Service Manual

Foot care spray device

SIRIUS NT MICRO

As of S/N 04.1418786
(Model SIRIUS NT 2013)

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1 General

1.1 Purpose

This service manual is intended to help authorized workshops to service and repair the SIRIUS NT MICRO foot care device, as off model year 2013.

The handpiece attachment (FH40S, FH40S_2016) is not described in this document. Please refer to separate service manuals available for these items.
See also chapter 3.2 Further documents.

1.2 Qualification of personnel

Service work on the SIRIUS NT MICRO foot care device may only be carried out by qualified and authorized specialists. Qualified specialist personnel are persons who, due to their specialist training, knowledge and experience, as well as their knowledge of the relevant safety regulations, are able to carry out the work safely and to recognize and avoid possible dangers. Advanced technical knowledge and basic knowledge of occupational safety are required. The local accident prevention regulations and the general safety regulations apply. The relevant safety regulations of DIN, EN, and VDE must be observed.

1.3 Safety

DANGER! Contact with mains voltage.
Danger to life from electric shock.
Pull the mains plug before opening the device.

ATTENTION! Electrostatic sensitive devices (ESD).
Open the device only in an ESD-protected.

- After repair or replacement of electrical components, the electrical system must be checked in accordance with EN 62353 / VDE 0751-1. The documentation of the test must be proven, when required.

- The device may only be opened by the manufacturer or by authorized specialists. Unauthorized changes to the device are not permitted.

1.4 Contact

The technical service of Eduard Gerlach GmbH will be happy to assist you, if you have any further questions.

Eduard Gerlach GmbH
Bäckerstraße 4 – 8
D-32312 Lübbecke
Germany

Telefon: 0049 5741 / 330-0
Technical Service International: technical-service@gehwol.de

Revision: E04

2 Technical changes

2.1 Overview of technical changes

Serial number	Software version	Change / Comments
04.1418786	SIR001	Product introduction of the SIRIUS 2013 model.
04.1419196		• Change from medical to non-medical device. The device is identical to the previous version, but is no longer classified as a medical device.
04.1519396	SIR2.2	• The handpiece motor is in clockwise rotation after being switched on. • Improvement of button handling of +/- buttons. • The handpiece light can now be switched separately. • If the same value as already saved is set using the + and - buttons, the LED in the corresponding memory button lights up.
Released as update only	SIR2.5	• The handpiece light is now also switched off with the standby button, but can be switched on again independently. • Chip-blower function: spray is switched on again, when the engine is switched on.
04.1519576	SIR2.8	• Brightness of the LEDs adjustable with function U10. The following bugs have been fixed: • After switching on at the power switch, the actual speed may differ from the displayed speed. • After switching on at the power switch, the saved rotation speeds can change.
04.1519766		• Power supply RPS-75-24 temporarily replaces the power supply MPS-65-27.
04.1620261		• Power supply MPS-65-27 is being used again.
04.1620421		• Product introduction of handpiece FH40S_2016 • Compressor EMV board now equipped with low pass filter.
04.1720602		• Low pass filter cancelled. Replaced by add on board (piggyback).
04.1720683	SIR5.01	• New NT2013 printed circuit board Rev.005 with software SIR5.01. • Add on board (piggyback) cancelled.
04.1821517		• New mains cable in black.
04.1821557	SIR5.01R	• Resistor R45 on the NT2013 printed circuit board is changed to 5.6 ohms to limit the current. • This change is identified by an "R" behind the software version.

2.2 Technical changes from the previous model

Externally, the SIRIUS 2013 model can be distinguished from the previous version by its white LED display. Further changes and developments are:

- New NT2013 printed circuit board
- New, more powerful and soldered in processor
- Service display consists of only one multicolour LED
- Display board and display are connected with a flexible flat cable (FFC).
- Different connectors on printed circuit board and keyboard.
- Connector for case light can be switched separately.
- Fine adjustment of the engine speed available in the service menu.

The following components are not compatible with the old model prior to S/N 04.1418786:

- NT2013 printed circuit board, display board and keyboard,
- Connection cable to NT2013 printed circuit board.

2.3 Medical device / non-medical device

SIRIUS devices from S/N 04.1418786 to 04.1419195 are medical devices. Later devices are identical in construction, but were no longer subjected to the conformity assessment procedure and were therefore classified as non-medical device.

2.4 Power supply RPS-75-24

The power supply RPS-75-24 which was used from S/N 04.1519766 to 04.1620260, is no longer available. If defective, it has to be replaced by the standard MPS-65-27 power supply. This requires to also replace the mains socket and the cable from the power supply to the controller board.

704265004 NT Power Supply MPS-65-27
704265105 Mains socket Sirius NT 2013 EMV
704265104 Cable Power Supply – Controller Board

2.5 Handpiece models

704205802 Handpiece FH40S old, with one-piece cartridge HILFH40S This model was used until S/N 04.1620420 (end of 2016). In case of a defect, it can be replaced by the new version FH40S_2016.	
704210401 Handpiece FH40S_2016, chuck can be disassembled The chuck assembly of the FH40S_2016 model can be fully disassembled. It is easy to clean and allows replacement of wear parts.	

Note: The handpiece (FH40S, FH40S_2016) is not described in this document. Please refer to separate Service Manuals available for these items.

2.6 Compressor add-on board

- S/N 04.1620421 - 04.1720601:
  Compressor EMV board is equipped with an additional low-pass filter to reduce noise.
- S/N 04.1720602 - 04.1720682:
  Additional add-on board (piggyback), no. 704265109 used instead of low-pass filter.
- As of S/N 04.1720683:
  Additional add-on board is cancelled. Function integrated into new flat module NT2013 Rev.005.

2.7 Flat module

- S/N 04.1418786 - 04.1720682:
  704265101 Flat Module SIRIUS NT 2013 white, with software SIR 2.8
- As of S/N 04.1720683:
  704265110 Flat module NT2013 Rev.005, with software SIR 5.01
- As of 04.1821557:
  704265110 Flat module NT2013 Rev.005, SIR 5.01R, with updated R45 resistor.

3 General information

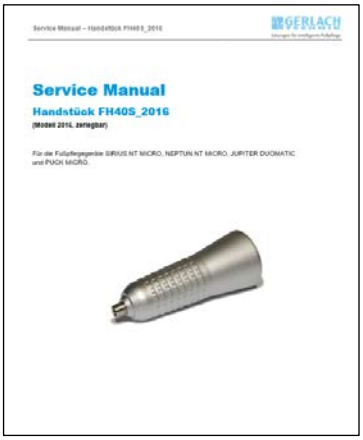
3.1 User manual

Note: Also read the user manual. It contains important information on the operation and maintenance of the device.

Please note that after replacing the flat module, a newer software version than that indicated by the serial number of the device may be installed.

3.2 Further documents

The handpiece attachment FH40S is not described in this document. Please refer to separate service manuals available for this item.



3.3 Flat module replacement

New or spare flat modules are delivered with the latest software version. When replacing the flat module, please label the device accordingly. Place a sticker with the software version (SIR xx) next to the nameplate. Inform the user about changes in the operation, if necessary.

3.4 Electrostatic-sensitive devices (ESD)

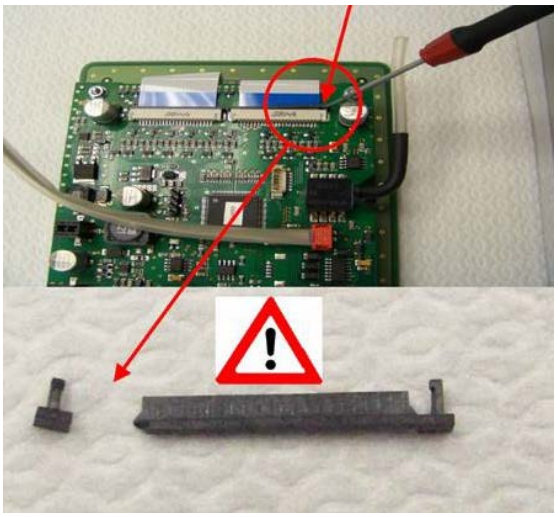
CAUTION! Electrostatic-sensitive devices (ESD).
Open the device only in an ESD-protected environment.

Use a grounding mat and an antistatic wrist strap when working on electronic components.

3.5 Disconnecting flexible flat cables (FFC)

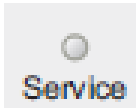
Be careful when disconnecting the flexible flat cables (FFC) from the flat module. The connector bracket can break easily. Push it gently and alternately left and right so that it does not tilt.

If the connector bracket is broken, the entire flat module must be replaced!



3.6 Service LED

The Service LED is intended to show the user when a service inspection is recommended.

	Service LED does not light up	Normal operating mode, < 400 operating hours.
	Service LED flashes	The device has 400 - 500 operating hours.
	Service LED lights up permanently	The device has over 500 operating hours. A service inspection is recommended

3.7 Spray function

The spray function is only active when the spray button is switched on and the handpiece motor is running. At the highest spray setting, the liquid takes under a minute to exit the handpiece when the hose is completely empty. The SIRIUS NT MICRO, model 2013 has no automatic spray pre-flow.

3.8 Memory buttons

Press a memory button to call up a previously saved speed setting or spray setting.

To save a speed setting, set the desired speed with the +/- buttons, then press and hold a memory button (M1, M2, M3) for approximately 5 seconds until the display shows an acknowledge pattern.

To save a spray setting, set the desired spray level with the spray +/- buttons, then press and hold a memory button (Spray1, Spray2) for approximately 5 seconds until the display shows an acknowledge pattern.

4 Service Menu

Basic settings can be made in the Service Menu.

4.1 Overview and operation

Menu	Function	Access level	Software version
U0	Set remote foot switch channel	User	all
U1	Reset Service LED	User	all
U3	Adjust motor speed	Service	all
U10	Set brightness of display	User	> SIR2.8
U12	Show operating values	Service	all
U14	Reset operating values	Service	all
U15	Exit Service Menu	User	all

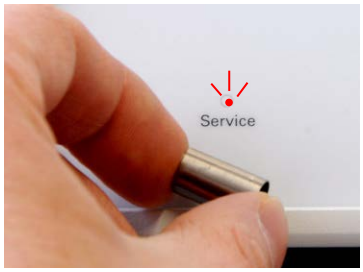
Button assignment

Button	Usage in Service Menu
	**execute**
	**+**
	**–**

Start the Service Menu and select a function

- Hold down the **direction of rotation** button while switching on the device with the mains switch.

