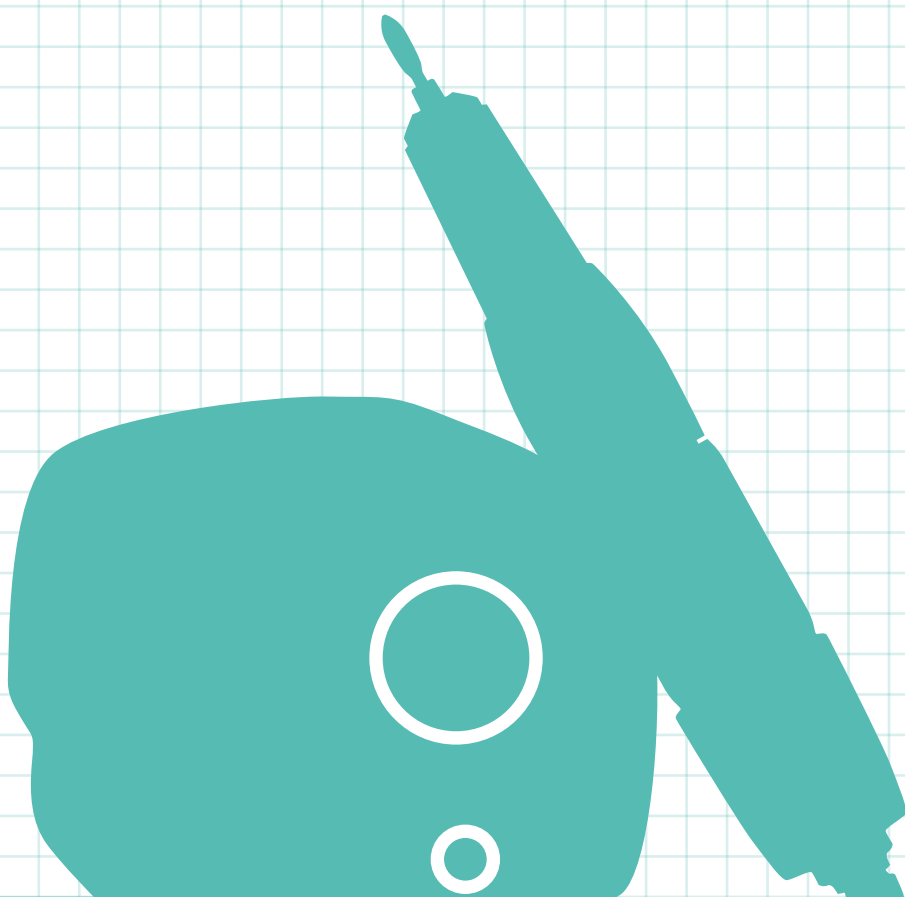




Made in KOREA

# marathon

2019 / 2020



saeyang

# 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 18 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

- 1976 Company Established
- 1977 Registered manufacturing of medical equipment.
- 1987 Registered trading business
- 1989 Registered Korea medical equipment cooperative association
- 1991 Registered of designs for engine for dental laboratory
- 1998 Certified ISO 9001 from TUV (Germany)
- 1999 Certified CE Mark from TUV (Germany)
- 2000 Certified Venture enterprise for high technology
- 2001 Awarded official Superior Exporting Firm
- 2001 Awarded Leading Enterprise
- 2002 Certified CE Mark of New item "Escort"
- 2003 Registered manufacturing Brushless motor
- 2003 Certified CE Mark of "Marathon Multi 600" Brushless motor
- 2004 Established R&D center
- 2004 Certified CE Mark of New item "Marathon N7&N2"
- 2005 Certified CE Mark of New item "Marathon HANDY700 Series" Brush/Brushless motor
- 2005 Awarded official best Exporting Firm
- 2006 Moved into a new factory
- 2006 Certified PSE from TUV
- 2006 Opening Ceremony of a new factory as well as the 30th anniversary
- 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)
- 2010 Certified CE Mark of New item "Endo e class"
- 2011 Development of Endo a class
- 2012 Dental contra angle
- 2013 Developed Implant Motor
- 2013 Certified FDA (Endo Motor)
- 2014 60,000RPM Handpiece Developed
- 2014 20:1 Optic Handpiede Developed
- 2015 Certified FDA CFDA(Implant Motor)
- 2015 Awarded Grand Prize for 2015 Best Company in Daegu City
- 2016 Awarded for Exporting US\$ 20 million  
Awarded for Daegu Star Company
- 2017 Factory expansion  
Development of Endo E plus  
Development of Ki-20 Advance  
Development of K35 cube
- 2018 Development of Endo A Class (APX)  
Development of MINI cro  
Korean World-class Product Award 2018

