

FOREDOM®

Operation & Maintenance Manual for K.1050 Brushless Micromotor Kit with additional Port for connecting a Brush Type Handpiece



For Your Safety:



Read this Manual before operating your Freedom Micromotor Power Tool.



Always wear eye protection while operating this Micromotor.

For More Information on Freedom machines, handpieces or accessories, contact your local dealer. When no local dealer is available, write, call or fax:

Freedom Electric Company

16 Stony Hill Road, Bethel, CT 06801

(203)792-8622, Fax: 203-796-7861, Email: customerservice@blackstoneind.com

Visit our website: www.freedom.net for video descriptions of this product.

Safety Instructions

A Micromotor Handpiece is a high speed rotary power tool which can be dangerous and cause serious injury if it is not used properly. NEVER operate it without wearing eye protection.

- **ALWAYS** wear proper eye and face protection.
- **ONLY** use accessories rated for 50,000 rpm or higher speeds when operating this micromotor. Follow the Allowable Rotation Speed chart on page 8 of this manual for safe operation when using accessories with head diameters of more than 3/32" (2mm).
- **ALWAYS** observe the manufacturer's maximum speed rating when using any accessory.
- **NEVER** use or continue to use any accessory which appears to be damaged, loose, vibrating, bent, or out of balance. Inspect each accessory for cracks or flaws before use.
- **ALWAYS** insert the shank or arbor of an accessory or mandrel into the collet or chuck of the handpiece as far as possible in order to provide proper support and close the collet or chuck securely.
- **NEVER** use excessive side pressures which may tend to bend or break the shank or arbor of an accessory. Let the speed of the accessory do the work.
- **DO NOT** stall the motor by jamming or using excessive pressure on the mounted point, buff, wheel or accessory. This can result in damage to the motor.
- **WEAR** a dust protector, mask or respirator to prevent the inhalation of harmful dust or debris from grinding, carving or other operations performed with this power tool.
- **NEVER** operate with a damaged power cord. If the power cord or plug to the handpiece is damaged, repair or replace immediately.
- **USE** a dust collector (vacuum system) to pull sawdust, grinding dust, or other debris away from the work area and the micromotor intake vents.
- **NEVER** wear open shoes or sandals. Use footwear that is tough enough to protect your feet from falling tools.
- **ALWAYS** keep both hands and fingers away from the cutting edge.
- **NEVER** cut or exert pressure, toward your hand or any other part of your body.
- **DO NOT** wear loose fitting clothing or jewelry. Loose clothing or jewelry can be come entangled in the tool. Do not wear items such as neckties, necklaces, or bracelets when operating power tools. Secure or tie back long hair.
- **NEVER** turn on or start the Handpiece while chuck is in open (unlocked) position. This can damage the handpiece. Make sure that a bur is installed and secured in the collet, that the spindle is NOT locked and that the bur can spin freely.
- **NEVER** close the collet when it is empty. Always operate and store it with a bur or other accessory in the chuck and with the chuck in the closed position.
- **DO NOT** operate the handpiece in the presence of any flammable liquid or gas.



Repair Services

Authorized repair service is available at the Foredom factory in Bethel, CT.

Please call 1-800-272-2885 or email customerservice@blackstoneind.com to request a RMA number (Return Material Authorization Number) prior to returning. Repairs will not be accepted without an RMA number.

Enclose the item(s), a packing list, your address, phone number, email address and a description of the problem or repairs required and a RMA number (Return Material Authorization Number) from customer service. Estimates of repair cost will be made upon request. **Please retain your proof of purchase for warranty repairs.**

Foredom Electric Company
16 Stony Hill Rd, Bethel, CT 06801

Limited Warranty

Foredom warrants its product to be free of defects in material or workmanship for a period of two years after purchase. Blackstone Industries, LLC d/b/a Foredom Electric Company warrants, to the original purchaser only, that its products will be free from defects in material or workmanship for the applicable period of time indicated above following the purchase date.

During the warranty period, the defective product will be repaired or replaced without charge or, at our sole option, the purchase price will be refunded. This warranty does not cover damage caused in transit or by accident, misuse or ordinary wear.

