StarDental® Instrument Solutions

Operating Manual

NuTorque™

Programmable Electric System

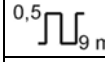
CAUTION: Federal law restricts this device to sale by or on the order of a dentist.

Table of Contents

A1 User Information

A1.1 Symbols Used

Operating Manual / Unit

	Situations where failure to follow the instructions may lead to danger, damage to material or operating faults.
	Important information for operator and engineer
	Observe Operating Manual
	CE mark (Communauté Européenne)
	Canadian Standards Association (CSA)
	VDE safety mark
	Manufacturer in accordance with EC Directive
	Date of manufacture
	Sterilizable up to 135 °C (275 °F)
	Type B applied part
	Operation mode: Intermittent operation. The operation time is 0,5 minutes with a 9 minute interval.
	**Disposal of equipment and accessories at the end of their service lives:** On the basis of EC Directive 2002/96/EC on Waste Electrical and Electronic Equipment, we would like to point out that this product is not subject to this Directive but may be disposed of in Europe in special waste management centres. Additional information can be obtained from the manufacturer or your dental supplier. This product has to be recycled or disposed of in a way that is harmless for human beings and the environment; in doing so, the national valid regulations are to be observed.

A1.2 Important Information

The Operating Manual should be read by the user before starting up the unit for the first time in order to avoid incorrect operation or other damage.

Repair and maintenance work - apart from the activities described in this Operating Manual - must be performed only by qualified technicians.

- *In the event of modifications by third parties, the warranty becomes null and void.*
- *Use only original parts and spare parts.*

Service:

Note:

Send the product every 2 years for a service check.
The safety check (STK) according to VDE 0751-1 and the measurement check (MTK) will be carried out during service check.
The safety checks in different countries can vary in compliance with country specific regulations and requirements for medical devices. The national valid regulations are to be observed.

A1.3 Safety Precautions

⚠ Risks from electromagnetic fields (pacemakers)

The functions of implanted systems (such as pacemakers) can be influenced by electromagnetic fields.

- Device should not be used if patient or operator has a pacemaker.

⚠ Electricity

Electrical shock may occur from incorrectly connecting a third-party system to the medical device.

⚠ Malfunctions from electromagnetic fields

The product meets the applicable requirements regarding electromagnetic fields.

Given the complex interactions between equipment and cell phones, the product may be influenced by a cell phone that is in use.

- Do not use cell phones in medical offices, hospitals, or laboratories.

Turn off electronic devices such as computer storage media, hearing aids, etc. during operation.

⚠ Premature wear and tear; malfunctions caused by improper care and maintenance

Shortened product life.

- Perform proper care and maintenance operations on a regular basis.

Motor overheating.

- Proper care and maintenance must be performed to prevent overheating of the motor.
- (See Section A3)

⚠ Endangering of the practitioner and the patient

- Stop using the device immediately in the event of damage, irregular noises, excessive vibrations, unusual generation of heat or if the bur is not seated properly.

⚠ Parameters configured incorrectly

Damage as a result of incorrect input values.

- Check all input values before use. In preparation mode, the motor speed or drill speeds are displayed according to the speed increase or reduction ratio. In ENDO mode, the drill speed, torque and drill direction are shown on the display.

⚠ Gearbox ratio incorrect

Damage as a result of incorrect speed/torque.

- Select the corresponding transfer factor from the menu and store.

⚠ Damage resulting from use of a non authorized transformer

Product damage.

- Only operate the medical device with the power pack supplied!

⚠ Damaged cord / brittle cord / no ground wire

Electric shock

- Inspect the cord before use.

⚠ Instrument tubing damage as a result of adhesive labels

The instrument tubing may break

- Do not attach adhesive labels or tape to the tubing.

⚠ Improper handling of handpieces

Incorrect handling can result in injury to persons

- Follow the separate user instructions for the attachments.

⚠ The use of unauthorized file systems

Unauthorized file systems can result in damage to the product and injury to persons.

- Only use authorized Ni-Ti file systems with a consistency >2%, suitable for rotary systems.
- Only use files with shafts meeting ISO specifications, shaft diameter of 2.334 to 2.350 mm.
- Please pay attention to the information provided by the manufacturer (method of operation, speed, torque stages, torsion consistency etc.) and appropriate use of the files.

⚠ The use of damaged files

Damaged files can result in damage to the product and injury to persons.

- Before each root canal preparation, a rubber dam must be put in place for safety reasons.
- Each time before use, the files must be checked for possible signs of material fatigue, deformation or over stress and must be replaced if such signs are present.

⚠ Torque too high

Damage to attachment.

- Attachments for root canal treatments should only be used in the ENDO mode.

⚠ Damage to screen

Use only finger touch, do not use hand instruments.

A1.4 Proper Use – Purpose

The NuTorque Programmable Electric System is used by trained dental professionals to perform general dental procedures including crown preparation, cavity preparation, crown finishing, inlay and the filling, polishing, prophylaxis and endodontic treatment.

The device is a control unit, which drives a low voltage dc electric micromotor via a handpiece hose. Power is supplied to the control unit by an ac power supply. The speed of the motor is controlled by the foot control of the dental unit. ISO E-type attachments are used to perform the various procedures. The maximum free run speed of the micromotor is 40,000 rpm.

