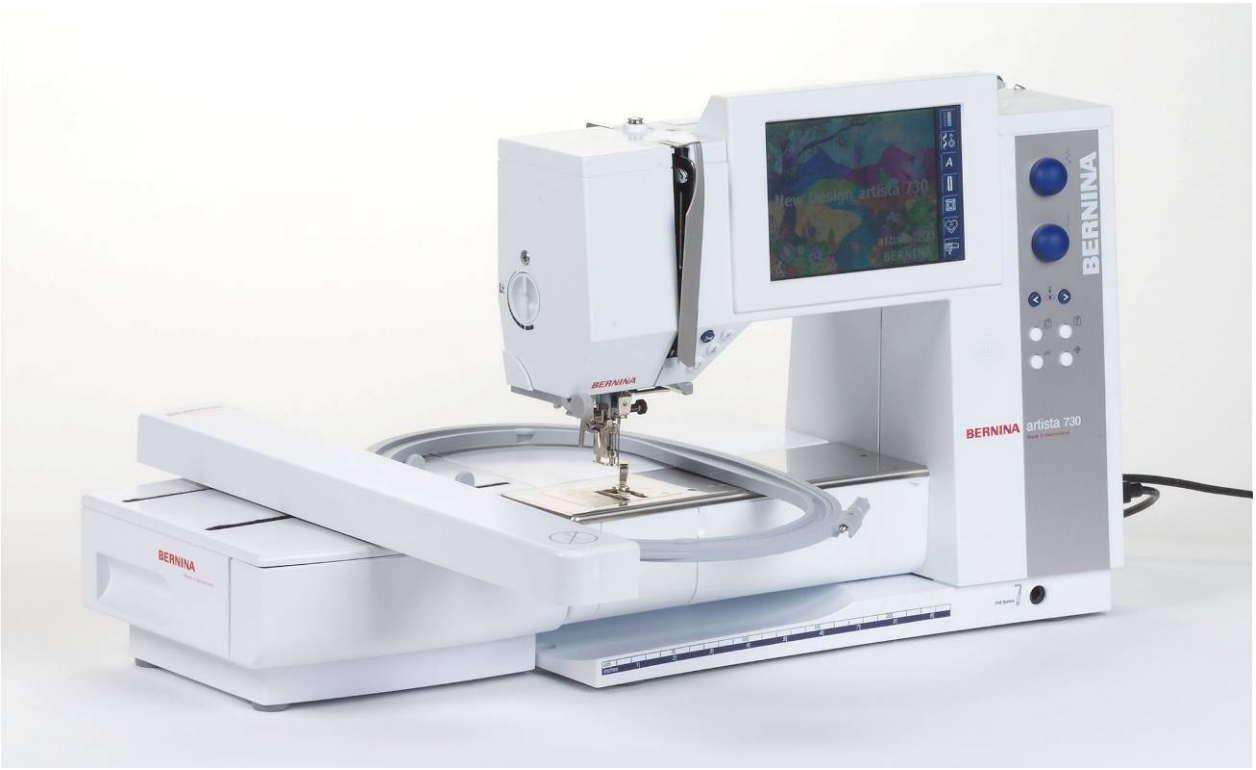
BERNINA®

Service Manual

Supplement to artista-200 service manual



artista 730 / artista 200

Fritz Gegauf Ltd.
BERNINA® Sewing machines
8266 Steckborn
Switzerland

Chapter 1
General information

1.1 Safety Regulations

Caution!
All electrical and electronic components operate at dangerous voltages. Remove the mains plug before making any adjustments to the machine. Wait about 30 seconds after removing the plug (capacitor discharge).

This service manual is intended to help with minor repairs and adjustments.
The instructions do not claim to be complete or comprehensive. The manual does not provide guidance for complete assembly or disassembly.

Important:
To enable the work described to be performed correctly, the sewing and embroidery computer must be in good mechanical and electrical condition (running smoothly, properly oiled and all leads connected)! When adjustments are carried out in the correct order, the sewing/embroidery computer will function without a problem.

It is important that only devices approved and distributed by BERNINA® are connected to the sewing/embroidery computer ports.

When servicing or repairing, always use genuine parts and original accessories, either those delivered with the machine or purchased afterwards.

These are the following:

- **Mains cable**
- **Foot control unit**
- **Buttonhole foot**
- **Presser foot 1**
- **Bobbin case with bobbin**
- **Other accessories**
- **BERNINA® stitch length regulator (BSR) foot (if applicable).**

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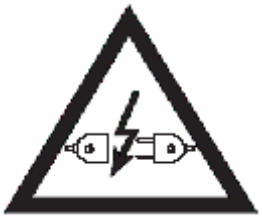
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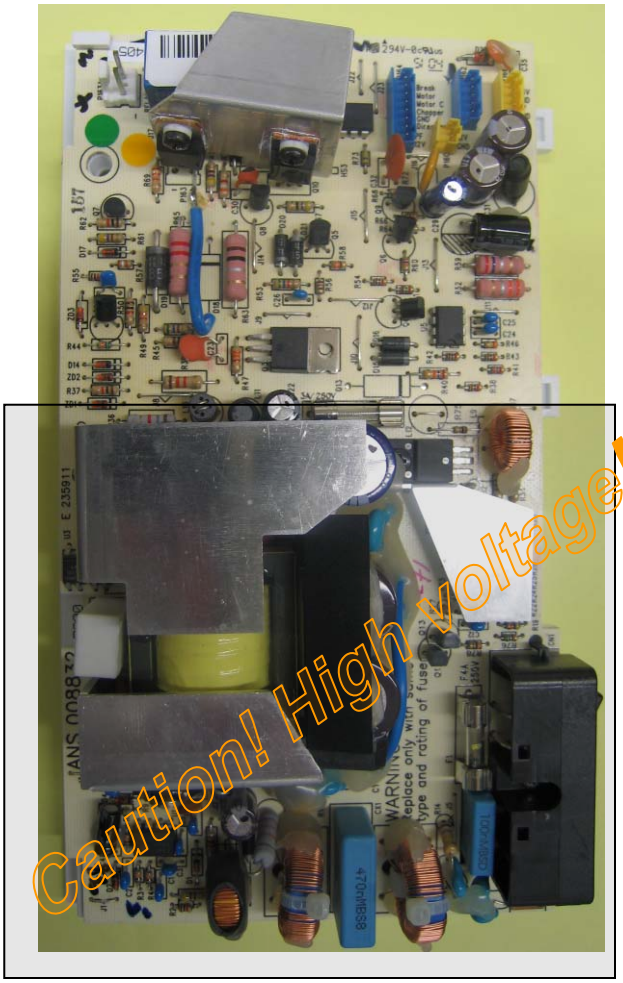
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Author: Stefan Süess
Layout/typesetting: Stefan Süess
Print: Stefan Suess

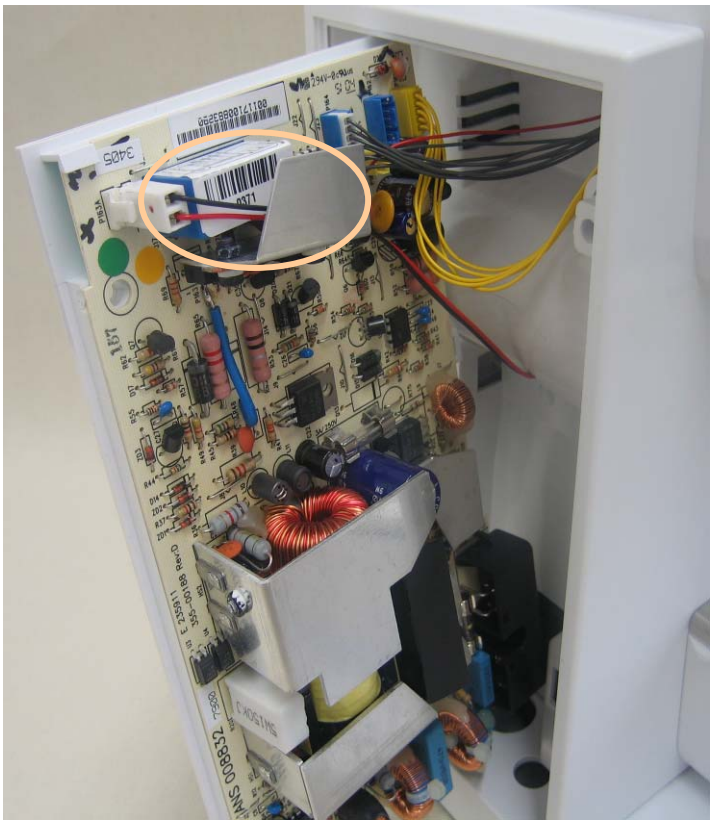
1.2 Warning: Dangerous voltage levels!

Caution!
The L-Print power circuitry, the S-Print CFL voltage supply and the mains cable all carry dangerous voltages. For your own safety do not touch the L-Print and Main-Print until about 30 seconds after the main voltage has been switched off. This is the time required for the capacitors to discharge.

Warning!
The sewing/embroidery computer may only be connected to the mains supply when the chassis covers are mounted. Work on the L-Print, Main-Print, CFL-Print and mains cable may only be carried out when the mains plug has been removed from the mains supply.







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1.4 Note on Electrostatic Discharge (ESD)



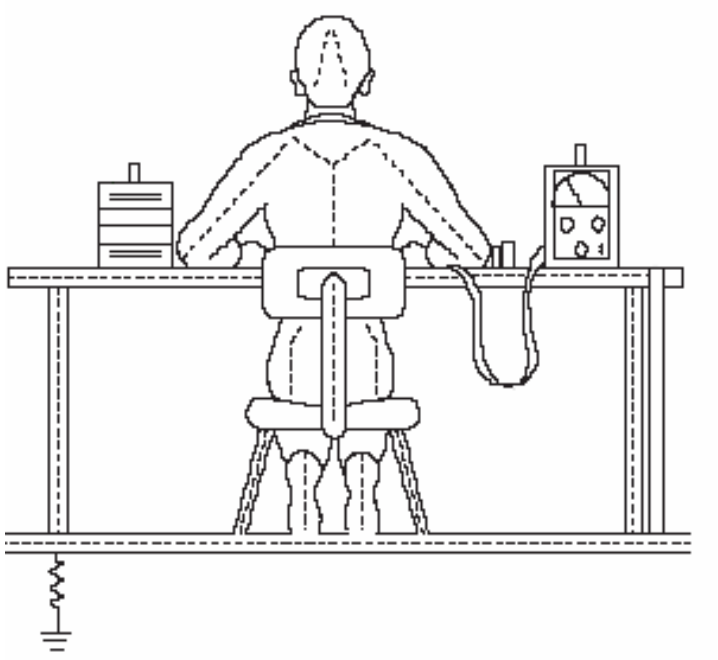
Electrostatic charges are caused by:
- a person's walking (influence) over synthetic tilled or carpeted floor
- friction between and separation of two insulating materials (triboelectricity)

If this static electricity discharges through electronic components, these may be partially or irreparably damaged. Electrostatically charged persons represent the greatest danger for components. This can be dissipated by controlled electrostatic discharge.

Protection of electrical and electronic components against electrostatic discharges

Be sure to follow these important guidelines:

- Always work at a stationary, ESD-compliant workstation equipped with the appropriate protective devices including conductive table and floor mat, earth connection box and earthing wristband when doing service work.
  The cable of the earthing wristband must have a built-in resistance of 1 M ohm to ensure protection.
- Always put on an earthing wristband before starting to work. Always remove any synthetic parts like plastic bags, covers etc. from your workstation.
- Only open ESD protective packaging at your ESD-proof workstation while wearing an earthing wristband. Electronic components must be placed on conductive table mats only. Packing is carried out under the same conditions.
- Only use conductive plastic/foil pouches and ESD transport boxes for dispatching electronic components – even if the components might be faulty.
- Treat faulty PCBs the same as good ones to prevent addition harm.



Chapter 2
Description of technical details and electronics

2.1 BERNINA® artista 730/200 technical specification

Features	**artista 730 / 200**
Maximum stitch length forward in mm	5
Increment in mm	0,05
Maximum stitch length reverse in mm	5
Maximum stitch width in mm	9
Maximum stitch width in mm (in sideways motion stitching)	bis 45
Increment in mm	0,11
Hook system	BERNINA® RH
Needle system	130/705 H
Adjusting needle	130/705H TCN 80
Sideways motion	X
Feed-dog drop	X
Feed-dog drop via FHS	X
Needle positions	11
Stitch patterns / designs	856
Total number of buttonhole types	25
Satin stitches	
Quilting stitches	
Total number of utility stitches	
Total number of decorative stitches	
Alphabets and monogrammes	9
Automatic darning programs	2
Total number of stitch programs	
Functions:	
Automatic basic settings	X
Display of recommended optimum stitch settings	X
Display of selected stitch	On screen
Clear button (clr)	X
Balance	Electronic
Vertical / horizontal mirroring	X
Permanent reverse sewing	X
Memory (mem)	1023X
Pattern end	X
Securing at pattern beginning/ending	X
Upper thread indicator	X
Lower thread indicator	No
BSR (BERNINA® Stich Regulator)	X
Integrated threader	X
Hopper mechanism	X
Long stitch function	No
Adjustable presser foot pressure	X
Knee-activated presser foot lifter (Free Hand System)	X
Automatic upper thread tension	No
Automatic lower thread cutter	No
User interface	
Display	Graph. LCD
Colours	256

Characteristics	artista 730 / 200
Size in mm (inch)	115x86mm (4.5” x 3.4”)
Resolution / Number of pixels	320x240
Screen backlighting	X / white
Direct stitch/function selection	X / Touchscreen
Stitch width bar display	X
Stitch length bar display	X
Integrated service program	X
Drive/power unit:	
Universal L-Print (100 - 240 Volt)	X
Maximum power	100 W
Motor:	DC/65W30V
Sewing speed	100-900 s.p.m
Embroidery speed ∅	600 s.p.m
Needle stop	X
Needle stop via foot control	X
Main power swtich	X
Mechanical data / housing:	
Diametral capacity in mm (inch)	190x110 (215) / 7.5x4.3 (10.2)
Overall length in mm (inch)	385 (385)
Overall widt in mm (inch)	175 (7)
Overall height in mm (inch)	308 (12)
Sewing light	CFL
Presser foot height in mm	7,5
Weight in kgs (lbs.) (without accessories)	approx. 9.7 (ca. 21 lbs.)

2.2 Cleaning

Remove covers and clean.

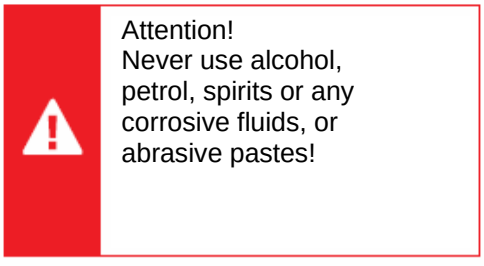
Electrostatic charging may occur during cleaning. To prevent this, use antistatic office-equipment cleaning agents.
We use and recommend BASF’s SURFACE CLEAN surface cleaner
It forms a protective film against static electricity, and is suitable for both plastic and metallic surfaces.

Inside parts
Dust, lint, thread and fabric remnants can accumulate inside the machine behind the covers and may lead to malfunctions.

In the head frame area, this frequently occurs in particular in the thread take-up (joints), the main shaft (behind the balance piece) and the thread tension device.

In the base area it occurs in:

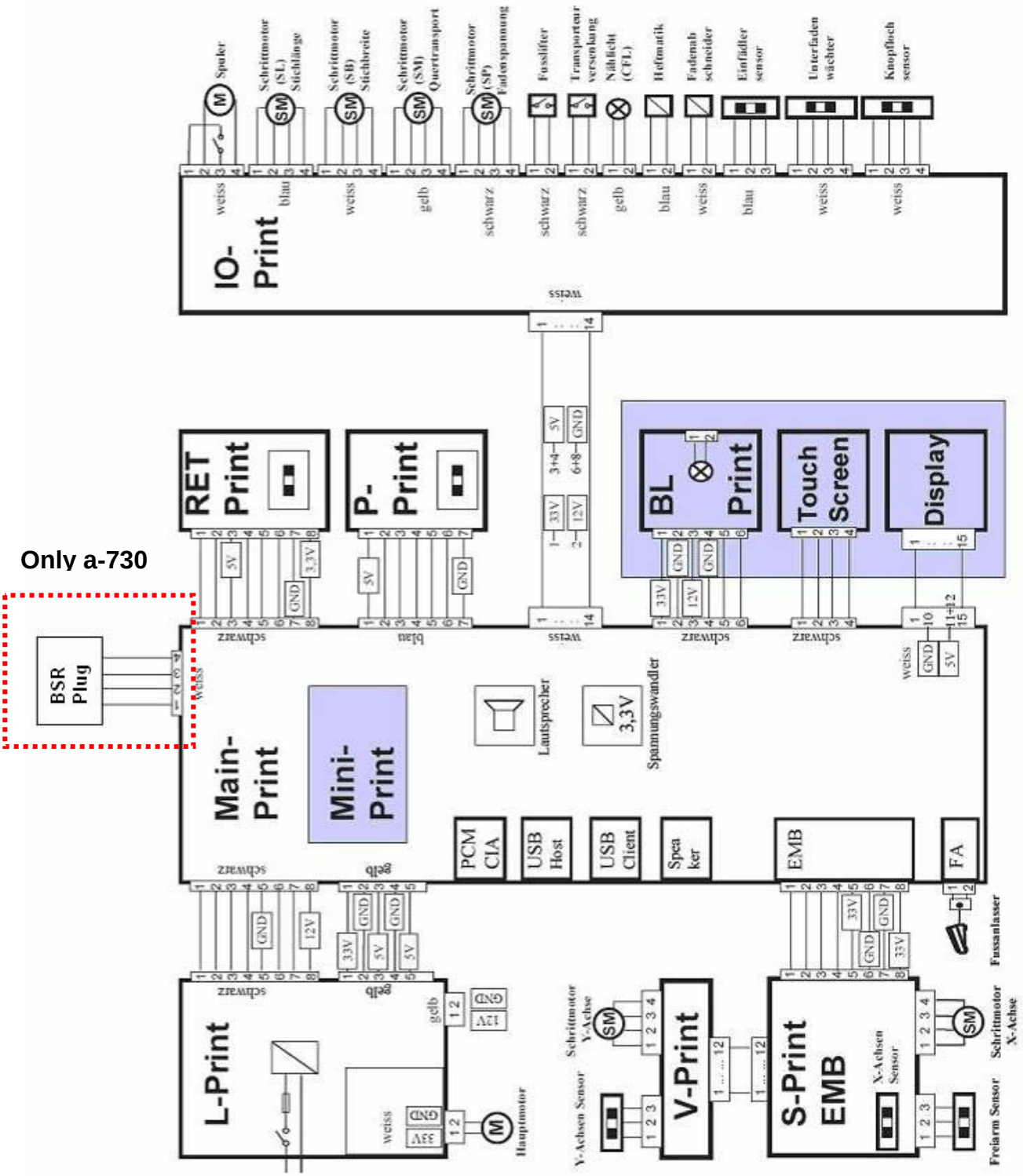
- the bobbin case,
- the feed-dog,
- the hook,
- the hook drive,
- the hook race,
- the base shaft (lift and advance eccentric),

