Surgic Pro

Surgic Pro+

COMPLETE SET WITH X-DSG20L

OPTIC MODEL : **Surgic Pro+ OPT-D (230V)**
ORDER CODE : **Y1002096**

Contents :

- Control Unit with data storage facility
- SGL70M LED Micromotor
- FC-78 Foot Control
- X-DSG20L Optic Handpiece (20:1 Reduction)
- Irrigation tube (5 pcs.) and other accessories

Surgic Pro

COMPLETE SET WITH X-SG20L

OPTIC MODEL : **Surgic Pro OPT (230V)**
ORDER CODE : **Y1001933**

Contents :

- Control Unit without data storage facility
- SGL70M LED Micromotor
- FC-78 Foot Control
- X-SG20L Optic Handpiece (20:1 Reduction)
- Irrigation tube (5 pcs.) and other accessories

COMPLETE SET WITH SG20

NON-OPTIC MODEL : **Surgic Pro NON-OPT (230V)**
ORDER CODE : **Y1001934**

Contents :

- Control Unit without data storage facility
- SG70M Non-Optic Micromotor
- FC-78 Foot Control
- SG20 Handpiece (20:1 Reduction)
- Irrigation tube (5 pcs.) and other accessories

Specifications :

Control Unit with AHC		Micromotor		Foot Control
• Power Supply	: 230V 50/60 Hz	1.6. Torque	: 5-80 Ncm	1.9. • Foot Control Functions : Program Button, Speed Control Pedal Coolant Solution Flow Volume Button Forward / Reverse Button
1.12. • Max. Pump Output	: 75 mL/min	1.4. Motor Speed	: 200~40,000 min-1	
1.1., 1.2. • Programs	: 8 Programs / Implant Systems	• Light Power (LED Micromotor)	: over 32,000 LUX 1.10.	
• Dimensions	: W268 × D220 × H100 mm			
1.14. • USB I/F	: 1 port (Surgic Pro+ Only)			
• Built in Memory	: 100 min (Surgic Pro+ Only)			

CONTROL UNIT

Control Unit Incorporating an Array of Sophisticated Functions

Compact body and large LCD display

The compact control unit features a sophisticated design including a large, high visibility backlight LCD panel and intuitive control buttons to contribute a safer and user friendly working environment.

Advanced irrigation pump

The pump allows easy set-up of irrigation tubes and is extremely quiet during operation.

1.1.

Memorises eight different implant systems

1.2.

The Surgic Pro memorises eight different implant systems and a total of 64 programs. The programmable parameters are gear ratio, speed, rotation direction, torque limit, coolant solution volume and illumination intensity. This is extremely useful when using two or more implant brands. Once you complete programming, simply push a button to call procedures up.

8 Steps × **8** Systems = **64** Programs

Six parameters can be set for each program

Data log function

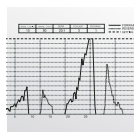
The Surgic Pro's data log function can record and store speed, torque values, and other patient treatment data. Such efficient data management helps ensure safe clinical practices.

* Maximum internal memory capacity is 100 minutes

Data management
Treatment data can be easily accessed and downloaded using a USB stick. Files can be transferred and added to patient records.

* USB memory stick not included

1.14.