- The display now shows "U0".
- Use the **M1** (-) and **M2** (+) buttons to select the desired function U0 to U15.
- Only for functions with access level “Service”:
  The functions U3, U12 and U14 are blocked for users.
  Hold a small magnet under the Service LED to unlock.
  Successful unlocking is indicated by blinking of the LED.
- Press the **M3** button to execute the selected function.



Exit the Service Menu

- To exit the service menu, select function U15 and press the **M3** button.

4.2 Functions

U0 - Set remote foot switch channel

SIRIUS NT and NEPTUN NT devices are set to channel 7 at the factory. If multiple devices are operated with a remote foot switch (no. 304204317), it is necessary to set individual channel for each device.

On the remote foot switch: Set the channel with the rotary switch on the underside of the foot switch. The switch is hidden under a pre-cut rubber cover.

On the device: Set the same channel with Service Menu function U0:

- Start the Service Menu and execute function U0.
- The display shows the channels 0 to 15 which is currently set.
  For example, "C 7" for channel 7.
- Use the **M1** (-) and **M2** (+) buttons to set the same channel as set on the foot switch.
- Check the remote connection by pressing a button on the foot switch.
  The remote signal indicator lights up when the device receives a signal from the remote. 
- Press **M3** to confirm the channel setting.
- To exit the Service Menu, select U15 and press the **M3** button.

	Note: Avoid channel 0, as this is the factory setting of LUNA, SATURN, and TRITON devices.

U1 – Reset the Service LED

This function resets the operating hours counter of the Service LED.

- Start the Service Menu and execute function U1.
- The display now shows "**Yes**".
- Press **M3** to execute. The display shows "**Erase - done**".
- To exit the service menu, select U15 and execute with **M3**.

U3 – Adjust motor speed

Use this function to fine adjust the speed of the handpiece micromotor. Use a digital optical tachometer and a partly reflecting rotating instrument for the measurement.

Note: The speed adjustment shifts the entire speed range.

- Unlock and execute function U3.
- The handpiece motor starts and the display shows "**2200**".
- Measure the actual speed and readjust with **M1** (-) and **M2** (+) if necessary.
- Press **M3** to save the setting. The device then changes to the next speed.
- Check the actual speeds for 10,000, 20,000, and 30,000 rpm.
- To exit the service menu, select U15 and execute with **M3**.

U12 – Show operating values

This function shows the operating values of the device.

- Unlock and execute function **U12**.
- The display now shows the operating hours of the handpiece motor (H xxx).
- Press **M2** to display further operating values.

  H xxx - operating hours of the handpiece motor, since the last reset with U1 or U14.
  S xxx - operating hours of the pump motor since last reset with U14.
  r xxx - Number of resets done with function U1.
  PRINT - Ends the display
- To exit the service menu, select U15 and execute with **M3**.

Note: Operating hours are only counted if switched off with the **motor on/off** button before disconnecting from the mains. Saving data takes a few seconds.

U14 – Reset operating values

This function resets all operating values.

- Unlock and execute function **U14**.
- Press **M3** to reset all operating values (H / S / r) to 0.
- When the reset is complete, "**done**" appears on the display.
- To exit the service menu, select **U15** and execute with **M3**.

U15 – Exit the Service Menu

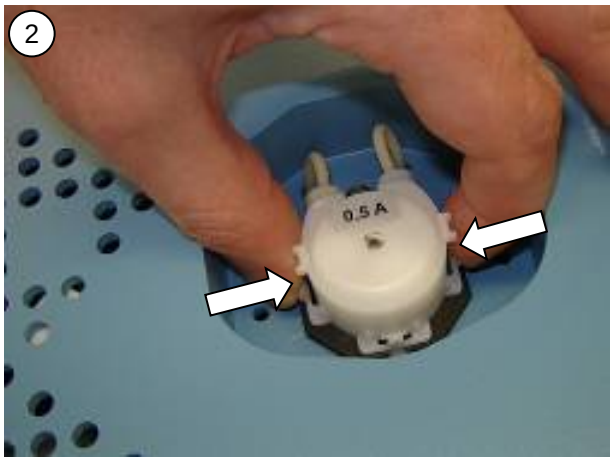
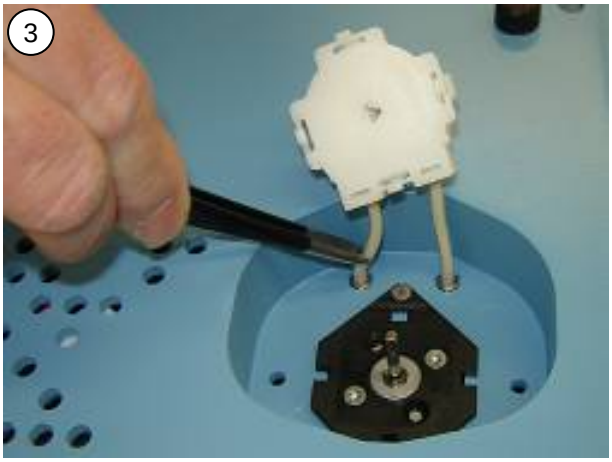
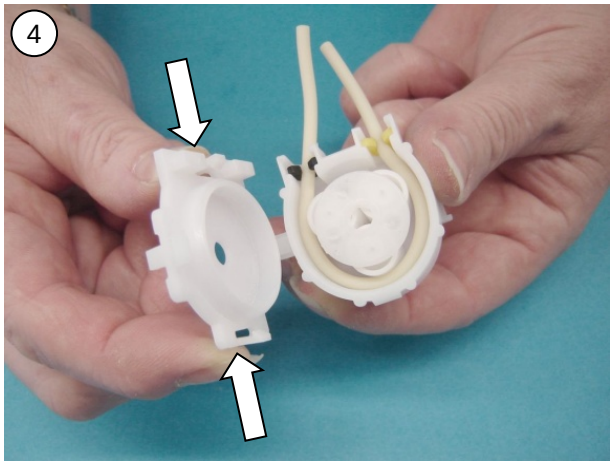
- Press **M2** until menu item **U15** is displayed.
- Press **M3** to exit the service menu. The device is now in the operating state again.

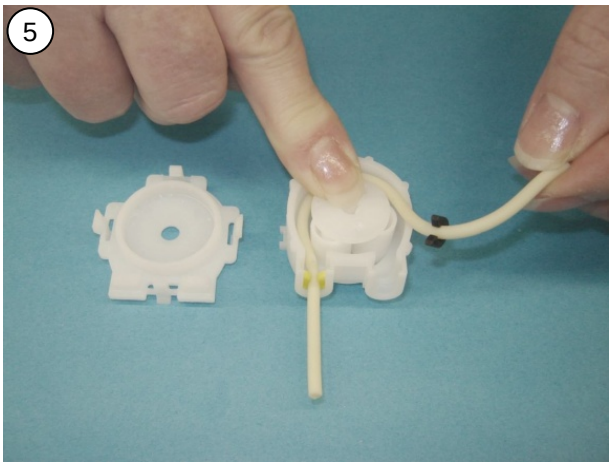
5 Maintenance and repairs

5.1 Spray pump

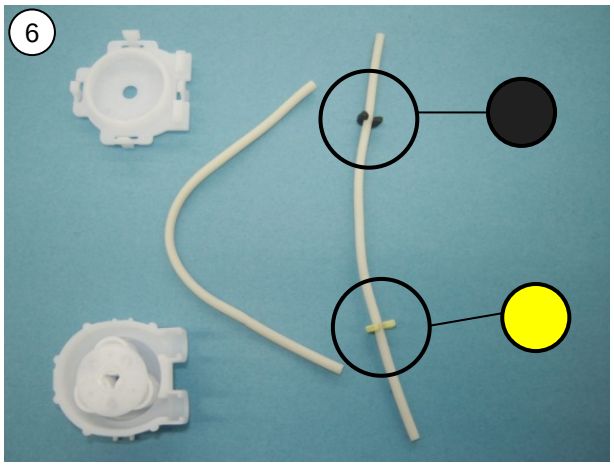
The peristaltic spray pump is subject to mechanical wear and must be cleaned and serviced regularly. The pump tubing should be replaced after approximately 600-700 hours of operation. There are two spare tubes in the device accessories. If the rollers show wear, they should also be replaced.

Or replace the entire pump cassette. A list of spare parts can be found in chapter 8.4 Spray Pump.

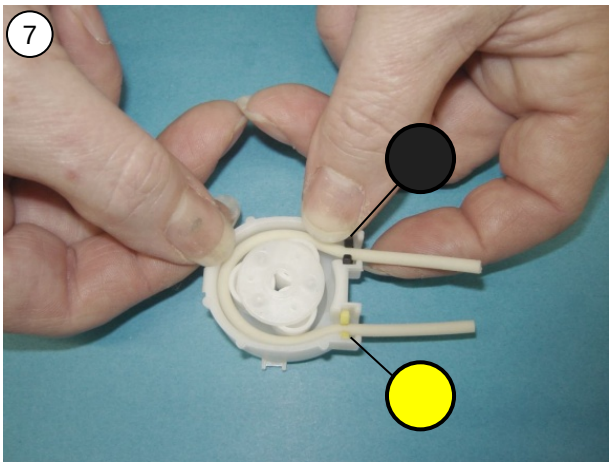
1 Preparation: Remove the spray tank. Set the spray level to maximum and let the device spray empty for 3-4 minutes. Then switch the device off and pull out the mains plug!	2  Press the two snap locks together and pull the pump cassette off the motor shaft.
3  Disconnect the pump tubing. Do not use sharp-edged tools.	4  Press the snap locks on the lower part to open the pump cassette.



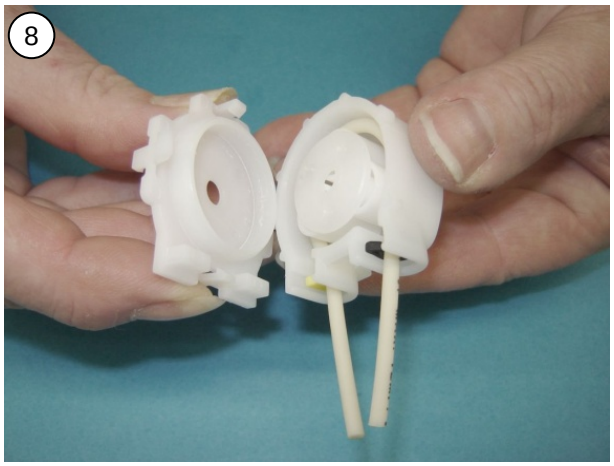
Remove the old pump tube, clean the inside of the pump cassette and check the rollers for wear.



