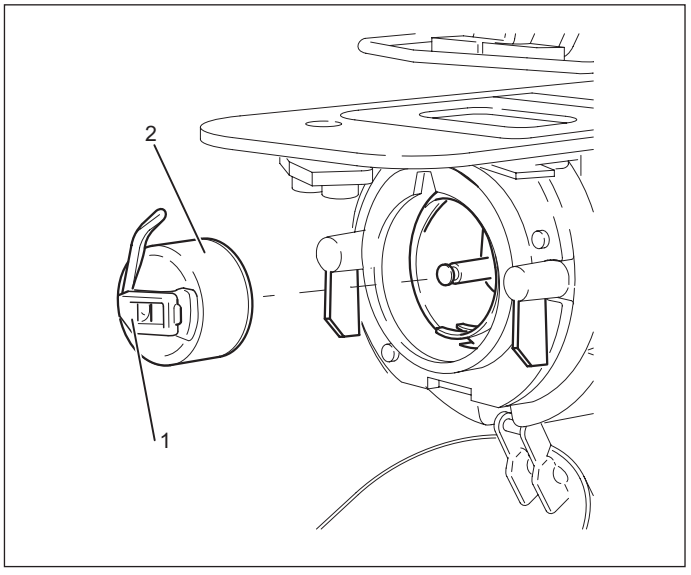
5−3. Winding the bobbin thread



Place the empty bobbin 1 on the bobbin winder spindle 2.
Thread the thread as shown in Fig and wind it round bobbin 1 a few times in the anti-clockwise direction.
Set the preliminary thread tension by turning milled screw 3.
Press lever 4 in the direction of the arrow until it clicks into place.
The bobbin is filled during sewing.
Winding is also possible as follows:
Switch on the machine and press the key for winding.
Remove the thread from the needle and take-up lever.
Operate the pedal to carry out winding, the bobbin winder stops automatically as soon as the bobbin is adequately full.
Press the key for winding, the machine stops.
Thread the machine again.
Adjusting the amount of thread on the bobbin
Loosen screw 5.
Set stop 6 so that the bobbin winder switches off automatically when the thread is still ca. 1 mm from the edge of the bobbin.
Tighten screw 5.

5−4. Removing/replacing the bobbin case

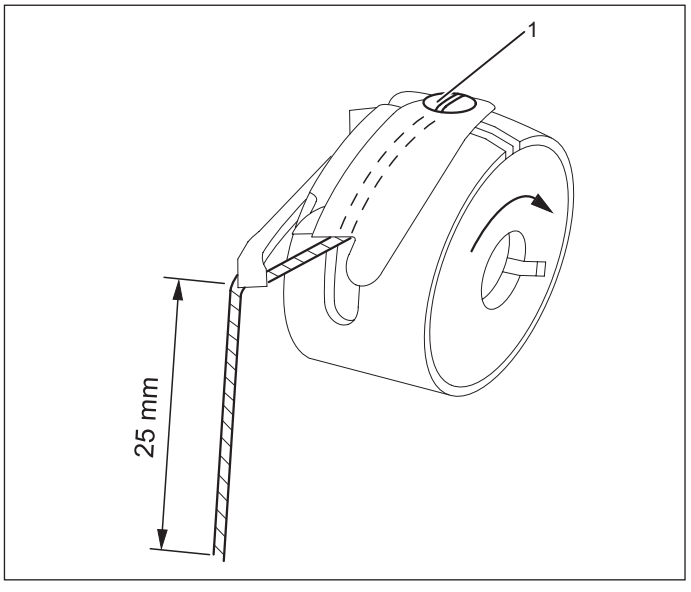
⚠	Switch off the machine. Danger of injury if the machine starts accidentally!



Removing the bobbin case
Open the hook cover
Pull out latch 1
Remove bobbin case 2

Replacing the bobbin case
Push bobbin case 2 into the bobbin case base until you feel it click into place
Close the hook cover.

5−5. Threading the bobbin thread/adjusting the bobbin thread tension

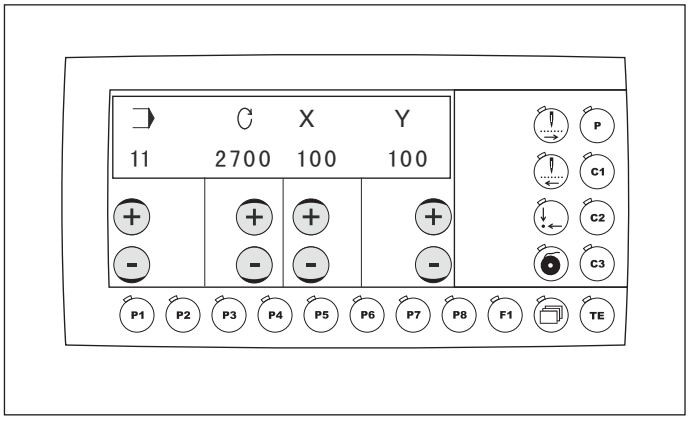


Place the bobbin into the bobbin case,so that this turns in the direction shown by the arrow when the thread is pulled.
Insert the thread as shown in the left Fig.
Set the thread tension by turning screw 1.

5−6. Selecting a seam program

To avoid the machine starting accidentally, to begin with the TE key must be pressed, after the machine has been switched on. The machine is then in its basic position and offers a number of possibilities for selecting seam programs.
- Direct selection of the seam pattern and its individual adaptation by changing the speed and size factors.
- Selection of the seam program via a program station. For this purpose a seam pattern with its respective speed and corresponding size factors must have been stored previously.
- With the selection of a sequence several seam programs are sewn after each other. For this purpose a sequence must have been compiled beforehand from individual seam programs (program stations).

5−6−1. Selecting and changing the seam pattern



With the machine in the basic position, select the direct seam pattern.

With the corresponding +/- key select the desired seam pattern, e.g. 11. The seam patterns are stored in the machine under program numbers, see Chapter 11.05 Summary of the seam patterns.

Select the desired speed with the corresponding +/- key.

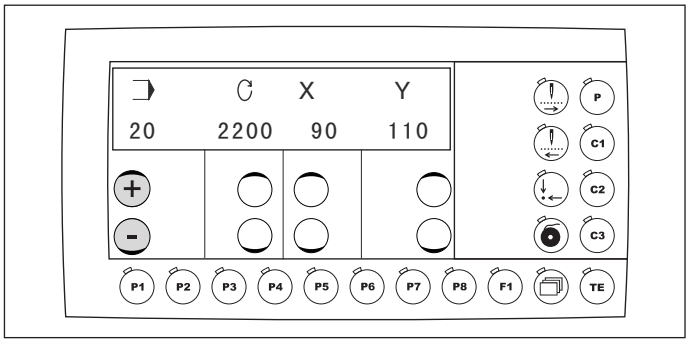
X Enter the desired size factor (in %) (X-direction) with the corresponding +/- key.

Y Enter the desired size factor (in %) (Y-direction) with the corresponding +/- key.

Conclude the input by pressing the TE key. (The machine changes to the sewing mode).

The enlargement of the seam pattern is limited by the size of the machine's sewing area.
The altered speed and size factors entered are not stored when the machine changes to another seam program.
If you wish to store these values, a station key must be reserved with the corresponding seam program.

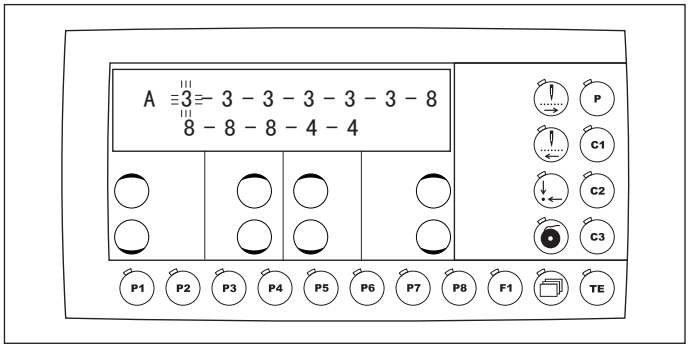
5−6−2. Selecting a program station



With the machine in its basic position, select the desired program station, e.g. P3.

Only those program stations can be selected, which have been reserved previously with a seam pattern with its respective speed and size factors.
Speed and size factors cannot be changed directly in a seam program selected via a program station.

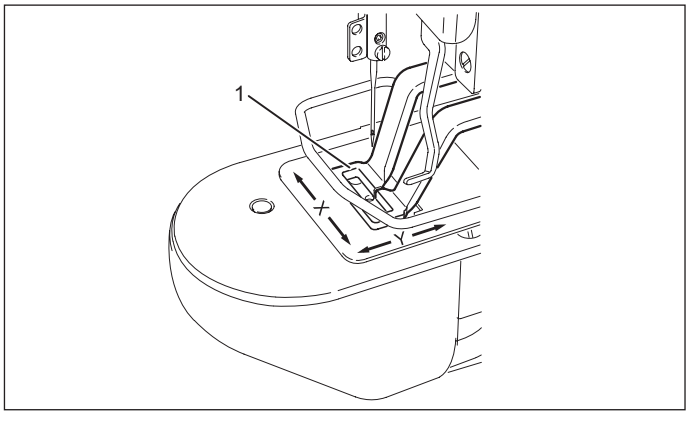
5−6−3. Selecting a sequence



With the machine in its basic position, select the desired sequence, e.g. C2.

The next seam program waiting to be sewn is depicted by the relevant flashing entry.
Sequences can only be called up if they have been created beforehand.

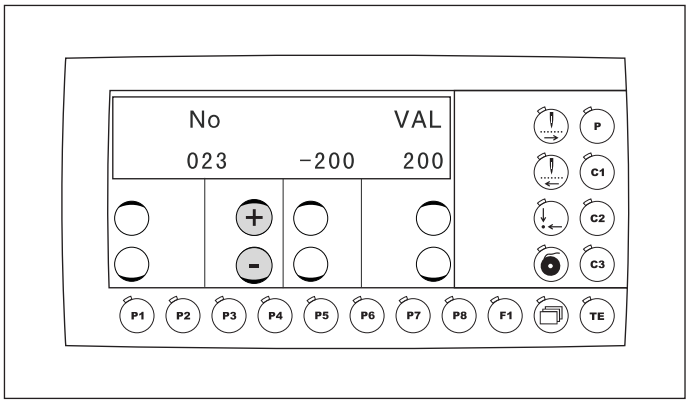
5−7. Adjusting the size of the sewing area



A comparison between the sewing area size entered and the actual sewing area size of the work clamp ensures that seam programs,which are not within the sewing area size, cannot be sewn.

Note:
If the actual and the entered sewing area size do not concur with each other, severe damage can be caused to the machine!

Measure the sewing area size of work clamp 1.

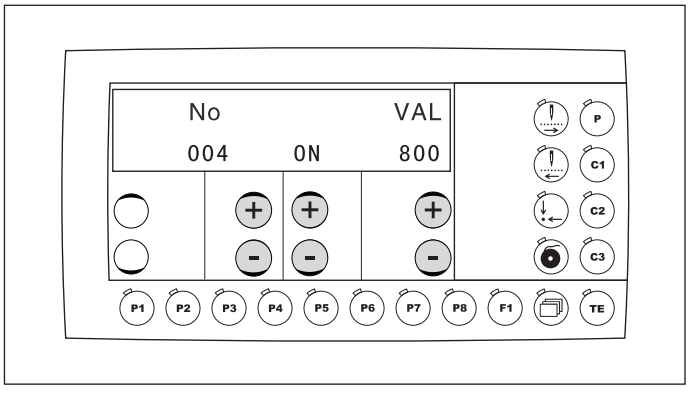


TE With the machine in its basic position, select the input mode. (LED is illuminated).

With the corresponding +/- key select parameter “023".
If required, enter the access code.
With the corresponding +/- key enter the measured value (in 1/10 mm) for the X-axis.
With the corresponding +/- key select parameter "024".
With the corresponding +/- key enter the measured value (in 1/10 mm) for the Y-axis.

TE Conclude the input by pressing the TE key. (Machine changes to the sewing mode).

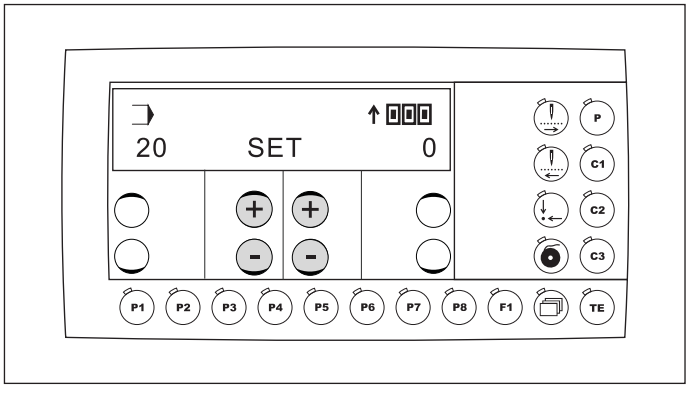
5−8. Setting up the bobbin thread counter



TE With the machine in its basic position, select the input mode.
With the corresponding +/- key select parameter "004".
If required, enter the access code.
With the corresponding +/- key switch on the bobbin thread counter.
With the corresponding +/- key enter the number of workpieces to be sewn.

TE Conclude the input by pressing the TE key. (Machine changes to the sewing mode).

5−9. Resetting the piece counter

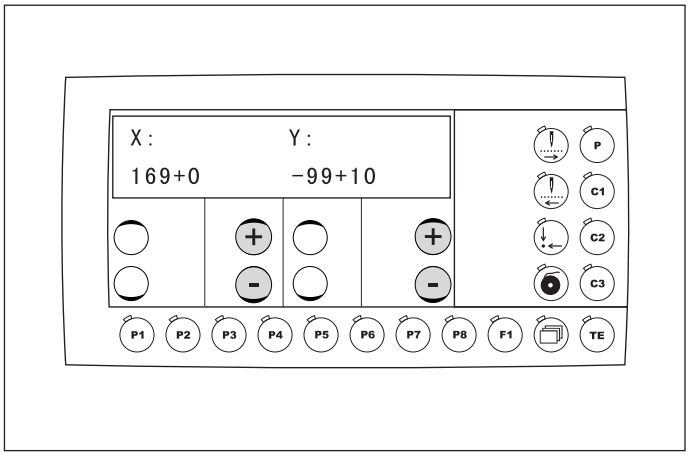


In the sewing mode (basic position of the machine) the piece counter or the bobbin thread counter can be displayed by pressing the menu key. (When the bobbin thread counter is switched off, the piece counter is displayed - Selection under parameter 004).

The piece counter counts from 0 onwards and differs from the bobbin thread counter in the display through the upwards pointing arrow.

Reset the piece counter with the corresponding +/- keys.

5−10. Shifting the seam pattern



To adapt the seam patterns to formed workpiece holders, selected seam patterns can be shifted.

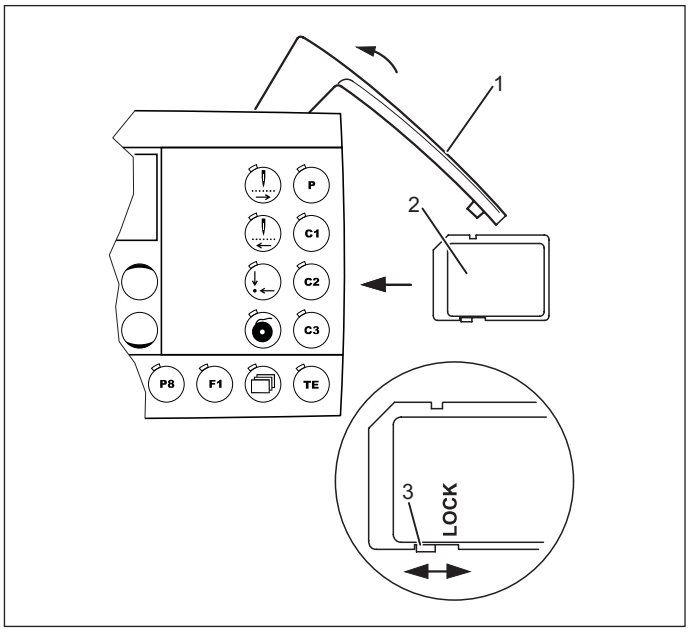
P1 From the basic position of the machine select the desired program station, e.g. P1.

Tact through the seam pattern, e.g. forwards.
The actual coordinates are shown together with the shift values for each stitch.

With the corresponding +/- keys it is possible to enter a shift value for the entire seam pattern in X- or Y-direction at each seam pattern coordinate.

The seam pattern shift is allocated to the respective actual program station and is deleted when the program number is changed.

5−11. Inserting and removing the SD-memory card

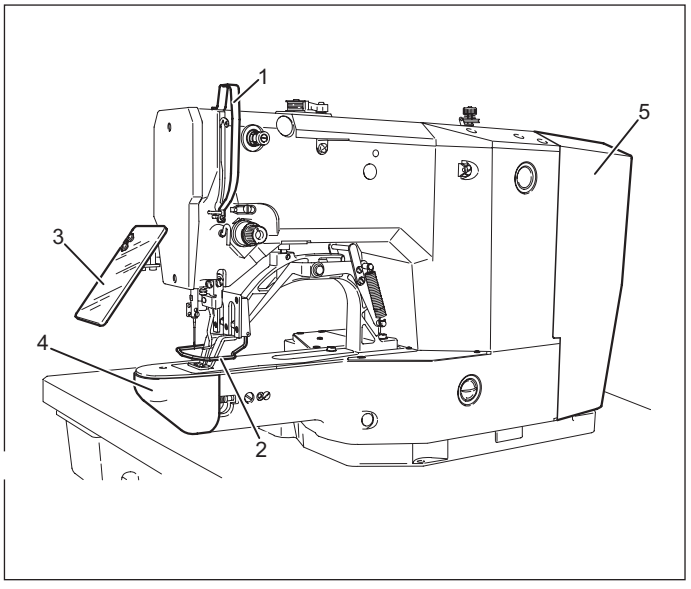


Inserting the SD-memory card
Open cover 1.
Insert SD-memory card 2 into the card slot with the label at the front.
Close cover 1 again.

Removing the SD-memory card
Open cover 1.
Press the edge of the SD-memory card 2 lightly – the SD-card is ejected.
Close cover 1 again.

Note:
By moving slide 3 it is possible to activate (position "LOCK") or deactivate the write protection function of the SD-memory card. To store, process or delete data on the SD-memory card, the write protection function must be deactivated.

6. Sewing



Note:
The machine must be installed, connected and set up as described in Chapter 8 Installation and Commissioning.

	The machine must not be operated without the safety devices 1 to 5,Danger of injury!

6−1. Operating cycle

Carry out all steps in accordance with Chapter 9 Setting up.
Place the material properly under the work clamp.
Lower the work clamp and start the sewing cycle.

6−2. Sewing in the "Direct program selection" mode

In this function, a seam pattern is selected. After selection, the speed and size can be altered.

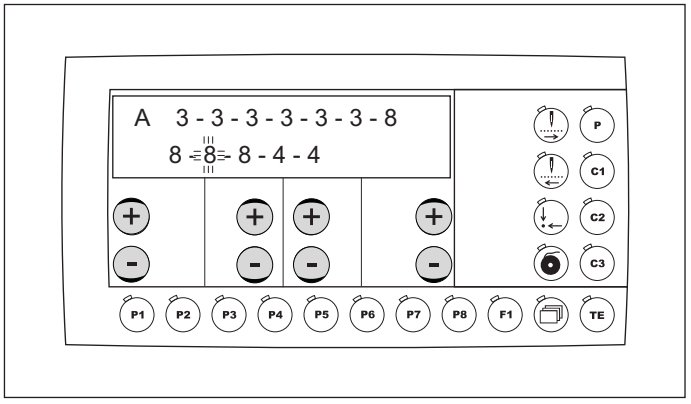
6−3. Sewing in the "Program stations" mode

Program stations can be selected, which have been reserved beforehand with a seam pattern with relevant speed and size factors, see Chapter 11.01 Reserving program stations.

6−4. Sewing in the "Sequences mode"

Sequences, which have been created beforehand, can be called up with the function keys C1 to C3.

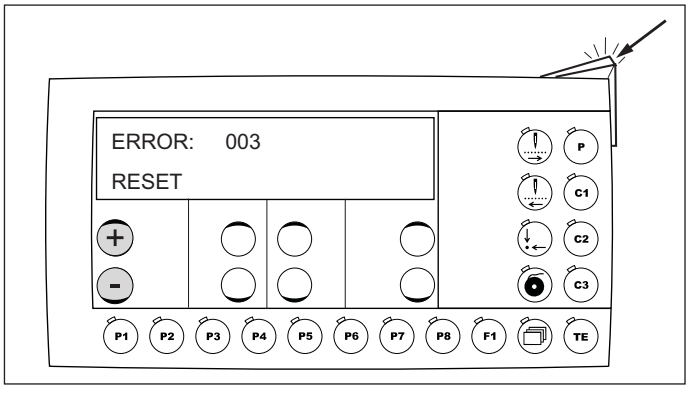
6−4−1. Interrupting a sequence



If an interruption occurs during a sequence cycle (e.g. Broken thread), it is possible to continue at the same sequence point after the error has been eliminated.
The procedure is as follows:

TE — The activated sequence point flashes.
Select the sequence A, B or C by pressing the left +/- key.
Press the corresponding +/- key to move to the sequence point to be repeated.
Conclude input by pressing the TE key.

