



Handpiece Maintenance System

iCare



OPERATION
MANUAL

Thank you for purchasing the NSK iCare. Please read this Operation Manual carefully before use to become familiar with operation instructions and care & maintenance. Keep this Operation Manual for future reference.

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1 Intended Use

Maintenance (lubrication and internal cleaning) of handpieces.

2 Precautions for handling and operation

- Please read these precautions carefully and use only as intended or instructed.
- Safety instructions are intended to avoid potential hazards that could result in personal injury or damage to the device. Safety instructions are classified as follows in accordance with the seriousness of the risk.

Class	Degree of Risk
DANGER	Hazard that could result in personal death or serious injury if the safety instructions are not correctly followed.
WARNING	Hazard that could result in serious injury or damage to the device if the safety instructions are not correctly followed.
CAUTION	Hazard that could result in light or moderate injury or damage to the device if the safety instructions are not correctly followed.
NOTICE	General product specification information highlighted to avoid product malfunction and performance reduction.

DANGER
<ul style="list-style-type: none"> • Do not install or use this product or fill it with Maintenance Oil in a room where explosion or fire is a risk. • Do not install or use the product in direct sunlight or where the temperature exceeds 40°C. • Provide adequate ventilation periodically. If odor is a concern, ventilate immediately.
WARNING
<ul style="list-style-type: none"> • Do not handle the AC power cord with wet hands. Wet hand contact with electricity may result in an electric shock. • If the product overheats or smells of burning, immediately turn off the power and disconnect the main power plug. Contact your Authorized NSK Dealer. • TO PREVENT ELECTRIC SHOCK, use a main electrical outlet that is earthed. • Be careful not to get water or liquid disinfectant or maintenance oil on the Unit. This could cause short circuits and lead to fire and/or electric shock. • Excessively turning the Main Power Switch ON and OFF may blow a fuse.

- When installing the product, provide space of approximately 10cm around the product for easy access to the inlet and the Power Cord.
- For safety, install the Unit in a place where the AC power cord can be easily removed.

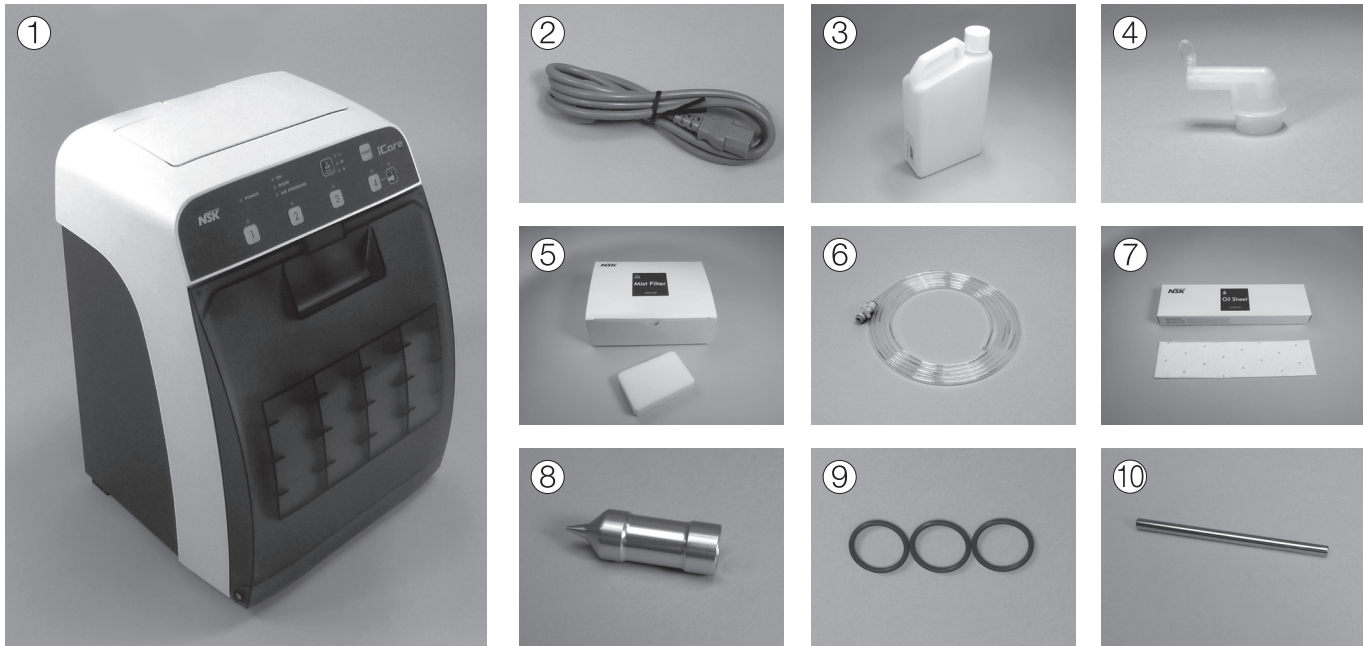
⚠ CAUTION

- Read this Operation Manual before use to fully understand the product functions and file for future reference.
- Do not use iCare to lubricate air scalers (except for NSK Ti-Max S970 series) and Phatelus air motors. The iCare lubricating system is not designed to lubricate those particular products. Maintain air scalers and Phatelus air motors as described in the operation manual for each product.
- If blood infiltrates inside a handpiece, iCare may not totally clean the internal handpiece components, and internal blood coagulation may cause product failure. In this case, NSK recommends to immediately lubricate those handpieces with PANA SPRAY Plus / PANA SPRAY.
- Autoclave handpieces AFTER lubricating with this product.
- Place a collector such as a tray under the Unit.
- After use, turn off the Power Switch and shut off the air supply (Air Compressor).
- Drain water from the Air Compressor and Air Filter at least once a week as required. Moisture from the tank could mix with the Maintenance Oil and defeat the purpose of this device.
- Remove the Air Tube and the AC power cord from the Unit if the Unit is not to be used for a long time.
- Do not store the Maintenance Oil in contact with halogen, strong acid, alkali, and oxidizing substance or in the same place as these substances.
- Use only consumable parts such as maintenance oil, and accessories such as an AC power cord specified by NSK. Other than what we specify may cause product failure due to insufficient lubrication.
- This device is for indoor use only.
- Keep the Unit on a level surface.
- Do not attempt to disassemble the product or tamper with the mechanism except as recommended by NSK in this Operation Manual.
- Do not allow any impact on to the product. Do not drop the product.
- Should the product function abnormally, cease operation immediately and contact your Authorized NSK Dealer.
- Perform regular function and maintenance checks.
- If the product is not used for a long period check it is functioning correctly before use.
- Installation and use of this product requires special precautions regarding EMC according to the EMC information.
- Portable and mobile RF communications equipment can affect Medical Electrical equipment. Do not use RF equipment near the product.
- The use of ACCESSORIES such as cables, other than those specified by the manufacturer, with the exception of cables sold by the manufacturer of this product as replacement parts for internal components, may result in increased EMISSIONS or decreased IMMUNITY of this product.
- This product should not be used adjacent to, or stacked with, other equipment. If adjacent or stacked use is necessary, this product should be observed to verify normal operation in the configuration in which it will be used.
- The system may present a possibility of malfunction when used in the presence of an electromagnetic interference wave. Do not install the system in the vicinity of any device which emits magnetic waves. Turn off the Main Power Switch of the system as an ultrasonic oscillation device or an electrode knife is located close to the vicinity of use.
- U.S. Federal law restricts this device to sale by or on the order of a licensed physician.