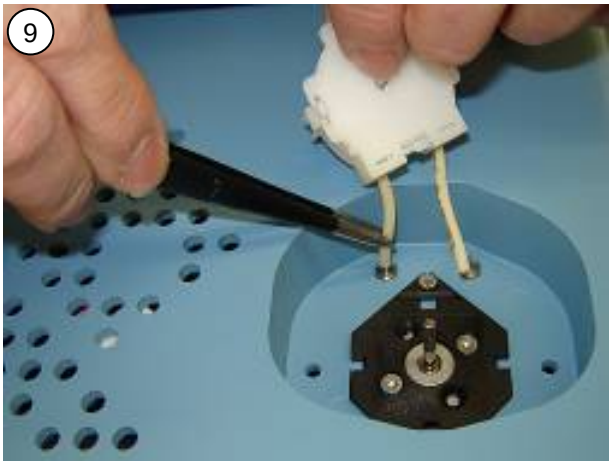
Put the two clamps on the new pump tube.



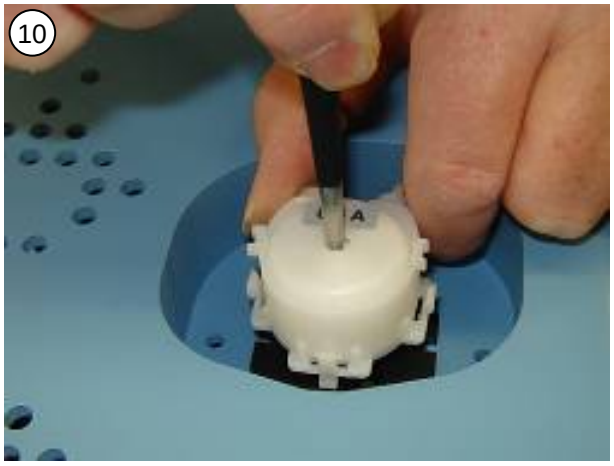
Insert the pump tubing with the yellow and black clips as shown.



Make sure that the rollers are in position and clip on the lower part.



Reconnect the pump tubing as shown. Do not use sharp-edged tools.

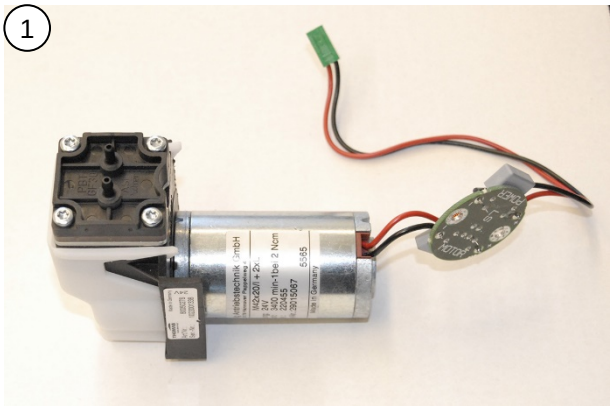
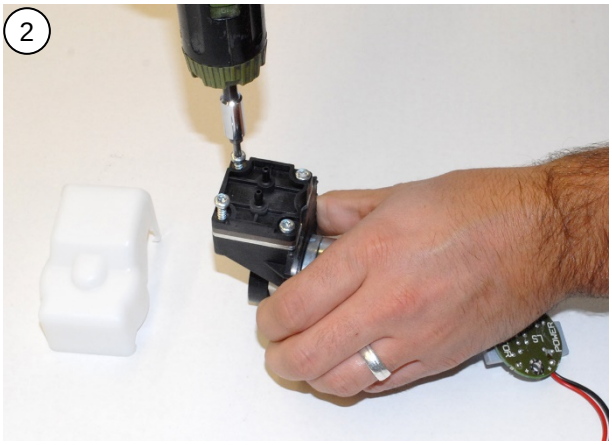
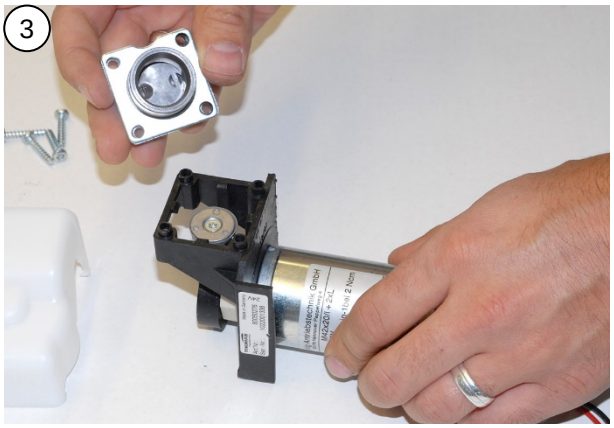
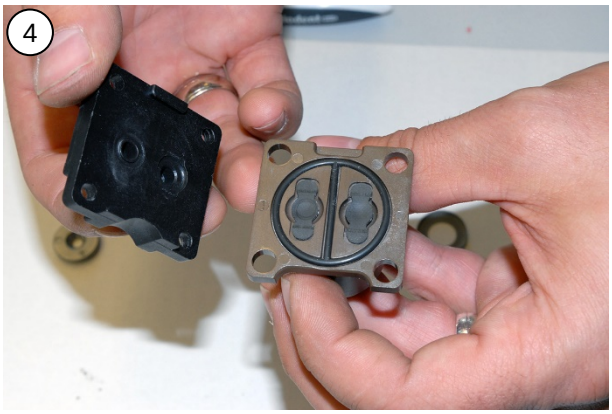
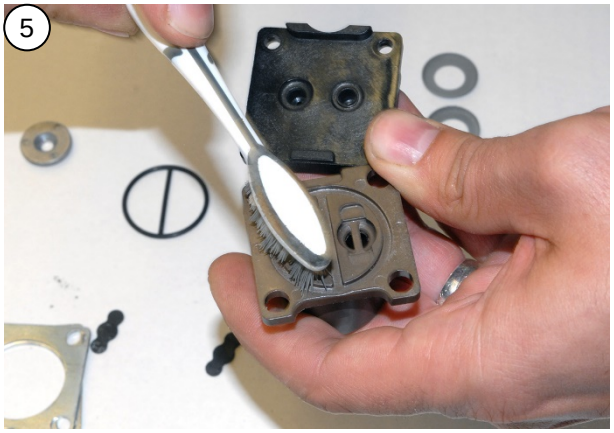
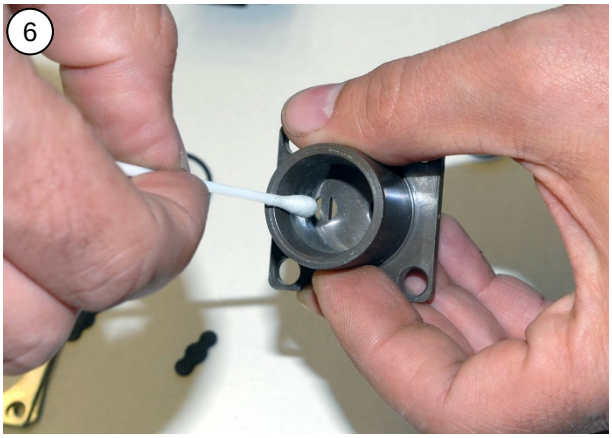


Push the pump cassette on the motor shaft until the snap locks engage. It may be necessary to spread the rollers apart.

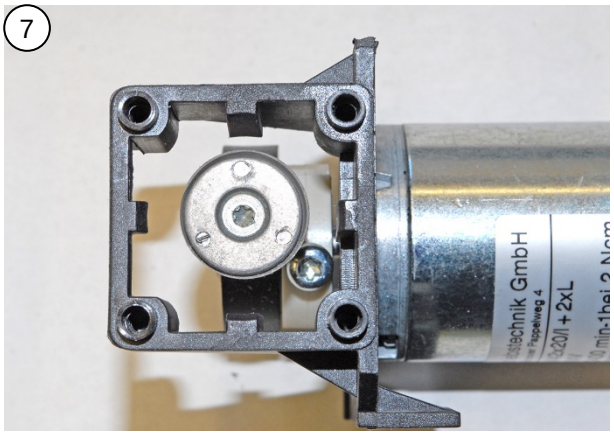
5.2 Compressor

Compressor maintenance

If the spray is not atomized fine and even and if the spray liquid is dripping, the compressor should be checked and serviced.

1  Remove the compressor and take off the white cover cap.	2  Loosen the four screws…
3  … and remove the cylinder.	4  Open the cylinder head and remove the seal ring and the valve plates. Change the valve plates if they are worn.
5  Clean the seal seat and the inlet and outlet openings.	6  Clean also the inside of the cylinder.

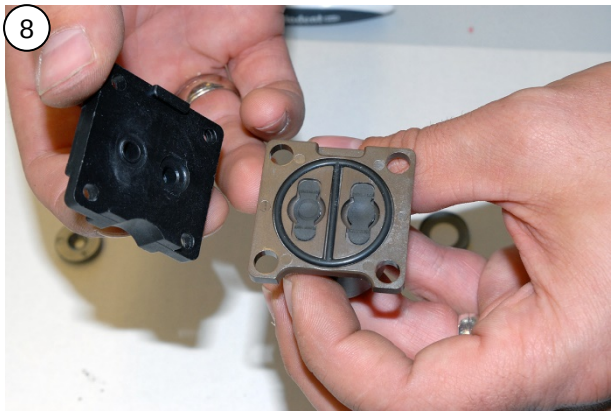
7



Clean and inspect the connecting rod and the piston seal. Change the piston seal if it is worn. Change the connecting rod if it has play.

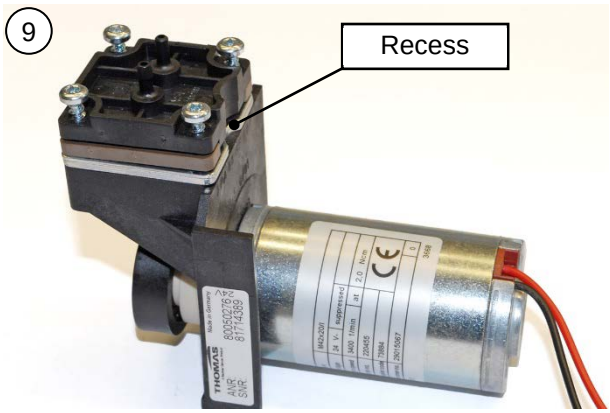
Left: A worn piston seal with frayed edge.
Right: A new piston seal.

