

# PFAFF

## creative 2140

german engineering

### **Service Manual for Embroidery unit**

### Specification of the "creative fantasy"

Dimension: length 398 / 440mm  
width 340 / 142mm  
height 135mm

Weight: 2,10 kg

Embroidering: X-axis 140  
Y-axis 225

Three frame sizes:      225 x 140 ("225")  
                                  120 x 115 ("120")  
                                  80 x 80 ("80")

Two steeping motors with steeping angle/full step 7,5°.

Motion on frame 0,1mm is equal with 7,5° on motor shaft.

Maximum stitch length: 12mm ( 135 stiches/minute ).

Maximum embroidery speed: 960 stiches/minute.

Tie-off speed: 60-80 stiches/minute.

Accessories:

- 1 embroidery frame "225"
- 1 embroidery frame "120" special accessories
- 1 embroidery frame "80" special accessories
- 1 embroidery foot
- 1 embroidery-pattern memory card No.300
- 4 clips
- 1 stencil
- 1 Instruction manual

## **Suitable sequence of dismantling and assembly of the "creative fantasy" unit**

### **Dismantling the housing cover**

1. Unscrew the two Torx screws 1 of the front cover (Fig. 1).
2. Lift the front cover carefully and remove the connecting wire from the cable channel.
3. Remove the front cover.

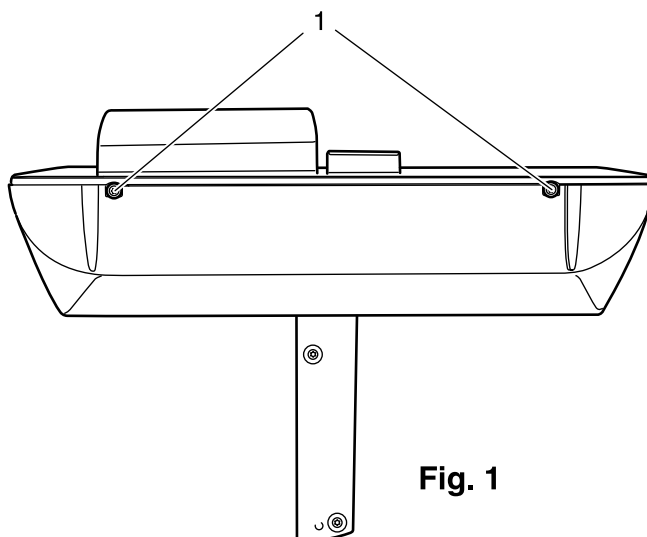


**Fig. 1**

4. Unscrew the five Torx screws 2 of the rear cover (Fig. 2).

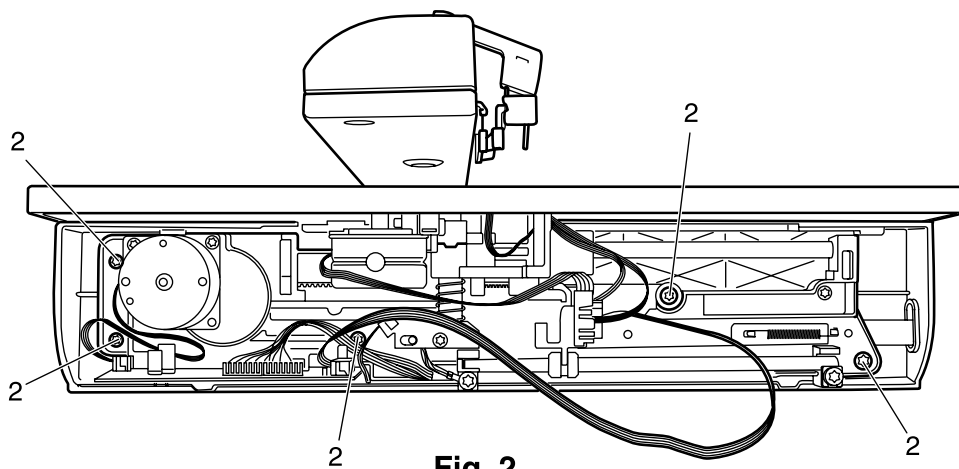


**Fig. 2**

5. Push the release lever 3 to the right and remove the rear cover (Fig. 3).

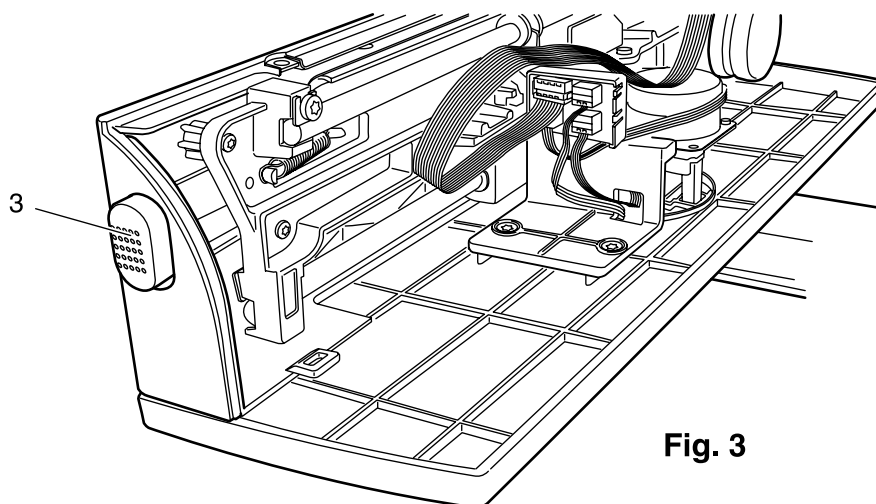


**Fig. 3**

6. Unscrew the small Torx screws 4 of the swivelarm upper part 5 (Fig. 4).

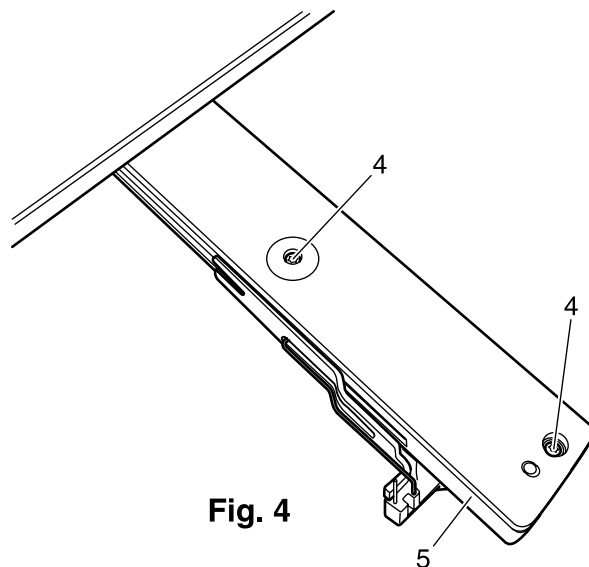


**Fig. 4**

7. Lift up the swivelarm and tip it 90° towards to the right.
8. Unscrew the Torx screw 6 and remove the swivelarm upper part 5 (Fig. 5).

