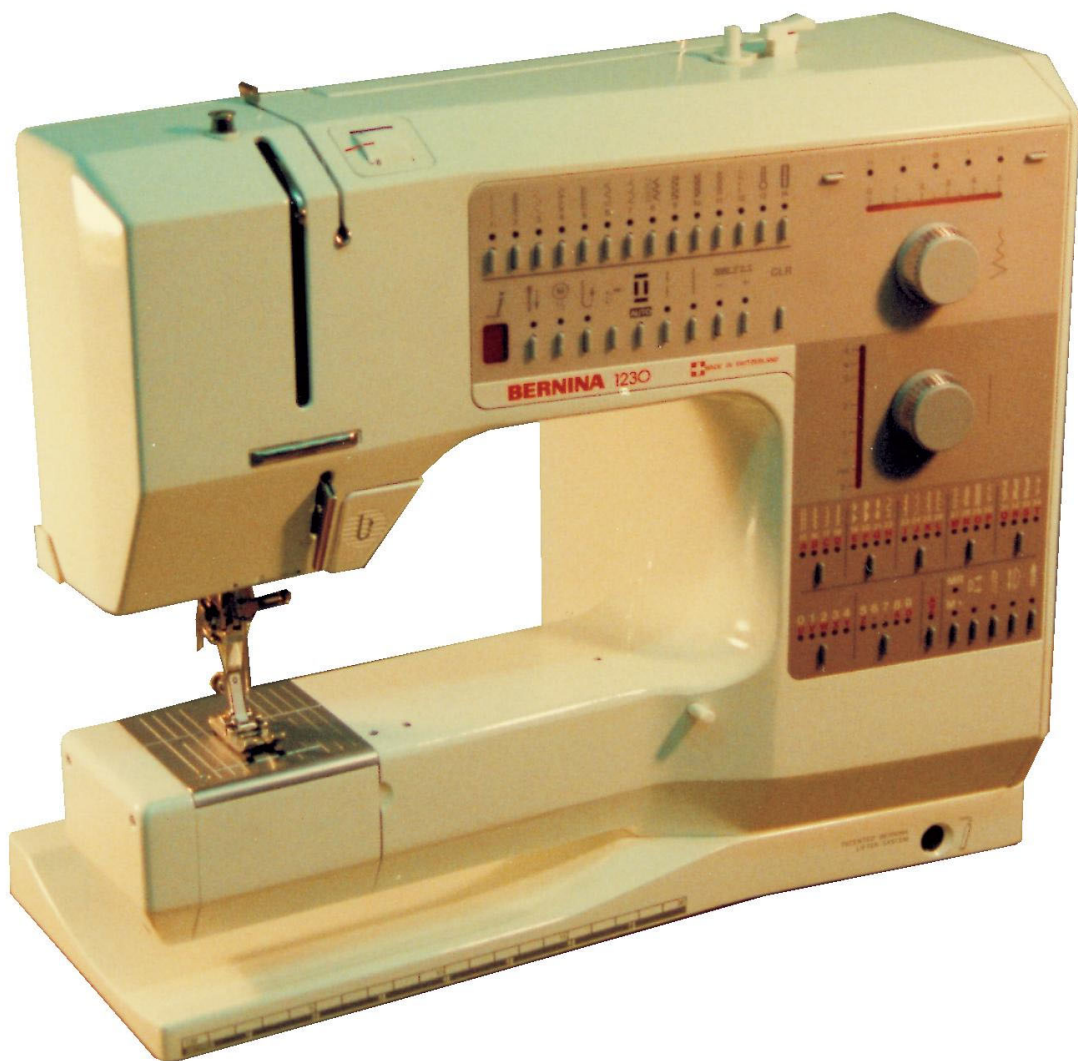


BERNINA®



Service manual

BERNINA 1230

(Supplement to service manual 1120 / 1130)

Contents

	Page
Technical data	5
Description of	
Print L-4200	6
Print A-1230	6
Print S-1230	6
Block schematic	
model 1230	7
Plug connections	8
Print A-1230	9
Print S-1230	10
Print L-4200	11
Diagnosing instructions	12
Test adapter L-4200	13
Power supply – 4200	14
Test panel – 1230	15
Test programme with service-panel	16
Warning against dangerous voltages	17
Starting the service programme	17
Ending the service programme	17
Diagnosis	18 + 19
Test A	
L-4200	20
B	
Print L-4200/R-4200 (Drive signal)	21
C	
Connection S-1230/L-4200	22
D	
Mains cord (cord reel)	23
E	
Connection of print S-1230/foot control unit	24
F	
Print P-4200	25
G	
Complete light holder	26
H ₁	
Step motors:	27
○ Print S-1230	
○ Hall-sensors	
H ₂	
○ Position Hall-sensor S.L.	28
○ Position Hall-sensor S.B.	
I	
Step motors pinning position	29
K	
Foot control unit	30
L	
Foot control digital/analog	31
M	
Print A-1230	32
Print S-1230	
Print L-4200	
N	
Ret-button	33
O	
Equalization of the forward/reverse feed	34
P _{1,2}	
Buttonhole	35 + 36
Q	
Sewing-off:	37
○ Stitch length	
○ Stitch width	
○ Needle position L.C.R.	
○ Long stitch	
Function test	38 + 39