8



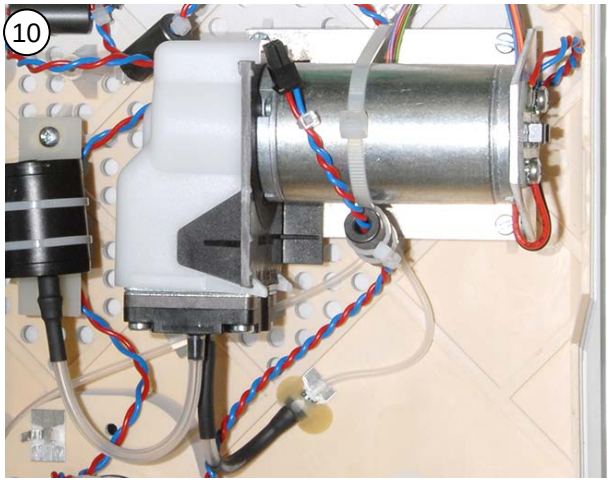
Reinstall the valve plates and the seal ring.

9

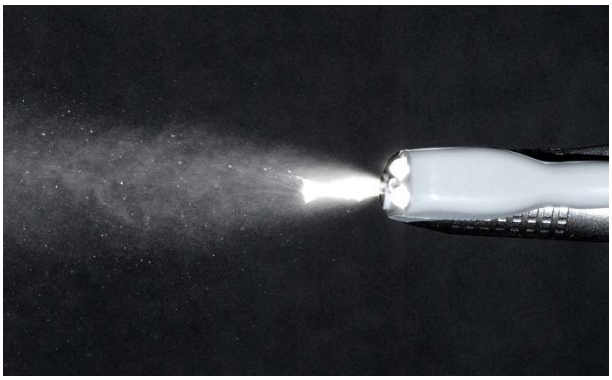


Put the cylinder back on. Make sure that the recess faces the motor side and that the valve plates and the seal are still in position.

10



Check the condition of the hoses and clean the muffler if necessary. Then reinstall the compressor in the device.



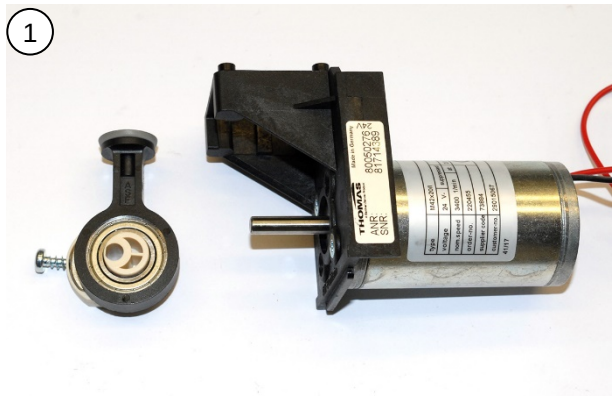
Check the function of the compressor.
Check if the spray is atomized fine and even.

Replacing connecting rod

If the compressor makes noises, check if connecting rod bearing is worn. If the bearing has play, replace the entire connecting rod assembly.

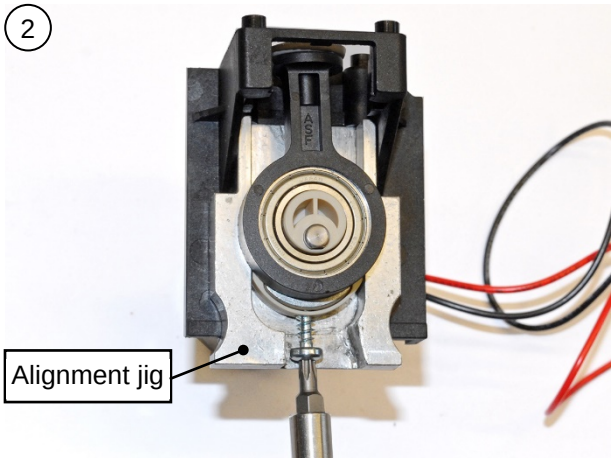
Alignment jig to mount the connecting rod: 704207331 compressor alignment jig.

1



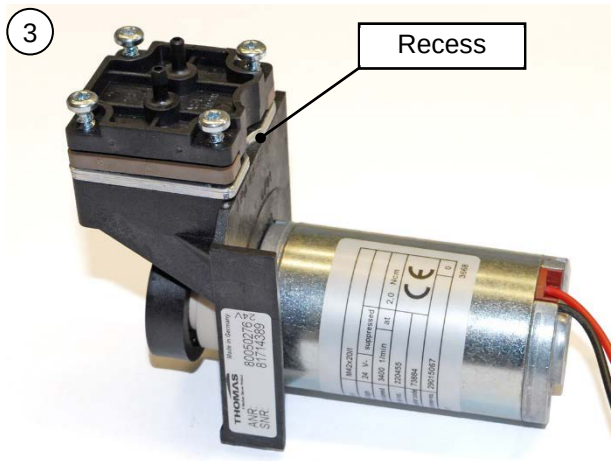
Take off the cylinder. Then loosen the fastening screw and remove the defective connecting rod.

2



Use the alignment jig to position the new connecting rod. Then tighten the fastening screw.

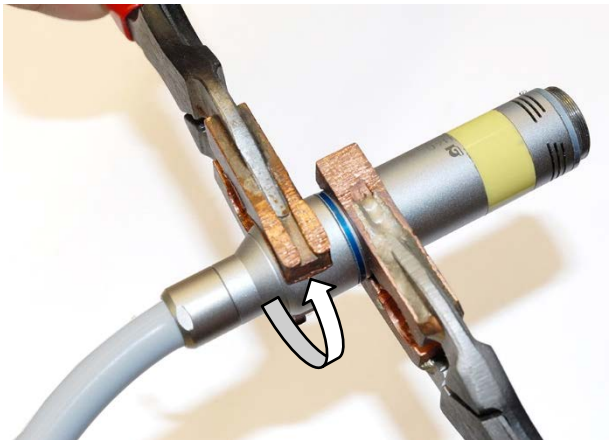
3



Put the cylinder back on. Make sure that the recess side faces the motor side and that the valve plates and the gasket are still in position.

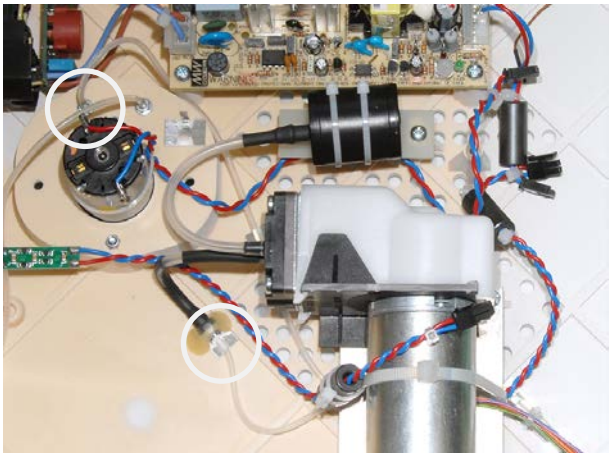
5.3 Disconnecting the motor cable

Use special copper jaw pliers or soft jaw pliers to loosen the motor cable. The connection can be very tight. If necessary, use a penetrating oil.

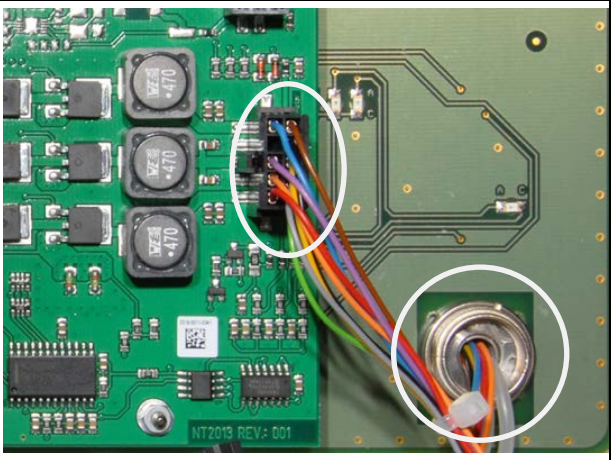


Place one pliers at the end of the motor and one at the cable fitting and loosen the motor cable.

Caution! The blue contact ring at the motor must not turn. If it does, stop immediately or you will destroy the motor.



Loosen the spray hoses in the device …



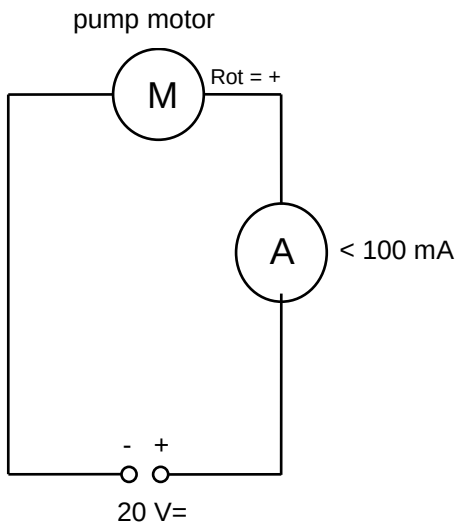
… and the connectors.
Then use the cable gland wrench to loosen the cable gland of the motor cable.

704207332 cable gland wrench

5.4 Pump motor

The current consumption of the pump motor must be checked at any maintenance or repair. A defective pump motor can damage the flat module.
See also 5.6 Repairing the pump motor output on the flat module.

DANGER! Contact with mains voltage.
Danger to life from electric shock.
Pull the mains plug before opening the device.

