

# Midwest<sup>®</sup> E

Motor

## Directions For Use

**CAUTION:** US Federal law restricts this device to sale by or on the order of a licensed dental professional.

MIDWEST<sup>®</sup> E  
Electric Handpiece System

Doc. No. 87513-0814

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Manufactured for:

**DENTSPLY Professional**

A division of DENTSPLY International

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## 1 Important Information

### Indications for Use

The Midwest<sup>®</sup> E Electric Handpiece System is intended for use by dental professionals in the performance of dental restoration, prophylaxis and endodontic procedures.

Attachments are offered to complement the system used for general dentistry work. The intended use of the respective attachment is dependent on the gear ratio. The System offers handpiece attachments for the removal of decayed matter, cavity and crown preparations, and removal of fillings and surface finishing of tooth and restoration surfaces. In addition, the system offers attachments for caries excavation and endodontics.

### Contraindications

None Known

## 1 Important Information



### Warnings

- This motor is solely intended for use with the Midwest® E Electric Handpiece system. Any other type of use or alteration to the product is prohibited and can result in personal injury.
- Never place an attachment on a running dental motor. Personal injury or damage to the equipment may occur.
- Electric Dental Micromotors generate significantly more power than traditional air turbines and air motors. Due to this increased power and torque, poorly maintained, misused, worn, or damaged handpieces can potentially generate friction induced heat capable of causing serious burns to patients and staff. The following guidelines should be followed to ensure safe operation of electric handpieces:
  - Carefully follow these maintenance instructions
  - Use only Midwest maintenance products
  - Examine the handpiece for damage before each use
  - NEVER apply pressure to the chuck release button while the handpiece is rotating or use the handpiece as a cheek or tongue retractor!

## 1 Important Information

- Immediately stop using the handpiece if it begins generating heat, excessive noise, or vibration
- ISO 11498 states “Dental low voltage electric motors shall not be used in the presence of a flammable anesthetic gas mixed with air, oxygen, or nitrous oxide.” (Note: nitrous oxide by itself is not a flammable anesthetic gas.)
- To dispose of this device adhere to local, state, federal and/or other governing regulations.







### Precautions

- This product is intended for use by dental professionals only
  - Motors should be sterilized between patients to prevent cross-contamination which could result in serious illness or even death from infectious organisms such as HIV (the virus that causes AIDS) or hepatitis B
- Sterilize motors before use, motors are supplied non-sterile**
- Follow all sterilization methods described in this manual for safe use of the product
  - Follow the separate User Manual for attaching and using the dental attachments. Improper handling can result in personal injury.
  - Service of the Midwest® E motors is restricted to DENTSPLY authorized service personnel only.








# 1 Important Information

## Applied Symbols

Appearing in the manual:

	Situations where failure to follow the instructions may lead to danger, damage to material or operating faults.
	Important information for operator and engineer.
	Disposal information see 1 Important Information - "Disposal"
	Sterilizable up to 135°C (275°F)

Appearing on the packaging:

	Fragile
	Keep dry
	Stacking restrictions
	Temperature range
	Air pressure
	Humidity
	Quantity

## 2 Cleaning and Sterilization



### **WARNING:**

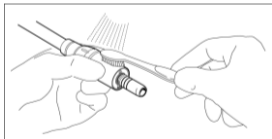
The dental motor **MUST** be sterilized before use and after each use

### **Cleaning**

DENTSPLY recommends the following steps between each patient use to prevent cross-contamination and to ensure continued trouble-free operation of your Midwest<sup>®</sup> E motor.

### **To Clean the Motor:**

Clean the surface by creating a 60 to 70% alcohol and water solution at 30°C ± 5°C (86°F ± 41°F) and brush the surface using a brush such as medium-hard toothbrush. Lubricate the motor coupling as shown below.



### **Note:**

Sterilization of the dental motor is required after cleaning



## 2 Cleaning and Sterilization

### **Sterilization**

Sterilize dental motors in a sterilizer per manufacturer recommendations

Immediately remove the product from the steam sterilizer after the sterilization cycle is complete. Corrosion can occur from moisture build up if left in the steam sterilizer.

The dental motor has a maximum temperature resistance of 138°C (280.4°F).

*NOTE:* The dental motor is autoclavable with two different validated methods:

1. Three pre-vacuum cycles for at least 3.5 minutes at 134°C ± 1°C (273.2°F ± 33.8°F)
2. Autoclave using the gravitation method for at least 90 minutes at 121°C ± 1°C (249.8°F ± 33.8°F)

Follow the autoclave manufacturer's Operators Manual for autoclaving

The drying time is at least 10 minutes.

The pre-vacuum is at least 20 kPa.

### **Bagged (wrapped) Sterilization:**

DENTSPLY Midwest recommends using sterilization bags large enough such that the bag is not stretched

Storage of the motors should be in placed in a dry, cool room protected from dust.

### 3 Operation

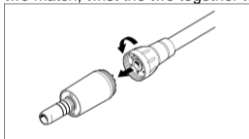


**WARNING:**

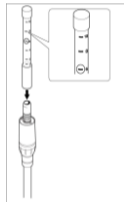
- Never plug an instrument on a running dental motor.
- The dental motor must be sterilized before first use and after each use.

**To connect the Motor to the Motor Housing:**

Lightly coat the O-rings on the motor tube with a lubricant spray. Align the pins on the motor with the holes on the motor hose until the two match, twist the two together to lock as shown below.



