

# Owner's Manual

## Assembly, Operation and Service Manual for Series TX & LX Flexible Shaft Power Tools

See Insert with  
Special Instructions  
for Square Drive  
Series TXH and  
LXH Models

2-Year  
Limited Warranty



### For Your Own Safety

- Please read this Assembly, Operation, and Service Manual before operating your Foredom power tool.
- Always wear eye protection while using power tools.
- Always use an accessory which has the same or a higher speed rating than your tool. Using an accessory with a lower speed rating can result in serious injury.
- For the TX Series – Only use accessories rated for use at 15,000 RPM or higher.
- For the LX Series – Only use accessories rated for use at 5,000 RPM or higher.

# FOREDOM®

Visit [www.foredom.net](http://www.foredom.net) to view videos on this product!

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## How-To Videos on [www.foredom.net](http://www.foredom.net)

Click on our homepage Video Library link where Foredom's National Sales Manager shows you the basics of using and maintaining flex shaft machines.

**Click to View:**

1. **Intro & Proper Set-up**
2. **Safety Guidelines**
3. **Handpieces & Accessories**
4. **Shaft and Sheath Maintenance – Grease and Replace**
5. **Motor Maintenance– Remove Dust, Replace Motor Brushes**

We have other product-related videos embedded throughout our website. We suggest that you take the time to watch these since they help to clarify product features and uses.

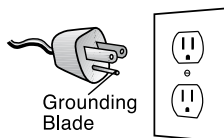
## Safety Instructions

*Before using your Foredom power tool, please read safety instructions.* They are for your protection and should always be followed to reduce the risk of personal injury or damage to the tool.

- **Always wear proper eye and face protection.** Wear safety glasses or face shields whenever you operate a Foredom or any power tool to prevent serious eye or face injuries.
- **Secure the workpiece or item that you are working on** in a vise or other work holding device. Holding it with your hand can result in serious hand injury.
- **Always use a proper dust collection system or wear a respirator** to prevent the inhalation of dust particles, polishing compounds, or other debris into the lungs.
- **Do not wear loose fitting clothing or jewelry.** Loose clothing or jewelry can become entangled in the rotating accessory. Do not wear items such as neckties, necklaces, or bracelets when operating power tools. Be sure to **tie back or secure long hair.**
- **Secure power tool to motor hanger or work surface.** Flexible shaft power tools can “jump” at start up or vibrate during operation. The tool should be properly secured in order to prevent it from vibrating off of the motor hanger, work bench or wall.
- **For added safety and comfort** while using this power tool for carving or other applications, it is recommended that you wear a heavy canvas or leather apron. It will protect you from debris and chips as well as help prevent injury if the handpiece slips off the workpiece. It will also help prevent loose clothing from getting caught in a rotating cutter, bur or other accessory.

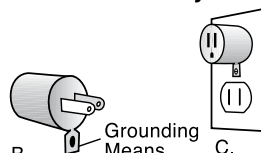
- **Never** wear open shoes or sandals. Use footwear that is tough enough to protect your feet from falling tools.
- **Never operate any accessory at speeds above its maximum rated speed.** When properly used, all of Foredom's accessories can be operated at the speed ratings listed in the Foredom Accessory Catalog or specified on kits and packaging. **Always** find out the manufacturer's speed rating before using accessories other than those from Foredom.
- **Never use or continue to use any accessory which appears to be damaged, loose, vibrating, or out of balance.** Inspect each accessory for cracks or flaws before using it. Avoid knots, imperfections in the wood or metal objects like nails, which could damage or catch the accessory.
- **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 tighten the collet or chuck securely.
- **Never** use excessive side pressure which may 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 accessory. This can result in damage to the motor or flexible shaft.
- **Never operate the motor with the outer sheath removed from the flexible shaft.**
- **Never modify the shielded plug on the TX or LX motor cord in order to plug it into a Non-TX or Non-LX speed control or AC electrical wall outlet. Use only TXR, SXR, or EMX speed controls with all Series TX, TXH, LX, or LXH motors.**
- **Always disconnect** the power cord before servicing the motor or removing the flexible shaft or sheath.
- **Never** operate your power tool during a perceptible power decrease. Turn power tool off and do not use until power is fully restored.
- **Use proper grounding procedures.** This tool should be grounded while in use to protect the operator from electric shock. The tool is equipped with an approved 3-conductor cord and a 3-prong grounding type plug to fit the proper grounding receptacle. The green (or green and yellow) conductor in the cord is the grounding wire. Never connect the green (or green and yellow) wire to a live terminal. If your unit is for use on less than 150 volts, it has a plug that looks like sketch A below. An adapter (sketches B and C) can be used for connecting plugs as shown in sketch A to 2-prong receptacles. The green colored rigid ear, lug, etc., extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box. **Some jurisdictions, including Canada, prohibit the use of 3 to 2 prong adapters. Where prohibited, they should not be used.** Use only 3-wire extension cords that have 3-prong grounding type plugs and 3-pole type plugs and 3-pole receptacles that accept the tool's plug. Always disconnect the power cord before servicing the tool. Never use in an area where flammable vapors are present.