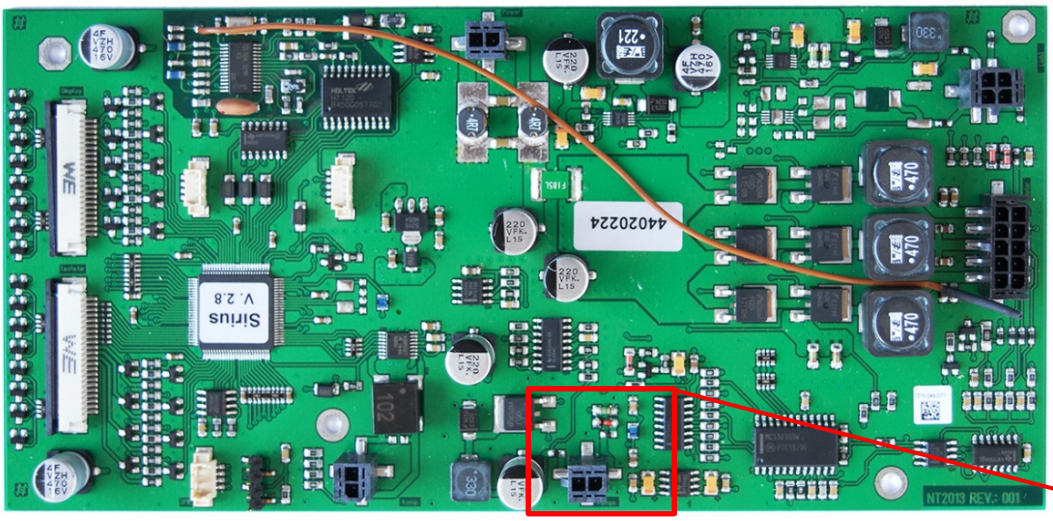


- Before the measurement, check that the pump cassette is clean and easy to move.
  If necessary, clean the pump cassette or install a new one.
  The measurement is carried out with the pump cassette attached.
- Pull the mains plug and open the device.
- Disconnect the pump motor from the flat module.
- Connect the pump motor via an amp meter to an external power supply set to 20 V DC (see figure).
- Measure the current consumption of the pump motor.
- If the current consumption is more than 100 mA, check again if the pump cassette is running fine. If the current consumption still exceeds 100 mA, even with a smooth-running cassette, the pump motor must be replaced (order no. 704206301 NT pump motor).

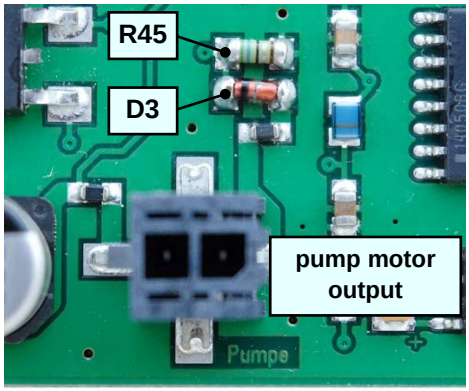
5.5 Flat module

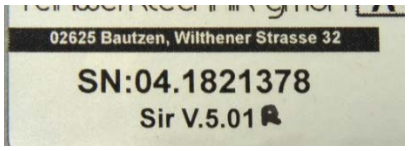
Repairing the pump motor output

If the pump motor output of the flat module does not work, this is usually caused by a broken diode which was overloaded by a defective pump motor.



- Pull the mains plug and open the device.
- Replace D3 with a type LL4148 Mini-MELF diode (e.g. Bürklin, Order No. 24S3460)
- Replace R45 with a 5.6 Ω Mini-MELF resistor (e.g. Bürklin, Order No. 26E168).
- Replace the pump motor or make sure its current consumption is under 100 mA (see previous chapter).
- Reconnect all connections and check the function of the pump motor.
- Add an “R” to the software version on the processor and on the nameplate to identify the retrofit.





Preventive retrofitting of affected flat modules

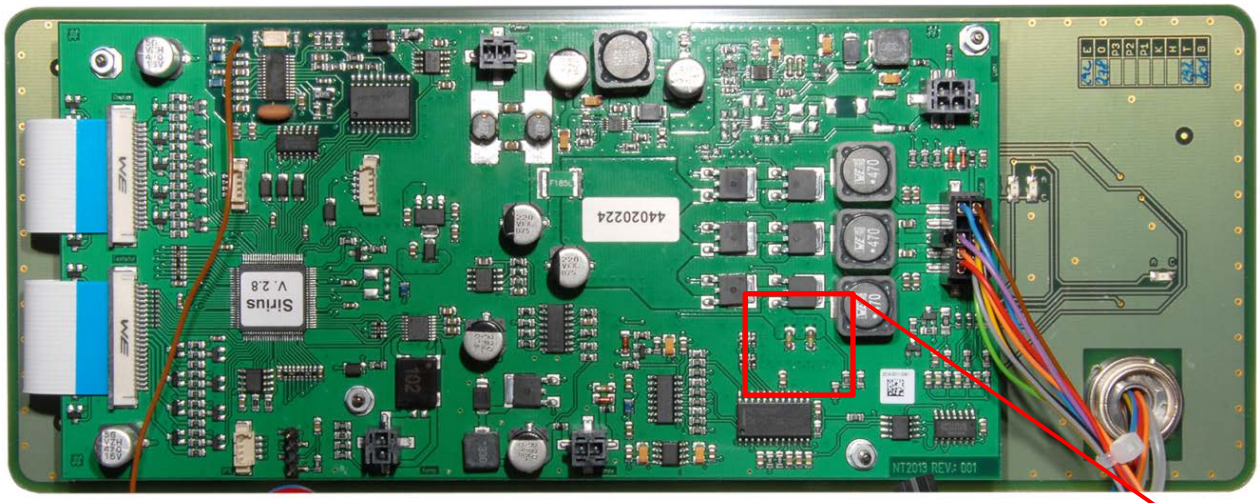
Changing the R45 resistor can be done as a preventive action, to protect the diode from overloading. Also add an “R” to the processor and nameplate for identification.

Flat modules as of SIRIUS SN 04.1821557 and spare flat modules come with the 5.6 Ω resistor ex works.

Note: After the retrofit, a degrading pump motor will be noticeable by a gradual reduction in speed and thus the amount of spray.

Checking current consumption of handpiece motor

If the handpiece motor is heating up, please check its current consumption. This can be done by measuring the voltage at resistor R104 on the flat module.

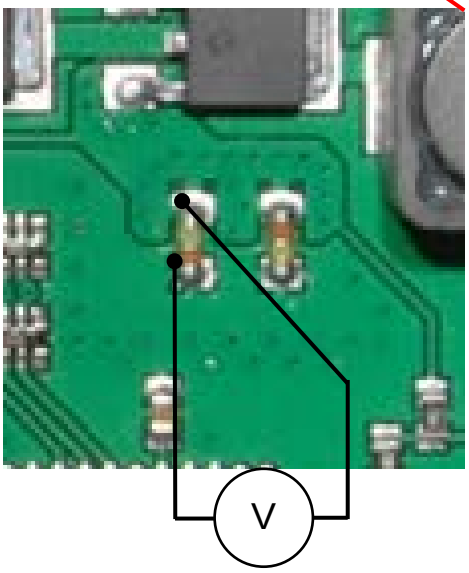


- Remove the handpiece attachment and the coupling from the handpiece motor.
- Run the handpiece motor at 30,000 rpm and measure the voltage at resistor R104 on the flat module.

  On a new or remanufactured motor, the voltage should not exceed 33 mV. On a well run-in motor, the voltage should not exceed 18 mV.

  33 mV corresponds to a current consumption of 300 mA
  18 mV corresponds to a current consumption of 160 mA

  If these values are exceeded, the handpiece motor should be replaced.



6 Troubleshooting

Error	Cause	Action
Handpiece motor is not running	Motor defective	Replace motor
	Cable break	Replace motor cable
	Flat module defective	Replace flat module
Unusual noises from the handpiece motor	Bearing defective	Replace motor
	Fan runner broken	Replace motor
	Rotor broken	Replace motor
Handpiece motor stops and display shows „OFF“	Motor has been overloaded and overload protection shut off the device	Switch off the device, let it cool down and switch it on again. Reduce load and check the handpiece.
Handpiece motor slows down or stops. Display does not show “OFF”	Flat module defective	Replace flat module
Handpiece motor does not run properly. Has to be cranked up	A phase is missing due to a cable break in the motor cable	Replace motor cable
	Handpiece motor defective	Replace motor
Handpiece motor has drop outs	Cable break in the motor cable	Replace motor cable
	Flat module defective	Replace flat module
	Handpiece motor defective	Replace motor
Handpiece motor heats up	Bearing defective	Replace motor
	Rotor broken	Replace motor
	Liquid in the motor	Let motor dry
Handpiece motor has speed fluctuations	Liquid in the motor	Let motor dry
Spray does not work properly	Pump tubing worn	Replace pump tubing or pump cassette
	Spray nozzle clogged	Clean or replace nozzle. Use appropriate spray liquids only.
	Spray tubing clogged or leaking	Clean or replace tubing. Use appropriate spray liquids only.
	Pump motor defective	Check power consumption and replace pump motor if necessary
Spray has drop outs	Flat module defective	Replace flat module
	Pump tubing worn or clogged	Replace pump tubing or pump cassette
	Wrong tank cap	Use original tank cap with ventilation opening
	Pump motor defective	Replace pump motor
Unusual noises from the spray pump	Pump rollers not in position	Reposition pump rollers
	Pump cassette is loose	Mount pump cassette
	Pump cassette worn	Replace pump cassette
Abrasion in the spray pump	Pump cassette is loose	Mount pump cassette
	Pump cassette worn	Replace pump cassette

Error	Cause	Action
Unusual noise from the compressor	Muffler came loose	Mount muffler
	Hose to muffler is leaky	Replace hose
	Compressor defective	Replace compressor
	Connecting rod loose or defective	Replace connecting rod
Spray drips, air pressure low	Compressor piston seal worn	Replace piston seal
	Compressor valve plates worn	Replace compressor valve plates
	Compressor seal ring worn	Replace compressor seal ring
	Muffler clogged	Clean muffler
	Compressor hoses leaky	Replace hoses
Spray drips, no air pressure	Spray nozzle clogged	Clean or replace spray nozzle
	Compressor defective	Replace compressor
	Spray hose loose, leaky or clogged	Clean or replace spray hose
Handpiece LED not working	Soldering in spray channel is defective	Resolder contacts in spray channel
	LED defective	Replace spray channel
Button does not work	Foil keyboard defective	Replace foil keyboard
	Flat module defective	Replace flat module
Missing segment in spray display	LED segment defective	Replace (SMD)LED on the foil keyboard or entire foil keyboard
Device does not work, no display	Mains cable defective	Check mains cable
	Mains socket defective	Check mains socket with a different device
	Loose connector	Check connectors
	Power supply defective	Replace power supply
	Flat module defective	Replace flat module
	Foil keyboard defective	Replace foil keyboard

7 Test plan

SIRIUS NT MICRO	
S/N of device:	**04.**
S/N of handpiece motor:	**05-**
Handpiece attachment	[ ] FH40S_2016, (disassemble chuck) [ ] FH40S, (one-piece chuck)
Customer:	

The following points must be checked during a service inspection of a SIRIUS NT MICRO device:

Component	Test case / action	Tested / done
Device enclosure	The enclosure is undamaged, clean and dust-free. All screws are present.	
Motor cable	The motor cable is undamaged and clean.	
Handpiece cleaned	The handpiece was disassembled and cleaned.	
Running characteristics	Handpiece motor and attachment run smoothly and without noise, in clockwise and counter-clockwise rotation.	
Chuck	The burs hold well in the chuck and do not slip.	
Spray function	The spray is well atomized. The spray hits the cutting surface of the rotating instruments. At low spray settings, spraying takes place at intervals. The spray nozzle does not drip.	
Display	All display segments are working.	
Buttons and LEDs	All buttons and LEDs are working.	
Remote foot switch	Remote foot switch is working (if available)	
Handpiece speed	Check rotation speed of the handpiece motor.	
Spray pump	The pump cassette was cleaned, checked and is working properly.	
Pump tubing	The pump tubing was changed (if necessary)	
Pump motor	The current consumption of the pump motor was checked and is below 100 mA.	
Flat module	Optional retrofit: Resistor R45 was changed to 5,6 Ohm.	