Technical data BERNINA model 1230

Stitch length max. forward 5 mm
max. reverse 5 mm

Increment 0–1 0,05 mm
1–3 0,1 mm
3–5 0,2 mm

Max. stitch width 5,5 mm
Increment 0,1 mm

Needle system 130/705 H

Adjusting needle 130/705 H/TCN

Hook system BERNINA CB = Central bobbin

Lowest point of needle bar = 0 degree

Presser foot height = 7,5 mm

Darning foot height = 0,5 mm

Automatic long stitch 10 mm/2:1

Basting device 30 mm/6:1

Working space 105 × 195 mm

Overall length 375 mm

Overall width 184 mm

Overall height 350 mm

Motor 90 W

No of stitches per/min. min.-max. 120–1050/min
reduced min.-max. 120–600/min

Sewing light: bulb 2 × 6 V/4 W

Weight 10,5 kg

Features and functions

Needle position 5

Light beam

Zig-zag and stitch length (freely adjustable)

Automatic basis adjustments

Basic marking Blinker

LED display for presser foot

Upper needle stop (general)

Lower needle stop (general)

Needle positioning upper/lower with foot pedal

Permanent reverse sewing

Pattern start

Fully automatic buttonhole

Buttonhole 3 step

Keyhole buttonhole

Automatic long stitch

Basting device

Balance for forward and reverse feed

Clear switch

Single pattern

Mirror image

Stitch pattern extended, stitch density
remains constant

2 needle limiter

Memory

7 practical stitches without reverse motion

5 practical stitches with reverse motion

12 decorative stitches with reverse motion

32 number of stitch patterns

LED control for programmed pattern

Manual stitch size adjustment, memorized

Main switch

Separate light switch

Speed control using the foot control

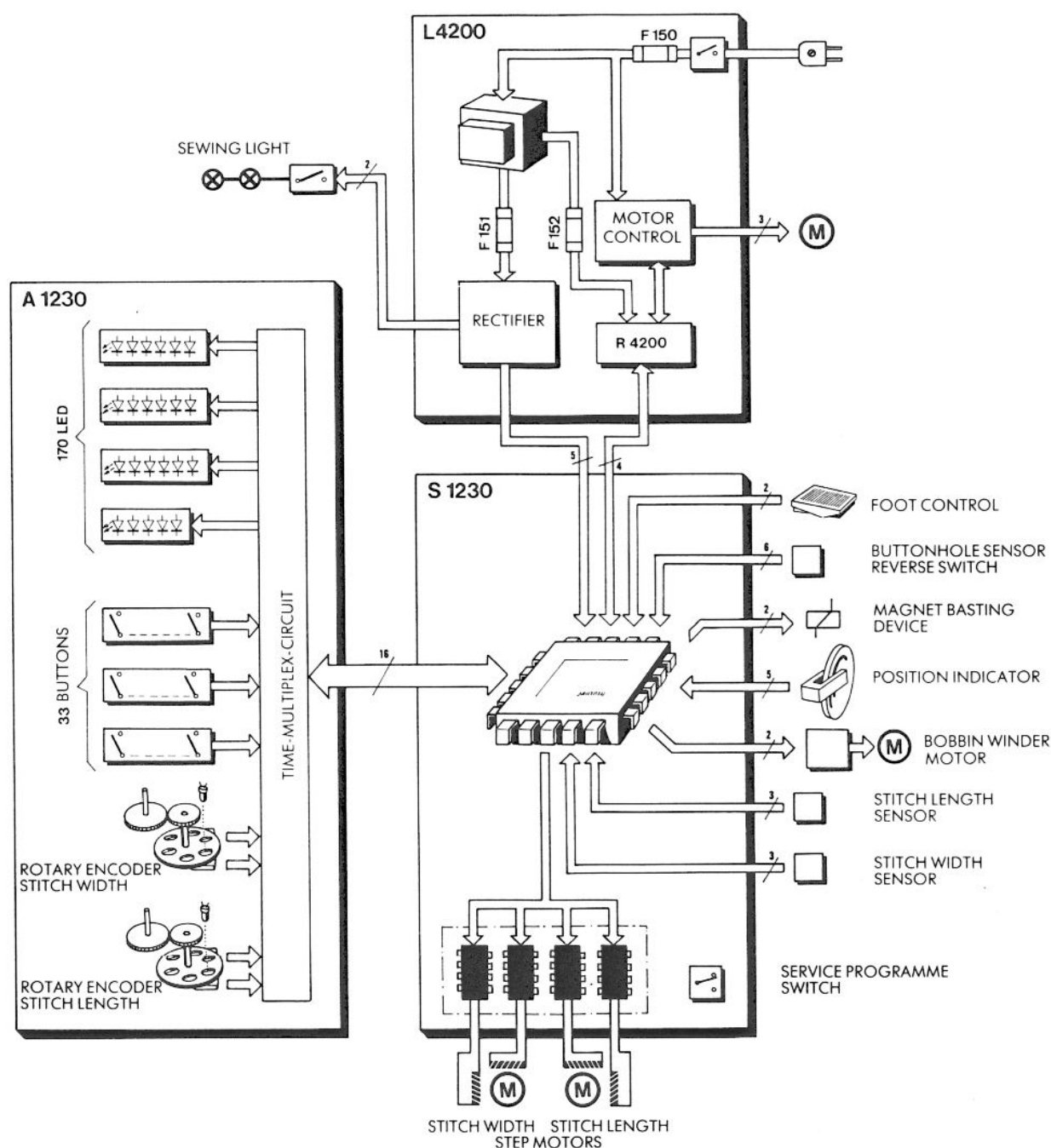
Letters A to Z

Numbers 0 to 9

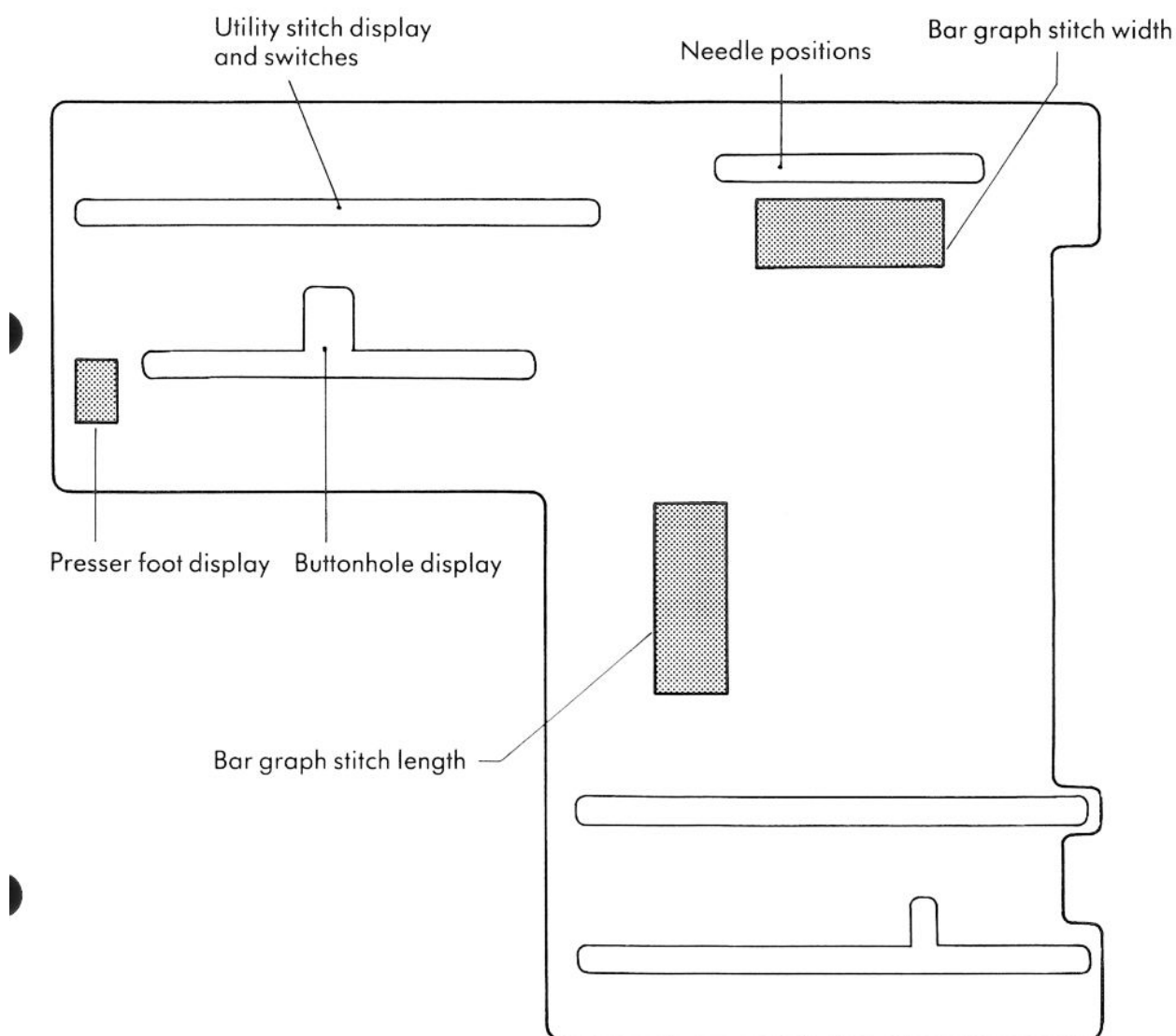
Characters 4 (– · ø ?)