ALL IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, ARE LIMITED IN DURATION TO THE APPLICABLE WARRANTY PERIOD. IN NO EVENT WILL WE BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusion may not apply to you.

At our sole option, repair, replacement or refund will be made if the product is returned postage prepaid to:

Foredom Electric Company
16 Stony Hill Road, Bethel, CT 06801

All warranty repairs must be done at the factory at the address above. We will not pay any shipping or transportation charges. This warranty only covers the original purchaser of the product. Proof of purchase may be requested. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Please retain your proof of purchase for warranty repairs.

Authorized repair service is available at the Freedom factory in Bethel, CT. Send items for repair to the factory marked "Attention: Repair Department". Enclose the item(s), a packing list, daytime phone number, return address, email address, and information regarding the problem or repairs required. Estimates of repair cost will be made upon request. It is our policy not to proceed with a repair without your approval if the cost (labor plus parts) is more than fifty percent of the cost for a new replacement. You will be notified and advised of the cost to repair and to purchase a new replacement.

Complete Kit (Fig. 3)

Control Unit, Power Cord

Brushless Handpiece

Handpiece Holder,

Phillips Screw, Washer

Foot Pedal

Handpiece Cradle

Collet Changing Wrench

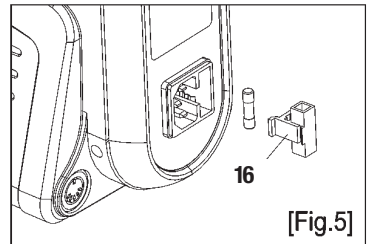
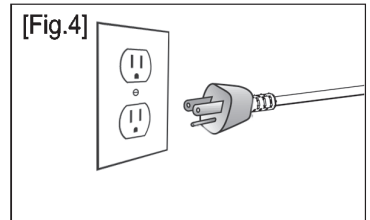
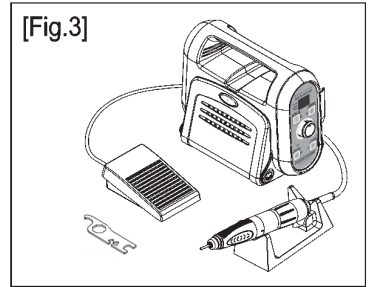
A Brush Type Handpiece may be used with Kit K.1050 but is NOT included with this kit

AC Power Input (Fig. 4)

1. Check the label on the rear of the Control Unit to make sure that the electrical specifications match your AC power.

2a. If the fuse needs to be replaced (Fig. 5), replace it with identical type and rating only— For 115 V micromotor use a 5x20mm, SLO-BLOW, 3.15A, 250V.

2b. For a 230V Micromotor use a 5x20mm, SLO-BLOW, 1.6A, 250V. The Fuse Holder **16** contains a spare fuse (Fig. 5).



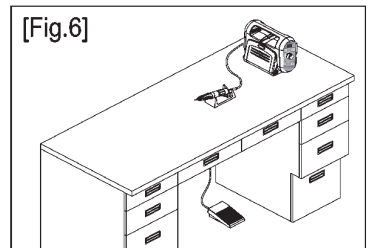
CAUTION

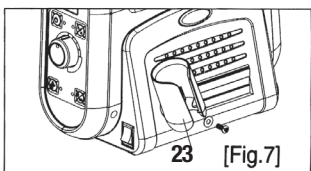
- Never plug or unplug the Power Cord with wet hands to avoid electric shock.
- Use only with a grounded AC power receptacle.

Installation

CAUTION

- The Control Unit should rest on a flat, steady surface. Avoid blocking the ventilation openings in the bottom of the case (Fig. 6).
- Use the Control Unit in locations with a temperature below 100°F. Avoid excessively dusty, hot or humid locations.





23 [Fig.7]

Set-up

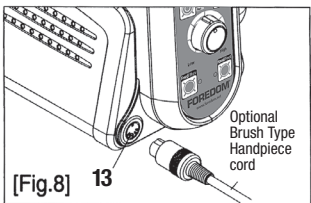
1. Fix the Handpiece Holder **23** to the right side of the Control Unit with screw and washer. (Fig.7).

2. An optional Brush Type Handpiece Motor Cord may be plugged into the Port A Outlet **13** located in the front of the Control Unit. (Fig.8).