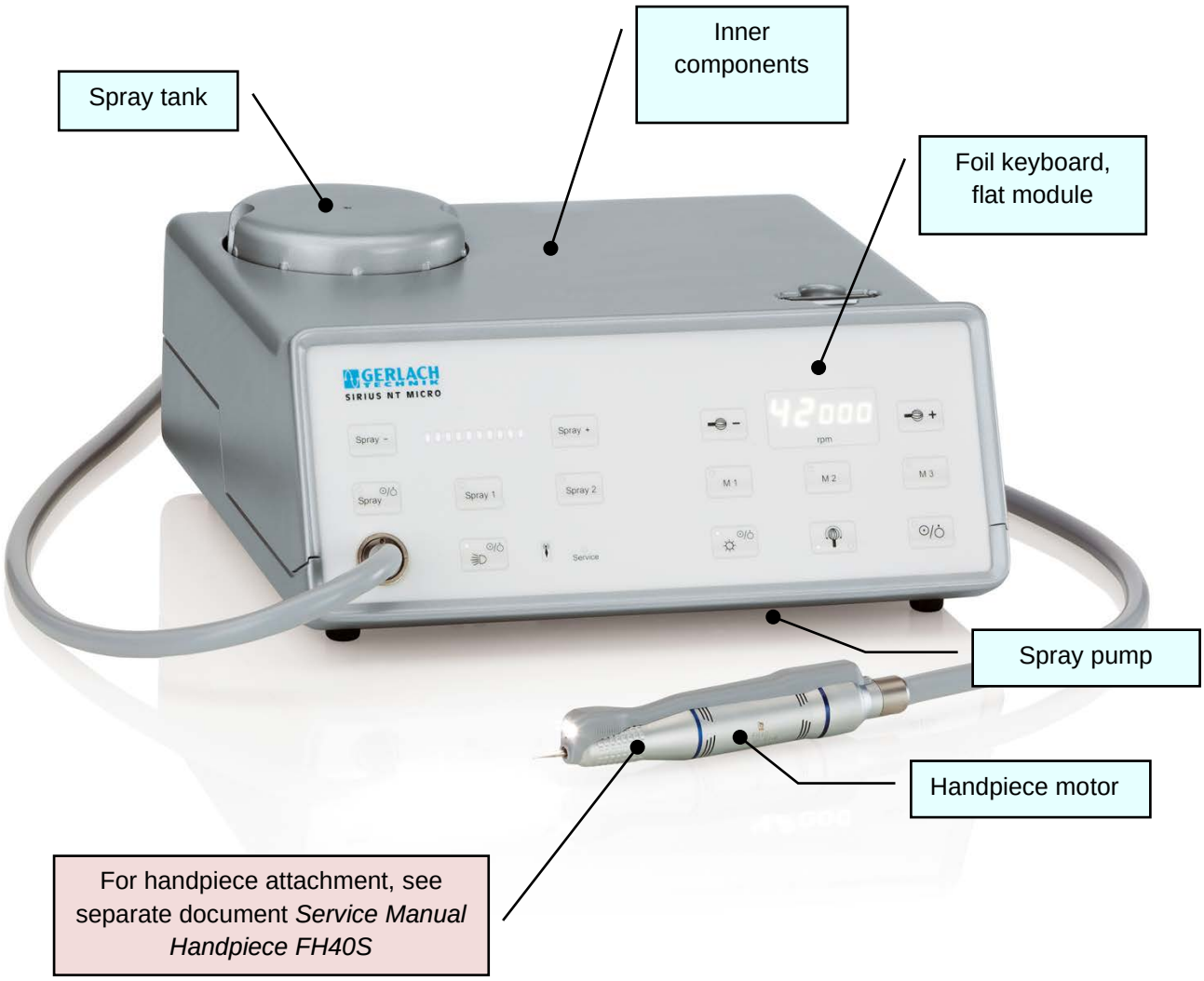
Setting		Rpm
2.200	+/- 35%	1.430 – 2.970
10.000	+/- 35%	6.500 – 13.500
20.000	+/- 10%	18.000 – 22.000
30.000	+/- 10%	27.000 – 33.000
42.000	+/- 10%	37.800 – 46.200

Component	Test case / action	Tested / done
Compressor	The compressor runs well and generates sufficient pressure (see also spray function). No abrasion from the piston seal is visible. The rubber buffers on the compressor bracket are not brittle or cracked.	
Spray tank	The spray tank is clean, not contaminated and has no cracks. The tank coupling is smooth and tight. The filter is clean and not discoloured. The vent in the tank cap is clean and not contaminated.	
Spray hoses	The spray hoses are clean, free and undamaged.	
Sprayed empty	Spray tank was emptied and the device was sprayed empty.	
Service LED reset	Operation hour counter of Service LED has been reset with function U1.	
Sealing sticker	Applied new screw hole sealing stickers, if broken	
Test for electrical safety	A test after the repair of medical electrical devices according to DIN EN 62353 / VDE 0751-1 has been carried out. The test result was filed.	

Testing workshop (company stamp)	Date:
	Sign:

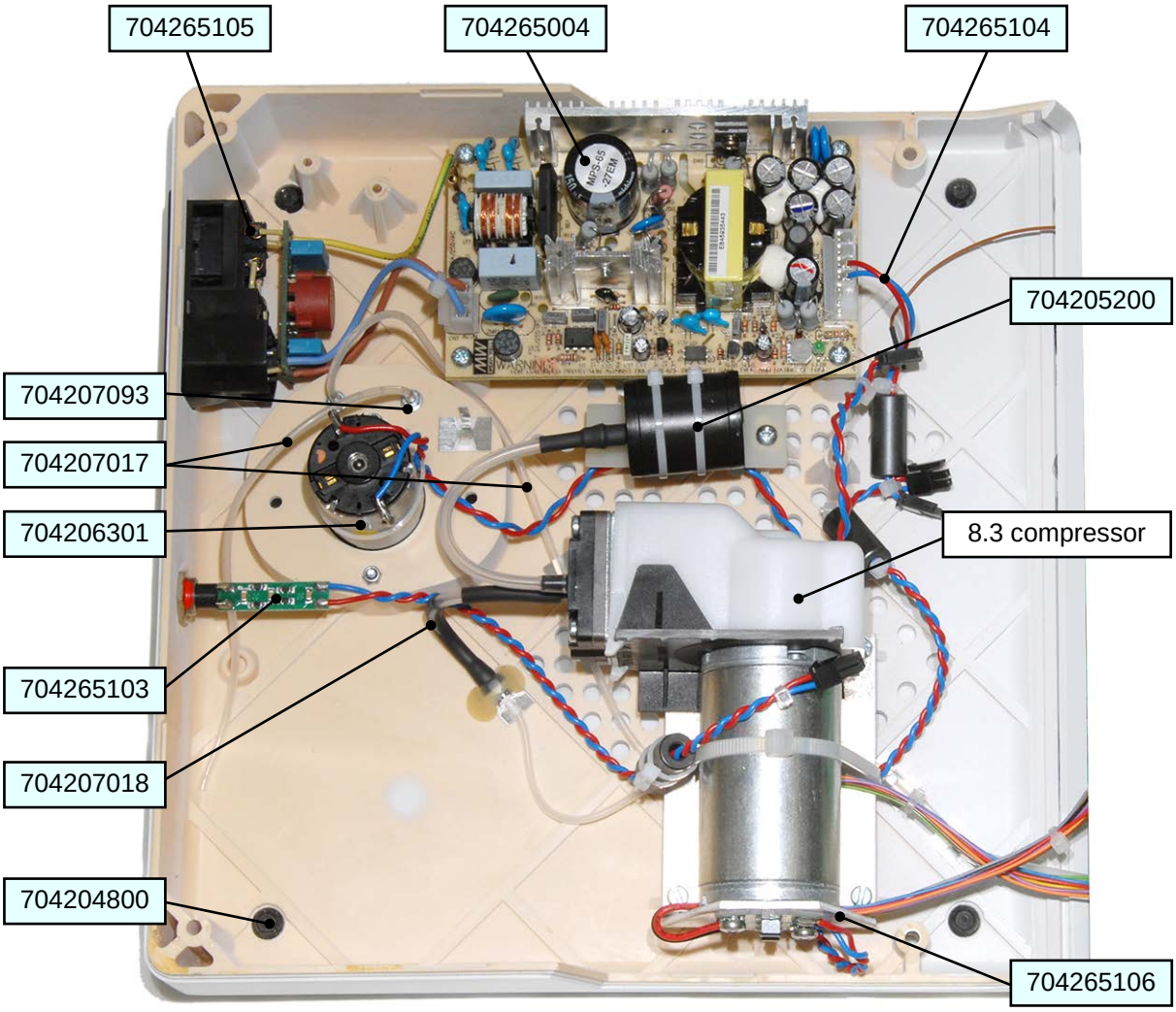
8 Spare parts

Overview



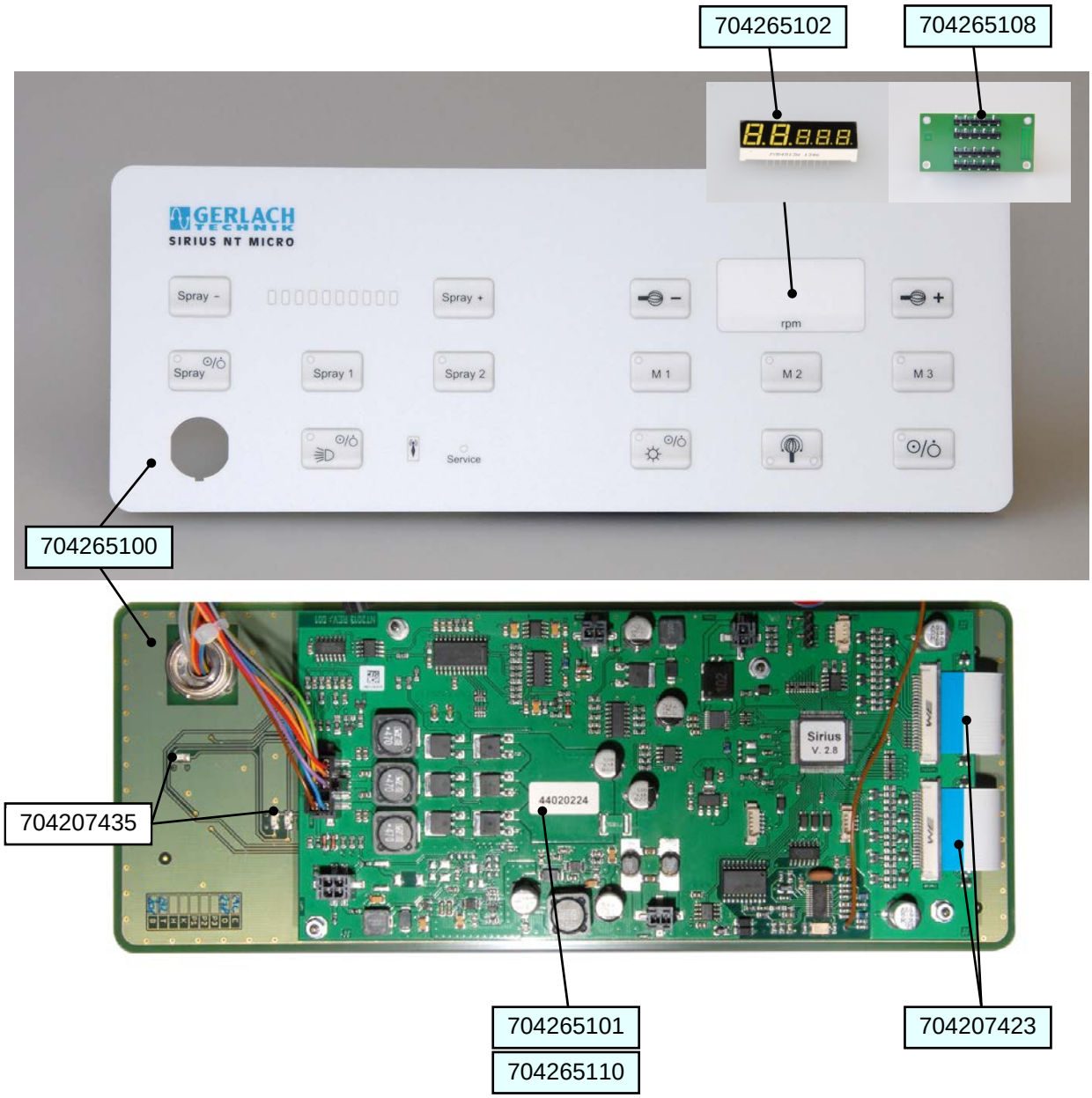
Color legend	
	= assembly
	= part
	= single component of a part

8.1 Inner components



Order-No.		Item	Note
704265105		Mains socket for Sirius NT 2013	With filter board and fuse
	704202500	Fuse 3,15 A, slow	
704265004		Power supply MPS-65-27	See revision note for S/N 04.1519766 to 04.1620260 with MPS-75 power supply
704265104		Cable, power supply – flat module	
704207093		Tube fitting 0,3mm	
704207017		Silicon tube, 1,5mm	Unit = meter
704206301		Pump motor w/o gear	
704205200		Muffler 30 x 35	With hose
704265103		Connector for case lamp	
704207018		Silicone tube, 2 mm	Unit = meter
704204800		Rubber foot	
704206401		Compressor 2010	
704265106		EMC filter board for compressor	
704265109		Compressor add-on board (piggyback)	Not illustrated, see revision note for S/N 04.1720602 - 04.1720682

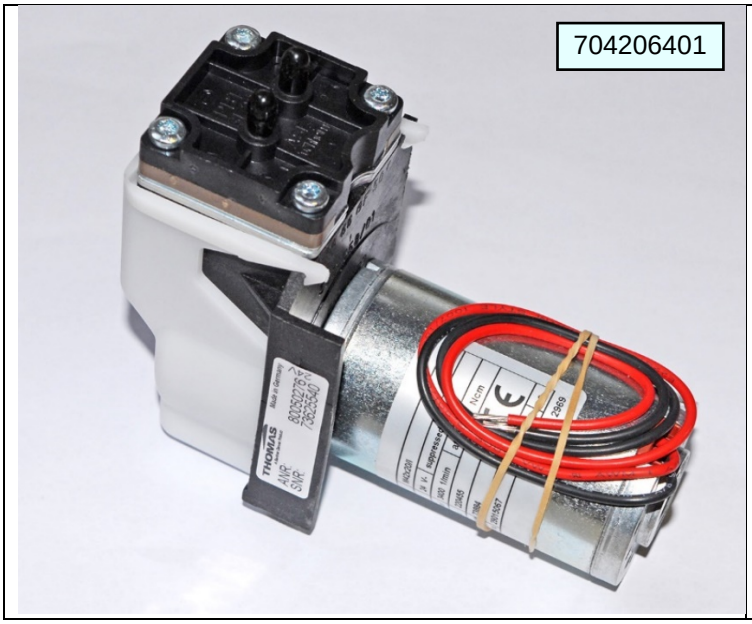
8.2 Foil keyboard and flat module



Order-No.		Item	Note
704265100		Foil keyboard, SIRIUS NT 2013	
	704207435	LED, SMD 1206 back white	Spare LED
704265102		Display, 7-segment, 5-digit, white	
704265108		Display board	
704265101		Flat module SIRIUS NT 2013	until S/N 04.1720682
on request		Flat module SIRIUS NT 2013, in exchage*	
704265110		Flat module NT2013 Rev.005	as of S/N 04.1720683
on request		Flat module NT2013 Rev.005, in exchange*	
704207423		Flexible flat cable FFC, 22-pol. 50mm	

* „in exchange“ parts are remanufactured parts. They can only be ordered after returning an old part.

8.3 Compressor



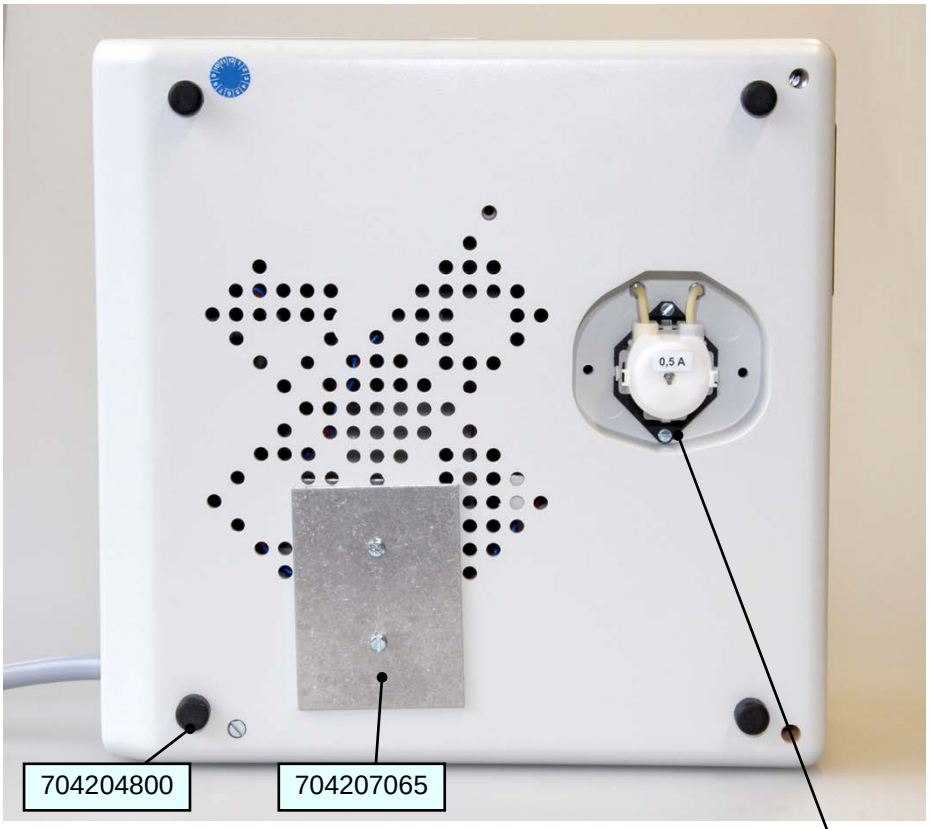

704207056

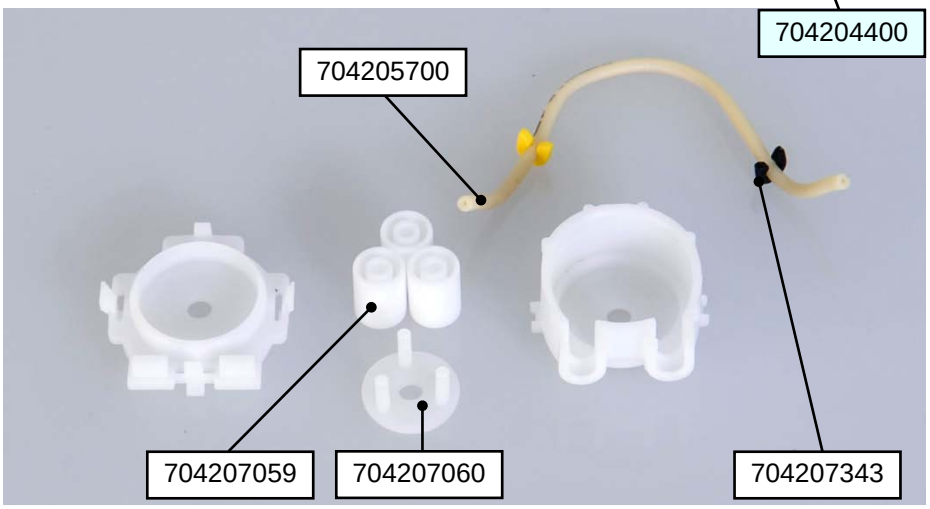

704207057


704207058

Order-No.		Item	Note
704206401		Compressor 2010	
	704206402	Connecting rod assembly, 6mm	Piston-rod-shaft assembly
	704207056	Seal ring for compressor	
	704207057	Valve plates for compressor	
	704207058	Piston seal for compressor	
704207331		Compressor alignment jig	Alignment jig for mounting the connecting rod assembly