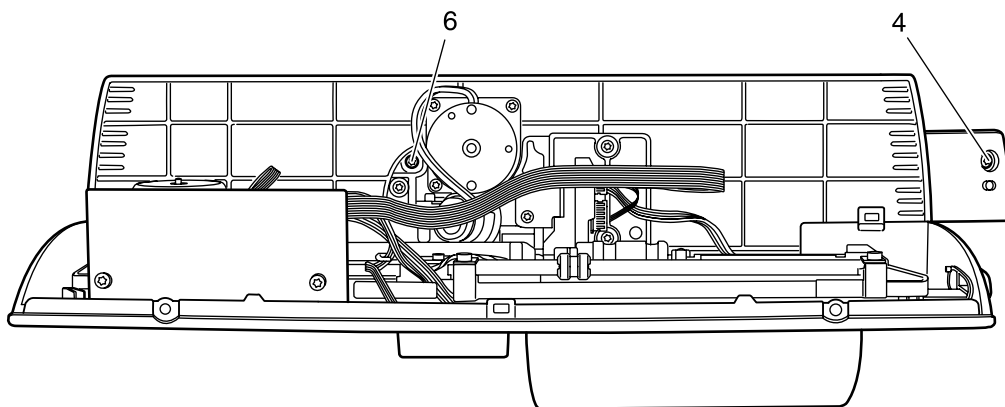


**Fig. 5**

#### **Dismantling the linear guide cpl:**

1. Pull off the plugs 7 of the connecting cable 8 at the small and big circuit board (Fig. 6).

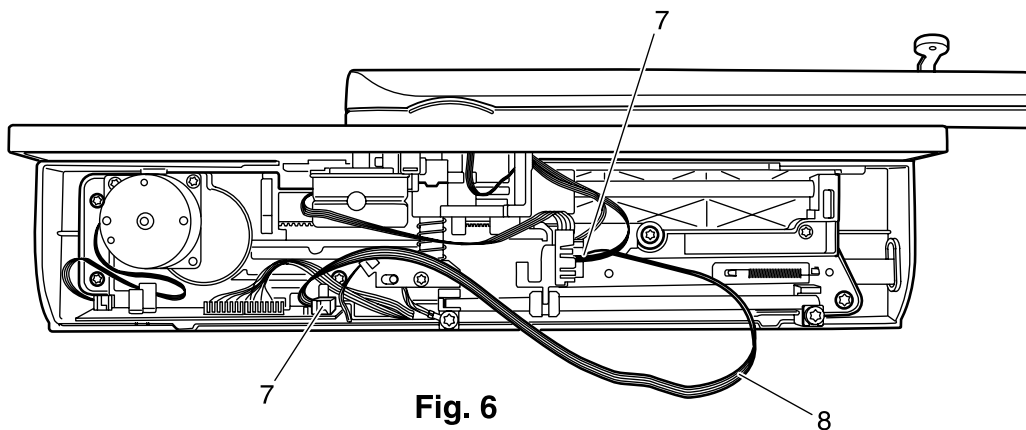


**Fig. 6**

2. Unscrew the two screws 9 of the linear guide (Fig. 7).
3. Remove the linear guide carefully.

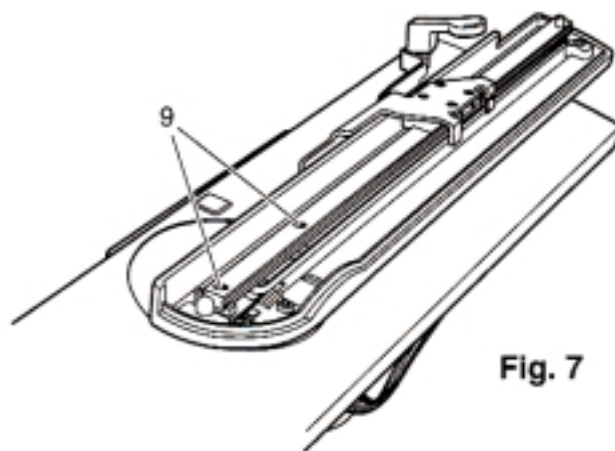


**Fig. 7**

4. Unscrew the Torx screw 10 of the Hall generator 11 (Fig. 8)

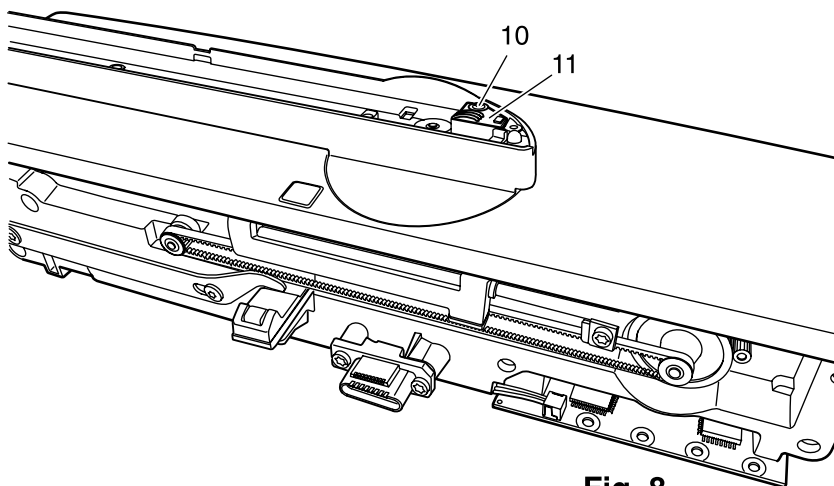


**Fig. 8**

5. Turn over the embroidery unit and unscrew the Torx screw 12 (Fig. 9).
6. Pull of the plug 13 (Hall generator) at the smal circuit board.
7. Remove the swivel arm lower part 15 and take carfully the connecting cable 14 out of the cable channel.

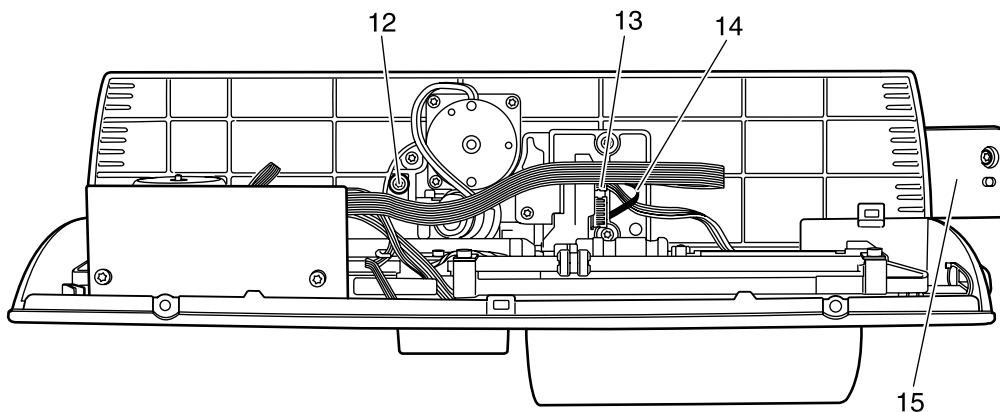
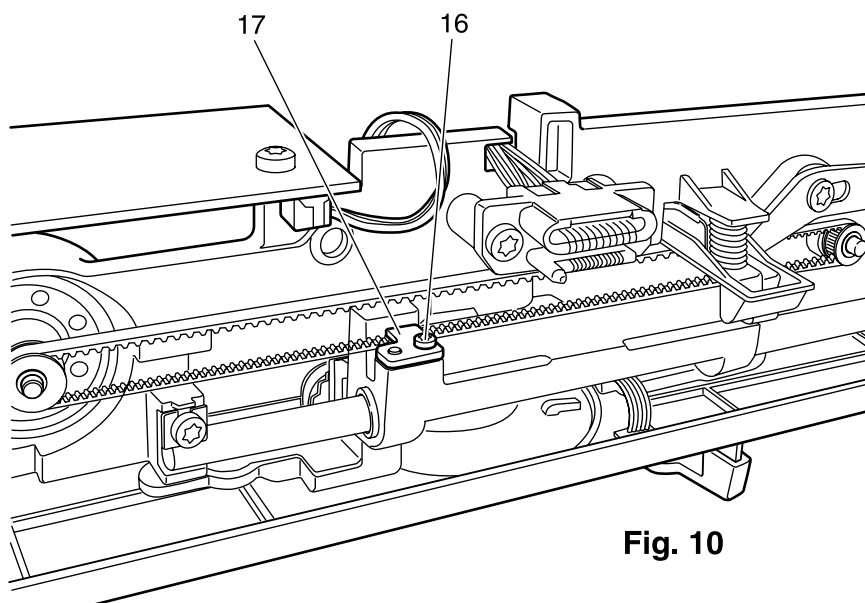