**Replace or repair worn cord immediately.**



Grounding Blade

A.  
Cover of  
Grounded  
Outlet Box



B.  
Adapter

Grounding  
Means

C.  
Cover of  
2-prong  
Outlet Box  
with Adapter

# Freedom® Power Tools in this Manual

You have purchased a fine quality power tool which will perform a wide variety of tasks difficult to do with any other kind of power tool. Freedom power tools are manufactured to high standards and will give you years of trouble-free performance with proper use and regular maintenance.

## Series TX Hang-Up and Bench Style Motors up to 15,000 RPM



**M.TX**



**M.TXB**



**M.TXM** with built-in control

## Series LX Hang-Up and Bench Style Motors up to 5,000 RPM



**M.LX**



**M.LXB**



**M.LXM** with built-in control

## Speed Controls –these are dedicated controls specific to Series TX, TXH, LX, and LXH motors



**C.TXR Foot Control**  
in plastic housing



**C.SXR Foot Control**  
in metal housing



**C.EMX Dial Control**

A complete Series TX or LX flexible shaft power tool consists of a motor, flexible shaft and sheath, speed control (foot or manual) and a handpiece. If you purchased a motor and control, a handpiece will also be needed to operate the machine. Locate and identify all components, parts and accessories you purchased before discarding the packing list and packing materials that came with your power tool.

## Assembly Instructions

**Always make sure your power tool is unplugged during assembly!**

After identifying all the components of your power tool, assemble it in the following manner:

### Assembly and Adjustment of Flexible Inner Shaft, Outer Sheath, & Handpiece

*Proper assembly and adjustment of the key tip flexible shaft and sheath are critical for the correct operation of your Freedom power tool.*

The exposed tip (handpiece end) of the flexible shaft (with handpiece removed) must extend 3/4" (19mm) beyond the sheath.



**Important Note: The shaft and sheath should be checked and adjusted (if necessary) even if you received them assembled and attached to the motor!**

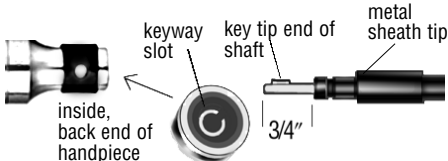
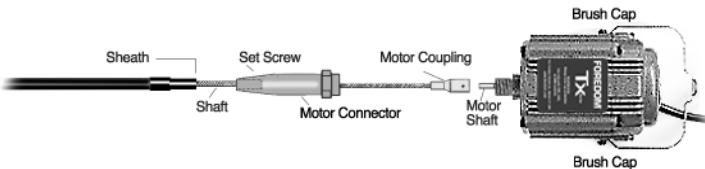
**Please follow these directions to assemble and adjust the shaft and sheath.**



To check the shaft and sheath you must first remove the handpiece which is easy to do.

To remove:

1. First make sure your power tool is unplugged. Simply pull the handpiece off the shaft and sheath with a firm grip.
2. With the handpiece removed, place the entire unit on a flat surface with the shaft and sheath extended straight. Loosen the set screw on the motor connector. **Adjust the exposed tip (handpiece end) of the flexible shaft so that it extends 3/4" (19mm) beyond the sheath.** This is done by moving the sheath in or out of the motor connector (motor end). Shown below.
3. When the correct adjustment is made, re-tighten the set screw in the motor connector and re-attach handpiece onto the shafting.