3. Plug the supplied Brushless Handpiece Motor Cord **21** into the Port B Outlet **17** located in the rear of the Control Unit and then tighten the plug nut. (Fig.9).

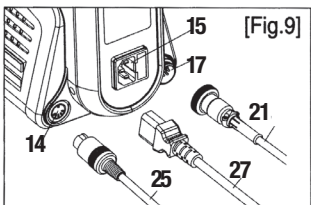
4. Plug the Foot Pedal Cord **25** into the Foot Pedal Outlet **14** located in the rear of the Control Unit. (Fig.9)

5. Plug the Power Cord **27** into the Power Connector **15** in the rear of the Control Unit. (Fig.9).



[Fig.8] 13

Optional
Brush Type
Handpiece
cord



[Fig.9]



CAUTION Make sure that all cords are connected safely and properly and that the Power Switch **12** is off before plugging in the Power Cord (Fig. 11).

Burs may be stored on the magnetic bur holder strips located on the side of the controller. Burs without enough ferrous metal will not attach to the strip. (Protect from ferrous metal dust.) (Fig. 10).

Operation

a. Make sure that a bur is inserted in the micromotor handpiece and collet is fully closed. (See page 5)

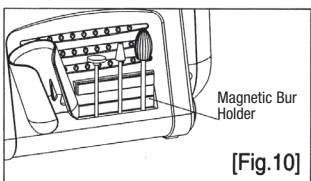
b. Set Power Switch 12 to off (O)(Fig. 11).

c. Plug the Power Cord 27 into a grounded electric outlet (Fig. 4).

d. Set the Speed Control Knob 7 to the slowest position.

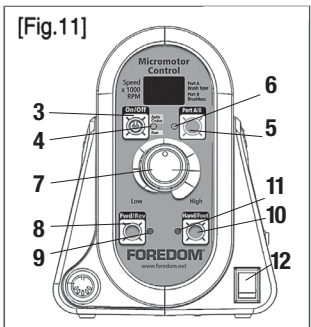
e. Turn the Power Switch 12 on (I)(Fig. 11) – switch lights up.

f. Select Port A (front) **Brush Type** or **Port B** (back) **Brushless Handpiece** by pressing **Handpiece Selector Switch 5** (Fig. 11).



[Fig.10]

Magnetic Bur
Holder



[Fig.11]



Port A FRONT	Brush Type Handpiece (Optional)	Indicator Light 6 turns Green
Port B BACK	Brushless Handpiece (Supplied)	Indicator Light 6 turns Orange

g. Select the rotation direction by pressing Forward/Reverse Selector Switch 8. (Forward is green / Reverse is orange)



CAUTION Never switch rotation direction while the handpiece is running.

Hand Mode Operation, follow steps a. through g. above, then:

1. Press the Hand/Foot Selector Switch **10** to “Hand”. (Hand/Foot Selector indicator light **11** turns green.)

2. Press the Motor On/Off Switch **3** to run the motor. (Motor On/Off indicator light **4** turns green.)

3. Set the Speed Control Knob **7** to desired speed.

4. Use the Motor On/Off Switch **3** to stop the motor.

Foot Mode Operation, follow steps a. through g. above, then:

1. Press the Hand/Foot Selector Switch **10** to “Foot”. (Hand/Foot Selector indicator light **11** turns orange, Motor On/Off indicator light **4** turns green.)

2. Set the Speed Control Knob **7** to desired maximum speed.

continued



Foot Mode Operation continued

In Foot Pedal Mode the micromotor will not exceed the preset dial speed.

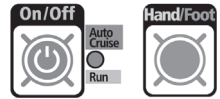
3. Press the Foot Pedal **26** to run the motor from start to a maximum speed (set by the speed control knob).

4. To increase the maximum speed setting, release foot pedal and allow motor to stop. Dial in new maximum speed and proceed.

