DÜRKOPP ADLER

M-TYPE PREMIUM

Additional Instructions

Skip Stitch Detection (SSD)
including remaining thread monitor (RFW)

1 General information

Sensor block offering the following functions:

- Remaining thread monitor (RFW/RTM)
- Skip stitch detection SSD composed of enlacement check (UK/LC) and bobbin rotation monitor (SDÜ/BRM)

Fig. 1: Sensor block
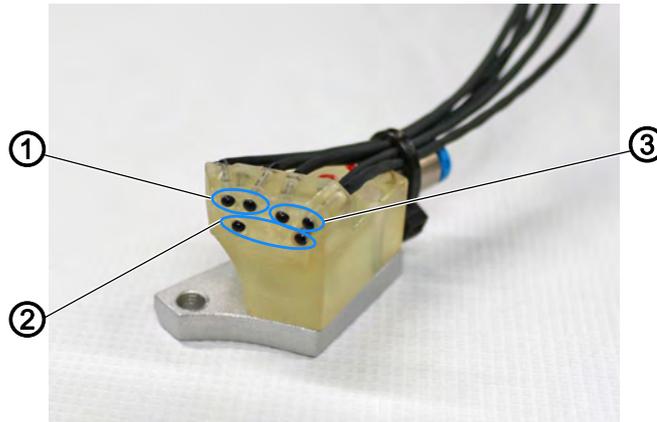
(1)	*- Sensor - enlacement check*	*(3)* - Sensor - bobbin rotation monitor
(2)	*- Sensor - remaining thread monitor*	

Components of the kit 0867 591404 (M-TYPE PREMIUM)

Check whether the scope of delivery for kit 0867 591404 is correct prior to installation.

Part number	Quantity	Designation
0867 591354	1	Sensor SSD
9202 002077	1	Cylinder-head bolt M4x10
9330 400017	1	Washer Ø 4
0867 151104	1	Bobbin case SSD
0867 151070	1	Compression spring (spare part)
0867 151200	3	Bobbin
9850 001504	1	Circuit board
9870 867059	1	Cable
0667 155840	1	Holder
0667 155930	1	Cover
9830 501014	4	Spacer PA 4.8mm
9204 201667	6	Pan-head screw M4x10-H
9710 061412	1	Magnet valve 3/2-way
9870 867065	1	Connecting cable

Part number	Quantity	Designation
9203 003087	2	Cylinder-head bolt M3x14
0867 591390	1	Holder
9207 170437	2	Chipboard screw 4.0x20 PAN-HEAD
9790 060102	1	Connection/elbow plug-in connector
B1300260.00	1	Double screw connection
B1100192.01	1	Reducer plug
B1400342.00	1	Sealing plug
9731 005004	2.2	Hose D4
9731 006004	1	Hose D6
0791 867722 EN	1	Additional Instructions SSD
9840 120106	3	Cable holder
9840 121002	6	Cable tie
0867 591423	1	Blow tube
9202 002057	1	Cylinder-head bolt M4x6
0867 140840	1	Holder
9202 002867	2	Cylinder-head bolt M6x8

Important

Machines of the M-TYPE PREMIUM class are not equipped with compressed air. If you want to assemble the skip stitch detection including remaining thread monitor to a PREMIUM machine, you will need the following additional kits: (see 📖 *Parts List*):

- 9780 000108: Compressed air maintenance unit
- 0867 593534: Pneumatic connection PREMIUM
- 0797 003031: Pressure line

2   Assembly

> **NOTICE**
>
> **Property damage may occur!**
>
> The operation of the sensor may be impaired by a damaged bobbin.
>
> Do NOT damage the bobbin when taking it out. Do not use any metal objects to remove it. Use your fingers to remove the bobbin in order to avoid damage.

> **NOTICE**
>
> **Property damage may occur!**
>
> Cables may sustain damage and impair the operation of the machine.
>
> Always lay the cables so as not to create any chafing or pinching points.

These instructions are intended for specialists. This group has the appropriate technical training for performing conversions or repairing malfunctions.

Tools required for assembling the kit

Fig. 2: Required tools

- Screwdriver, cross-head
- Screwdriver slot
- Allen key, size 3
- Allen key, size 5
- Wrench, size 14
- Wire cutter

2.1 Assembling parts

1. Switch off the machine and disconnect it from the power supply.
2. Disassemble, if present, any old components of the remaining thread monitor.