This medical device

- includes a low-voltage electric dental motor.
- is not approved for use in areas with an increased risk of explosion. (It is not suitable to use the dental unit in an atmosphere of flammable mixtures – AP, APG.)

According to these provisions, the medical device is only to be used by an experienced user for the described application in accordance with:

- the applicable health and safety regulations
- the applicable accident prevention regulations
- and these operating instructions

According to these regulations, the user is required to:

- only use equipment which is free of faults and works properly
- only use the equipment for the proper purpose

- protect himself, the patient and third parties from danger
- avoid contamination from the product

A1.5 Operating mode

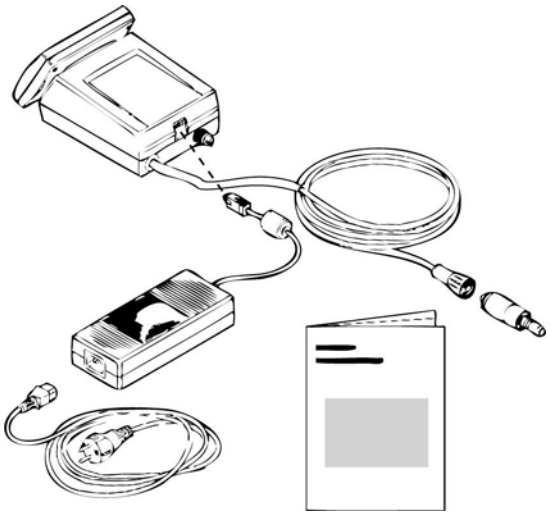
Note:
30 seconds operating time and 9 minutes interval is the feasible limit load of the motor (full load at maximum speed).

- In practice, it is realistic for impulse loading to last a number of seconds and intervals to last anywhere between a number of seconds to a number of minutes, with the maximum motor current not usually being reached. This represents the typical procedure for dentists.

A2 Accessories

A2.1 NuTorque Package

NuTorque control unit with motor tubing
NuTorque motor
Power supply 100 – 240 V AC
Operating Manuals (System Manual and Motor Manual)
Main cable



A2.2 Accessories

Description	StarDental Part Number
1:1 Electric Friction Grip Attachment with Autochuck	263981
1:5 Electric Friction Grip Attachment with Autochuck	263982
1:5 Mini Electric Friction Grip Attachment with Autochuck	263983
1:1 Electric Attachment with AutoLatch	263984
16:1 Electric Attachment with AutoLatch	263985
1:1 Electric Straight Attachment	263986

A3 Cleaning and Maintenance

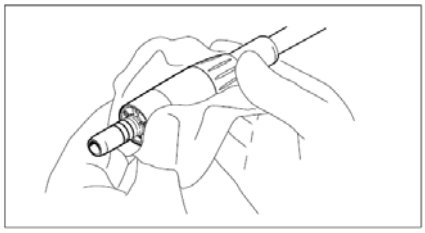
A3.1 Cleaning

Disinfect the motor by wiping after each treatment.
The motor and attachments ***MUST*** be cleaned ***AND*** sterilized after ***EACH*** *patient (See 'Motor and Attachments' manual*).
Disinfect with a clean, damp cloth using isopropyl alcohol – see illustration below.

- Do not exert any pressure on the LCD screen.

- Do not use products containing acetone, chlorine or bleach as disinfecting agents.
- Never immerse in solvent.

- Not suitable for cleaning in an ultrasonic bath.



A3.2 Maintenance

⚠ ATTENTION!

Repair and maintenance work on the electrical part of the **NuTorque** Unit may be performed only by specialists or by persons trained in the factory and familiarized with the safety regulations.

DO NOT OPEN CONTROL BOX. There are no serviceable parts inside the Control Box.

A4 Installation

Operate the medical device exclusively with the NuTorque motor, StarDental Part #265200, and power supply with AC adapter, StarDental Part #265202.

A4.1 Control Box Location

- The suggested place for the control box would be on the side of the delivery head. Illustration 1 below. The mounting bracket is mounted under the delivery unit, see mounting instructions StarDental® part number 064037 in NuTorque Mounting Kit, StarDental part number 264170.
- Mount control box as near as possible to the delivery head's tubing connections.

♦ Alternate mounting locations – top of delivery unit, ONLY if enough clearance is available. (Illustration 2)
– under delivery unit, ONLY if enough clearance is available. (Illustration 3)