6−5. Error messages



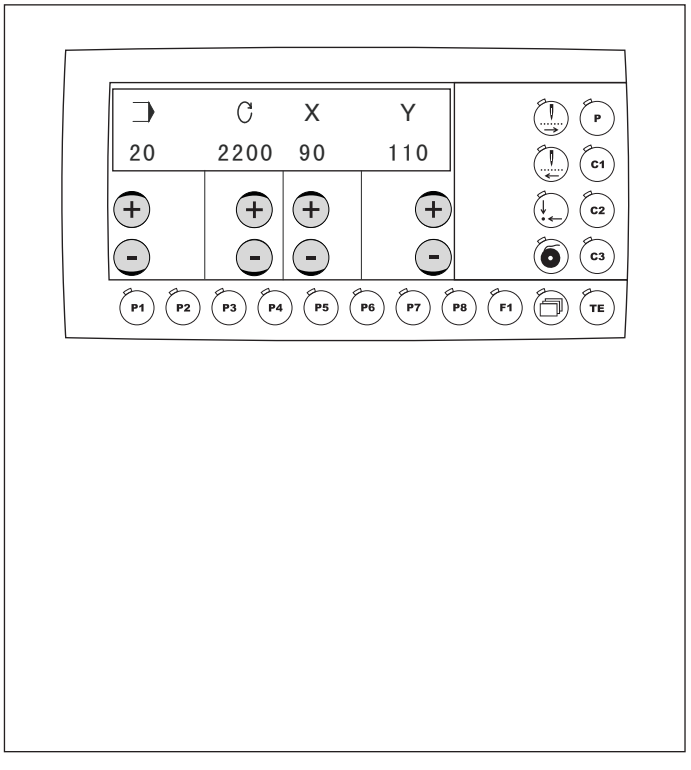
When an error occurs, the text "ERROR" appears on the display together with an error code and short instructions. In addition the diode in the memory card slot lights up red (see arrow).

Correct the error.
Acknowledge the correction of the error by pressing the corresponding +/- key or by switching the machine off and on.
The diode in the memory card slot (see arrow) turns yellow again.

7. Input

After the machine has been switched on, it is in the input mode. The LED in the "TE" key is illuminated. The input mode is used to reserve program stations, to enter sequences and to change machine parameters. In addition information and input possibilities for the service area are available in this mode.

7−1. Reserving program stations



P1 – P8 — The station keys P1 to P8 are used to enter and select seam programs. A complete seam program is configured from the following parameter:
- seam pattern
- speed
- size factor in X-direction
- size factor in Y-direction

TE — Call up the input mode by pressing the TE key (LED is illuminated).

P1 – P8 — Press a station key to call up the direct seam pattern selection function.

With the corresponding plus/minus key select the desired seam pattern, e.g. 20. The seam patterns are stored in the machine under program numbers.

Select the desired speed with the corresponding +/- key.

X — Enter the desired size factor (in %) (X-direction) with the corresponding +/- key.

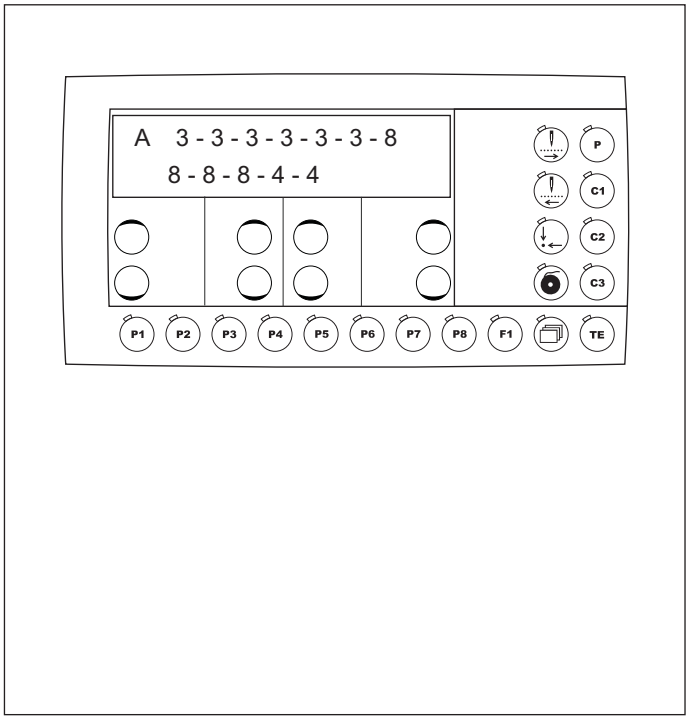
Y — Enter the desired size factor (in %) (Y-direction) with the corresponding +/- key.

Note: The enlargement of the seam pattern is limited by the size of the machine's sewing area.

TE — Conclude the input by pressing the TE key. (The machine changes to the sewing mode).

7−2. Sequences

7−2−1. Entering sequences



C1 – C3 The sequence program keys C1 to C3 are used to enter and select sequence programs. The sequence programs are put together from seam programs, which have been deposited under the station keys P1 to P8.
A sequence can consist of up to 3 segments (A, B + C). In each segment up to 14 entries can be made.

TE Call up the input mode by pressing the TE key (LED is illuminated).

C2 In the input mode, select the desired sequence program key, e.g. C2.

P3 Enter the desired seam programs in any order by using the station keys, e.g. P3 six times.

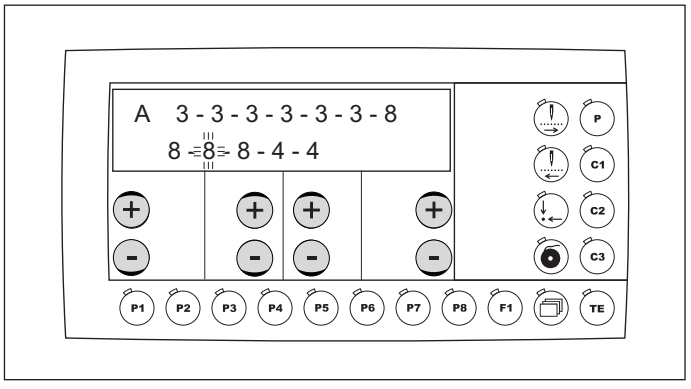
P8 P8 four times.

P4 P4 twice.

TE Press the TE key input twice (machine changes to the sewing mode).

The station keys for selection must have been reserved beforehand.
In the "Input" mode it is possible to scroll between the sequence zones A, B and C by pressing the Menu key.

7−2−2. Checking the sequence contents



C2 With the machine in its basic position, select the desired sequence, e.g. C2.
The activated sequence point flashes.
Press the corresponding +/- key to move to the sequence point to be checked (e.g. 8).

TE Press the TE key (LED is not illuminated).

The parameters, such as number of the seam pattern, speed and size factors of the flashing sequence entry are shown if the Menu key is pressed.

Quit the check mode by pressing the Menu key twice.

7−2−3. Deleting sequences

TE Call up the Input mode by pressing the TE key (LED is illuminated).

C1 – C3 Call up the sequence to be changed by pressing the C1, C2 or C3 keys.

Deleting individual entries
Press a +/- key to set the cursor beneath the entry to be deleted and delete the entry by pressing the reverse tacting key twice.

P1 – P8 Inserting individual entries
Press a +/- key to set the cursor beneath the position for the insertion.Insert the desired entry by pressing the corresponding station key.

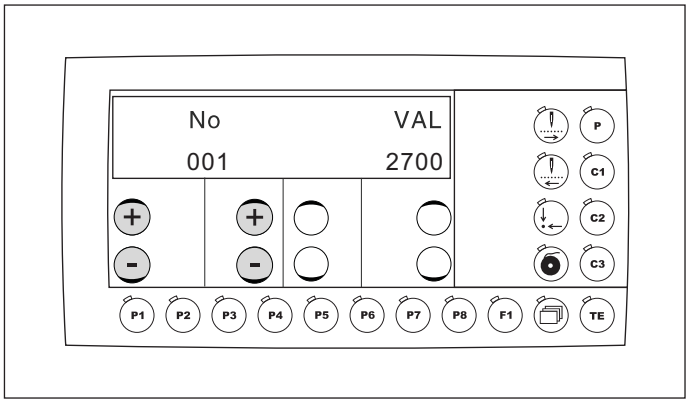
Deleting a complete sequence
Press a +/- key to set the cursor at the beginning of the sequence. Press the reverse tacting key as often as necessary to delete all entries on the display.

TE Press the TE input key twice (machine changes to the sewing mode).

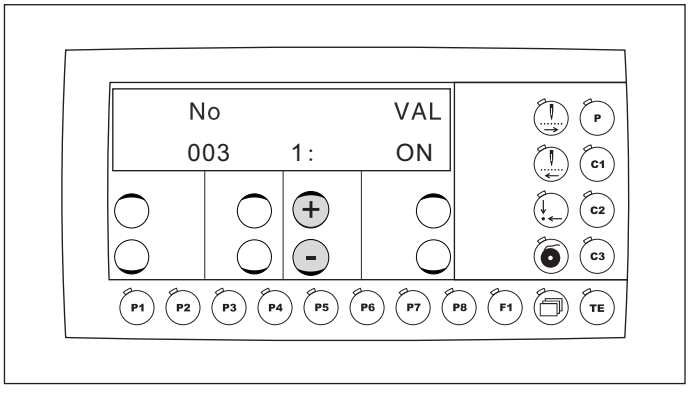
7−2−4.Combining sequences

Several sequences can be combined to one seam program. To carry out the adjustment,enter the corresponding value for parameter 005 (see Chapter 11.07 List of parameters).

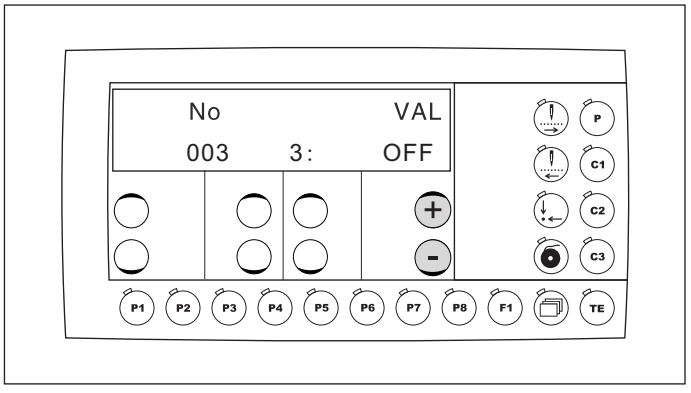
7−3. Parameter input



After the machine has been switched on, it is in the input mode.



With the corresponding +/- key select the desired parameter, e.g.003 lock seam patterns.



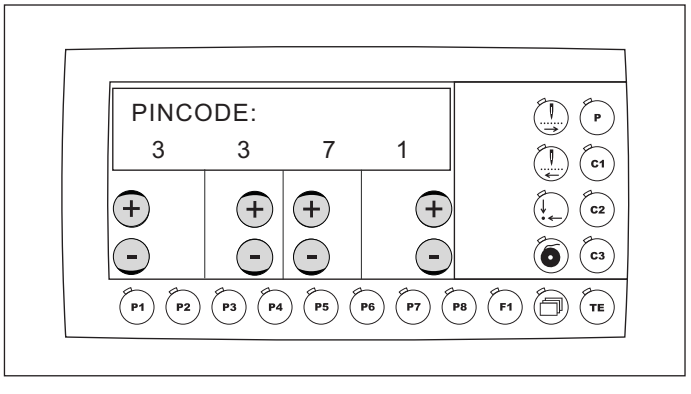
With the corresponding +/- key select the desired seam pattern.
With the corresponding +/- key lock the desired seam pattern.

TE Conclude the input by pressing the TE key. (The machine changes to the sewing mode).

7−4. Access codes

The selection of seam patterns, the reservation of the program stations, the input of sequences and the selection of individual parameter levels can be locked with a 4-figure access code. The access code can be changed as desired.
The factory set access code is "3371".

7−4−1. Entering the access code



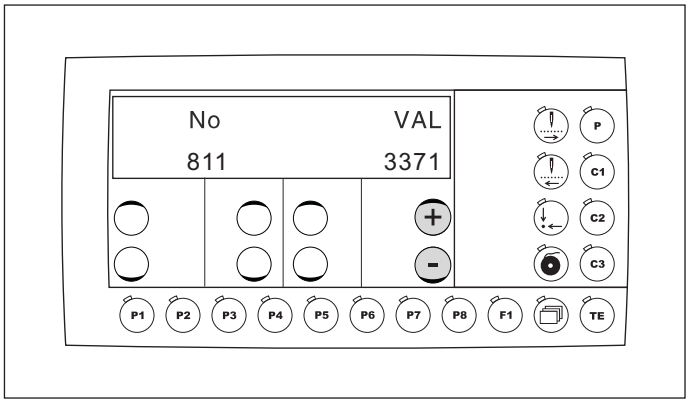
If, in the input mode, a function is selected, which has an access code, the demand for entering the access code appears on the display.

Enter the access code with the corresponding +/- keys.

TE Conclude the input by pressing the TE key (machine changes to the sewing mode).

⚠	Once the access code has been entered, all functions with access protection are freely accessible, until the machine is switched off.

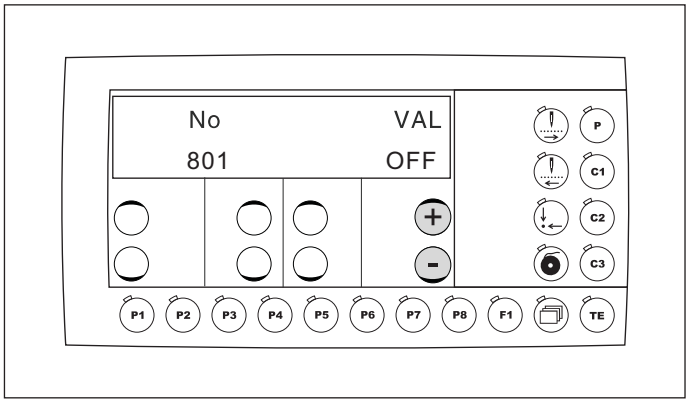
7−4−2. Changing the access code



In the input mode, select parameter "811"
Enter the access code, see the Chapter of Entering the access code.
Change the access code with the corresponding +/- keys.

TE Conclude the input by pressing the TE key (machine changes to the sewing mode).

7−4−3. Granting access rights



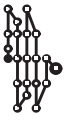
In the input mode select the corresponding parameter ("801" to "806").
If required, enter the access code.
With the corresponding +/- key approve (on) or lock (OFF) access.

TE Conclude the input by pressing the TE key (machine changes to the sewing mode).

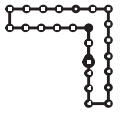
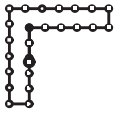
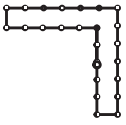
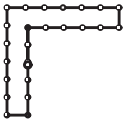
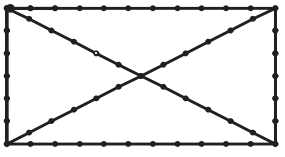
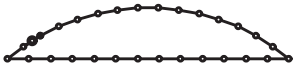
7−5. Summary of the seam patterns

No.	Seam pattern	Size of sewing area [mm]	No. of stitches
P1		16.0 x 2.0	42
P2		10.0 x 2.0	39
P3		16.0 x 2.5	42
P4		24.0 x 3.0	42
P5		10.0 x 2.0	27
P6		16.0 x 2.5	30
P7		10.0 x 2.0	35
P8		16.0 x 2.5	38
P9		24.0 x 3.0	53
P10		24.0 x 3.0	61
P11		6.0 x 2.5	20
P12		6.0 x 2.5	25
P13		6.0 x 2.5	34
P14		8.0 x 2.0	15
P15		8.0 x 2.0	22
P16		8.0 x 2.0	29
P17		10.0 x 0.0	21
P18		10.0 x 0.0	28

7−5. Summary of the seam patterns

No.	Seam pattern	Size of sewing area [mm]	No. of stitches
P19		25.0 x 2.0	28
P20		25.0 x 2.0	36
P21		25.0 x 2.0	41
P22		25.0 x 2.0	44
P23		4.0 x 20.0	27
P24		4.0 x 20.0	35
P25		4.0 x 20.0	41
P26		4.0 x 20.0	56
P27		0.0 x 20.0	18
P28		0.0 x 10.0	21
P29		0.0 x 20.0	21

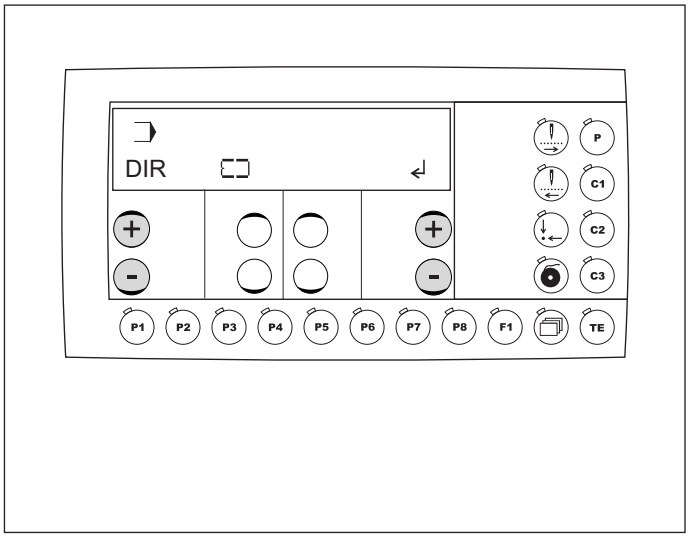
7−5. Summary of the seam patterns

No.	Seam pattern	Size of sewing area [mm]	No. of stitches
P30		0.0 x 20.0	28
P31		10.0 x 10.0	28
P32		10.0 x 10.0	28
P33		15.0 x 15.0	28
P34		15.0 x 15.0	28
P35		14.0 x 2.0	21
P36		36.0 x 19.0	74
P37		6.5 x 9.0	34
P38		6.5 x 9.0	34
P39		11.0 x 11.0	72
P40		31.7 x 6.0	32

7−6. Program Management

In the program management the programs filed in the machine memory or on connected SD-memory cards are displayed and can be deleted or copied. Commercially available SD-memory cards with a storage capacity of max. 512 MB can be inserted in the control panel. The data is stored in machine-relevant sub-directories.
The programs 50 – 99 are stored in the files 50 – 99 and the machine data in the file MD.
Should the SD-memory cards need to be formatted by the PC, they must be formatted in the format "FAT16".
Alternatively the SD-memory cards can also be formatted on the corresponding machine with the formatting function.

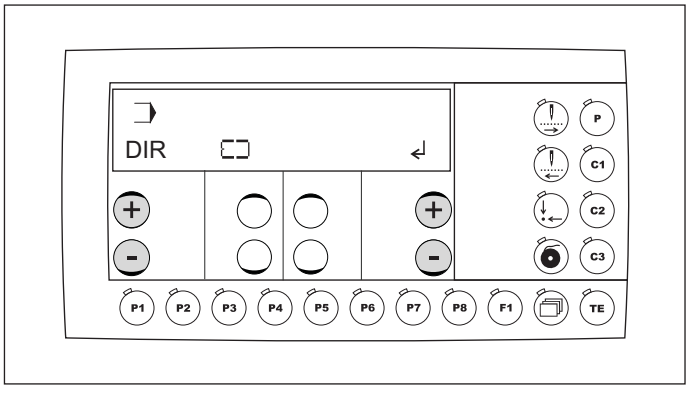
7−6−1.Calling up the program management



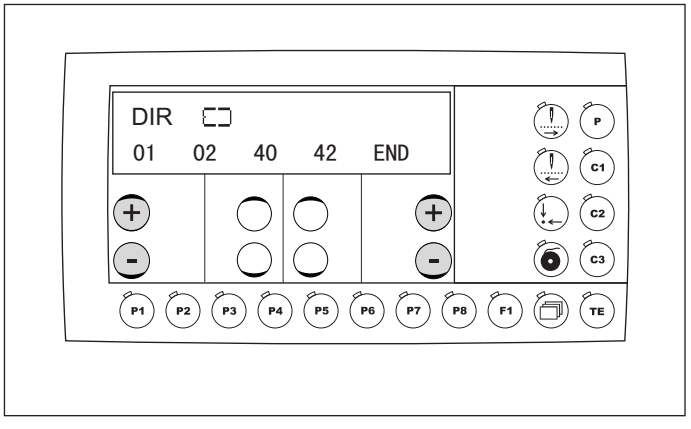
·Switch on the machine.
·Call up the program management
After the program management has been called up, the first menu item appears (display of data in the machine memory). Confirm the selection of the menu item with the "Enter" function by pressing the right plus key. In this example the contents of the machine memory are then displayed.
It is possible to scroll through the other menu points by pressing the left +/- key (see following chapters).

The following menu items are available in the program management:
·Display data in the machine memory
·Display data on the connected SD-memory card
·Copy data to the SD-memory card
·Copy data to the machine memory (from the SD-memory card)
·Delete data in the machine memory
·Delete data on SD-memory card
·Format SD-memory card

7−6−2.Display of the data in the machine memory

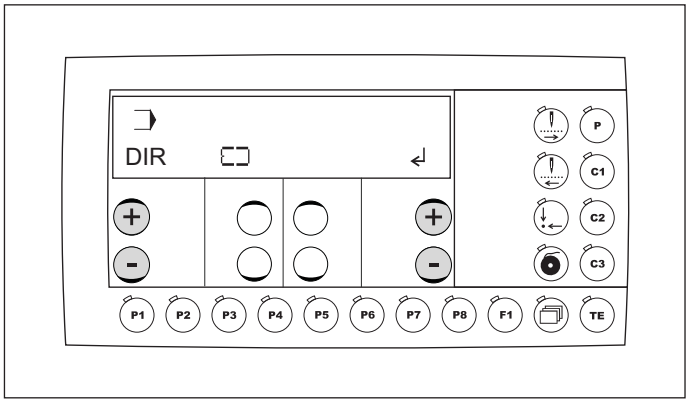


Call up the program management.
Press the left +/- keys until the corresponding menu item appears.
Confirm the selection of the menu item with the "Enter" function by pressing the right plus key.

