

marathon 2017/18

THE BEST CREATION OF MICRO MOTOR

saeyang



<http://shstak.com>



Welcome to SAEYANG

Thank you for your interest and support for our products.

We, Saeyang Microtech, has continued to grow since its foundation in 1976 specialized in manufacturing micro-handpieces for laboratory and dental field with enjoying a good reputation from overseas more than 100 countries as well as Korea.

The most important thing is superior quality of our products and through this, we always do our best for customer satisfaction as our top priority. Also we focus on developing new products by advanced technical innovation in R&D center and launching at least more than two models in the market with ongoing investments for new facilities each year.

We exhibit at overseas famous exhibitions more than 15 times in the United States, Germany, France, Spain, UK, Italy, H.K and China. During those exhibitions, we have a good opportunity to establish mutual trust and confidence with our buyers over 100 countries.

Saeyang will always do our best to listen to any needs and requirements of the customer.

Thank you for your continued support.

President & CEO
Jung Pil Shin





SAEYANG History

Oct.	1976	Company Established
Dec.	1977	Registered manufacturing of medical equipment.
Sep.	1987	Registered trading business
Apr.	1989	Registered Korea medical equipment cooperative association
May.	1971	Registered of designs for engine for dental laboratory
Apr.	1998	Certified ISO 9001 from TUV (Germany)
Feb.	1999	Certified CE Mark from TUV (Germany)
May.	2000	Certified Venture enterprise for high technology
Nov.	2001	Awarded official Superior Exporting Firm
Nov.	2001	Awarded Leading Enterprise
Apr.	2002	Certified CE Mark of New item "Escort"
Jan.	2003	Registered manufacturing Brushless motor
Jun.	2003	Certified CE Mark of "Marathon Multi 600" Brushless motor
Jun.	2004	Established R&D center
Jul.	2004	Certified CE Mark of New item "Marathon N7&N2"
Mar.	2005	Certified CE Mark of New item "Marathon HANDY700 Series" Brush/Brushless motor
Dec.	2005	Awarded official best Exporting Firm
Apr.	2006	Moved into a new factory
Jul.	2006	Certified PSE from TUV
Oct.	2006	Opening Ceremony of a new factory as well as the 30th anniversary
Feb.	2008	Certified ISO 9001 : 2000 from SGS (U.K) Certified ISO 13485 : 2003 from SGS (U.K) Certified Directive 93/42/EEC from SGS (U.K)
Aug.	2010	Certified CE Mark of New item "Endo e class"
Mar.	2011	Development of Endo a class
Mar.	2012	Dental contra angle
Mar.	2013	Developed Implant Motor
Aug.	2013	Certified FDA (Endo Motor)
Jun.	2014	60,000RPM Handpiece Developed
Sep.	2014	20:1 Optic Handpiede Developed
Mar.	2015	Certified FDA CFDA(Implant Motor)
Oct.	2015	Awarded Grand Prize for 2015 Best Company in Daegu City
Dec.	2016	Awarded for Exporting US\$ 20 million

saeyang



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Marathon Products Line-up

Laboratory Air turbine



Air turbine handpiece



Brushless micromotor



E-Type Motor



Brush micromotor



E-Type Motor



Brushless control box



Brush control box





Air Turbine





Air Turbine Handpiece

mat-H300W

Air turbine handpiece (water)



- Dimensions : L124.1 x Ø17.2 (mm)
- Speed : 320,000 rpm
- Weight : 85.5g
- Air Pressure : 2.5 - 3.0 bar

mat-H300A

Air turbine handpiece (water)



- Dimensions : L131.9 x Ø16.9 (mm)
- Speed : 320,000 rpm
- Weight : 60g
- Air Pressure : 2.0 - 2.5 bar



mat-300W water

Features

- Compact size
- speed control pedal
- Easy adjustment of water volume and air pressure
- Simple chuck-handle system
- Less noise and vibration