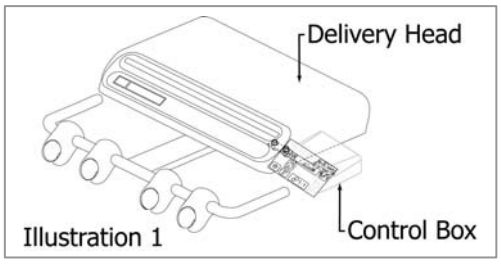


Illustration 1

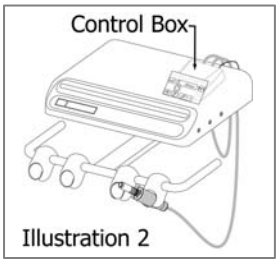


Illustration 2

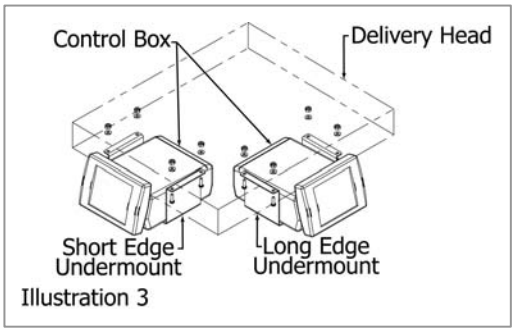


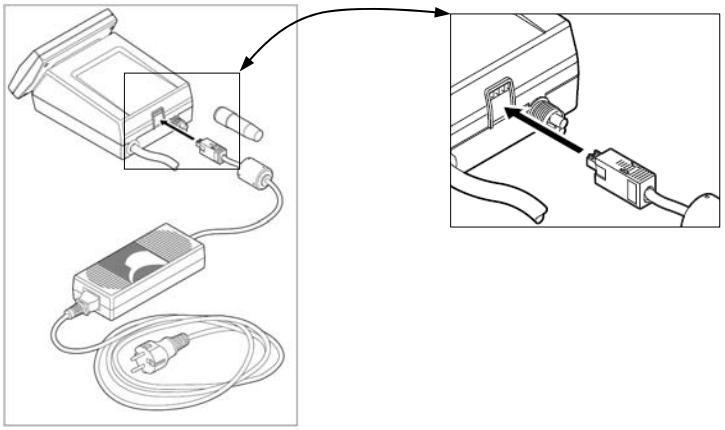
Illustration 3

A4.2 Connect Power Supply

Note:
The power supply must be connected in compliance with country specific regulations and requirements for medical devices.

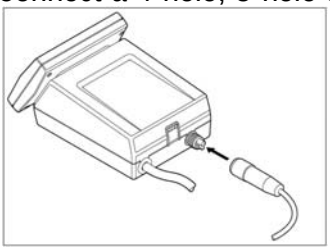
- Connect the power supply to the back of the unit.

- Switching off the dental unit, the plug of the power supply cord has to be disconnected from the electrical outlet.



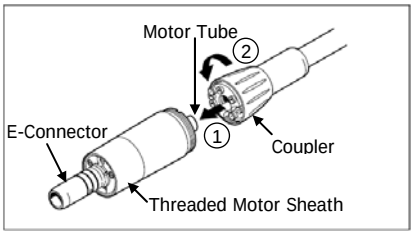
A4.3 Connect Control Box

- Connect a 4-hole, 5-hole or 6-hole tubing to the control box four-hole connection



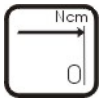
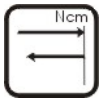
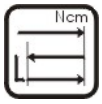
A4.4 Connect The Motor To The Tubing

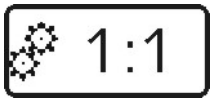
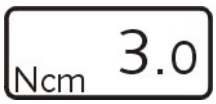
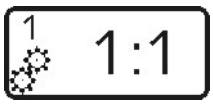
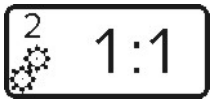
- Lightly coat the O-rings on the motor tube with spray lubricant. Push the motor onto the tubing until it clicks and secure it with coupler.



A5 Set-Up

A5.1 Menu Option Symbols

Button	Function	Mode
	Set-up Mode for Submenu Entry and exit	Main menu and Set-up menu
	Instrument light on/off Submenu: illumination setting	Main menu and Set-up menu
	Submenu: illumination setting – delay time	Submenu in the set-up
	Calibration of foot control/working pressure	Submenu in the set-up
	Speaker on / off (Audio)	Submenu in the set-up
	Display contrast setting	Submenu in the set-up
	Change parameter values	Submenu and main menu
	Change parameter values	Submenu and main menu
	Direction of rotation counter clockwise	Main menu
	Direction of rotation clockwise with Auto stop	Main menu 1E to 5E (ENDO mode)
	Direction of rotation Auto reverse	Main menu 1E to 5E (ENDO mode)
	Direction of rotation Auto reverse-forward	Main menu 1E to 5E (ENDO mode)
	Spray on / off	Main menu M1 to M3

Button	Function	Mode
	Bur speed	Main menu 1E to 5E and M1 to M3
	Ratio setting of the low speed attachments	Main menu 1E to 5E and M1 to M3
 To  (1E, 2E, 3E, 4E, 5E)	Memory cell for Endodontic Mode	Main menu
 To  (M1, M2, M3)	Memory cell for preparation	Main menu
	Torque value setting	Main menu 1E to 5E
	Demonstration of motor rotation without air connection	Set-up menu
	Touch-screen StandBy time: Screen shuts down into StandBy mode after chosen time of 0, 5, 10, 15 or 30 minutes. To turn back on, press foot pedal.	Set-up menu
	Start Motor	Demonstration Mode
	Stop Motor	Demonstration Mode
	Service Menu -For Service Technician ONLY	Set-up menu
 	Additional Memory of reduction ratio for future handpieces with different ratios than currently available	Set-up menu