NOTICE

- No special training is required for this device.

3 Package Contents

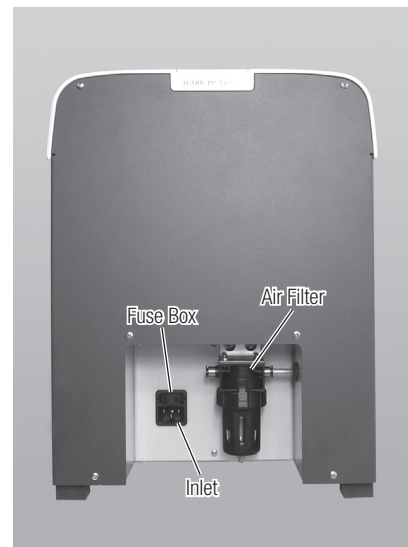
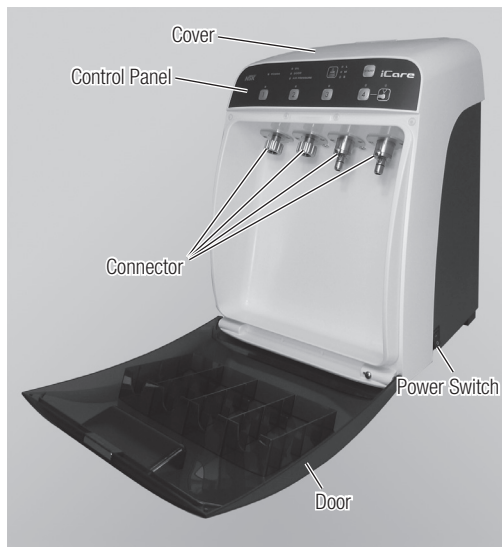


English

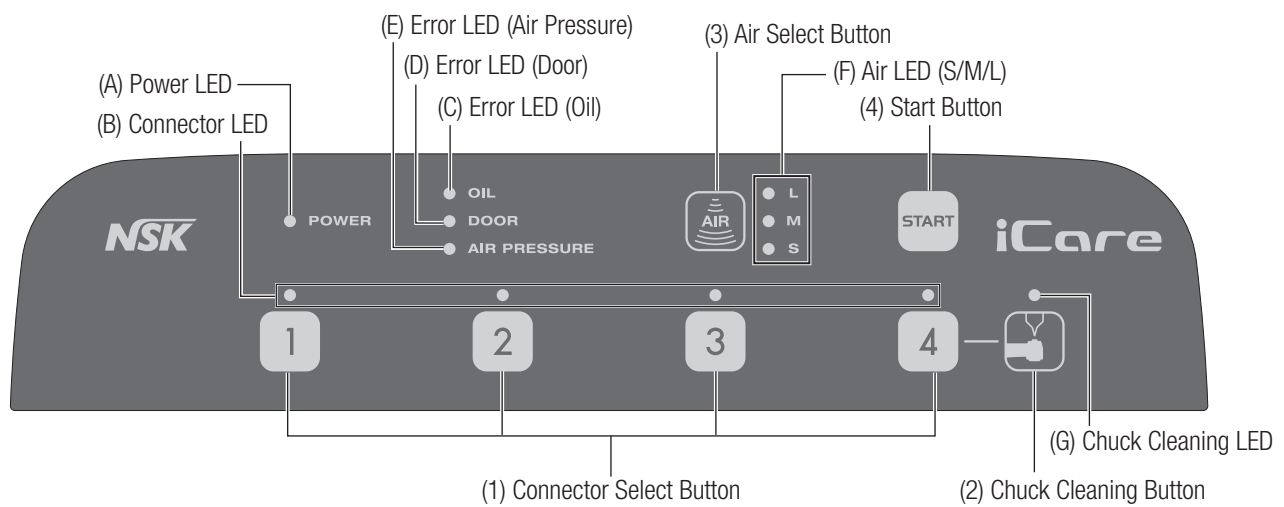
No.	Part Name	Quantity
1	iCare Unit	1
2	AC Power cord	1
3	Maintenance Oil for iCare	1
4	Oil Filling Nozzle	1
5	Mist Filter Set	1set (Pack of 12)
6	Air Tube	1
7	Oil Absorber Sheet	1set (Pack of 10)
8	Chuck Cleaning Nozzle	1
9	O-ring Set	1set (Pack of 3)
10	Test Bur	1

4 Part names

iCare Unit



Control Panel



4-1 Buttons on Control Panel

(1) Connector Select Button

Use this Button when selecting a connector to use.

(2) Chuck Cleaning Button

Use this Button when selecting Chuck Cleaning Mode.

(3) Air Select Button

Use this Button when selecting Air Mode.

(4) Start Button

Use this Button when starting lubrication.

4-2 Display part on Control Panel

(A) Power LED

This LED lights up when power is ON (I side).

(B) Connector LED

This LED lights up when the connector is selected. This LED blinks during lubrication.

(C) Error LED (Oil)

See "11. Error LED".

(D) Error LED (Door)

See "11. Error LED".

(E) Error LED (Air Pressure)

See "11. Error LED".

(F) Air LED (S/M/L)

The selected Air mode lights up.

(G) Chuck Cleaning LED

This LED lights up when the Chuck Cleaning is selected. This LED blinks during cleaning.

5 Checking and how to connect each part

5-1 Connecting Air Tube

- 1) Securely insert the Air Tube into the Air Filter Connector at the back of the Unit (Fig. 1).
- 2) Connect the Y-type One-Touch Connector to the air source (Air Compressor) as shown in Fig. 2.
- 3) Push and pull the Air Tube to be sure that it is firmly connected.

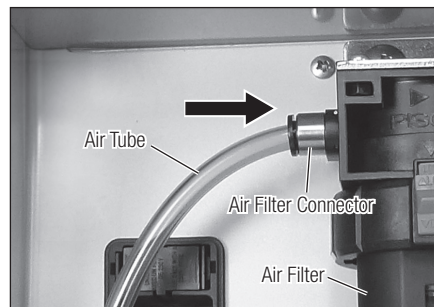


Fig. 1

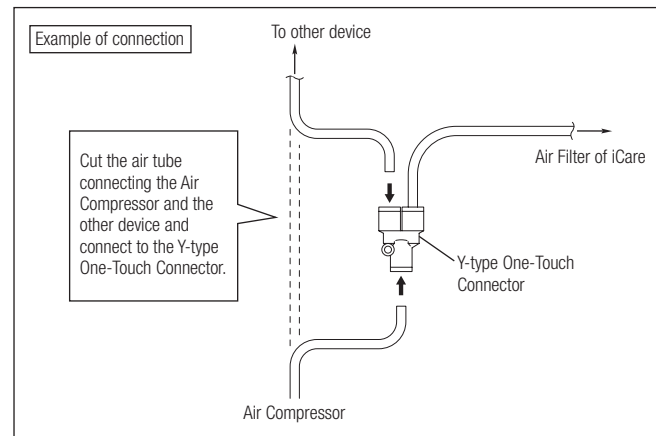


Fig. 2

CAUTION

- The optimum air pressure for this product is between 0.5 - 0.6MPa (5 - 6kgf/cm²). The product does not operate if the air pressure is set less than 0.5MPa (5kgf/cm²).
- Do not twist or bend the Air Tube.
- If you have difficulty connecting the Air Tube, contact your Authorized NSK Dealer.
- Drain water from the Air Compressor and Air Filter at least once a week as required. Moisture from the tank could mix with the Maintenance Oil.

