

New as of:

01.2016

SL motor

ISO adapter / Basic (APEX) adapter

Operating Instructions

English

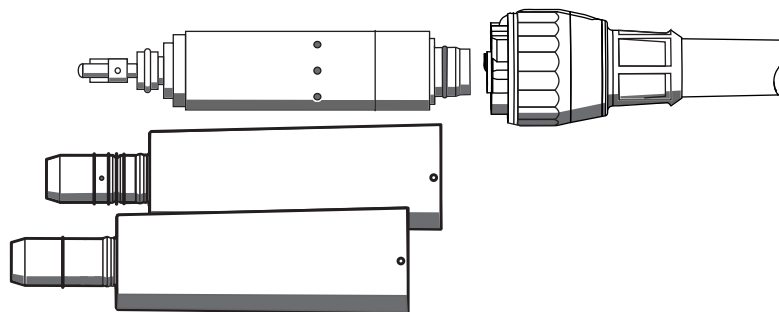


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1 Before you begin ...

The motor complies with the regulations reflecting the current state of technology. The motor complies with the ISO 14457 standard.

1. Read the operating instructions prior to using the SL motor.
2. Use the motor only for applications that are described in the operating instructions.
3. Observe the applicable hygiene standards, work safety regulations and accident prevention measures for the motor.

Intended Use

The micro-motor serves as a drive for rotating and oscillating straight and contra-angle handpieces in connection with a dental treatment center.

Contraindications

None

Target group

This product is intended only for use by trained dental personnel in dental practices and laboratories.

1.1 Structure of the document

1.1.1 Labeling of information

Warnings

- To prevent injuries, please observe all warnings.

Warnings are labeled as follows:

DANGER! indicates a danger **leading** to death or serious injury if not avoided.

WARNING! indicates a danger that **may lead** to death or serious injury if not avoided.

CAUTION! indicates a danger that **may lead** to injury if not avoided.

Instructions for use

- To prevent material damage and additional expenses, please observe all instructions for use.

Instructions for use are labeled as follows:

NOTICE! indicates measures for the prevention of material damage.

IMPORTANT: indicates information on the avoidance of additional expenses and other important information.

Tip: indicates information for facilitating work.

1.1.2 Formats and symbols

The formats and symbols used in this document have the following meaning:

✓ Prerequisite 1. First action step 2. Second action step or > Alternative action ⇐ Result > Individual action step	Requests you to do something.
Use of formats and symbols [→ 5].	Identifies a reference to another text passage and specifies its page number.
• List	Identifies a list.

1.2 Service life of Sirona instruments

When used as intended:

- Non-moving parts of Sirona instruments have a typical service life of approx. 5 years
- Moving parts of Sirona instruments have a typical service life of approx. 3 years

No warranty claim can be inferred here, as wear may occur earlier or later than indicated above depending on use, frequency of sterilization, and frequency of maintenance.

2 Safety information

Obligations of the user

- Use only fault-free materials that do **not** deviate from the specified data [→ 7].
- Protect yourself, patients, and others against any foreseeable dangers. To do this, follow the safety information.
- Comply with the Intended use of the equipment.
- You should always keep these operating instructions within reach for further reference.

Preventing the spread of infections and cross contamination

Prevent the spread of infections and cross contamination between patients, users, and third parties. Sterilize the adapter after each patient.

Take the appropriate hygiene measures, e.g. wear protective gloves.

Prevention of eye damage

The LED is in risk class 2 according to the IEC 62471:2006 standard. The LED emits optical radiation that is potentially hazardous and may be harmful to the eyes! Potential damage to the retina from the blue light emission. Do not stare at the LED for longer periods of time while in operation.

Protecting the motor shaft/axis

Do **not** let the motor drop on the floor. A bent motor shaft causes irregular operating noises or strong vibrations. This can damage instruments.

Malfunction or damage

Discontinue use immediately in case of malfunction, unusual or different sounds or damage. Damaged motors may cause injury. Notify the dental depot or the manufacturer.

Potential explosion hazard

Do **not** use this product in areas subject to explosion hazards.

Repair

Do **not** repair the motor yourself.