Fig. 3: Bobbin case

Bobbin case old   *Bobbin case new*

3. Change the bobbin case.

Fig. 4: Assembling parts
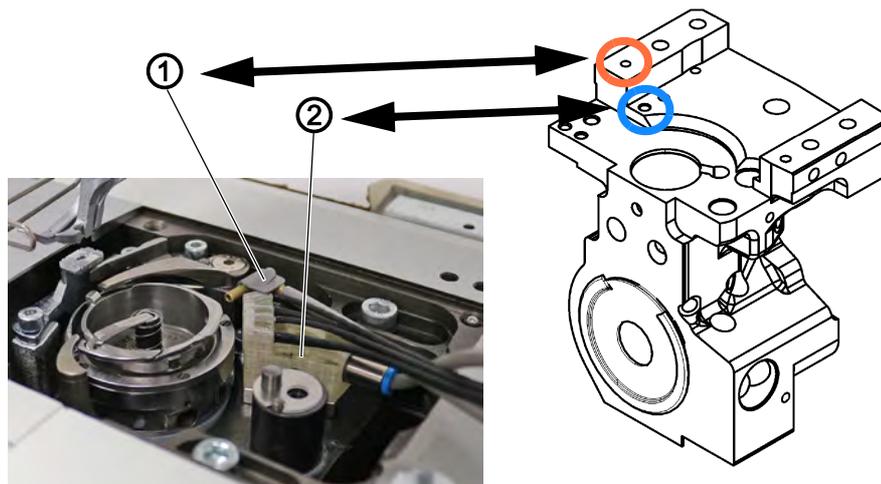
(1) - Blow tube   *(2) - Sensor block*

4. Cut the pneumatic hose D4 (2.2 m) in half.
5. Slip the pneumatic hoses onto blow tube (1) and sensor block (2) and mark the hose ends (2 = sensor block, 4 = blow tube).
6. Use an M4x10 screw and washer to assemble the sensor block (2) (hole marked by blue circle) - push the sensor block (2) all the way back against the hook housing; it is supposed to abut on the housing.
7. Assemble the thread-pulling knife with the blow tube (1) in the hole marked by the orange circle (screw M4x6).
8. Tilt the machine.
9. Pull the cables of the sensor block (2) and the pneumatic hoses of blow tube (1) and sensor block (2) through the base plate and down to the underside of the machine.

Assembling the SSD circuit board

! **Important**

Components susceptible to electrical discharge. Handling these components is only permitted at protected workstations.

Fig. 5: SSD circuit board
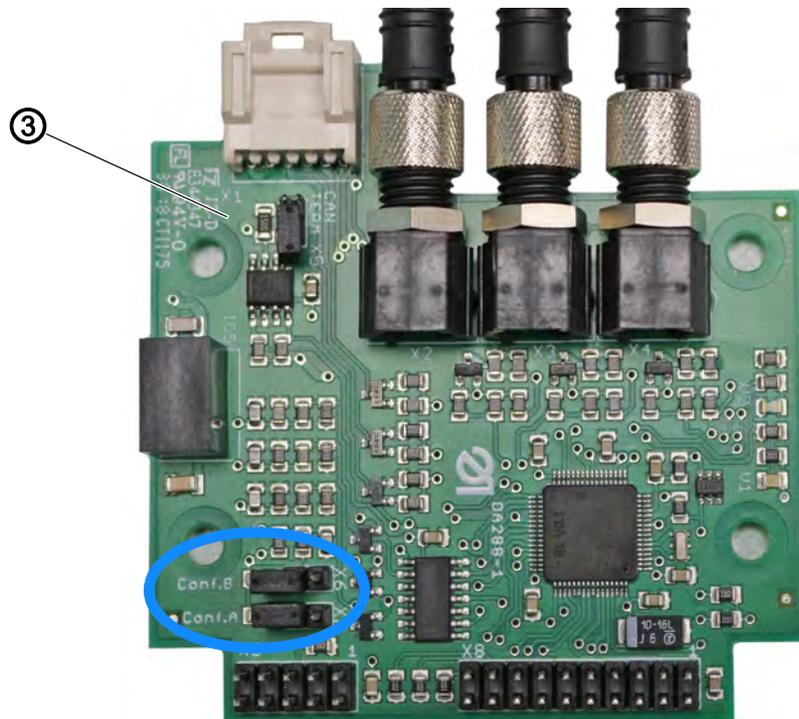
(3)   - SSD circuit board