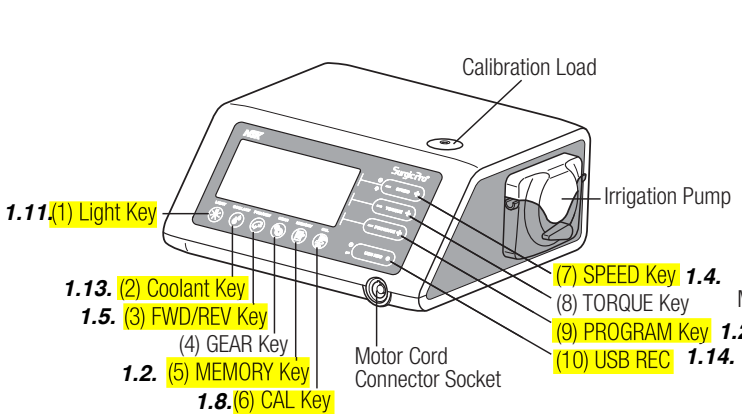


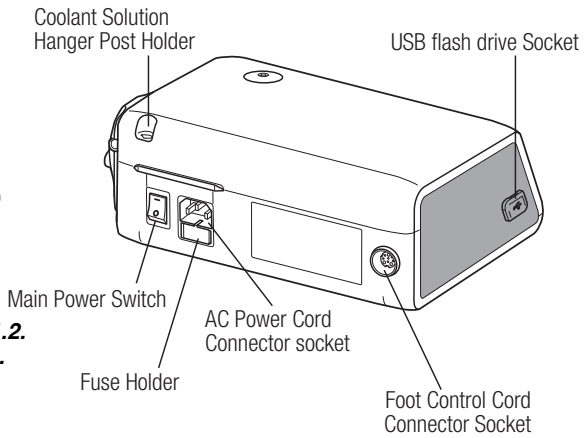
Easy treatment data handling
No specific software is required to display CSV or bitmap files.

* File formats: csv or bmp

English

3. Control Unit and Foot Control





*The item which does not have number is explained in context.

3-1 Keys on the Control Unit

1.11. (1) Light Key

Select the light level. (OFF -> LOW->HIGH) Repeat press Key to cycle through light levels. (Default:HIGH)

1.13. (2) Coolant Key

Use to select 6 levels of coolant solution flow from 0 to 5, repeat press Key to cycle through coolant flow levels.

1.5. (3) FWD/REV Key

Use to select the direction of rotation. Press this Key once to change the rotational direction. (Once in Reverse the Control Unit audibly warns with a 'beep')

(4) GEAR Key

Use to set gear ratio of the attached handpiece before use. Repeat press this Key until the LCD display indicates the correct gear ratio of the handpiece.

1.2. (5) MEMORY Key

Use to memorize the program parameters set by the operator. Press & hold this Key for approx. 1 second to memorize parameters. When beep sounds, the new program parameters have been memorized.

1.8. (6) CAL Key

Use to activate calibration cycle of the handpiece before use.

1.4. (7) SPEED Key (- +)

Use to set the Micromotor speed. Press [+] Key to increase, and [-] Key to decrease speed. When keep pushing the key to change the speed quickly. (When the upper and lower speed limits are reached an audible alarm 'beep' is sounded).

(8) TORQUE Key (- +)

Use to set the torque range. Press [+] Key to increase and [-] Key to decrease torque range. When keep pushing the key to change the torque range quickly. (When the upper and lower torque range limits are reached an audible alarm 'beep' is sounded). The torque range setting should be selected according to the attached handpiece gear ratio.

1.2. (9) PROGRAM Key (- +)

Select the available programs. (1 to 8) Press [+] Key to ascend and [-] Key to descend program number. You will find all program numbers sequentially by pressing Keys.

1.14. (10) USB REC (Surgic Pro+ ONLY)

Press this Key to record the Surgic Pro series operation to USB flash drive.
A short push will save data being memorized to USB flash drive. A long push (about 2 seconds) will erase data saved on the control unit memory.

Surgic Pro

1.3.

Micromotor

Optic / Non-Optic

Brighter and Lighter – That's Clear Evolution
Surgic Pro micromotor with LED

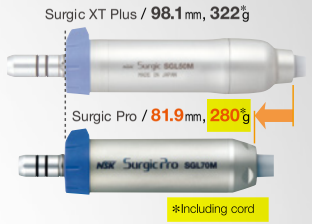
- Powerful torque (up to 80 Ncm) *1.6.*
- Wide speed range (200 to 40,000 min^{-1}) *1.4.*
- High torque accuracy
- Light and small micromotor
- LED illumination (over 32,000 LUX) *1.10*
- Excellent durability
- Autoclavable, thermo-disinfectable and maintenance free brushless design *1.3.*

135°C *1.7.*

LED

Shorter and Lighter than the conventional optic surgical micromotor

This new surgical micromotor is 16.2 mm shorter and weighs 42 g less compared to the conventional optic surgical micromotor.