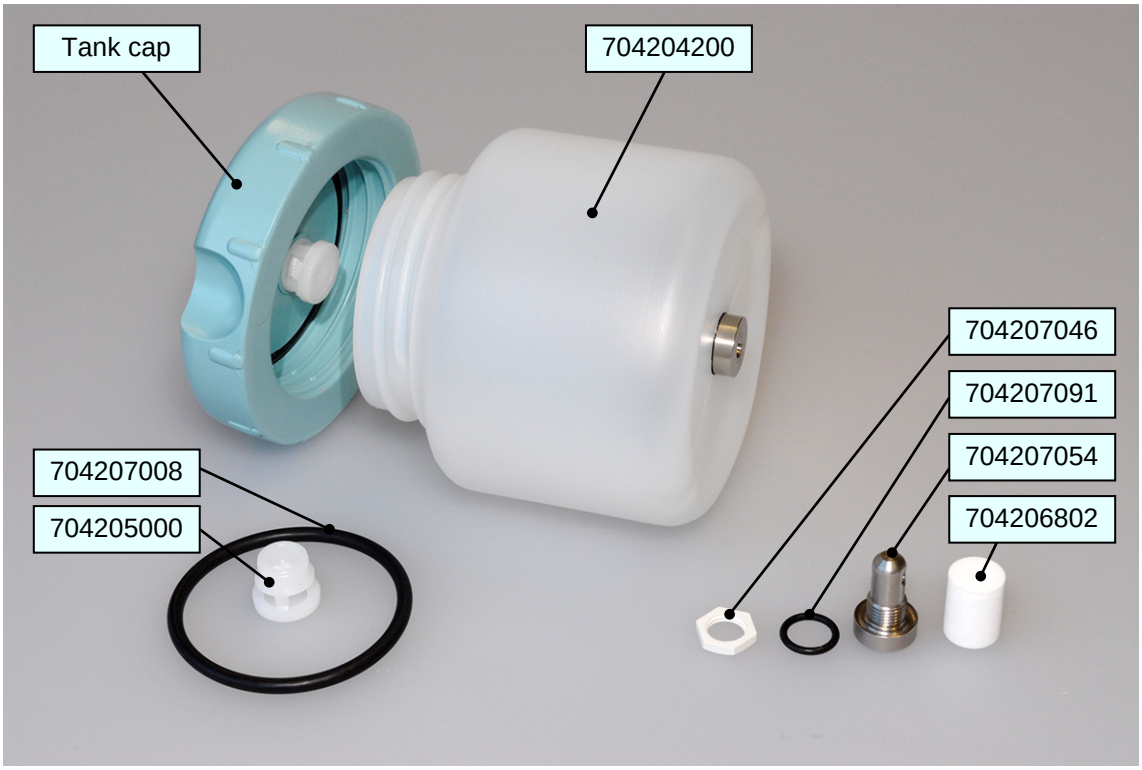
8.4 Spray pump and bottom side parts





Order-No.		Item	Note
704204400		Spray pump cassette, 0,5mm	Complete pump head with rotor and tube
	704205700	Pump tube 0,5mm, 2pcs	Packaging unit = 2 pcs
	704207059	Roller	
	704207060	Roller support	
	704207343	Tube clip, black	
704204800		Rubber foot	
704207065		Transportation lock with screws	For transportation only

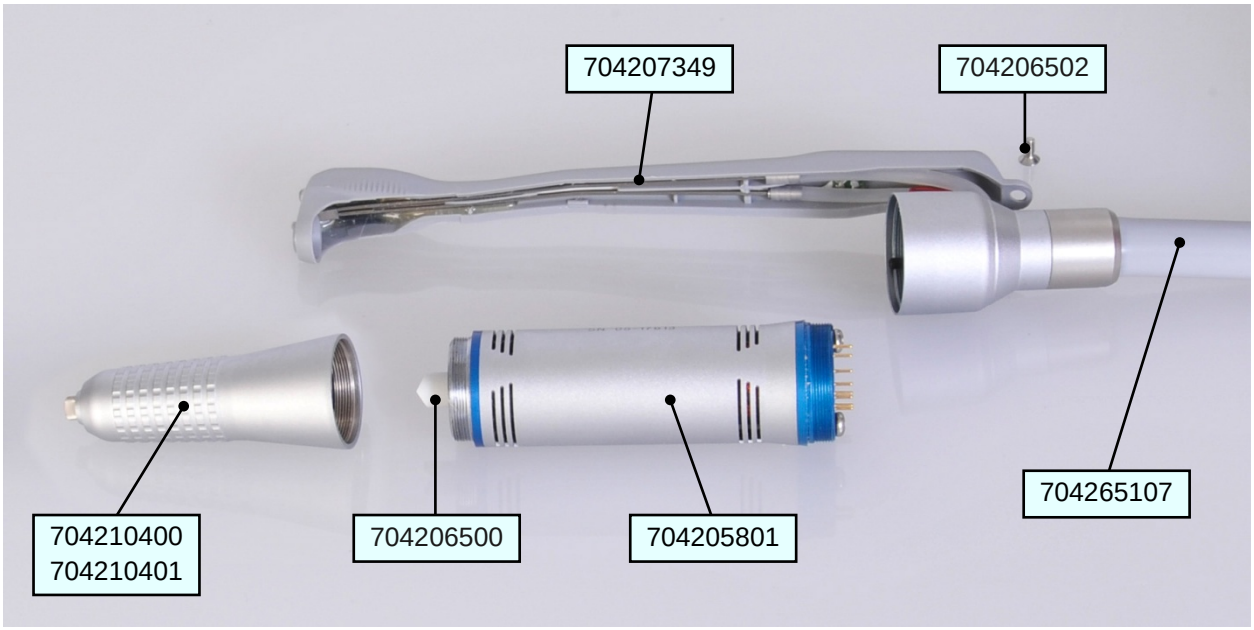
8.5 Spray tank



Order-No.	Item	Note
	Please order tank caps by color	All tank caps come with seal ring and vent
704205400	Tank cap, pastel turquoise	
704205500	Tank cap, light gray	
704205501	Tank cap, astral silver	
704205502	Tank cap, pastel blue	
704205509	Tank cap, platin silver	
704207008	Seal ring, 54x4mm	Single seal ring for tank cap
704205000	Vent for tank cap	
704204200	Spray tank w/o cap	Spray tank assembly with attachment parts, but without cap
704207068	Spray tank	Single spray tank without attachment parts
704207046	Plastic nut M10 x 1	
704207091	O-ring 11,0 x 2mm, NBR 70	
704207054	Coupler	
704206802	Tank filter	

8.6 Motor handpiece

(as of S/N 04.1620421)



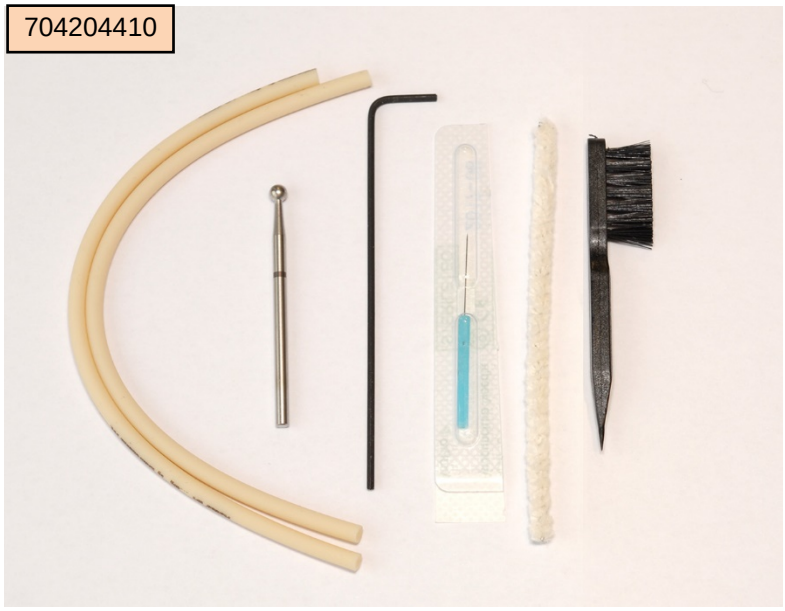
Order-No.	Item	Note
704205801	NT micromotor FH 40	
on request	NT micromotor FH 40, in exchange*	
704206500	Coupling FH 40	
704206502	Screw, M2 x 5, DIN 7991	
704210400	Handpiece FH40S_2016, boxed	Packaged, with booklet
704210401	Handpiece FH40S_2016	Unpackaged
720903826	Maintenance instructions FH40S_2016 D/GB	Booklet
704265107	Motor cable NT 2013	
on request	Motor cable NT 2013, in exchange*	
704207349	Spray attachment, with LED	
704207332	Cable gland tool	Wrench for motor cable gland 

* „in exchange“ parts are remanufactured parts. They can only be ordered after returning an old part.

Note: handpiece spare parts can be found in the separate *Service Manual Handpiece FH40S_2016* document.

8.7 Accessory

704204410



704204501

704207322

Order-No.	Item	Note
704204410	Service pack Sirius 0,5mm	Accessory pack
704205700	Pump tube 0,5 mm, 2 pcs	
705110200	Test bur	
704206501	Allen key 1,3mm	
704207434	Cleaning pin	
N/A	Pipe cleaner	
N/A	Cleaning brush	
704204501	Power cable, 50cm	CEE 7/7
704207322	Bur shank gauge	used to check bur shanks and to mount drip caps