MODEL **mat-300W**

Specifications control box only

- Air pressure : 2.5 - 3.0 bar
- Weight : 1.7 kg
- speed : MAX 320,000 RPM
- Dimensions : W234 x D99 x H190(mm)
- Contents : Control unit, Handpiece, Foot control



mat-300A air

Features

- Compact size
- speed control pedal
- Easy adjustment of volume and spray air
- Simple chuck-handle system
- Less noise and vibration



MODEL **mat-300A**

Specifications control box only

- Air pressure : 2.0 - 2.5 bar
- Weight : 1.15 kg
- speed : MAX 320,000 RPM
- Dimensions : W100 x D103 x H182(mm)
- Contents : Control unit, Handpiece, Foot control



memo





BLDC





Brushless Micromotors

SDE-BS50C



- Dimensions : L160 x Ø23 (mm)
- Speed : 1,000 - 60,000 rpm
- Max. Torque : 5.78 Ncm
- Weight : 212g
- Cord length : 1.5m

SDE-BM50S1



- Dimensions : L160 x Ø27 (mm)
- Speed : 1,000 - 50,000 rpm
- Max. Torque : 7.8 Ncm
- Weight : 231g
- Cord length : 1.5m

SDE-BM40S1



- Dimensions : L160 x Ø27 (mm)
- Speed : 1,000 - 40,000 rpm
- Max. Torque : 8.5 Ncm
- Weight : 231g
- Cord length : 1.5m

SDE-BS40E



- Dimensions : L117 x Ø22 (mm)
- Speed : 1000 - 40,000 rpm
- Max. Torque : 6.5 Ncm
- Weight : 265g
- Cord length : 1.5m



Multi600 60K

brushless

Max
60,000
min⁻¹

DIGITAL



Variable

Knee
Control

Features

- Digital speed display window
- Less noise, less vibration
- Excellent durability
- Ceramic ball bearing
- Knee-control type
- Self-diagnosis function
- Auto-cruise function
- Variable speed control pedal (FS60N)



MODEL **Multi600 (60K)**

Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 60,000 RPM
- Weight : 3.1 kg
- Dimensions : W122 x D268 x H237(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



Multi600 50K



Features

- Digital speed display window
- Less noise, less vibration
- Excellent durability
- Ceramic ball bearing
- Knee-control type
- Self-diagnosis function
- Auto-cruise function
- Variable speed control pedal (FS60N)



MODEL **Multi600 (50K)**

Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 50,000 RPM
- Weight : 3.1 kg
- Dimensions : W122 x D268 x H237(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

Handy700 60K



Features

- Digital speed display window
- Maximum speed set mode possible
- Less noise, less vibration
- Excellent durability
- Ceramic ball bearing
- Self-diagnosis function
- Auto-cruise function
- Variable speed control pedal (FS60N)
- Handpiece cradle attached
- Magnetic bur holder attached
- Easy-carry system



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 60,000 RPM
- Weight : 2.7 kg
- Dimensions : W137 x D232 x H180(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



Handy700 50K



Features

- Digital speed display window
- Less noise, less vibration
- Excellent durability
- Ceramic ball bearing
- Self-diagnosis function
- Auto-cruise function
- Variable speed control pedal (FS60N)
- Handpiece cradle attached
- Magnetic bur holder attached
- Easy-carry system



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 50,000 RPM
- Weight : 2.7 kg
- Dimensions : W137 x D232 x H180(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

Handy Eco



Features

- Automatic safety overload protection system
- Digital speed display window
- Variable speed control pedal



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 50,000 RPM
- Weight : 1.6 kg
- Dimensions : W141 x D186 x H97(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

CC







Brush Micromotors

SDE-SM45C



- Dimensions : L155 x Ø30 (mm)
- Speed : 0 - 40,000 rpm
- Max. Torque : 4.5 Ncm
- Weight : 230g
- Cord length : 1.5m

SDE-SH37LN



- Dimensions : L152 x Ø28 (mm)
- Speed : 0 - 40,000 rpm
- Max. Torque : 4.5 Ncm
- Weight : 201g
- Cord length : 1.5m

SDE-SH37L(M45)