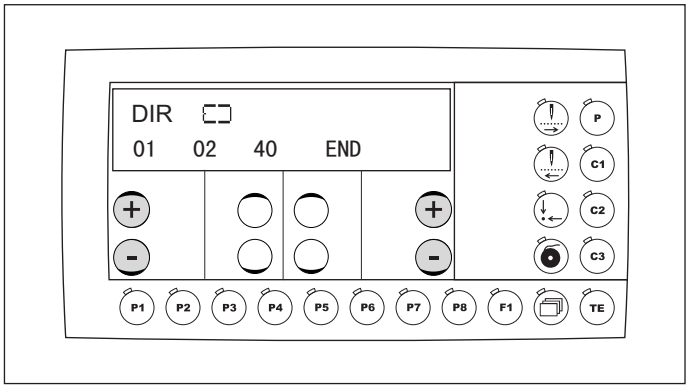


By pressing the right +/- keys it is possible to scroll through the display of the machine memory.
When the left +/- keys are pressed, the other menu items of the program management are called up.

7−6−3. Display of the data on the SD-memory card

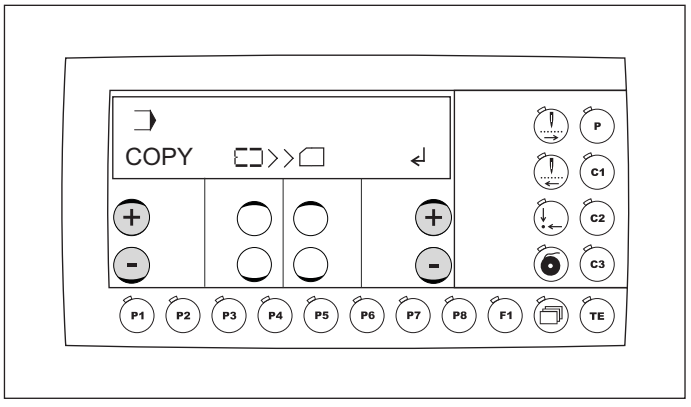


Call up the program management.
Press the left +/- keys until the corresponding menu item appears.
Confirm the selection of the menu item with the "Enter" function by pressing the right plus key.

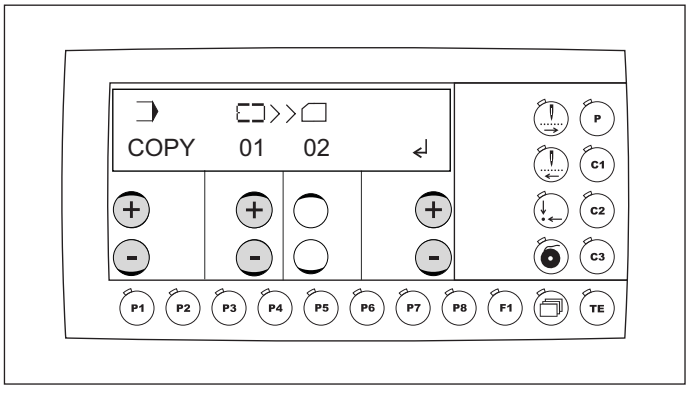


By pressing the right +/- keys it is possible to scroll through the display of the SD-memory card.
When the left +/- keys are pressed, the other menu items of the program management are called up.

7−6−4. Copying data onto the SD-memory card



Call up the program management.
Press the left +/- keys until the corresponding menu item appears.
Confirm the selection of the menu item with the "Enter" function by pressing the right plus key.



Press the corresponding +/- keys to select the data to be copied from the
machine memory onto the SD-memory card:

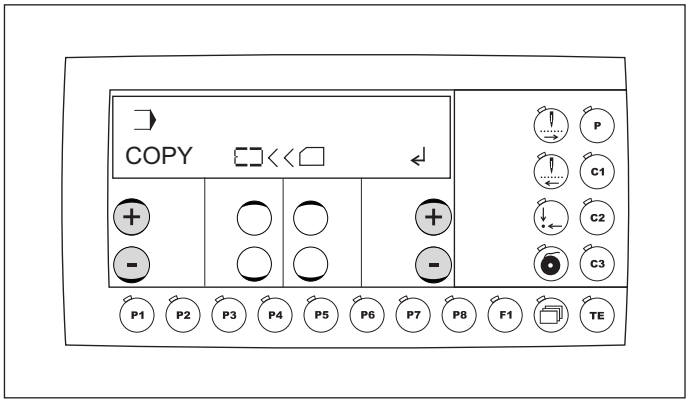
MD = machine parameters
50 - 99 = programs
ALL = all programs

The copying process is started with the "Enter" function by pressing the right plus key.

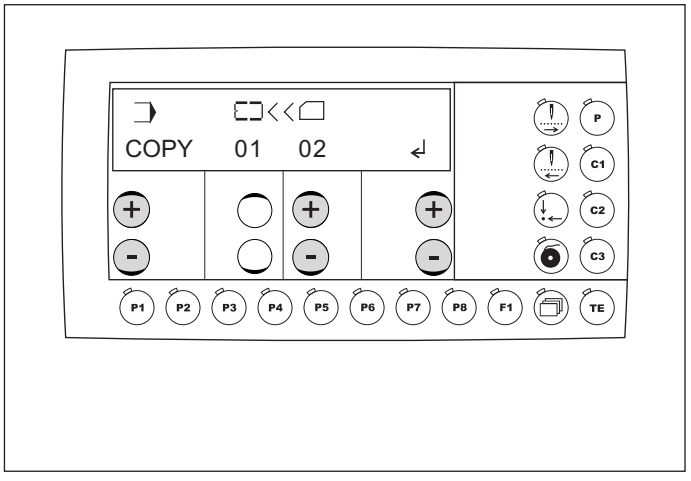
⚠	If the data for copying already exists, a safety enquiry appears before overwriting the data. Press the right plus key to confirm the copying process. The copying process can be stopped by pressing the right minus key.

When the left +/- keys are pressed, the other menu items of the program management are called up.

7−6−5. Copying data into the machine memory



Call up the program management.
Press the left +/- keys until the corresponding menu item appears.
Confirm the selection of the menu item with the "Enter" function by pressing the right plus key.



Press the corresponding +/- keys to select the data to be copied from the SD-memory card into the machine memory:

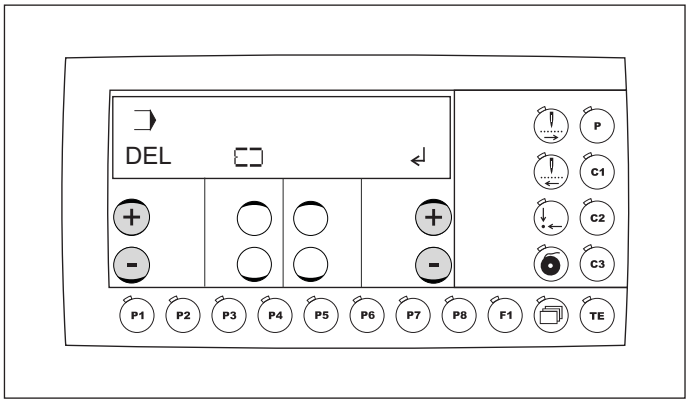
MD = machine parameters
50 - 99 = programs
ALL = all programs

The copying process is started with the "Enter" function by pressing the right plus key.

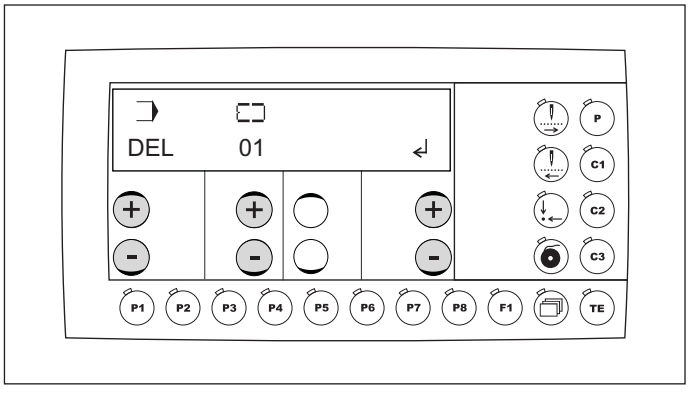
⚠	If the data for copying already exists, a safety enquiry appears before overwriting the data. Press the right plus key to confirm the copying process. The copying process can be stopped by pressing the right minus key.

When the left +/- keys are pressed, the other menu items of the program management are called up.

7−6−6. Deleting data in the machine memory



Call up the program management.
Press the left +/- keys until the corresponding menu item appears.
Confirm the selection of the menu item with the "Enter" function by pressing the right plus key.



Press the corresponding +/- keys to select the data to be deleted from the machine memory:

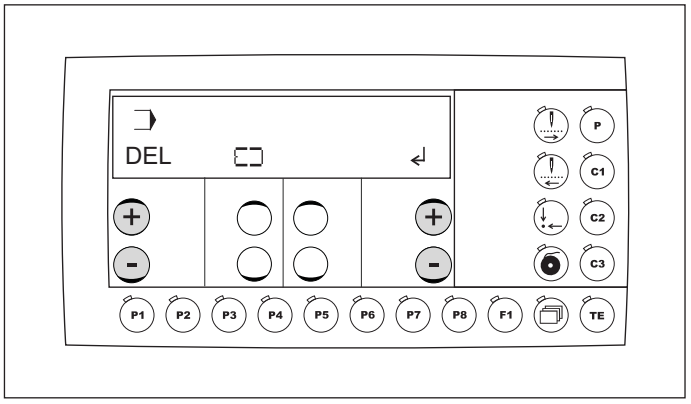
50 - 99 = programs
ALL = all programs
Machine data cannot be deleted

The deleting process is started with the "Enter" function by pressing the right plus key.

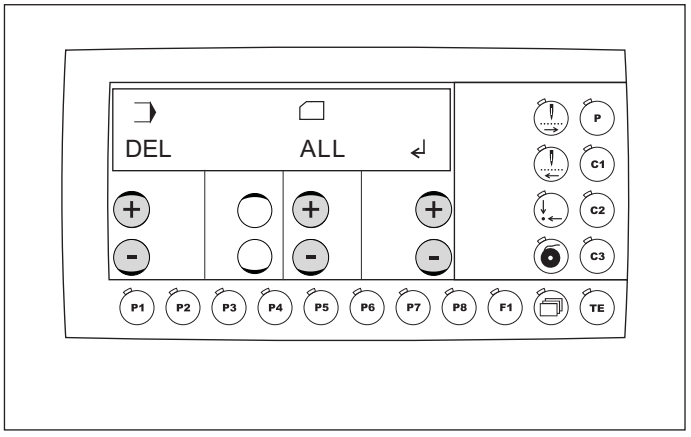
⚠	Before the data is deleted, a safety enquiry ensues. Press the right plus key to confirm the deleting process. The deleting process can be stopped by pressing the right minus key.

When the left +/- keys are pressed, the other menu items of the program management are called up.

7−6−7. Deleting data from the SD-memory card



Call up the program management.
Press the left +/- keys until the corresponding menu item appears.
Confirm the selection of the menu item with the "Enter" function by pressing the right plus key.



Press the corresponding +/- keys to select the data to be deleted from the SD-memory card:

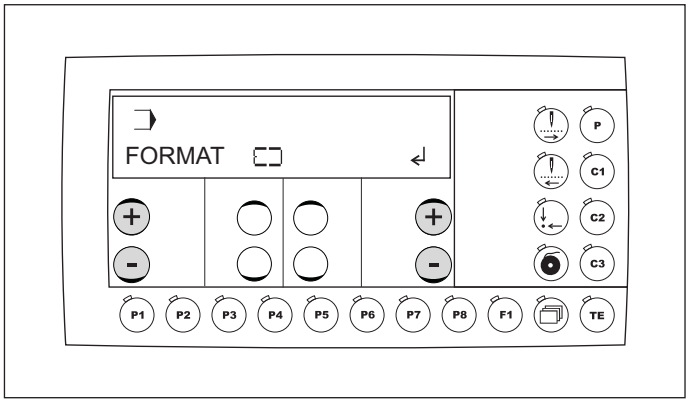
MD = machine parameters
50 - 99 = programs
ALL = all programs

The deleting process is started with the "Enter" function by pressing the right plus key.

⚠	Before the data is deleted, a safety enquiry ensues. Press the right plus key to confirm the deleting process. The deleting process can be stopped by pressing the right minus key.

When the left +/- keys are pressed, the other menu items of the program management are called up.

7−6−8. Formatting the SD-memory card



Call up the program management.
Press the left +/- keys until the corresponding menu item appears.
The formatting process is started with the "Enter" function by pressing the right plus key.

⚠	Before formatting begins, a safety enquiry ensues. Press the right plus key to confirm the formatting process.The formatting process can be stopped by pressing the right minus key.

When the left +/- keys are pressed, the other menu items of the program management are called up.

7−7. List of parameters

Group	Parameter	Description	Setting range	Set value
000	001	**Maximum speed** This parameter is used to fix the max.sewing speed (upper limit).	500 - 2700	2700
	002	**Sewing speed for start stitches** With this parameter the speeds for the 5 start stitches are fixed. Speed (spm) for start stitch no.1 Speed (spm) for start stitch no.2 Speed (spm) for start stitch no.3 Speed (spm) for start stitch no.4 Speed (spm) for start stitch no.5	 500 - 2700 500 - 2700 500 - 2700 500 - 2700 500 - 2700	 500 900 2700 2700 2700
	003	**Locking/releasing seam patterns** This parameter is used to release (ON) or lock (OFF) the individual seam patterns (0 to 99) to be carried out in the sewing mode.	ON - OFF	ON
	004	**Switch bobbin thread counter on/off** **Standard value (pieces per bobbin)** In the sewing mode, the bobbin thread counter counts the pieces sewn backwards from the standard value. If the bobbin thread counter is switched on, in the sewing mode a signal is given when the value 0 is reached.	ON - OFF 1 - 9999	OFF 11
	005	**Sequence combination** This parameter is used to combine several sequences with each other. 0 = no combination 1 = C1 with C2 2 = C2 with C3 3 = C1 with C3 4 = C1 with C2 and C3	0 - 4	0
	006	**Reversing after thread trimming** **Reverse position [°]** With this parameter it is possible to switch the automatic reversing function after thread trimming on or off. If the reversing function is switched on, the reverse position can be set by turning the balance wheel. The access code is necessary for this adjustment.	ON - OFF 0 - 14	ON 11
	007	**Starting point = scale reference point** With this parameter it is possible to choose whether the scale reference point is the starting point (ON) or the zero point (OFF).	ON - OFF	OFF
	008	**Speed for the "winding" function** This parameter is used to fix the speed for the winding operation.	200 - 2700	1500
	009	**Via zero point to starting point after end of sequence** With this parameter it is possible to choose that, after the end of the sequence, the X-, Y-drive moves to the seam starting point via the reference initiators.	ON - OFF	OFF
	010	**Via zero point to starting point after number of program cycles Number of program cycles** With this parameter it is possible to choose that, after a certain number of program cycles, the X-, Y-drive moves to the seam starting point via the reference initiators.	ON - OFF 1 - 100	OFF

Group	Parameter	Description	Setting range	Set value
000	011	**Pedal mode** Switchover between level mode (0) and flip flop mode (1).	0 - 1	0
	012	Needle or balance wheel position in degrees	0 - 360	11
	013	**NIS "needle in material" [°]** This parameter is used to set the NIS signal. If the function is executed, the position can be entered by turning the balance wheel. If the position is altered, the result is a change in the point of time when the carriage is moved. The access code is necessary for this adjustment.	65 - 166	107
	014	**Thread trimming speed [min-1]** This parameter is used to fix the speed for thread trimming.	100 - 700	300
	015	**Reduced current for stepping motors** The reduction function of the holding current at rest with closed work clamp is switched on or off.	ON - OFF	ON
	016	**Key tone** The key tone, as reaction to a key on the control panel being pressed, is switched on or off. The double tone for incorrect inputs always remains switched on.	ON - OFF	ON
	017	**Clamp solenoid Operating time [10 ms]** The time, for which the solenoid is under full current, is entered.	5 - 100	10
	018	**Clamp solenoid duty-cycle [%]** At the end of the clamp solenoid operating time (Parameter "017") the solenoid is clocked. The relationship between duration of operation and nonoperation is entered here.	5 - 100	20
	019	**Thread trimming solenoid operating time [10 ms]** The time, for which the solenoid is under full current, is entered.	5 - 100	25
	020	**Thread trimming solenoid duty-cycle** At present without a function	5 - 100	100
	021	**Thread take-up lever t.d.c. [°]** The position for the t.d.c. thread takeup lever is entered here. If the function is executed, the position can be set by turning the balance wheel. The access code is necessary for this adjustment.	45 - 53	51
	022	**Thread trimming position (in relation to t.d.c. needle) [°]** The position, at which the thread trimming solenoid is switched on, is entered here. The adjustment is set by turning the balance wheel. The access code is necessary for this adjustment.	180 - 253	180
	023	**Sewing area size X [1/10 mm]** To avoid mechanical collisions, the sewing area size of the clamp in use is entered. The control unit checks the path and, if necessary, issues an error message.	±200	-100/+100

Group	Parameter	Description	Setting range	Set value
000	024	**Sewing area size Y [1/10 mm]** To avoid mechanical collisions, the sewing area size of the clamp in use is entered. The control unit checks the path and, if necessary, issues an error message.	±100	-15/+15
	025	**Thread wiper solenoid operating time [10 ms]**		
	026	**Thread wiper solenoid**, ratio on-time to off-time in % (Duty-Cycle)		
	027	Basic position / loading point = zero point	ON - OFF	OFF
100	101	**Software version main processor** The software version of the main processor is displayed 0335/xxx 102 Software version sewing		0335/xxx
	102	**Software version sewing drive unit** The software version of the sewing drive module is displayed.		V.xx
	103	**Software version control panel** The soft and hardware version of the control panel are displayed.		V.xxx/H.xxx
600	601	**Display inputs** With this function the digital inputs can be checked. "IN" shows the input numbers (1 - 16). Under "VAL" the respective switch status is displayed. IN VAL 1 IN1, programmable input 1 2 IN2, programmable input 2 3 E3, work clamp raised 4 5 6 7 8 9 10 11 12 13 14 15 16		

Group	Parameter	Description	Setting range	Set value
600	602	**Display special inputs** With this function it is possible to check the special inputs pedal, reference X (SM1) and reference Y (SM2). "IN" shows the inputs (PED, REFX, REFY). Under "VAL" the respective switch status is displayed. IN VAL PED Pedal (speed control unit-1; 0; +1; 2) REFX Reference input X REFY Reference input Y		
	603	**Connect outputs** With this function the outlets can be connected. "OUT" shows the outlet selected (1-16). Under "VAL" the selected output is set (S) with the plus/minus key (+), and reset (R) with the plus/minus key. Interlocks are checked. Non-assigned outlets are not connected. OUT VAL 1 S/R Solenoid for work clamp open 2 S/R 3 S/R Solenoid for thread trimming 4 S/R 5 S/R 6 S/R Program outlet 7 S/R Program outlet 8 S/R 9 S/R 10 S/R 11 S/R 12 S/R 13 S/R 14 S/R 15 S/R 16 S/R		
	604	**Move stepping motors** The stepping motors SM1 (X-axis) and SM2 (Y-axis) are moved individually with the respective plus/minus keys. Interlocks are not checked.		
	605	**Turn sewing motor** The sewing motor can be operated with a selectable set speed by pressing the pedal. After the sewing motor has been started, the current speed is also displayed.	500-2700	500
	606	**Thread trimming sequence** The sequence for a complete thread trimming cycle is started with the +/- key (+) below CUT and below THR.		
	607	**Cold start (RESET)** With this function the control unit carries out a cold start (RESET) with which the data is reset. After this function has been selected, the machine must be switched off and then on again.		
	608	**Setting zero points** With this function and the adjustment gauge, the zero points for the X/Y-drive unit can be set. (stepping motor correction values for the reference points REFX, REFY). The access code is required for this adjustment.		