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# Marathon Products Line-up

Laboratory  
Air turbine



mat-300W  
Water

mat-300A  
Air

Air turbine handpiece



Water

Air

Brushless  
micromotor



SDE  
BM50S1

SDE  
BM40S1

Brush  
micromotor



SDE  
S40

SDE  
H38L

SDE  
SM45C

SDE  
SH37LN

SDE  
SH37L(M45)

SDE  
H37L1

SDE  
H35SP1

SDE  
H37LSP

SDE  
H37SP

SDE  
H200

SDE  
SH300S

SDE  
MH20

E-Type Motor



SDE  
M33E

SDE  
M33Es

SDE  
M300Es

Brushless  
control box



Multi 600  
(60,000 rpm)



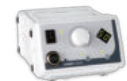
Multi 600



Handy 700  
(60,000 rpm)



Handy 700



Handy Eco

Brush  
control box



Multi 600  
(Duo)



Handy 702



Eco 450



New N7



New N2



K38  
(Standard / Clip type)



MINI cro  
(Clip type)



K35



K35 cube



Escort II pro



Escort III



Marathon-4



M4 mini



M3 Champion



M3 Mighty

The background features a complex, abstract design with various shades of blue and white. It includes curved lines, overlapping geometric shapes, and a grid-like pattern of thin lines that create a sense of depth and movement. The overall aesthetic is clean and modern.

# Air Turbine



marathon

mat-300w

marathon



marathon  
MAT-H300W  
MADE IN KOREA  
NO. 19010001  
CE

# Air Turbine Handpiece

## mat-H300W

Air turbine handpiece (Water)



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

## mat-H300A

Air turbine handpiece (Air)



- Dimensions : L131 x Ø17 (mm)
- Speed : 320,000 rpm
- Weight : 60g
- Air Pressure : 2.0 - 2.5 bar

# mat-300W water

## Features

- Compact size
- Speed control pedal
- Easy to control of water rate and air pressure
- Simple chuck-handle system
- Less noise and vibration



## 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 to control of air pressure
- Simple chuck-handle system
- Less noise and vibration



## Specifications control box only

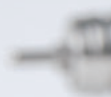
- Air pressure : 2.0 - 2.5 bar
- Weight : 1.15 kg
- Speed : MAX 320,000 RPM
- Dimensions : W100 x D103 x H182(mm)
- Contents : Control unit, Handpiece, Foot control

# memo

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**BLDC**







# Brushless Micromotors

## SDE-BM50S1



- Dimensions : L160 x Ø27 (mm)
- Speed : 1,000 - 50,000 rpm
- Max. Torque : 7.8 Ncm
- Weight : 230g
- Cord length : 1.5m

## SDE-BM40S1



- Dimensions : L160 x Ø27 (mm)
- Speed : 1,000 - 40,000 rpm
- Max. Torque : 8.5 Ncm
- Weight : 230g
- Cord length : 1.5m

# Multi600 60K

## Features

- Digital speed display window
- Less noise, less vibration
- Excellent durability
- Knee-control type
- 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
- Electric power : 100W
- 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
- Knee-control type
- 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
- Electric power : 100W
- 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
- Self-diagnosis function
- Auto-cruise function
- Variable speed control pedal (FS60N)
- Handpiece cradle attached
- Magnetic bur holder attached
- Easy-carry with handle



## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 100W
- 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
- Maximum speed set mode possible
- 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 with handle



## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 100W
- 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 (FS60N)
- Can be laid on the side