Changing from Foot to Hand Mode

1. Press Hand/Foot selector switch, **10** (Hand/Foot Selector indicator light **11** turns green)

2. Press Motor On/Off switch, **3** and select a speed using the control knob **7**.

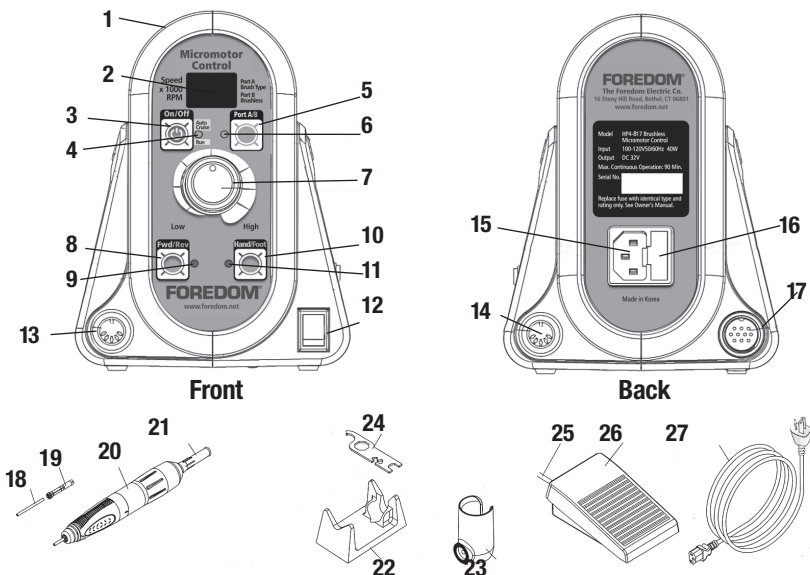


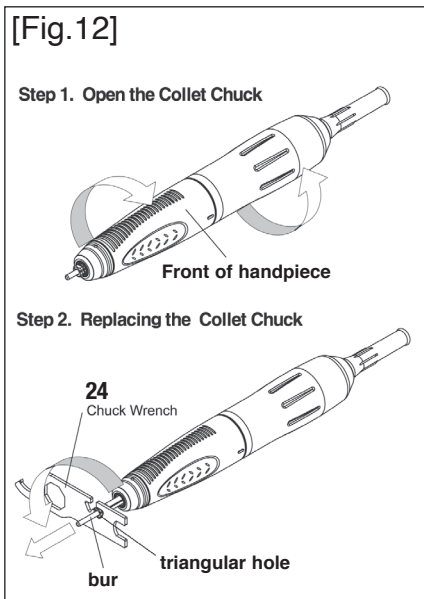
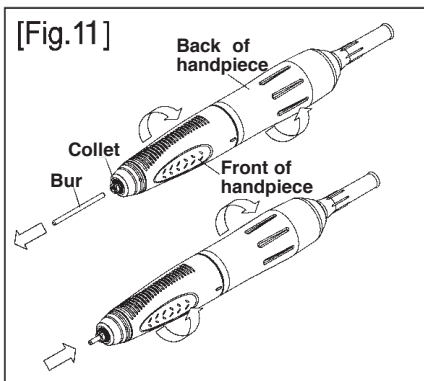
Auto Cruise Mode

In Foot Mode operation, the Auto Cruise feature allows a preset speed to be maintained when the Foot Pedal is released. To enable Cruise Mode, press motor run switch **3**, the indicator light **4** will turn orange. To activate, hold the pedal at the desired speed position and after 2 seconds there will be a double beep. The foot pedal can then be released, and the selected speed will be maintained. Pressing the foot pedal again will release the preset speed. A new preset speed can then be selected by holding the foot pedal at the desired speed for 2 seconds until a double beep is heard. To return to normal Foot Control operation, press the Motor On/Off & Auto Cruise switch **3**. The Indicator light **4** will turn green.

Components

- | | | |
|---|---|--|
| 1 Control Unit (HP4-817) | 10 Hand/Foot Selector Switch | 19 3/32" Collet (1/8" is optional)
Collet part numbers and sizes are listed on page 5. |
| 2 Digital Speed Display (x 1,000rpm) | 11 Hand/Foot Indicator Light | 20 Brushless Micromotor Handpiece H.MH-150) |
| 3 Motor On/Off & Auto Cruise Switch | 12 Power On/Off Switch & Light | 21 Handpiece Motor Cord |
| 4 Motor On/Off & Auto Cruise Indicator Light | 13 Port A Brush Type Handpiece Plug Outlet | 22 Handpiece Cradle (HP4-933) |
| 5 Handpiece Port Selector Switch | 14 Foot Pedal Plug Outlet | 23 Handpiece Holder |
| 6 Handpiece Port Indicator Light | 15 Power Cord Plug Outlet | 24 Chuck Wrench (HP4-993) |
| 7 Speed Control Knob | 16 Fuse Holder with spare fuse | 25 Foot Pedal Cord |
| 8 Forward/Reverse Selector Switch | 17 Port B Brushless Handpiece Plug Outlet | 26 Foot Pedal (HP7-7060) |
| 9 Forward/Reverse Indicator Light | 18 Test Bur | 27 Power Cord |