- Dimensions : L154 x Ø30 (mm)
- Speed : 0 - 40,000 rpm
- Max. Torque : 4.5 Ncm
- Weight : 202g
- Cord length : 1.5m

SDE-H37L1



- Dimensions : L155 x Ø30 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 201g
- Cord length : 1.5m

SDE-H35SP1



- Dimensions : L152 x Ø28 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 201g
- Cord length : 1.5m



SDE-H37LSP



- Dimensions : L154 x Ø30 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 202g
- Cord length : 1.5m

SDE-H37SP for surveyor



- Dimensions : L154 x Ø30 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 202g
- Cord length : 1.5m

SDE-H200



- Dimensions : L129 x Ø22 (mm)
- Speed : 0 - 30,000 rpm
- Max. Torque : 1.6 Ncm
- Weight : 143g
- Cord length : 1.5m

SDE-SH300S



- Dimensions : L135 x Ø23 (mm)
- Speed : 0 - 30,000 rpm
- Max. Torque : 1.6 Ncm
- Weight : 135g
- Cord length : 1.5m

SDE-MH20(30K)



- Dimensions : L120 x Ø20 (mm)
- Speed : 0 - 30,000 rpm
- Max. Torque : 1.3 Ncm
- Weight : 121g
- Cord length : 1.5m



E-Type Motors

SDE-M33E



- Dimensions : L109 x Ø25 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 137g
- Code length : 1.5m

SDE-M33Es



- Dimensions : L99 x Ø25 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 109g
- Code length : 1.5m

SDE-M300Es



- Dimensions : L97 x Ø23 (mm)
- Speed : 0 - 30,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 86g
- Code length : 1.5m



Multi 600 Duo

Features

brush

brushless

Max
50,000
min⁻¹

DIGITAL



- Digital speed display window
- Less noise, less vibration
- Excellent durability
- Ceramic ball bearing
- Self-diagnosis function
- Auto-cruise function
- Variable speed control pedal (FS60N)



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 50,000 RPM
- Weight : 3.1 kg
- Dimensions : W122 x D268 x H237(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



Handy 702



Features

- Digital speed display window
- Less noise, less vibration
- Excellent durability
- Self-diagnosis function
- Auto-cruise function
- Variable speed control pedal (FS60N)
- Handpiece cradle attached
- Magnetic bur holder attached
- Easy-carry system



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 40,000 RPM
- Weight : 2.7 kg
- Dimensions : W137 x D232 x H180(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

Eco 450



Features

- Automatic safety overload protection system
- Variable speed control pedal(FS60N)
- Less noise, less vibration

**Specifications** control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 40,000 RPM
- Weight : 1.6 kg
- Dimensions : W141 x D186 x H97(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



New N7



Features

- Automatic safety overload protection system
- Dust-proof cover for switch
- On/Off Foot Switch
- Variable speed control pedal



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 40,000 RPM
- Weight : 1.7 kg
- Dimensions : W115 x D147 x H96(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



New N2



Features

- Automatic safety overload protection system
- Dust-proof cover for switch
- On/Off Foot Switch
- Variable speed control pedal



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 40,000 RPM
- Weight : 1.2 kg
- Dimensions : W115 x D147 x H96(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



K38



Features

- MAX 8hours (MH20)
- LI-ION battery(rechargeable)
- Digital speed display window
- LED display for battery charging level
- Automatic System
 - power save / FWD-REV
 - overload protection(warning signal)
- On/Off Foot Switch



white



red



black



pink



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 30,000 RPM
- Weight : 277 g
- Dimensions : W67 x D128 x H30(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

K35

brush

Max
35,000
min⁻¹

DIGITAL



Features

- Digital speed display window
- Auto - cruise control (in case of connection variable speed control)
- Automatic System
 - power save / FWD-REV
 - overload protection (warning signal)
- Variable speed control pedal
- On/Off Foot Switch



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 35,000 RPM
- Weight : 1.13 kg
- Dimensions : W120 x D120 x H75(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