▲ Digital



▲ Laid on the side  
for narrow space



## Specifications control box only

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





D C





# Brush Micromotors

## SDE-S40



- Dimensions : L150 x Ø30 (mm)
- Speed : 0 - 40,000 rpm
- Max. Torque : 5.0 Ncm
- Weight : 225g
- Cord length : 1.5m

## SDE-H38L



- Dimensions : L151 x Ø30 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.5 Ncm
- Weight : 200g
- Cord length : 1.5m

## SDE-SM45C



- Dimensions : L155 x Ø30 (mm)
- Speed : 0 - 40,000 rpm
- Max. Torque : 4.5 Ncm
- Weight : 235g
- Cord length : 1.5m

## SDE-SH37LN



- Dimensions : L152 x Ø28(mm)
- Speed : 0 - 40,000 rpm
- Max. Torque : 4.5 Ncm
- Weight : 210g
- 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 : 210g
- Cord length : 1.5m

## SDE-H35SP1



- Dimensions : L152 x Ø28(mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 210g
- Cord length : 1.5m

## SDE-H37LSP



- Dimensions : L154 x Ø30 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 215g
- Cord length : 1.5m

## SDE-H37SP for surveyor



- Dimensions : L154 x Ø30 (mm)
- Speed : 0 - 35,000 rpm
- Max. Torque : 3.2 Ncm
- Weight : 205g
- Cord length : 1.5m

## SDE-H200



- Dimensions : L129 x Ø22 (mm)
- Speed : 0 - 30,000 rpm
- Max. Torque : 2.9 Ncm
- Weight : 143g
- Cord length : 1.5m

## SDE-SH300S



- Dimensions : L135 x Ø23 (mm)
- Speed : 0 - 30,000 rpm
- Max. Torque : 2.9 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 : 2.7 Ncm
- Weight : 137g
- Cord length : 1.5m

## SDE-M33Es



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

## SDE-M300Es



- Dimensions : L97 x Ø23 (mm)
- Speed : 0 - 30,000 rpm
- Max. Torque : 2.4 Ncm
- Weight : 86g
- Cord length : 1.5m

# Multi 600 Duo

## Features

- Brushless & brush micromotor / Dual control system
- Digital speed display window
- Less noise, less vibration
- Excellent durability
- Self-diagnosis function
- Auto-cruise function
- Variable speed control pedal (FS-60N)



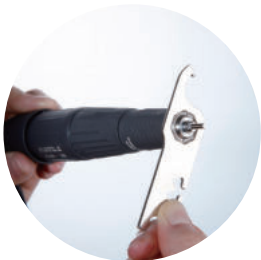
## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 50W
- 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
- Handpiece cradle attached
- Magnetic bur holder attached
- Easy-carry with handle
- Variable speed control pedal (FS-60N)



▲ Collet chuck change



## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 60W
- 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
- Less noise, less vibration
- Can be laid on the side
- Variable speed control pedal (FS-60N)



▲ Laid on the side for narrow space



### Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 50W
- 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 (SFP-27)
- Variable speed control pedal (FS-60)



▲ Dust - proof cover



## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 50W
- 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 (SFP-27)
- Variable speed control pedal (FS-60)



▲ Dust - proof cover



### Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 40W
- Speed : MAX 35,000 RPM
- Weight : 1.2 kg
- Dimensions : W115 x D147 x H96(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

# K38



white



pink



hot pink



blue



mint



black

## Features

- Standard type / Clip type
- 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 (SFP-27)



## Specifications control box only

- Power supply : DC 12V
- Electric power : 24W
- Speed : MAX 30,000 RPM
- Weight : 277 g
- Dimensions : W67 x D128 x H30(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand, Holder (optional), Cradle(optional)

# MINI cro



## Features

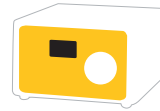
- Clip type
- LI-ION battery (rechargeable)
- Speed display LED [white >> sky blue >> blue >> pink]
- Overload protection
- FWD-REV
- Pause button
- Battery remaining indicator