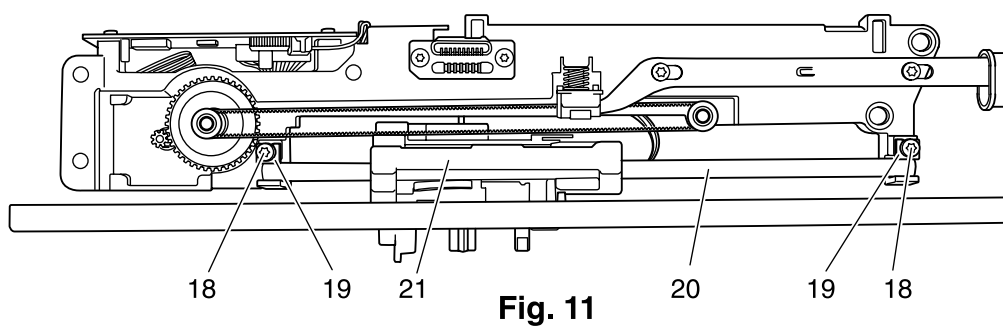
**Fig. 9**

### Dismantling the motor and the driving carrier:

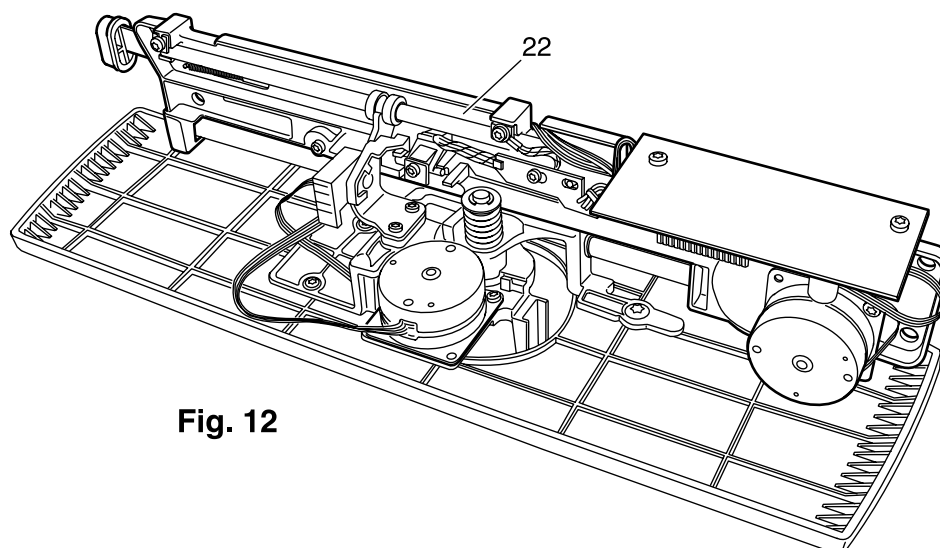
1. Unscrew the screw 16 of the clamp plate 17 and remove the clamp plate (Fig. 10).



2. Unscrew the two fastenings screws 18 of the clamping plates 19 (Fig. 11).
3. Pull the guide shaft 20 out of the motor carrier 21.

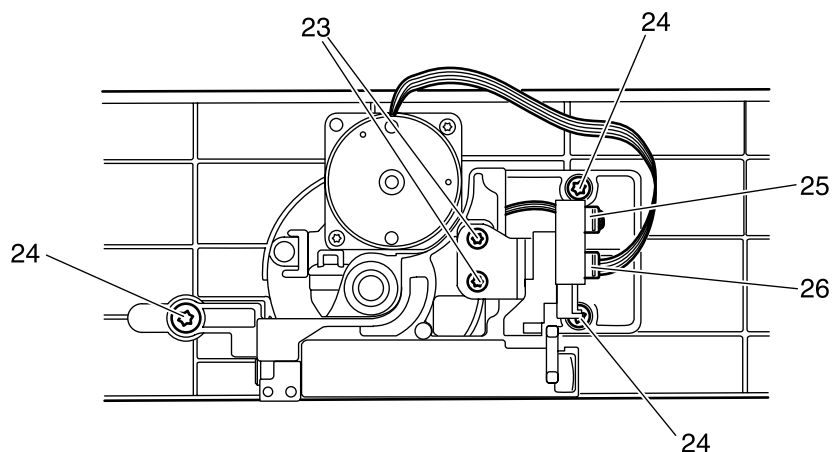


4. Remove the driving carrier 22 (Fig. 12).

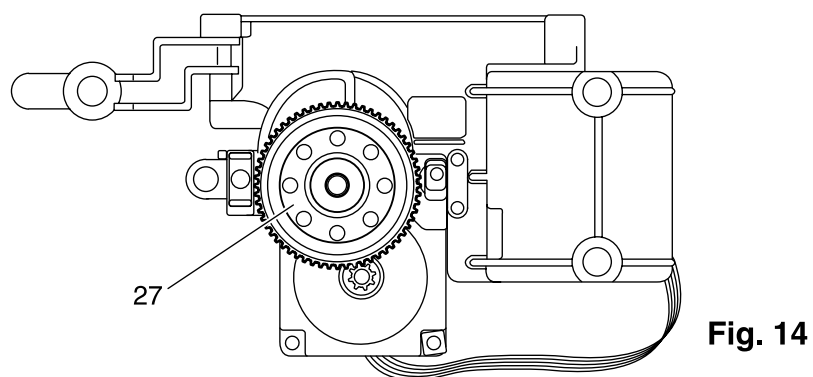


#### Dismantling the motor holder:

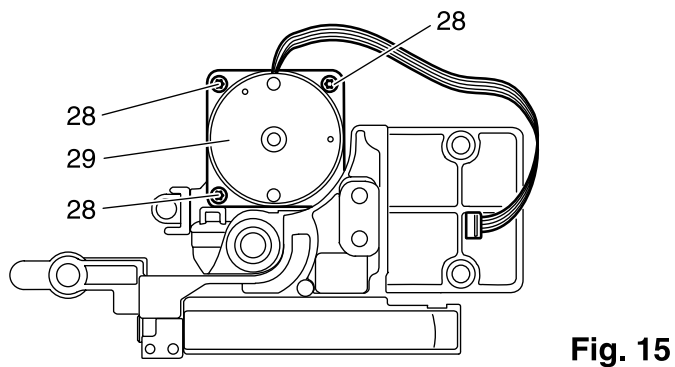
1. Unscrew both screws 23 of the support angel (Fig. 13).
2. Pull of the black plug 25 (Hall generator) and the plug 26 ( stepping motor ) at the small circuit board.
3. Unscrew the three Torx screws 27 of the motor holder and remove the sliding arm.



4. Remove the gear 27 (Fig. 14).



5. Unscrew the three Torx screws 28 (Fig. 15).
6. Remove the stepping motor 29 and the three nuts.



### Dismantling the driving carrier:

1. Draw off the white and red plug of the circuit board.
2. Unscrew the Torx screw 30 of the Hall generator 31 (Fig. 16).
3. Remove careful the hall generator 31.

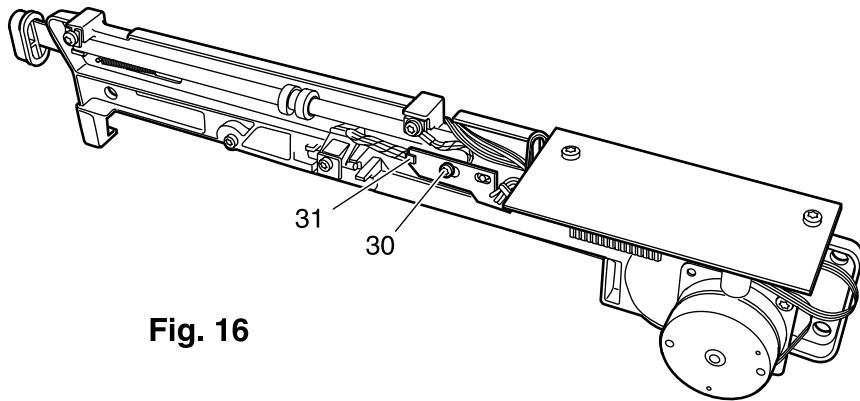


**Fig. 16**

4. Unscrew both fastening screws 32 of the circuit board 33 ( Fig. 17).
5. Unscrew the two fastening screws 34 of the CT - Connector 35.
6. Remove the circuit board 33 and the CT - Connector 35.

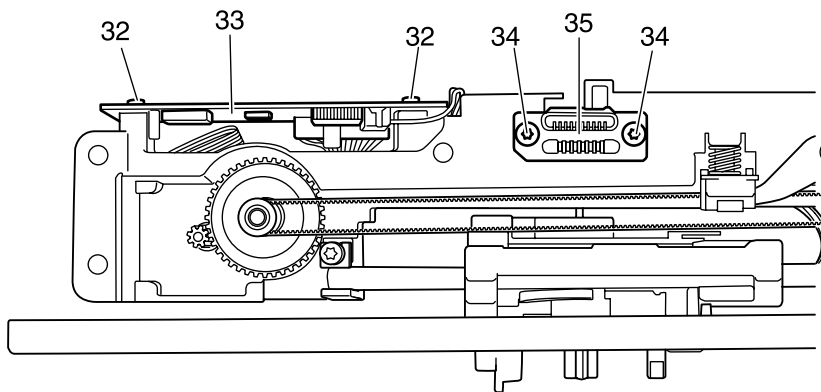


**Fig. 17**

7. Remove the circlip 36 of the stepping motor gear (Fig. 18).
8. Remove the rim washer 37.
9. Remove the toothed belt 38.
10. Remove the gear 39 and the plastic washer.