Spare and accessory parts

Use only original Sirona parts or parts approved by Sirona. Safe operation is **not** guaranteed for parts that have not been approved by Sirona.

If you have any questions, please contact your dental depot or the manufacturer.

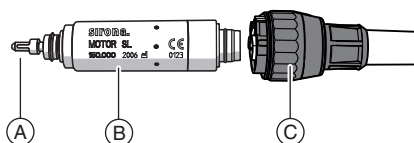
3 Technical description

3.1 Task

The motor converts electrical energy to rotation and transfers rotation to the instrument.

The adapter allows instruments with an ISO connection to be attached.

3.2 Design of SL Motor



A	Motor shaft including attachments
B	Product labeling
C	Control ring/lamp ring

3.3 Product labeling

The following product information is lasered on the motor:

- Product name
- Year of manufacture
- Serial number
- CE marking



3.4 Technical data

Motor

	SL motor
Length in mm	~ 54
Max. diameter in mm	~ 16
Speed range ^a in min ⁻¹	~ 200 - 40000
Torque ^b in Ncm	~ 2.4
U max. in A	~ 4.5
Max. power in W	~ 58
Spray function	x
Apex function	-
Light function	x

a. For min. speed see the operating instructions for the treatment center

b. For max. torque see the operating instructions for the treatment center

Adapter

	ISO adapter	Basic adapter (APEX)
Light function	x	x
Spray function	x	-
Apex measurement	-	x (with BL motor only)
Handpiece holder – ISO 3964	x	x

Treatment center

		SL motor
Lamp voltage in V, at the lamp		~ 3.3
Lamp current in A		
	Halogen lamp	~ 1.2
	LED	~ 0.25
Cooling air pressure in bar		2.2 - 3
Cooling air supply in l/min		30 ±5
Spray air pressure in bar		2.7±0.2
Spray air flow in ml/min		~ 6
Spray water pressure in bar		2 ±0.2
Spray water flow in ml/min		>100
Recommended water content in spray in ml/min		>50

Operating conditions

Ambient temperature	10°C - 40°C (50°F - 104°F)
Relative humidity in %	30 - 85
Air pressure in hPa	700- 1060

This product bears the CE mark in accordance with the provisions of the Council Directive 93/42/EEC of June 14, 1993 concerning medical devices (MDD).



3.5 Connection Options

The motor was designed for direct operation of T1 CLASSIC instruments. In order to be able to use T1 LINE, T2 LINE, or T3 LINE, for example, an intermediate ISO adapter must be used.

4 Preparation

4.1 Initial start-up and longer breaks in use

1. Sterilize the adapter prior to startup.
2. Clean and maintain the motor after longer breaks in use.

4.2 Prior to starting the work day

- Purge the water and air channels for 30 seconds.

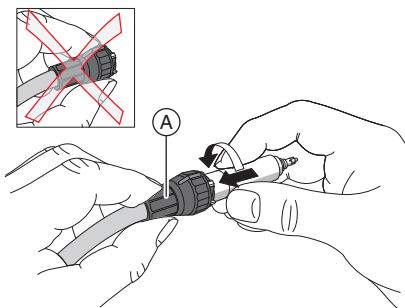
5 Operation

CAUTION! Do not detach the motor from the supply hose during operation! This may cause injury!

CAUTION! If the motor overheats under high load, let it cool off by idling at half speed before continuing treatment.

NOTICE! Never operate the motor without cooling air.

5.1 Connect motor to the supply hose



- ✓ Hold the supply hose by the connecting ring (A).
- 1. Insert the motor into the hose coupling to the stop
- 2. Tighten the motor.

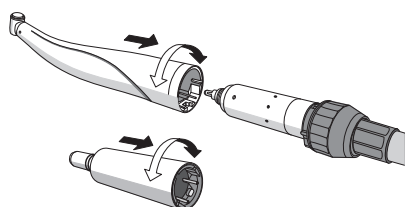
Does water leak out between the motor and the hose connection?

- 1. Detach the motor from the supply hose.
- 2. Reconnect the motor to the supply hose. Make sure it is connected properly.

5.2 Replacing the instrument

CAUTION! The instrument should only be fitted or removed when the motor is at standstill.