5-2 Filling with Maintenance Oil

- CAUTION** ⚠
- Before filling with Maintenance Oil, be sure that the Drain Screw on the underside of the Unit is tightened securely. Oil may leak if the screw is loose (Fig. 3).

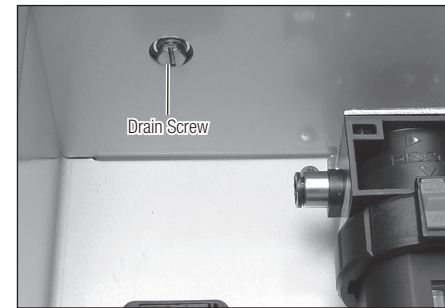


Fig. 3

- 1) Open the Cover (Fig. 4).
- 2) Remove the Oil Fill Cap by turning it counter clockwise (Fig. 5).
- 3) Remove the cap for Maintenance Oil and install the Oil Filling Nozzle (Fig. 6).
- 4) Fill with Maintenance Oil slowly (Fig. 7).
- 5) When filling is complete, securely attach the Oil Fill Cap by turning it clockwise.



Fig. 4



Fig. 5



Fig. 6

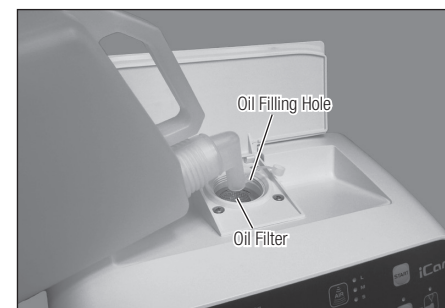


Fig. 7

- DANGER** ⚠
- Do not fill Maintenance Oil in a room where there is a risk of explosion or fire.

- CAUTION** ⚠
- Do not overfill Maintenance Oil in order to avoid accidental oil leaks. Pour slowly.
 - Use only the NSK Maintenance Oil for iCare. Use of oil other than NSK Maintenance Oil for iCare may cause a failure and result in insufficient product lubrication.

5-3 Mist Filter

Attach Mist Filters to the inside of the Door (Fig. 8).

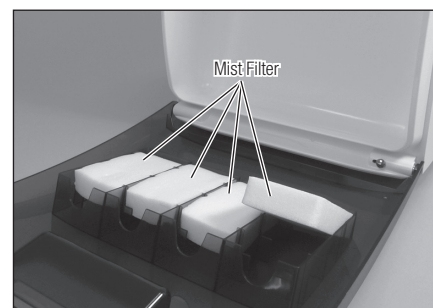


Fig. 8

5-4 Oil Absorber Sheet

Place an Oil Absorber Sheet at the bottom of the lubricating chamber of the Unit. The Oil Absorber Sheet is designed to absorb residual Maintenance oil after lubrication (Fig. 9).



Fig. 9

5-5 Connecting AC Power Cord

- 1) Turn OFF (O side) the Power Switch before connecting the AC power cord.
- 2) Insert the AC power cord plug so that it fits the Connector Socket at the rear of the Unit (Fig. 10).
- 3) Plug the AC power cord into a wall outlet.

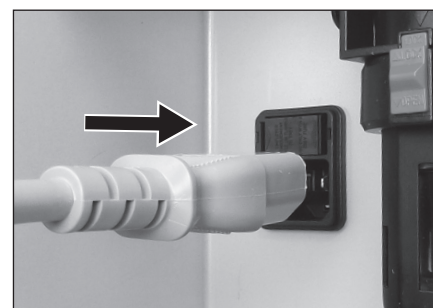


Fig. 10

- CAUTION**  • Hold the plug when pulling out the AC power cord. If holding the cord part, the cord may be damaged.
- Be sure that the device has completely stopped before pulling out the AC power cord.

5-6 Setting of sound volume

"High" and "Low" sound volume can be switched by repeating the following procedure.
Close the Door then turn ON the Power Switch (I side) while pressing the Air Select Button.

6 Oil priming

Before using your NSK iCare for the first time, and every time after the oil tank has been completely emptied, Follow these 8 steps to correctly prime the oil tank pump. Failure to follow these instructions may result in your iCare not dispensing the correct oil volume.

Fill the NSK iCare oil tank with NSK iCare oil then:


- 1) Close the iCare door then, while holding down the Chuck Cleaning Button, switch ON (I side) the iCare main Power Switch.
- 2) A beep will then sound and the Error light will illuminate. Release the Chuck Cleaning Button.
- 3) Open the iCare door then hold down any Connector Select Button "1-4" and check that oil now flows from that selected Connector. Release the Connector Select Button.
- 4) Close the iCare door.
- 5) Switch OFF (O side) the iCare main Power Switch. Now immediately switch ON (I side) the iCare main Power Switch.
- 6) Press each Connector Select Button so that all 4 Connector LED lights simultaneously illuminate.
- 7) Press the Start Button and oil priming will start. Oil should now start to flow from each Connector.
- 8) A BEEP will sound when the oil priming procedure has automatically finished.

7 Check before use

Before use, check the product by referring to the check points below. If you find something abnormal such as looseness, when checking or using, stop use and contact your Authorized NSK Dealer.

- Check that the turbine connector part is securely fastened and the Nut screw is free of wear, seizure or adherence of dirt.
- Check that the E-type connector part is secure and free of flaws or adherence of dirt.

8 Operation Procedures

- CAUTION**  • Do not use iCare to lubricate air scalers (except for NSK Ti-Max S970 series) and Phatelus air motors. The iCare lubricating system is not designed to lubricate those particular products. Maintain air scalers and Phatelus air motors as described in the operation manual for each product.
- If blood infiltrates inside a handpiece, iCare may not totally clean the internal handpiece components, and internal blood coagulation may cause product failure. In this case, NSK recommends to immediately lubricate those handpieces with PANA SPRAY Plus / PANA SPRAY.
- Maintain individual handpiece according to the procedure described in the operation manual of handpiece.

8-1 Attaching Handpiece

■ Air Turbine

When connecting a Midwest 4 Hole air turbine (According to ISO 9168)

- 1) Remove the bur from the handpiece.
- 2) Open the iCare Door, insert the air turbine to the shape of the air turbine connector, and tighten the nut securely (Fig. 11).
→To 4)

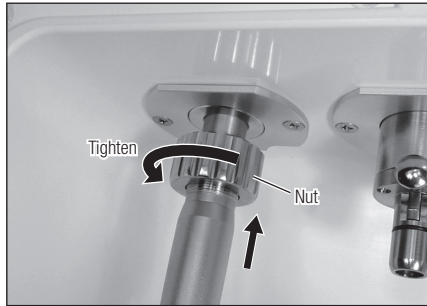
When connecting another type of air turbine

- 1) Remove the bur from the handpiece.
- 2) Open the iCare Door, insert the adaptor (option) to the shape of the air turbine connector, and tighten the nut securely (Fig. 12).
- 3) Insert the air turbine into the adaptor (Fig. 13).