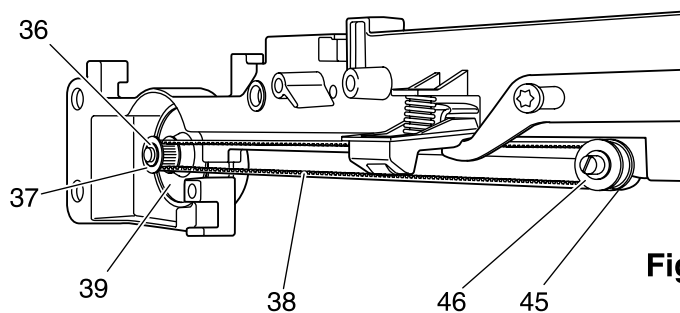


**Fig. 18**

10. Unscrew the three Torx screws 40 (Fig. 19).
11. Remove the stepping motor 41

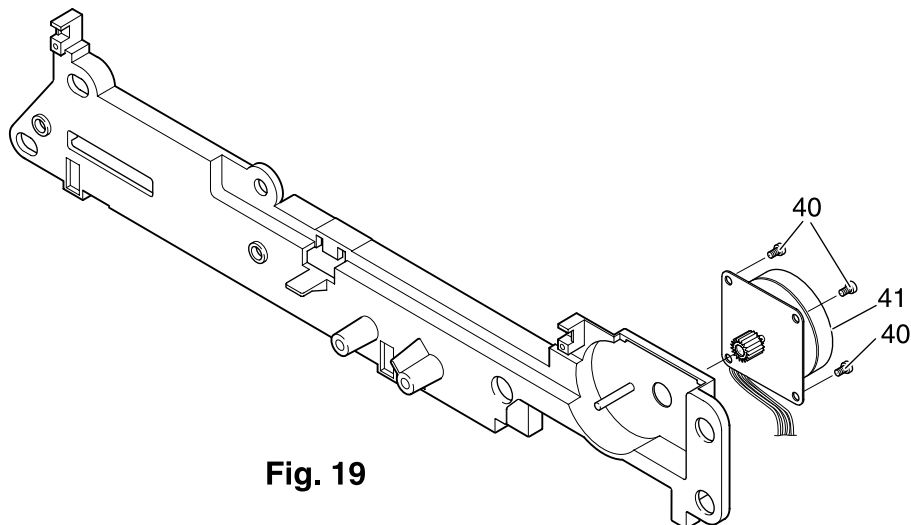


**Fig. 19**

12. Remove the spring 42 of the release lever 43 (Fig. 20).

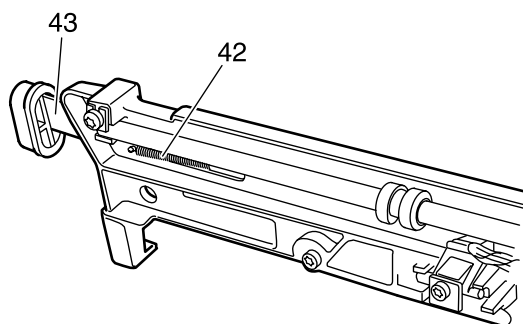


**Fig. 20**

13. Unscrew the two Torx screws 44 and remove the release lever 43 (Fig. 21).
14. Unscrew the lock nut 45 and remove the adjusting eccentric 46 cpl.
15. Pull off the cable shoe 52 from the contact tin 51.
16. Unscrew the Torx screw 47 of the fastening clip 48.
17. Remove the pressure plate 49 and the pressure spring 50.
18. Lift up the contact tin 51 and remove it.
19. Remove the fastening clip 48.

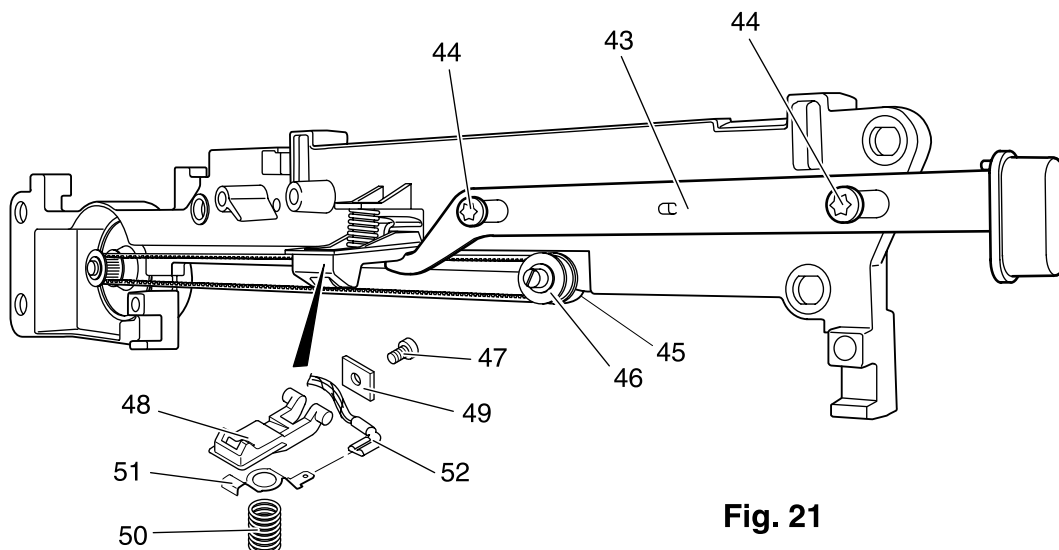


**Fig. 21**

20. Unscrew the two fastenings screws 53 of the clamping plates 54 (Fig. 22).
21. Remove the guide shaft 55 with the support bushing 56 and the cable 57.

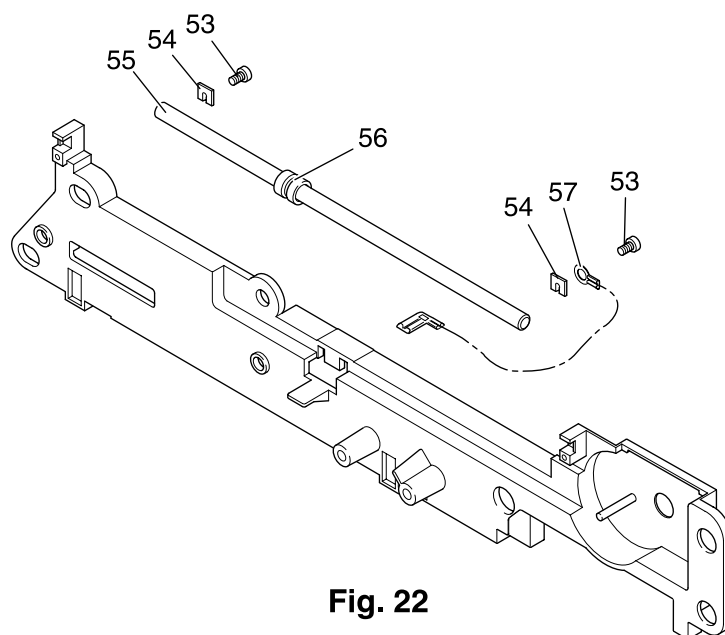
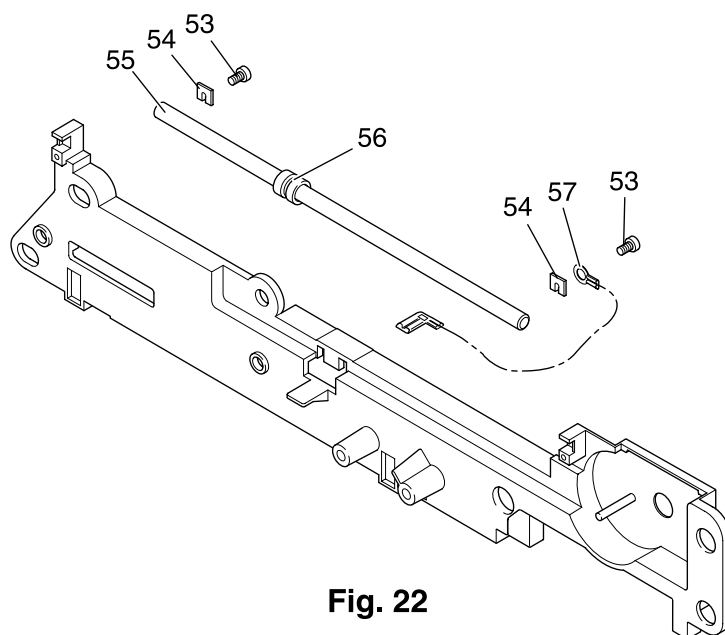