Attach the instrument or adapter to the motor



CAUTION! Do not operate the motor with exposed motor shafts and attachments (removed instrument / adapter). This may cause injury!

- ✓ The motor is at a standstill.
- > Attach the instrument or adapter. Lock the instrument or adapter into place here by turning.
- ✓ The motor is at a standstill.
- > Insert the instrument until it snaps into place.

Removing instrument/adapter

- ✓ The motor is at a standstill.
- > Detach the instrument or adapter. Do not pull on the supply hose while doing this.

Removing the instrument

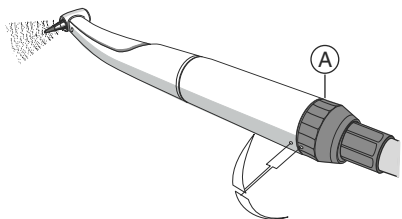
- ✓ The motor is at a standstill.
- > Detach the instrument. Do not pull on the supply hose while doing this.

5.3 Adjusting the cooling spray

CAUTION! The Basic adapter (APEX) does not provide cooling spray. Ensure sufficient cooling of the preparation site via a sterile external media supply, e.g. NaCl.

- Adjust the flow rate of the cooling water using the control ring (A) (> 50 ml/min).

Tip: You can measure the amount of cooling water with a measuring cup and watch.



Water flow rate

The maximum water flow is set when the two marks are located opposite one another.

6 Follow-up

6.1 After each treatment session

NOTICE! Condition immediately, or at the latest, one hour after treatment.

✓ Wear appropriate protective clothing.

1. Purge the water and air channels on the treatment center for 30 seconds.
2. Remove the instrument.
3. Pre-disinfect directly at the treatment center [→ 13].
4. Remove the adapter/motor.
5. Transport the motor/adapter to the hygiene room in a suitable transport container.
6. Conduct automatic conditioning of the adapter [→ 13]. Manual conditioning [→ 14] is possible in exceptional cases if the national/local regulations are followed.
7. Conduct manual conditioning of the motor following national/local regulations [→ 14].
8. Sterilize the adapter [→ 15].

6.2 At the end of the work day

NOTICE! Do not leave any instruments on the motor overnight, in order to prevent oil from leaking into the electric motor. Never lubricate the electric motor.

6.3 Once per work week

- ✓ The adapter has been conditioned.
- Lubricate the lock washer [→ 16].

7 Conditioning

7.1 Conduct pre-disinfection

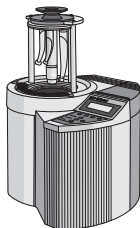
- ✓ Wear appropriate protective clothing.
 - ✓ All disinfectants must be approved in your country and have proven bactericidal, fungicidal and virucidal properties. Only use disinfectants with **no** protein-fixing properties.
 - ✓ Use disinfectants and other agents that contain **no** corrosive components such as chloride.
1. Spray the surface with disinfectant.
 2. Wipe the disinfectant off with a cloth.
- ↪ For further conditioning, the motor/adaptor should be dry and free of residue.

7.2 Automated cleaning and disinfecting ...

Apply the following steps for the adapter **only**.

Do **not** clean motors automatically.

7.2.1 ... with a DAC UNIVERSAL



We recommend using **Sirona DAC UNIVERSAL** for automated cleaning, disinfection, care, and unwrapped sterilization.

For further details, refer to the operating instructions supplied with the unit.

- ✓ The adapter is conditioned using the DAC UNIVERSAL.
1. Check whether the adapter is clean after conditioning under good lighting (min. 500 lux) and color rendering index (min. 80 Ra).
 2. If it is still dirty, repeat the process.
 - ↪ For further conditioning, the adapter should be dry and free of residue.
 3. Pack the adapter in packaging material suitable for sterilization and storage. e.g. paper/plastic composite packaging.
 4. Sterilize the adapter [→ 15].

7.2.2 ... with cleaning and disinfection equipment



The adapter can also be cleaned and disinfected in suitable cleaning and disinfection equipment.

The cleaning and disinfection equipment used must be approved by its manufacturer for the cleaning and disinfection of dental instruments and comply with EN ISO 15883-1 (e.g. 95°C (203°F) and 10 min. holding time).