Memory capacity 50 units (can be called up even
after mains failure/interruption)

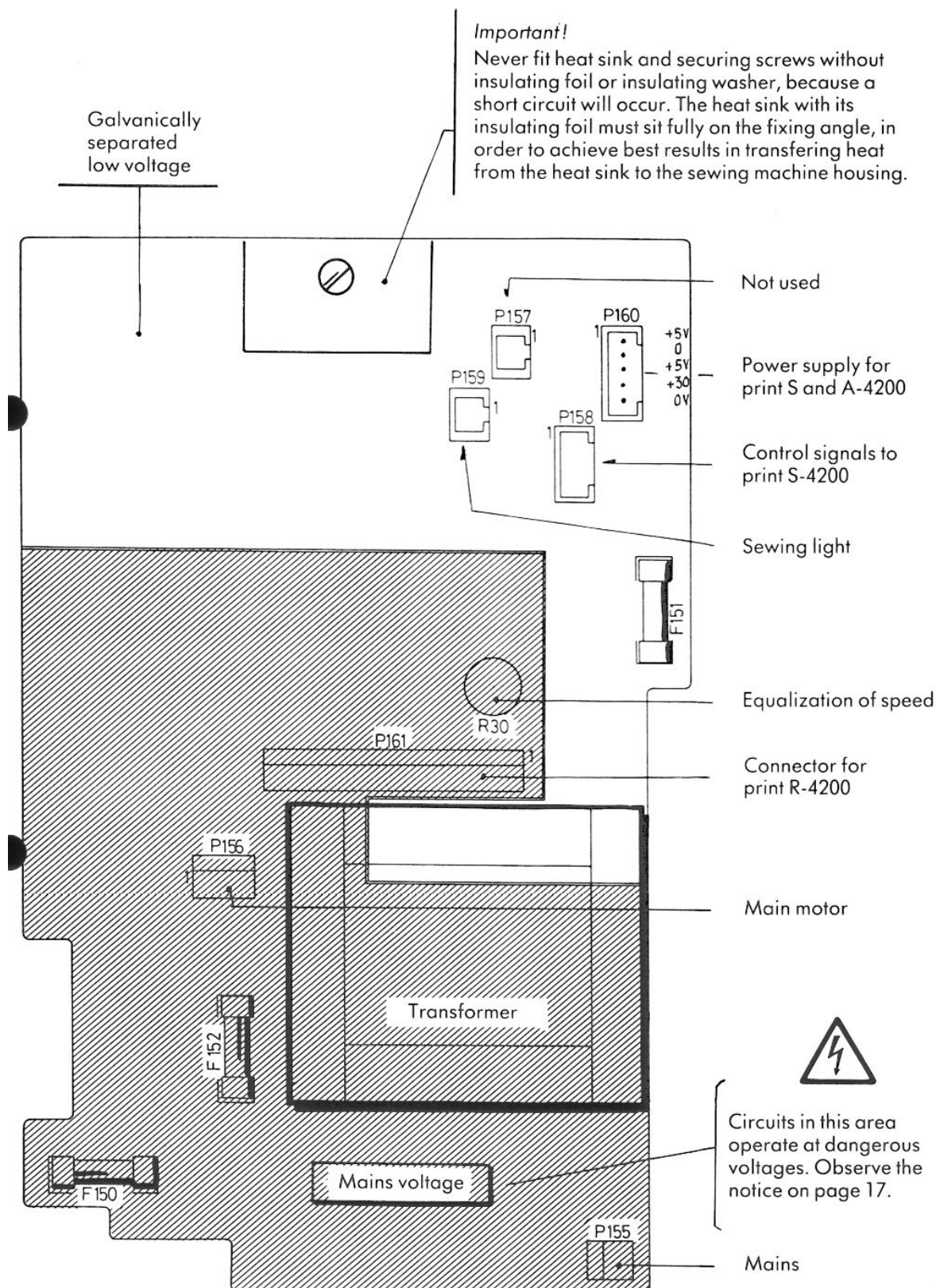
Model 1230 block schematic



Print A-1230



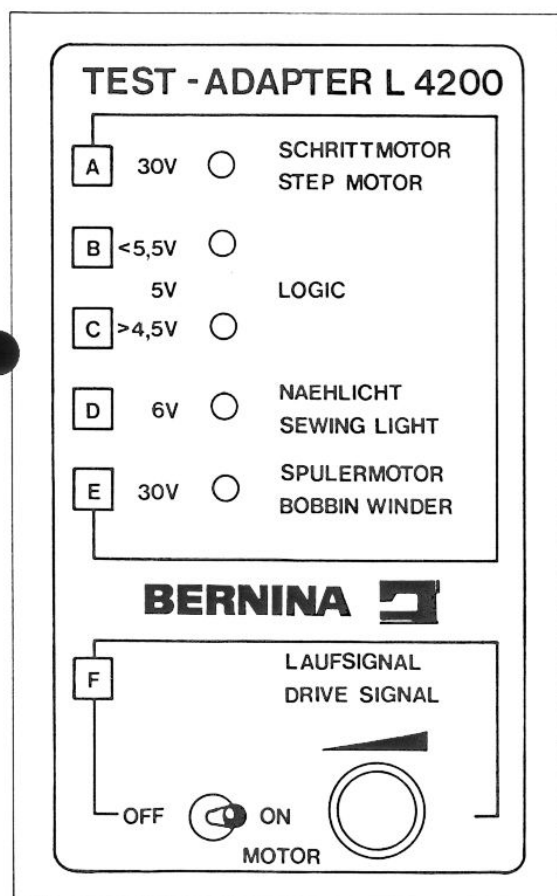