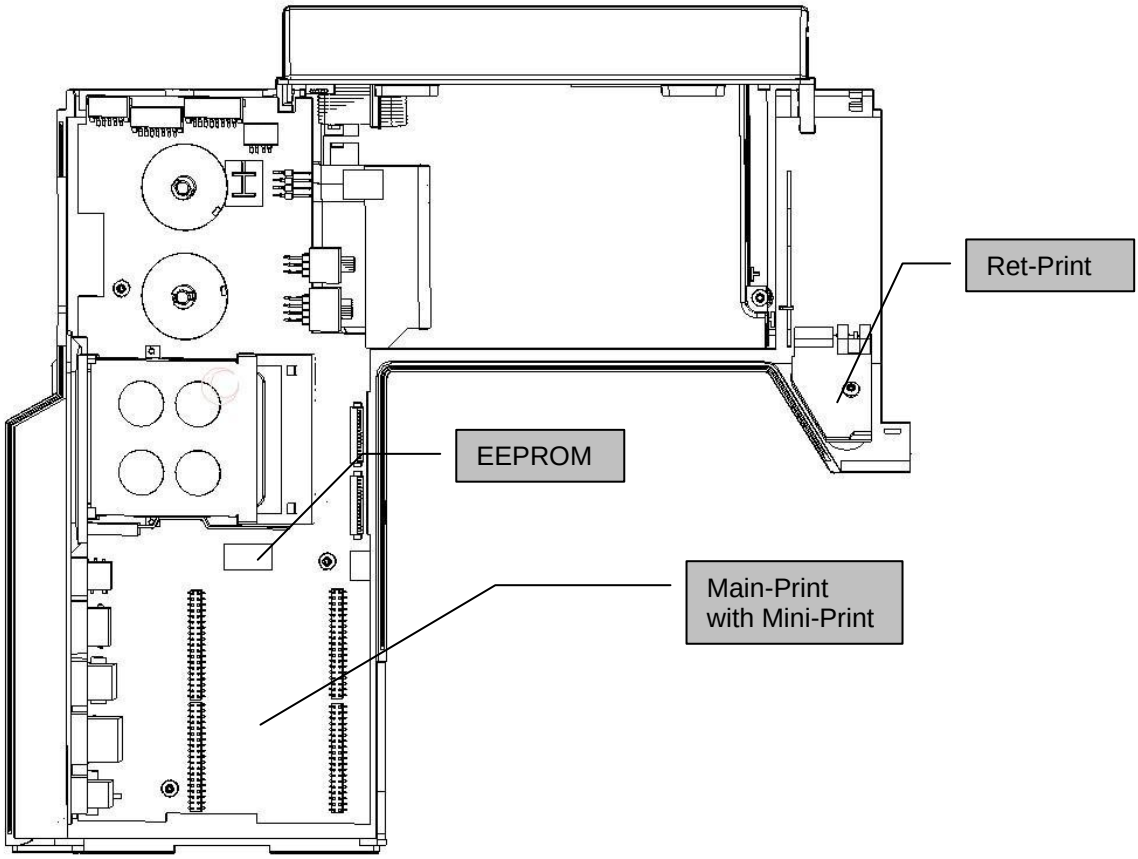


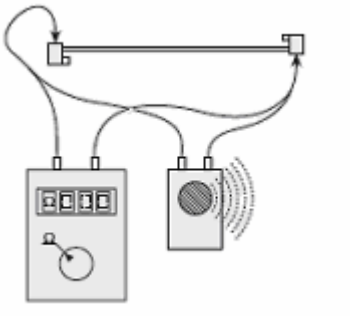
The main and base shaft belts and their tension units can also be affected by the accumulation of dust, lint, thread and fabric remnants, as well as by belt residue.

2.3 Block diagram

The electronics of the BERNINA® artista 730 / 200 are primarily accommodated in four main modules (PCBs) – the L-Print (power PCB), the P-Print (positioning PCB) and the Main-Print with Mini-Print and the Input/Output-Print (I/O-Print).

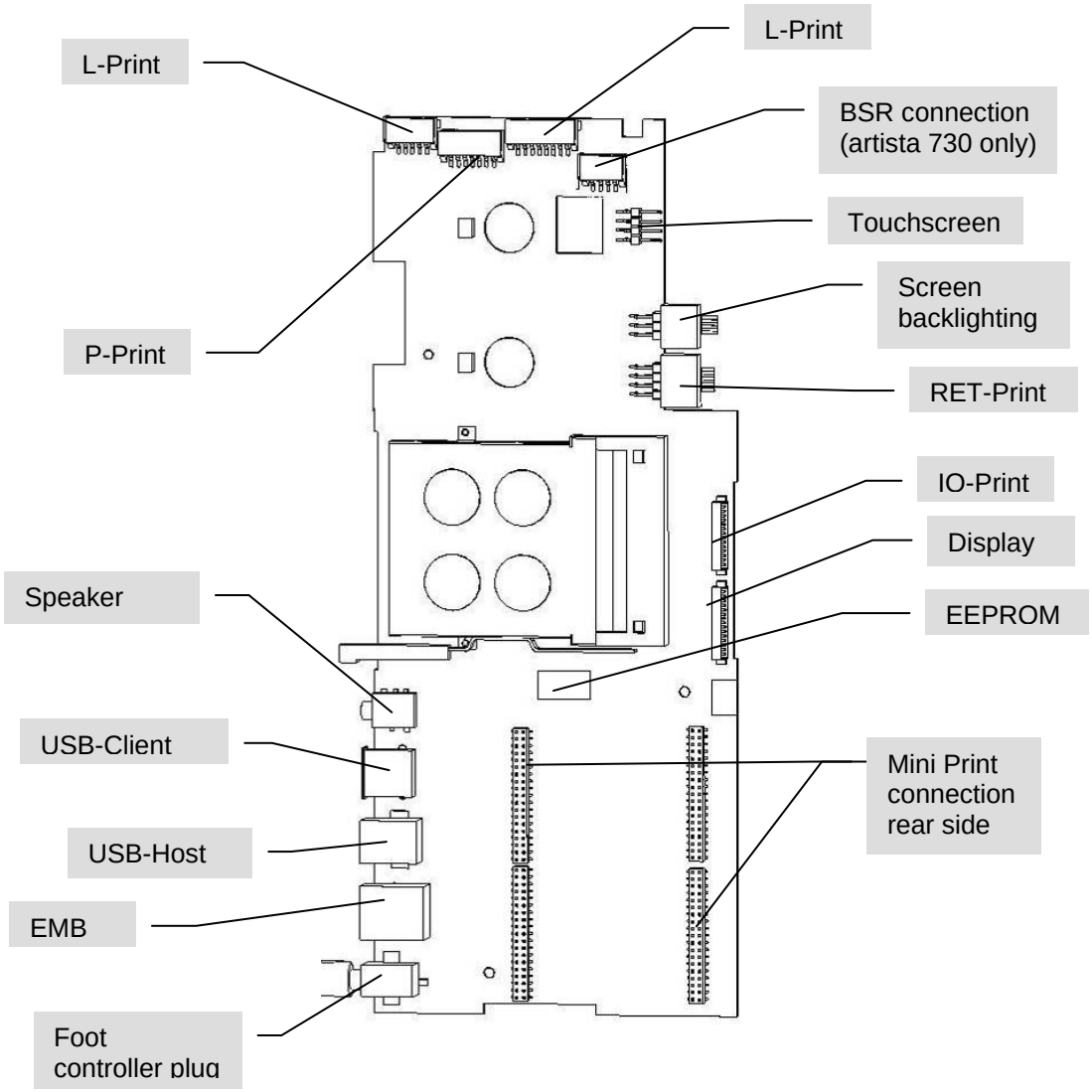




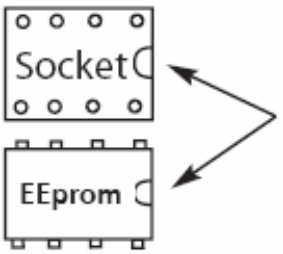
What to test	What to adjust	Desired status
Electrical resistance of cable	Disconnect mains plug, remove covers and unplug cables from both printed circuits	
Visual check		Check cables for damage, short circuits, and line disconnections Check plug and socket for damage, bent or loose contacts
Electronic measurement by ohmmeter or continuity tester (beeper) 	Set measuring instrument to beeper or Ohm area. Check each cable wire. This involves placing the measuring tips on the top of the connector against the metal cutters to check each wire against the other.	**Each wire individually:** **If the wire is OK:** • Ohm on the ohmmeter: beep signal on beeper. **Defective wire:** Ohm on Ohmmeter: no beep signal on beeper (interruption). **Each wire against the other wires:** **If the wire is OK:** Ohm on Ohmmeter: no beep signal on beeper **Defective wire:** • Ohm on ohmmeter; beep signal on beeper (short circuit, squashed wires)

2.4 Main-Print

The S-Print is manufactured according to S.M.D. (Surface Mounted Device) technology.
S.M.D. components facilitate very compact circuitry.
S.M.D. printed circuits cannot be repaired with conventional tools!



The sewing computer data is saved on an EEPROM on the Main-Print.
If the Main-Print needs to be replaced, that EEPROM must be moved to the new Main-Print.



EEPROM markings must match

Chapter 3
Functional check and diagnostic instructions

3.1 Functional check

A correct functional check must be carried out in order to make an error diagnosis.

1) Visual check:
Spool holder
Thread guiding parts
Needle in general, and needle position
Stitch plate
Feed-dog
Bobbin case
Hook, thread guide plate, bobbin case Retainer
Hook driver

2) Functional check:
Functioning of FHS presser foot lifter
Functioning of feed-dog drop
Functioning of presser foot pressure setting
Removal of bobbin case
Functioning of automatic and manual thread cutter
Connecting machine with original cable and foot control
LCD screen with backlighting
Functioning of sewing light
Functioning of left and right needle position
Functioning of stitch length and stitch width
Functioning of CLR button
Functioning of winder motor
Test-run the machine and listen for unusual noises and noise level
Inspect main-, foot-control- and ribbon cables for loose contacts and electrical resistance.
Drive check of stepping motors.
Inspect USB, embroidery module, PC and foot control interfaces for connection capabilities.
Note machine's operating hours, firmware version and balance values in service program.

3) Mechanical checks:
Remove all covers.
Cleaning of mechanical parts
Check bevel gears for wear and tear
Checking of:
Main shaft play
Base shaft play
Thread take-up lever
Needle bar support
Feed-dog
Functioning of bobbin case hinge
Functioning of upper and lower thread tension.
Lubricate the machine.

4) Sewing checks:
Sewing-off using the following:
Functioning of the Quick reverse button (securing stitches)
Straight stitch
Zigzag stitch
Honeycomb stitch
Automatic buttonhole stitch
Automatic darning
Embroidery module (if there is one) using the test embroidery design
BSR foot (if available)

3.2 Diagnostic instructions

Powering the stepping motors

- In order to allow the stepping motors to operate correctly, it is essential that they are returned to their "zero" position after each restart of the sewing computer or change of function. In order to adjust this "zero" position, the stepping motors must be powered (under current). Replacement motors should be adjusted before they are fitted into the machine. To achieve this, the motor must be connected to the P-Print at the appropriate plug, which in turn must be connected to the S-Print, and the S-Print to the power supply. Plug in the power cable, then select pinning positions in the **service program (SP 4f)**. This program powers the stepping motors to their correct current values. The motors can then be adjusted according to the servicing instructions of the service manual.

Saving the data before carrying out any servicing or repair work

- Customer and machine data must be recorded on a **BERNINA Personal Design Card** before starting servicing or repair work. This is to avoid loss of data when replacing PCBs or updating the firmware, and for use when comparing with the factory settings. The machine data is saved on a replaceable EEPROM (Electrically Erasable Programmable Read-Only Memory) on the Main Print. This EEPROM may only be exchanged with a special tool and in an ESD environmental workplace.

3.3 Sewing-off

- Sewing-off is a way of checking whether the adjustments made have had the desired effect, and that the machine is functioning correctly.
- The following stitches should be checked in sequence using the appropriate criteria.

1)
Straight stitch
Is the thread regulator spring being moved correctly?
Is the row of stitching straight?
Is the thread feed regular?

2)
Zigzag (default values)
Is the stitch formation symmetrical?
Is the thread feed regular?
Is the fabric free from puckering?

3)
Satin stitch
Is the stitch formation symmetrical?
Is the thread feed regular?
Is the fabric free from puckering?

4)
Running stitch
Is the stitch formation symmetrical?
Is the thread feed regular on both sides?
Is the fabric free from puckering?

5)
Balance using “9” & “Leaf” pattern
Is the stitch formation symmetrical?
The stitched outline in the '9' and the leaf must correctly meet up.

6)
Any other stitch (e. g. Honeycomb stitch)
Is the stitch formation symmetrical?
Is the thread feed regular?
Is the fabric free from puckering?

7)
Buttonhole
Standard buttonhole:
Is the stitch formation symmetrical?
Are the beads of equal length?
Is the feed correct?
Automatic buttonhole:
Is the stitch formation symmetrical?
Are the beads of equal length?
Is the feed correct?
Keyhole buttonhole:
Is the stitch formation symmetrical?
Are the beads of equal length?
Is the feed correct?
Is the stitch formation of the eyelet part symmetrical?

8)
Sew-off samples for the customer
At the end of the service, a sample is prepared for the customer so that they can see how the machine sews after the service or repair.
This sample should contain the following stitches:
- Straight stitch
- Zigzag stitch
- Running stitch
- Reverse-fed stitch
- Buttonhole

Should the customer have complained about any specific stitch, these should also be sewn on another piece of fabric and included.
The sample for the customer must be the technician’s business card!

9)
BSR foot
Functioning
Even stitching in X/Y directions

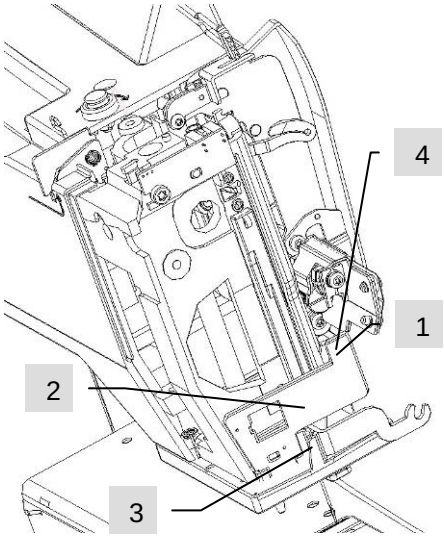
10)
Embroidery module
• Test embroidery design or customer-specific designs if necessary.

3.4 External cleaning

Caution!
Never use alcohol, petrol, spirits or any other corrosive fluids, or abrasive pastes!
Electrostatic charging may occur during cleaning. To prevent this, use antistatic office-equipment cleaning agents.
We use and recommend “BASF’s SURFACE CLEAN” cleaner It forms a protective film against static charging, and is suitable for plastic and metallic surfaces.

Chapter 4
Replacing Assemblies

4.1 BSR interface



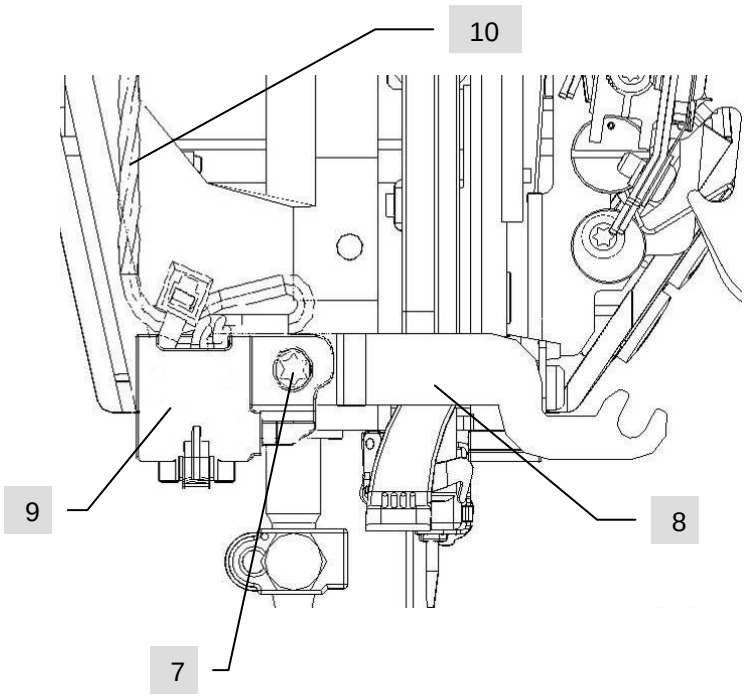
Disassembly:

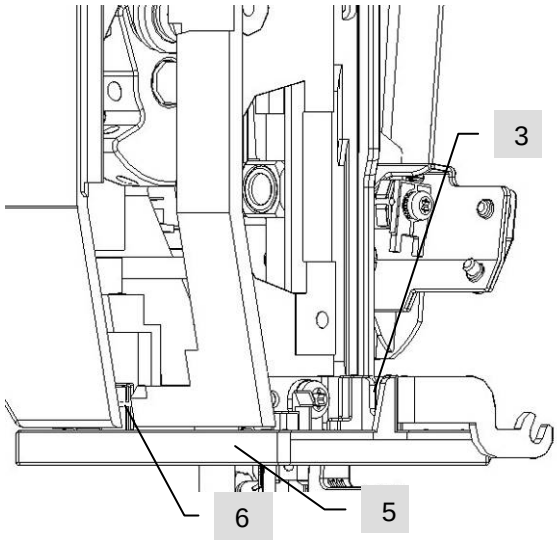
- Remove covers.
- Remove Main Print cable (**10**).
- Loosen screw (**3**) by about one rotation.
- Remove plug (**4**).
- Disengage CFL (**5**) from both clips (**6 and in front of CFL**), push down gently and slide CFL Print (**1**) up and out of the guiding (**2**).
- Remove screw (**7**).
- Remove magnifying glass holder (**8**) and BSR interface (**9**).

Note:
The presser foot bar must be down!
Don't bend CFL tube!