* Refer to "16. Option Parts List" for the correct adaptor.

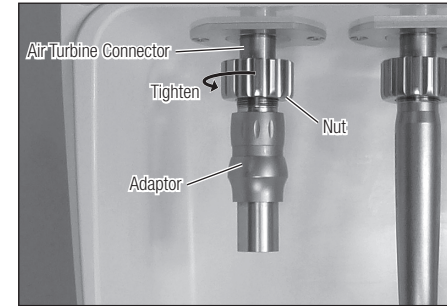
→To 4)

- 4) Push and pull the handpiece to be sure that it is securely attached.
- 5) Point the bur insertion hole toward the door and close the door securely (Fig. 14).



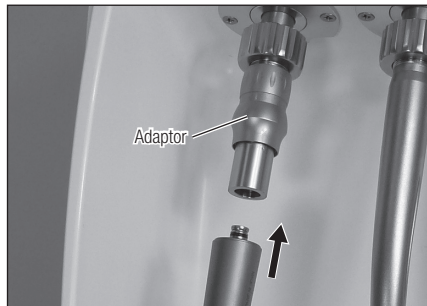
*C3 Type

Fig. 11



*C2 Type

Fig. 12



*C2 Type

Fig. 13

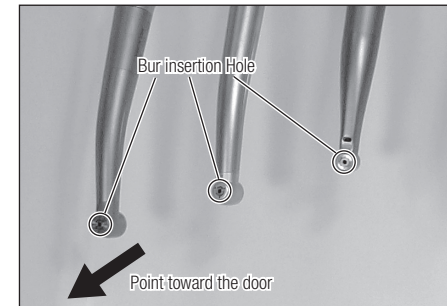


Fig. 14

■ E Type handpiece (According to ISO 3964 type)

Straight Handpiece

- 1) Insert the supplied Test Bur into the handpiece and lock the chuck by turning the Bur Lock Ring (Fig. 15).
- 2) Open the iCare door and attach the handpiece to the E-Type handpiece connector until it locks (Fig. 16).
- 3) Push and pull the handpiece to be sure that it is securely attached.
- 4) Close the door securely.

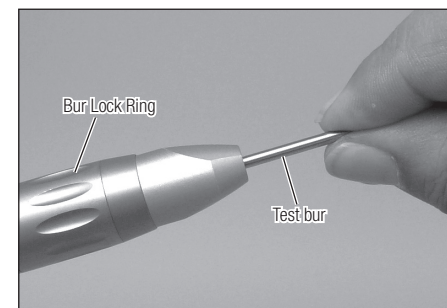
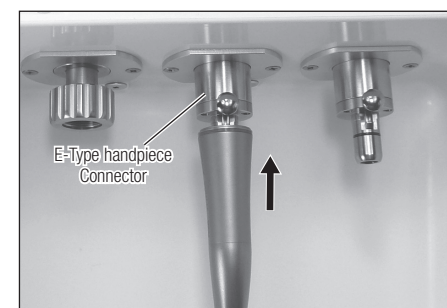


Fig. 15

Contra Angle Handpiece

- 1) Remove the bur from the handpiece.
- 2) Open the iCare door and attach the handpiece to the E-Type handpiece connector until it locks (Fig. 16).
- 3) Push and pull the handpiece to be sure that it is securely attached.
- 4) Point the bur insertion hole toward the door and close the door securely (Fig. 14).



*C2 Type

Fig. 16

CAUTION

- Be sure to remove the bur from Air Turbine and Contra Angle Handpieces before attaching the handpiece to the adaptor or Connector. For Straight handpieces be sure to insert the supplied Test Bur and lock the chuck before connecting to the E-Type handpiece connector (Fig. 15).
- For Contra Angle and Air Turbine Handpieces point the Bur Insertion Hole towards the door and close the door (Fig. 14). Mist Filters absorb the oil coming out of the handpiece.

NOTICE

- NSK offers Handpiece Head Filters, which help absorption of oil from the handpiece during lubrication.
- * For replacement Handpiece Head Filters, refer to "16. Option Parts List".

8-2 Lubrication and internal cleaning

NOTICE • iCare has preset lubrication modes optimal for various handpiece types. Lubricate and clean handpieces by following the instruction below.

- 1) Turn on (I side) the Power Switch.
- 2) Press the Connector Select Button to select the connector to which handpiece is attached. The relevant LED light will illuminate.
- 3) Press the Air Select Button to select an air purge mode among S, M and L.

Mode	Connector	Lubrication and Cleaning Time per Handpiece	Handpiece
S mode (Short)	Air Turbine Connector	28 sec.	Air Turbine (M4/B2 type only)
	E-type Handpiece Connector	50 sec.	Contra Angle Handpieces, Straight Handpieces (The oil drainage time is shorter than that in M mode)
M mode (Medium)	Air Turbine Connector	30 sec.	Air Turbine (Other than M4/B2 type)
	E-type Handpiece Connector	64 sec.	Contra Angle Handpieces, Straight Handpieces
L mode (Long)	Air Turbine Connector	33 sec.	NSK Air Scaler Ti-Max S970 series (Air Turbine Connector)
	E-type Handpiece Connector	84 sec.	Handpieces from which oil cannot be drained sufficiently in M mode (The oil drainage time is longer than that in M mode)

- 4) When the Start Button is pressed lubrication starts. The Connector LED blinks during lubrication.
- 5) When lubrication is completed, a beep sounds and the Connector LED turns off.

CAUTION • When Connector LED is off, lubrication for the connector will not start.
 • After lubricating NSK Ti-Max S970 Scaler series, the Scaler must be operated until oil no longer flows from the rear of the Scaler (the connection point of the Scaler and coupling/hose).

8-3 Removing Handpieces

CAUTION • If debris is contained in the oil expelling from a handpiece even after lubrication, lubricate the handpiece again.

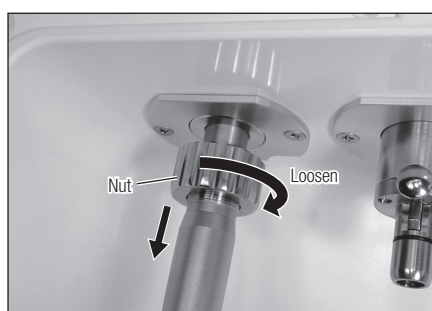
■ Removing Air Turbine

For Midwest 4 Hole Air Turbine (According to ISO 9168)

- 1) Open the door after the Connector LED has turned OFF and lubrication has completely finished.
- 2) Loosen the nut and pull out the handpiece straight from the Air Turbine Connector (Fig. 17).

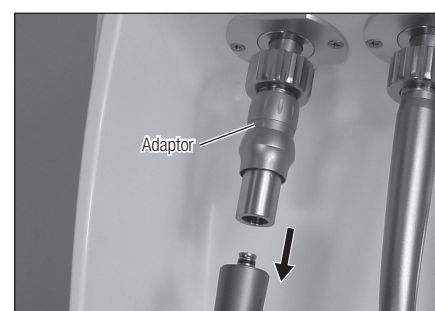
For other types of air turbine handpieces

- 1) Open the door after the Connector LED has turned OFF and lubrication has completely finished.
- 2) Pull out the Air Turbine straight from the adaptor, or pull out the Air Turbine while pushing up the connector ring of the adaptor (Fig. 18).