Print L-4200



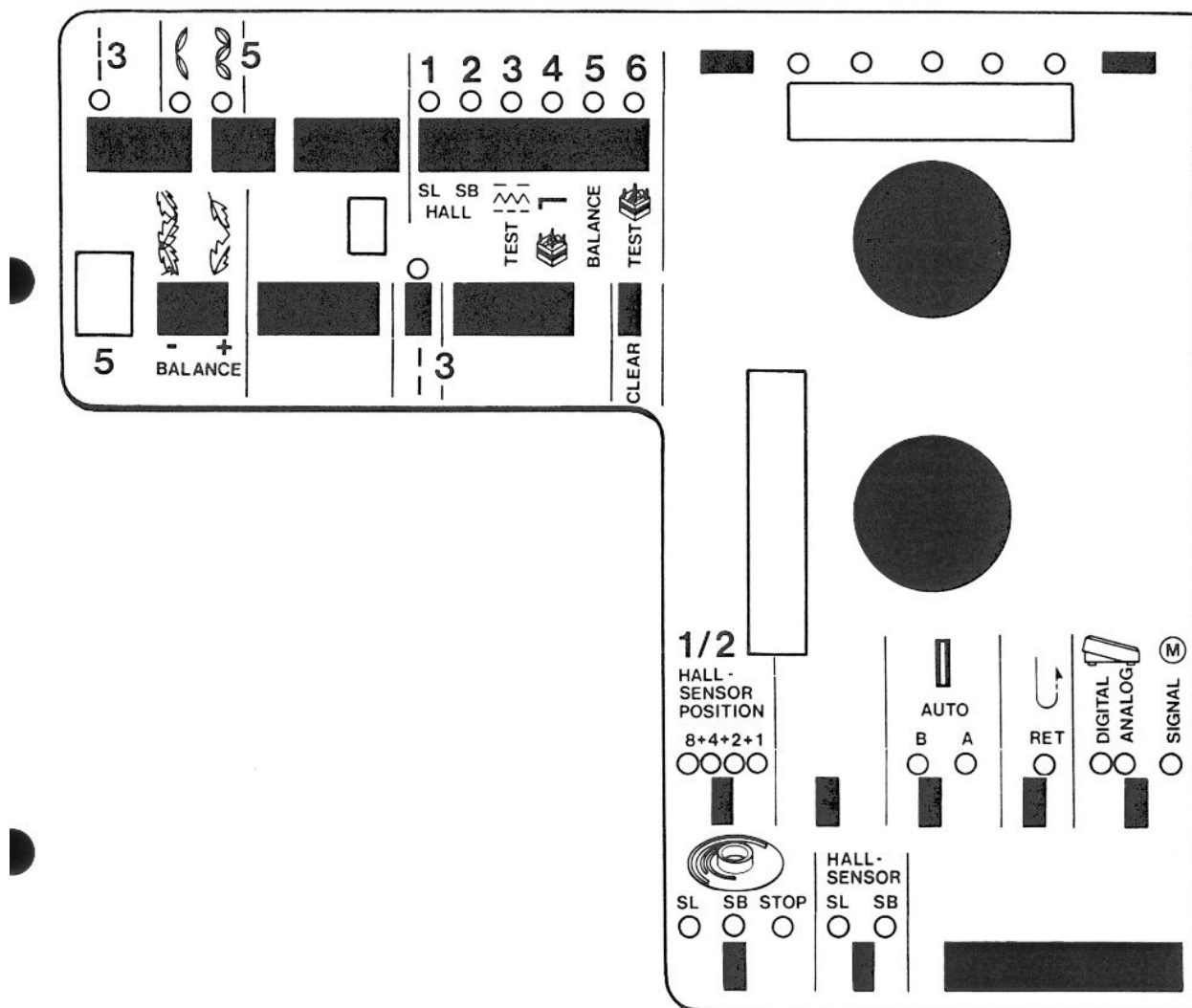
Test adaptor L-4200

The power supply for electrical parts which are connected to print L-4200 and the main motor control are checked with the aid of the test adaptor.