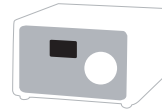
## Specifications control box only

- Power supply : DC 12V
- Electric power : 24W
- Speed : MAX 30,000 RPM
- Weight : 225 g
- Dimensions : W65 x D147 x H25(mm)
- Contents : Control unit, Handpiece, Handpiece stand  
Holder (optional), Cradle(optional)

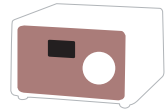
# K35



yellow



silver



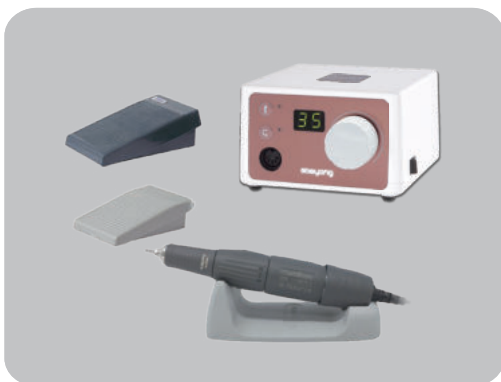
rose gold

## 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 (FS-60)
- On/Off foot switch (SFP-27)



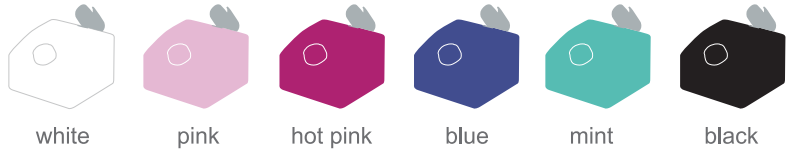
▲ Digital



## Specifications control box only

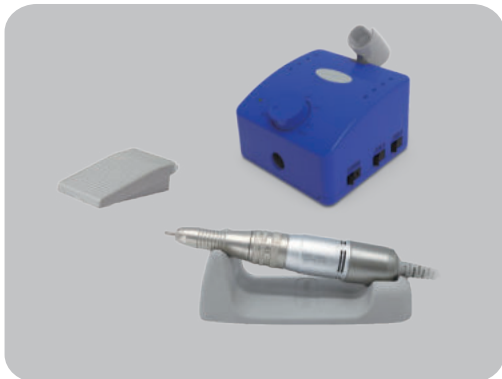
- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 40W
- Speed : MAX 35,000 RPM
- Weight : 1.13 kg
- Dimensions : W120 x D120 x H75(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

# K35 Cube



## Features

- Non - stage speed control volume dialing system
- Built-in handpiece cradle and bit stand
- Forward&reverse direction switch
- On/Off foot switch (SFP-27)



### Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 45W
- Speed : MAX 35,000 RPM
- Weight : 1.3 kg
- Dimensions : W120 x D120 x H85(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

# Escort II pro



white

pink

red

blue

mint

black

## Features

- Powerful performance with low noise & vibration
- Built-in handpiece cradle and bit stand
- Automatic safety overload protection system
- Forward&reverse direction switch
- Variable speed control pedal (FS-60N)
- On/Off foot switch (SFP-27)



## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 45W
- Speed : MAX 35,000 RPM
- Weight : 1.25 kg
- Dimensions : W134 x D154 x H82.4(mm)
- Contents : Control unit, Handpiece, Foot control, Handpeice stand

# Escort III

## Features

- Powerful and excellent performance with low noise & vibration
- Lightening push button
- Forward&reverse direction switch
- On/Off foot switch (SFP-27)



▲ Lightening push button



## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 40W
- 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
- Lightening push button
- 4 stage speed control
- Forward&reverse direction switch
- On/Off foot switch (SFP-27)



▲ Lightening push button



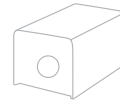
## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 40W
- Speed : MAX 35,000 RPM
- Weight : 1.16 kg
- Dimensions : W112 x D147 x H77(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

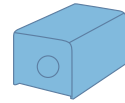
# M4 mini

## Features

- Powerful performance with low noise & vibration
- Forward&reverse direction switch
- 4 stage speed control
- Compact size
- On/Off foot switch (SFP-27)



white



blue



▲ Collet chuck change



### Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 40W
- 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 (SFP-27)



white



blue



pink



black



## Specifications control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 45W
- 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 (SFP-27)