**Fig. 22**

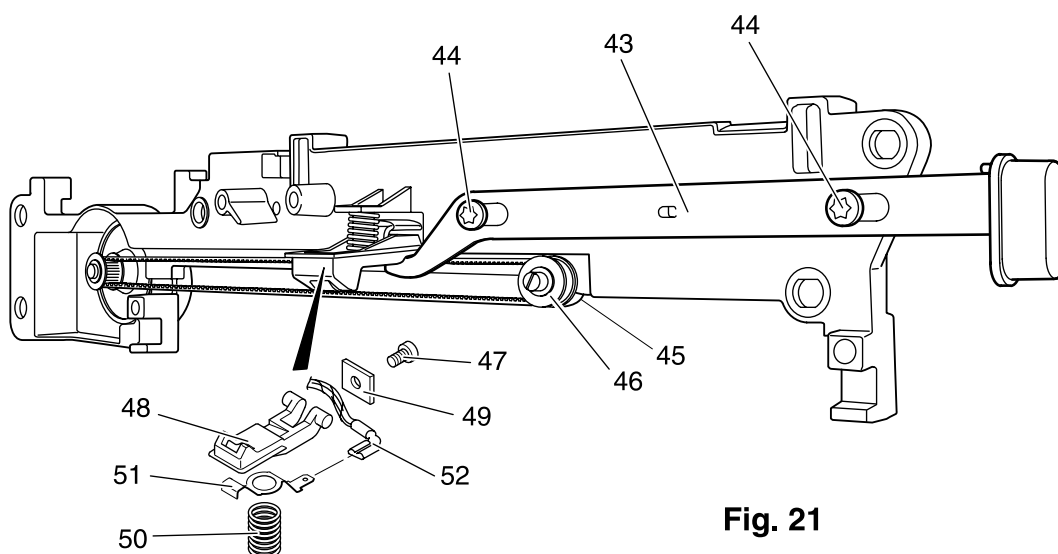
## **Assembly of the "creative fantasy" embroidery unit**

### **Assembly of the driving carrier**

1. Insert the support bushing 56 into the guide shaft 55 (Fig. 22).
2. Insert the guide shaft 55 and the cable 57 into the bearings and tighten it with the clamping plates 54 and the Torx screws 53.



3. Replace the plastic fastening clip 48 into the cut-out, insert the contact tin 51, the pressure spring 50 and the pressure plate 49 and tighten the Torx screw 47 (Fig. 21).
4. Pin up the cable shoe 52 from the cable 57 of the contact tin 51.
5. Insert the release lever 43 cpl. and tighten the two Torx screws 44.



6. Apply the tension spring 42 (Fig. 20).
7. Insert the adjusting eccentric 46 for the belt tension (Fig. 18).  
(Basic setting: The lobe pointing to the left).
8. Insert the lock nut 45 and tighten it slightly.

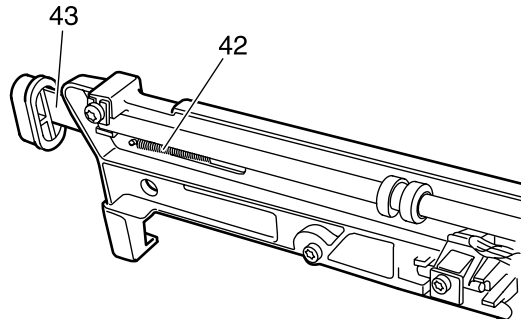


**Fig. 20**

9. Determination of the no-load current of the stepping motor. Insert the plug of the stepping motor into the checking cable of the test control unit. Determine the no-load current of the stepping motor without unit element error. Meter reading: 45 mA to 52 mA.
10. Insert the stepping motor 41 and tighten the three Torx screws 40 slightly (Fig. 19).
11. Insert the plastic washer and the gear 39 (Fig. 18).
12. Loosen the three Torx screws 40 by just 1/8 of a turn.
13. Push the stepping motor with 2N - 3N (contact pressure) against the gear and adjust the play.
14. The pressing direction must show to the centre line of the gear.
15. Tighten the screws slightly.

#### Control the adjustment

The adjustment is correct, if the motor is 10 mA to 12 mA higher (toothing share) than the no-load current. if the reading is not within the tolerance, repeat this procedure.

16. Tighten the Torx screws 40 very firmly.

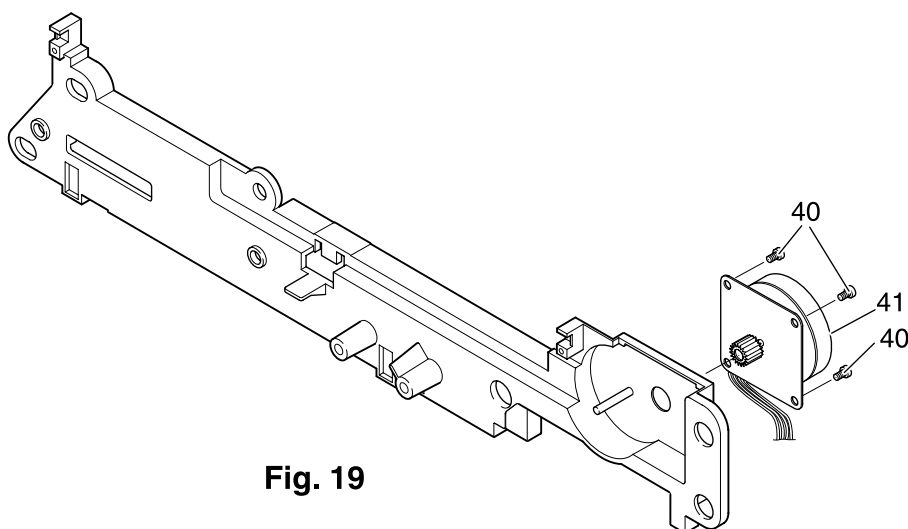
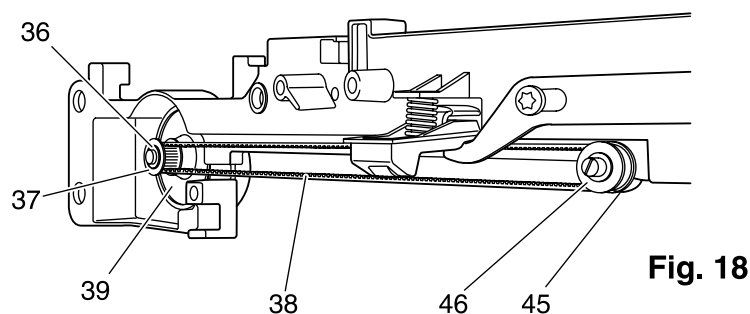
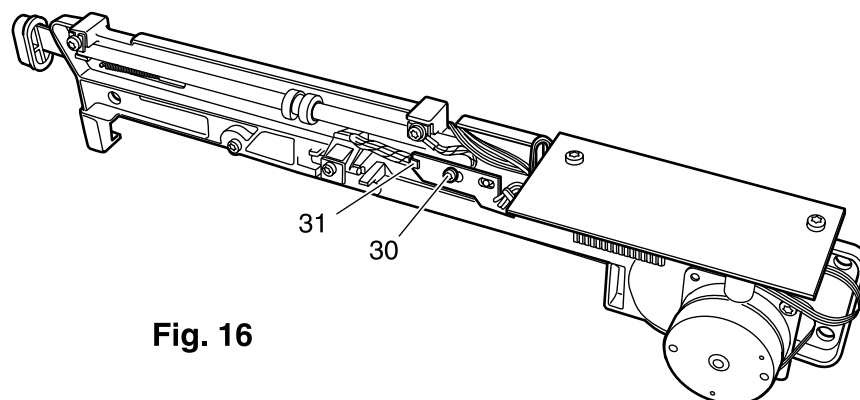
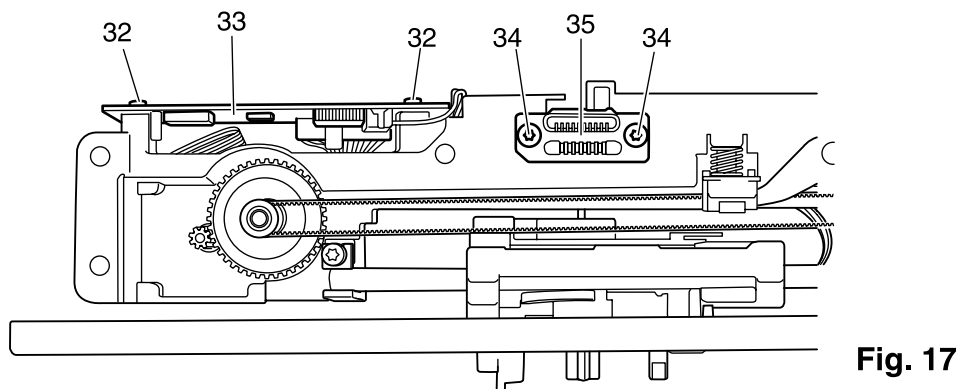