Group	Parameter	Description	Setting range	Set value
600	609	**Setting the clamp centre X** This function is used to set the centre of the clamp in X-direction. When entering the function, the machine moves to the current clamp centre, after which it is possible to move to the right or left edge of the clamp, depending on the set limits (param."023"). A correction can be made with the plus/minus keys. The relocation value is displayed.		
	610	**Setting the clamp centre Y** This function is used to help set the centre of the clamp in Y-direction. After entering this function, the machine moves to the current clamp centre, after pressing a key to the front or the rear limit (param. “024"). The clamp must be shifted manually.		
	611	**Automatic clamp opening off** With this function the automatic opening of the clamp after thread trimming can be switched off. After the machine has been switched off, the automatic clamp opening function is always activated.	ON - OFF	OFF
	612	Test function continuous start	ON - OFF	OFF
800		**The function groups and the functions** Programming the Function Keys P, P1-P8 and C1-C3 can be released for manipulation (ON) or locked (OFF). If a function group is suppressed, its parameters cannot be changed until a valid access code has been entered. Once a valid access code has been entered, the suppression is cancelled until the machine is switched off.		
	801	Right of access function group 000	ON - OFF	ON
	802	Right of access function group 100	ON - OFF	ON
	807	Right of access function group 600	ON - OFF	OFF
	808	Right of access function group 700	ON - OFF	OFF
	809	Right of access function group 800	ON - OFF	OFF
	810	Right of access to keys "P", "P1" - "P8" and "C1" - "C3"	ON - OFF	ON
	811	**Access code** This parameter is used to alter the access code. Upon delivery the machine is set with the access code "3371".		3371

7−8. Error messages on the display

Following error messages are shown on the control panel display

ERROR: 1	Processor error STACK_OVERFLOW
ERROR: 2	Processor error STACK_UNDERFLOW
ERROR: 3	Processor error UNDEF_OPCODE
ERROR: 4	Processor error PROTECTION_FAULT
ERROR: 5	Processor error ILLEGAL_WORD_OPERAND
ERROR: 6	Processor error ILLEGAL_INSTRUCTION
ERROR: 7	Processor error ILLEGAL_BUS_ACCESS
ERROR: 8	Processor error NMI
ERROR: 10	OTE (Sewing head recognition unit) not attached
ERROR: 11	OTE not programmed (new)
ERROR: 12	OTE check sum error
ERROR: 13	OTE header invalid
ERROR: 14	OTE user data invalid
ERROR: 30(#)	(OTE error see cap. 11.10)
ERROR: 31(#)	(Error Sewing motor see cap. 11.09)
ERROR: 50	Incorrect control panel
ERROR: 51	Incorrect machine class in OTE
ERROR: 52	Incorrect software for main drive
ERROR: 101	Mains voltage
ERROR: 102	Power supply overload
ERROR: 103	24 V too low
ERROR: 201(#)	(Error Sewing motor see cap. 11.09)
ERROR: 202	Pattern too large
ERROR: 203	Overload data transfer sewing motor
ERROR: 204	Tacting function locked
ERROR: 205	Run function locked
ERROR: 206	No NIS
ERROR: 207	Not end of ramp
ERROR: 208	Zero point not found
ERROR: 209	Sewing function locked
ERROR: 210	Bobbin thread fault
ERROR: 211	Stitch too large
ERROR: 301	Raise clamp not completed
ERROR: 302	Lower clamp not completed
ERROR: 303	Raise clamp locked (needle position)
ERROR: 304	Lower clamp locked (needle position)
ERROR: 305	Thread wiper on locked (needle position)
ERROR: 401	Error sewing motor
ERROR: 402	Overload data transfer sewing motor
ERROR: 403	Program station not programmed
ERROR: 404	Program locked
ERROR: 405	Program does not exist
ERROR: 406	No NIS
ERROR: 407	Zero points invalid
ERROR: 408	Machine not in basic position
ERROR: 409	Zero point not found
ERROR: 416	Error in SD-memory card reader 1: No SD-memory card inserted 2: Wrong SD-memory card (does not match the machine) 3: SD-memory card not inserted correctly 4: SD-memory card with write protection 5: Data error on SD-memory card 6: Formatting failed 7: File does not match machine 8: Incorrect file size 9: Transfer error 10: Data cannot be deleted 11: Sewing head recognition unit not connected
ERROR: 417	No penetration point found for winding
ERROR: 418	1st penetration point for winding is located outside the sewing area
ERROR: 419	Incorrect number of sewing-on stitches
ERROR: 420	Incorrect number of attaching stitches

7−9. Sewing motor errors

1 Time out
9 Position not reached
34 Brake path too short
35 Communication error
36 Initialisation (Init.) not completed
65 Extint low at Init
66 Short circuit
68 Extint low in operation
69 No increments
70 Motor blocking
71 No incremental connector
73 Motor running interrupted
75 Controller locked
170 Invalid transmission
171 Zero mark invalid
175 Start error
222 Time-out monitoring

7−10. OTE-errors

1 Read error
2 Write error
3 Full EEPROM
4 No EEPROM
5 Invalid size
6 Invalid address
7 Address overflow
8 Checksum falled
9 Serialnr. changed
7 Adressen-Überlauf
8 Checksummen-Fehler
9 Falsche Seriennummer

8.Care and maintenance

8−1.Maintenance intervals

Clean the entire machine ..... once a week
Clean the hook compartment ..... once a day, more often when in continuous operation
Oiling the needle head parts ..... as required
Oiling the hook ..... as required
Oiling the bearing points in the arm ..... once a month

⚠	During all cleaning work the machine must be disconnected from the power supply by switching off the main switch or pulling out the plug!Danger of injury if the machine is started accidentally!

8−2. Cleaning the machine

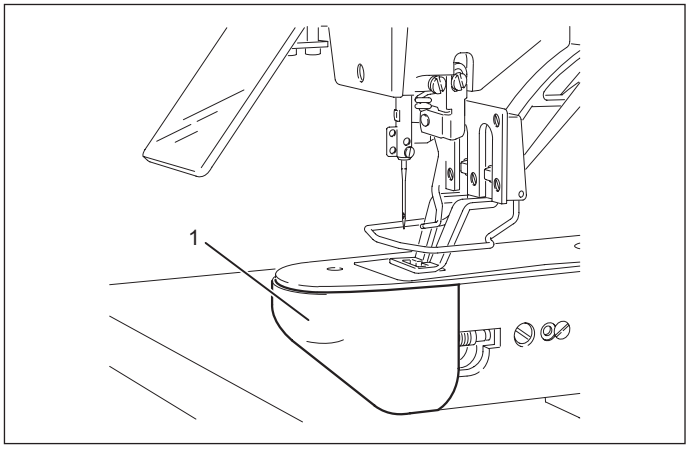
The cleaning cycle required for the machine depends on following factors:
- Single or several shift operation
- Amount of dust resulting from the workpiece

It is therefore only possible to stipulate the best possible cleaning instructions for each individual case.

⚠	For all cleaning work the machine must be disconnected from the mains by switching off the on/off switch or by removing the mains plug! Danger of injury if the machine suddenly starts up.

To avoid breakdowns, the following cleaning work is recommended for single shift operation:
- Clean hook compartment and needle area of sewing head several times daily.
- Clean the entire machine at least once a week.

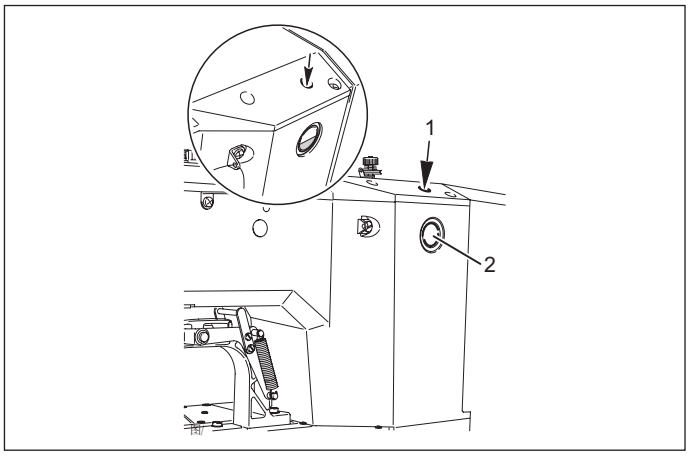
8−3. Cleaning the hook compartment



⚠	Switch off the machine! Danger of injury if the machine is started accidentally!

Open the hook compartment cover 1.
Clean the hook and the hook compartment daily, more often if in continuous operation.

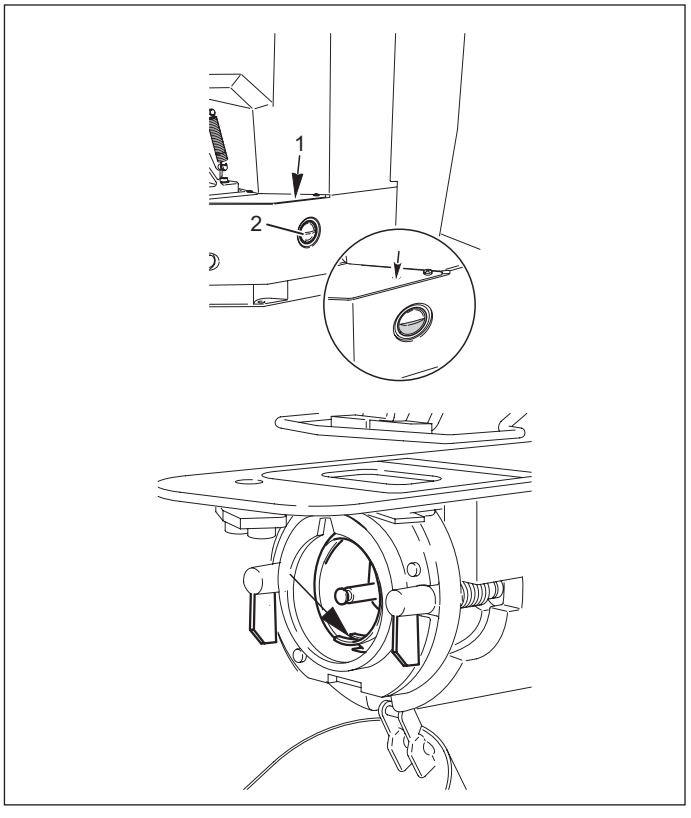
8–4. Oiling the needle head parts



When required, pour oil through hole 1 up to the upper marking in inspection glass 2.

⚠	Only use oil with a mean viscosity of 10.0 mm2/s at 40°C and a density of 0.847 g/cm3 at 15°C.

8–5. Oiling the hook

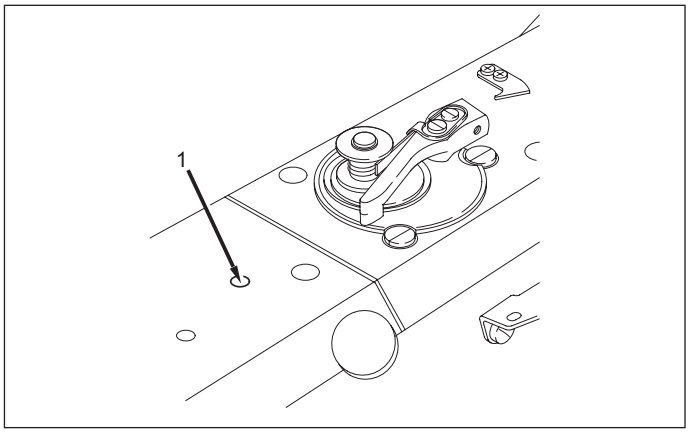


⚠	Switch off the machine! Danger of injury if the machine is started accidentally!

When required, pour oil through hole 1 up to the upper marking in inspection glass 2.
Before commissioning the machine, and after long downtimes, also add a few drops of oil to the hook race, see arrow in the Fig.

⚠	Only use oil with a mean viscosity of 10.0 mm2/s at 40°C and a density of 0.847 g/cm3 at 15°C.

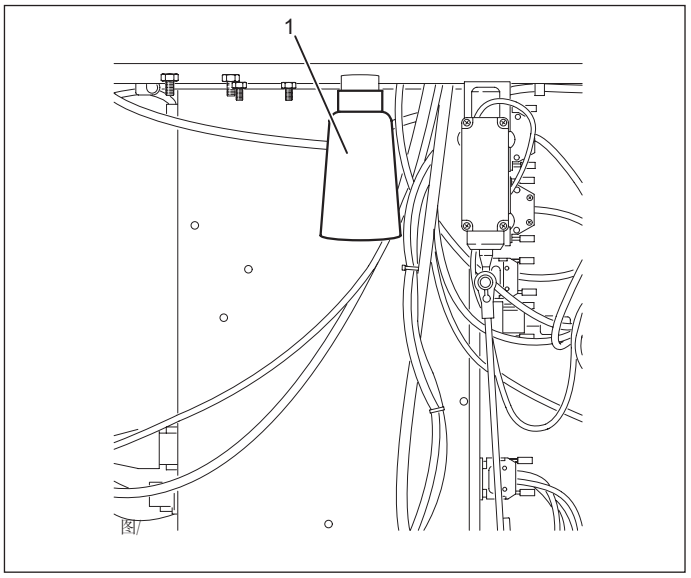
8–6. Oiling the bearing points in the arm



Once a month pour a few drops of oil into hole 1.

⚠	Only use oil with a mean viscosity of 10.0 mm2/s at 40°C and a density of 0.847 g/cm3 at 15°C.

8−7. Oil disposal



When required, unscrew oil collector 1 and dispose of the oil in accordance with the valid local environmental regulations.

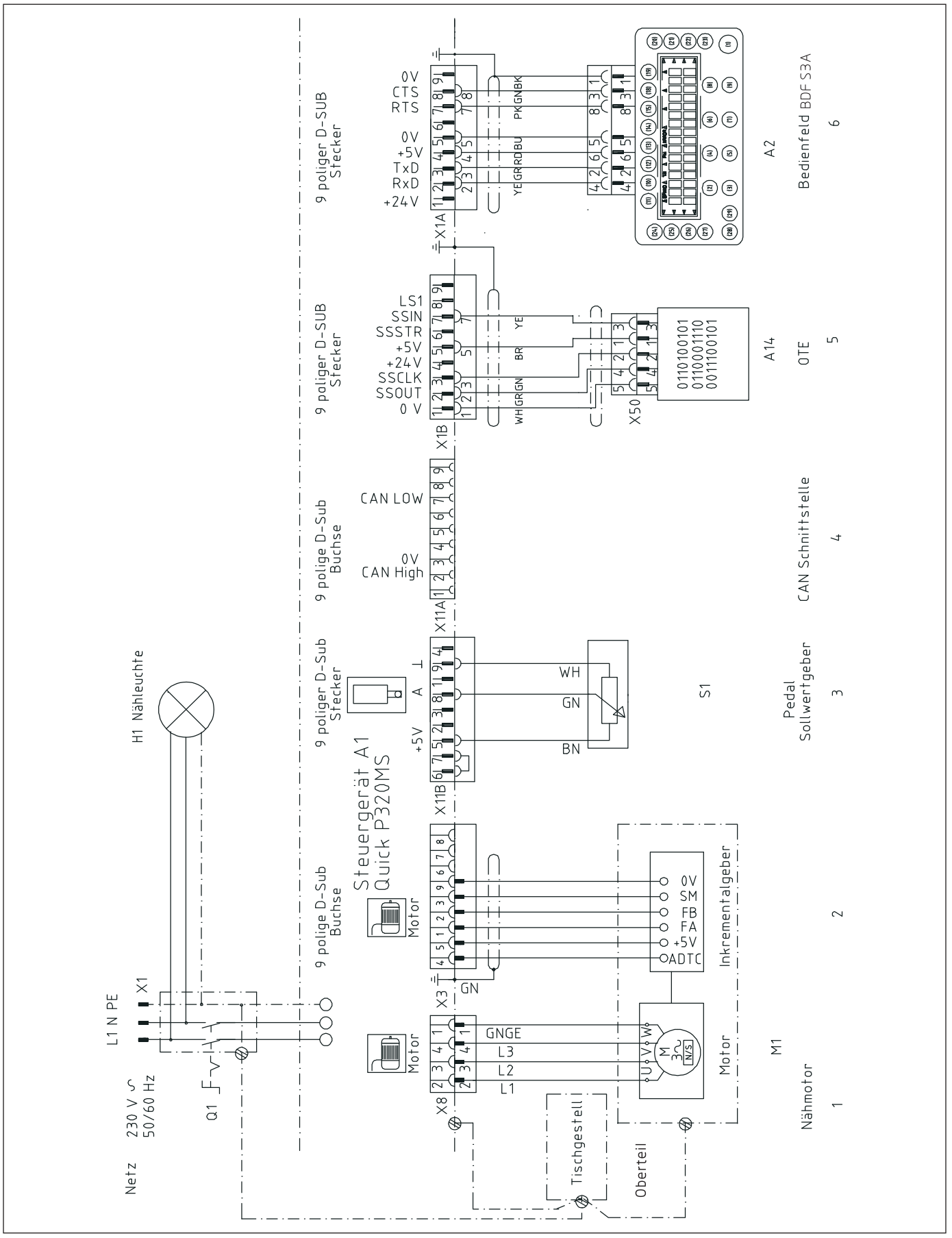
⚠	The oil must not get into the sewer system! Danger of damage to the environment!

9. Circuit diagrams

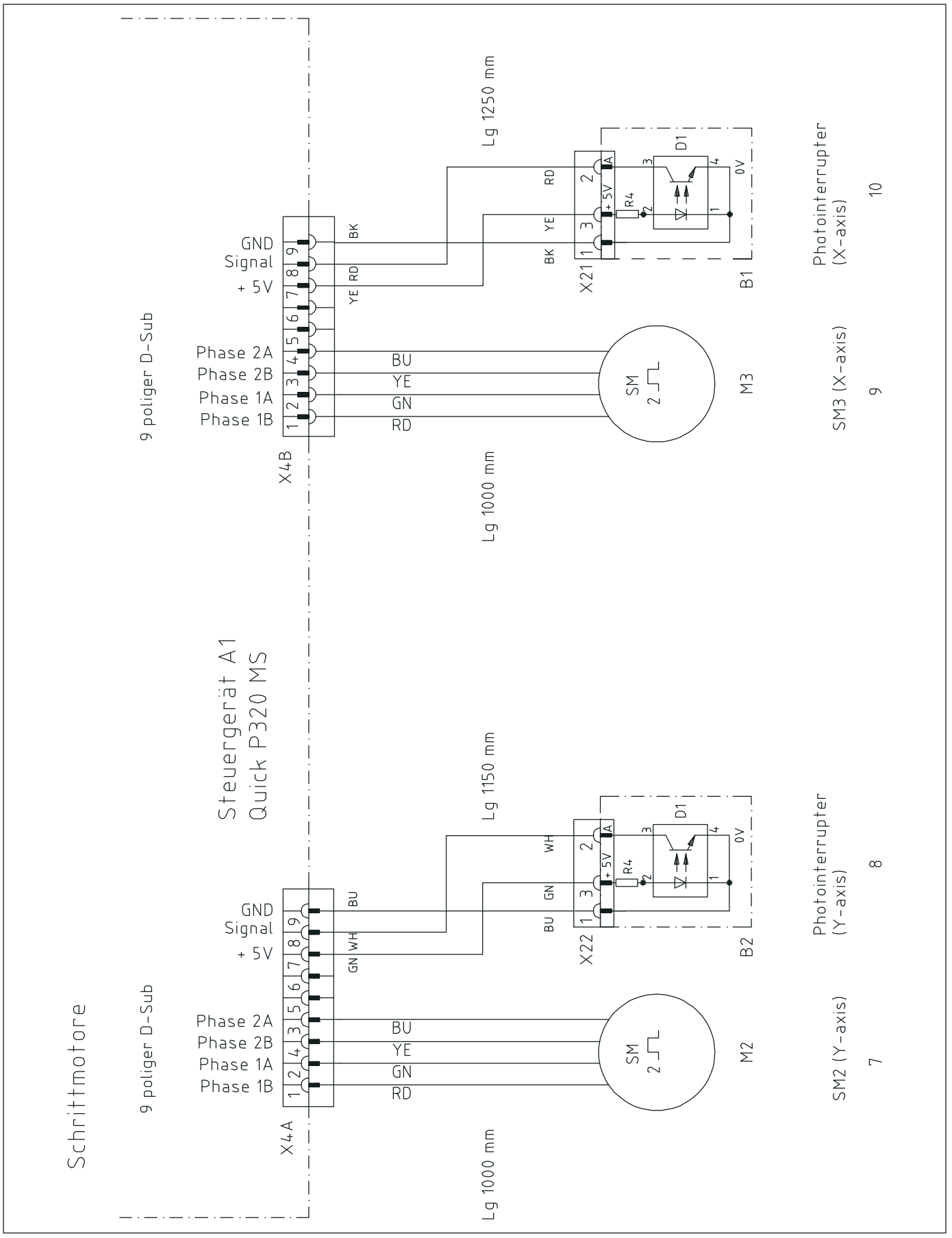
Circuit diagram reference list

A1	Controller Quick P 320MS
A2	Control panel S3A
A14	Sewing head recognition system (OTE)
B1	Hybrid light barrier Y axis
B2	Hybrid light barrier X axis
B3	Hybrid light barrier clamp monitoring
H1	Sewing lamp
M1	Sewing motor
M2	Sewing motor Y axis
M3	Sewing motor X axis
Q1	Main switch
S1	Pedal speed control unit
X1	Mains switch
X1A	A2 Control panel S3A
X1B	A14 Sewing head recognition system (OTE)
X3	M1 Incremental transmitter (sewing motor)
X4A	M2 Stepping motor + hybrid light barrier Y axis
X4B	M3 Stepping motor + hybrid light barrier X axis
X5	Inputs
X8	M1 Sewing motor
X11A	CAN interface
X11B	S1 Pedal speed control unit
X13	Outputs
X21	B1 Hybrid light barrier X axis
X22	B2 Hybrid light barrier Y axis
X23	B3 Hybrid light barrier clamp monitoring
X41	Y1 Clamp open
X43	Y3 Thread trimming
X44	Y4 Thread wiper
Y1	Clamp open
Y3	Thread trimming
Y4	Thread wiper