*C3 Type

Fig. 17



*C2 Type

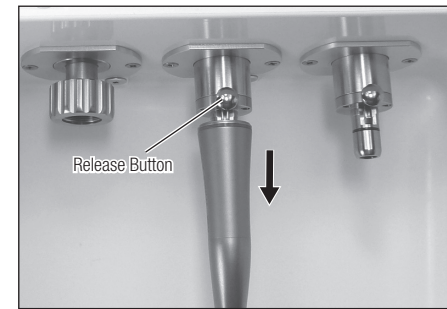
Fig. 18

■ Removing E-type handpieces (According to ISO 3964 type)

- 1) Open the door after the Connector LED has turned OFF and lubrication has completely finished.
- 2) Pull out the handpiece straight while pressing the Release Button on the E-type Handpiece Connector (Fig. 19).

CAUTION

- With a cloth, wipe off any Oil collected at the bottom of the chamber and the door. The collected oil could leak from the bottom of the door. Dispose of the cloth as medical waste according to the laws and regulations in your country.



*C2 Type

Fig. 19

English

8-4 Chuck Cleaning

This product can clean the Chuck of Air Turbine and Contra Angle handpieces.

- 1) Insert the chuck cleaning nozzle into the Connector "4" until it locks (Fig. 20).
- 2) Press the Chuck Cleaning Button to illuminate the Chuck Cleaning LED.
- 3) Holding the handpiece securely by hand, insert the chuck cleaning nozzle into the bur insertion hole of the handpiece (Fig. 21).
- 4) Press the Start Button and chuck cleaning will start. The Chuck Cleaning LED will blink during cleaning.
- 5) When cleaning is completed, a beep sounds and the Chuck Cleaning LED will turn off.
- 6) Lubricate the handpiece following the instruction in "8-1 Attaching Handpiece" and "8-2 Lubrication and internal cleaning".



*C2 Type

Fig. 20

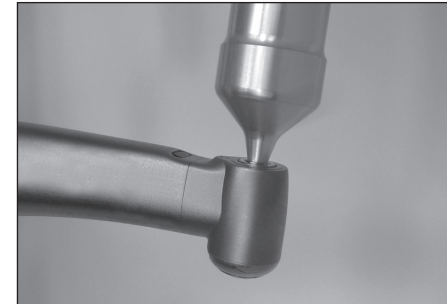


Fig. 21

CAUTION

- Do not clean the chuck of NSK Straight Handpieces as this may cause handpiece malfunction.

NOTICE

- Only Connector "4" is available for chuck cleaning.
- Clean the chuck at least once a week.

9 Maintenance of iCare

9-1 Cleaning the iCare

- 1) Turn OFF (O side) the Power Switch.
- 2) Remove the AC power cord from Unit.
- 3) Wipe the surface using a cloth moistened with water, warm water or soapy water (neutral detergent), then again wipe using another cloth moistened with disinfectant alcohol.

CAUTION

- Never use solvent such as benzine or thinner for cleaning.
- Do not leave an alcohol-immersed cloth in contact with the Unit for a long period. Bleaching, deformation or failure of the Unit may occur.

NOTICE

- The door can easily be detached when necessary and be cleaned with tap water (See "9-2 Detaching and reattaching the door").

9-2 Detaching and reattaching the door

9-2-1 Detaching the door

Slide the detachment lever (lower right corner) inward then pull the door out to remove (Fig. 22).

9-2-2 Reattaching the door

- 1) Fit the installation hole on the door into the pin on the front left side (Fig. 23).
- 2) Align the other installation hole on the door right side with the pin while pulling the detachment lever. Release the detachment lever. A 'click' sound will indicate that the door is secure (Fig. 24).



Fig. 22

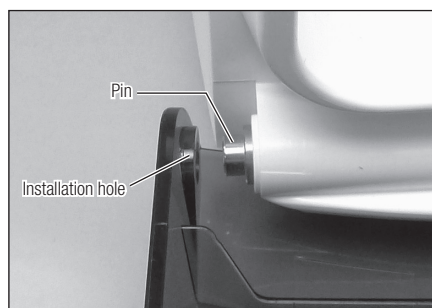


Fig. 23

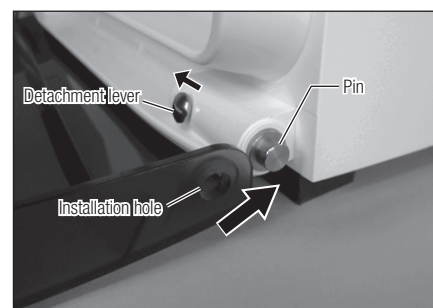


Fig. 24

- CAUTION**
- Attach or detach the door on a level surface. During attachment or detachment, be careful not to drop the door or the Unit.
 - Do not soak the door in alcohol and do not leave an alcohol-immersed cloth in contact with the door for a long period. Bleaching or door deformation may occur.

9-3 Replacing Mist Filter

Open the door and remove the used Mist Filters. Replace with new Mist Filters as shown in Fig. 25.

- CAUTION**
- Replace immediately with new Mist Filters when signs of debris appear.
 - Dispose of used Mist Filters as medical waste according to the laws and regulations in your country.

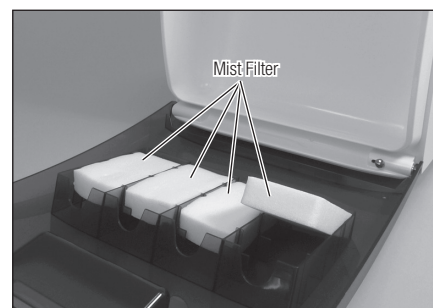


Fig. 25

9-4 Replacing the Oil Absorber Sheet

Open the door and remove used Oil Absorber Sheet. Place new Oil Absorber Sheet at the bottom of the lubricating chamber of the Unit as shown in Fig. 26.

- CAUTION**
- Replace immediately with a new Oil Absorber Sheet when signs of debris appear.
 - Dispose of used Oil Absorber Sheets as medical waste according to the laws and regulations in your country.



Fig. 26

9-5 Draining the Air Filter

- 1) When water accumulates in the Air Filter case, press the Drain Button at the bottom of the case to drain the Air Filter (Fig. 27).
- 2) In addition to the Air Filter, drain the air supply attached to this device (Air Compressor) at least once a week.

CAUTION

- The air supply (Air Compressor) and Air Filter need to be clean and free from moisture. Drain the Air Compressor and Air Filter at least once a week as required. Moisture from the tank could mix with the Maintenance Oil.

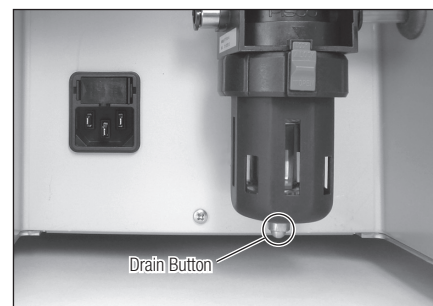


Fig. 27

9-6 Oil removal from the oil tank

Before relocating or requesting product service, remove oil in the oil tank following the instruction below.