Assembly:

- Attach BSR connector (**9**) and magnifying glass holder (**8**).
- Retighten screw (**7**).
- Engage CFL (**5**) at both clips (**6 and in the front of the CFL**).
- Slide CFL Print (**1**) into guide (**2**). **Be sure not to squash the cables**.
- Retighten screws (**3**).
- Connect plug (**4**).
- Connect Main Print cable (**10**).
- Refit covers.
- Carry out a functional check (**refer to chapter 3**).
- Sew-off (**chapter 3.3**).



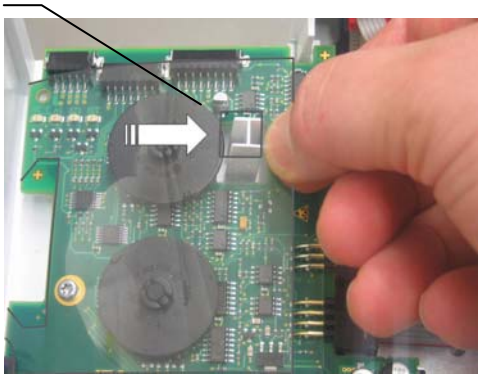


4.2 Replacing the protective film against oil

Disassembly:

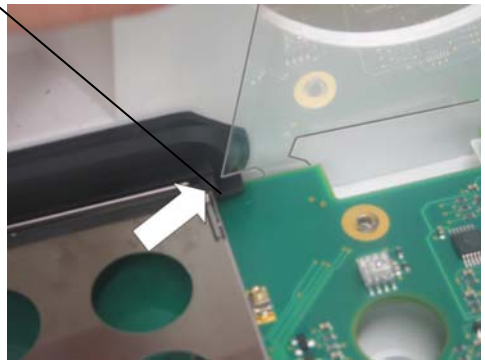
- Remove covers.
- Lift protective film and pull over the plastic profile. (**Picture 1**)
- Turn disk (**2**) until it disengages, then remove button (**1**), distance tube (**3**), and disk (**2**). (**see picture on next page**)
- Remove screws (**4**).
- Lift main print (**5**), and turn over (**Picture 4**).
- Slide protective film out of screw eye. (**Picture 3**)

Picture 1



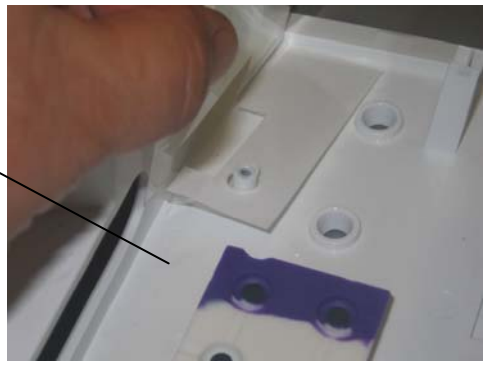
Assembly:

Picture 2



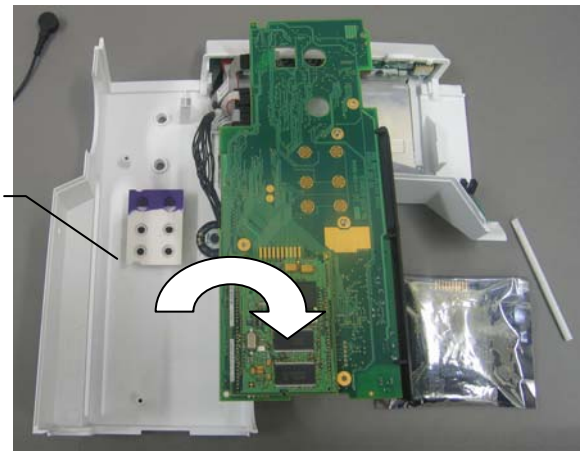
- Place protective film over screw eye. (**Picture 3**)
- Place Main Print (5) into front cover in such way that the protective film covers the Main Print.
- Check that the cables were not unplugged accidentally, and that the black cable is lead away from the loudspeaker's contact points.
- Before retigthening the screws (**4**) check that the protective film does not get trapped between front cover and plug side black covering (**picture 2**).
- Tighten screws (**4**) to fasten Main Print (**4**).
- Reattach buttons (**1**), distance tubes (**3**), and disks (**2**). Turn disk until it engages.
- Place cable so that it is neither squashed, nor obstructing the mechanical parts.

Picture 3

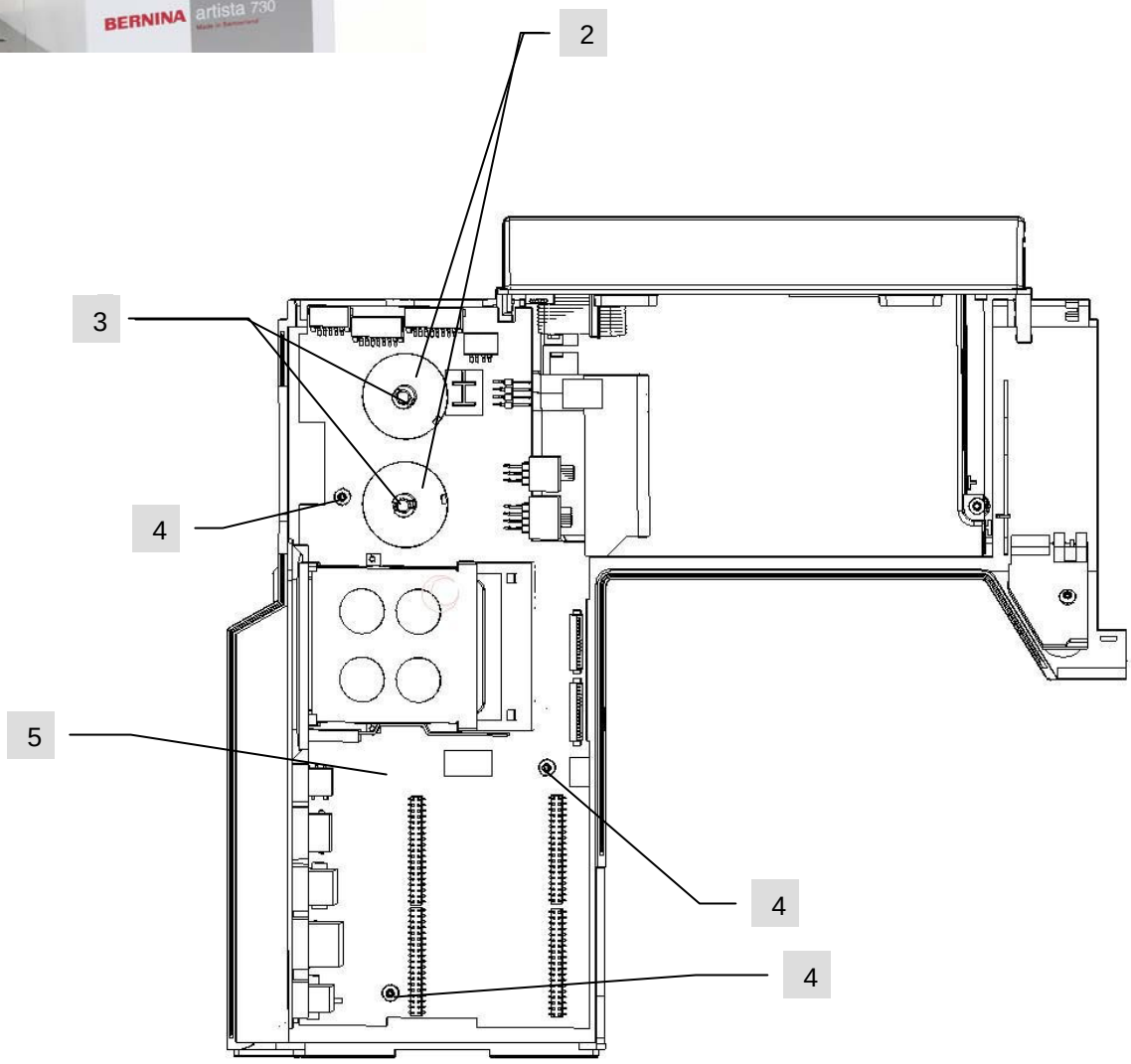


- Lift protective film and pull it over the plastic profile. (**Picture 1**)
- Refit covers.
- Carry out a functional check (**refer to chapter 3**).
- Sew-off (**chapter 3.3**).

Picture 4




BERNINA
artista 730


1
2
3
4
5
4
4

Chapter 5
Service Program

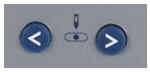
5.1 Starting the test program



Entering:

- Switch machine off ("0").
- Keep **CLR-button** pressed, and switch machine on.
- The sewing/embroidery computer moves the stepping motors to the "zero" position (brief motor noise).
- The machine is now in the basic position for servicing – first level (**Service Program**).

Alternative access:



- If the touch-screen is calibrated in such way that no selection can be made on the screen, or the basic screen settings are misadjusted in such way that nothing can be seen anymore, an alternative access is provided. Access is achieved by simultaneously pressing the needle position keys and switching on the device.
- Adjusting screen **brightness**: Use the Creative Consultant button  to darken, and the Tutorial button  to lighten the display.
- Adjusting **contrast**: Use the Clear button  to reduce, and the Client Setup button  to increase the contrast.
- Touch cross symbols on touch screen for calibration.
- After calibration of touch-screen, the user-sewing program can be directly accessed.

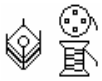
Basic position:
Menus 1 to 6 are selected in the service program basic setting.


1 = Menu:
Service information



2 = Menu:
Screen


3 = Menu:
Signals and sensors

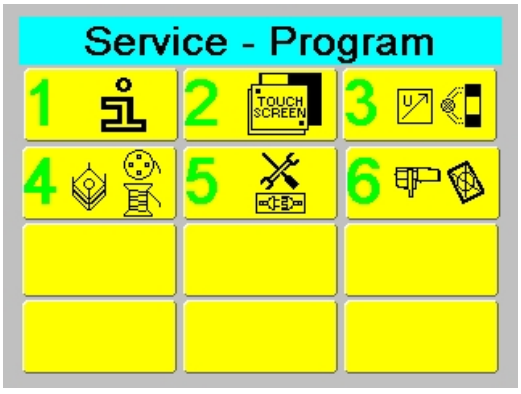

4 = Menu:
Basic functions


5 = Menu:
Settings and interfaces


6 = Menu:
Embroidery module

Menus:

- The various tests – **menus 1 to 6** – are selected in the service program basic setting.
- Press **ESC** to return to basic setting.



Tests:

- The testing level contains the active part of the program.
- Press **ESC** to return to respective menu (**1 - 6**) without saving.
- Press **OK** to return to respective menu with saving.

5.2 Virtual keyboard

- Tests a, b, f, h and i in menu 1, and test a in menu 6 require data entering.
- Data can be entered using the four data entering fields in the virtual keyboard

The virtual keyboard data fields are:

1) Data display field (to completely delete, press it)
2) CLR field (<--) (to individually delete, press it)
3) Data entering field (letters, numbers and symbols depending on display)
4) Select the data entering field modes

ABC Capital letters

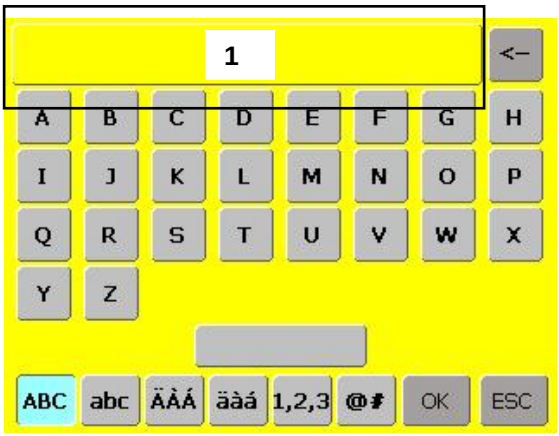
abc Low-case letters

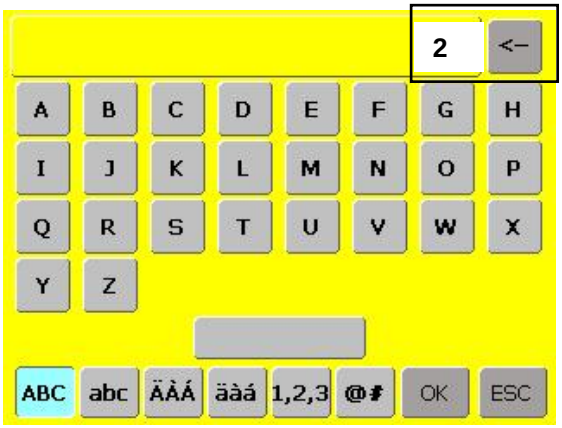
ÄÀÁ Capital lettering special characters

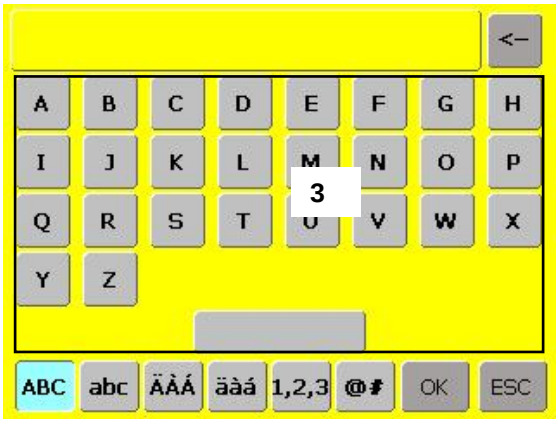
äàá Low-case lettering special characters

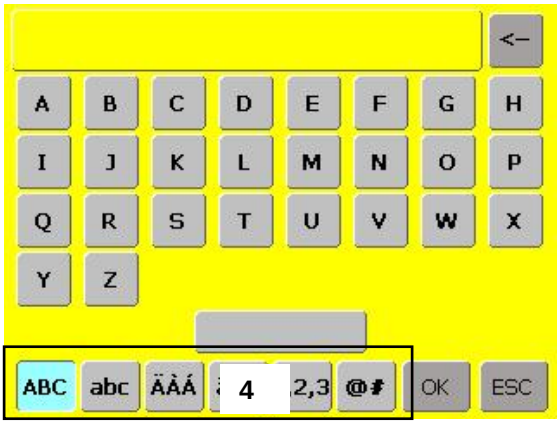
1,2,3 Numbers and currencies

@# Symbols and special characters

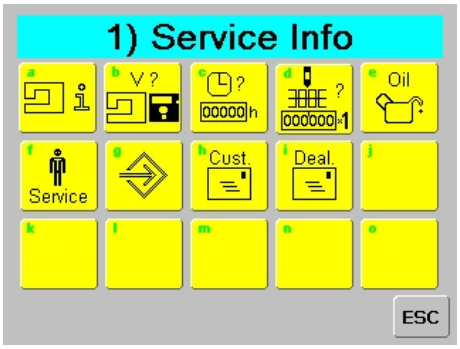








5.3 Menu 1 – Service information

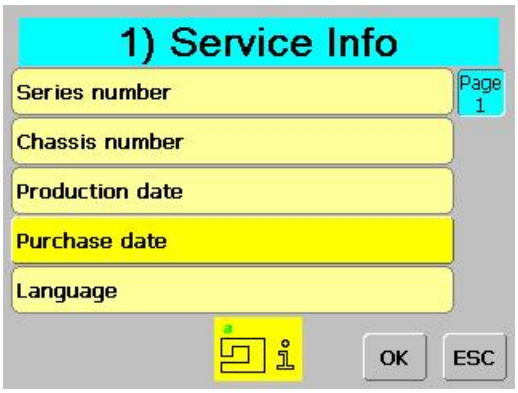


- The tests are selected here by pressing the appropriate button.
- Information on configuration, sewing/embroidery computer status and user and dealer data.
- Tests are displayed page by page.
- Explanations of data and how to change and save data are given below.

1a Sewing/embroidery computer basic data

What to test:

- Series number
- Chassis number
- Production date
- Purchase date
- Language



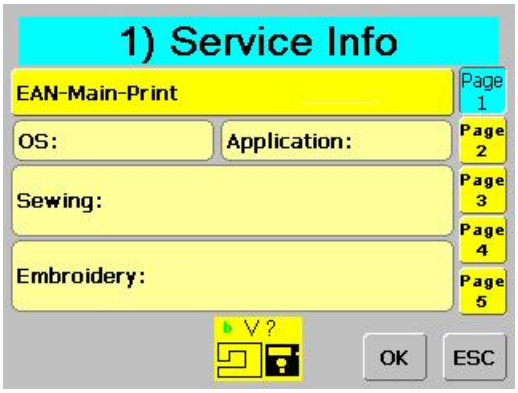
Note:

- The Purchase date can be entered only once.
- Press **ESC** to return to menu **1) Service Information.**

1b Sewing/embroidery computer soft- and firmware data (Page 1)

What to test:

- EAN Main-Print = EAN-Code Main-Print
- OS = OS Version
- Application = Firmware Version
- Sewing = - Application
  - Bios Version
- Embroidery = - ARTE-Engine
  - Embroidery module Application
  - Embroidery module Bios Version



Note:

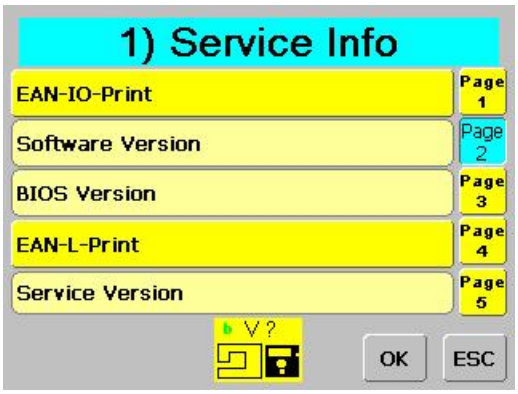
- EAN = European Article Number.
- The EAN-number must be checked and re-entered if deviating when replacing Main-Print.

- Select **Page 2** to go to the next page.
- Press **ESC** to return to menu **1) Service Information.**

1b Sewing/embroidery computer soft- and firmware data (Page 2):

What to test:

- EAN-IO-Print = EAN Code Input/Output Print
- Software Version = Software Version
- BIOS Version = BIOS Version
- EAN-L-Print = EAN Code L-print
- Service Version = Service Software Version



Note:

- EAN = European Article Number.
- The EAN-number must be checked and re-entered if deviating when replacing L- und IO-Prints.