Measure the air supply coming out of the end of the motor coupler as shown on the right. The value must be at least 10 l/min.



**WARNING:**

- Before treatment of the patient, ensure the dental motor is properly connected to the hose by gently pulling on the motor.
- To prevent heat buildup on the patient's teeth, the water spray must be at least 50 ml/min for appropriate cooling.
- To prevent the dental motor from heating up, the air spray must be delivering 10 NI/min.

### 3 Operation

**To Disconnect the Motor from the Motor Hose:**

Twist the Midwest<sup>®</sup> E motor in the opposite direction until loose and then pull apart



**CAUTION:**

Pressing the footswitch while connecting or disconnecting the dental motor can cause damage to the dental motor and to the supply hose. Do not connect or disconnect the dental motor while the footswitch is operating.

## 5 Maintenance

On a weekly basis, perform the following on the motor:

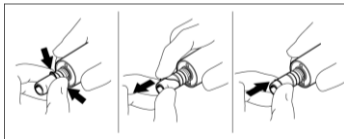
1. **Check for Damage or Missing O-Rings**

Check that all O-rings are present and undamaged on the coupling of the motor. If the O-rings are missing or damaged, replace them accordingly.



**CAUTION:** If the O-rings are missing or damaged, malfunctions and premature failure can occur.

To replace a new O-ring: squeeze the O-ring between your fingers until its shape resembles a bow, slide the O-ring to the front and remove it away from the coupler. Insert new O-rings into the grooves and ensure it is seated flush in the groove.



2. **Lubricate the O-Rings**

Lightly lubricate the O-rings with Midwest Plus™ lubricant by using a cotton roll coated with the lubricant spray.

*NOTE:* Do not use Vaseline or other types of grease or oil to lubricate the O-rings

## 6 Specifications

Motor speed range:	100 – 40,000 rpm
Motor power:	max. 60 W
Motor voltage:	max. 22 V AC
Output torque:	max. 3.5 Ncm
Operation mode:	Duty cycle (0.5 on / 9 off) minutes
Max. current of the LED:	250 mA
Air outlet of the coupling (cooling air):	10 NI/min
Spray air pressure:	1 – 2.5 (14.5 – 36.2) bar (psi)
Spray water pressure:	0.8 – 2.0 (11.6 – 29.0) bar (psi)
Weight:	62 (0.136) g (lbs)
Dimensions:	31.7 x 22 (1.25 x 0.87) mm (inch)
Rotation:	clockwise / counter-clockwise
Sound level:	< 40 dBA
Connection of attachments:	ISO 3964

### Operating Conditions

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Location:	Permitted in interior rooms
Ambient temperature:	10 – 35 (50 – 95) °C (°F)
Relative humidity:	30 – 75 %
Max. altitude:	2,000 m

## 6 Specifications

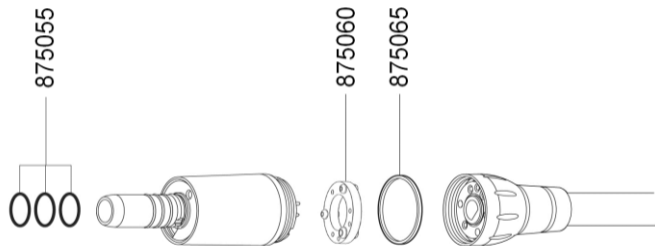
### Storage and Transport Conditions

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**!** **CAUTION:** There is a potential hazard from starting the motor after storage in very cold conditions. Damage to the device can occur. Products that have been stored in very cold environments must be warmed to 20°C – 25°C (68°F – 77°F) before use.

Ambient temperature:	-30 to 70 (-22 to 158) °C (°F)
Relative humidity:	5 – 95 %
Air pressure:	700 – 1,060 hPa
Keep dry	

## 7 Spare Parts



Part Number	Description
875055	Midwest <sup>®</sup> E Motor O-Rings (3)
875060	Midwest <sup>®</sup> E Motor Hose Connection O-Ring
875065	Midwest <sup>®</sup> E Motor Seal

## 8 Warranty

The Midwest® E Motor is guaranteed to be free of defects in material and workmanship for a period of 36 months from date of purchase – provided the motor has been operated and maintained as prescribed in these Instructions for Use, at the discretion of DENTSPLY, and has not been subject to apparent misuse, abuse or accident.

All questionable, defective or loose parts must be returned with proof of purchase, transportation prepaid.

Not following the provided instructions for Installation, Operation and Maintenance will void the warranty.

There are no warranties, express or implied, which extend beyond the description of the face hereof. DENTSPLY neither assumes, nor authorizes any person to assume for it, any other liability in connection with the sale or use of its products.

Damages are limited strictly to repair or replacement of parts.

DENTSPLY expressly disclaims liability for incidental and consequential damages resulting from the use of the products.

Claims covered by this warranty will be honored when presented through your DENTSPLY Professional distributor within 30 days from discovery of defect within the applicable warranty period.

### **MAINTENANCE & REPAIR – Within USA**

Midwest Air Repair  
901 West Oakton Street  
Des Plaines, IL 60018-1884  
800-800-7202

### **MAINTENANCE & REPAIR – Within Canada**

Contact your dealer of choice to arrange maintenance & repair.