10. Correctly place the lower jumper (Conf.A) on the rear of the SSD circuit board (3); it must be open.

Fig. 6: Circuit board holder
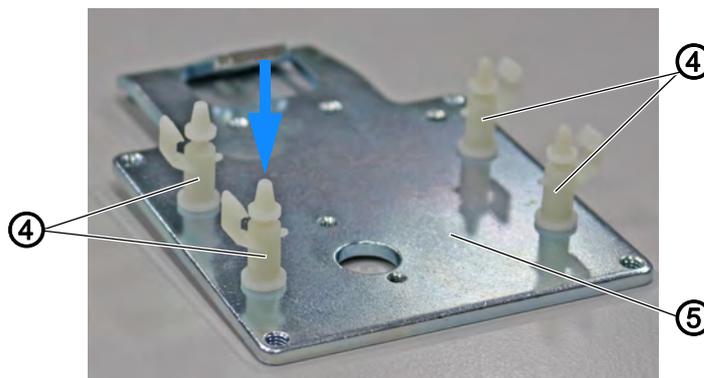
(4)   - Spacer   *(5)   - Circuit board holder*

11. Slip the spacers (4) (9830 501014) onto the circuit board holder (5) and fix them in place by pushing them down.

Fig. 7: Assembling the circuit board holder
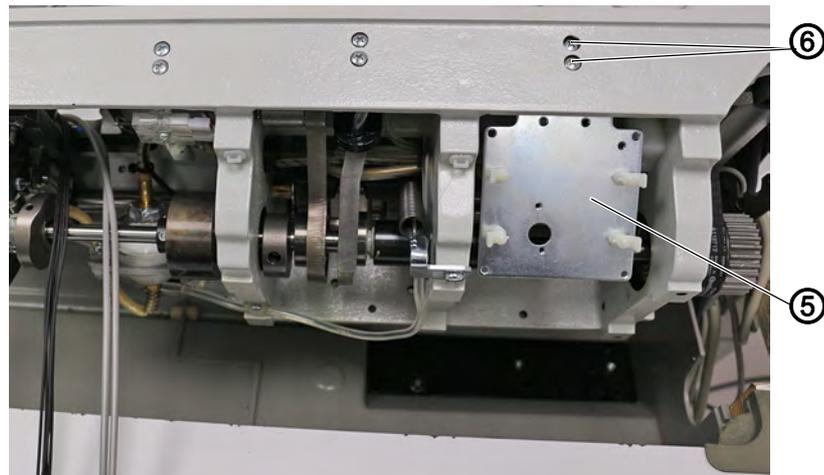
(5) - Circuit board holder   (6)   - Screws

12. Assemble the circuit board holder (5) to the base plate of the machine using 2 screws (6).

Fig. 8: SSD circuit board
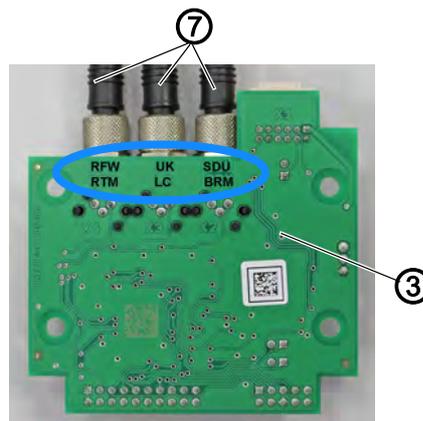
(3) - SSD circuit board   (7)   - Cables sensor block

13. Connect and tighten the cables (7) of the sensor block on the SSD circuit board (3).
    Follow the marking (RFW, UK, SDÜ) on the SSD circuit board (3).