**To Re-attach Handpiece:** while holding the black colored metal outer sheath tip facing upward, turn on the motor so that it is running at about half speed **and then turn it off.** While the inner key tip is still rotating, grip the handpiece and push it onto the sheath tip with one firm motion until it snaps into place (shown at right). This procedure will align the key tip into the keyway slot (as shown at left). To verify this, insert and tighten an accessory into collet or chuck, turn on control to low speed and observe that the accessory rotates smoothly.

## Connecting Foot Speed Control

The electrical specifications for your power tool are listed on the back of the motor. It will show the proper voltage and currents to use with your power tool. **Be sure to follow the grounding instructions on page 3 of this manual while attaching the speed control to a power outlet.**

**TX, TXB, LX, and LXB Motors can *only* be plugged into TXR or SXR Foot Controls or an EMX Dial Control on AC Current Only. *Serious motor damage will result* if other speed controls are used, if more than one control at a time is used or if motor is directly plugged into an AC electrical outlet.**

To connect the TXR or SXR foot control to the motor, insert the shielded 3-prong plug on the motor power cord into the socket connector on the shorter power cord on the foot control. With the foot control in the “off” position (not depressed), plug the 3-prong plug on the longer power cord from the foot control into a proper 3-wire power outlet.

***When your foot is not pressing the foot control, the motor should not be running.***

**It is also important to hold the handpiece securely before engaging the foot pedal to the “on” position.** Your foot must maintain steady contact with the pedal during operation. Holding the handpiece in your hand, press your foot down with a light touch, start out slowly and gradually increase the speed.

**Finding the right speed for any specific task is a matter of experimentation and experience.**

## Connecting Table-Top Dial Speed Control

TX, TXB, LX, and LXB motors can also use the EMX dial speed control on AC current.

1. Plug the shielded 3-prong power cord from the motor into the short cord on the dial control.
2. With motor fwd/off/rev switch in the “off” position and the dial control indicator also in the “off” position, connect the detachable power cord to the dial control outlet on the back and into a proper 3-wire outlet (see page 3).
3. Holding the handpiece in your hand, put the motor fwd/off/rev switch in the desired “on” position, begin with a light touch, start out slowly and gradually increase the speed.
4. Overloading the motor may blow the fuse. The fuse can be found below the detachable power cord receptacle.



**Use *only* TXR, SXR, or EMX speed controls. *Never* modify the shielded plug on the motor cord in order to use it with a different control or to plug it directly into an AC electrical power outlet.**

**Hold the handpiece securely before turning the motor on with either the foot or dial control.**



## Hanging Motor Installation

TX and LX Motors should be hung up about 25”–40” above the work surface and to the right of the work if you are right handed or to the left of the work if you are left handed.

Use a safety clip or hook like the one shown to prevent the motor from jumping or twisting off an open hook at start up or during use. Properly securing the motor will help to prevent injury to the user.

All Foredom motor hangers have a safety clip (see page 15). If an “open hook” is used be sure to secure the motor to it with wire or tape.



*To minimize repetition, we sometimes drop prefixes associated with Foredom part numbers. Officially, Motors begin with M. (M.TX), Handpieces with H. (H.30®), and Speed Controls with C. (C.TXR).*

# FOREDOM®

## Handpieces for Key Tip Shafts

(burs not included)



**H.8**



**H.8D**



**H.10**



**H.10D**



**H.15**



**H.15D**



**H.18D**



**H.18D**



**H.20**



**H.20D**



**H.25**



**H.28**



**H.30®**



**H.43T**



**H.44T**



**H.50**

### New Adapters



**HP771** Key Tip handpiece to Slip Joint shaft



**HP770** Slip Joint handpiece to Key Tip shaft



**HP775** Duplex adapter for Key Tip handpiece and shaft



**HP776** Duplex adapter for Slip Joint handpiece and Key Tip shaft

If you have purchased a TXH or LXH motor, see insert for special Square Drive Handpieces for use with Series these motors.

## Attaching Accessories to Handpieces

Directions for attaching accessories to handpieces vary according to the type of handpiece being used. Locate the model number of your Freedom handpiece from the photos on page 7. **Always wait for the motor, flexible shaft and accessory to come to a complete stop before changing an accessory.** (Handpieces listed in brackets are for use with Series TXH and LXH models only.) Attach the accessory according to the following:

### Collet Types –

#### 8, 8D, 25, (25H), 28, 28SJ, (28H), 35, 35SJ, 43T, 44T, 44TSJ, & (44HT) Handpieces:

A collet is an interchangeable slotted cylinder inserted tightly into the interior of a handpiece to hold a bur or other rotary accessory. The diameter size of the collet must match the shank diameter of the accessory.