### **Specifications** control box only

- Power supply : AC100 - 120V or 200 - 240V 50/60 Hz
- Electric power : 45W
- Speed : MAX 35,000 RPM
- Weight : 1.26 kg
- Dimensions : W118 x D156 x H89(mm)
- Contents : Control unit, Handpiece, Foot control, Handpiece stand

# memo

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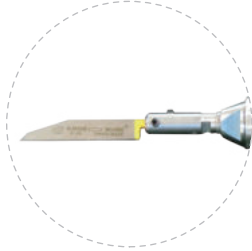




# Equipments

# SDE-SM110

hammer handpiece



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

# SDE-LS200

laboratory lathe spindle

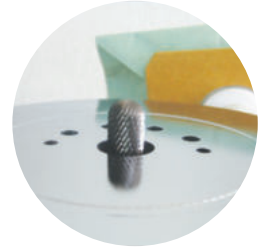


- Max.speed: 28,000 rpm
- Compatible Automatic Spindle with laboratory alloy grinders



# Marathon-20

center grinder



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

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**Spare parts**

Collet sleeve



Collet chuck  
Standard

brushless



Collet chuck

brush



Spindle chuck



Collet chuck

Air turbine



17mm

Air turbine  
Cartridge

Air



Air turbine  
Cartridge

Water



Spindle assy

brushless

SDM-BM50S1 / SDM-BM40S1



Spindle assy

brush

SDM-H37L1 / SDM-H37LN



Spindle assy

brush

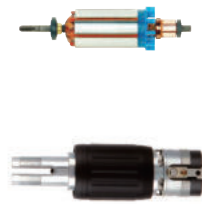
SDM-H35SP1



**Armature**  
SDM-SH37LN  
(Bearing Ø4)



**Armature**  
SDM-H37L1  
SDM-H35SP1  
(Bearing Ø3)



**Armature**  
SDM-M33Es



**Armature**  
SDM-M33E



**BLDC Motor** brushless  
SDM-BM50S1



**Carbon brush** brush



**Ball Bearing** brushless



**Ball Bearing** brush



**Ball Bearing** Air turbine



**Variable Speed  
Foot Pedal**

FS-60 / FS-60N / SFP-73



**On / Off  
Foot Switch**

SFP-27 / SFP-22  
/ SFP-20N



**Air turbine  
Foot Switch**

MAT-F300



**Handpiece Stand**



**Cord** brushless



**Cord** brush

Straight / Curling



**Charger Cord**

New K38 / MINI cro



**Bur Inserting  
Tool** Air turbine

MAT-H300A / MAT-H300W



**Handpiece Tube** Air turbine

(A) MAT-300A

(B) MAT-300W





**Chuck Joint Wrench** brush



**Chuck Wrench** brush brushless



**Spanner** Air turbine



(A) Ø3.5 (B) Ø9.5

**Spanner**  
SM110



(A) Ø5 (B) Ø9

## Maintenance & Repair tool box

brushless



brush



# User guide

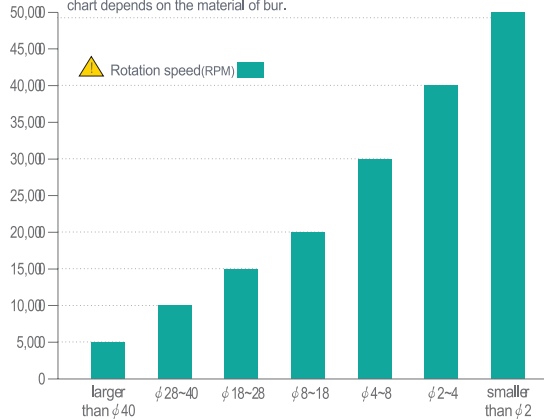
(For safety & efficiency)

## \* 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



1 Check the product if everything is set before use.



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



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



4 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



5 Do not exceed the maximum speed.



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



7 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.