A5.2 Turn On Unit

To “turn on” unit

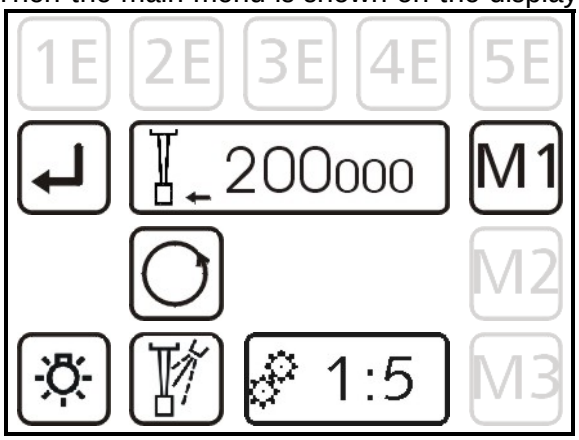
- Plug into electrical outlet. The company logo and controller software versions are displayed on the screen for a few seconds e.g.:

DentalEZ GROUP

(V xx) OK*
(V xx) **

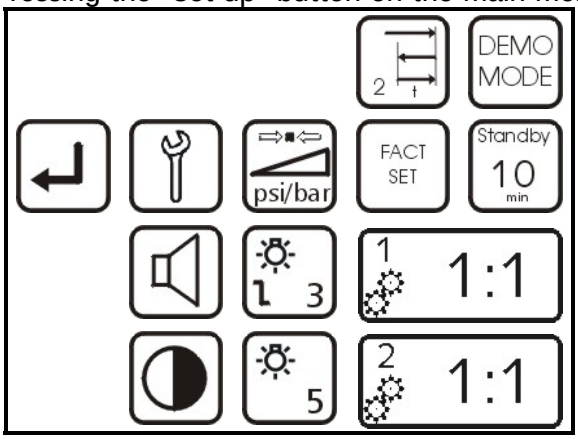
* software version display
** software version control box

Then the main menu is shown on the display:



A5.3 Settings: Set-Up Menu

Pressing the “Set up” button on the main menu changes the display to the set-up mode display. 



Set Up Menu Screen

The following parameters can be set here:

- Calibrate foot control

Press the psi/bar button to start the “psi/bar” calibration process. 

Proceed as follows:

1. If “MAX” is not already displayed on the "PSI/BAR" button, press "PSI/BAR" once or twice until "MAX" appears displayed on the "PSI/BAR" button.
2. When "MAX" is displayed the unit is ready to activate calibrating the maximum pressure.
3. Press the foot control ALL THE WAY DOWN and keep holding it down.
   Press and HOLD "PSI/BAR" button, (while "MAX" is displayed and foot control is being held all the way down), until signal sounds.
   Maximum pressure has now been calibrated (to equal 100%).
    100%
4. The "PSI/BAR" button should now have “MIN” displayed on it. If it does not, then press "PSI/BAR" once or twice until "MIN" appears displayed on the "PSI/BAR" button
5. When "MIN" is displayed the unit is ready to activate calibrating the minimal pressure.
6. DO NOT PRESS THE FOOT CONTROL AT ALL, and
   Press and HOLD "PSI/BAR" button, (while "MIN" is displayed), until signal sounds.  0%
   Minimum pressure has now been calibrated (to equal 0%).

Calibration is finished.

Attention: Calibration is only activated when air pressure from the delivery unit is on.

- Other set of features:

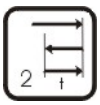
	Setting options	Factory setting
speaker	on / off	on
Illumination	1 – 9	5
Fiber Optic Delay	1 – 5 sec.	2
Display contrast	0% to 100%	10%
Reverse time for Auto reverse forward	1 – 5 sec.	2 sec.

- Pressing the “speaker” button changes the operating status of the speaker. If the symbol is white, the speaker is on; if the symbol is light blue, the speaker is off.

- By pressing the “Illumination” symbol, a number appears next to the symbol. This number can be changed using “+” or “-”. The number 1 equals the lowest light output, the number 9 is the maximum light output. Confirm the illumination setting by pressing the “Illumination” symbol again. The set and stored value appears next to the symbol.

- By pressing the “Fiber Optic delay” symbol, the delay time can be changed using “+” or “-” to choose from 1 second to 5 seconds (delay time). Confirm the fiber optic delay time by pressing the “Fiber Optic delay” symbol again. The set and stored value appears next to the symbol.

- By pressing the “Autoreverse-forward” symbol, a number with “t” appears next to the symbol. The number can be changed using “+” or “-”.
  1 second to 5 second reverse time for autoreverse-forward. Confirm the reverse time set by pressing the “Autoreverse-forward” symbol again.
  The set and stored value appears next to the symbol.



- Pressing the “Display Contrast” button activates the symbol.

The display contrast can be changed using “+” or “-”
Confirm the contrast set by pressing the “Display Contrast” button again.

- Note: Demo mode is used for sales demonstration purposes only. In the E1 (endo mode) only, the system will function without being connected to the delivery unit (no air connection). In this mode the unit will operate with a maximum speed of 2000 rpm for 2 minutes and then return to its normal operating mode.

Select demo mode by pressing the “DEMO MODE” button.
The display changes to the 1E display.
The "START" button appears on the display.
Press "START" button – the motor starts running for 2 minutes max.

The running cycle of the motor can be interrupted by pressing "STOP" button.

By pressing the "RETURN" button the set-up menu appears and the demo program is finished.

Press the "RETURN" button, and the main menu appears.

- Standby time setting of the touch screen.