**General Directions:** Be sure to use the correct shank size. The correct shank will fit snugly inside the collet. **Caution: Never tighten a collet unless an accessory has been inserted.** Tightening an empty collet or inserting an accessory which is too small or too large may damage the collet.

#### 8, 8D, and 8SJ Handpieces:

**To change a collet:** slide back the chuck guard and use one wrench to hold the spindle and the other to unscrew the chuck nut by turning counterclockwise. Remove chuck nut to expose collet and pull collet out of handpiece. Slip new collet in and tighten chuck nut with wrenches.

**To insert accessory:** insert shank as far as possible into the collet. Tighten chuck nut with wrenches. Test for a secure hold by pulling on accessory. Remove wrenches. To release an accessory, follow the same steps. Accessories can be released when chuck nut is loosened. If accessory does not run true, loosen chuck nut, rotate accessory, and retighten.

#### 25, (25H), 28, 28SJ, (28H), 43T, 44T, 44TSJ & (44HT) Handpieces:

**To change a collet:** 1. Insert pin provided into the pilot hole and through the spindle hole (turn spindle to align holes). Apply wrench and unscrew chuck nut by turning counterclockwise.

2. Remove chuck nut to expose collet.

3. Pull collet out of handpiece spindle.

4. Slip new collet in place and screw on chuck nut.

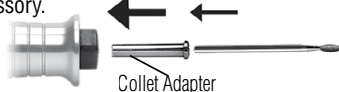
5. Remove pin.



#### 25, (25H), 28, 28SJ, (28H), 35, 35SJ, 43T, 44T, (44HT), and 44TSJ Collet Handpieces:

**To insert or change accessories:** insert pin provided into the pilot hole and through the spindle hole (turn spindle to align holes). Loosen chuck nut slightly with wrench provided. Insert shank of accessory into collet. Tighten chuck nut with wrench, keeping pin in pilot hole. Test for a

**Collet Adapters for 8, 8D, 25, (25H), 28, 28SJ, (28H), 35, 35SJ, 43T, 44T, 44TSJ, & (44HT) Handpieces:** let you 'step down' to a smaller shank size accessory.



Part No.	Collet Size	Accessory Shank Size
HPL4-3233	3/32" →	1/16"
HPL4-3234	1/8" →	1/16"
HPL4-3235	3mm →	3/32"
HPL4-3236	1/8" →	3/32"
HPL4-3237	3mm →	1.6mm

secure hold by pulling on accessory. **Remove pin. Chuck Type – 30®, 30SJ, and (30H) Handpieces:**



These handpieces have a geared 3-jaw #0 chuck. Open chuck jaws as far as necessary with key provided. Insert shank of accessory fully into the chuck. Tighten jaws with chuck key until accessory is secure and centered. If accessory does not run true, reopen jaws, rotate accessory and retighten. To release accessory, simply reopen chuck jaws with key and pull out accessory.

#### Hammer Type – 15, 15D, & 15SJ Handpieces:

These handpieces have a threaded spindle. Thread anvil or stylus into threaded spindle as far as it will go with clockwise motion. Insert pin provided into cross hole in anvil or stylus. Tighten and remove pin. To release accessory, insert pin into the cross hole and unthread.



**Quick Change Type – 10, 10D, 18, 18D, 18SJ, 20, 20D and 20SJ Handpieces:** *Keep an accessory in these handpieces at all times, during both operation and storage, or damage to the collet and handpiece may result.* These handpieces accept only 2.35mm (3/32") shank accessories.

**10 and 10D Handpieces:**

To insert bur, turn lever 180° clockwise towards the back (shaft connection end) of handpiece. Insert or change a 2.35mm (3/32") shank bur and turn lever 180° forward counterclockwise. Make sure lever is completely locked into the forward position. **Never change burs while handpiece is running.** Optional 1/8" and 3mm collets are available for these quick change handpieces.