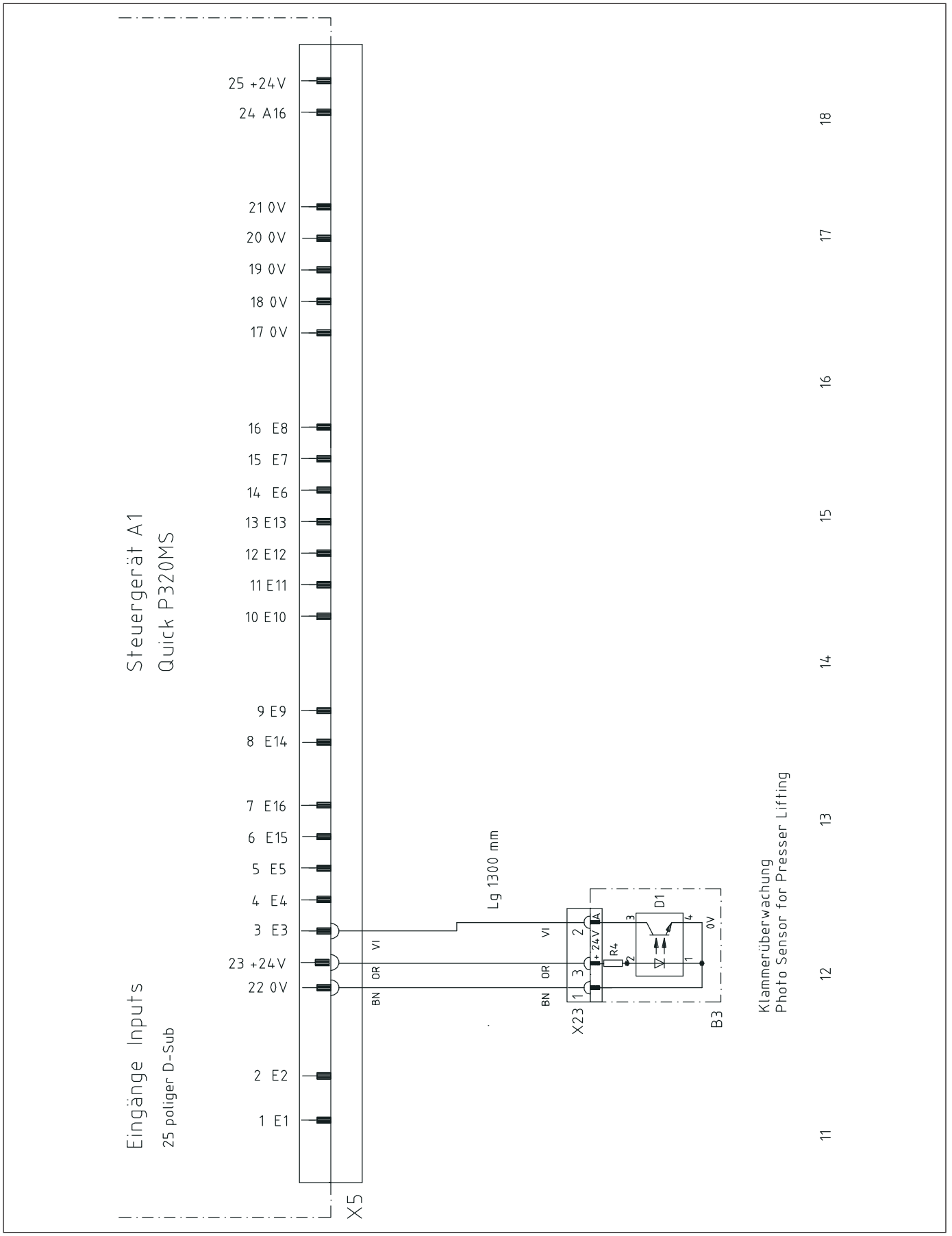
Circuit diagrams



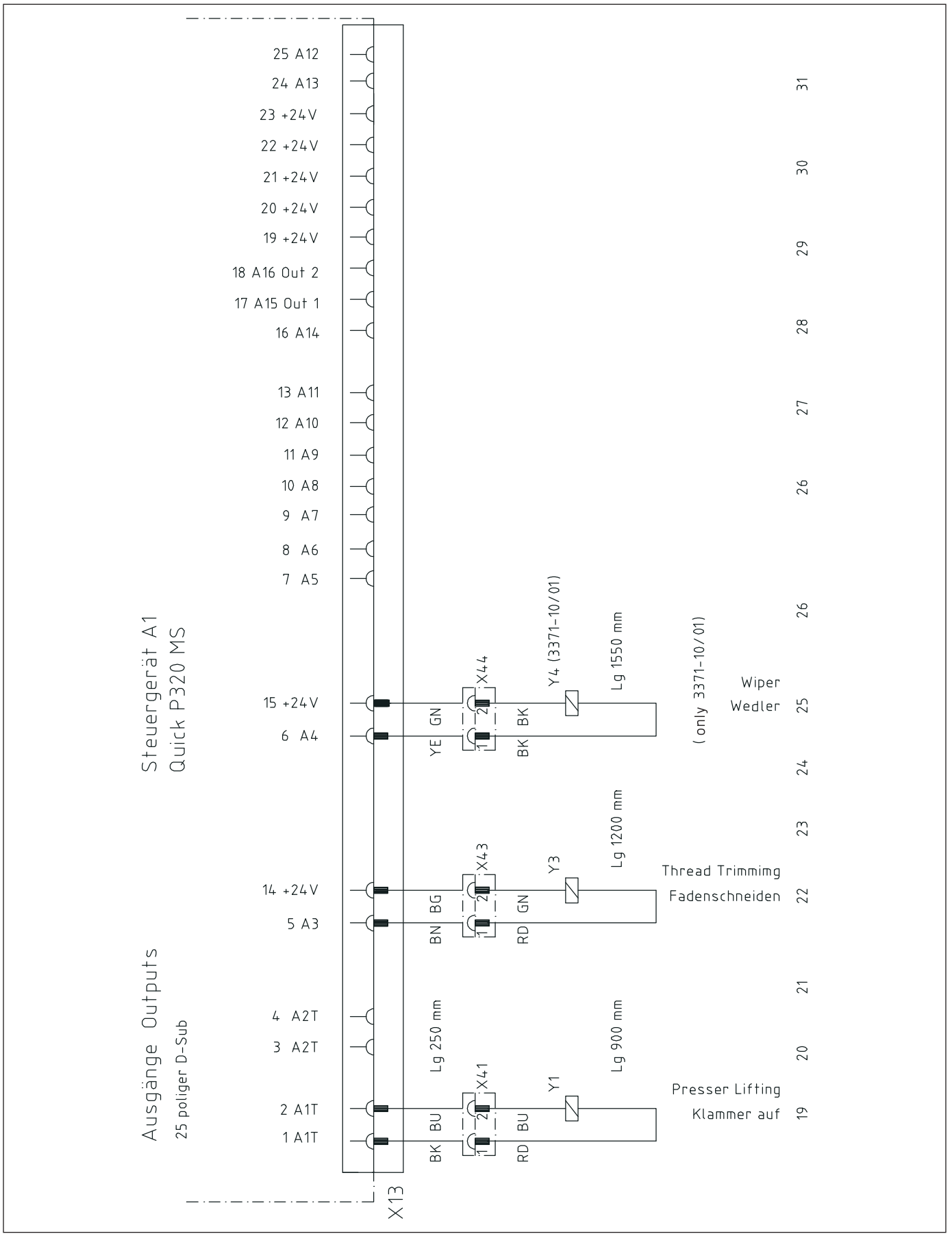
Circuit diagrams



Circuit diagrams



Circuit diagrams



10.Adjustment

Please observe all notes from Chapter 1 Safety of the instruction manual! In particular care must betaken to see that all protective devices are refitted properly after adjustment.

If not otherwise stated, the machine must be disconnected from the electrical power supply.

10−1. Notes on adjustment

All following adjustments are based on a fully assembled machine and may only be carried out by expert staff trained for this purpose.
Machine covers, which have to be removed and replaced to carry out checks and adjustments, are not mentioned in the text.
The order of the following chapters corresponds to the most logical work sequence for machines which have to be completely adjusted. If only specific individual work steps are carried out, both the preceding and following chapters must be observed.
Screws, nuts indicated in brackets ( ) are fastenings for machine parts, which must be loosened before adjustment and tightened again afterwards.

10−2. Tools, gauges and other accessories

1 set of screwdrivers with blade widths from 2 to 10 mm
1 set of spanners with jaw widths from 7 to 14 mm
1 set of Allen keys from 1.5 to 6 mm
1 metal ruler
1 machine zero point gauge

10−3.Abbreviations

t.d.c. = top dead centre
b.d.c. = bottom dead centre

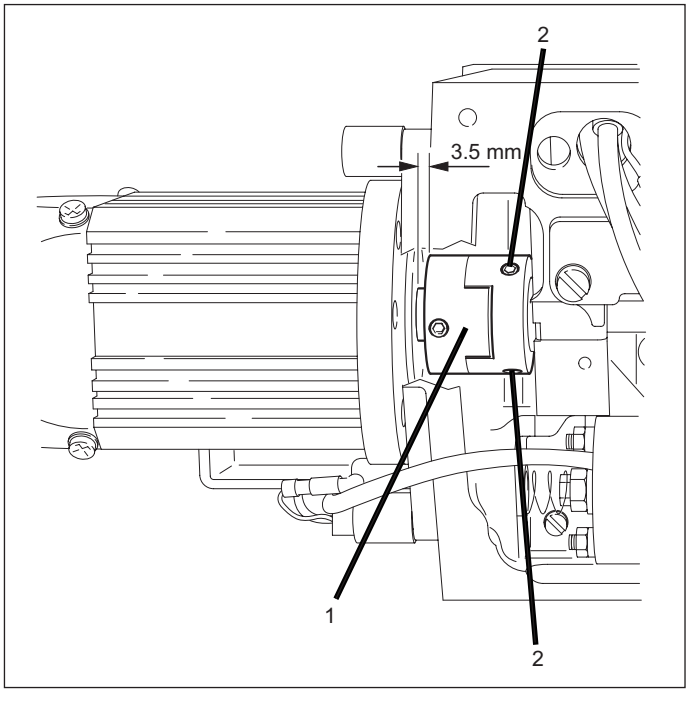
10−4.Explanation of the symbols

In this adjustment manual, symbols emphasize operations to be carried out or important information. The symbols used have the following meaning:

Note, information

Service, repair, adjustment, maintenance (work to be carried out by qualified staff only)

10−5.Basic position of the machine

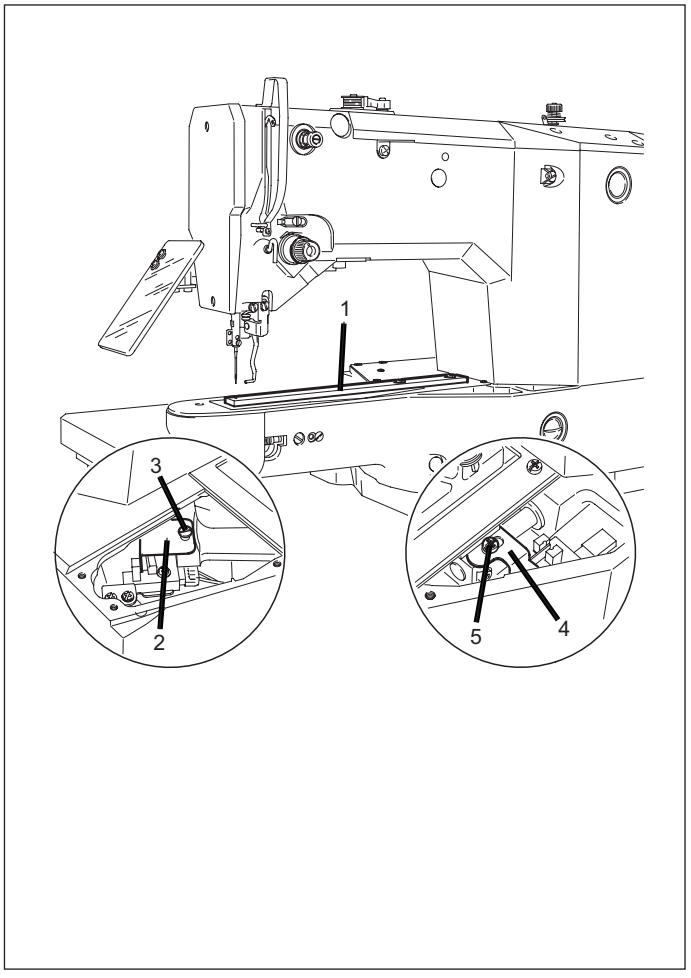


Requirement
After the machine has been switched on, it should position in t.d.c. needle bar.

Switch on the machine.
Hold clutch 1 (screws 2) and bring the needle bar into the appropriate position by turning the balance wheel.
Switch off the machine.

The distance from the clutch 1 to the motor plate should be 3.5 mm.
In the direction of rotation the second screw of the clutch section 3 should be on the surface of the motor shaft.
The clutch section 1 should be touching the 0-ring of the axial bearing.

10−6.Work clamp zero point



Requirement
After the machine ahs been switched on and parameter “608" selected,
1. the needle should be centred to the hole in the adjustment gauge,
2. the switch lugs 2 and 4 should be centred to the respective initiator.

When removing the work clamp holder, take care that the ball bearings in the arm support do not drop out !

Remove the work clamp holder and the lower feed plate .
Screw adjustment gauge 1 to the work clamp drive unit.

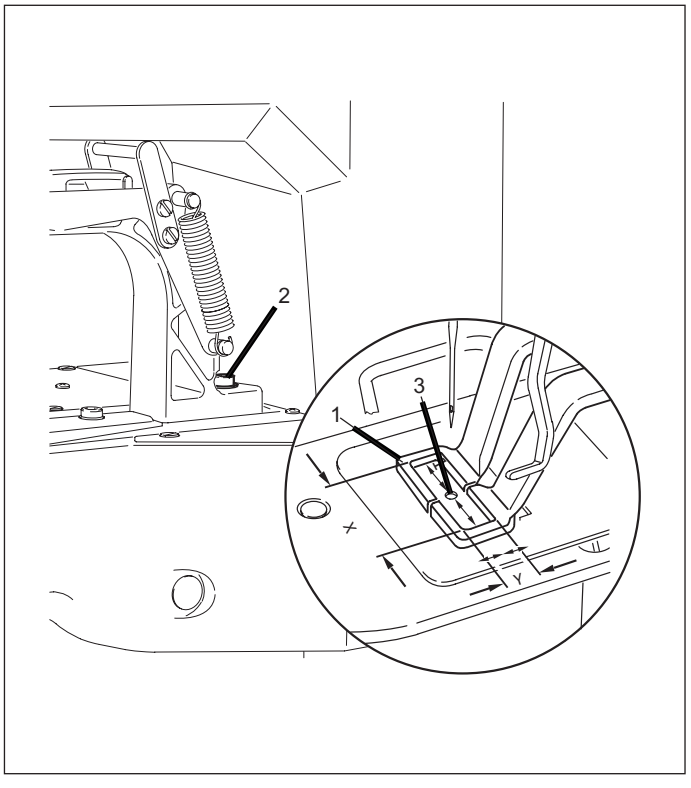
Preliminary adjustment
Move the work clamp drive unit by hand in accordance with requirement 1.
Adjust switch lug 2 (screw 3) and switch lug 4 (screw 5) in accordance with requirement 2.

Fine adjustment
Switch on the machine.
In the input mode, select parameter "608".
If necessary, enter the access code.

With the corresponding plus/minus key move the work clamp drive unit in accordance with requirement 1.
Switch off the machine.
Remove adjustment gauge 1.
Fit the lower feed plate and work clamp holder.

If, during the fine adjustment, the setting is ±5 increments above or below the value in X- and Y-direction, the setting should be checked again in accordance with requirement 2.

10−7.Aligning the work clamp



Requirement
The work clamp should be aligned in "X" and "Y" direction, so that it does not touch the needle during sewing.

Switch on the machine.
Set the sewing area size.
In the input mode, select parameter "610".
If necessary, enter the access code.
Align work clamp 1 (screw 2) so that the needle hole 3 is in the centre of the work clamp cutout.

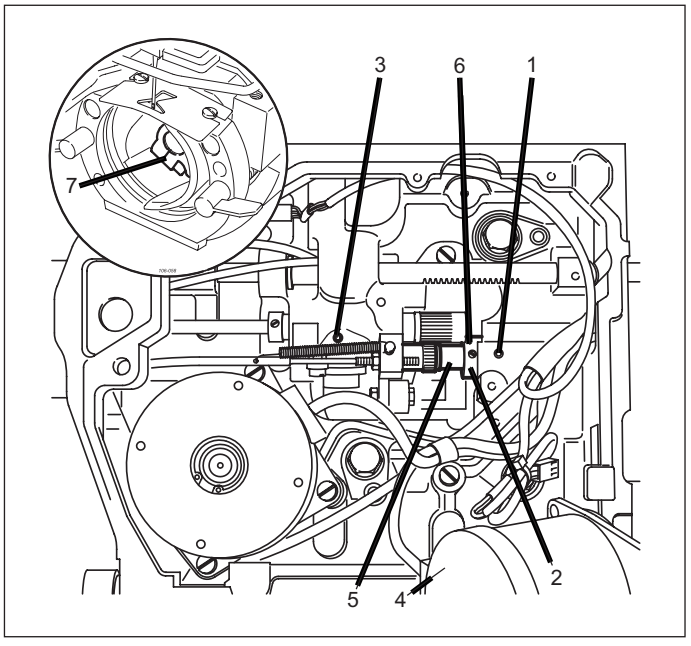
Checking the "Y-direction"
To check this adjustment, move along the maximum set sewing area size in "Y-direction" by pressing the corresponding plus/minus keys (readjust if necessary).
Call up parameter "609".

Checking the "X-direction"
Move along the maximum set sewing area size in "X-direction" by pressing the corresponding plus/minus keys.
If necessary adjust the position of work clamp 1 by entering a correction value "X" with the corresponding plus/minus keys in "X-direction" in accordance with the requirement.

TE
Conclude the input.

When using the max. sewing area size (X=40mm, X =20 mm), the correction value under parameter "609" must be set at "0".

10−8.Hook driver

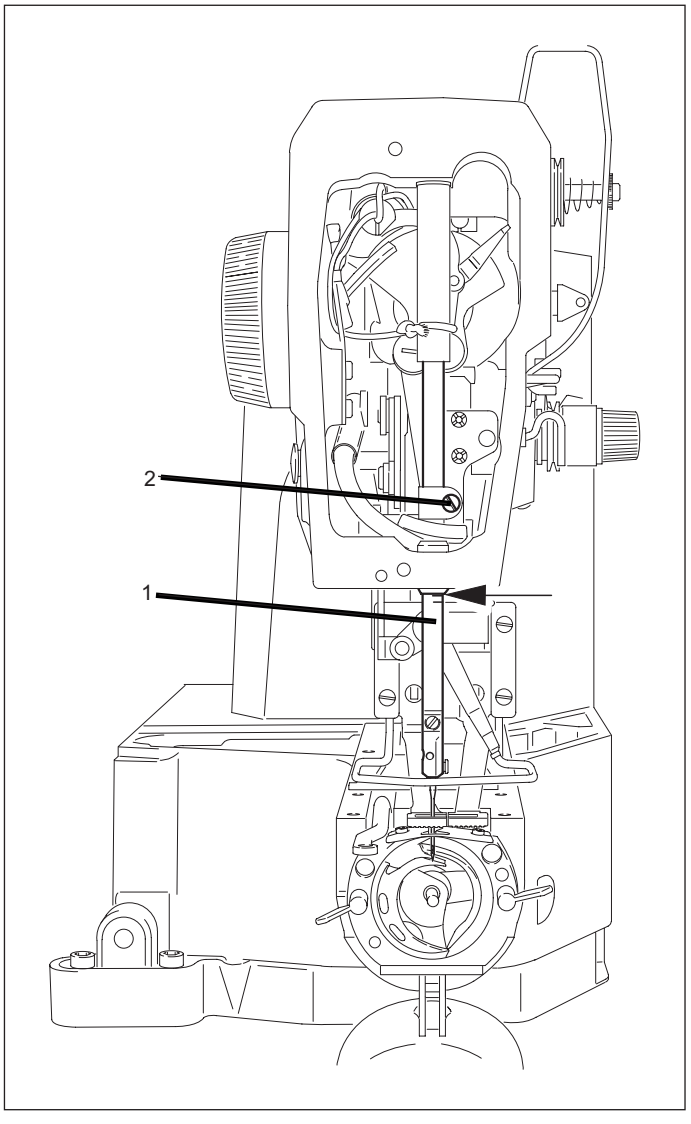


Requirement
1. When the balance wheel is turned, the machine should not bind.
2. The play of catch 7 should be less than 0.1 mm.

Remove the hook.
Loosen screws 1, 2 and 3 (remove motor 4).
Move the eccentric shaft 5 in accordance with requirement 1 and twist it in accordance with requirement 2.
Tighten screws 1 and 3.
Move adjustment ring 6 against the metal edge and tighten screw 2.
Insert the hook.

If catch 7 has too much play, the running noise of the machine increases. Too little play may cause the machine to jam.