- Select **Page 3** to go to the next page.
- Press **ESC** to return to menu **1) Service Information.**

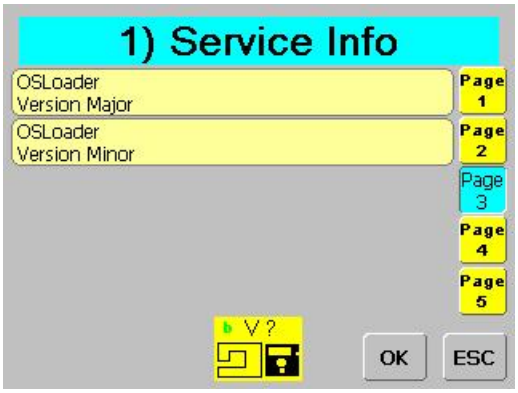
1b Sewing/embroidery computer soft- and firmware data (Page 3):

What to test:

- OSLoader Version Major = First number
- OSLoader Version Minor = Last numbers

Note:

- Select **Page 4** to go to the next page.
- Press ESC to return to menu **1) Service Information.**



1b Sewing/embroidery computer soft- and firmware data (Page 4):

What to test:

BSR

- Production date
- Chassis number
- Serial number

Note:

- Select **Page 5** to go to the next page.
- Press **ESC** to return to menu **1) Service Information.**



1b Sewing/embroidery computer soft- and firmware data (Page 5):

What to test:

BSR

- Hardware Version
- Bootloader Version
- Software Version



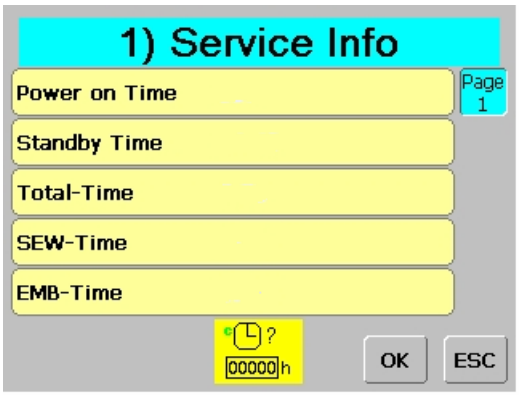
Note:

- Press **ESC** to return to menu **1) Service Information.**

1c Sewing/embroidery computer operating time data

What to test:

- Power on Time
- Standby Time
- Total Time
- SEW-Time: = Time sewing
- EMB-Time: = Time embroidery



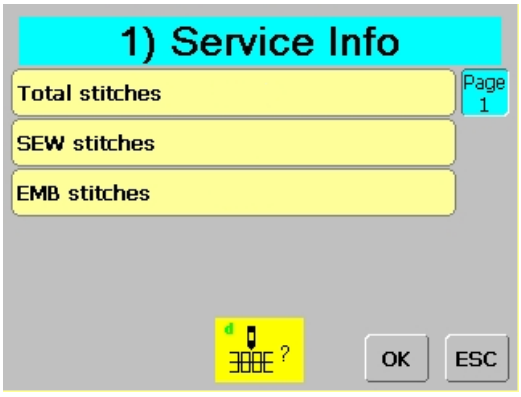
Note:

- Total number of operating hours of each category in the sewing and embroidery system.
- Power on time = standby time + (Total time = SEW-time + EMB-time)
- Press **ESC** to return to menu **1) Service Information.**

1d Sewing/embroidery computer stitch counter data:

What to test:

- Total stitches = Total number of stitches
- SEW stitches = Total number of stitches sewn
- EMB stitches = Total number of stitches embroidered



Note:

- Total stitches = Total SEW-stitches + total EMB-stitches.
- Press **ESC** to return to menu **1) Service Information.**

1e Sewing/embroidery computer servicing data

What to test:

- Lubricate Stitches: = Time for cleaning/oiling (appears at 180'000 stitches).
- Reset Lubricate Stitches: = Resetting cleaning/oiling time count
- Service Stitches: = Time for servicing (appears at 2'000'000 stitches)



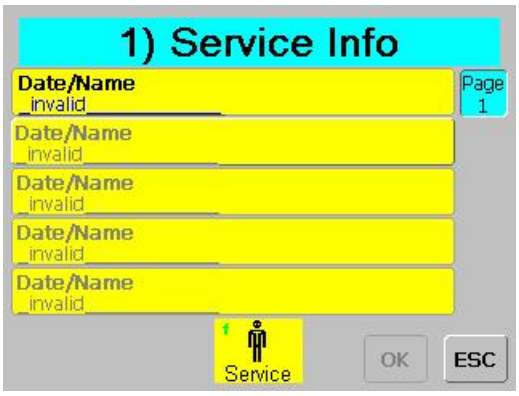
Note:

- The stitch counter (up-counter) triggers a reminder at 180'000 stitches (Clean and oil the sewing/embroidery system, please).
  Important:
- Remember to always reset the up-counter (cleaning interval) after servicing or repairing.
- Lubrication time is reset by pressing "**Press here to reset lubricate stitches**".
- Servicing time is reset by technician's entry in **Test 1f**.
- Press **ESC** to return to menu **1) Service Information.**

1f Sewing/embroidery computer servicing data

What to test:

- Date / Name = Enter date of servicing and name of servicing person



Note:

- When resetting the servicing stitches, date and name must be entered using the virtual keyboard to ensure that the stitch counter is set to zero.
- Press ESC to return to menu **1) Service Information.**

1g Saving of customer data:

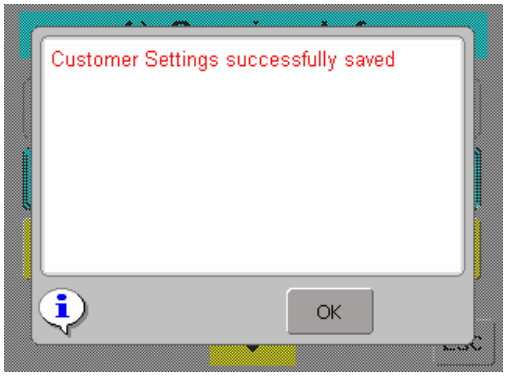
What to test:

- When replacing the Main-Print, it is essential to save the customer's data first. Use a **BERNINA Personal Design Card** (ATA-Card) to save the data.
- Save the Customer settings = Saving of customer data on a **BERNINA Personal Design Card**.
- Load the Customer Settings = Loading of customer data to the sewing/embroidery system from a **BERNINA Personal Design Card**.

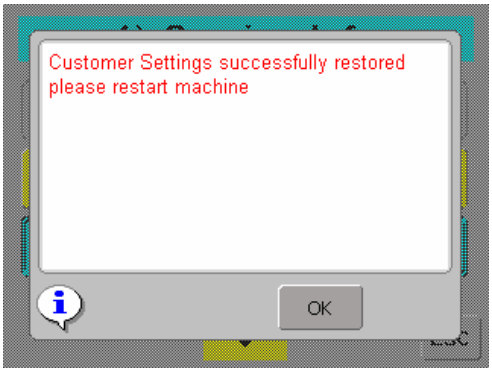


Note:

Insert a **BERNINA Personal Design Card** into the PCMCIA drive. Then select „**Save the customer settings**“. Remove **BERNINA Personal Design Card** after complete and successful saving is confirmed.



Insert **BERNINA Personal Design Card** into PCMCIA drive. Then select „**Load the customer settings**“.Remove **BERNINA Personal Design Card** after successful restoring of data is confirmed. Machine can be restarted now.





1h Customer data (Page 1):

What to test t:

- BERNINA website = BERNINA Homepage
- First Name: = Customer’s first name
- Last Name: = Customer’s last name.
- Street = Customer’s street
- House number = Customer’s house number



Note:

- The virtual keyboard opens on selecting a field.
- **Electronic reading/entering** of data is not possible.
- Press **Page 2** to go to the next page.
- Press **ESC** to return to menu **1) Service Information.**



1h Customer data (Page 2):

What to test:

- Postal ZIP code = Customer’s postal ZIP code
- Location = Customer’s location
- Country = Customer’s country
- Phone number = Customer’s phone number
- Mobile number = Customer’s mobile number



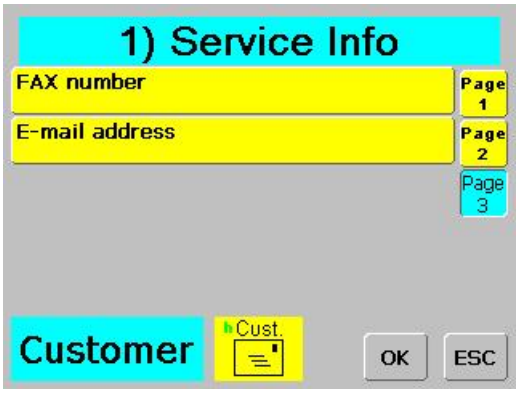
Note:

- The virtual keyboard opens on selecting a field.
- **Electronic reading/entering** of data is not possible.
- Press **Page 3** to go to the next page.
- Press **ESC** to return to menu **1) Service Information.**

1h Customer data (Page 3):

What to test t:

- FAX number = Customer's Fax number
- E-mail address = Customer's E-mail address



Note:

- The virtual keyboard opens on selecting a field.
- **Electronic reading/entering** of data is not possible.
- Press **ESC** to return to menu "**1) Service Information".**

Deal.

1i Dealer data (Page 1):

What to test:

- Store Name = Name of the store
- First name = Dealer's first name
- Last name = Dealer's last name
- Street = Dealer's street
- House number = Dealer's house number



Note:

- The virtual keyboard opens on selecting a field. Customer data can be entered now. **Electronic reading/entering** of data is not possible.
- Press **Page 2** to go to the next page.
- Press **ESC** to return to menu „**1) Service Information".**

Deal.

1i Dealer data (Page 2):

What to test:

- Postale ZIP Code = Dealer's postal ZIP code
- Location = Dealer's location
- Country = Dealer's country
- Phone number = Dealer's phone number
- Mobile number = Dealer's mobile number



Note:

- The virtual keyboard opens on selecting a field. Customer data can be entered now. **Electronic reading/entering** of data is not possible.
- Press **Page 3** to go to the next page.
- Press **ESC** to return to menu „**1) Service Information".**

Cust.

1i Dealer data (Page 3):

What to test:

- FAX number = Dealer's FAX number
- E-mail address = Dealer's E-mail address
- Website = Dealer's homepage
- Open Monday = Open hours Monday
- Open Tuesday = Open hours Tuesday



Note:

- The virtual keyboard opens on selecting a field. Customer data can be entered now. **Electronic reading/entering** of data is not possible.
- Press **Page 4** to go to the next page.
- Press **ESC** to return to menu **1) Service Information.**

1i Dealer data (Page 4):

What to test:

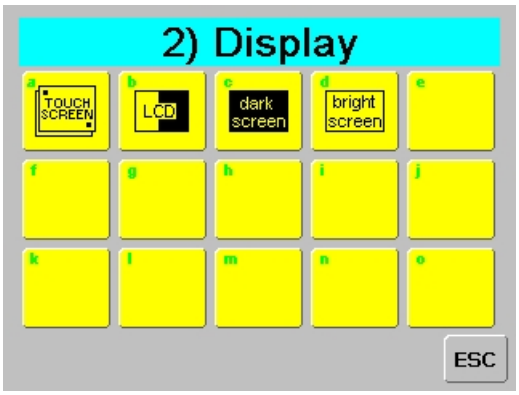
- Open Wednesday = Open hours Wednesday
- Open Thursday = Open hours Thursday
- Open Friday = Open hours Friday
- Open Saturday = Open hours Saturday
- Open Sunday = Open hours Sunday



Note:

- The virtual keyboard opens on selecting a field. Customer data can be entered now. **Electronic reading/entering** of data is not possible.
- Press **ESC** to return to menu **1) Service Information**.

5.4 Menu 2 - screen

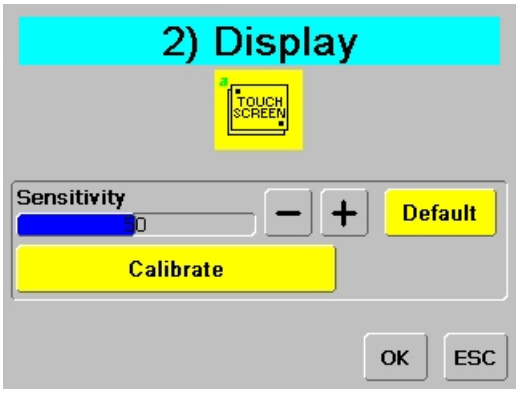


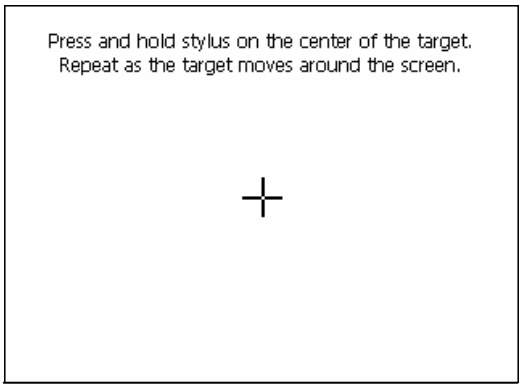
- The tests are selected here by pressing the appropriate button.
- Information on screen, touch screen.
- Tests are displayed page by page.
- Explanations of data and how to change and save data are given below.

2a Touch screen calibration:

What to adjust:

- Touch screen **Sensitivity** can be adjusted here.
- Press **Calibrate** to start the touch screen sensitivity calibration.

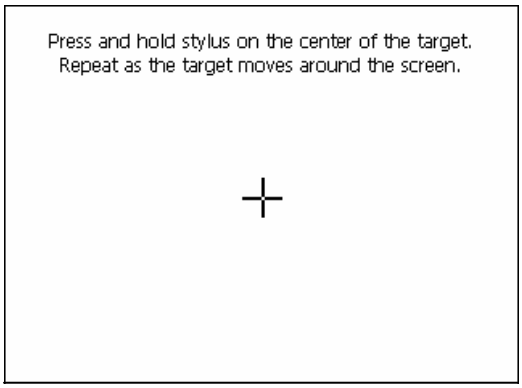




Note:

- Use the **+ and – symbol buttons** to adjust the sensitivity.
- Press **Default** to reset to basic setting.
- Touch and 'hold' the **five cross symbols** with the touch screen pen to calibrate the touch screen.
- Press **ESC** to return to menu **2) Display**.

2a Touch screen calibration: (Alternative access)



Note:

- If the touch-screen is calibrated in such way that no selection can be made on the screen, or the basic screen settings are misadjusted in such way that nothing can be seen anymore, an alternative access is provided.

Alternative access:

- If the touch-screen is calibrated in such way that no selection can be made on the screen, or the basic screen settings are misadjusted in such way that nothing can be seen anymore, an alternative access is provided. Access is achieved by simultaneously pressing the needle position keys and switching on the device.
- Touch the **cross symbols** on the screen to calibrate the touch screen.
- Adjusting screen **brightness**: Use the Creative Consultant button to darken, and the Tutorial button to lighten the display.
- Adjusting **contrast**: Use the Clear button clr to reduce, and the Client Setup button to increase the contrast.

  After calibration of touch screen, the user sewing program can be directly accessed.

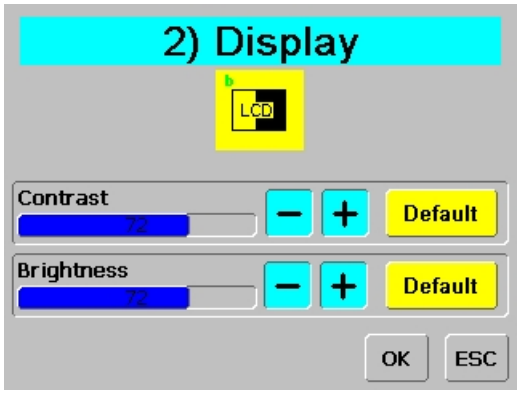
Repairing Note:

- Check connecting cables (touch screen, screen backlighting and display) for correct Main Print connection.
- Check connecting cable for deformation, tears or breaks. Replace if necessary.
- Replace Touch Screen
- Replace Main-Print.

2b LCD (screen):

What to adjust:

- Screen contrast
- Screen brightness



Note:

- Use **+ and - Icons** to adjust contrast.
- Use **+ and - Icons** to adjust brightness.
- Press **Default** to return to default.
- Press **OK** to save the values and to return to menu **2) Display**.
- Press **ESC** to return to menu **2) Display** without saving

Repairing note:

- Check LCD connecting cable for correct Main-Print connection.
- Check connecting cable for deformation, tears or breaks. Replace if necessary.
- Replace touch screen.
- Replace Main-Print.



2c Blank black LCD (screen):



What to test:

- Blank screen (black) to find any pixel errors.

Note:

- **Touch** the touch screen at any place to return to menu **2) Display.**

Repairing note:

- Replace LCD if pixel errors occur.



2d Blank white LCD (screen):



What to test:

- White blank screen to find dirt or stains.

Note:

- **Touch** the touch screen at any place to return to menu **2) Display**.

Repairing note:

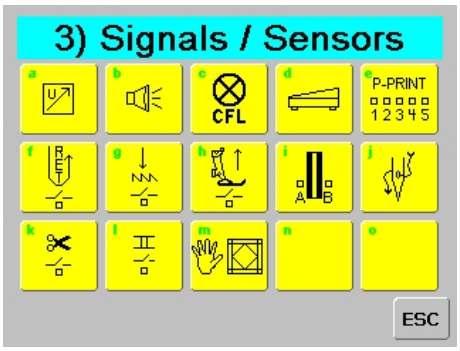
- Clean LCD and touch screen.

Attention:

- Do not use any abrasive or corrosive cleaning agents.



5.5 Menu 3 - Signals and sensors.

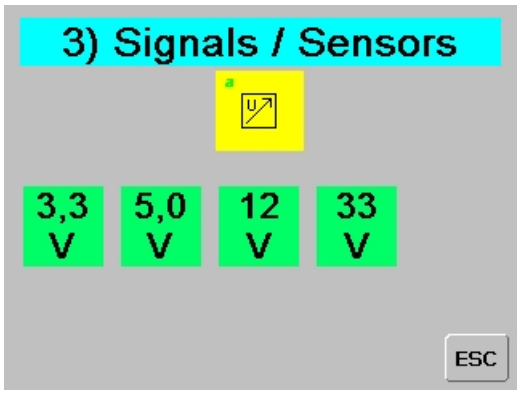


- The tests are selected here by pressing the appropriate button.
- Information on sensors and signals.
- Tests are displayed page by page.
- Explanations of data and how to change and save data are given below

3a Operating voltages functional test :

What to test:

- The voltages on the Main-Print are displayed by **green fields**: **3,3V; 5,0V; 12V; 33V**.