To order the correct Replacement or Additional Collet for the H.MH-150 check the Handpiece Serial Number

Handpiece Serial Nos.	Collet Part No.	Collet Size
808xxxx and above	HP4-117	2.35mm (3/32")
	HP4-117B	3.18mm (1/8")
	HP4-117C	3.00mm
807xxxx and below	HP7-5008	2.35mm (3/32")
	HP7-5007	3.18mm (1/8")
	HP7-5006	3.00mm


Using the Brushless Motor Handpiece (H.MH-150)

Changing Accessories

Burs and other accessories can be inserted or removed from the handpiece collet when the collet is open. To open the collet:

1. Turn off the motor using the Motor On/Off Switch **3** and the Power Switch **12**.
2. Twist the Front of Handpiece in the "R" or release direction (clockwise) until the raised indicator bar **clicks** into the far left mark (◁) on the silver center ring (Fig.11).
3. Remove the accessory and replace with another accessory. Insert accessory shank fully (about 1 1/8") into the collet for maximum support. You should feel it touch the back of the collet.
4. Twist the knurled Front of Handpiece toward the "S" or secure position by turning counterclockwise until it snaps to lock the collet. The accessory and the collet will be able to spin freely. The raised collet indicator bar will be above the far right (>) mark in the silver center ring.

Note: The intermediate position between "S" and "R" holds both the spindle and the accessory in a locked position. This is useful to unscrew an over-tightened mandrel screw.

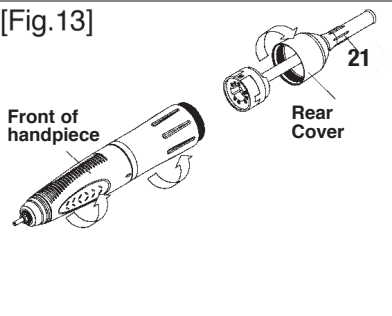
CAUTION Never run the handpiece when the **collet is open or in the intermediate position.**  **The spindle is in the locked position and will not turn. This will damage the motor. NEVER close the collet when it is empty.**

Removing and Installing Collets

1. With knurled Front of Handpiece in "R" release position and bur or accessory in collet, place triangular hole in Chuck Wrench **24** over triangular flats of Collet head and unscrew the collet counterclockwise (Fig. 12) Remove collet.
2. With bur or accessory in new collet, thread into handpiece. Place triangular hole in Chuck Wrench **24** over triangular flats of Collet head and tighten the collet clockwise. Be careful not to over-tighten. Test to insure that new collet releases accessory smoothly in the "R" released position. Test to insure that new collet holds firmly in the "S" secure position and spindle rotates freely.

See video on
Changing Collets &
Accessories at:
www.foreedom.net

[Fig.13]



Replacing the Handpiece Cord Set

Unplug Handpiece Motor Cord Assembly **21** from Handpiece Plug Outlet **17** on the back of the control. The Motor Cord Assembly **21** can be replaced by unthreading the Rear Cover from the Motor Housing (Fig.13).



CAUTION Keep a bur in the chuck at all times.

NEVER close the collet when it is empty.

Do not operate the handpiece without a bur in the chuck.

Do Not submerge the handpiece in liquids!

- Use only recommended burs.
- Always be sure chuck is free of dirt or debris before replacing a bur.
- After replacing a bur, make sure that the Collet Chuck is fully closed before running the Motor.
- DO NOT open the collet while the motor is running. It will damage the handpiece.
- Always put the Handpiece on the Handpiece Cradle **22** or in Handpiece Holder **23** while not in use. (Fig.7). Take special care not to drop it on the floor.
- Thoroughly clean the Collet with brush or compressed air before reassembling. Clean at least once a week for longer life.
- Keep the Handpiece clean and free of dirt and debris during disassembly.
- The spindle and the motor should be disassembled only by a qualified repair facility.