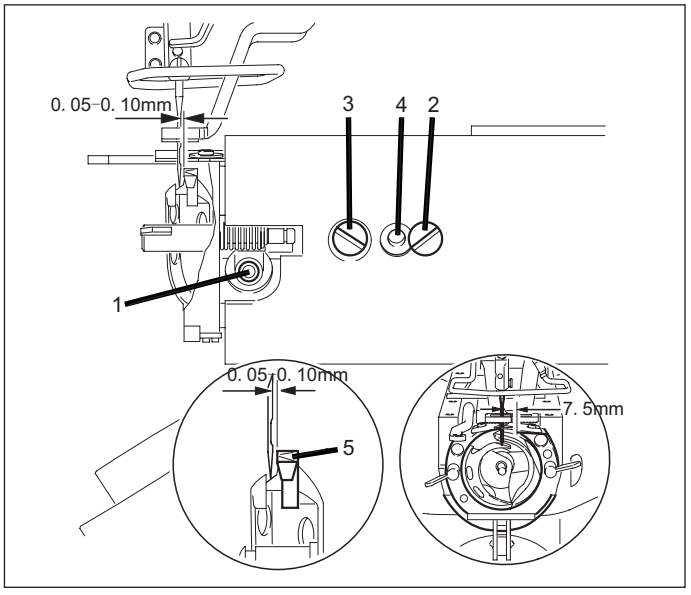
10−9.Needle height



Requirement
With the needle bar in b.d.c., depending on the sub-class the marking on needle bar 1 described below should be flush with the lower edge of the needle bar bush:
Sub-class -1/01 top marking,
Sub-class -1/11 second marking from the bottom.

Adjust needle bar 1 (screw 2) in accordance with the requirement.

10−10.Hook-to-needle clearance

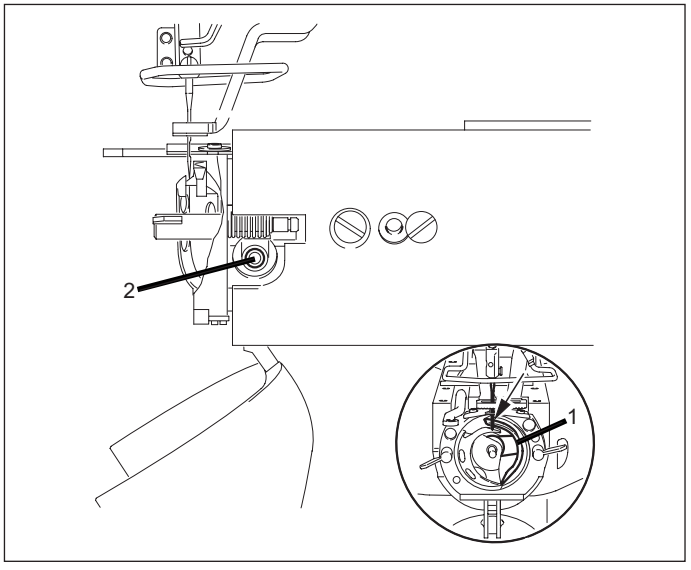


Requirement
When the bottom marking of the ascending needle bar is level with the lower edge of the needle bar bush
1. hook 5 should be 0.05–0.1 mm behind the needle.
2. the distance between the needle and the tip of the hook race should be 7.5 mm.

Loosen screws 1, 2 and 3.
Turn the eccentric pin 4 in accordance with the requirements.
Tighten screws 2 and 3.

Screw 1 remains loosened for further adjustments.

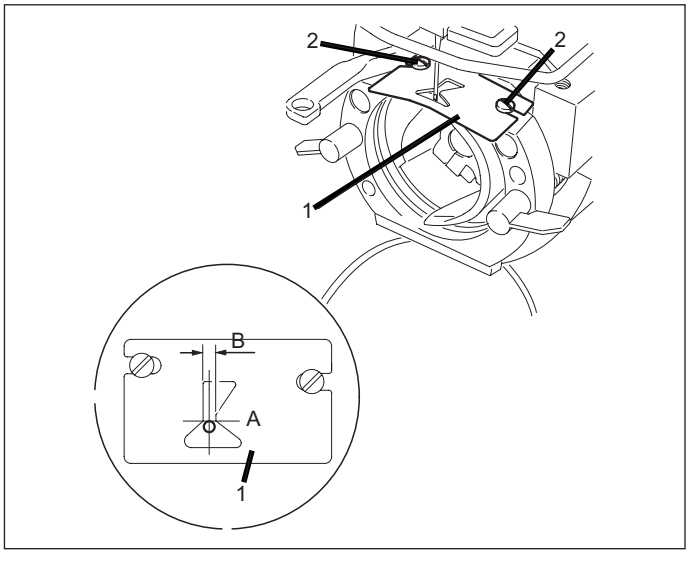
10−11.Needle rise and needle guard



Requirement
When the bottom marking of the ascending needle bar is level with the lower edge of the needle bar bush
1. the hook point should be centred to the needle.
2. the needle guard (see arrow) should slightly touch the needle.

Turn catch 1 (screw 2) in accordance with requirement 1, or move it in accordance with requirement 2.

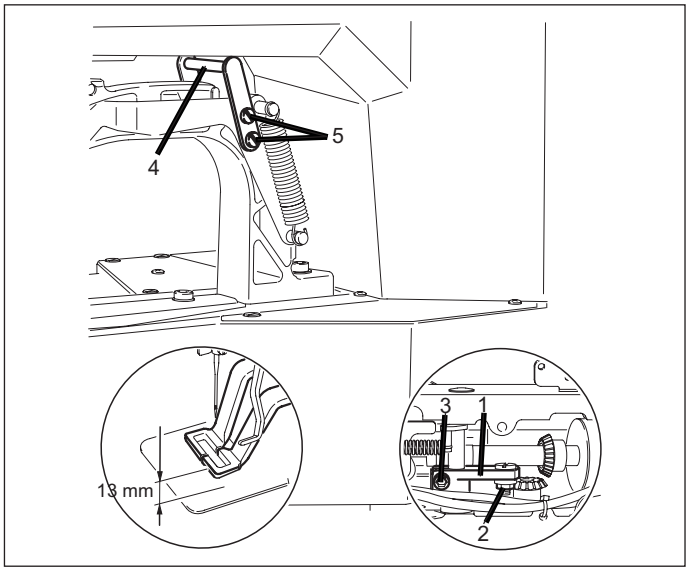
10−12.Aligning the hook race cover



Requirement
The needle should be centred to cutout B and the rear side of the needle flush to the imaginary line A.

Move the hook race cover 1 (screws 2) in accordance with the requirement.

10−13.Work clamp height

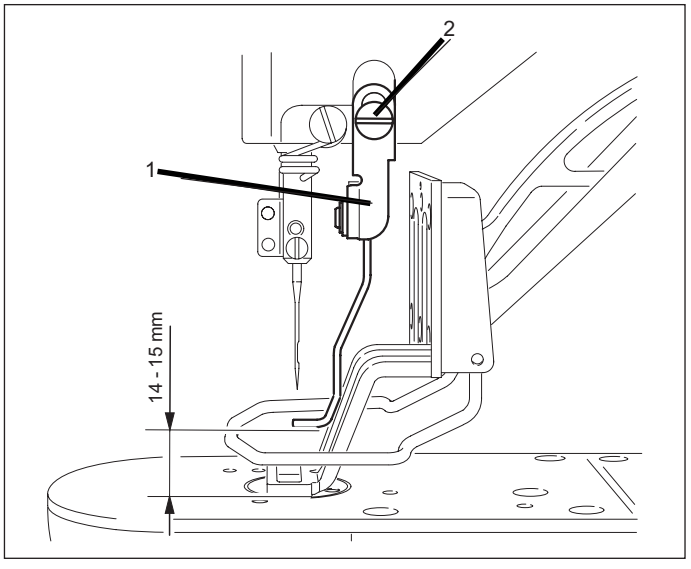


Requirement
1. The work clamp should be 13 mm above the upper edge of the needle plate.
2. Both halves of the work clamp should be parallel to each other.

Turn lever 1 (nut 2 and screw 3) in accordance with requirement 1.
Move lift plate 4 (screws 5) in accordance with requirement 2.

After aligning the work clamp, it is imperative to check the position of the thread wiper.

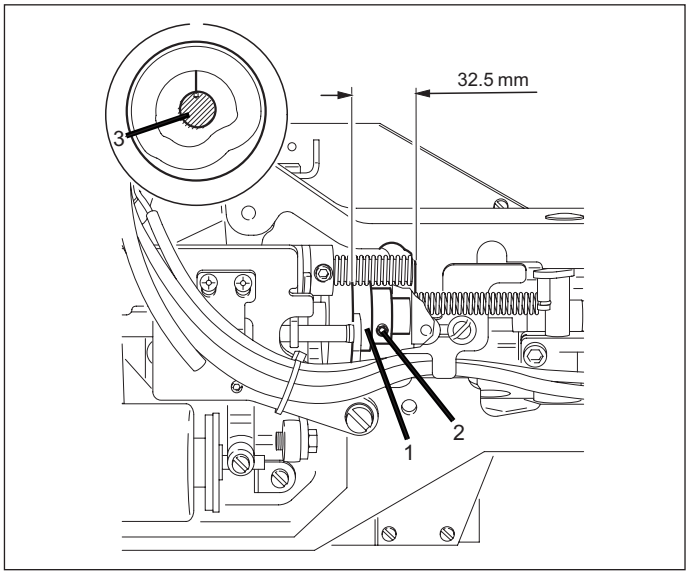
10−14.Position of the thread wiper



Requirement
When the thread wiper is centred to the needle, its lower edge should be 14 – 15 mm above the upper edge of the needle plate.

Bring the thread wiper 1 into the appropriate position by operating the work clamp manually.
Move thread wiper 1 (screw 2) in accordance with the requirement.

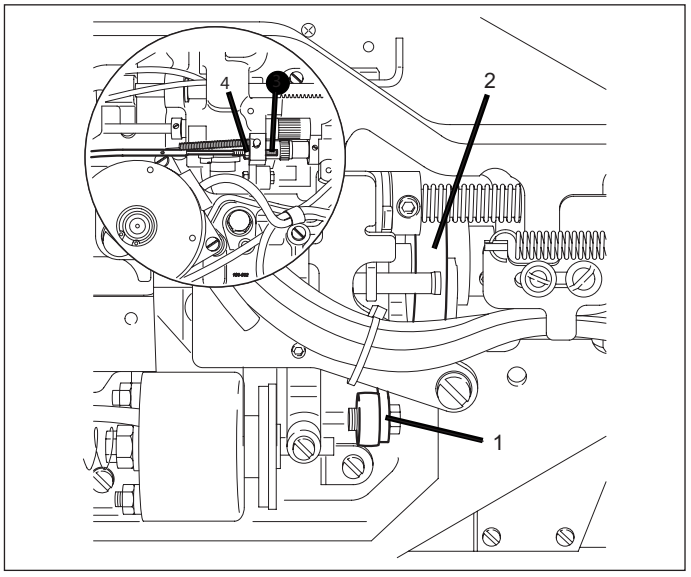
10−15.Position of the control cam



Requirement
1. The markings on control cam 1 and arm shaft 3 should correspond with each other.
2. The outer edge of control cam 1 should be at a distance of 32.5 mm from the metal surface of the case.

Turn control cam 1 (screw 2) in accordance with requirement 1, or move it in accordance with requirement 2.

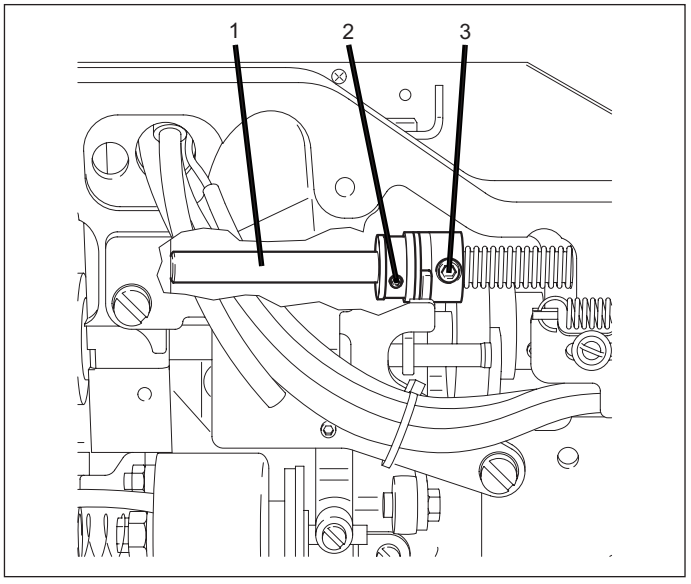
10−16.Position of the control roller



Requirement
When the needle bar is at its b.d.c., the control roller should be centred to the running path of control cam 2.

Turn screw 3 (nut 4) in accordance with the requirement.
For checking purposes, operate lever 1 by hand to let the control roller fall into the running path of control cam 2.

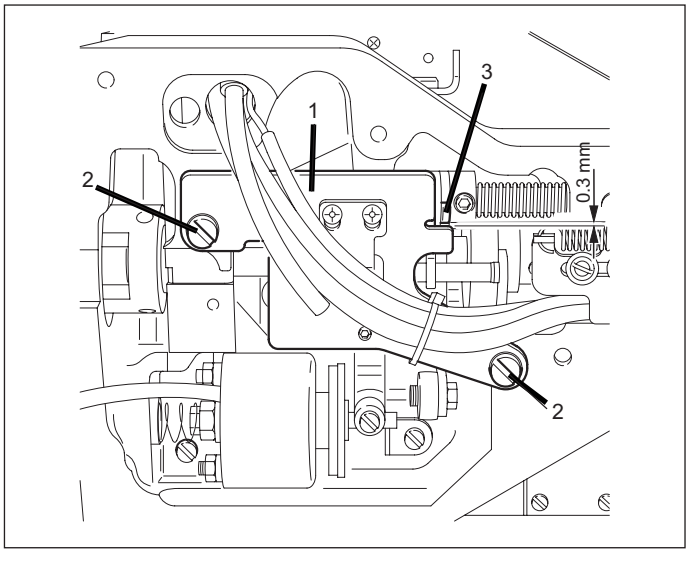
10−17.Position of the drive shaft of the thread trimmer



Requirement
When the thread trimmer is in its basic position, shaft 1 should be flush with the metal edge of the machine case.

Move shaft 1 (screws 2 and 3) in accordance with the requirement.

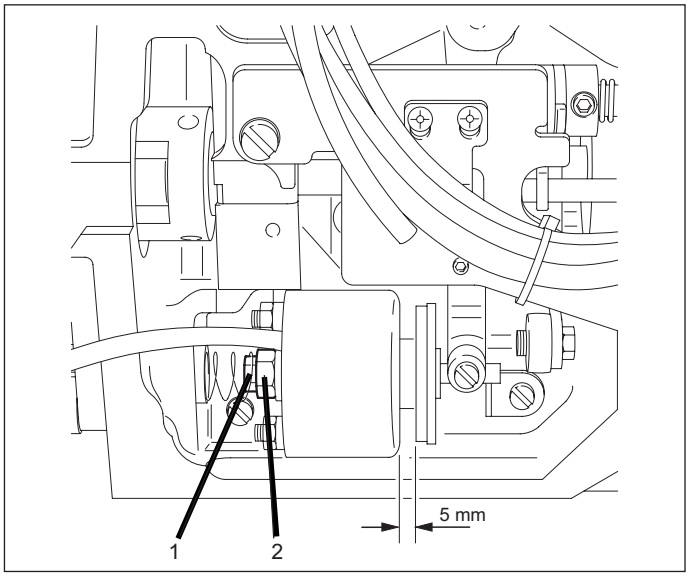
10−18.Aligning the stop plate



Requirement
When the thread trimmer is in its basic position, there should be a clearance of 0.3 mm between lever 3 and plate 1.

Move plate 1 (screws 2) in accordance with the requirement.

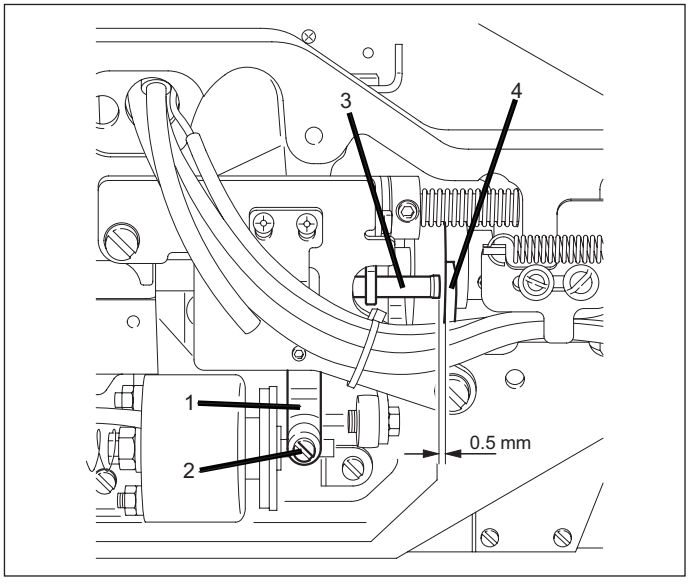
10−19.Adjusting the trimmer solenoid



Requirement
When the thread trimmer is in its neutral position, solenoid 1 should be at a distance of 5 mm from the case.

Turn nut 1 (nut 2) in accordance with the requirement.

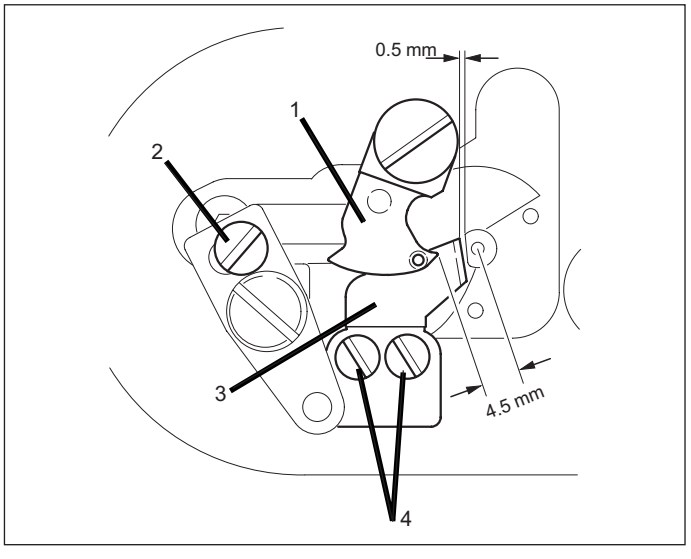
10−20.Adjusting the engaging lever



Requirement
When the thread trimmer is in its neutral position, pin 3 should be at a distance of 0.5 mm from release trip 4.

Move lever 1 (screws 2) in accordance with the requirement.

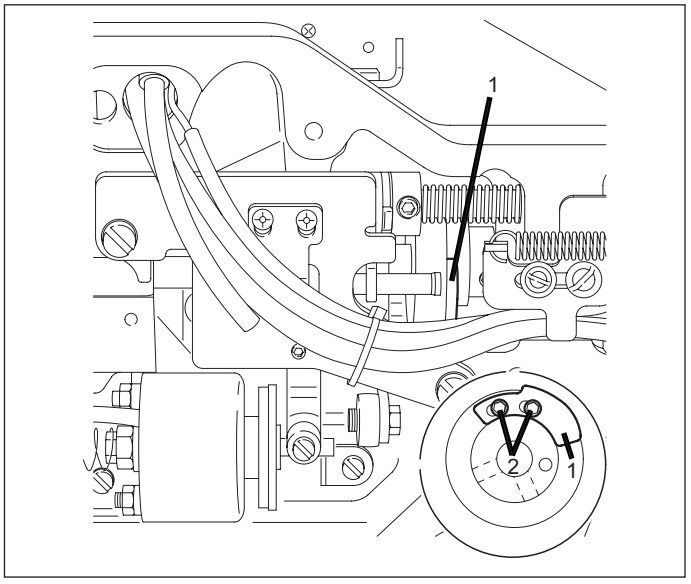
10−21.Position of the thread catcher and knife



Requirement
When the machine is in its basic position
1. the tip of the thread catcher 1 should be at a distance of 4.5 mm from the centre of the needle hole.
2. The blade of knife 3 should be at distance of 0.5 mm from the needle plate insert.

Adjust thread catcher 1 (screw 2) in accordance with requirement 1.
Adjust knife 3 (screws 4) in accordance with requirement 2.

10−22.Position of the release trip

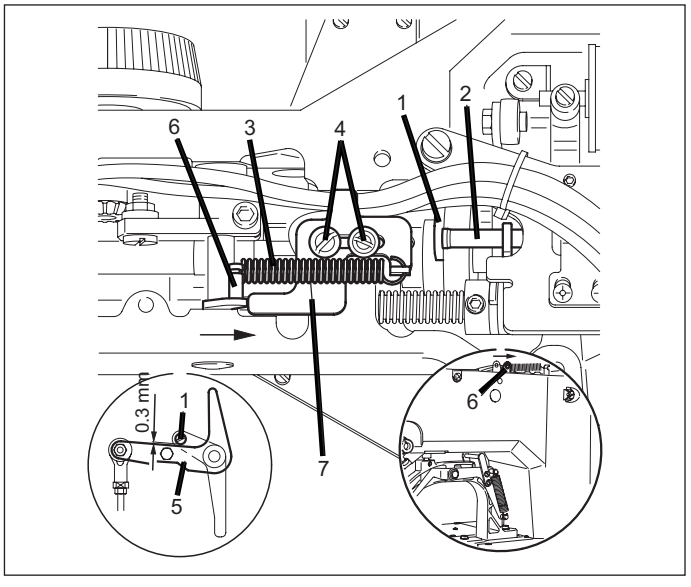


Requirement
The slots of trip 1 should be touching screws 2 on the right side.