- When all LEDs A to E light up, then the power supply for:
 - the step motors
 - the logic circuit
 - the sewing light
 is correct. Bobbin winder motor, LED E, cannot be tested.
- If only LED B doesn't light up, then the voltage for the logic is too high (more than 5,5 V).
- If only LED C doesn't light up, then voltage for the logic is too low (less than 4,5 V).
- When the motor switch is in the «on» position, the electric brake is released, the motor receives the desired value and will run at the set speed. LED F for the drive signal *must* be lit. Speed regulation is made by turning the potentiometer.
- When the motor switch is placed in the «off» position the signal returns to zero, and the electric brake should engage. The motor slows down to a stop. LED F *must* go out.



Test-Panel 1230





Danger high level voltage!

Mains voltage (see print L-4200)

Circuits on the power print L-4200, the main motor and the cord drum operate at dangerous voltages. As some capacitors discharge approx. 30 seconds after pulling out the mains plug, you should wait this long before touching print L-4200.

Test-programm model 1230 (service operation)

1. Test-programme start

- Remove belt cover (service instructions model 1130, section 6).
 - Set service switch on the S-print into service position (refer to Fig. S-1230, page 10).
 - Switch-on sewing machine / D.C. mains adaptor unit. The sewing machine is now in service programme no. 6 (step motors), move to and from with an acustical noise.
 - Push clear button (min. 2 sec.).
 - Mount service panel.
- The sewing machine is now in the initial state of the service operation. The individual test programmes 1 to 6 can be selected from this state. The initial state can always be selected by depressing the clear button.*

The following sensor signals can now be checked:

- Position indicator / P-print (test 5 model 1130).
- Foot control digital and analog (new).
- Drive signal (partially covered in test 1, test adaptor model 1130).
- Ret button (new).
- Adjust buttonholer potentiometer (partially section 42 model 1130).

Termination of the test-programme

- Switch off the sewing machine / D.C. mains adapter.
 - Bring the service switch on the S-print into the normal position.
- The sewing machine can now be operated normally.

Attention:

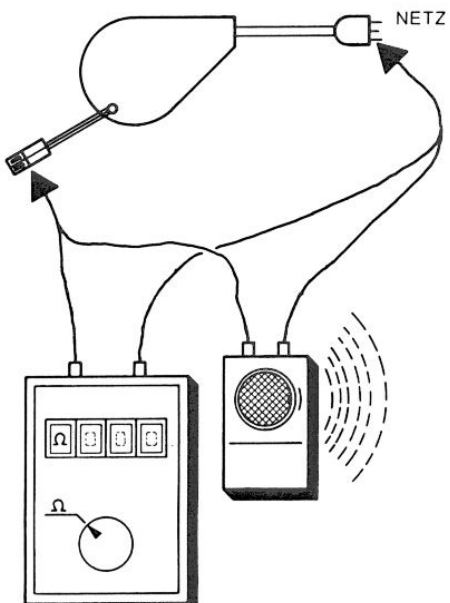
- When changing from normal operation – Service operation – normal operation.
- Switch off the machine / mains adapter.
 - Bring the service switch into the desired position.
 - Switch on the machine / mains adapter.

Diagnosis

Fault	Possible fault on	Repair instructions
Selected functions not executed when button depressed	<ul style="list-style-type: none"> – Print A-1230 	<ul style="list-style-type: none"> – Replace print A-1230, if malfunction still occurs, replace print S-1230. Test with new S-1230, print and old A-1230 print.
Automatic buttonholing does not function	<ul style="list-style-type: none"> – Buttonhole foot – Print S-1230 – Print Ret-1230 	<ul style="list-style-type: none"> – Test P₁, P₂
Basting device does not function	<ul style="list-style-type: none"> – Print S-1230 – Basting device magnet 	<ul style="list-style-type: none"> – Replace print S-1230 – Replace magnet and adjust
Reverse button does not function	<ul style="list-style-type: none"> – Print S-1230 – Print Ret-1230 	<ul style="list-style-type: none"> – Start service test programme, depress reverse button, LED RET must illuminate, if not: replace print S-1230 or if nec. Ret print.
Irregular stitch width or length	<ul style="list-style-type: none"> – Step motor 	<ul style="list-style-type: none"> – Test H₁, H₂
Bar graphs do not react to stitch adjustments	<ul style="list-style-type: none"> – Operating chassis – Print A-1230 	<ul style="list-style-type: none"> – Check mechanical and optical parts of the rotary encoder – Replace print A-1230
Main motor stops after 5 seconds	<ul style="list-style-type: none"> – Print P-4200 – Print S-1230 	<ul style="list-style-type: none"> – Test F – Replace print S-1230
No needle stop	<ul style="list-style-type: none"> – Print P-4200 – Print S-1230 – Print L-4200 	<ul style="list-style-type: none"> – Test F – Replace print S-1230 – Test A
Stitch pattern no. 32 is too short or too long	<ul style="list-style-type: none"> – Feed equalization 	<ul style="list-style-type: none"> – Test O