Note

What to test:	3,3V	5V	12V	33V
Desired status:	**Green**	**Green**	**Green**	**Green**
Actual status:	**Red**	**Red**	**Red**	**Red**
Repair note:	• Check the wiring for deformation, tears or breaks. Replace if necessary • Check the connectors for deformations. Replace if necessary • Check L-Print functioning. Replace if necessary • Replace Main-Print	• Check the wiring for deformation, tears or breaks. Replace if necessary • Check the connectors for deformations. Replace if necessary • Check L-Print functioning. Replace if necessary • Replace Main-Print	• Check the wiring for deformation, tears or breaks. Replace if necessary • Check the connectors for deformations. Replace if necessary • Check L-Print functioning. Replace if necessary • Replace Main-Print	• Check the wiring for deformation, tears or breaks. Replace if necessary • Check the connectors for deformations. Replace if necessary • Check L-Print functioning. Replace if necessary • Replace Main-Print

- Press **ESC** to return to menu „**3) Signals / Sensors**“.

3b Speaker Test:

What to test:

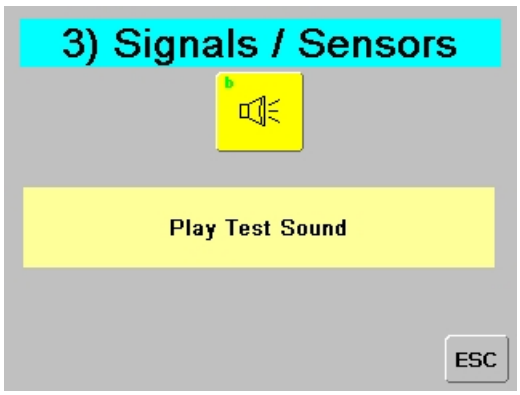
- Speaker.

Note:

- Press **Icon 3b** to switch beep sound on and off
- Press **ESC** to return to menu **3) Signals / Sensors**.

Repairing note:

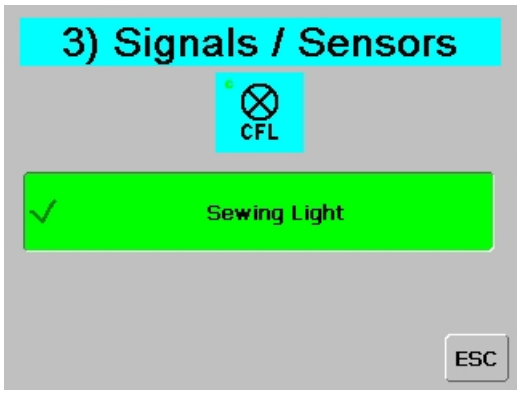
- If there is no sound, replace loudspeakers.
- Replace Main-Print.



3c Sewing light test:

What to test:

- Sewing light.



Note:

- Press **icon 3c** to switch the sewing light on or off. When the sewing light is **on**, the **bar on the display and the sewing light itself** light up.
- Press **ESC** to return to menu **3) Signals / Sensors**.

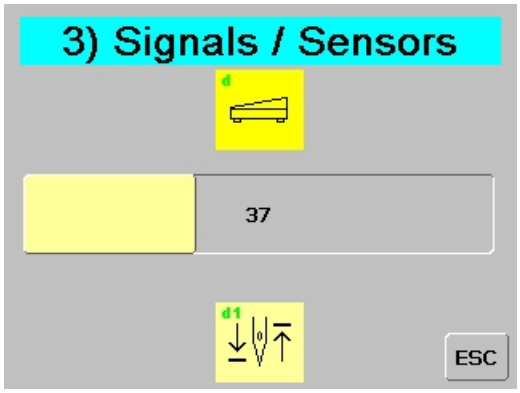
Repairing note:

- If the sewing light does not light, replace the bulb or the Main Print.

3d & 3d1 Foot control:

What to test:

- Foot control



Note:

- Activate foot control to display the foot control setting on the bar display.
- When using the heel kick function on the foot control, **symbol d1** lights up.
- Press **ESC** to return to menu **3) Signals / Sensors**.

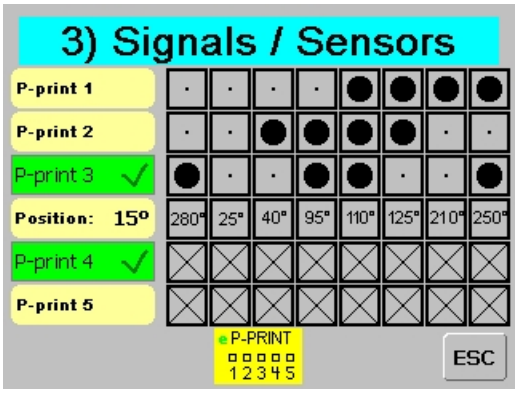
Repairing note:

- Check the foot control cable for deformation, loose contacts, tears or breaks. Replace if necessary.
- Check foot control ceramic plate and coal carrier functioning. Replace if necessary.
- Replace Main-Print.

3e Positioning PCB (P-Print):

What to test:

- Set needle bar to **lower dead center = 0°**.
- The **bar display of the signals 3, 4 and 5 lights up** in green.
- Turn hand wheel counter clockwise and **compare these positions and signals with the chart** (**on the next page**)



Note:

- **Lower dead center** of needle bar equals **0°**.
- **Upper dead center** of needle bar equals **180°**.
- Press **ESC** to return to menu **3) Signals / Sensors**.

P - print 1				✓	✓	✓	✓
P - print 2		✓	✓	✓	✓	✓	
P - print 3	✓		✓	✓	✓		✓
P - print 4	✓	✓	✓				
P - print 5	✓	✓			✓		
Position Grad °	0 °	40 °	95 °	110 °	125 °	210 °	270 °

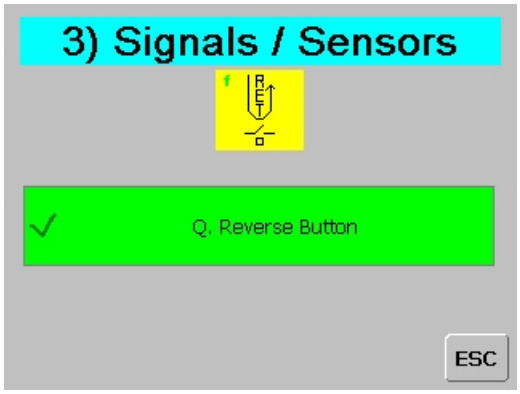
Repairing Note:

- Clean P-Print light barriers.
- Check the cable for deformation, tears or breaks. Replace if necessary.
- Replace P-Print.
- Replace Main-Print.

3f Quick reverse button:

What to test:

- Functioning of Quick reverse button



Note:

- When pressing the **Quick reverse button**, the **bar lights up in green**.
- Press **ESC** to return to menu **3) Signals / Sensors**.

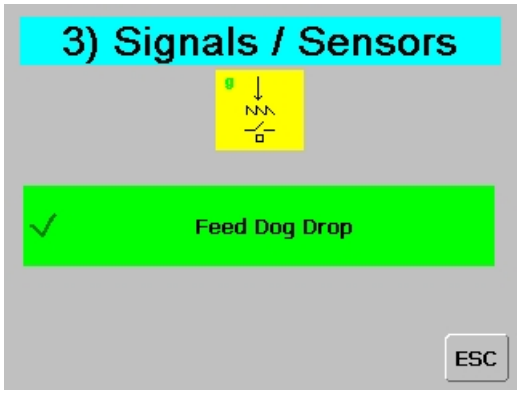
Repairing Note:

- Replace RET-Print.
- Replace Main-Print.

3g Feed-dog drop light barrier:

What to test:

- Feed-dog drop light barrier



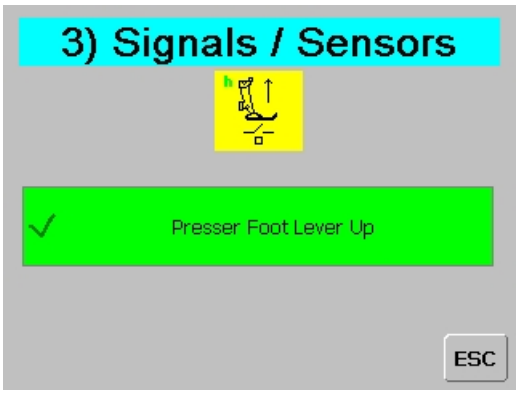
Note:

- **Switching on the feed-dog drop** activates the light barrier, and the bar **display lights up in green**.
- Press **ESC** to return to menu **3) Signals / Sensors**.

Repairing note:

- Remove base plate. Check light barrier for dirt. Clean if necessary.
- Check feed-dog mechanical functioning. Adjust if necessary.
- Replace Main-Print.

3h Presser foot lifter micro switch:



What to test:

- Presser foot lifter micro switch

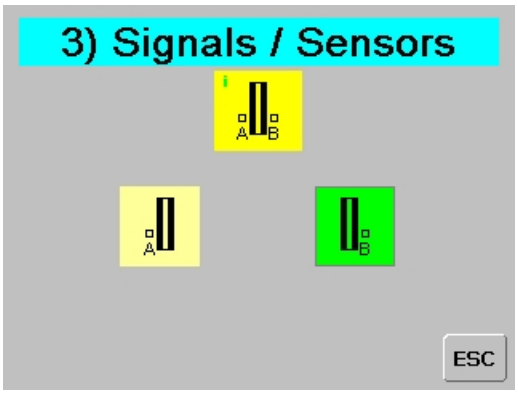
Note:

- **Raising the presser foot** activates the micro switch, and the **bar display lights up in green**.
- Press **ESC** to return to menu **3) Signals / Sensors**.

Repairing Note:

- Check the cable for resistance, deformations, tears or breaks. Replace if necessary.
- Check functioning using an Ohm meter. Check micro switch position. Replace if necessary.
- Replace Main-Print.

3i Buttonhole signals A & B:



What to test:

- Buttonhole signals A & B

Note:

- Attach automatic **buttonhole foot no. 3A**. **Move slide back and forth**.
- **Icon A or B lights up** depending on the respective active signal.
- Press **ESC** to return to menu **3) Signals / Sensors**.

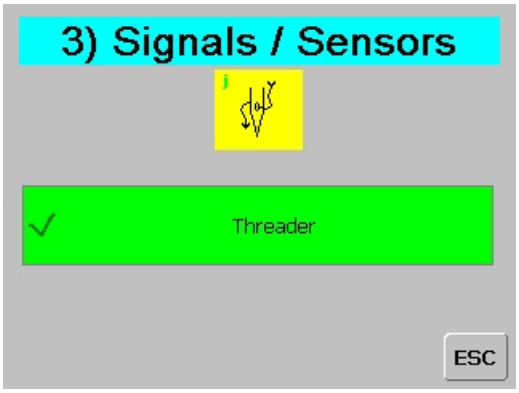
Repairing note:

- Check mechanical parts of buttonhole foot for ease of movement. Replace if necessary.
- Check buttonhole lens for dirt. Clean or replace if necessary.
- Check sensor for dirt. Clean or replace if necessary.
- Check the sensor connector for deformations. Replace if necessary.
- Check the sensor cable for deformation, tears or breaks. Replace if necessary.
- Check IO- / Main-Print connectors for deformations. Replace if necessary.
- Check IO- / Main-Print cables for deformations, tears or breaks. Replace if necessary.
- Check IO-Print functioning. Replace if necessary.
- Replace Main-Print

3j Threader sensor

What to test:

- Threader sensor



Note:

- As long as the threader is actuated the **bar display lights up in green**
- Press **ESC** to return to menu **3) Signals / Sensors**.

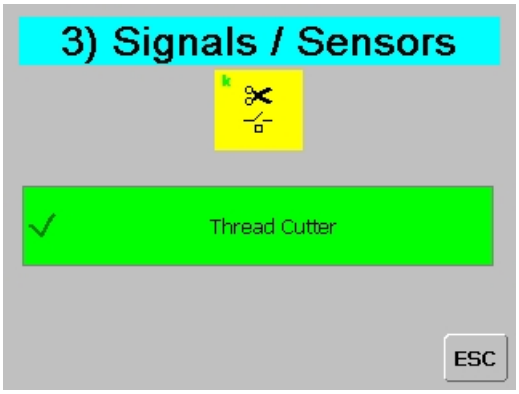
Repairing note:

- Check the sensor cable for deformation, loose contacts, tears or breaks. Replace if necessary.
- Replace threader sensor
- Replace IO-Print.
- Replace Main–Print.

3k Thread cutter button:

What to test:

- Functioning of Thread cutter button



Note:

- When pressing the **Thread cutter button**, the **bar lights up in green**.
- Press **ESC** to return to menu **3) Signals / Sensors**.

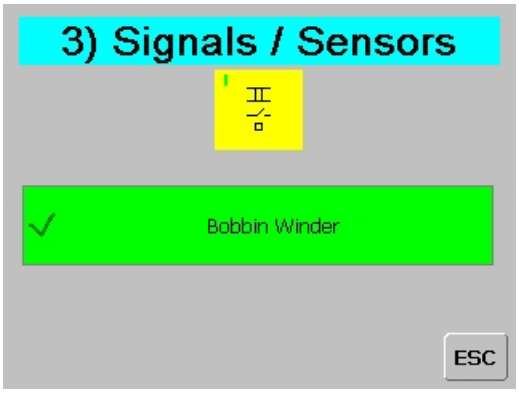
Repairing note:

- Replace Ret-Print
- Replace IO-Print
- Replace Main-Print

3l Winder motor micro switch:

What to test:

- Winder motor micro switch



Note:

- **Switching on the winder** activates the micro switch, and the **bar display lights up in green**.
- Press **ESC** to return to menu **3) Signals / Sensors**.

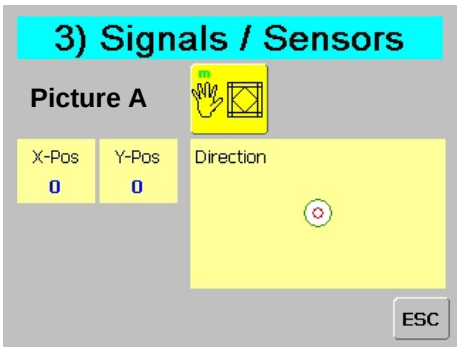
Repairing note:

- Check the cable for resistance, deformations, tears or breaks. Replace if necessary.
- Check functioning using an Ohm meter. Check micro switch position. Replace if necessary.
- Replace IO-Print
- Replace Main-Print.

3m BERNINA Stitch Regulator (BSR) foot:

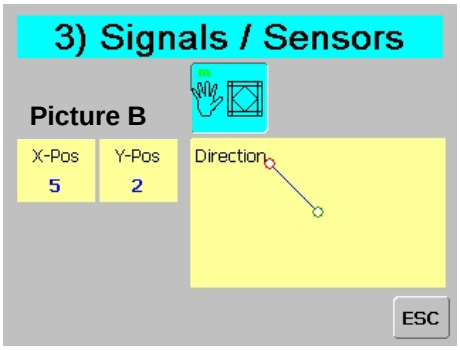
What to test:

- BSR foot



Note:

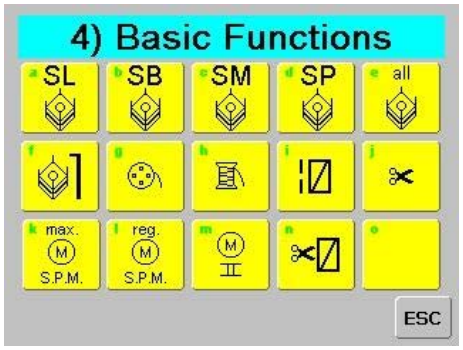
- Attach BSR foot.
- Press **icon 3m** (**picture A**) to start test.
- Place fabric under the presser foot and move it in different directions.
- The movements are then displayed in **picture B.**
- The X- and Y-position values are displayed in mm in **picture B**.
- Press **ESC** to return to menu **3) Signals / Sensors**.



Repairing note:

- Check BSR foot sensor for dirt. Clean or replace if necessary.
- Check BSR connector.
- Update BSR foot.

5.6 Bereich 4 - Basic Funktions

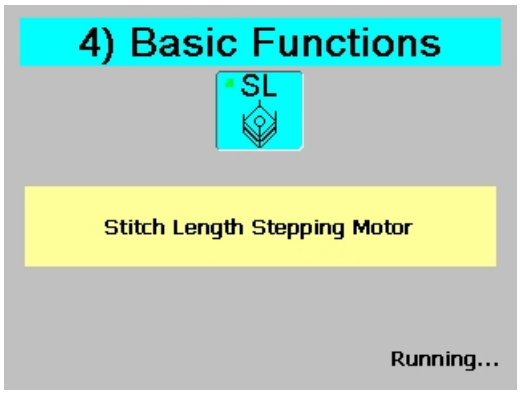


- The tests are selected here by pressing the appropriate button.
- Testing and adjusting of main and stepping motors, magnets, thread indicators, winder motor, and thread cutter operation.
- Tests are displayed page by page.
- Explanations of tests and how to change and save tests are given below.

SL 4a Stitch length stepping motor:

What to test:

- Stitch length stepping motor (SL)



Note:

- Press **icon 4a** to **start and stop** test.
- The **stitch length stepping motor** moves **left to right and right to left**, and the **feed-dog** moves **forth and back.**
- Press **ESC** to return to menu **4) Basic Functions**.

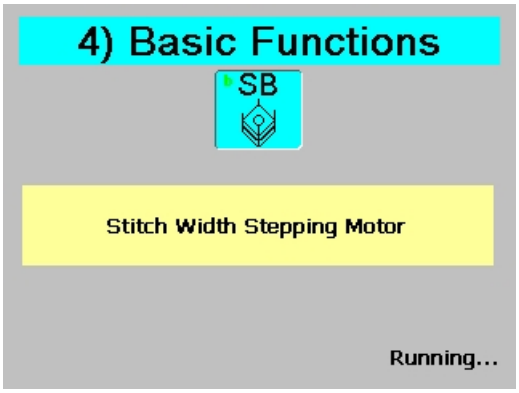
Repairing note:

- If a stepping motor does not spin, the failure might be with the stepping motor, IO-Print or the Main-Print. Swap the connections to find the defective PCB.
  Attention: Not when machine is powered. Disconnect machine from mains supply.
- If the error still occurs, check IO-Print functioning and replace if necessary

SB 4b Stitch width stepping motor:

What to test:

- Stitch width stepping motor (SB)



Note

- Press **icon 4b** to **start and stop** test.
- The **stitch width stepping motor** moves **back and forth**, the **needle bar** to **left and right**.
- Press **ESC** to return to menu **4) Basic Functions**.