CAUTION

- Never exceed the maximum rotation speed specified by the manufacturer for the bur being used.
- Large burs, even when operated below maximum rated speed, may begin to vibrate. Speed should be reduced immediately to prevent damage to the bur, handpiece, or operator.
- Be sure to insert the Bur shank all the way, until it touches the back of the Collet Chuck. Then tighten the Collet Chuck. If the Bur is used while not inserted completely, it is very dangerous because vibration may cause it to come out, bend, or break.

See videos
of Product
Features at:
www.foreedom.net



CAUTION

- Do not exceed the maximum operating speed of the bur or accessory in the handpiece to avoid personal injury.
- Before turning off the Power Switch, make sure that the motor has been stopped.
- When the unit is not in use, for maximum safety, unplug the Power Cord.

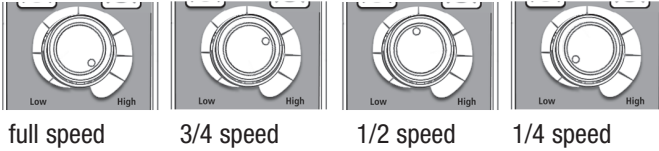
Using an Optional Brush Type Motor Handpiece in Port A:

Foredom currently has 3 brush type handpieces for use in Port A on Control Box (HP4-817). These brush type micromotor handpieces all have different speed ranges, as detailed below. However, since the handpiece speed ranges do not match the factory maximum preset of 35,000 RPM on the digital display, you can approximate the digital display speed with the actual speed of your specific handpiece as follows:

Digital Display:

- 35** 35,000 = full speed
- 26** 26,000 = 3/4 speed
- 17** 17,000 = 1/2 speed
- 9** 9,000 = 1/4 speed

Dial position (shown below) is also an indicator of speed for these handpieces.