Fig. 9: Assembled SSD circuit board
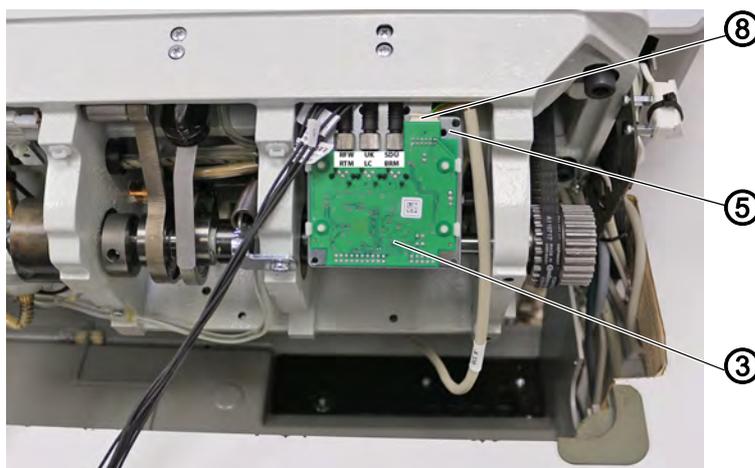
(3) - SSD circuit board   (8)   - Plug
(5) - Circuit board holder

14. Insert the plug (8) of cable X330 into the slot of the SSD circuit board (3).

15. Carefully slip the SSD circuit board (3) onto the circuit board holder (5).

Fig. 10: Laying the cables
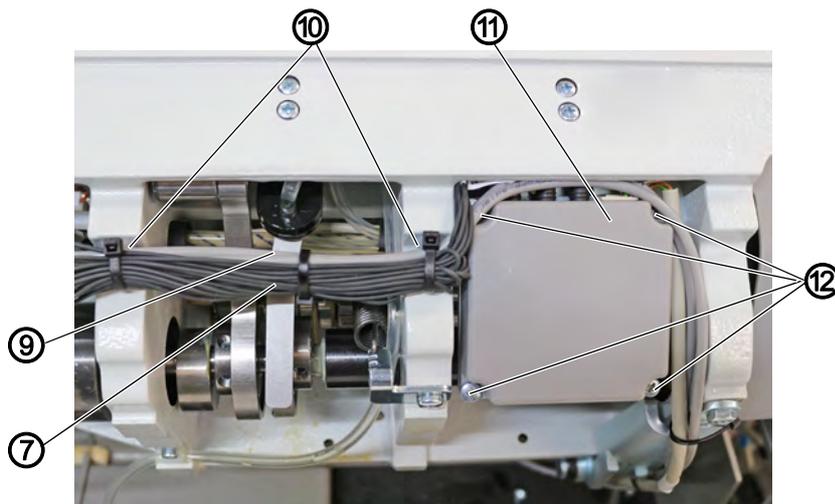
(7)   - Cables sensor block   (11) - Cover
(9)   - Pneumatic hoses   (12) - Screws
(10) - Cable holder

16. Assemble the cover (11) to the circuit board holder (12) using 4 screws (tighten the screws only slightly!).

17. Assemble the cable holder (10).

18. Feed the cable ties through the cable holders (10).

19. Lay the cables (7) of the sensor block in loops.

20. Use the cable ties to fix the cables (7) and pneumatic hoses (9) in place. Make sure not to crush the pneumatic hoses (9).

21. Lay cable X330 and the pneumatic hoses (9) on the right next to the cover (11) of the SSD circuit board and tighten them to the casting using a cable tie.

22. Feed the cable X330 and the pneumatic hoses (9) through the slot in the oil pan below the table.

23. Erect the machine again and, while doing so, check the routing of the cables and hoses for pinching and chafing points.

24. Disassemble handwheel, motor cover, valve cover, arm cover and head cover.

Fig. 11: Laying cable X320
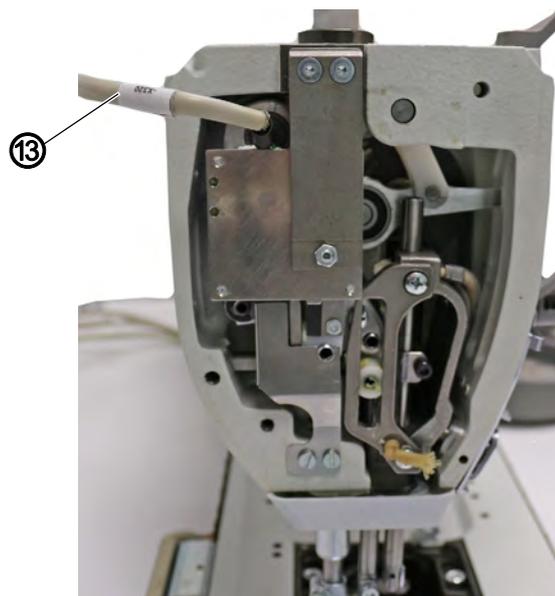
(13) - Cable X320

25. Completely remove cable X320 (13) of the material thickness detection from the machine.

26. Remove the plug of cable X320 (13) from the CAN bus of the control.

27. Lay the new cable X320 at the same position previously occupied by the cable you removed and insert the plug at the head of the machine.