Move trip 1 (screws 2) in accordance with the requirement.

If the needle thread is too short after trimming, trip 1 can be slightly readjusted.

10−23.Position of the release catch

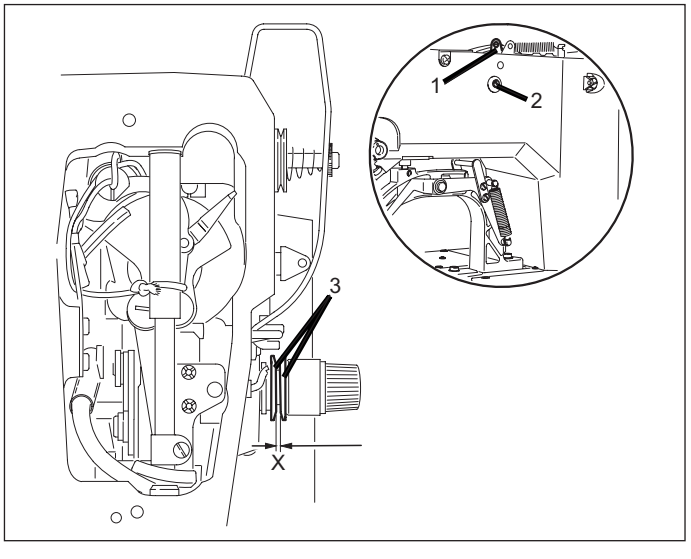


Requirement
When lever 6 is touching release catch 7, there should be a distance of 0.3 mm between drive lever 5 and pin 1.

Turn the balance wheel until pin 1 is no longer on the release trip 2.
Release spring 3 and loosen screws 4.
In accordance with the requirement, place the feeler gauge between the drive lever 5 and pin 1.
Push lever 6 lightly in the direction shown by the arrow.
Move release catch 7 against lever 6 and tighten screws 4.
Remove the feeler gauge and attach spring 3.

Spring 3 should only be released and attached with suitable tools! Danger of injury!

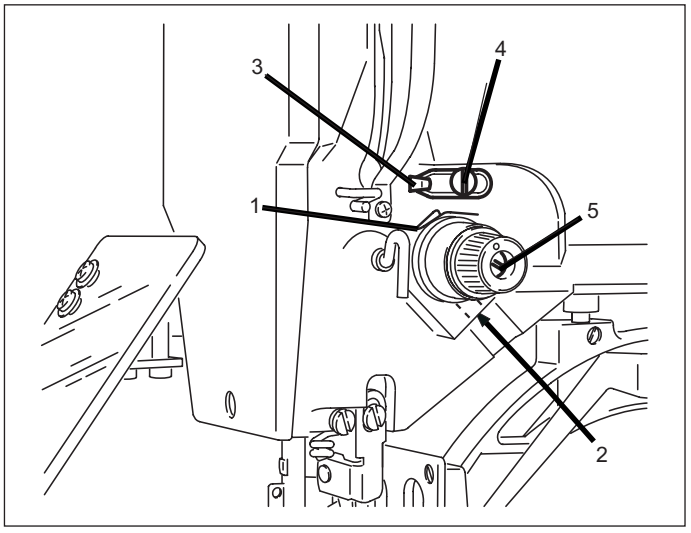
10−24.Needle thread tension release



Requirement
After thread trimming the distance X between tension discs 3 should be 0.6–0.8 mm for normal materials and 0.8–1.0 mm for heavy materials.

Bring the machine into the cutting position by hand.
Move lever 1 (screw 2) in accordance with the requirement.

10−25.Thread check spring and thread regulator

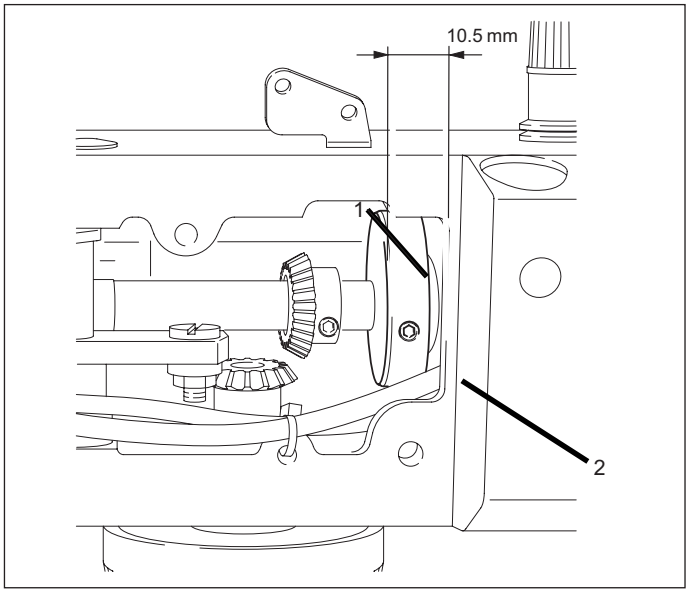


Requirement
1. The thread check spring 1 should have a 6–8 mm stroke.
2. Screw 4 should be positioned in the centre of the slot of thread regulator 3.

Adjust thread check spring 1 (screw 2) in accordance with requirement 1.
Move thread regulator 3 (screw 4) in accordance with requirement 2.

Turn pin 5 to adjust the thread spring resistance.
All settings of the thread check spring 1 depend on the material and might have to be corrected to achieve the desired result.

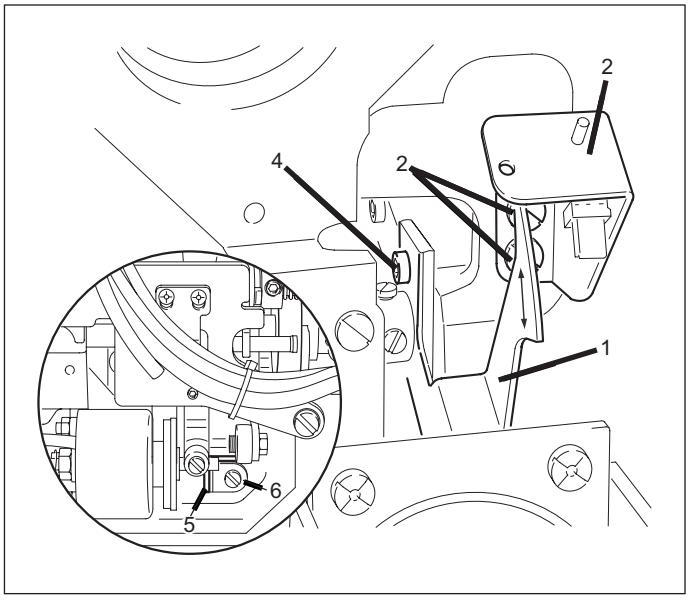
10−26.Bobbin winder drive wheel



Requirement
1. The should be a distance of approx. 10.5 mm between drive wheel 1 and the metal edge of the machine case.
2. When the bobbin winder is switched on, its friction wheel should be driven by drive wheel 1. When the bobbin winder is switched off, drive wheel 1 must not touch the friction wheel of the bobbin winder.

Adjust drive wheel 1 (screw 2) in accordance with the requirements.

10−27.Work clamp initiator



Requirement
When the work clamp is lowered and shortly before lever 5 in the machine arm touches stop 6, the initiator should switch on (input "3" parameter "601" is positioned at "off").

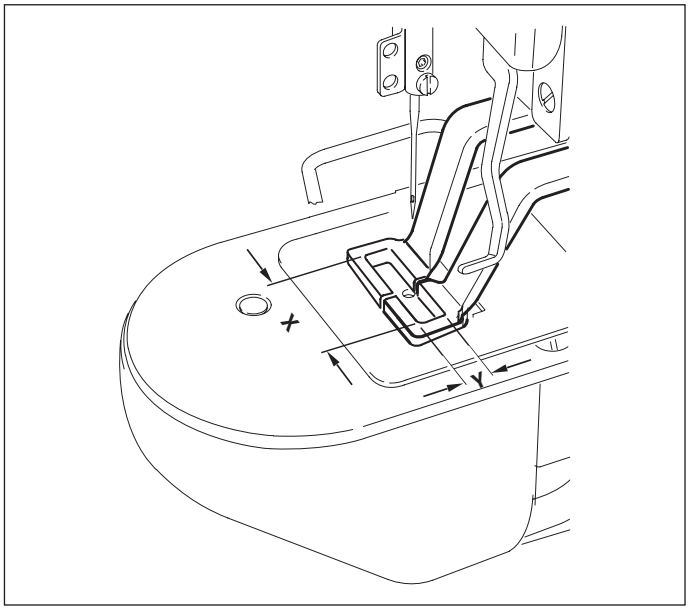
Switch on the machine and press the "TE" key.

Lower the work clamp by pressing the "tacting forwards" key.

With the clamp in this position, press the "TE" key.

In the input mode, select parameter "601".
Select input "3" with the corresponding plus/minus key.
If necessary, enter the access code,move cam switch 1 by hand and check the ON/OFF switch position on the display.
Adjust support 2 (screws 3) and cam switch 1 (screws 4) in accordance with the requirement.
Switch off the machine.

10−28.Changing the work clamp



Measure the cutout of the new work clamp in X- and Y-direction.
Adjust the sewing area size.
Fit the new work clamp and align it in.
Select the seam program to match the work clamp cutout.
Check the seam program by tacting.

If the actual size of the sewing area differs from the size entered, serious damage can be caused to the machine!

10−29.Cold start

When a cold start is carried out, the seam patterns 50–99 and all altered parameter settings are deleted! The machine is reset to its condition on delivery, the machine's zero points remain unaffected.

Switch on the machine.
Select parameter "607" with the corresponding plus/minus keys.
If necessary, enter the code.

With the corresponding plus/minus key carry out the reset operation.
Switch the machine off and on again after approx. 3 seconds.

11.Specifications

Max. sewing speed: ..... 2500 spm^{-1}

Feed type: ..... Intermittent

Stitch length: 0. 1–10. 0mm

Stitch type: ..... 301 (lockstitch)

Needle size in 1/100 mm:

For fine materials: 70–100

For medium-weight materials: 100–120

Needle system: ..... DP×17

Needle bar stroke: 41mm

Fabric clearance: ..... max. 13 mm

Max. size of sewing area: ..... 6,5 x 6,5 mm

Power supply: ..... 220 V ± 10%, 50/60 Hz, single phase

Power consumption: 0. 55kVA

Electrical power rating: 1. 2kVA

Fuse protection: ..... 1x 16 A, inert

Noise data:

Noise emission level at workplace

With a sewing cycle of 1 sec. on and 2 sec. Off: ..... L_{pA}=74dB(A)

(Noise measurement in accordance with DIN 45 635-48-B-1, ISO 11204, ISO 3744, ISO 4871)

Sewing head dimensions

Length: ..... Approx. 700mm

Width: ..... Approx. 220mm

Height: ..... Approx. 380mm

Dimensions of standard base

Length: ..... Approx. 1060mm

Width: ..... Approx. 600mm

Height: ..... Approx. 820mm

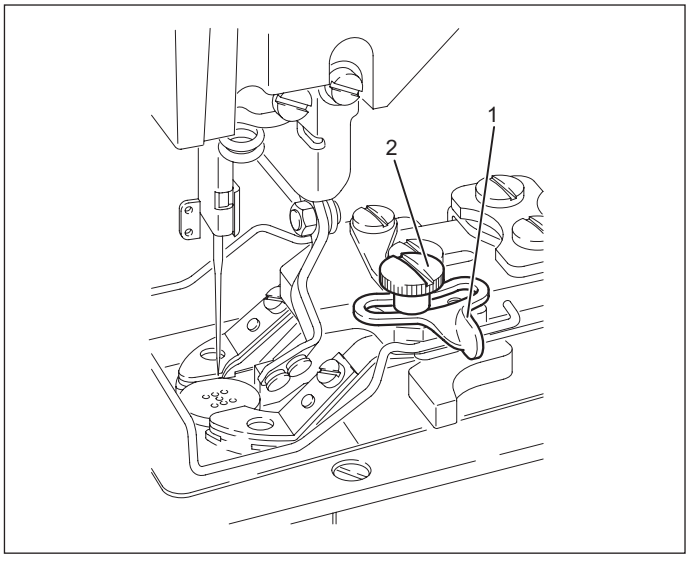
Weights

Sewing head: ..... Approx. 42kg

Base incl. control box: ..... Approx. 45kg

12.Control elements

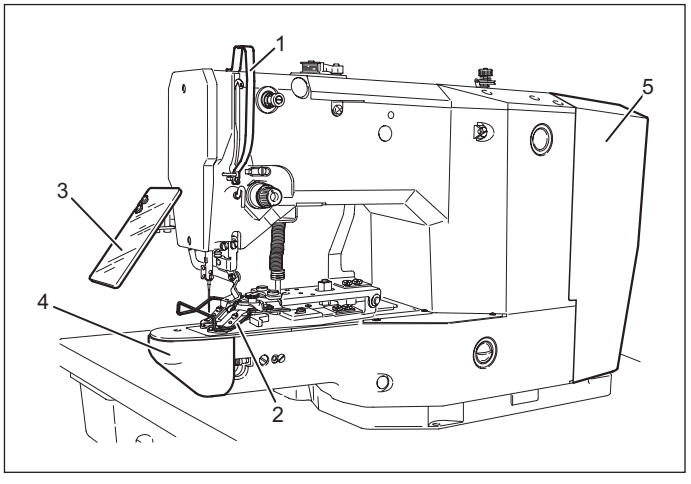
12−1.Lever for adjusting the button clamp size



Adjust lever 1 to set the size of the button clamp. To do so, loosen screw 2.

After screw 2 has been loosened, the clamp jaws close automatically. Danger of crushing in the button clamp zone!

13.Sewing



The machine must be installed, connected and set up as described in the Chapter of Installation and Commissioning.

The machine must not be operated without the safety devices 1 to 5.

13−1.Operating cycle

Carry out all steps in accordance with the Chapter of Setting up.
Place the material properly under the button clamp.
Lower the button clamp and start the sewing cycle.

13−2.Sewing in the "Direct program selection" mode

In this function, a seam pattern is selected. After selection, the speed and size can be altered.

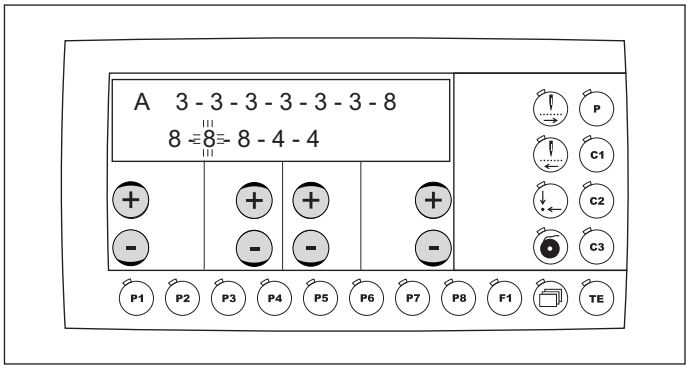
13−3.Sewing in the "Program stations" mode

Program stations can be selected, which have been reserved beforehand with a seam pattern with relevant speed and size factors.

13−4.Sewing in the "Sequences mode"

Sequences, which have been created beforehand, can be called up with the function keys C1 to C3.

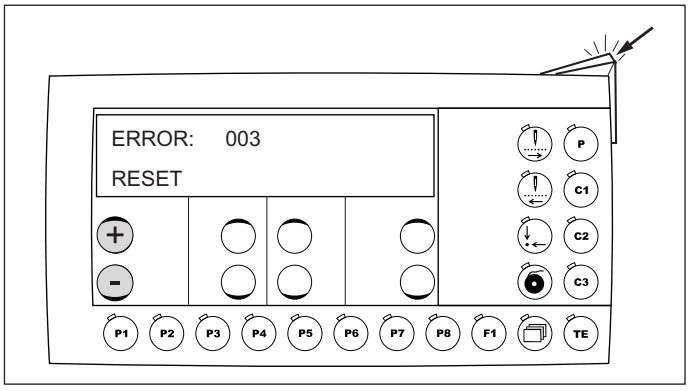
13−4−1.Interrupting a sequence



If an interruption occurs during a sequence cycle (e.g. broken thread), it is possible to continue at the same sequence point after the error has been eliminated.
The procedure is as follows:

The activated sequence point flashes.
Select the sequence A, B or C by pressing the left +/- key.
Press the corresponding +/- key to move to the sequence point to be repeated.
TE Conclude input by pressing the TE key.

13−5.Error messages



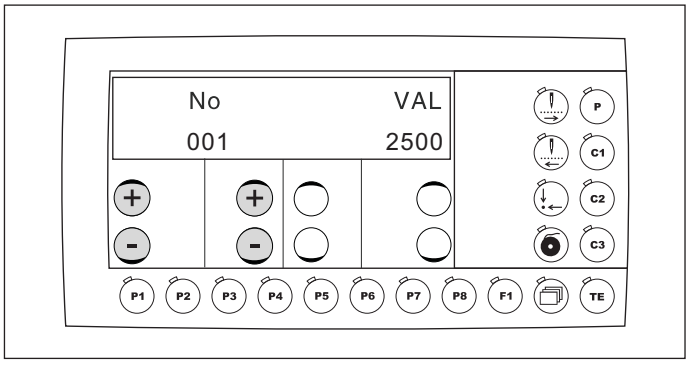
When an error occurs, the text "ERROR" appears on the display together with an error code and short instructions. In addition the diode in the memory card slot lights up red (see arrow).

Correct the error.
Acknowledge the correction of the error by pressing the corresponding +/- key or by switching the machine off and on.
The diode in the memory card slot (see arrow) turns yellow again.

14.Input

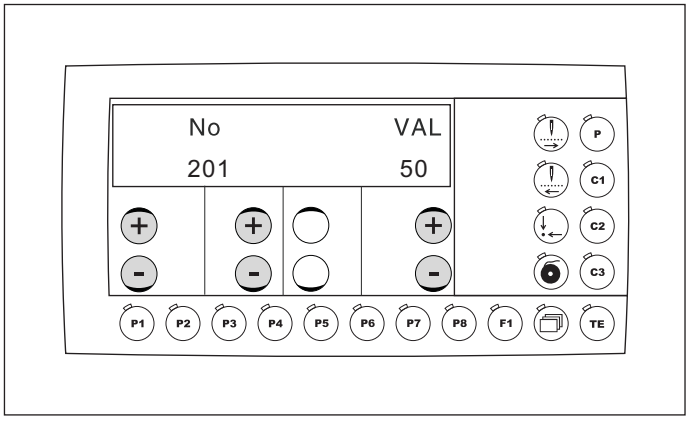
14−1.Free input of the seam pattern

In addition to the selection of firmly stored seam patterns, there is also a possibility of setting seam patterns (button type) as desired using the corresponding parameter input.



TE Call up the Input mode by pressing the TE key (LED is illuminated).

With the corresponding +/- keys, select the parameter 201 to enter the program number.



With the corresponding +/- keys, select the desired program number.
With the corresponding +/- keys, select the parameter 202 to enter the button type.
With the corresponding +/- keys, select the desired button type. (2 = two-hole button, 3 = three-hole button, 4 = four-hole button)
With the corresponding +/- keys, select the parameters 203 - 208 in turn to enter the coordinates of the buttonholes 1 - 6, and enter the relevant values for the X- and Y-direction.
If necessary, with the corresponding +/- keys, select the parameter 209 to enter the number of stitch positions and enter the desired value.
If necessary, with the corresponding +/- keys, select the parameter 210 to choose the stitch formation.
The stitch formation can only be chosen for three- and four-hole buttons and depends on the previously selected button type.

Stitch formations for the three-hole button

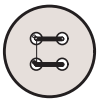
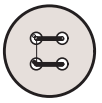
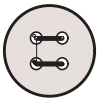
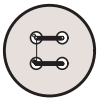
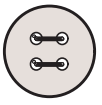
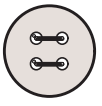
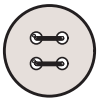
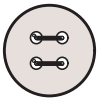
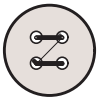
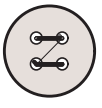
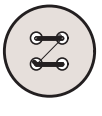
	Seam cycle Value for parameter 210 = 0
	Point Value for parameter 210 = 1

Stitch formations for the four-hole button

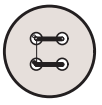
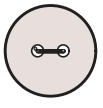
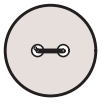
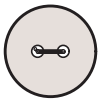
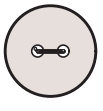
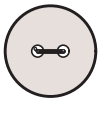
	Normal Value for parameter 210 = 0
	Seam cycle Value for parameter 210 = 1
	Arrow Value for parameter 210 = 2
	Z Value for parameter 210 = 3

Select the desired stitch formation with the corresponding +/- key.
If necessary, select parameter 211 with the corresponding +/- keys and activate the intermediate trimming function.
The intermediate trimming function can only be activated for four-hole buttons. When the function is activated, the thread is trimmed between the second and third hole of the button.
With the corresponding +/- keys call up parameter 212 and enter the number of sewing-on stitches.
With the corresponding +/- keys call up parameter 213 and enter the number of attaching stitches.