**H.MH-011 Hammer
Micromotor Handpiece**
Strokes Per Minute: 1 - 2,500



**H.MH-120 Chuck Style Micromotor
Handpiece**
Maximum Speed- 20,000 RPM

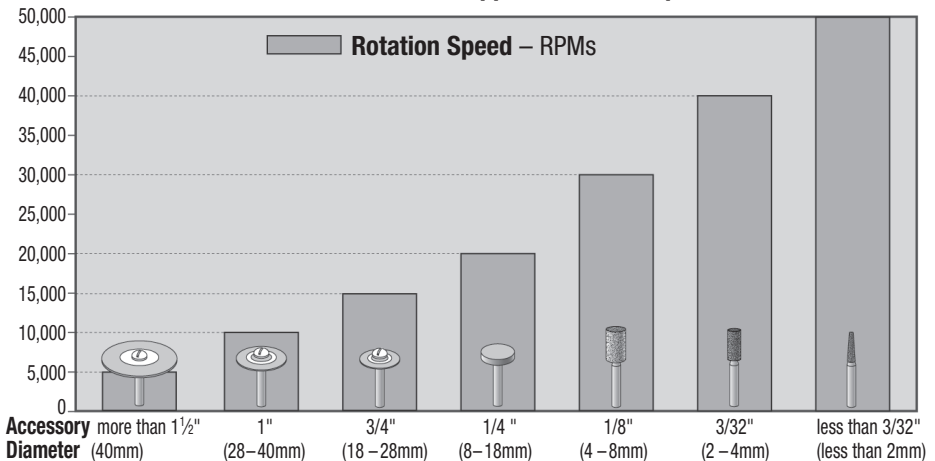


**H.MH-170 High Speed Rotary
Micromotor Handpiece**
Maximum Speed- 38,000 RPM.

Error codes

Error Code	Status	Cause
"1E"	Motor sensor error	<ol style="list-style-type: none"> 1. One or more hall sensors defective 2. The Brushless Motor Cord B is unplugged or defective. 3. The Motor Cord is broken.
"2E"	Motor lock error	<ol style="list-style-type: none"> 1. The Collet Chuck is opened. 2. The Motor Handpiece is mechanically defective. 3. The Motor Handpiece is electrically defective. 4. The Motor Cord A is selected but motor code is unplugged or defective.
"4E"	Motor overvoltage detection error	<ol style="list-style-type: none"> 1. The circuit of the Control Unit is defective.
"5E"	Overheat error	<ol style="list-style-type: none"> 1. The Control Unit has been operated under a high load condition for too long a time. 2. The Control Unit has been exposed to an excessively warm environment (more than 100°F). 3. Air openings are blocked. 4. Temperature sensor is defective.
"6E"	Overload error or was stalled by jamming the bur into the work.	<ol style="list-style-type: none"> 1. The motor Handpiece was operated under an overload condition,
"7E"	Control Circuit Board error	<ol style="list-style-type: none"> 1. The circuit of the Control Unit is defective.

Recommended Approximate Bur Speeds



See Maximum Speed Rating by Bur Manufacturer

Allowable Rotation Speed

The chart is a general guide for the maximum rotation speed of conventional burs. The allowable rotation speed can be slightly different, depending on bur materials or types.

Troubleshooting

NOTE: When an error reading is displayed, turn off the power switch for a few seconds and then turn it on again. If “5E” is displayed wait for about ten minutes. If the error reading re-appears, follow the Troubleshooting Chart below.

Trouble	Check Points	Corrective Actions
Power Lamp Does Not Light	Make sure that the Power Cord is correctly plugged into the outlet and the control unit.	Correctly plug in the Power Cord.
	Check if the fuse is blown.	Replace only with the recommended fuse. If the fuse blows again, repair or replace the unit.
	Make sure Power Switch is working properly.	Replace the Power Switch.
Motor Does Not Run	“1E” displayed Make sure Motor Cord is plugged in properly. Check if proper motor port is selected.	Correctly plug in the Motor Cord. If error code continues, replace the Motor Cord. Select proper motor handpiece port.
	“2E” displayed Check if the Collet Chuck is open. Check if proper motor port is selected.	If open, close the Collet Chuck. If error code continues, repair or replace the handpiece. Select proper motor handpiece port.
	“4E” displayed The circuit of the Control Unit is defective.	Repair or replace.
	“5E” displayed Check if the Control Unit has been used at a high load and for a long time. continues repair or replace the control unit.	Turn off the Power Switch for about 10 mins., then restart the Control Unit. If error code
	Check for high workplace temperature.	If too warm, move the Control Unit to a location with an indoor temperature of 32~100°F.
	Check control air openings for blockage.	Unblock air opening.
	Temperature sensor is defective.	Replace the sensor.
“6E” displayed	Check if the Control Unit has been excessively used under a high load condition.	Press the Auto Cruise Switch or turn off, then press the Motor On/Off Switch. If error code continues, repair or replace Control Unit.
	Check if the Collet Chuck is open.	If open, close it by turning the Chuck Handle.
	Make sure the shaft of the Motor Handpiece can rotate freely.	If it cannot be rotated with the chuck closed, the spindle of the Motor Handpiece is defective. Repair or replace it.
“7E” displayed The circuit of the Control Unit is defective.	Turn off the Power Switch for about 10 mins., then restart the Control Unit. If error code continues repair or replace the control unit.	
Foot Pedal Does Not Work	See if Foot Pedal Cord is properly plugged in.	Plug in the Foot Pedal Cord correctly.
	The Hand/Foot Selector Switch is set to “Hand”.	Set the Hand/Foot Selector Switch to “Foot”.
	Foot Pedal still does not work.	Repair or replace it.
Handpiece overheats or is noisy while operating at no load	The ball bearings are defective.	Repair the Motor Handpiece.
Motor Vibrates Excessively and is Unusually Noisy	Make sure that the Collet Chuck is free of dirt.	Thoroughly clean the Collet Chuck.
	The rotation speed is too high.	Reduce the rotation speed. Refer to Allowable Rotation Speed chart.
	Check if the bur shaft is bent, or bur is out of round or unbalanced.	Replace with a new bur.
	Make sure that the ball bearings are in good condition.	Repair or replace the Motor Handpiece.

Caution: Repairs should be performed only by qualified personnel.