**Fig. 19**

17. Insert the toothed belt 38 (Fig. 18).
18. Insert the rim washer 37 and apply the circlip 36.
19. Turn the adjusting eccentric 46 clock wise and adjust the correct belt tension. The toothed belt will be parallel to the housing. The adjustment is correct, if the motor current is 10 mA to 12 mA higher than the current measured before (toothing share + no load current). If the reading is not within the tolerance, repeat this procedure.
20. Tighten the lock nut 45.



21. Screw down the CT-Connector 35 with the Torx screws 34 (Fig. 17).
22. Screw down the circuit board 33 with the Torx screws 32.
23. Insert the stepping motor plug into the circuit board.
24. Screw down the hall generator circuit board 31 with the Torx screw 30 (Fig.16).
25. Insert the plug of the connecting cable into the circuit board.



### Assembly of the motor holder:

1. Screw down the circuit board 11 of the Hall generator into the swivel arm lower part 15 (Fig. 8).
2. Introduce the wire into the cable channel.

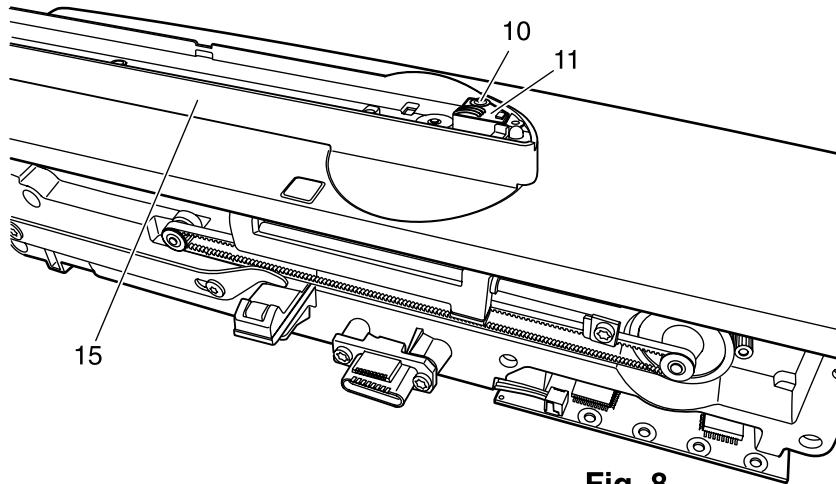


**Fig. 8**

3. Determination of the no-load current of the stepping motor. Insert the plug of the stepping motor into the checking cable of the test unit. Determine the no-load current of the stepping motor without unit element error. Meter reading: 45 mA to 52 mA.
4. Apply the three square nuts into the motor holder (Fig. 15).
5. Insert the stepping motor 29 and tighten the three Torx screws 28 slightly.

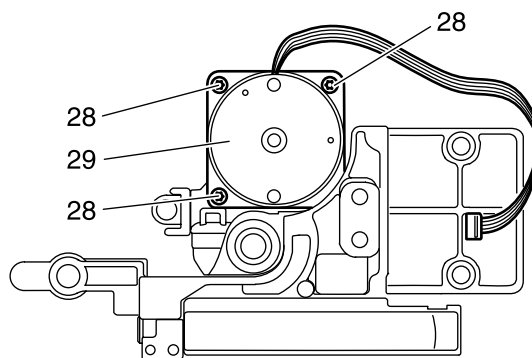


**Fig. 15**

6. Insert the plastic washer and the gear 27 (Fig. 14).

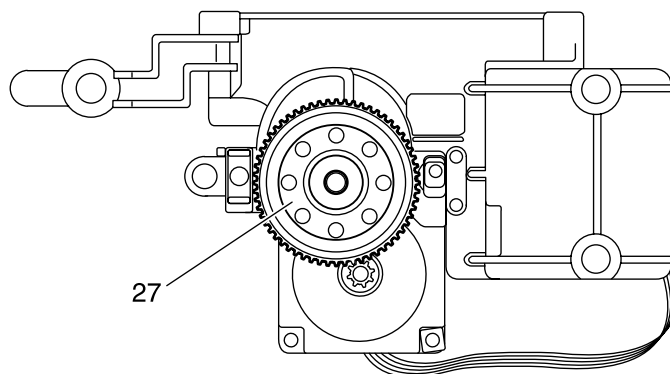


**Fig. 14**

7. Loosen the three Torx screws 28 by just 1/8 of a turn (Fig. 15).
8. Push the stepping motor 29 with 2 N - 3 N (contact pressure) against the gear 28 and adjust the play.
9. The pressing direction must show to the centre line of the gear.
10. Tighten the Torx screws 28 slightly.

Control the adjustment

The adjustment is correct, if the motor current is 10 mA to 12 mA higher (toothing share) than the no-load current. If the Meter reading is not within the tolerance, repeat this procedure.

11. Tighten the Torx screws 28 very firmly.
12. Stack up the motor holder 24 onto the sliding arm and tighten the Torx screws 27 (Fig. 13).
13. Lace up the cable into the cable channel.
14. Insert the support angel and tighten both Torx screws 23.
15. Insert the plug 26 (stepping motor) into the smal circuit board.
16. Insert the black plug 25 (Hall generator) into the smal circuit board.

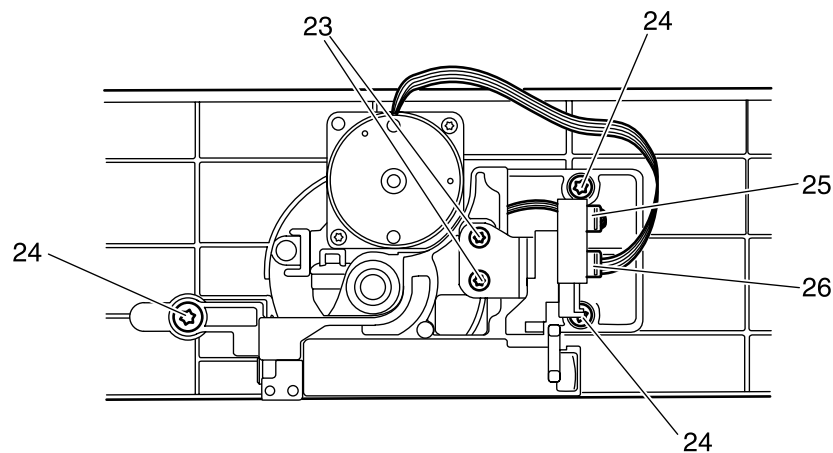


**Fig. 13**

### Connection of the motor and the driving carrier:

1. Insert the support angel into the support bushing 56 (Fig. 12).
2. Push the guide shaft 20 into the guide bushing of the motor carrier 21 (Fig. 11).
3. Insert the guide shaft 20 into the bearing and tighten it with the clamping plates 19 and the Torx screws 18.
4. Check the free movement of motor carrier and driving carrier. If necessary, straighten the support angel.