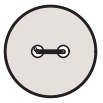
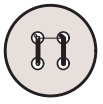
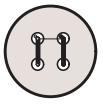
14−2.Summary of the seam patterns

No.	Seam pattern	Size of sewing area [mm]	Penetrations/button row	Total number of stitches
P1		3.4 × 3.4	6	18
P2		3.4 × 3.4	8	22
P3		3.4 × 3.4	10	26
P4		3.4 × 3.4	12	22
P5		3.4 × 3.4	6	22
P6		3.4 × 3.4	8	26
P7		3.4 × 3.4	8	26
P8		3.4 × 3.4	12	3
P9		3.4 × 3.4	6	18
P10		3.4 × 3.4	8	22
P11		3.4 × 3.4	10	26

14−2.Summary of the seam patterns

No.	Seam pattern	Size of sewing area [mm]	Penetrations/button row	Total number of stitches
P12		3.4 × 3.4	6	18
P13		3.4 × 3.4	8	22
P14		3.4 × 3.4	10	26
P15		3.4 × 3.4	6	22
P16		3.4 × 3.4	8	26
P17		3.4 × 3.4	10	30
P18		3.4 × 0.0	6	11
P19		3.4 × 0.0	8	13
P20		3.4 × 0.0	10	15
P21		3.4 × 0.0	12	17
P22		3.4 × 0.0	16	21

14−2.Summary of the seam patterns

No.	Seam pattern	Size of sewing area [mm]	Penetrations/button row	Total number of stitches
P23		0.0 × 3.4	6	11
P24		0.0 × 3.4	10	15
P25		0.0 × 3.4	12	17
P26		3.4 × 3.4	6	18
P27		3.4 × 3.4	10	26
P28		3.4 × 3.4	6	22
P29		3.4 × 0.0	10	30
P30		3.4 × 0.0	5	20
P31		3.4 × 0.0	8	29
P32		3.4 × 0.0	5	20
P33		3.4 × 0.0	8	29

14−3.List of parameters

Group	Parameter	Description	Setting range	Set value
000	001	**Maximum speed** This parameter is used to fix the max.sewing speed (upper limit).	500 - 2500	2500
	002	**Sewing speed for start stitches** With this parameter the speeds for the 5 start stitches are fixed. Speed (spm) for start stitch no.1 Speed (spm) for start stitch no.2 Speed (spm) for start stitch no.3 Speed (spm) for start stitch no.4 Speed (spm) for start stitch no.5	 500 - 2500 500 - 2500 500 - 2500 500 - 2500 500 - 2500	 500 900 2500 2500 2500
	003	**Locking/releasing seam patterns** This parameter is used to release (ON) or lock (OFF) the individual seam patterns (0 to 99) to be carried out in the sewing mode.	ON - OFF	ON
	004	**Switch bobbin thread counter on/off** **Standard value (pieces per bobbin)** In the sewing mode, the bobbin thread counter counts the pieces sewn backwards from the standard value. If the bobbin thread counter is switched on, in the sewing mode a signal is given when the value 0 is reached.	ON - OFF 1 - 9999	OFF 11
	005	**Sequence combination** This parameter is used to combine several sequences with each other. 0 = no combination 1 = C1 with C2 2 = C2 with C3 3 = C1 with C3 4 = C1 with C2 and C3	0 - 4	0
	006	**Reversing after thread trimming** **Reverse position [°]** With this parameter it is possible to switch the automatic reversing function after thread trimming on or off. If the reversing function is switched on, the reverse position can be set by turning the balance wheel. The access code is necessary for this adjustment.	ON - OFF 0 - 14	ON 11
	007	**Starting point = scale reference point** With this parameter it is possible to choose whether the scale reference point is the starting point (ON) or the zero point (OFF).	ON - OFF	OFF
	008	**Speed for the "winding" function** This parameter is used to fix the speed for the winding operation.	200 - 2500	1500
	009	**Via zero point to starting point after end of sequence** With this parameter it is possible to choose that, after the end of the sequence, the X-, Y-drive moves to the seam starting point via the reference initiators.	ON - OFF	OFF
	010	**Via zero point to starting point after number of program cycles Number of program cycles** With this parameter it is possible to choose that, after a certain number of program cycles, the X-, Y-drive moves to the seam starting point via the reference initiators.	ON - OFF 1 - 100	OFF

Group	Parameter	Description	Setting range	Set value
000	011	**Pedal mode** Switchover between level mode (0) and flip flop mode (1).	0 - 1	0
	012	Needle or balance wheel position in degrees	0 - 360	11
	013	**NIS "needle in material" [°]** This parameter is used to set the NIS signal. If the function is executed, the position can be entered by turning the balance wheel. If the position is altered, the result is a change in the point of time when the carriage is moved. The access code is necessary for this adjustment.	65 - 166	107
	014	**Thread trimming speed [min-1]** This parameter is used to fix the speed for thread trimming.	100 - 700	300
	015	**Reduced current for stepping motors** The reduction function of the holding current at rest with closed work clamp is switched on or off.	ON - OFF	ON
	016	**Key tone** The key tone, as reaction to a key on the control panel being pressed, is switched on or off. The double tone for incorrect inputs always remains switched on.	ON - OFF	ON
	017	**Button clamp solenoid Operating time[10 ms]** The time, for which the solenoid is under full current, is entered.	5 - 100	10
	018	**Button clamp solenoid duty-cycle [%]** At the end of the clamp solenoid operating time (Parameter "017") the solenoid is clocked. The relationship between duration of operation and nonoperation is entered here.	5 - 100	20
	019	**Thread trimming solenoid operating time [10 ms]** The time, for which the solenoid is under full current, is entered.	5 - 100	25
	020	**Thread trimming solenoid duty-cycle** At present without a function	5 - 100	100
	021	**Thread take-up lever t.d.c. [°]** The position for the t.d.c. thread takeup lever is entered here. If the function is executed, the position can be set by turning the balance wheel. The access code is necessary for this adjustment.	45 - 53	51
	022	**Thread trimming position (in relation to t.d.c. needle) [°]** The position, at which the thread trimming solenoid is switched on, is entered here. The adjustment is set by turning the balance wheel. The access code is necessary for this adjustment.	180 - 253	180
	023	**Sewing area size X [1/10 mm]** To avoid mechanical collisions, the sewing area size of the clamp in use is entered. The control unit checks the path and, if necessary, issues an error message.	±200	-23/+23

Group	Parameter	Description	Setting range	Set value
000	024	**Sewing area size Y [1/10 mm]** To avoid mechanical collisions, the sewing area size of the clamp in use is entered. The control unit checks the path and, if necessary, issues an error message.	±100	-23/+23
	025	**Thread wiper solenoid operating time [10 ms]**	5-100	10
	026	**Thread wiper solenoid**, ratio on-time to off-time in % (Duty-Cycle)	5-100	100
	027	Basic position / loading point = zero point	ON - OFF	OFF
100	101	**Software version main processor** The software version of the main processor is displayed 0335/xxx 102 Software version sewing		0300/xxx
	102	**Software version sewing drive unit** The software version of the sewing drive module is displayed.		V.xx
	103	**Software version control panel** The soft and hardware version of the control panel are displayed.		V.xxx/H.xxx
200	201	**Program number** The program number of the program to be processed is selected.	50-99	50
	202	**Button hole model** The button hole model (number of holes in the button) is selected.	2-4	2
	202	**Coordinates of the first hole** The coordinates of the hole are entered.		xx,yy
	204	**Coordinates of the second hole**		xx,yy
	205	**Coordinates of the third hole**		xx,yy
	206	**Coordinates of the fourth hole**		xx,yy
	207	**Coordinates of the fifth hole**		xx,yy
	208	**Coordinates of the sixth hole**		xx,yy
	209	**Stitch positions** The number of stitch positions on one edge are entered.	1-20	xx,yy

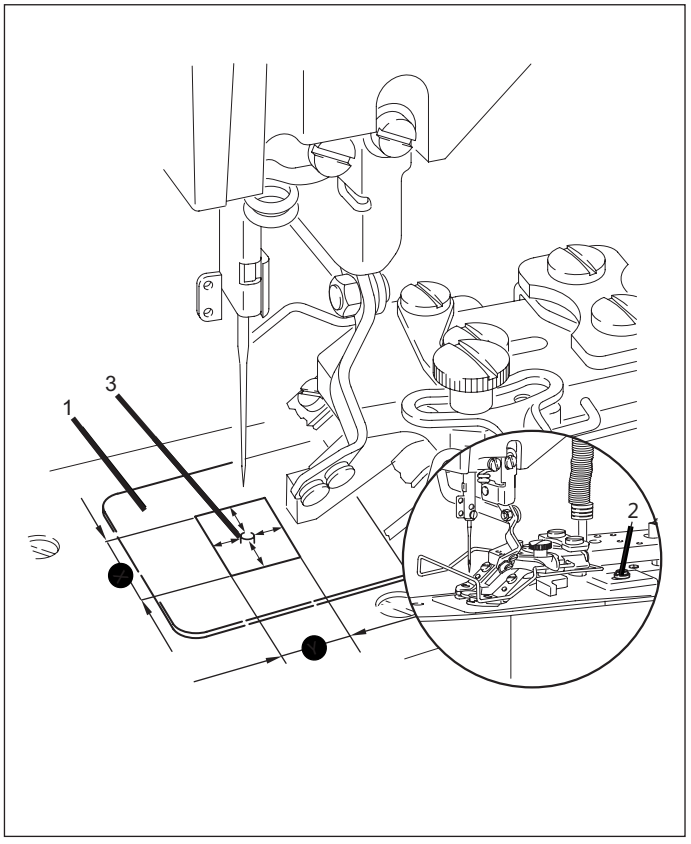
Group	Parameter	Description	Setting range	Set value
200	210	**Stitch formation** The stitch formation depends on the (0 – 3) type of button selected, see the Chapter of Free input of the seam pattern (Teach in) of the instruction manual. Three-hole button: 0 = cycle, 1 = point, 2 = stitching Four-hole button: 0 = normal, 1 = cycle, 2 = arrow, 3 = Z	0-2 (0-3)	0
	211	**Intermediate trimming** On four-hole buttons the thread can be trimmed between the second and third hole.	ON - OFF	OFF
	212	Number of sewing-on stitches	2-10	2
	213	Number of attaching stitches	2-10	4
600	601	**Display inputs** With this function the digital inputs can be checked. "IN" shows the input numbers (1 - 16). Under "VAL" the respective switch status is displayed. IN VAL 1 IN1, programmable input 1 2 IN2, programmable input 2 3 E3, button clamp raised 4 5 6 7 8 9 10 11 12 13 14 15 16		

Group	Parameter	Description	Setting range	Set value
600	602	**Display special inputs** With this function it is possible to check the special inputs pedal, reference X (SM1) and reference Y (SM2). "IN" shows the inputs (PED, REFX, REFY). Under "VAL" the respective switch status is displayed. IN VAL PED Pedal (speed control unit-1; 0; +1; 2) REFX Reference input X REFY Reference input Y		
	603	**Connect outputs** With this function the outlets can be connected. "OUT" shows the outlet selected (1-16). Under "VAL" the selected output is set (S) with the plus/minus key (+), and reset (R) with the plus/minus key. Interlocks are checked. Non-assigned outlets are not connected. OUT VAL 1 S/R Solenoid for work clamp open 2 S/R 3 S/R Solenoid for thread trimming 4 S/R 5 S/R 6 S/R Program outlet 7 S/R Program outlet 8 S/R 9 S/R 10 S/R 11 S/R 12 S/R 13 S/R 14 S/R 15 S/R 16 S/R		
	604	**Move stepping motors** The stepping motors SM1 (X-axis) and SM2 (Y-axis) are moved individually with the respective plus/minus keys. Interlocks are not checked.		
	605	**Turn sewing motor** The sewing motor can be operated with a selectable set speed by pressing the pedal. After the sewing motor has been started, the current speed is also displayed.	500-2500	500
	606	**Thread trimming sequence** The sequence for a complete thread trimming cycle is started with the +/- key (+) below CUT and below THR.		
	607	**Cold start (RESET)** With this function the control unit carries out a cold start (RESET) with which the data is reset. After this function has been selected, the machine must be switched off and then on again.		
	608	**Setting zero points** With this function and the adjustment gauge, the zero points for the X/Y-drive unit can be set. (stepping motor correction values for the reference points REFX, REFY). The access code is required for this adjustment.		

Group	Parameter	Description	Setting range	Set value
600	609	**Setting the button clamp centre X** This function is used to set the centre of the button clamp in X-direction. When entering the function, the machine moves to the current clamp centre, after which it is possible to move to the right or left edge of the button clamp, depending on the set limits (param. "023"). A correction can be made with the plus/minus keys. The relocation value is displayed.		
	610	**Setting the button clamp centre Y** This function is used to help set the centre of the button clamp in Y-direction. After entering this function, the machine moves to the current button clamp centre, after pressing a key to the front or the rear limit (param. "024"). The button clamp must be shifted manually.		
	611	**Automatic clamp opening off** With this function the automatic opening of the clamp after thread trimming can be switched off. After the machine has been switched off, the automatic clamp opening function is always activated.	ON - OFF	OFF
	612	Test function continuous start	ON - OFF	OFF
800		**The function groups and the functions** Programming the Function Keys P, P1-P8 and C1-C3 can be released for manipulation (ON) or locked (OFF). If a function group is suppressed, its parameters cannot be changed until a valid access code has been entered. Once a valid access code has been entered, the suppression is cancelled until the machine is switched off.		
	801	Right of access function group 000	ON - OFF	ON
	802	Right of access function group 100	ON - OFF	ON
	803	Right of access function group 200	ON - OFF	ON
	807	Right of access function group 600	ON - OFF	OFF
	808	Right of access function group 700	ON - OFF	OFF
	809	Right of access function group 800	ON - OFF	OFF
	810	Right of access to keys "P", "P1" - "P8" and "C1" - "C3"	ON - OFF	ON
	811	**Access code** This parameter is used to alter the access code. Upon delivery the machine is set with the access code "3371".		3371

15.Adjustment

15−1.Aligning the feeder



Requirement
The feeder should be aligned in the "X and Y direction" in such a way that the feeder cutoutdoes not touch the raised needle hole 3 during sewing.

Switch on the machine.
Set the sewing area size.
In the input mode, select parameter "610".
If necessary, enter the access code.
Align feeder 1 (screw 2) so that the raised needle hole 3 is positioned in the centre of the feeder cutout.

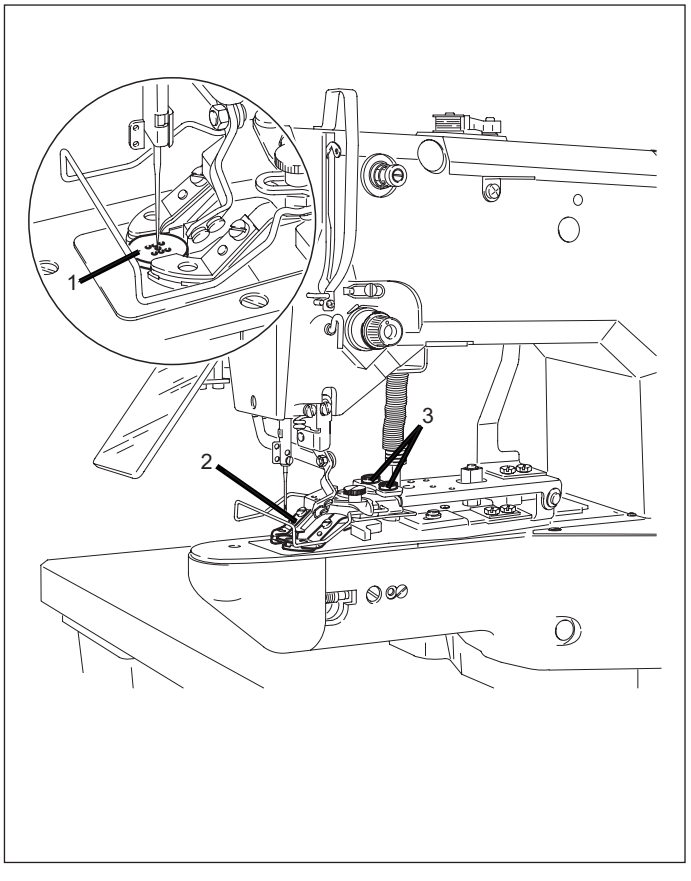
Checking the "Y-direction"
To check this adjustment, move along the maximum set sewing area size in "Ydirection" by pressing the corresponding plus/minus keys (readjust if necessary).
Call up parameter "609".

Checking the "X-direction"
Move along the maximum set sewing area size in "X-direction" by pressing the corresponding plus/minus keys.

If necessary adjust the position of feeder 1 by entering a correction value "X" with the corresponding plus/minus keys in "X-direction" in accordance with the requirement.

TE Conclude the input.

15−2.Aligning the button clamp

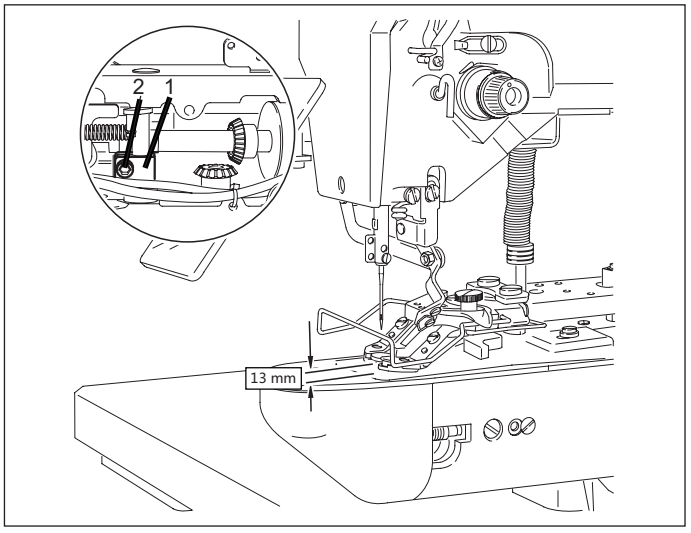


Requirement
The button clamp should be aligned in "X" and "Y" direction, so that the needle penetrates the centre of the gauge button.

Insert gauge button 1 and switch on the machine.
In the input mode select parameter "609".
If necessary, enter the access code.
Adjust button clamp 2 (screws 3) in "X and Y direction" in accordance with the requirement.

TE Conclude the input, remove the gauge button and switch off the machine.

15−3.Button clamp height

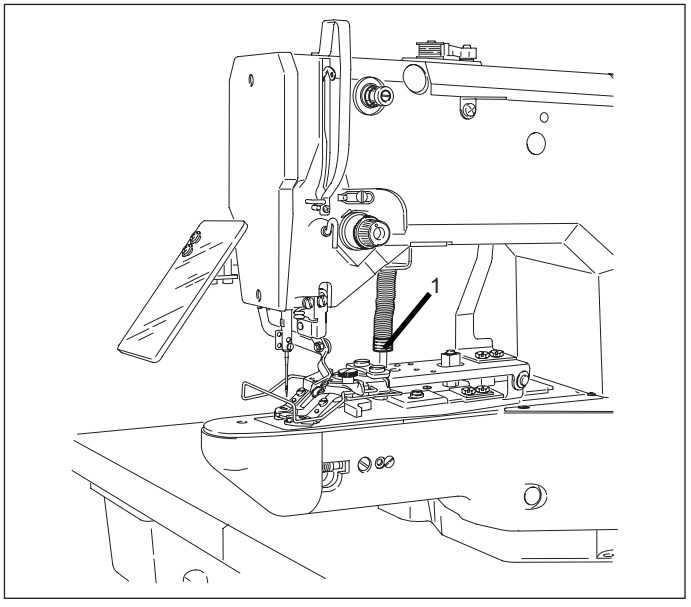


Requirement
The button clamp should be 13 mm above the upper edge of the needle plate.

Turn lever 1 (nut 2 and screw 3) in accordance with requirement.

After aligning the button clamp, it is imperative to check the position of the thread wiper. Danger of needle breakage!

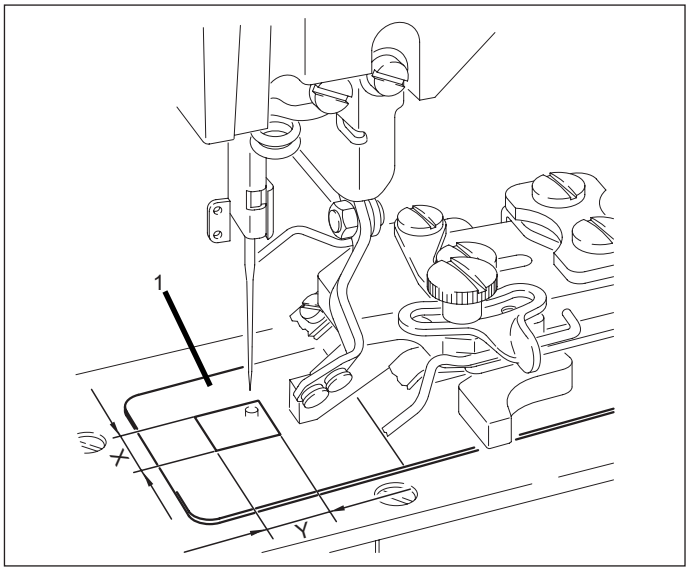
15−4.Button clamp pressure



Requirement
The pressure of the button clamp should be set so that the workpiece can be held reliably without pressure marks.

Adjust milled screw 1 in accordance with the requirement.

15−5.Changing the feeder and the jaws of the button clamp



Measure the cutout of the new feeder in X- and Y-direction and adjust the sewing area size.
Fit and align the new button clamp jaws.
Select the seam program to match the button clamp.
Check the seam program by tacting through it.

If the actual size of the sewing area differs from the size entered, serious damage can be caused to the machine!