What is to be tested	What to adjust	Normal condition
Print L-4200 / R-4200	<ul style="list-style-type: none"> – Initial state of service operation (page 17) – Select test 3 (sewing trial) – Depress foot control 	<ul style="list-style-type: none"> – The LED «signal» is illuminated, the motor rotates.
<p><i>Repair instructions:</i> – If the LED «signal» M is not illuminated: A test should be conducted with a new R-print and the old L-print. If still faulty, then replace L-print and repeat test. If still faulty, replace S-print, and if necessary check the cable connection L-/S-print (refer to test C, page 22).</p>		

Test B (Test-Panel)

What is to be tested	What to adjust	Normal condition
<p>Mains cord (cord reel)</p>	<ul style="list-style-type: none"> – Take out mains plug. a) Disconnect ina plug at P 155 on print L-4200. b) Connect one end of the tester to the plug, then test every wire to check that a circuit can be made. 	 <p>NETZ</p> <ul style="list-style-type: none"> – Hith pitched tone! Cord ok. – Ohmmeter shows a small resistance, cord ok!
<p><i>Important:</i> If there is no high pitched tone, or the display of the ohmmeter wavers or shows infinite resistance, then the cord is defective. Replace cord reel.</p>		

Test D

What is to be tested	What to adjust	Normal condition																		
Print P-4200	<ul style="list-style-type: none"> – Initial state of service operation (page 17) a) Using the handwheel bring needle to its zero position (lowest pos.) b) Rotate handwheel forwards and check table to the right <p><i>Important:</i> If the print does not function as required per the table, then repeat tests a) and b) using a new print. If there are still discrepancies then refit the old print, replace print S-1230, and repeat tests a) and b).</p>	<ul style="list-style-type: none"> – LEDs SL, SB and stop not illuminated on the service panel <table> <tr> <th>LED SL</th><th>LED SB</th><th>LED STOP</th></tr> <tr> <td>on</td><td>on</td><td>off</td></tr> <tr> <td>on</td><td>on</td><td>on</td></tr> <tr> <td>on</td><td>off</td><td>on</td></tr> <tr> <td>off</td><td>off</td><td>on</td></tr> <tr> <td>off</td><td>off</td><td>off</td></tr> </table>	LED SL	LED SB	LED STOP	on	on	off	on	on	on	on	off	on	off	off	on	off	off	off
LED SL	LED SB	LED STOP																		
on	on	off																		
on	on	on																		
on	off	on																		
off	off	on																		
off	off	off																		

Test F (Test-Panel)

What is to be tested	What to adjust	Normal condition
Step motors, print S-1230	<ul style="list-style-type: none"> – Initial state of service operation (page 17) – Select service test programme 6 	<ul style="list-style-type: none"> – Step motors rotate back and forth, feed dog and needle bar must move
If a step motor does not rotate, then the fault can either lie with the step motor, or print S-1230. The faulty components can be identified by swapping the connections (plug P208 with P207, step motors).		
Hall sensors	<ul style="list-style-type: none"> – Initial state of service operation (page 17) Select service test programme 6 <ul style="list-style-type: none"> – Select service test programme 1 SB and 2 SL for Hall sensor position check (test H₂ page 28). 	<ul style="list-style-type: none"> – LEDs for the Hall sensors on the service panel should flash at the same frequency as the stepping motor motion
If the check LED of the Hall sensors does not flash, then the fault can lie in the Hall sensor, the mechanical part or the step motor. Replace defective step motor (see manual 1130, pages 35 to 41).		
	<ul style="list-style-type: none"> – Connect the removed motor and Hall sensor to print S-1230 and energize with the 4200 supply unit. – Manually slide magnet over the Hall sensor. – Select service test programme 1 for SB step motor. – Select service test programme 2 for SL step motor SL. 	<ul style="list-style-type: none"> – LED SB must illuminate – LED SL must illuminate
If the LED does not illuminate, replace the Hall sensor and adjust the step motor to its zero position (service test programme 5, see test O).		