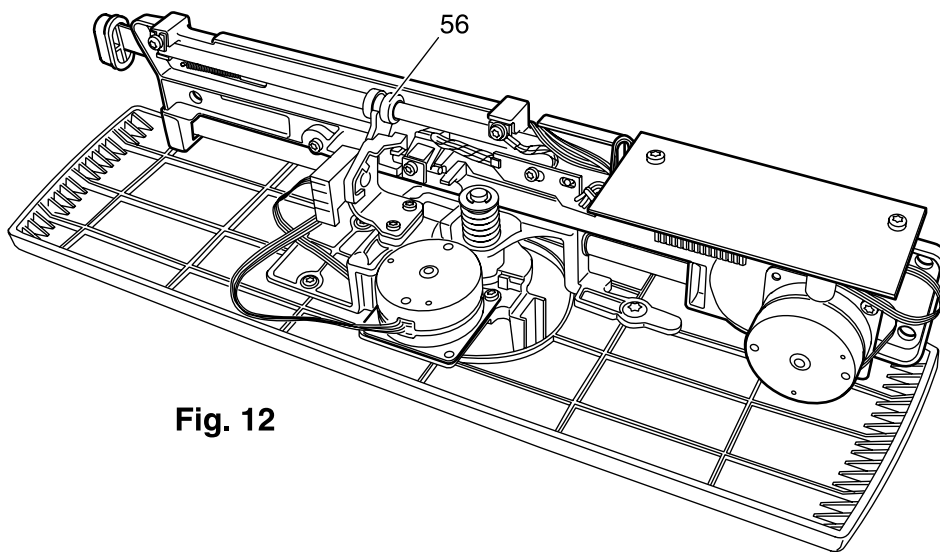


Fig. 12

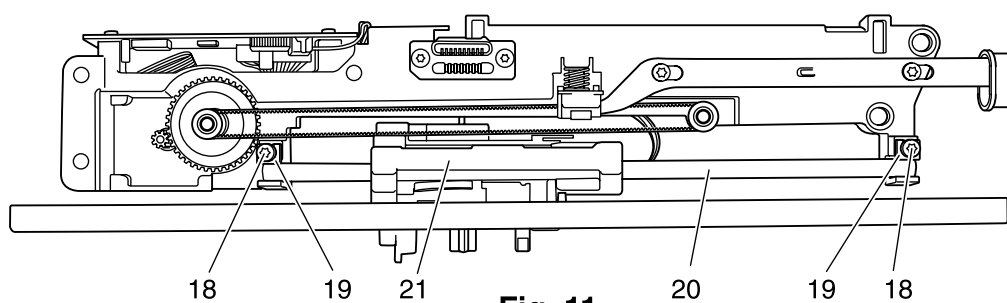


Fig. 11

5. Insert the clamp plate 17 into the toothed belt and tighten the Torx screw 16 (Fig. 10).

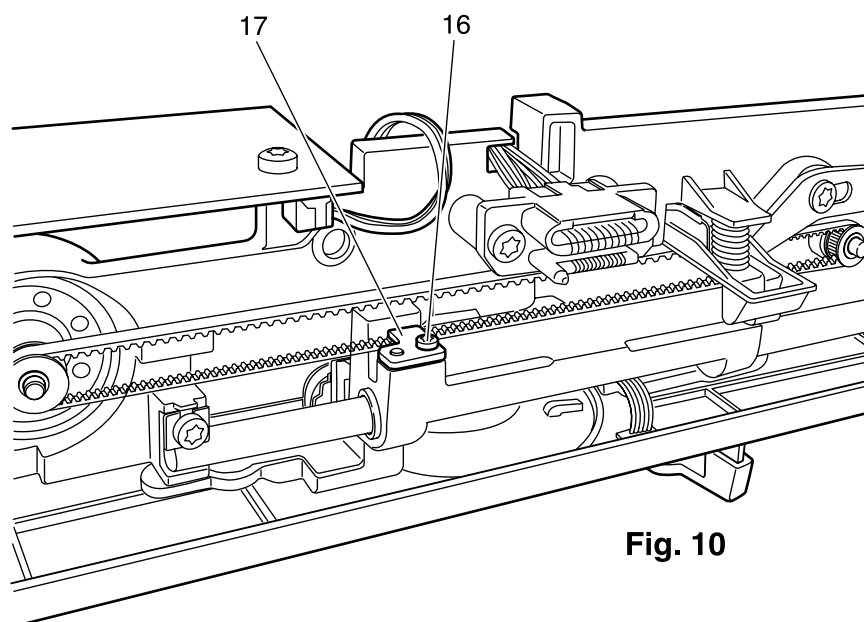


**Fig. 10**

6. Insert the swivel arm lower part 15 into the cut-out of the sliding arm and tighten it with the Torx screw 12 (Fig. 9).
7. Insert the plug 13 (Hall generator) into the small circuit board.

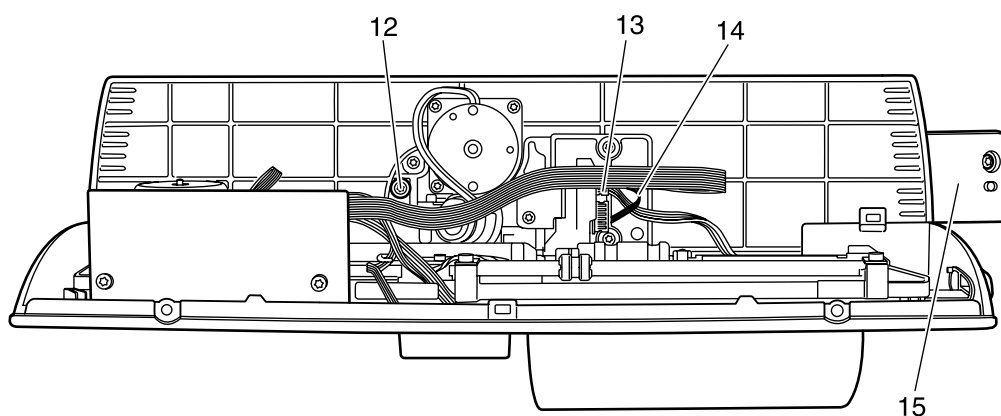


**Fig. 9**

### Assembly of the linear guide cpl.:

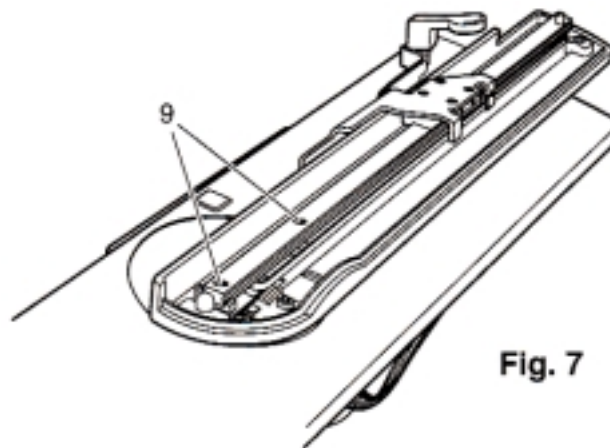
1. Insert the toothed belt into both gears.

Caution: Don't move with the embroidery fram holder outside of the linear guide before it will be insert into the motor carrier.

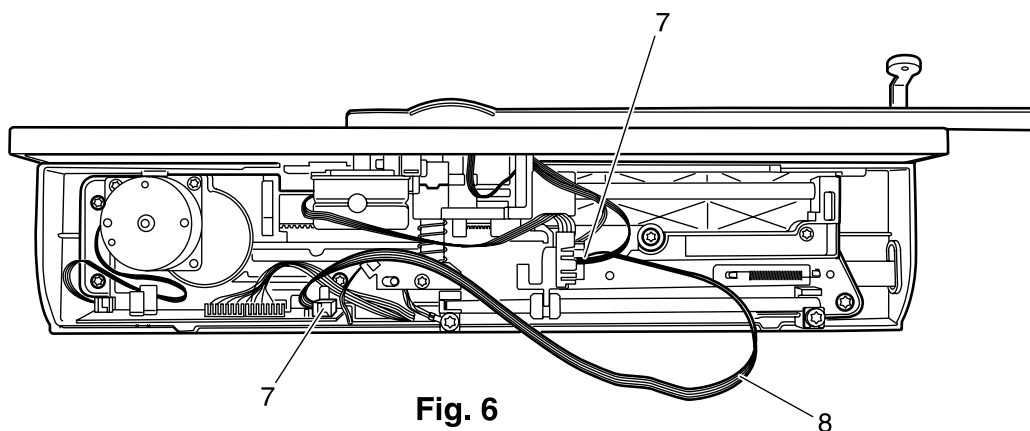
2. Insert the linear guide into the motor carrier and tighten the screws 9 slightly (Fig. 7).
3. Adjust the toothed belt tension over the linear guide and push the linear guide as far as possible to the front. Then tighten the screws 9 very firmly.