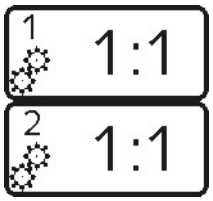
Press "STANDBY" button. With "+" or "-" select time.
By pressing "STANDBY" button again the selected time is activated.

- All manual settings could be reactivated to the factory settings by pressing the "FACT SET" button.

Attention: All manual settings will be cancelled when this button is pressed.

- Back to the main menu by pressing " RETURN" button.

- Press one of the “Additional Memory” buttons (button number 1 or button number 2). With “+” or “-“ select the desired transmission ratio.



Confirm the ratio by pressing the “Additional Memory” button again.

A6 Operation

A6.1 General Operation

- **Asepsis**

  Infection
  - After treatment of a patient, run spray air and spray water for at least 20 seconds.
  - Because of stagnation, water and air lines in dental units must be flushed or blown before initial operation and after standing idle (weekend, public holiday, vacation, etc.).

- **Starting the motor**

  Note: The start pressure for the motor is 1 bar / 14.5 psi.

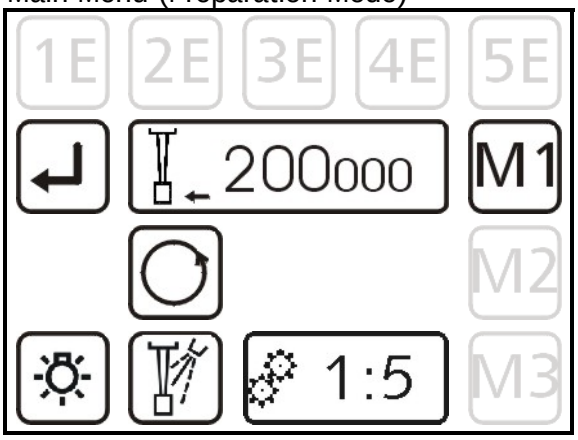
  The minimum operating pressure at 40,000 rpm is 1.8 bar / 26 psi.

  - Press down the foot control pedal until the motor pressure reaches 14.5 psi (1 bar, 14.5 psi).
  - Press the foot control again – all the way down.

    Now, the configured speed is reached.

A6.2 Settings

Main Menu (Preparation Mode)



A6.3 Settings: Preparation memory settings M1 to M3:

Factory settings:

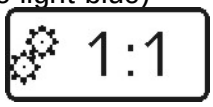
Button	Gear Ratio / Attachment	Speed	Spray	Light
M1	1 : 5	200,000 rpm	on	on
M2	1 : 1	40,000 rpm	off	on
M3	1 : 1	40,000 rpm	on	on

Options available for changing factory settings:

Gear Ratio / Attachment
Speed selection
(up to 1,000 rpm: in increments of 50,
up to 2,000 rpm: in increments of 100,
up to 10,000 rpm: in increments of 500,
up to 40,000 rpm: in increments of 1,000)
Spray on/off
Light on/off
Direction of rotation (clockwise or counter clockwise)
Menu M1, M2, M3

To Change Factory Presets:

Press the M1, M2 or M3 button (when activated, the background color changes to light blue)
Activate the gear ratio by pressing the “gear ratio” symbol.



Select the appropriate increase or reduction ratio using the “+” or “-” symbol.
Confirm the gear ratio by pressing the “gear ratio” symbol again.

Activate the speed by pressing the “speed” symbol (when activated, the background color changes to light blue). Change the speed using the “+” or “-” symbol until the speed you want appears in the display. Confirm by pressing the “Speed” symbol again. The color changes to white.

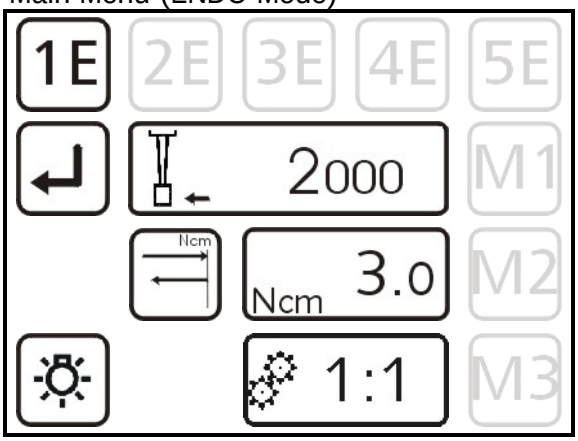
Select the spray by pressing the “Spray” symbol. If the symbol is white, the spray is on; if the symbol is light blue, the spray is off.

Select the fiber optic light by pressing the “Light” symbol. If the symbol is white, the light is on; if the symbol is light blue, the light is off.

Select the direction of rotation by pressing the “Direction of rotation” symbol.
If the symbol is white, the direction of rotation is clockwise; if the symbol is light blue, the direction of rotation is counterclockwise.

Pressing the M1 button and holding it in until the signal sounds stores the options set in menu option M1.
Follow the same procedure for setting M2 and M3, if desired.