Test H₁ (Test-Panel)

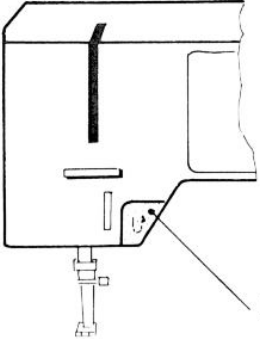
17-20

What is to be tested	What to adjust	Normal condition
<p>Pinning position of step motors: refer to section 49, or 53 model 1130 (pages 41 and 37).</p>	<ul style="list-style-type: none">– Initial state of service operation (page 17)– Select service test programme 4	<ul style="list-style-type: none">– The step motors are activated to the step position for pinning.

Test I (Test-Panel)

What is to be tested	What to adjust	Normal condition
<p>Foot control digital/analog:</p>	<ul style="list-style-type: none"> – Start service-programme – Connect foot control to the machine. – Depress slowly forwards. 	<ul style="list-style-type: none"> – LEDs «analog and digital» are illuminated.
<p><i>Repair instructions:</i> – The s-print should be replaced if only the «analog or digital» LED is illuminated. – The foot control is defective if neither of the LEDs is illuminated (regulator or cable).</p>		

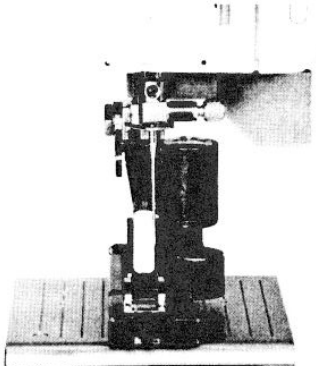
Test L (Test-Panel)

What is to be tested	What to adjust	Normal condition
<p>Ret-Button (Reverse button)</p>	<ul style="list-style-type: none"> – Initial state of service operation (page 17) – Depress ret-button  <p>Ret-button</p>	<ul style="list-style-type: none"> – LED «Ret» is illuminated
<p><i>Repair instructions:</i></p> <ul style="list-style-type: none"> – LED «Ret» is not illuminated: – A check should first be made as to whether the switch is being actuated. If this is not the case, then the switch activator should be mechanically adjusted (travel increased) until the switch is actuated. The following procedure should be followed if the LED «Ret» is still not illuminated. – Remove the P203 6-pole black plug connection at the S-print. – Connect new Ret-print. – Manually actuate the switch, LED «Ret» illuminates. – Replace Ret-print. – Re-adjust buttonholer/potentiometer. 		

Test N (Test-Panel)


© 2004

Test P1 (Test-Panel)

What is to be tested	What to adjust	Normal condition
<ul style="list-style-type: none"> – Automatic buttonholer – Print S-1230 – Print Ret-1130 – Buttonhole foot 	<p>a) Testing and adjustment</p> <ul style="list-style-type: none"> – Initial state of service operation (page 17). – Select service-programme 5. – Press button for buttonholing. – Mount buttonhole foot. – Lower feed-dog. – Lower presser-foot lifter lever. – Clip the adjusting filter on the presser foot bar from the right hand side. Slide it to its highest position until it audibly clicks into place. – With a small screwdriver rotate potentiometer «auto A» on print S 1230 clockwise to its endstop (LED A does not illuminate). Slowly rotate the potentiometer in the opposite direction, simultaneously sliding the carriage of the buttonhole foot until LED A just starts to flash. – Potentiometer «auto B» can now be adjusted in a similar fashion using LED B. 	 <p>Fitted adjusting filter.</p> <p>Attention: New filter no. 000.354.70.01</p>
<p>Note: In order to allow the foot carriage to be moved easily, two smooth pieces of material should be placed between the needle plate and the foot carriage. (Alternatively use knee lever or lifter lever to weaken the pressure of the material presser bar.)</p>		

What is to be tested	What to adjust	Normal condition
<p>The stitch length, width, LMR and the automatic long stitch (not the basting stitch)</p>	<p>– Select service-programme 3</p>	<p>– The machine can now be sewn-off.</p> <p>L.C.R. Straight stitch Stitch length and stitch width can be adjusted Longstitch</p>
<p><i>Note:</i> If the normal condition is not achieved then test M must be carried out first.</p>		

Test Q (Test-Panel)

What to adjust	Normal condition
<i>Rotary encoder</i> Adjust the stitch width and stitch length with the knobs Turn to the right Turn to the left	 Bar graph on the display increase Bar graph on the display decrease
To check the electrical transport equalization, sew using stitch 28	Sewn patterns must be closed
Press all function buttons and check LEDs	All LEDs should light up
 Press all stitch selection buttons one after the other.	The respective LED should light up.

Function-test electronic