28. Assemble head cover, arm cover and valve cover again.

29. Insert the CAN connector into the CAN bus of the control.

Fig. 12: Connecting the magnet valve
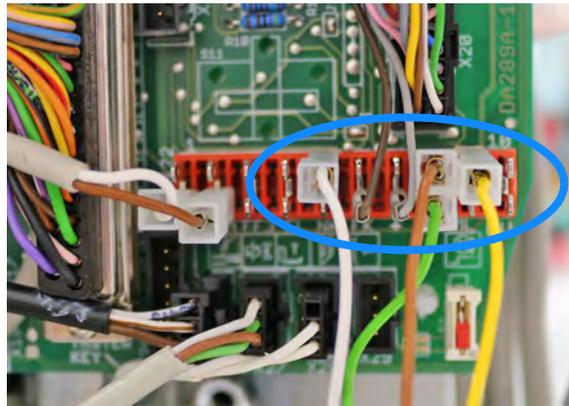
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yellow = 9
brown/green = 8
white = 5

30. Connect the cable of the magnet valve to the connector strip on the main circuit board below the handwheel.

31. Feed the cable of the magnet valve through the tabletop cutout and down to the underside of the tabletop.

32. Assemble motor cover and handwheel again.

Fig. 13: Magnet valve

(14) - Magnet valve   *(15) - Support plate*

33. Assemble the magnet valve (14) on the support plate (15).

Fig. 14: Connecting the magnet valve
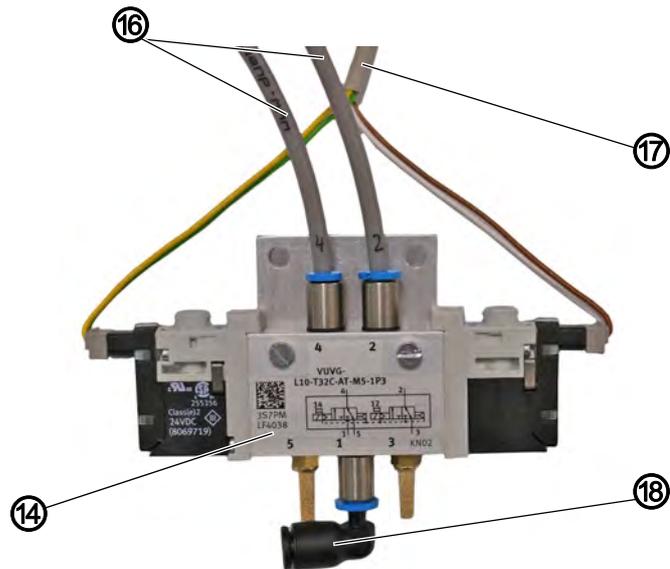
(14) - Magnet valve
(16) - Pneumatic hoses

(17) - Magnet valve cable
(18) - Elbow plug-in connector

34. Insert the elbow plug-in connector (18) into the magnet valve (14).

35. Slip the pneumatic hoses (16) of blow tube and sensor block onto the magnet valve (14).

Sensor block	Blow tube
brown/white	yellow/green
Output 2	Output 4

36. Slip the plug of the magnet valve cable (17) onto the magnet valve.

Fig. 15: Assembling the magnet valve
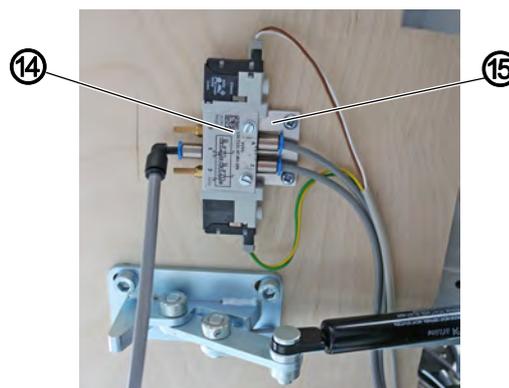
(14) - Magnet valve