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



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



10 Do not customize the product.



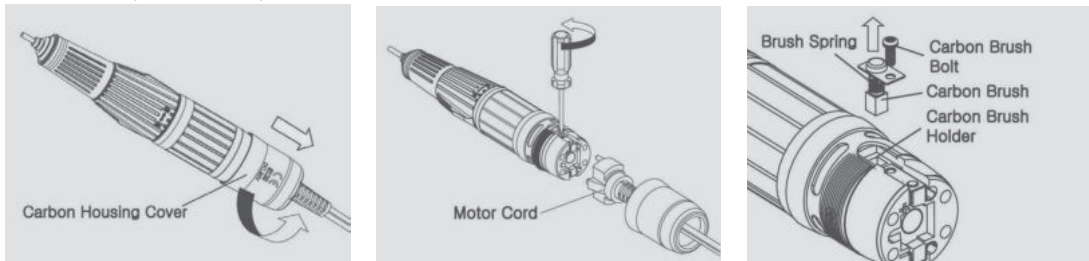
11 Avoid exposing the product to high temperature and humidity. Daily inspection & maintenance are required.



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

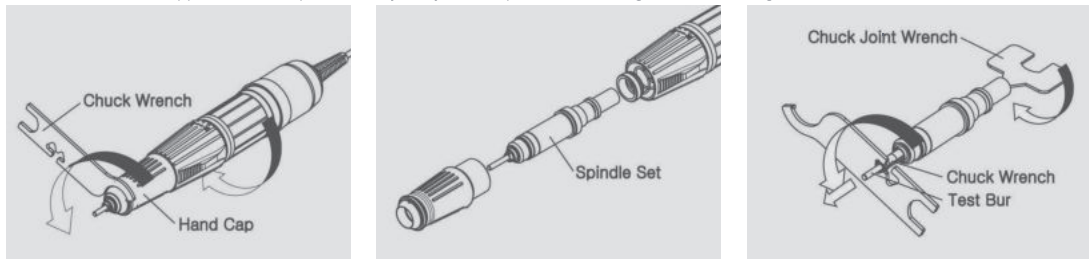
## Replacing Carbon Brushes

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.



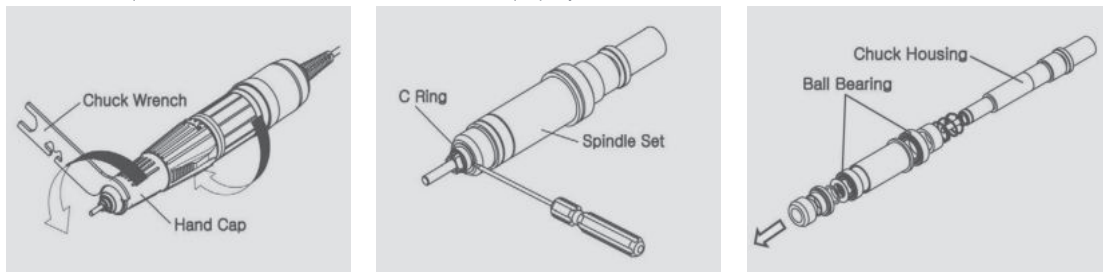
## Replacing the Collect Chuck

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



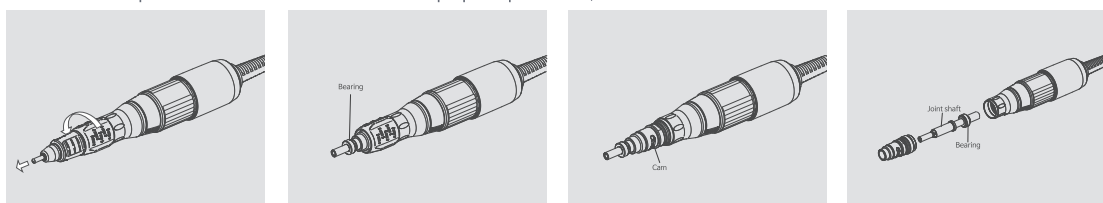
## Replacing Ball Bearings

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.



since 1976

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