- 1) Turn OFF (O side) the Power Switch.
- 2) Remove the AC power cord plug from wall outlet.
- 3) Remove the AC power cord from the Unit.
- 4) Prepare an oil receiving container.
- 5) Remove the Oil Fill Cap.
- 6) Put the oil receiving container below the drain screw and remove the drain screw.
- 7) When oil draining is completed, securely fasten the drain screw.



Fig. 28

9-7 Replacing the O-ring

The O-Ring attached to the E-type handpiece connector may deteriorate or break due to wear. If any abnormality is found, replace the O-Ring with a new one following the instruction below.

- 1) Remove the O-ring using a thin needle (Fig. 29).
 - 2) Insert a new O-ring into the empty groove.
- * For replacement O-ring, refer to the Spare Parts List.

CAUTION

- A deteriorated O-ring would cause excess flow of oil from the connector. If such abnormality is found, replace the O-ring with a new one. Use only the O-ring which NSK specifies.

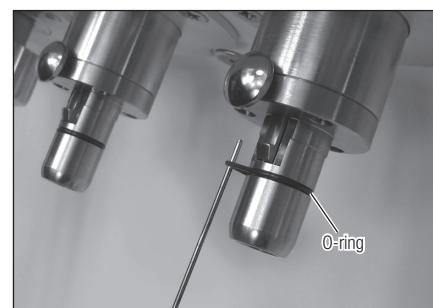


Fig. 29

9-8 Changing Fuses

- 1) Turn OFF (O side) the Power Switch.
 - 2) Remove the AC power cord from the Unit.
 - 3) Pull out and remove the Fuse while squeezing the ratchets of the Fuse Box inward at the same time (Fig. 30).
 - 4) Replace the Fuse with a new one.
 - 5) Place the Fuse holder in the original position.
- * For replacement Fuse, refer to the Spare Parts List.

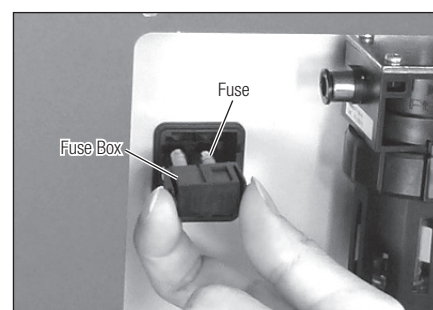


Fig. 30

CAUTION

- Use only the fuse which NSK specifies.
- If you cannot identify the cause for the blowout of the fuse, be sure to contact your Authorized NSK Dealer for an inspection.

NOTICE

- When it is difficult to pull out the fuse holder, pull it out while pushing the ratchet with a hard-tipped object.

9-9 Replacing the air filter element



- Replace the air filter element every one or two years.

CAUTION

- 1) Drain the Air Filter (See "9-5 Draining Air Filter").
- 2) Pull out the air tube while pushing the connector ring on the air filter (Fig. 31).
- 3) Remove the two screws using a cross slot screwdriver to remove the air filter (Fig. 32).
- 4) Move the red lock button down to "▼ OPEN" (Fig. 33).
- 5) Turn the case supporter clockwise and pull it down. The case supporter and case guard can now be removed (Fig. 34).
- 6) Remove the case (Fig. 35).
- 7) Remove the screw at the bottom of the retainer using a cross slot screwdriver (Fig. 36).
- 8) Remove the retainer and the air filter element.
- 9) Install a new air filter element into the retainer and securely tighten them to the original position with the screw.
- 10) Insert the case into the case guard then insert them into the case supporter (Fig. 37).
- 11) Align the lock button with the position of the groove in the air filter body to insert, and push it up until there is no gap between the case supporter and the air filter body. Turn it counter clockwise until the lock button reaches the ▼ portion (Fig. 38).
- 12) Move the red lock button up to "▲ LOCK" to lock (Fig. 39).
- 13) Attach the two screws in the reverse order of "3)".
- 14) Insert the air tube into the air filter connector.