Main Menu (ENDO Mode)



A6.4 Settings: Endodontic mode 1E to 5E

Factory settings:

Key	Ratio -/ Attachment	Speed	Torque	Direction of rotation	light
1E	1 : 1	2000 rpm	0.3 Ncm	autoreverse	on
2E	4 : 1	1200 rpm	1.2 Ncm	autoreverse	on
3E	16 : 1	250 rpm	4.8 Ncm	autoreverse	on
4E	16 : 1	450 rpm	4.8 Ncm	autoreverse	on
5E	16 : 1	450 rpm	4.8 Ncm	autoreverse	on

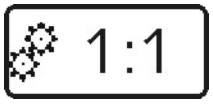
Options available for changing factory settings:

Ratio -/ Attachment
Speed selection
(up to 1,000 rpm: in increments of 50,
up to 2,000 rpm: in increments of 100)
Torque limit Ncm
Light on/off
Direction of rotation (clockwise, counter clockwise, auto-stop, auto-reverse, auto-reverse forward)

Menu 1E, 2E, 3E, 4E, 5E

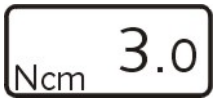
To Change Factory Presets:

Press the 1E button (when activated, the background color changes to light blue). Activate the gear ratio by pressing the “gear ratio” symbol. Select the appropriate increase or reduction ratio using the “+” or “-” symbol. Confirm the gear ratio by pressing the “gear ratio” symbol again.



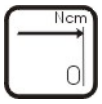
Activate the speed by pressing the “speed/rpm” symbol (when activated, the background color changes to light blue). Change the speed using the “+” or “-” symbol until the speed you want appears in the display. Confirm the speed by pressing the “speed/rpm” symbol again. The color changes to white.

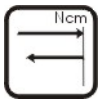
Select the torque by pressing the “Torque” symbol.
The light blue symbol shows the active status.
Select the appropriate torque value using the “+” or “-” symbol.
Confirm by pressing the “Torque Ncm” symbol again.

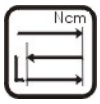


Select the fiber optic light by pressing the “Light” symbol. If the symbol is white, the light is on; if the symbol is light blue, the light is off.

Select the direction of rotation by pressing the "DIRECTION OF ROTATION" button until the button for the desired direction is displayed. The choices will be:

Forward, Reverse, Auto-Stop 

, Auto-Reverse 

, or Auto-Reverse Forward 

NOTE:
Autoreverse/forward mode: the maximum file torque level as defined by the file manufacturer will be set and displayed on the control unit. When the maximum torque is reached, an audible sound is heard, the file will stop and reverse automatically. After the preset time, the file will begin rotating clockwise again.

NOTE:
The torque value determines the point at which the direction of rotation will stop in Auto-Stop; and the point at which the direction of rotation will reverse when in Auto-Reverse and in Auto-Reverse Forward.

Confirm the direction of rotation by pressing and holding the "DIRECTION OF ROTATION" button.

Pressing the 1E button and holding it in until the signal sounds stores the options set in menu option 1E.
Follow the same procedure for setting 2E through 5E, if desired.

A7 Troubleshooting

1. The medical device heats up and gets excessively hot when running without a load:
   - Check if cooling air is coming from supply and motor tubing. Return unit to StarDental® if no air pressure. If coolant air is found, check unit to determine if it is on Demo mode.
2. The medical device has no lighting:
   - Light bulb defective – Replace. *(See 'Electric Motor and Attachments' Manual)*
   - Lighting control not activated - Check symbol  on the control box.
3. Attached straight and contra angle is blocked – error code:  **ERR 82**
   - Release blockage
4. Motor or attachment defects:
   - Incorrect pressure – Configure pressure in accordance with technical specifications.
   - No air or water supply - check on/off symbol  on the control box.

Note:
If necessary, insert a filter, water trap or air dryer.
Air requirements - see also: "Specifications".

A8 Specifications

Control Unit

Motor speed range (forward/reverse):	100 – 40,000	rpm
Output torque:	max. 3.0	Ncm
Motor current:	max. 5.7	A / Phase
Motor electronics:	2.000.2642	
Motor voltage:	max. 22	V AC
Operation mode:	Duty cycle (0.5 on/9 off)	min
Operation voltage of the bulb:	max. 3.2	V DC
Setting range for lamp voltage:	2.8 – 3.2	V DC
Power of the bulb:	2.5	W
Air outlet of the coupling (cooling air):	7 - 10	Nl/min
Weight:	.69	kg
Dimensions (Width/Height/Depth):	110 x 76 x 175	mm
Rotation:	clockwise/counterclockwise	
Sound level:	<65	dBa
Instrument connection:	ISO 3964	
Protection class:	Part of class I system	
Over voltage category:	II	
Pollution degree:	P2	
Device classification of applied part (EN 60601)	Type B	
Protection category:	IP20	

Power Supply

Rated voltage:	100 - 240	V AC
Rated frequency:	50 / 60	Hz
Power consumption:	120	VA
Operation mode:	Duty cycle (0.5 on/9 off)	min
Weight:	.57	kg
Dimensions (Width/Height/Depth):	73 x 41 x 175	mm
Protection class:	I	
Over voltage category:	II	
Pollution degree:	P2	

Media Supply Data

System pressure:	1.8 – 4.0 bar	26 – 58 psi
Cooling air outlet on motor coupling	7 – 10 Nl/min	
Air requirements:	Dry, free from oil, clean, uncontaminated according EN ISO 7494-2.	
Air filter:	50 µm	
Water quality:	Drinking Water	
pH-value:	7.2 – 7.8	
Water filtration provided by customer:	80 µm	