For further details, refer to the operating instructions supplied with the unit.

- ✓ The adapter is conditioned with a cleaning and disinfection device.
- 1. Check whether the adapter is clean after conditioning under good lighting (min. 500 lux) and color rendering index (min. 80 Ra).
- 2. If it is still dirty, repeat the process.
 - ✎ For further conditioning, the adapter should be dry and free of residue.
- 3. Pack the adapter in packaging material suitable for sterilization and storage. e.g. paper/plastic composite packaging.
- 4. Sterilize the adapter [→ 15].

7.3 Manual cleaning and disinfection

IMPORTANT: Manual conditioning is possible in exceptional cases if the national/regional regulations are followed. The national/regional regulations are to be checked before.

NOTICE! Condition immediately, or at the latest, one hour after treatment.

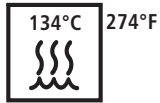
NOTICE! Never clean in an ultrasound bath!

NOTICE! Never immerse in disinfectant solution!

- ✓ Wear appropriate protective clothing.
- ✓ All disinfectants must be approved in your country and have proven bactericidal, fungicidal and virucidal properties. Only use disinfectants with **no** protein-fixing properties.
- ✓ Use disinfectants and other agents that contain **no** corrosive components such as chloride.
- 1. Moisten a clean, lint-free cloth with disinfectant.
- 2. Wipe the motor/adapter with the moist cloth. When doing so, also wipe any hard-to-reach places.
- 3. Observe the application time for the disinfectant.
- 4. Wipe the motor/adapter dry.
 - ✎ The motor/adapter is disinfected and clean.
- 5. When the motor/adapter is dirty, repeat the cleaning process.



7.4 Sterilizing



Apply the following steps for the adapter **only**.

NOTICE! Never sterilize the motor.

- ✓ The adapter is cleaned and sterilized.
- ✓ If necessary, the adapter can be packed in packaging suitable for sterilization and storage, e.g. paper/plastic composite packaging or container.
- Sterilize the adapter in the steam sterilizer with saturated water vapor.

Overpressure: 2.04 bar (29.59 psi)

Temperature: 134° C (274° F)

Holding time: 3 min



Steam sterilizers that fulfill the requirements of either EN 13060, class B (for example, DAC PREMIUM / DAC PROFESSIONAL) or EN 13060, class S and are suitable for the sterilization of motors are approved.

NOTICE! Do not exceed 140°C (284°F), even during the drying phase.

After sterilizing

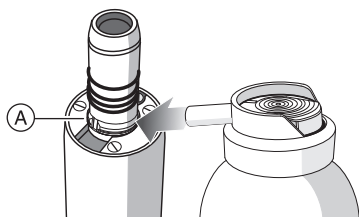
1. Remove the adapter from the steam sterilizer immediately.
CAUTION! The adapter will be hot. Risk of burns!
NOTICE! Do **not** attempt to accelerate the cooling process by immersing the adapter in cold water. This will damage your adapter!
2. Store all adapters so that they are protected from contamination.
3. Sterilize again once the storage period has elapsed.

Following regular sterilization, have your motor serviced after approx. 2 years in a facility authorized by Sirona.

8 Maintenance

Elastomers, e.g. O-rings, must be replaced depending on their degree of wear.

8.1 Lubricate the lock washer



Interval

- 1x weekly

Procedure

1. Spray some T1 spray on the stop spring ring (A).
2. Turn the stop spring ring to distribute the T1 spray.

8.2 Replacing lamps and lamp ring

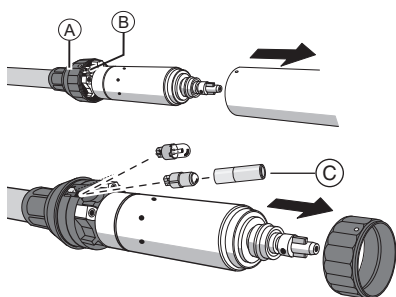
CAUTION! The lamp can be hot. Risk of burns! Allow the lamp to cool down.

✓ Use an LED or halogen lamp with a green base [→ 18].