Escort II pro



Features

- Powerful performance with low noise & vibration
- Built-in handpiece cradle and bit stand
- Automatic safety overload protection system
- Comfortable
- One-touch change of driving direction during operation
- Variable speed control pedal
- On/Off Foot Switch



white



blue



pink



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 35,000 RPM
- Weight : 1.45 kg
- Dimensions : W140 x D155 x H90(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



Escort III



Features

- Powerful and excellent performance with low noise & vibration
- One-touch change of driving direction efficient operation
- On/Off Foot Switch



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 35,000 RPM
- Weight : 1.23 kg
- Dimensions : W112 x D147 x H77(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

Marathon-4



Features

- Powerful and excellent performance with low noise & vibration
- 4 stage speed control
- One-touch change of driving direction efficient operation
- On/Off Foot Switch



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 35,000 RPM
- Weight : 1.16 kg
- Dimensions : W112 x D147 x H77(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



M4 mini



Features

- Powerful performance with low noise & vibration
- Easy direction change
- On/Off Foot Switch
- 4 stage speed control



white



blue



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 35,000 RPM
- Weight : 1.0 kg
- Dimensions : W78 x D126 x H69(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



M3 Champion



Features

- Built-in handpiece cradle and bit stand
- Forward&reverse direction switch
- On-off foot Switch



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 35,000 RPM
- Weight : 1.23 kg
- Dimensions : W118 x D156 x H78(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



M3 Mighty



Features

- Built-in handpiece cradle and bit stand
- Forward&reverse direction switch
- On-off foot Switch



Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- speed : MAX 35,000 RPM
- Weight : 1.26 kg
- Dimensions : W118 x D156 x H89(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand



Equipments





SDE-SM110

hammer handpiece



- 5,000 Strokes/min.
- Control function of Impact Force
- D.C 30V

SDE-LS200

laboratory lathe spindle

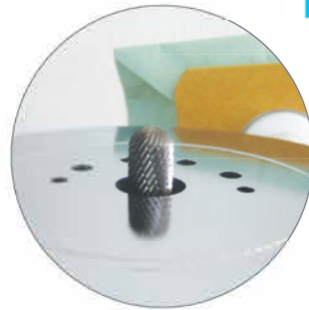


- Max.speed: 28,000 rpm
- Compatible Automatic Spindle with laboratory alloy grinders



Marathon-20

center grinder



- **Max.Speed: 3,200 rpm**
- Grinding plaster model
- Grinding edge part of plaster model with an upper acetal plate
- Human-friendly dust collecting system
- Tools can easily change
- Good & effective design

Marathon-103

surveyor



▲ Surveyor tool pin set

- Precise instrument with exact movement
- Easy exchangeable system (spindle, model table, cone former and plaster)
- Excellent finished surface
- Variable application possible
- Surveyor tools available

Marathon-37

cartridge warmer



- Maintains painless temperature with 37°C (98.6 °F)
- Effective for painless injection

memo





spare parts





Collet sleeve



Collet chuck Standard

brushless



Special coated



Collet chuck

brush



Spindle chuck



Spindle assy

brushless



Spindle assy

brush

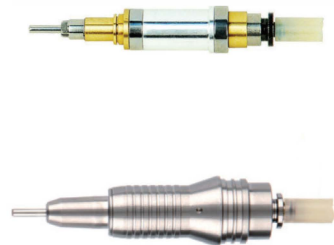
H37L1 / H37LN



Spindle assy

brush

H35SP1





Armature
SH37LN
(Bearing Ø4)



Armature
H37L1
H35SP1
(Bearing Ø3)



Armature
M33Es



BLDC Motor brushless

(A) 50,000 rpm



(B) 60,000 rpm



Carbon brush

H37L1 / SH37L(M45)