Ambient Conditions For Control Unit And Power Supply

Location:	Permitted in interior rooms
Ambient temperature:	10 °C – 40 °C / (50 °F - 104 °F)
Relative humidity:	30 - 75 %
Max. altitude:	3000 m

Storage And Transport Conditions For Control Unit And Power Supply

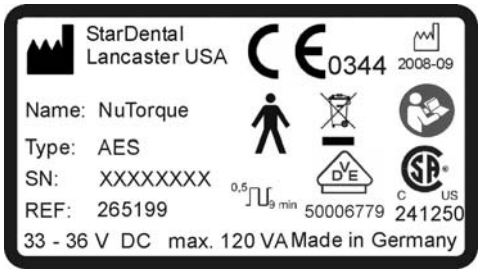
Danger when starting up the medical device after storage in very cold conditions. This can cause an operational failure of the medical device.

⚠ ***Very cold devices must be brought to a temperature of 20 °C to 25 °C (68 °F – 77 °F) before being started up.***

Ambient temperature:	-30 °C - 70 °C (-22 °F - 158 °F)
Relative humidity:	5 - 95 %
Air pressure:	700 - 1060 hPa (10.153 – 15.374 psi) (.7 – 1.06 bar)
Keep dry!	

We reserve the right to make technical modifications.

Rating plate



Symbols used please see chapter A1.1

A9 Information on Electromagnetic Compatibility

The medical device is suitable for use in the specified electromagnetic environment. The purchaser or user of the medical device should assure that it is used in an electromagnetic environment as described below:

Emission Test	**Compliance**	**Electromagnetic Environment**
Radio-Frequency Emissions CISPR 11	Group 1	The medical device uses RF energy only for its internal function. Therefore, the RF emission is very low and not likely to cause any interference in nearby electronic equipment.
Radio-Frequency Emissions CISPR 11	Class B	The medical device is for use in all facilities including residential facilities and facilities that are directly connected to a public power supply that also supplies residential buildings.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	

Immunity tests	**IEC 60601-test level**	**Conformance level**	**Electromagnetic environment - guidelines**
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact discharge ± 8 kV atmospheric discharge	± 6 kV contact discharge ± 8 kV atmospheric discharge	Floors should be made of wood or concrete or have ceramic tiles. When the floor is covered with synthetic material, the relative humidity must be at least 30%.
Fast transient electrical disturbances/ Bursts IEC 61000-4-4	± 2 kV for power lines ± 1 kV for signal lines	± 2 kV for power lines ± 1 kV for signal lines	The quality of the supply voltage should correspond to that of a typical business or hospital environment .
Surges IEC 61000-4-5	± 1 kV Push-pull voltage ± 2 kV common mode voltage	± 1 kV Push-pull voltage ± 2 kV common mode voltage	The quality of the supply voltage should correspond to that of a typical business or hospital environment.
Voltage interruptions, short-term interruptions and fluctuations of the supply voltage IEC 61000-4-11	<5 % U_T for 0,5 periods 40 % U_T for 5 periods 70 % U_T for 25 periods <5 % U_T for 250 periods	<5 % U_T for 0,5 periods 40 % U_T for 5 periods 70 % U_T for 25 periods <5 % U_T for 250 periods	The quality of the supply voltage should correspond to that of a typical business or hospital environment. When the user of the medical device needs continued operation even when the power supply is interrupted, it is recommended to supply the medical device from an uninterrupted power supply or a battery.
Magnetic field with a supply frequency (50/60 Hz) per IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial hospital.
Conducted HF disturbances IEC 61000-4-6	3 V eff 150 kHz to 80 MHz outside of the ISM bands[a]	10 V eff	Portable and mobile radio devices should not be used closer to the medical device (including the electrical lines) than the recommenced safe distance calculated using the equation for the transmission frequency. Recommended safe distance: $d = 1.17 \sqrt{P}$ $d = 0,35 \sqrt{P}$ for 80 MHz to 800 MHz $d = 0,70 \sqrt{P}$ for 800 MHz to 2.5 GHz with P as the maximum rated power of the transmitter in Watts (W) according to the transmitter manufacturer, and d as the recommended safe distance in meters (m). [b]The field strength of stationary radio transmitters should be less than the conformance level at all frequencies in an on-site check[c]. [d]Disturbances are possible close to devices that have the following symbol.
Radiated HF disturbances IEC 61000-4-3	3 V/m 80 MHz to 2,5 GHz	10 V/m	

NOTE: U_T is the alternating mains voltage before the test level is used.

NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2: These guidelines may not be applicable in every case. The spread of electromagnetic waves is absorbed and reflected by buildings, objects and people.

[a] The ISM frequency bands (for industrial, scientific and medical applications) between 150 kHz and 80 MHz are 6.765 MHz to 6.795 MHz; 13.553 MHz to 13.567 MHz; 26.957 MHZ to 27.283 MHz and 40.66 MHz to 40.70 MHz.

[b] The conformance levels in the ISM frequency bands between 150 kHz and 80 MHz and the frequency range of 80 MHz and 2.5 GHz are intended to reduce the probability that mobile and portable communications equipment will produce disturbances when they are unintentionally brought near the patient. For this reason, the additional factor of 10/3 is used when calculating the recommended safe distances within these frequency ranges.