1.3.

LED illumination helps the clinicians to focus more easily on the treatment area and contributes to precise surgery

Clearer : LEDs generate natural daylight quality light which gives clearer vision when compared to halogen light.

Durable : LED light sources are longer lasting and more durable than halogen bulbs.

1.3.

Optic MODEL: **SGL70M** ORDER CODE: **E1023**

Non-Optic MODEL: **SG70M** ORDER CODE: **E1025**

• Solid titanium body • with 2 m cord

11. Sterilization

135°C This handpiece and motor can be autoclavable up to Max.135°C. ***1.7.***

- Autoclave sterilization is recommended.
- Autoclave sterilization is required for the first time use and after each patient as noted below.

CAUTION

Only Items Specified below can be autoclaved.

- Handpiece
- Internal Irrigation Nozzle
- Protection Plug
- Micromotor with Motor Cord
- Tube Holder
- Calibration Bur
- Handpiece Stand
- Nozzle Holder

***Autoclaving**

1) Remove blood and debris from the handpiece and motor.
2) Clean inside the handpiece; by using the spray lubricant.
3) Place those in autoclave pouch (not included in the package) and seal it.
4) Autoclavable up to max. 135˚C.
   ex.) Autoclave for 20 min. at 121°C, or 3 min. at 134°C.
5) Keep the handpiece in the autoclave pouch to keep it clean until you use it.
   * EN13060/EN ISO17665-1 recommends autoclaving for 3 minutes (minimum holding time) at 134°C or 15 minutes(minimum holding time) at 121°C.
   NSK recommends Class B sterilization.

CAUTION

- Clean and lubricate the handpiece before autoclaving. Autoclaving a handpiece stained with blood or debris could cause damage to the handpiece.
- Do not lubricate the micromotor.
- Do not disconnect the motor cord from the micromotor.
- The Irrigation tube is a single use and cannot be autoclaved.
- We do not recommend you to sterilize on plasma sterilization or EOG sterilization.

NOTICE
- It is possible to choose programs that have been skipped using the Control Unit.

6-2 IMPLANT SYSTEM

Surgic Pro Series can memorize 8 different IMPLANT SYSTEMs. Also, you can program 8 steps in one SYSTEM number which you use. When you set the program, refer to values which Implant manufacture recommends.

When programming each IMPLANT SYSTEM, the SYSTEM number may be changed by pressing the PROGRAM (+) and (-) Key simultaneously.

1.8.

6-3 Calibration Function

The rotation resistance of a handpiece depends on the handpiece model, condition, and internal wear of the handpiece gears. This Control Unit incorporates an automatic function to recognize the level of the resistance of the attached handpiece and motor.

NOTICE
- This equipment is optimized to obtain the highest calibration accuracy at a gear ratio of 20:1. For calibration USE ONLY the 20:1 reduction handpiece listed on “12. Contra Angle Handpieces and Accessories”.
- Micro saw handpiece should not be calibrated.
- Calibration should be performed only on NSK handpiece.

6-3-1 Calibration preparation

1) Attach Gear Ratio (Reduction Ratio) 20:1 handpiece to the motor.
2) Attach the Calibration Bur to the handpiece.
3) Press the [CAL] key for about 2 seconds. There will be a beep and the display will switch to Calibration Mode.

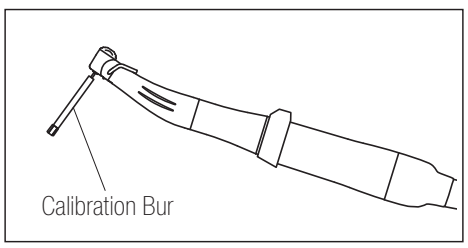
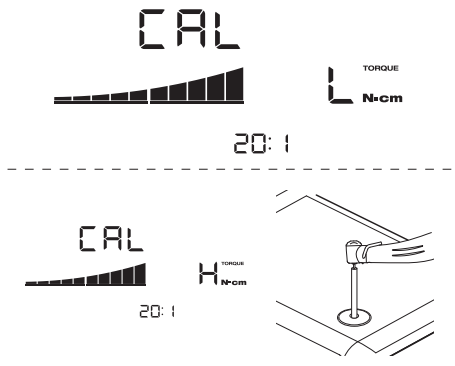


Fig.14

6-3-2 Conducting Calibration

CAUTION
- Do not apply load during no-load calibration. If load is applied, “FAIL” will appear on the LCD, and calibration will stop.