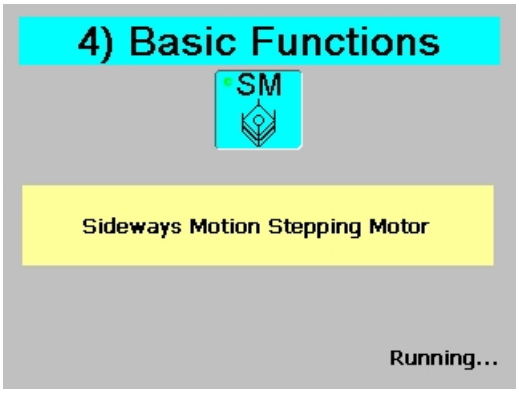
Repairing note:

- If a stepping motor does not spin, the failure might be with the stepping motor, IO-Print or the Main-Print. Swap the connections to find the defective PCB.
  Attention: Not when machine is powered. Disconnect machine from mains supply.
- If the error still occurs, check IO-Print functioning and replace if necessary

SM 4c Sideways motion stepping motor

What to test:

- Sideways motion stepping motor (SM)



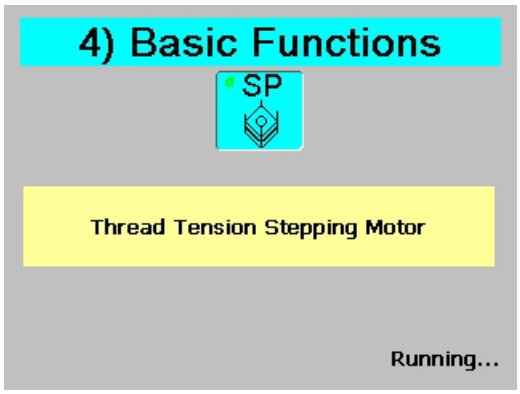
Note:

- Press **icon 4c** to **start and stop** test.
- The sideways motion stepping motor moves back and forth and the **feed-dog** moves **left and right.**
- Press **ESC** to return to menu **4) Basic Functions**.

Repairing note:

- If a stepping motor does not spin, the failure might be with the stepping motor, IO-Print or the Main-Print. Swap the connections to find the defective PCB.
  Attention: Not when machine is powered. Disconnect machine from mains supply.
- If the error still occurs, check IO-Print functioning and replace if necessary

SP 4d Upper thread tension stepping motor:



What to test:

- Upper thread tension stepping motor (SP)

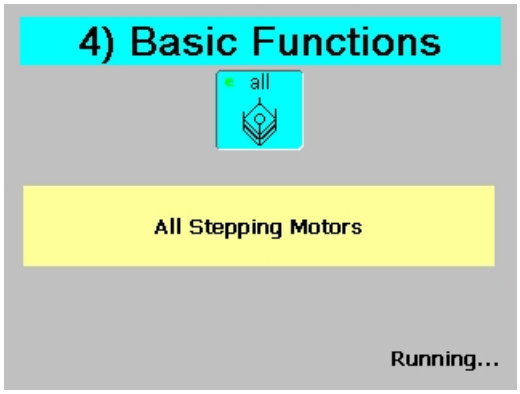
Note:

- Press **icon 4d** to **start and stop** test.
- The **upper thread tension stepping motor** moves **back and forth**
- Press **ESC** to return to menu **4) Basic Functions**.

Repairing note:

- If a stepping motor does not spin, the failure might be with the stepping motor, IO-Print or the Main-Print. Swap the connections to find the defective PCB.
  Attention: Not when machine is powered. Disconnect machine from mains supply.
- If the error still occurs, check IO-Print functioning and replace if necessary

all 4e All stepping motors:



What to test:

- Function all stepping motor (all)

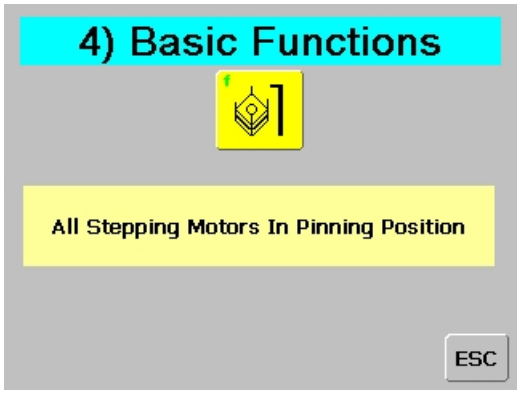
Note

- Press **icon 4e** to **start and stop** test.
- **All the stepping motors** move **back and forth**.
- Press **ESC** to return to menu **4) Basic Functions**.

Repairing note:

- If a stepping motor does not spin, the failure might be with the stepping motor, IO-Print or the Main-Print. Swap the connections to find the defective PCB.
  Attention: Not when machine is powered. Disconnect machine from mains supply.
- If the error still occurs, check IO-Print functioning and replace if necessary

4f Pinning positions of all stepping motors:



What to test:

- Pinning position of all stepping motors

Note:

- Press **icon 4f** to **start** test
- The **stepping motors** move into their zero positions (**pinning positions**).
- Use **4mm pinning tool** to check the pinning positions.
- Press **ESC** to return to menu **4) Basic Functions**.

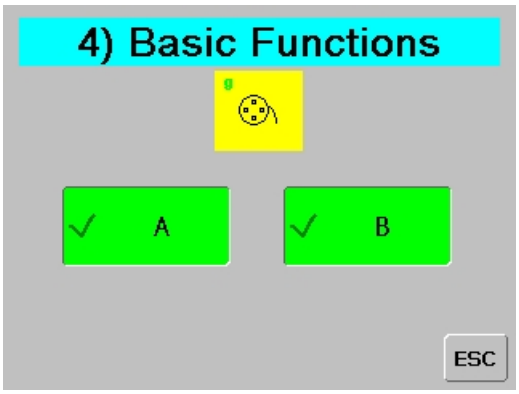
Repairing note:

- For replacing refer to respective stepping motor.

4g lower thread indicator:

What to test:

- Function lower thread indicator



Note:

- Insert filled bobbin and bobbin case. Close lid.
- Pulling the lower thread **lights up** the respective signal field. (**A or B**)
- Press **ESC** to return to menu **4) Basic Functions**.

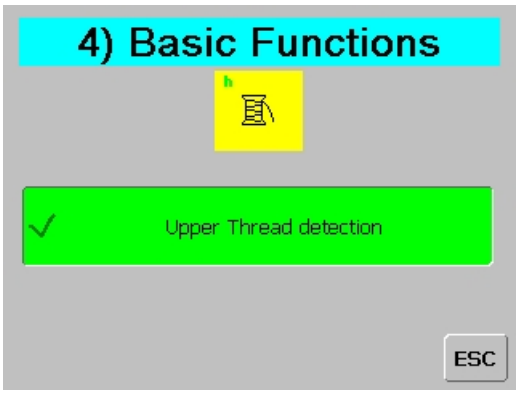
Repairing note:

- Check lower thread indicator clamping and position in the lid.
- Check the cable for resistance, deformations, tears or breaks. Replace if necessary.
- Check connectors.
- Replace lower thread indicator.
- Replace IO-Print
- Replace Main-Print.

4h Upper thread indicator:

What to test:

- Function Upper thread indicator



Note

- From below insert thread loop into thread tensioner up to the thread regulator spring. Move thread regulator spring with thread loop up and down.
- The **bar display lights up in green** if the **sensor is active**
- Press **ESC** to return to menu **4) Basic Functions**.

Repairing note:

- Check settings of thread regulator spring mechanics. Adjust if necessary.
- Check light barrier for dust or dirt. Clean if necessary.
- Check if thread regulator spring is broken, dehooked or bent. Replace thread tensioner if necessary.
- Check RET-Print and Main-Print connectors for deformations. Replace if necessary.
- Check RET-Print and Main-Print cables for deformations, tears or breaks. Replace if necessary.
- Check RET-Print functioning. Replace if necessary.
- Replace Main-Print.

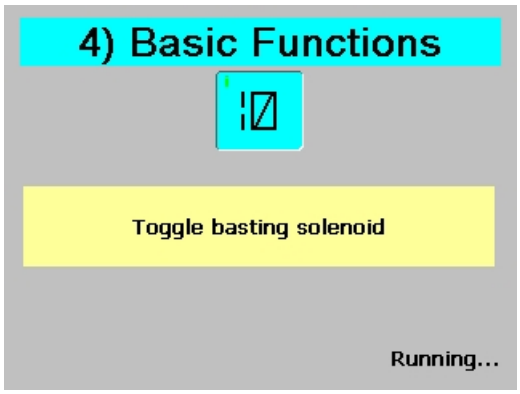
4i Basting magnet:

What to test:

- Function basting magnet

Note:

- Press **icon 4i** to **start and stop** test
- The **basting magnet** moves **back and forth**
- Press **ESC** to return to menu **4) Basic Functions**.



Repairing note:

- Check the cable for deformation, tears or breaks. Replace if necessary.
- Replace basting magnet.
- Replace IO-Print.
- Replace Main-Print.

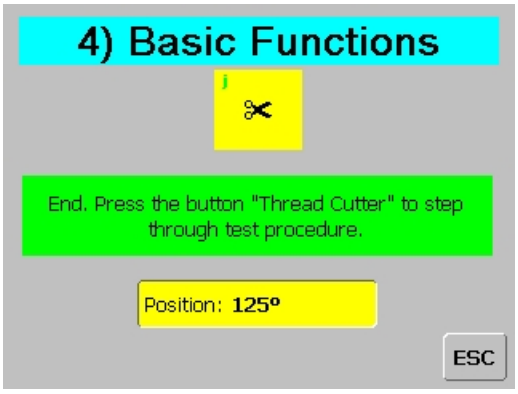
4j Thread cutting process:

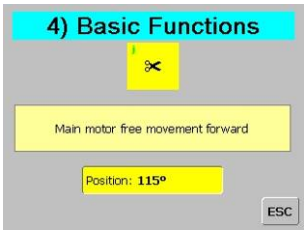
What to test:

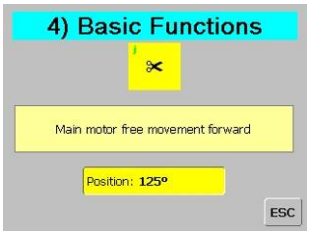
- Thread cutting process

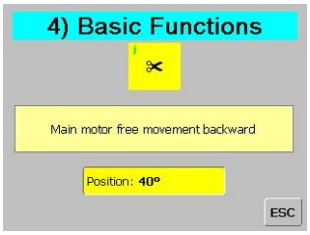
Note:

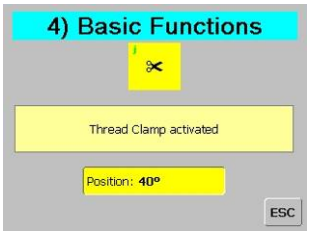
- Each pressing of the thread cutter button triggers the individual processes (10 working steps).
- Press **ESC** to return to menu **4) Basic Functions**.

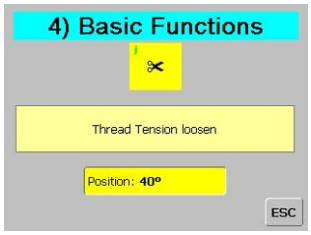


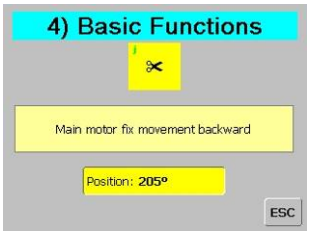


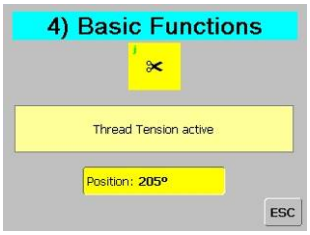




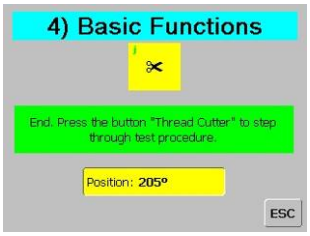












Step	Degree / Position	Movement	Movement / Action
1	125°	Start position	Starting position
2	115°	Main Motor free movement forward	Main motor runs forward
3	125°	Main Motor free movement forward	Main motor runs forward
4	40°	Main Motor free movement backward	Main motor runs backward
5	40°	Thread clamp activated	Thread clamp is activated
6	40°	Thread tension loosen	Loosen thread tension
7	205°	Main Motor free movement backward	Main motor runs backward
8	205°	Thread tension active	Thread tension is activated
9	205°	Thread Clamp deactivated	Thread tension is deactivated
10	205°	End.	End

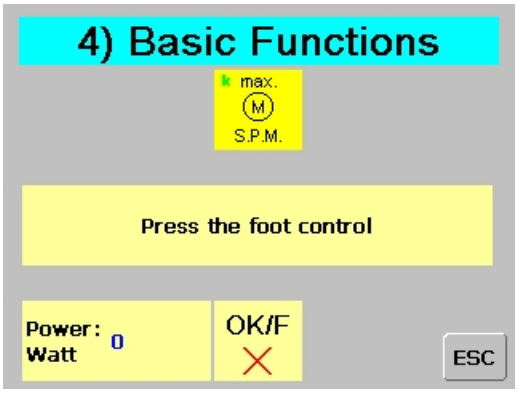
Repairing note:

- Check cutting edge of thread cutting blade. If blunt, replace thread cutting blade.
- Check position of synchronizing disc – see **test 3e**
- Replace IO-Print.
- Replace Main-Print.

4k Stitches per minute (SPM) calibration:

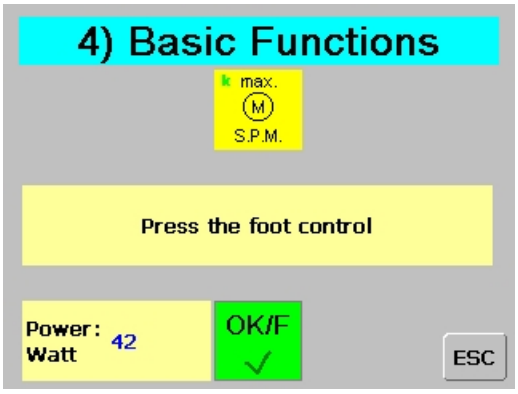
What to test:

- Stitches per minute calibration



Note:

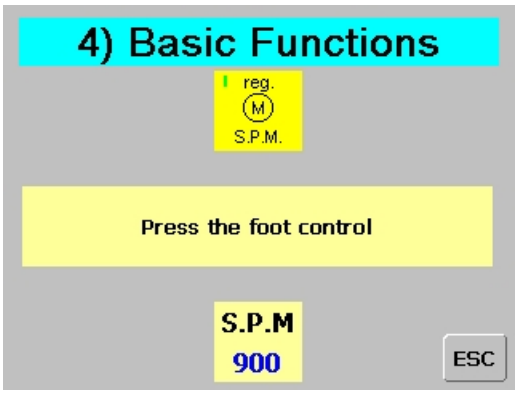
- Connect foot control and actuate. Keep pressed until machine stops on own accord
- **OK/F** button lights up in **green**.
- In the event of an **error**, a **red X** appears in the **OK/F** button.
- The machine starts to run, slowly taking up speed, accelerating to 900 stitches per minute (S.P.M.), then slowing down to 100 SPM and accelerating up to the average value.
- The Watt value is displayed in the left field.
- Press **ESC** to return to menu **4) Basic Functions**.



Repairing note:

- The Wattage (**ca. 53W**) gives an indication on the smoothness of the machine. The higher the value the stiffer the driving and vice versa.
- Ensure smooth running of the machine – mechanical ease of movement. Check drive belt tensions. Check main and base shaft bearing, needle bar belt tensioner, thread take-up crank and hook system for ease of movement.
- Check the cables for deformation, tears or breaks. Replace if necessary.
- Replace L-Print.
- Replace main motor.

4l Standard SPM (stitches per minute) speed:



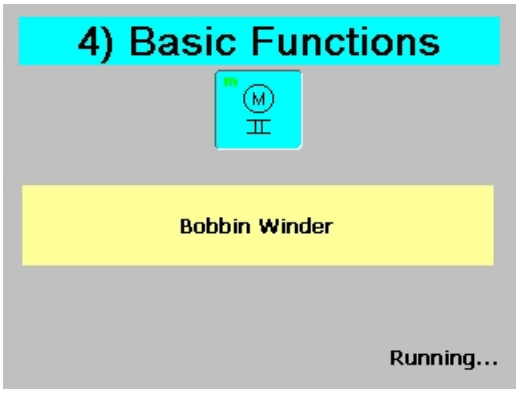
What to test:

- Standard SPM speed

Note:

- Connect foot control and actuate. The main motor runs speed-dependant.
- The number of **stitches per minute (SPM)** is displayed in the field.
- Press **ESC** to return to menu **4) Basic Functions**.

4m Winder motor:



What to test:

- Winder motor

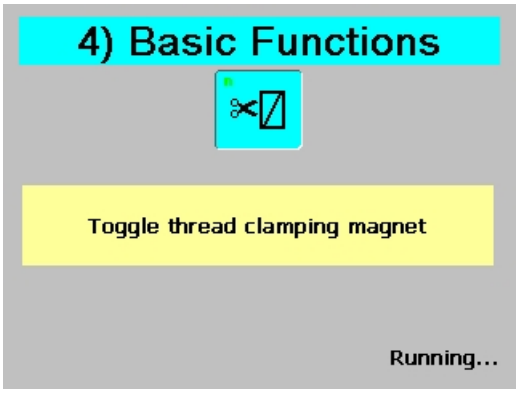
Note:

- Press **icon 4m** to **switch the winder motor on and off**
- Press **ESC** to return to menu **4) Basic Functions**.

Repairing note:

- Replace winder motor.
- Replace IO-Print.
- Replace Main-Print.

4n Thread cutter clamping magnet:



What to test:

- Thread cutter clamping magnet

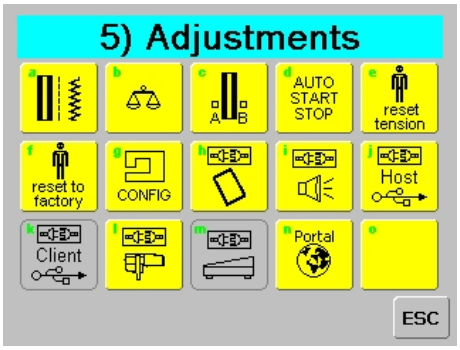
Note:

- Press **icon 4n** to **start and stop** test
- The **clamping magnet** moves **back and forth**
- Press **ESC** to return to menu **4) Basic Functions**.

Repairing note:

- Check the cable for deformation, tears or breaks. Replace if necessary.
- Replace clamping magnet.
- Replace IO-Print.
- Replace Main-Print.