φ 3.5

M300Es / M30Es



φ 2.5

Ball Bearing brushless



814



1360

Ball Bearing brush



1260



830



1480



1040



1030



**Lab. Air Tubine
Foot Switch**



**Variable Speed
Foot Pedal**



On / Off Foot Switch



Cord

brushless



Cord

brush



Handpiece Stand





Chuck Joint Wrench

brush



Chuck Wrench

brush

brushless



Spanner

brushless



Maintenance & Repair

brush

brushless





User guide

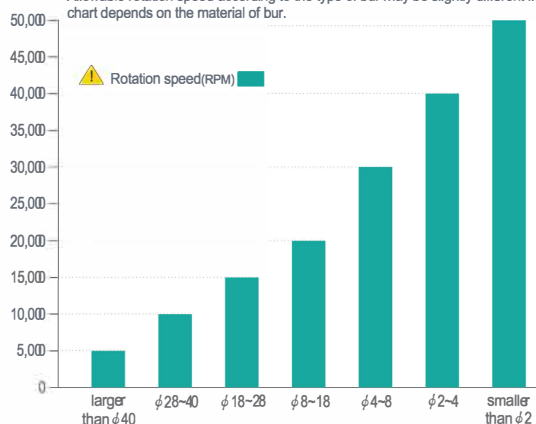
(For safety & efficiency)

* Precaution

1. Do not operate a micromotor with a bent, asymmetrical or damaged bur. Must operate it with a standard bur.
2. Do not start the motor at a high rotation speed.
Start from the low speed and change it slowly to the desired speed.
3. For your safety, do not exceed the rotation speed according to the type of bur.
4. Do not try to open/close the chuck handle during operation.
5. Clean the motor after use.

* Allowable rotation speed

Do not exceed the allowable rotation speed according to the type of bur for your safety. Allowable rotation speed according to the type of bur may be slightly different from the chart depends on the material of bur.



※ This chart for allowable rotation speed can be slight different depending on bur materials or type



Check the product if everything is set before use.



Do not drop the product.
Dropping the motor may damage ball bearing or weaken durability of the motor



Check the product if there is any flaw, crack, or faulty adhesion before use.



In order to take the bur out of the handpiece, release the chuck handle(shift to the left side, R) to open the collect chuck. Make sure to close the collect chuck(shift to the right side, S) before use



Do not exceed the maximum speed.



Wear a safety goggles/shield and mask to protect your face from cutting and grinding works



Check if the product is overheated when you use it at the maximum speed for long. When it gets overheated, you must stop the product and cool it down before use.



If the product works abnormally, stop the product immediately and contact your dealer for repair.



For safety, make sure to read and understand the operation manual carefully before use.



Do not customize the product.



Avoid exposing the product to high temperature and humidity. Daily inspection & maintenance are required.

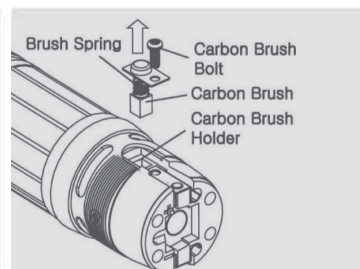
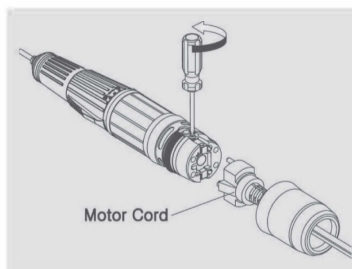


Make sure to turn off the product after use. Leaving the product turned on is very dangerous and may cause overheating.



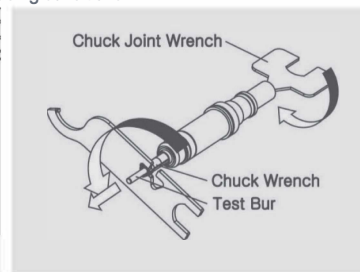
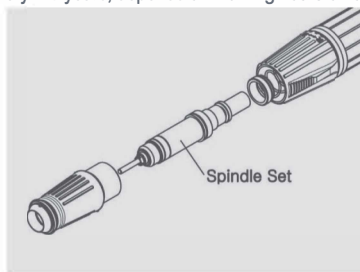
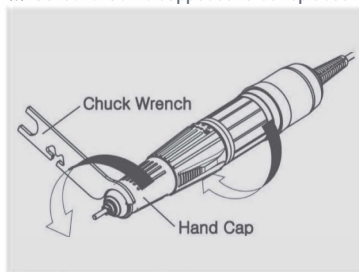
Replacing Carbon Brushes