[c] The field strength of stationary transmitters such as base stations of mobile telephones and land mobile radio devices, amateur radio stations, AM and FM, radio and television broadcasters cannot be theoretically predetermined. To determine the electromagnetic environment of stationary transmitters, a study of the location should be considered. When the measured field strength at the site where the medical device is used exceeds the above conformance level, the medical device should be monitored to demonstrate proper function. When unusual performance features are observed, additional measures may be necessary such as realigning or moving the medical device.

[d] Within the frequency range of 150 kHz to 80 MHz, the field strength should be less than 3V eff V/m.

Recommended safe distance between portable and mobile HF telecommunications equipment and the medical device			
The medical device is intended for use in an electromagnetic environment in which HF disturbances are controlled. The customer or the user of the medical device can help prevent electromagnetic disturbances by maintaining the minimum distance between portable and mobile HF telecommunications devices (transmitters) and the medical device depending on the output of the communication device as indicated below.			
Rated power of the transmitter in W	Safe distance depending on the transmission frequency:		
	150 kHz to 80 MHz d=0,35 √P	80 MHz to 800 MHz d=0,35 √P	800 MHz to 2,5 GHz d=0,70 √P
0,01	0,04	0,04	0,07
0,1	0,11	0,11	0,22
1	0,35	0,35	0,70
10	1,11	1,11	2,21
100	3,50	3,50	7,00
For transmitters whose maximum rated power is not in the above table, the recommended safe distance d in meters (m) can be calculated using the equation for the respective gap, where P is the maximum rated power of the transmitter in Watts (W) according to the manufacturer's information. NOTE: At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2: These guidelines may not be applicable in every case. The spread of electromagnetic waves is absorbed and reflected by buildings, objects and people.			

A10 Replacement Parts

Description	StarDental Part Number
NuTorque™ Programmable Electric System	265199
NuTorque Motor	265200
Power Supply with AC Adapter	265202
Control Box	265203
Motor O-Rings (Package of 5)	265228
Motor Bulb	265205
1:1 Electric Friction Grip Attachment with Autochuck	263981
1:5 Electric Friction Grip Attachment with Autochuck	263982
1:5 Mini Electric Friction Grip Attachment with Autochuck	263983
1:1 Electric Attachment with AutoLatch	263984
16:1 Electric Attachment with AutoLatch	263985
1:1 Electric Straight Attachment	263986
Lubricant Tip	265141
DentaLube® II	262539
NuTorque Mounting Kit	264170
NuTorque Electric Handpiece Lubricant	265138

A11 Important Notice About Returning Product To The DentalEZ Group

A11.1 Return Procedure

Anyone wishing to return any DentalEZ Group product to a DentalEZ facility MUST obtain the proper RETURN AUTHORIZATION NUMBER from the Customer Service Department.

The RA Number must appear clearly marked on both the outside and inside of the returned product carton. When requesting a return authorization number you will be asked to provide the following information:

- Product Name, Model Number or Part Number
- Serial Number of Product
- Dealer Return Purchase Order Number
- Reason For Return
- Copy of Invoice Showing Purchase

Items will be evaluated. Return Authorization Number is not a guarantee for credit. Your cooperation with this procedure will help us expedite processing of any returns. To Obtain A Return Authorization Number, Call **1-866-DTE-INFO**

A11.2 Warranty

Limited Warranty

DentalEZ® warrants the **NuTorque™ Programmable Electric System** to be free of defects in material and workmanship, under normal usage, under the following terms:

StarDental® Products:	**Warranty Period*:**
Control Box, Motor, Motor Tubing, Power Supply and Cord	3 Years from date of purchase
Attachments (1:1 AL, 1:1 AC, 16:1 AL, 1:5 Miniature Head AC, 1:5 Standard Head AC and 1:1 Straight)	2 Years from date of purchase

Please note the following additional terms of our warranty and return policy:

Warranties cover manufacturing defects only and do not cover defects resulting from abuse, improper handling, cleaning, care or maintenance, normal wear and tear or non-observance of operating, maintenance or installation instructions. **Failure to use authorized parts or an authorized repair facility voids this warranty.**

- **Liability is limited to repair or replacement of the defective product at our sole discretion. All other liabilities, in particular liability for damages, including, without limitation, consequential or incidental damages are excluded.**

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NO EMPLOYEE, REPRESENTATIVE OR DEALER IS AUTHORIZED TO CHANGE THIS WARRANTY IN ANY WAY OR TO GRANT ANY OTHER WARRANTY.

WARRANTY REPAIRS: Parts repaired or replaced on a product that is in warranty will be warranted for the duration of that product's original warranty.

NON-WARRANTY REPAIRS: The warranty on parts either repaired or replaced on an out-of-warranty product will cover the repaired part only and will be for the time frame of a new parts warranty period.

PRODUCT RETURN: Opened products or product returns more than a year old cannot be returned for credit. There will be a 15% ($25.00 minimum) restocking charge on all items authorized for return.

* Provided conditions in warranty are met.

For new products, manuals and technical information, call 1-866-DTE-INFO
or visit our web site at: *www.dentalez.com*

DentalEZ
INTEGRATED SOLUTIONS

StarDental® Instrument Solutions

EC REP

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Lancaster, PA 17601 U.S.A.
Printed in Germany

065197 E (Date Of Issue: 2015-03-25)

CE 0344