5.7 Bereich 5 - Adjustments

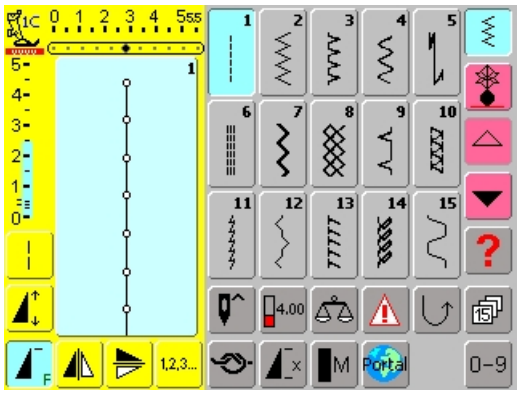


- The tests are selected by pressing the appropriate button.
- Testing and adjusting of balance, buttonhole, configuration, presser foot pressure, BSR foot, MyArtista Portal. Carrying out of resets.
- Tests are displayed page by page.
- Explanations of tests and how to change and save tests are given below.

5a Sewing-off (customer's view):

What to test:

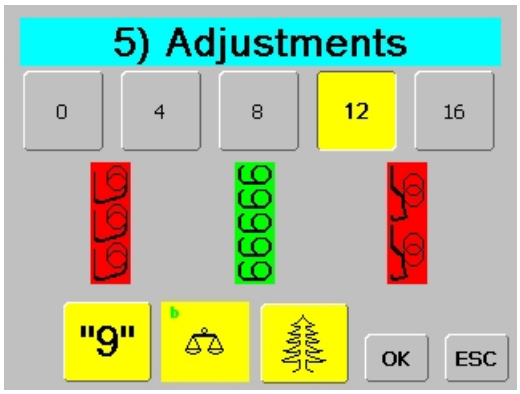
- Press **icon 5a** to open the **sewing program in customer's view.**
- The machine can be sewn off using different stitch patterns.
- Press **CLR** to return to **service program**.



5b Mechanical balance fine-adjusting:

What to test:

- The **number 9** pattern.
- Thread machine, place two-layered sewing-off cotton under the presser foot and start machine.
- The **9** pattern must now be stitched in such way that **the ends meet**.

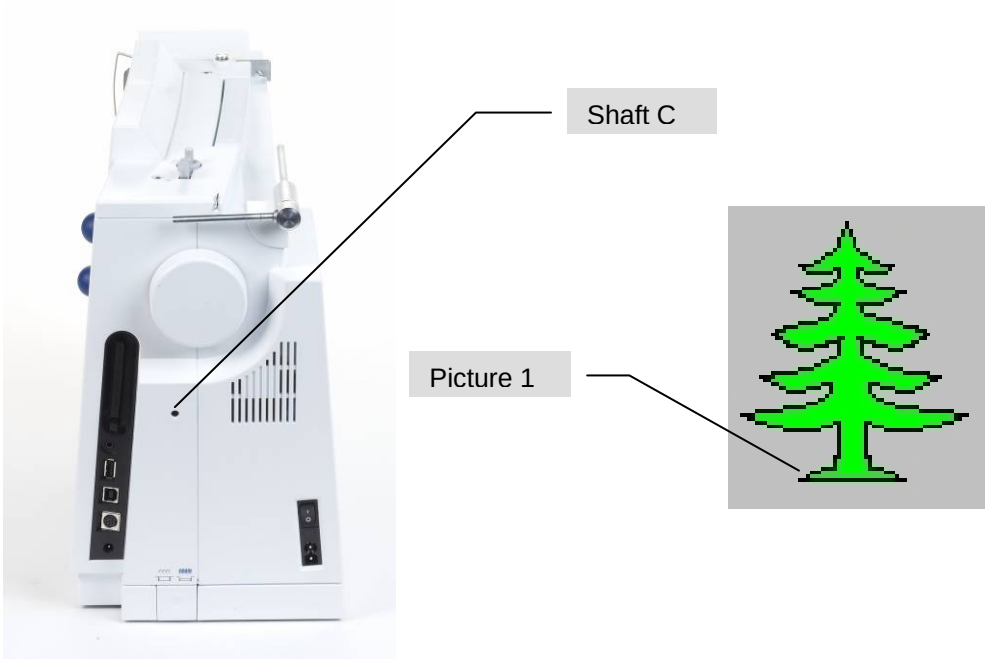


What to adjust:

- Fine-adjusting.
- **Turn balance shaft C** (**picture on next page)** in such way that the **9** is sewn correctly,
  i. e. ends of stitching lines meet exactly.

Repairing note:

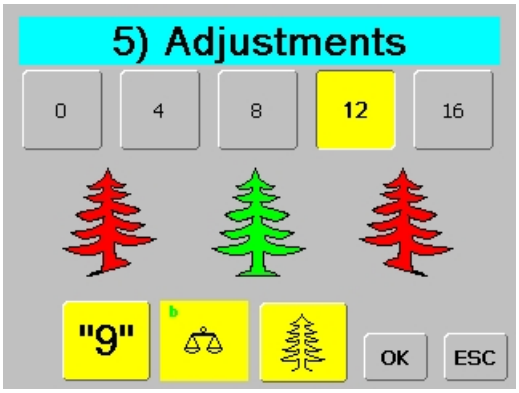
- Make sure that the basic mechanical settings are correct.
- Use the icons 0-16 to increase or decrease the balance value by one unit respectively.



5b Mechanical balance fine-adjusting:

What to test:

- The stitching out of the **tree**
- Thread machine, place two-layered sewing-off cotton under the presser foot and start machine.
- **Both sides of the tree** should **look equal** and the base line should be **straight** (**picture 1**).



What to adjust:

- Fine-adjusting.
- **Turn balance shaft C** in such way that the **tree looks equal on both sides** and **stands flat on the ground.**

Note:

- Press **ESC** to return to menu **5) Adjustments**.



Turn clockwise **OK** **Turn counter clockwise**

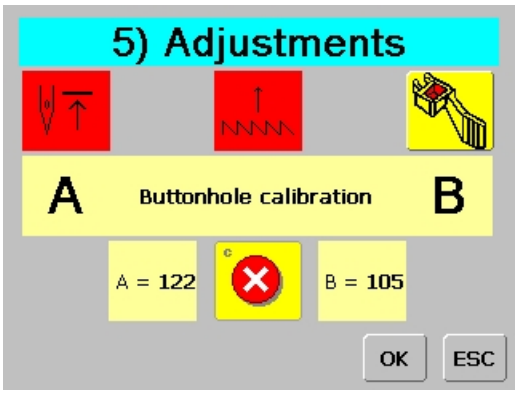
Repairing note:

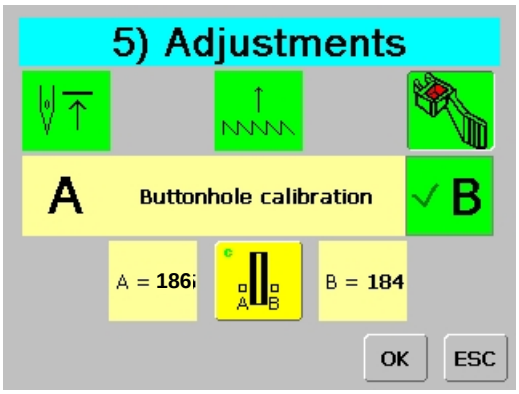
- Make sure that the basic mechanical settings are correct.
- Use the icons 0-16 to increase or decrease the balance value by one unit respectively.

5c Buttonhole calibration:

What to test:

- Buttonhole calibration.
- Attach automatic **buttonhole foot 3A.**
- **Set feed-dog to sewing mode**.
- Attach **adjusting filter,** then press symbol on right side to confirm**.**
- To make the feed-dog move sufficiently, the needle bar must be set to max. **1 cm below upper needle stop**.
- Press **icon 5c** to start the test.
- The **buttonhole device** toggles. **Signals A and B** are recorded.
- The calibrated **signals A and B** must be in the range of **120 to 190.**





Note:

- The calibrated **signals A and B** must be in the range of **120 to 190.**
- Press **OK** to save the value. This brings you back to menu **5) Adjustments**.
- Press **ESC** to return to menu **5) Adjustments**.

Repairing note:

- **Balance fine-adjusting** see **test 5b** in service program.
- Check mechanical parts of automatic buttonhole foot (smooth sliding of carriage, motion of signal prism).
- Replace automatic buttonhole foot.
- Test **sensors A and B** in service program **test 3i**.
- Replace IO-Print and/or buttonhole sensor PCB.
- Replace Main-Print

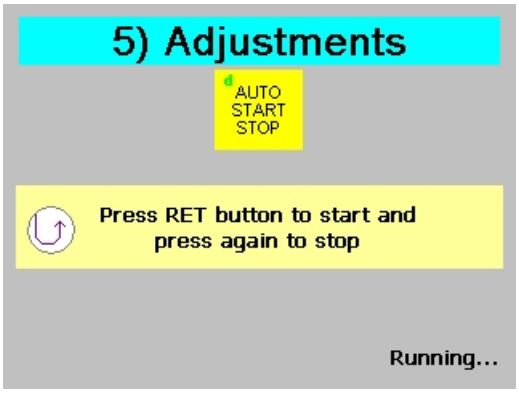
5d Automatic start/stop:

What to test:

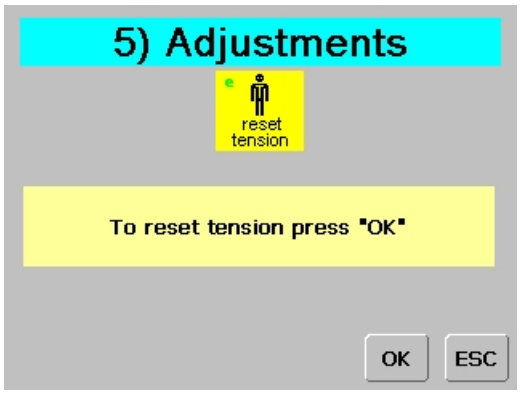
- Automatic start/stop

Note:

- **Press RET-Button, Machine runs** at full speed**.**
- Straight stitch is available.
- The machine **runs and stops for about 7.5 seconds** respectively
- Press **RET-Button** again to **stop** the test.
- Press **ESC** to return to menu **5) Adjustments**.



5e Resetting upper thread tension to default (Reset tension):



What to adjust:

- Press **OK** to reset to the **electronic basic value** of the **upper thread tension**.
- This brings you back to the menu **5) Adjustments**.

Note:

- Press **ESC** to return to **5) Adjustments without resetting to basic value**.

5f Resetting to factory settings (Reset (all) to factory):



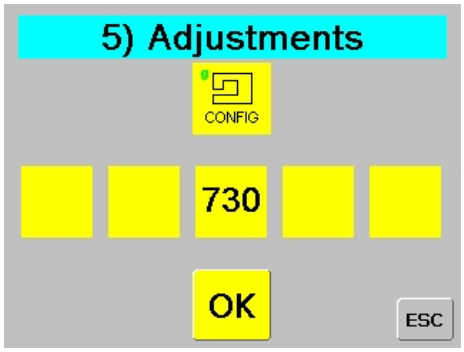
What to adjust:

- Press **OK** to reset to **factory settings**.
- This brings you back to **5) Adjustments**.

Note:

- It is essential to save the customer's data on a BERNINA Personal Design Card before resetting to factory settings**!**
- Refer to **test 1g** in the service program for the **saving of data.**
- Press **ESC** to return to **5) Adjustments without resetting to factory settings**.

5g Sewing/embroidery computer Configuration (artista 730)



What to test:

- Display of machine type.

Note:

- Press **ESC** to return to menu **5) Adjustments**.

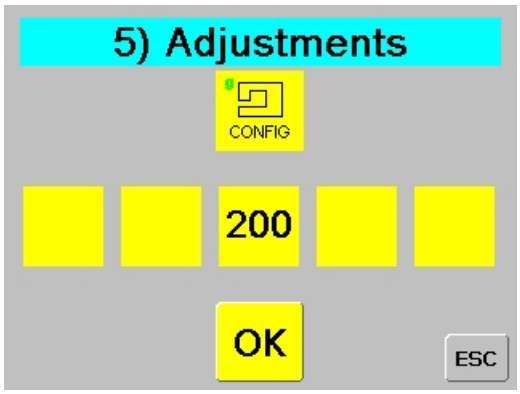
5g Sewing/embroidery computer Configuration (artista 200)

What to test:

- Display of machine type.

Note:

- Press **ESC** to return to menu **5) Adjustments**



5h Testing the PCMCIA interface:

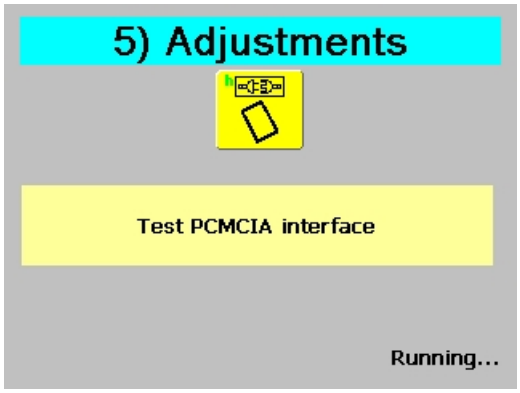
What to test:

- Functioning of PCMCIA interface



Note:

- Insert a **BERNINA Personal Design Card** into the machine's **PCMCIA drive**.
- Press **Icon 5h** to **start** the test.
- If **OK,** a message appears, saying**:** ***Embroidery design card working properly!***
- In the event of an **error**, the message says: ***Embroidery design card NOT working!***
- Press **ESC** to return to menu **5) Adjustments**



Repairing note:

- Try another **BERNINA Personal Design card**.
- Replace Main-Print.

5i Testing the speaker interface:

What to test:

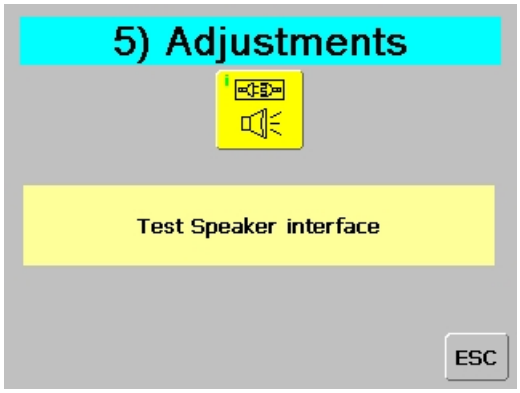
- Loudspeaker interface

Note:

- Connect external loudspeakers
- When pressing **Icon 5i**, there is a **sounding signal**.
- Press **ESC** to return to menu **5) Adjustments**

Repairing note:

- If there is no sound, replace the Main Print.

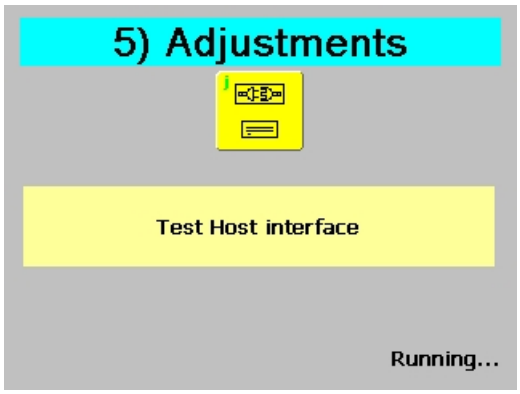


5j USB Host interface:

What to test:

- USB Host interface





Note:

- Connect a **BERNINA USB Stick** or an external **CD-ROM drive**.
- Press **Icon 5j** to start the test.
- If OK, the message reads: ***USB Device is working properly!***
- In the event of an error, the message reads: ***USB Device NOT working!***
- Press **ESC** to return to menu **5) Adjustments**

Repairing note:

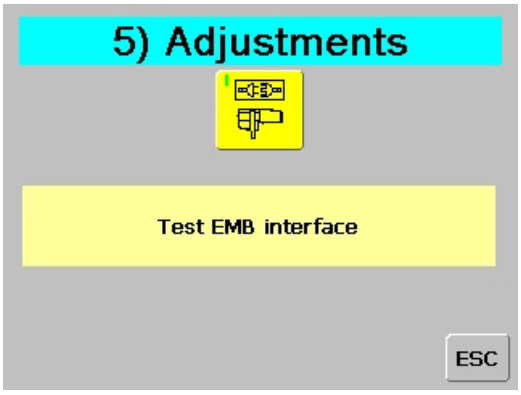
- Use another **BERNINA USB Memory Stick**
- Test USB cable (by connecting another peripheral).
- Replace Main-Print.

5l EMB interface:

What to test:

- Embroidery module interface





Note:

- Attach **embroidery module**.
- press **icon 5l** to start the test
- If **OK**: ***Module detected***
- If **failed**: ***Module not detected. Connect module before try again***
- Press **ESC** to return to menu **5) Adjustments**

Repairing note:

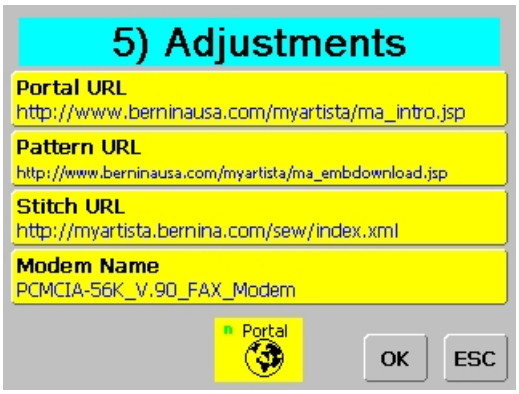
- Use Ohm meter to check EMB cable for resistance.
- Replace EMB cable.
- Replace embroidery module S-Print.
- Replace Main-Print.

5n MyArtista Portal Settings:

These data are entered by the factory. They should not be changed. If they are, the myartista Portal can no longer be detected.

What to test:

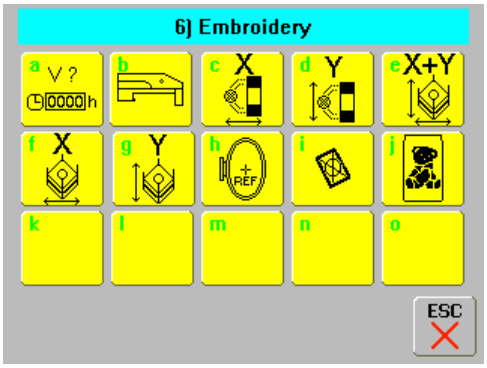
- Portal URL = Myartista entry portal
- Pattern URL = Myartista embroidery designs
- Stitch URL = Myartista stitch patterns
- Modem name = Modem name



Note:

- The virtual keyboard opens on selecting a field.
- Data can be changed now.
- **Electronic reading/entering** of data is not possible.
- Press **ESC** to return to menu **5) Adjustments**

5.8 Bereich 6 - Embroidery module (EMB)

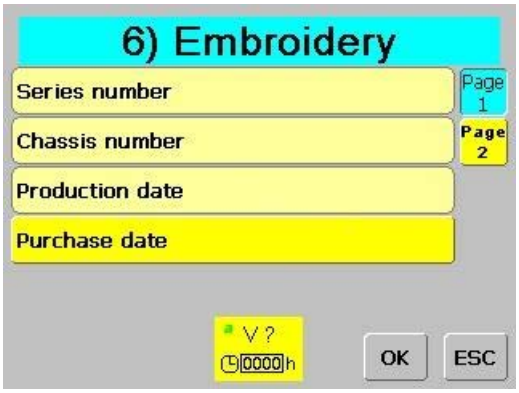


- The tests are selected by pressing the appropriate button.
- The EMB test menu contains information on the configuration and the state of the embroidery module. It also contains tests for the individual components.
- Data, saving, and changing are explained below.