#### Control the adjustment

The adjustment is correct, if the motor current is 10 mA to 12 mA higher than the current measured before (toothing share + no-load current). If the Meter reading is not within the tolerance, repeat this procedure.



4. Insert the connecting cable 8 into the plugs 7 at the big and the small circuit board (Fig. 6). Do not buckle the cable.



### **Adjustment of the Hall generators and operational test with the control unit:**

1. Plug the power cord of the test control unit into the wall socket.
2. Disconnect the stepping motor wire (X-motor) from the circuit board.
3. Connect the motor checking cable of the test control unit to the X-motor.
4. Switch on the master switch of the control unit.
5. Press the keys "Left" and "Right" and check the current consumption of the stepping motor.  
Meter reading: 130 mA.
6. Insert the circuit board checking cable during the control of the current consumption.  
There is a short circuit in the circuit board, if the stepping motor stops now.  
The circuit board has to be exchanged.
7. Set the end switch at the test control unit at "ON".
8. Press the key "Right" and go to the right stop position.
9. The yellow LED for the end switch lights up.
10. Press the "Home" key.
11. Insert the 1,0 mm Distance gauge and check the distance.

Set the switch at the test control unit at "OFF" if the distance is not correct.

Loosen the screw of the Hall generator and move the Hall generator just a little to the left or to the right. Tighten the screw. Repeat steps 7 - 11 until the distance is correct.

12. Disconnect the checking cables from the circuit board. Connect the stepping motor wire (X-motor) to the circuit board.
13. Disconnect the stepping motor wire (Y-motor) from the circuit board.
14. Connect the motor checking cable of the test control unit to the Y-motor.
15. Apply the holding device No. 52-003 075-09.
16. Press the key "Left" and "Right" and check the current consumption of the stepping motor.  
Meter reading: 130mA.
17. Insert the circuit board checking cable during the control of the current consumption.
18. Set the end switch at the control unit at "ON".
19. Press the key "Left" and go to the stop position.
20. The yellow LED for the end switch lights up.
21. Press the "Home" key.
22. Insert the 1,0 mm Distance gauge and check the distance.

Set the end switch at the test control unit at "OFF" if the distance is not correct.

Loosen the screw of the Hall generator and move the Hall generator just a little to the front or to the back. Tighten the screw. Repeat steps 17 to 22 until the distance is correct.

23. Disconnect the checking cables from the circuit board. Connect the stepping motor wire (Y-motor) to the circuit board.

### Assembly:

1. Replace the rear cover and check the correct fitting.
2. Tighten the five Torx screws 2 (Fig. 2).

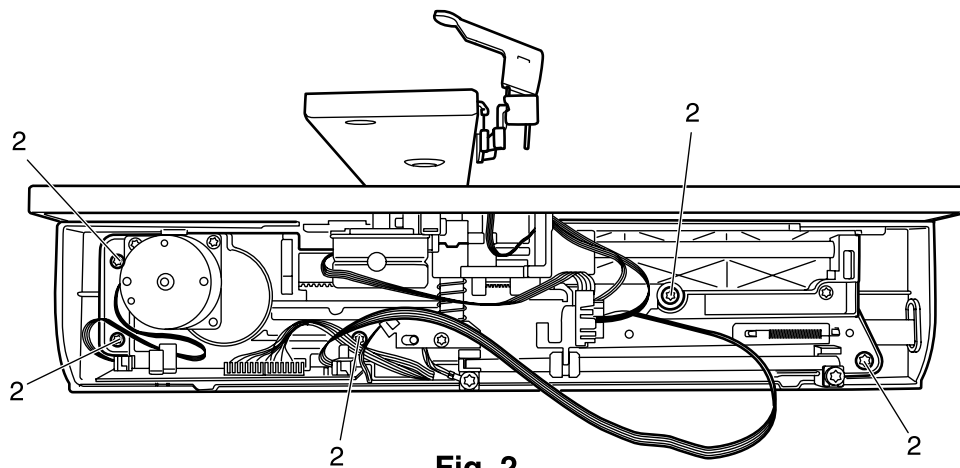


**Fig. 2**

3. Lift up the swivel arm 5, tip it 90° towards to the right.
4. Apply the swivel arm topcover and tighten it with the Torx screw 6 (Fig. 5).

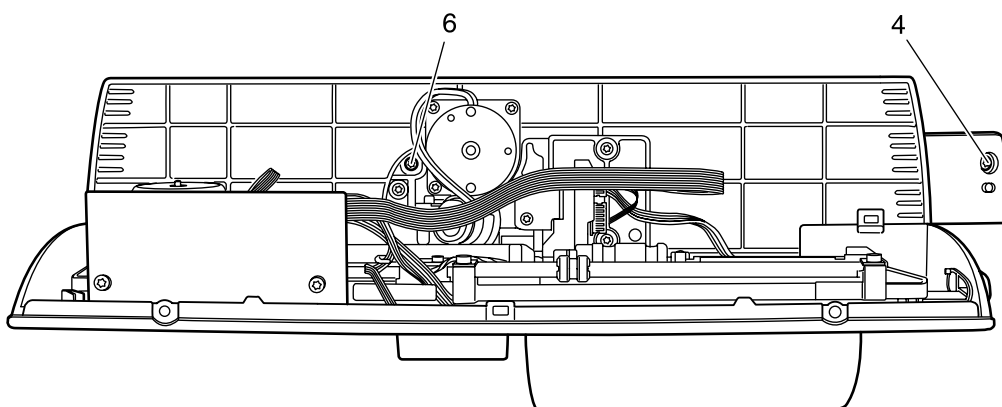


**Fig. 5**

5. Apply the front cover and install the connecting cable (Fig.1).
6. Tighten the Torx screws 1.

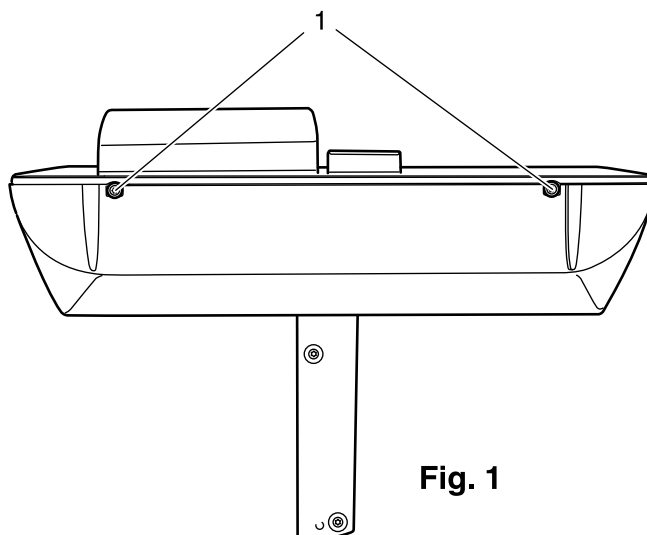


**Fig. 1**

7. Lift up the swivel arm and tip it in embroidery position.
8. Tighten the Torx screws 4 (Fig. 4).

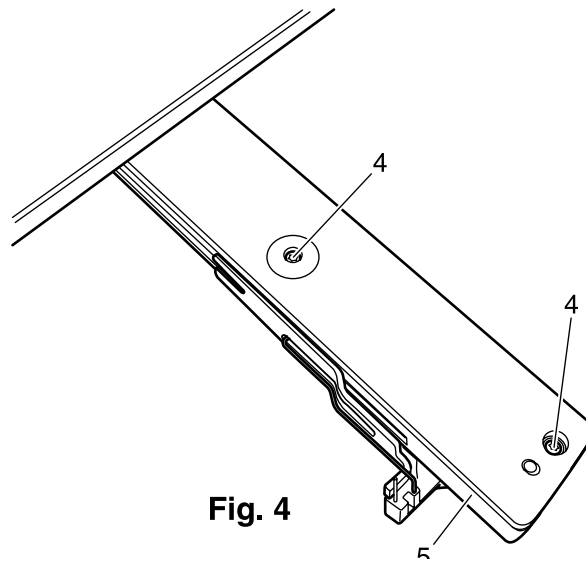


**Fig. 4**

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