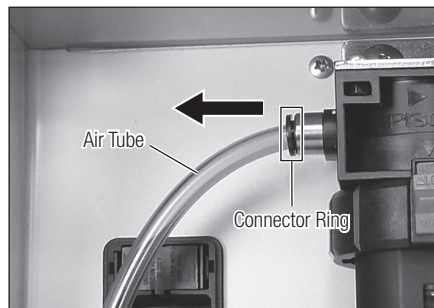


Fig. 31

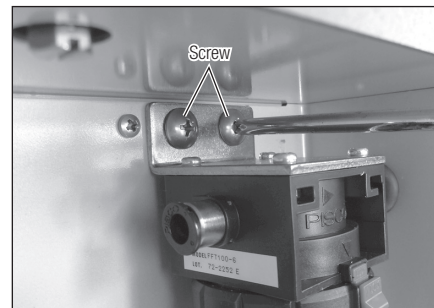


Fig. 32

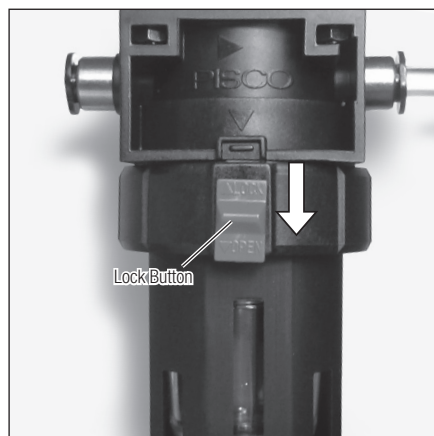


Fig. 33



Fig. 34

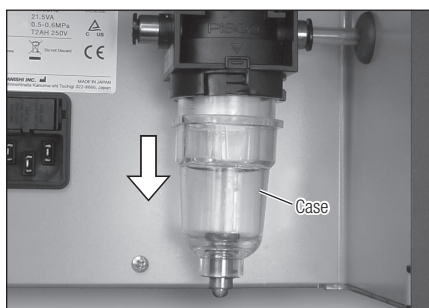


Fig. 35

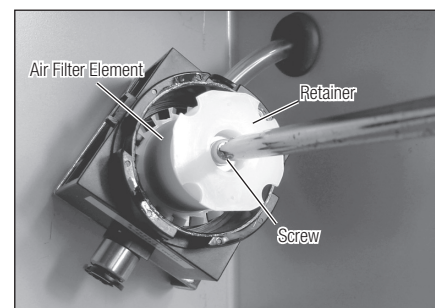


Fig. 36

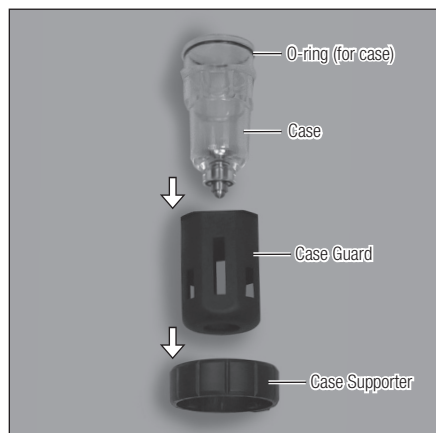


Fig. 37

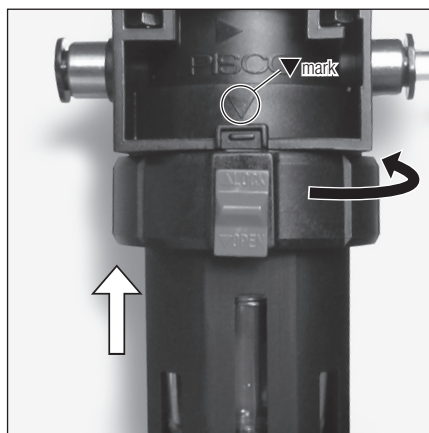


Fig. 38

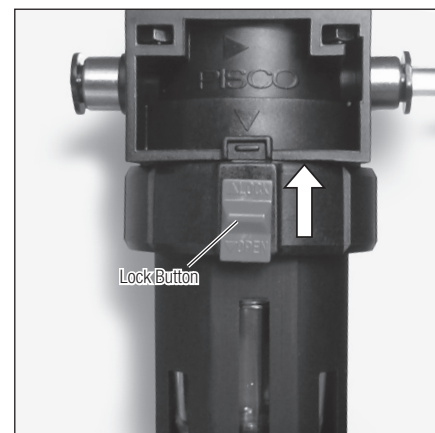


Fig. 39

CAUTION  • Be sure to STOP the air pressure before removal and reinstallation of the air filter.
 • When installing and removing the air filter, apply Maintenance Oil onto the O-ring of the case.

10 Periodical Maintenance Checks

Perform periodical maintenance checks every three months, referring to the check sheet below. If any abnormalities are found, contact your Authorized NSK Dealer.

Points to check	Details
Connection of AC power cord	Confirm whether the AC power cord is completely inserted all the way into the inlet.
Air Tube	Confirm whether the Air Tube is damaged, or bent. Confirm whether the Air Tube is completely inserted into the Air Filter connector, and cannot be removed by pushing and pulling.
Air Filter	Confirm whether any water accumulates in the Air Filter. If water accumulates then drain the water.
Air Purge	Press each Connector Select Button while pressing the Air Select Button to confirm that air comes out.
E-Type Handpiece Connector	Confirm whether the insert part is free of damage or adherence of debris. Attach the handpiece to confirm that there is no backlash, etc. Confirm that the O-ring is not damaged or cut.
Air Turbine Connector	Install the air turbine to confirm that there is no backlash, etc.
Oil Filter	Remove the oil fill cap to confirm that no debris has accumulated in the filter. Remove any accumulated debris.
Oil is blocked	See "6. Oil priming" and confirm that oil properly comes out from the connector.
Beep sound	Turn on the power switch (I side) to confirm that a beep sounds.
Drain Screw	Confirm that the Drain Screw is firmly tightened.
Chuck Cleaning Nozzle	Confirm if the Chuck Cleaning Nozzle is clogged.
LED	Turn on the Power Switch and confirm that all the LEDs illuminate.

11 Error LED

The error LED illuminates on the Control Panel when the device ceases to operate due to failure, excessive pressure, disconnection and incorrect usage. When this happens, restart the Unit to repeat the error check. If there are no problems, the error is cancelled and the operation can be resumed. If the error is displayed again, refer to the table below and take appropriate actions.

Error LED	Description of error	Cause of error	Check/Remedy
Error LED (Oil) illuminates	Oil level is too low	There is a small remaining amount of oil (Remaining amount is 150ml or less).	Refill oil (However, the device can be used for a while after the LED lights up).
Error LED (Door) illuminates	Door abnormality	The door is OPEN before or during maintenance operation.	Close the door before or during maintenance operation.
		The door is CLOSED before Chuck cleaning.	Open the door before Chuck cleaning.
Error LED (Air Pressure) illuminates	Air supply pressure abnormality	The supplied air pressure is out of the allowable range of the product specification.	Confirm whether the supplied air pressure is correct.
Error LED (Oil) blinks	Lubricating pump circuit abnormality	Failure of parts	Contact your Authorized NSK Dealer for repair.
Error LED (Door) blinks	Abnormality of power circuit	Failure of parts	Contact your Authorized NSK Dealer for repair.
All of Error LED (Oil), Error LED (Door) and Error LED (Air Pressure) blink	Flash memory abnormality	Failure of parts	Contact your Authorized NSK Dealer for repair.

12 Troubleshooting

When a problem is detected, check the following again before requesting service. If none of these are applicable or if the trouble is not remedied even after an action has been taken, a failure of this product is suspected. Contact your Authorized NSK Dealer.

In addition, when asking for service, drain oil from the oil tank in the main body according to the tank oil removal procedures (9-6 Oil removal from the oil tank) described in the Operation Manual.

Trouble	Cause	Remedy
Power cannot be turned on.	The power cord plug is not connected. Or electricity is disconnected.	Check the connection.
	The AC power cord is not connected to the Unit.	Check the connection.
	The power is not turned ON (I side).	Turn ON the power (I side).
	The internal fuse has malfunctioned.	Replace the fuse.
The device does not operate.	Connector is not selected (The Connector LED is OFF).	Press the Connector Select Button to select connector.
	The door is OPEN before or during operation.	Close the door before or during operation.
	The door is CLOSED before Chuck Cleaning.	Open the door before Chuck Cleaning.
	Oil chamber is empty (Error LED (Oil) lights up).	Fill with NSK maintenance oil.
	Air is not supplied. Or the air pressure is low (Error LED (Air Pressure) lights up).	Check air supply and air pressure.
	The room temperature is too low.	Use this product in an operating environment of 10 - 40°C. Especially in winter, wait until the room temperature reaches the operating temperature.
Maintenance oil and air do not flow from the Chuck Cleaning Nozzle.	The hole of the Chuck Cleaning Nozzle is clogged with debris.	Remove dirt in the hole using a brush (Do not use a metal brush).

13 Specification

Model	iCare
Rated Voltage	AC100V - 240V 50/60Hz
Input Voltage	21.5VA
Air Pressure	0.5 - 0.6MPa (5 - 6kgf/cm ²)
Oil Tank Capacity	1.2L
Dimensions	W280 x D240 x H350mm
Weight	C2 Type: 6.5kg C3 Type: 6.5kg

C2 Type: Air Turbine = 2pcs. E Type Handpiece = 2pcs.

C3 Type: Air Turbine = 1pc. E Type Handpiece = 3pcs.

	Temperature	Humidity	Atmospheric Pressure
Use Environment	10 - 40°C	25 - 75%	
Transportation and Store Environment	-10 - 50°C	10 - 85%	500 - 1,060hPa

14 Symbols

 Conforms to CE European Directive.


 Manufacturer.

 Authorized representative in the European community.

 Follow the waste of electric and electronic equipment (WEEE) Directive (2012/19/EU) for product and accessory disposal.

 Caution, Refer to attached instructions.

 TUV Rhineland of North America is a Nationally Recognized Testing Laboratory (NRTL) in the United States and is accredited by the Standards Council of Canada to certify electro-medical products with Canadian National Standards.

 Marking on the outside of Equipment or Equipment parts that include RF transmitters or that apply RF electromagnetic energy for diagnosis or treatment.