1. Turn off the power of the Control Unit and remove the Carbon Housing Cover and the Motor Cord from the rear of the handpiece.
2. Take off Carbon Brush Bolts using a screwdriver(+) and remove worn-out Carbon Brushes.
3. While replacing by new ones, the Brush Spring needs to get jammed in the Carbon Brush Holder.
4. Assemble the handpiece.
5. Run the handpiece at 20,000rpm for 30minutes under no load condition before use.



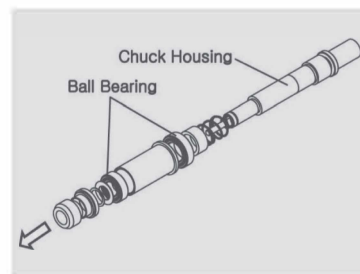
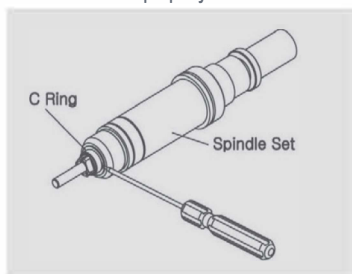
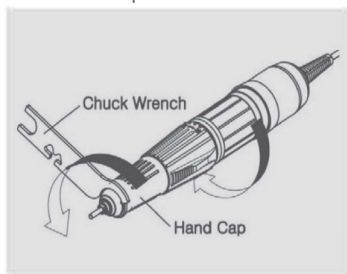
Replacing the Collect Chuck

1. Turn the Hand Cap counterclockwise using the Chuck Wrench until the Hand Cap and the Spindle Set get disassembled.
 2. Keep turning it counterclockwise until the collect chuck gets disassembled.
 3. After replacing a new Collect Chuck, assemble the handpiece.
 4. Run the handpiece under no load condition to check if it works properly before use.
- ※ Collect chuck is supposed to be replaced every 2-3 years, depends on working hours or loading conditions



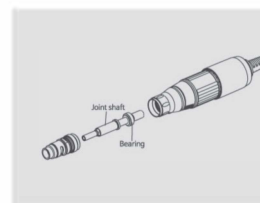
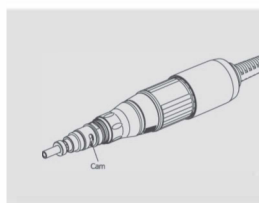
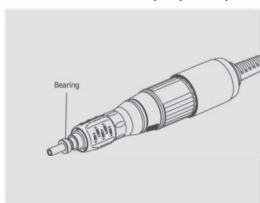
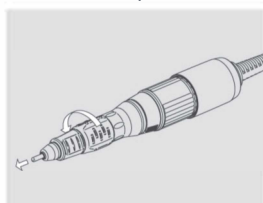
Replacing Ball Bearings

1. Disassemble the Hand Cap and the Spindle Set.
2. Remove the C Ring from the front of the Chuck Housing to disassemble Ball bearings and other parts.
3. Assemble other parts, replace it with new Ball Bearings, and install the C Ring.
4. Connect the Hand Cap and the Spindle Set.
5. Run the handpiece under no load condition to check if it works properly before use.



Replacing Ball Bearings(SH300S)

1. After removing a bur, please open a handle of the handpiece. After that start to disassemble.
2. Disassembling nose-cone and bearing housing by wrench. After that pulling the bearing out.
3. Disassembling a handle and cam and related parts. After that pulling a joint shaft out.
4. Disassembling connector and related parts of joint shaft. After that pulling the bearing out.
5. Replacing bearing by inverse order of disassembly. It will require to apply removable glue on nose cone, bearing housing.
6. Run the handpiece under no load state and confirm proper replacement, and then use.





saeyang

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