1) No-load calibration ··· torque display “L”
   Hold the motor in your hand and make sure that “L” is displayed on the torque display. Push [CAL] key without applying load. The calibration bur will begin to rotate. Calibration is complete when there is a beep and “donE” appears on the display.
2) Load calibration···torque display “H”
   Make sure “H” is displayed on the torque display, plug the calibration bur into the Calibration Load. Push [CAL] key (The calibration is done while applying Calibration Load, so securely grasp the handpiece. The calibration bur will begin to rotate. Calibration is complete when there is a beep and “donE” appears on the display).



3) Speed calibration
   Remove the bur from the Calibration Load then press the [CAL] key (Calibration bur should not touch anywhere). The bur will begin to rotate at a slow speed. After rotating slowly for 8 seconds, the bur will rotate at high speed for 8 seconds. There will a beep when calibration is complete. Calibration mode will finish automatically.

SURGICAL HANDPIECES CONTRA-ANGLE (INCREASING)

X-SG93L

OPTIC MODEL : **X-SG93L** ORDER CODE : **C1004**
NON-OPTIC MODEL : **X-SG93** ORDER CODE : **C1007**

- 1:3 Increasing
- Max Speed : 120,000 min^{-1}
- Titanium Body with Scratch Resistant DURACOAT
- Cellular Glass Optics (X-SG93L)
- Clean Head System
- Push Button Chuck
- External cooling
- For FG burs (φ1.6)

Z-SG45L

OPTIC MODEL : **Z-SG45L** ORDER CODE : **C1107**
NON-OPTIC MODEL : **Z-SG45** ORDER CODE : **C1108**

- 1:3 Increasing
- Max. Speed : 120,000 min^{-1}
- Titanium Body with Scratch Resistant DURAGRIP
- Cellular Glass Optics (Z-SG45L)
- Clean Head System
- Push Button Chuck
- External cooling
- For FG burs (φ1.6, 20-25 mm)
- Ceramic Bearings
- Anti Heat System
- DLC Coating

SURGICAL HANDPIECES CONTRA-ANGLE (DIRECT DRIVE)

X-SG25L

OPTIC MODEL : **X-SG25L** ORDER CODE : **C1011**

- 1:1 Direct Drive
- Max. Speed : 40,000 min^{-1}
- Titanium Body with Scratch Resistant DURACOAT
- Cellular Glass Optics
- Clean Head System
- Push Button Chuck
- External cooling
- For CA burs (φ2.35)

X-SG65L *2.*

OPTIC MODEL : **X-SG65L** ORDER CODE : **H1009**
NON-OPTIC MODEL : **X-SG65** ORDER CODE : **H1038**

2.3. 1:1 Direct Drive Max Speed : 40,000 min^{-1}
2.1. Titanium Body with Scratch Resistant DURACOAT
2.2. Cellular Glass Optics Clean Head System
2.4. External cooling For HP burs (φ2.35) *2.5.*

135°C *2.6.*

X-DSG20L

OPTIC MODEL : **X-DSG20L** ORDER CODE : **C1068**

NON-OPTIC MODEL : **X-DSG20** ORDER CODE : **C1067**

- 20:1 Reduction
- Max. Torque : 80 Ncm
- Max Speed : 2,000 min^{-1}
- Titanium Body with Scratch Resistant DURACOAT
- Cellular Glass Optics (X-DSG20L)
- Double Sealing System
- Push Button Chuck
- External and internal cooling (Kirschner/Meyer)

X-SG20L *3.*

OPTIC MODEL : **X-SG20L** ORDER CODE : **C1003**

3.2.
- 20:1 Reduction
- Max. Torque : 80 Ncm
- Max. Speed : 2,000 min^{-1}
- Titanium Body with Scratch Resistant DURACOAT

3.1.
- Cellular Glass Optics
- Double Sealing System

3.7.
- Push Button Chuck
- External and internal cooling (Kirschner/Meyer)

3.3.