 Caution: U.S. Federal law restricts this device to sale by or on the order of a licensed physician.

15 Warranty

NSK products are warranted against manufacturing errors and defects in materials. NSK reserves the right to analyze and determine the cause of any problem. Warranty is voided should the product be not used correctly or for the intended purpose or has been tampered with by unqualified personnel or has had non NSK parts installed. Replacement parts are available for seven years beyond discontinuation of the model.

16 Option Parts List

Model	Order Code	Remarks
PTL Type Adaptor	Z257010	For Phatelus Coupling
B2/M4 Type Adaptor	T904	For Borden 2 Hole Coupling
KV Type Adaptor	Z257020	For Kavo Coupling
SR Type Adaptor	Z257023	For Sirona Coupling
WH Type Adaptor	Z257021	For W&H Coupling
BA Type Adaptor	Z280022	For Bien Air Coupling
F-Type Adaptor	Z280042	For Endo MateTC2/TC, TASKAL Wizard head
Handpiece Head Filter	U1120118	Pack of 200

* Some adaptors cannot be mounted depending on the type of air turbine. Please consult your Authorized NSK Dealer.

17 Spare Parts List

Model	Order Code	Remarks
Maintenance Oil for iCare	Z016130	Quantity: 1 Bottle
Maintenance Oil Set for iCare	Y1002783	Pack of 6 Bottles
Mist Filter set	Y900159	Pack of 12
Oil Absorber Sheet	U433135	Pack of 10
O-ring set	M154060	Pack of 3
Fuse	D1202220010	Rated value T2AH250V
Air Tube	U508038	3m
Chuck Cleaning Nozzle	Z257301	
Test Bur	Z070101	
Air Filter Element	U508353	
Air Filter	U508352	
Case	U508354	
O-ring (for case)	U508355	
Oil Filter	U1120116	
Oil Fill Cap	U1120038	


18 Disposal of the product

In order to avoid the health risks of operators handling the disposal of medical equipment, as well as the risks of environmental contamination caused thereof, a surgeon or a dentist is required to confirm the equipment is sterile. Ask specialist firms who are licensed to dispose of specially controlled industrial wastes, to dispose the product for you.

19 EMC Information (Electromagnetic Compatibility Information)

Guidance and manufacturer's declaration - Electromagnetic Emissions		
The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR11/EN55011	Group 1	The product uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11/EN55011	Class B	
Harmonic emissions EN/IEC61000-3-2	Class A	
Voltage fluctuations/flicker emissions EN/IEC61000-3-3	Not Applicable	

Guidance and manufacturer's declaration - Electromagnetic Immunity			
The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.			
Immunity test	IEC61326-1 Test Level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) EN/IEC61000-4-2	±(2) 4kV Contact ±(2, 4) 8kV Air	±(2) 4kV Contact ±(2, 4) 8kV Air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst EN/IEC61000-4-4	±2kV for power supply lines	±2kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge EN/IEC61000-4-5	±1kV line(s) to line(s) ±2kV line(s) to earth	±1kV line(s) to line(s) ±2kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines EN/IEC61000-4-11	0% Ut (100% dip in Ut) for a cycles 40% Ut (60% dip in Ut) for 10/12 a cycles* 70% Ut (30% dip in Ut) for 25/30 a cycles* 0% Ut (100% dip in Ut) for 250/300 a cycles*	0% Ut (100% dip in Ut) for a cycles 40% Ut (60% dip in Ut) for 10/12 a cycles* 70% Ut (30% dip in Ut) for 25/30 a cycles* 0% Ut (100% dip in Ut) for 250/300 a cycles*	Mains power quality should be that of a typical commercial or hospital environment. If the user of the product requires continued operation during power mains interruptions, it is recommended that the product be powered from an uninterruptible power supply or a battery.
Power frequency (50/60Hz) magnetic field EN/IEC61000-4-8	30A/m	30A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
<p>NOTE: 'Ut' is the AC mains voltage prior to application of the test level. *: eg: "25/30 a cycles" means "25 cycles for a 50Hz test", or "30 cycles for a 60Hz test".</p>			

Guidance and manufacturer's declaration - Electromagnetic Immunity			
The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.			
Immunity test	IEC61326-1 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF EN/IEC61000-4-6	3Vrms 150kHz to 80MHz	3V	Portable and mobile RF communications equipment should be used no closer to any part of the product, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1.2 \sqrt{P}$ $d = 0.35 \sqrt{P}$ 80MHz to 800MHz $d = 0.70 \sqrt{P}$ 800MHz to 1.0GHz $d = 2.3 \sqrt{P}$ 1.4GHz to 2.0GHz $d = 7.0 \sqrt{P}$ 2.0GHz to 2.5GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer, and (d) is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters as determined by an electromagnetic site survey ^(a) should be less than the compliance level in each frequency range ^(b) . Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF EN/IEC61000-4-3	10V/m 80MHz to 1.0GHz	10V/m 80MHz to 1.0GHz	
	3V/m 1.4GHz to 2.0GHz	3V/m 1.4GHz to 2.0GHz	
	1V/m 2.0GHz to 2.7GHz	1V/m 2.0GHz to 2.7GHz	
<p>NOTE1: At 80MHz and 800MHz, the higher frequency range applies. NOTE2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</p>			
<p>a: Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the product is used exceeds the applicable RF compliance level stated above, the product should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the product. b: Over the frequency range 150kHz to 80MHz, the field strength should be less than 3V/m.</p>			

Cables and accessories	Maximum length	Complies with
Power Supply Cord	2.0m (Unshielded)	RF emissions, CISPR11, EN55011 Harmonic emissions, Voltage fluctuations/flicker emission, Electrostatic discharge (ESD) Electric fast transient/burst Surge Voltage dips, short interruptions and voltage variations on power supply input lines Power frequency (50/60Hz) magnetic field Conducted RF Radiated RF

Class B/Group 1
 IEC61000-3-2/EN61000-3-2
 IEC61000-3-3/EN61000-3-3
 IEC61000-4-2/EN61000-4-2
 IEC61000-4-4/EN61000-4-4
 IEC61000-4-5/EN61000-4-5
 IEC61000-4-11/EN61000-4-11
 IEC61000-4-8/EN61000-4-8
 IEC61000-4-6/EN61000-4-6
 IEC61000-4-3/EN61000-4-3

Recommended separation distances between portable and mobile RF communications equipment and the product

The product is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the product can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the product as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m				
	150kHz to 80MHz $d = 1.2 \sqrt{P}$	80MHz to 800MHz $d = 0.35 \sqrt{P}$	800MHz to 1.0GHz $d = 0.70 \sqrt{P}$	1.4GHz to 2.0GHz $d = 2.3 \sqrt{P}$	2.0GHz to 2.7GHz $d = 7.0 \sqrt{P}$
0.01	0.12	0.035	0.07	0.23	0.70
0.1	0.38	0.11	0.22	0.73	2.2
1	1.2	0.35	0.70	2.3	7.0
10	3.8	1.1	2.2	7.3	22
100	12	3.5	7.0	23	70

For transmitters rated at a maximum output power not listed above, the recommended separation distance 'd' in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where 'P' is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE1: At 80MHz and 800MHz, the higher frequency range applies.

NOTE2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.