(15) - Support plate

37. Tighten the magnet valve (14) with the support plate (15) under the tabletop.

38. Cut the pneumatic hoses to length if necessary.

Fig. 16: Maintenance unit

(19) - Pneumatic hose   (21) - Reducer plug
(20) - Blanking plug   (22) - Double screw connection

39. Assemble the double screw connection (22) to the air maintenance unit.

40. Insert the reducer plug (21) and the blanking plug (20) into the double screw connection (22).

41. Insert the pneumatic hose (19) of the magnet valve into the double screw connection (22)

42. Cut the pneumatic hose to length if necessary.

43. Restore power supply and compressed air connection.

44. Switch on the machine and make the necessary adjustments in the software (*p. 14*).

2.2 Software settings

Important

Before you can define the software settings, you need to switch the machine off and back on again. Otherwise, the new circuit board will not be detected by the software.

2.2.1 For M-TYPE PREMIUM machines (with OP3000)

Prerequisite:
The software version of the machines must be V04.26 or higher.

1. Access the Technician level by entering the password 25483.
2. Open the menu `User config.` and select the subitem `Outp. config.`
3. Set the outputs `X120B.9` and `X120B.10` to `Mode 2` (cleaning signal for the RFW).
4. Open the `Machine Config` and select the subitem `Bobbin`.
5. You can define the following settings:

Menu item	Setting options
`Bobbin Monitor`	Activation of the sensor units RFW and SSD 0 = PCB 9850 867003 1 = CAN version (right bobbin) (Value range On/Off, preset: off)
`SSD`	Enlacement check (Value range On/Off, preset: off)
`BRM`	Bobbin rotation monitor (Value range On/Off, preset: off)
	`Length` Delay before the bobbin rotation monitor starts. The machine calculates the number of stitches automatically depending on the value entered for the length and the set stitch length. (Value range 000 - 255, preset: 50)
`MsgAfterTrim`	If detecting an error during the enlacement check or while monitoring the bobbin rotation, the machine will indicate an error message during the seam, which must be confirmed with **OK**. The error disappears. If the parameter `MsgAfterTrim` is active, the error will be displayed again after the seam has been completed. (Value range On/Off, preset: off)
`StopConfirm`	If detecting an error during the enlacement check or while monitoring the bobbin rotation, the machine will indicate an error message and stop. You must confirm this error before you can resume sewing. (Value range On/Off, preset: off)

6. Use ᴾ ⋯ on the user level to call up the parameter `Bobbin RFW`.
7. Using the enlacement check requires that you set the mode to `Monitor`.

8. If necessary, make additional adjustments in the `Monitor` menu:

`t Clean` Value range 0000 - 5000 [ms] (Preset: 200)	Duration for which the lens is blown clear with compressed air. The process takes place after the thread has been cut.
`Motor Stop` Value range On/Off (Preset: off)	Sewing stops and a notice is shown on the display when the bobbin is detected to be nearly empty. If the parameter is not activated, only the LEDs on the machine arm give a warning if the bobbin is empty.
`Foot down` Value range On/Off (Preset: off)	Sewing foot down if an error occurs during thread cutting.

Important

When winding thread onto an empty bobbin for the first time, you must use winder mode. Otherwise (i.e. during sewing), the machine will detect a skip stitch and stop sewing.

2.2.2 For M-TYPE PREMIUM machines (with Commander)

Prerequisite:
The software version of the machines must be V04.26 or higher.

1. Log in as a technician by entering the password 25483.

2. Tap the symbol ≡ to bring up the navigation pane.

↳ This opens the navigation interface.

Fig. 17: Navigating the burger menu
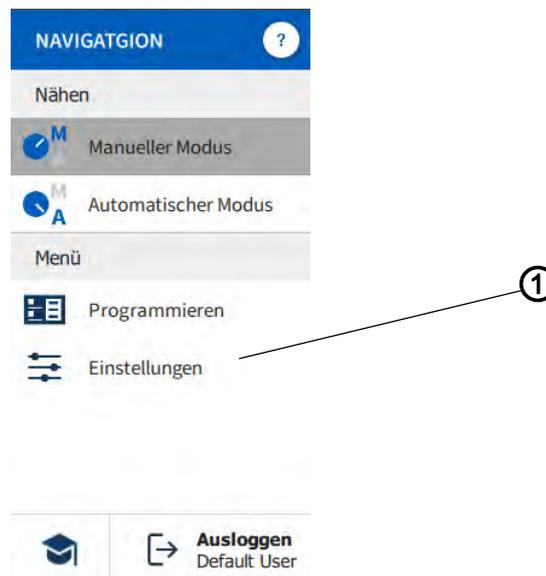
(1) - Menu Settings

3. Tap `Settings` (1).

↳ This opens the Settings interface.