1. Detach the instrument or adapter.
2. Place the marking of lamp ring (A) over the lamp (B).
3. Detach the lamp ring.
4. Remove the defective lamp from the socket.
5. Place the new lamp in sideways. Do **not** slide the lamp in from the front. Ensure the proper position of the contact surfaces.
NOTICE! Pressing on the lens can destroy the LED. Therefore, please use the installation tool (C) to insert the LED.
6. Attach the lamp ring. The marking on the lamp ring must be over the lamp. The marking points toward the instrument/adapter.
7. Check the light function.

If the LED does not light up:

- Remove the LED and re-insert it after rotating it 180° around its own axis.



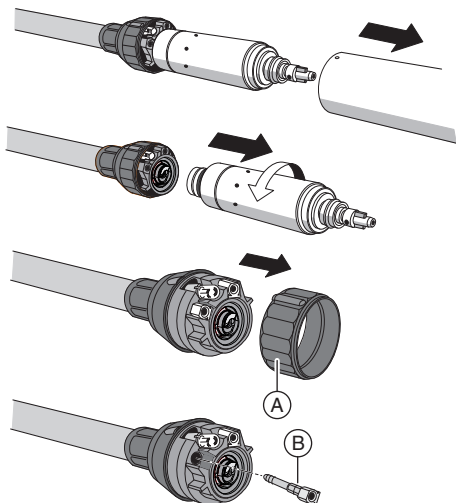
8.3 Replacing the spray water cartridge

Required accessories

- Spray water cartridge

If the spray water cartridge leaks or is clogged.

1. Detach the instrument or adapter.
2. Detach the motor from the supply hose.
3. Place the marking of the lamp ring above the halogen lamp / LED.
4. Detach the lamp ring (A).
5. Remove the old spray water cartridge (B).
6. Apply T1 spray lightly to the new spray water cartridge.
7. Insert the new spray water cartridge.
8. Attach the lamp ring. The lamp ring's marking must be above the halogen lamp / LED. When joined together, the markings on the lamp ring and the supply hose form a line.

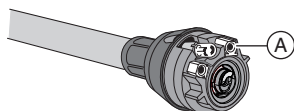


8.4 Replacing spray air cartridge

Required accessories

- Spray air cartridge
- T1 spray

The spray air cartridge (A) is replaced in the same way as the spray water cartridge [→ 17].



8.5 Replacing O-rings

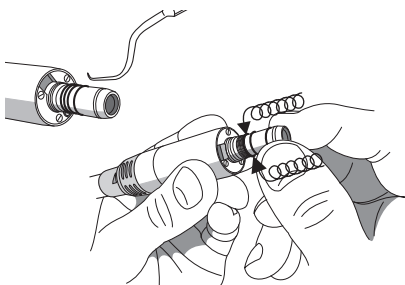
NOTICE! Do not use any sharp tools and do not stretch the new O-rings.

If the handpiece coupling leaks, the O-rings must be replaced.

IMPORTANT: The BASIC adapter has only one O-ring.

1. Remove the defective O-rings.
2. Insert the O-rings one after another. Start with the first groove.
3. Apply T1 spray lightly onto the O-rings.

NOTICE! Do **not** use Vaseline or silicone grease on the O-rings.



9 Spare parts and consumables

Use only original Sirona parts or parts approved by Sirona.

	REF		REF
ISO adapter	60 00 793	Halogen lamp, green base	59 45 407
Basic adapter (APEX)	59 83 072	LED	63 14 558
SL D+ spray water cartridge	61 24 825	O-ring 8.4 x 0.7	58 60 390
SL D+ spray air cartridge	62 02 662	O-ring 17 x 0.6	70 36 205
SL D+ control ring	61 24 726	T1 spray (6 x 250 ml)	59 01 665

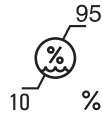
10 Storage and transport conditions



Protect from moisture



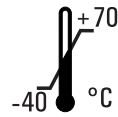
Sensitive contents



Relative humidity



Air pressure



Temperature

After a severe change in temperature, allow sufficient time for acclimatization.

11 Disposal

- According to current information, the product does not contain any substances that are hazardous to the environment.
- Disinfect the product prior to disposal.
- Observe the applicable disposal regulations for your area.

We reserve the right to make any alterations which may be required due to technical improvements.

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