SG20

NON-OPTIC MODEL : **SG20** ORDER CODE : **C1010**

- 20:1 Reduction
- Max Torque : 80 Ncm
- Max Speed : 2,000 min^{-1}
- Stainless Steel Body
- Double Sealing System
- Push Button Chuck
- External and internal cooling (Kirschner/Meyer)

DURAGRIP — Washable in thermodisinfector — Autoclavable up to 135°C — Can be use up to 80 Ncm

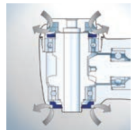
SURGICAL HANDPIECES

Dismantable Contra-Angle Handling up to 80 Ncm of Torque

The Ti-Max X-DSG20 series can be easily disassembled for internal cleaning.

Easy to disassemble and clean *3.4.*

The DSG20 contra-angle can be disassembled with a simple twist for easy internal cleaning. NSK's unique locking mechanism prevents accidental disassembly during operation.



Double sealing system

NSK's unique double sealing system prevents blood and other contaminants from entering the instrument head to ensure longevity of the instruments.

10. Specifications

3.5.

Model	X-SG20L	X-SG25L	X-SG93L	X-SG93	SG20
Max. Rotation Speed (Motor)	40,000min^{-1}				
Max. Rotation Speed (Handpiece)	2,000min^{-1}	40,000min^{-1}	120,000min^{-1}		2,000min^{-1}
Gear Ratio	20:1 Reduction	1:1 Direct Drive	1:3 Increasing		20:1 Reduction
Bur/Drill Type	ISO 1797-1 (EN ISO 1797-1) Type1 Ø2.35mm Surgical Bur/Drilll	ISO 1797-1 (EN ISO 1797-1) Type1 Ø2.35mm CA Bur	ISO 1797-1 (EN ISO 1797-1) Type3 Ø1.59-1.60mm Standard FG Bur		ISO 1797-1 (EN ISO 1797-1) Type1 Ø2.35mm Surgical Bur/Drill
Chuck Length	11.6mm				
Max. Bur/Drill Length	36mm	22.5mm	25mm		36mm
Max. Working Part Diameter	Ø4.7mm	Ø4.0mm	Ø2.0mm		Ø4.7mm
Optic	Glass Rod			-	
Water Spray Type	External, Internal*	External			External, Internal*
Use Environment	Temperature: 10 - 40°C, Humidity: 30 - 75% (No Condensation)				
Transportation and Store Environment	Temperature -10 - 50°C, Humidity: 10 - 85%, Atmospheric Pressure: 500 - 1,060hPa				

22 *Only for a drill with internal irrigation system.

iCare & iCare plus		12 months
Vario Surg 3		12 months
Clinical Micromotors	All products	24 months
Couplings	LED & Non Optic	12 months (5 years on the internal LED)
Endodontic products	All products	12 months
FX & EX Series	Low Speed Handpieces & Heads	12 months
iMax S		12 months
Laboratory products	All products	12 months
Maintenance products	All relevant products	12 months
Oral Hygiene products	All products / Excluding Scaler Tips	12 months
Pana Max Plus Series	High Speed Handpieces	12 months
Pico	High Speed Handpieces	12 months
Implant Contra-angles	S-Max	18 months
	Ti-Max	24 months
	Surgical Straights 1:1	24 months

5.

iClave plus		24 months
Nano Series	Low Speed Handpieces	36 months
S Max Series	High & Low Speed Handpieces	24 months
Surgic Pro	Excluding Handpieces	24 months
TiMax Z Series	High & Low Speed Handpieces	36 months
6 Month Additional warranty on NSK instruments for all iCare and iClave plus users		

5.