Fig. 18: Settings
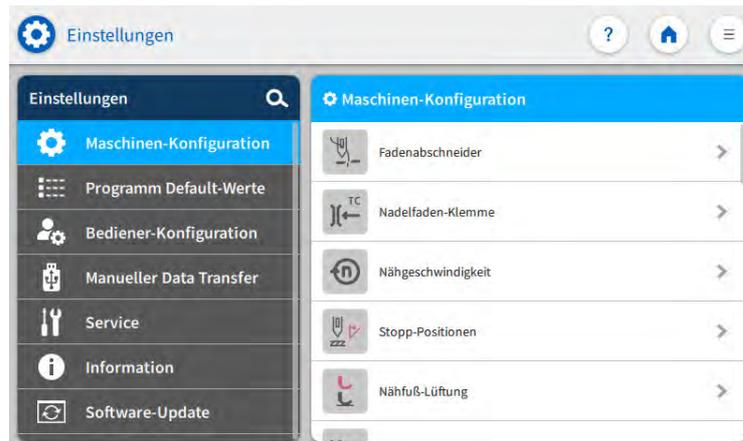
4. Open the `Machine Config` and tap the subitem `Input/Output Config`.

5. Tap the subitem `Output Config`.

6. Set the outputs `X120B.9` and `X120B.10` to `Mode 2` (cleaning signal for the RFW).

7. Tap `Machine Config` on the right-hand side again.

8. Open the `Machine Config` and tap the subitem `RFW/SSD`.

9. You can define the following settings:

Icon	Menu item	Value range
	`Remaining thread monitor`	Value range On/Off (Preset: off)
	`Repeat message after FA` If detecting an error during the enlacement check or while monitoring the bobbin rotation, the machine will indicate an error message during the seam, which must be confirmed. The error disappears. If the parameter is active, the error will be displayed again after the seam has been completed.	Value range On/Off (Preset: off)
	`Confirmation after sewing stop required` If detecting an error during the enlacement check or while monitoring the bobbin rotation, the machine will indicate an error message and stop. You must confirm this error before you can resume sewing.	Value range On/Off (Preset: off)

Icon	Menu item	Value range
	Enlacement check	Value range On/Off (Preset: off)
	Bobbin rotation monitor	Value range On/Off (Preset: off)
		Length Seam length before the bobbin rotation monitor starts. Value range 000 - 255 [mm] (Preset: 50)

10. Call up the parameters using 🅿 in manual mode on the user level or using ⚙ in programming mode.

11. Call up the parameter *Bobbin monitor mode* in the cross-segment parameters.

12. Using the enlacement check requires that you set the mode to *Monitor*.

13. If necessary, make additional adjustments in the *Monitor* submenu:

Sewing stop ⊘	Sewing stops and a notice is shown on the display when the bobbin is detected to be nearly empty. If the parameter is not activated, only the LEDs on the machine arm give a warning if the bobbin is empty. Value range On/Off (Preset: off)
Sewing foot down	Sewing foot down if an error occurs during thread cutting. Value range On/Off (Preset: off)
t Clean	Duration for which the lens is blown clear with compressed air. The process takes place after the thread has been cut. Value range 0000 - 5000 [ms] (Preset: 200)

Important

When winding thread onto an empty bobbin for the first time, you must use winder mode. Otherwise (i.e. during sewing), the machine will detect a skip stitch and stop sewing.

2.3 Information messages (M-TYPE PREMIUM)

The machine may display information messages while operating with the SSD kit. Refer to the table below for the meaning of these messages as well as potential remedies.

Code	Type	Notice	Possible cause	Remedial action
3217	Information	RFW right	Bobbin is empty.	Insert a new bobbin
3223	Information	Skip stitch detection	A skip stitch has occurred.	-
3224	Information	Bobbin rotation monitor	The bobbin is not rotating.	Check the bobbin, advance the initial thread
3225	Information	SSD sensor is soiled.	SSD sensor is soiled.	Clean the sensor (using compressed air or a soft cotton cloth).

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