6a Embroidery module basic data (Page 1):

What to test:

- Series Number
- Chassis Number
- Production date
- Purchase Date = Date of sale/purchase is entered via virtual keyboard.



Note:

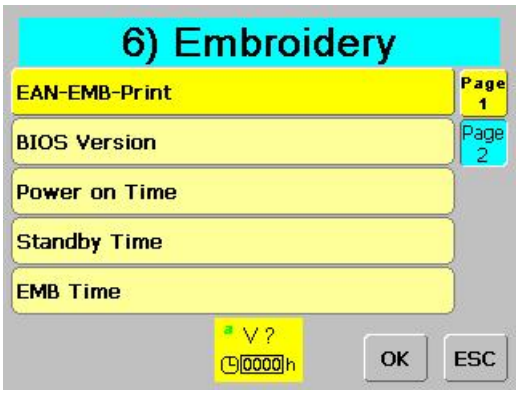
- **Series number, chassis number and production date** are entered by the Production department. These data cannot be changed.
- Press **Page 2** to go to the next page.
- Press **ESC** to return to menu **6) Embroidery**.

Repairing note:

- EMB updating.

V ?
0000 h

6a Embroidery module basic data (Page 2):



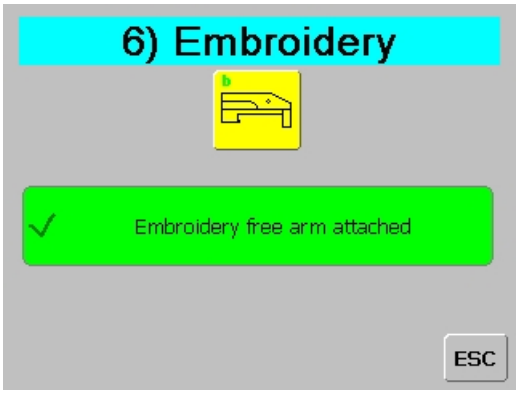
What to test

- EAN-EMB-Print = EAN-Code Print:
  The EAN Code is entered by the Production department and can be changed using the virtual keyboard after replacement of the EMB S-Print.
- BIOS Version = BIOS Version:
  The installed BIOS version is displayed.
  The information is entered together with the software and cannot be changed.
- Power-on time = Total hours:
  in powered state.
- Time Standby = in standby state:
  machine is powered but not operating.
- EMB Time = actual time used for embroidering

Note:

- **BIOS Version,**
- Operating and stitching times are automatically updated by the system.
- Press **ESC** to return to menu **6) Embroidery**.

6b Free-arm adapter sensor:



What to test:

- Free-arm adapter sensor

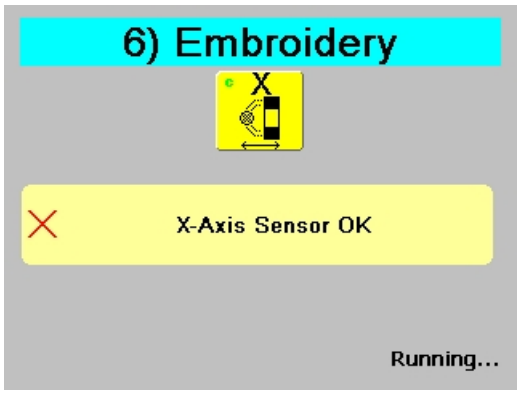
Note:

- Attach free-arm adapter and embroidery module.
- Press **Icon 6b**, the bar lights up in green on sensor recognition, and a green tick symbol ✓ appears.
- If the recognition fails or there is no free-arm connected, a cross symbol ✗ in red appears.
- Press **ESC** to return to menu **6) Embroidery**.

Repairing note:

- Ensure that the free-arm adapter and EMB are in the correct positions.
- Check connecting cables. Replace if necessary.
- Replace sensor.
- Check EMB PCB and S-Print. Replace if necessary.

6c X-axis sensor:



What to test:

- Function X-axis sensor

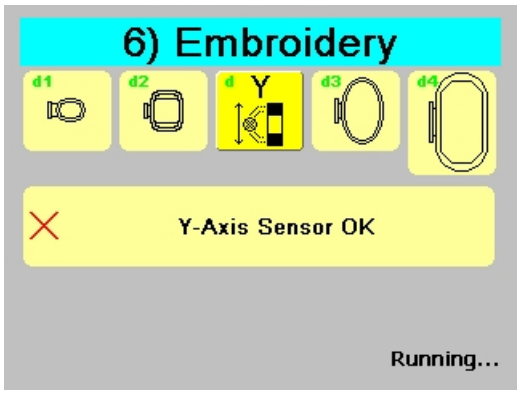
Note:

- Attach embroidery module and hoop.
- Press **Icon 6c**, the bar lights up in green on sensor recognition, and a green tick symbol ✓ appears.
- In the event of an error, an ✗ appears.
- The test stops automatically on recognition of the sensor.
- Press **ESC** to return to menu **6) Embroidery**.

Repairing note:

- Replace X – Sensor.
- Replace S-Print EMB.

6d Y-axis sensor:



What to test:

- Function Y-axis sensor

Note:

- Attach embroidery module and hoop.
- Press **Icon 6d**, the bar lights up in green on sensor recognition, and a green tick symbol ✓ appears.
- In the event of an error, an ✗ appears.
- The test stops automatically on recognition of the sensor.
- If a hoop is attached, the respective hoop type is also displayed on successful recognition.
  Icon d1 to d4 light up in **green**.
- Press **ESC** to return to menu **6) Embroidery**.

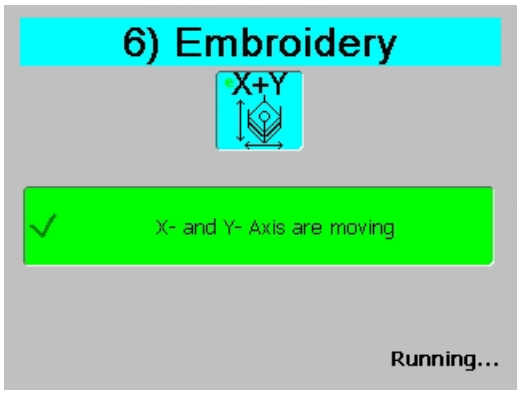
Repairing note:

- Replace Y - Sensor.
- Replace S-Print EMB.

6e X- and Y-movement of stepping motors:

What to test:

- Function X and Y movement of stepping motors



Note:

- Attach embroidery module.
- When p**ressing Icon 6e** the **X- and Y-axis stepping motors move back and forth.**
- Press **Icon 6e** again to **stop** the test.
- An ✓ appears while the motors are moving.
- Press **ESC** to return to menu **6) Embroidery**.

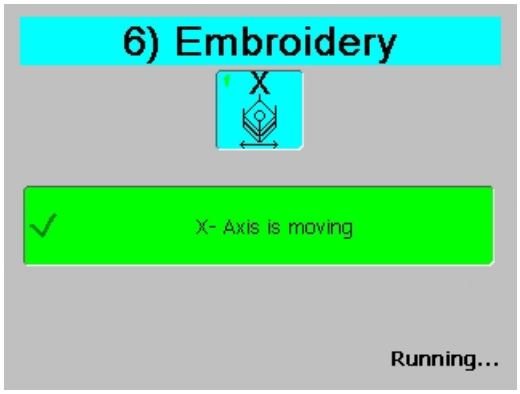
Repairing note:

- Carry out test 6f and 6g.
- Replace Stepping motor X or Y.
- ReplaceS-Print EMB.

6f Movement of stepping motor X:

What to test:

- Function movement of stepping motor X



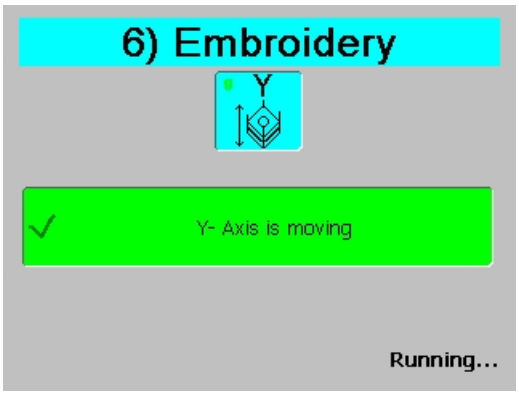
Note:

- Attach embroidery module.
- When p**ressing Icon 6f** the **X-axis stepping motor moves back and forth.**
- Press **Icon 6f** again to **stop** the test.
- An ✓ appears while the motors are moving.
- Press **ESC** to return to menu **6) Embroidery**.

Repairing note:

- Check X drive belt tension.
- Check if drive pinion of stepping motor X is free of threads.
- Replace stepping motor X.
- Replace EMB S-Print.

6g Movement of stepping motor Y:



What to test:

- Function movement of stepping motor Y

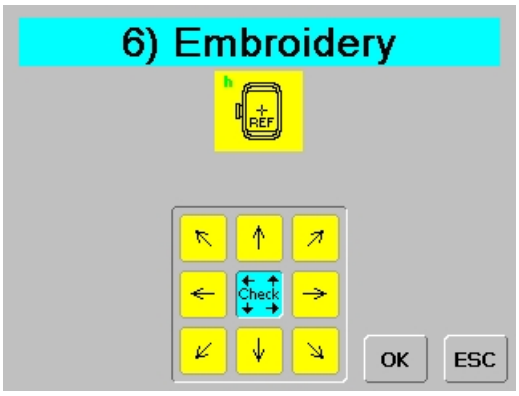
Note:

- Attach embroidery module.
- When p**ressing Icon 6g** the **Y-axis stepping motor moves back and forth.**
- Press **Icon 6g** again to **stop** the test.
- An ✓ appears while the motors are moving.
- Press **ESC** to return to menu **6) Embroidery**.

Repairing note:

- Check Y drive belt tension.
- Check if drive pinion of stepping motor Y is free of threads.
- Replace stepping motor Y.
- Replace EMB S-Print.

6h Hoop reference position:



What to adjust:

- Hoop center reference point.

Note:

- Attach embroidery module and hoop.
- Place template (item 030575.50.00 blue) in hoop.
- Press **Icon** Check EMB moves to reference point.
- Use the arrow keys to correct/adjust the center position
- Press **OK** to **save the value** and to return to menu **6) Embroidery**.
- Press **ESC** to return to menu **6) Embroidery** without saving.

Repairing note:

- Check tests **6c to 6g**.
- Check X and Y drive belt tension.
- Check if drive pinion of stepping motors is free of threads

6i Customer's embroidery view:

What to test:

- Press **Test 6i** to get into Customer's embroidery view.
- Press **Clr** to return to **Service Basic program**.



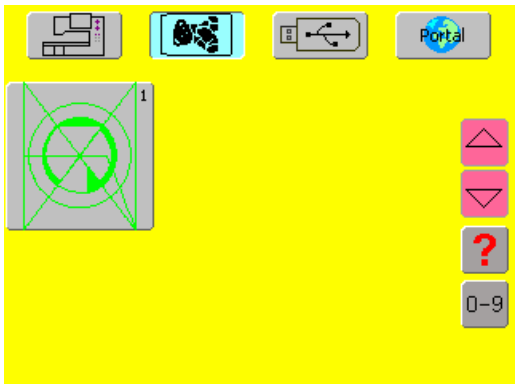
6i Test designs from PCMCIA card

What to test:

- Test design

Note:

- Hoop sew-off cotton and stabilizer.
- Attach embroidery module and hoop.
- Select test design.
- Stitch test design. Check it.
- Press **Clr** to return to **service program**
- Test design assessment **see next page**.



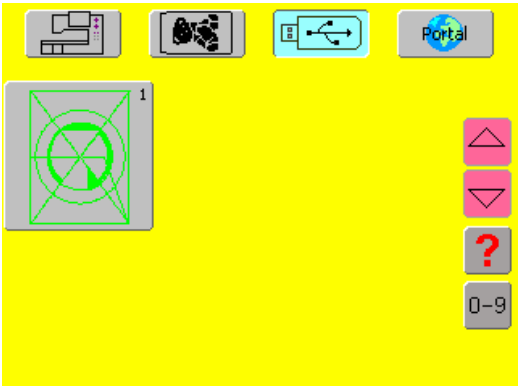
6i Test design from USB Memory Stick

What to test:

- Test design

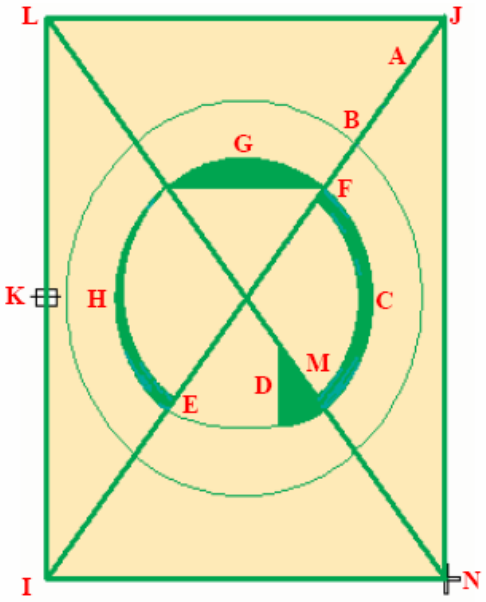
Note:

- Hoop sew-off cotton and stabilizer.
- Attach embroidery module and hoop.
- Select test design.
- Stitch test design. Check it.
- Press **Clr** to return to **service program**
- Test design assessment **see next page**.



6i Test Design assessment

Point/Area	Desired status:	Possible cause:
A	The two stitching lines must be on top of each other.	Reference point not adjusted. Speed too high, belt tension too weak/strong.
B Circle	Circle must close at point B.	X- and Y-axis stiff-driving. Belt tension too weak/strong.
C Satin stitching	The stitches must lie densely together.	Stiff-driving caused by threads, fluff, etc. in the drive. Belt tension too weak/strong.
D Fill Stitch	Stitch density (Y-direction) must be even.	Y-axis stiff-driving (slide or drive).
E	Must match first diagonal row.	Y- or X-axis stiff-driving (slide or drive).
F	Must be parallel to first diagonal row.	Y- or X-axis stiff-driving (slide or drive).
G Fill Stitch	Stitch density (Y-direction) must be even.	Y-axis stiff-driving (slide or drive).
H Satin stitch	The stitches must lie against each other.	Stiff-driving caused by dirt in the drive (probably thread remnants)
I	Must match corner row.	Y- or X-axis stiff-driving (slide or drive).
J	Must match corner row.	Y- or X-axis stiff-driving (slide or drive).
K	The stitching line must be seen. Note: Since there are no securing stitches at the beginning, it may well be that point K does not match the starting point.	Y- or X-axis stiff-driving (slide or drive). Fabric hooped incorrectly. Mark hoop outline with pencil.
L	Corner point must match.	Y-axis stiff-driving (slide or drive).
M	Must match fill (point D).	Y- or X-axis stiff-driving (slide or drive).
N	Corner point must match.	Y- or X-axis stiff-driving (slide or drive).



Chapter 6
Updating

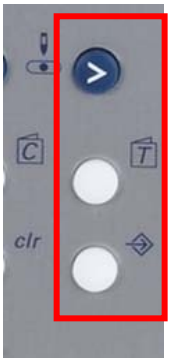
6.1 Updating of sewing/embroidery compute

Note:

The artista 730 and 200 models have the same firmware (FW). The firmware can only be installed via a BERNINA Personal Design Card. The bootloader and the firmware must not be stored on the same ATA card.

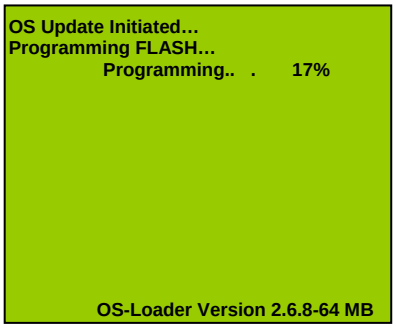


1. Save bootloader (OS loader) or FW on a BERNINA Personal Design Card.
2. First load the customer's data from the machine to a BERNINA Personal Design Card via Icon 1g in Service Program.
3. Then insert BERNINA Personal Design Card into PCMCIA drive on the artista 730 or artista 200 and lock it in the drive. If a new bootloader version is available, be sure to install it first.

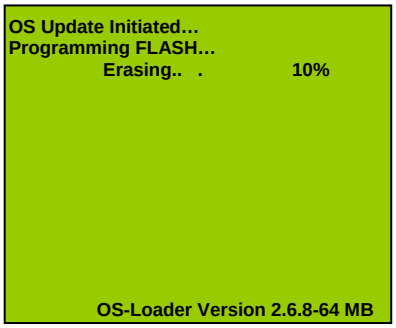


4. Keep these buttons  pressed

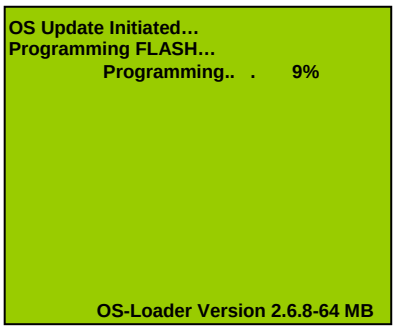
   and switch the machine on.
5. The **Update** screen appears and the processing starts.
6. The Update data is checked and the new bootloader or FW loaded.



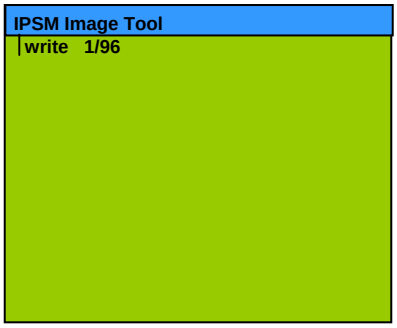
7. First, the Flash memory in the machine is emptied.



8. Then, the new software is written to the Flash memory.



9. After resetting, the Update is carried out and the sewing/embroidery computer automatically restarted in the new application.



10. Return to Service Program after restarting. Then reload the customer's data from the BERNINA Personal Design Card in **Service Program test 1g**.
11. The new version is now installed on the sewing/embroidery computer. It is ready for normal use.
12. Error messages appear if the update fails, does not start or if errors occur while updating.

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