**18, 18D, and 18SJ Handpieces:**

These handpieces have a lever on the side of the handpiece. Push the spring loaded lever down to open the collet and release the shank of accessory (2.35mm or 3/32" only). Insert accessory with the lever held down. **Never push lever down while handpiece or flex shaft are rotating.**



**20, 20D, 20SJ Handpiece:**

These handpieces have a lever action collet release mechanism. Wait for the motor, flexible shaft, and accessory to come to a complete stop before turning the lever to open the collet and remove or insert accessory (2.35mm or 3/32" only). Turn lever 90° to left or right to open collet and change an accessory. To close the collet turn the lever back to the position parallel to the handpiece.



**Chisel Type — 50 and 50C Handpieces (50C includes set of six chisels):**

Inserting a chisel into this reciprocating handpiece should be done while the motor is off or with the handpiece disconnected. Loosen the locking nut with the 12mm spanner wrench provided by unscrewing it counterclockwise. Insert the tang fully into the plunger shaft. Tighten the locking nut clockwise until tool is held securely. **Do not over tighten.**

## Handpiece Lubrication

(See page 7 for handpiece photos.)

**8, 18, 20, 25, (25H), 28, 30®, (30H) 35, 43T, 44T and (44HT):**

These handpieces have been permanently lubricated. Their greased-shielded ball bearings **should absolutely not be lubricated.** (Handpieces listed in brackets are for use with Series TXH and LXH models only.)

**10 and 10D:** Lubrication should not be required for the first 2–3 months of continuous use. Then, approximately every two weeks of use, lubrication of the front and back ends of the handpiece is required. Follow the detailed instructions that come with your handpiece.

**8D, 10D, 15D, 18D, 20D, and 52D**

**Handpieces with Duplex Spring Connections:**

Approximately **every 20 hours of operation apply 1 or 2 drops of Freedom oil** (Part No. MS10005) into the hole in the duplex spring collar next to the sheath connector. This will provide sufficient lubrication for both the duplex spring connection and the handpiece spindle.

**15, 15D:** Clean off any dirt to prevent foreign matter from falling inside the handpiece. Put two drops of Freedom oil into the oil hole in the side of the housing. Run the handpiece slowly to distribute the oil. **Lubricate every 100 hours of use.**

**50:** **After every 200 hours of use** you should clean and lubricate this handpiece. The old grease must be cleaned off of the interior cam chamber and replaced with new lubricant (Part No. MS10008). Follow the detailed instructions that come with your chisel handpiece.

Visit [www.freedom.net](http://www.freedom.net)

How-To Videos on Freedom flex shaft set-up, maintenance and operation!

## General Accessory Recommendations

Foredom's wide assortment of accessories makes your flexible shaft power tool very versatile. Use it for grinding, sanding, carving, engraving, brushing, cutting, buffing, and polishing on virtually any material. The Foredom Accessory Catalog offers the right accessories for your specific applications. Accessories may be purchased from your local dealer or directly from Foredom.

Visit our online store at [www.foredom.net](http://www.foredom.net).

**Always let the speed of the power tool do the work.**

**Avoid forcing the tool or applying too much pressure.**

Experience will help you choose the right speed for the work you are doing. It's always a good idea to practice on a scrap piece of the same material you plan to use to determine the best accessories and speeds.

**Always follow the manufacturer's RPM or speed recommendations when selecting accessories.**

Your motor is supplied with a variable speed control that allows you to operate it at the most suitable speed for each job. **TX Series motors have a maximum speed rating of 15,000 RPM. LX Series motors have a maximum speed rating of 5,000 RPM.**

**Always use an accessory which has the same or a higher speed rating than your tool. Using an accessory with a lower speed rating can result in serious injury.**

### Abrasive Points, Wheels, and Discs

Use **Aluminum Oxide** (red color) for fast cutting on high-tensile, tough materials such as steel and malleable iron. Also use on glass and porcelain, etc.

**Aluminum Oxide** (white color) points have an extremely fine grit for producing a fine, high finish on high-tensile materials including stainless steel and glass. **Rubber Bonded Abrasive Wheels** are used for removing rust and for polishing with various grits. For best results, use finer grits for finishing at high speeds and coarser grits for stock removal at lower speeds. **Abrasive Discs** are for grinding, smoothing, and cleaning glass, high speed steel, and other tough materials. **Ruby Carvers** have ruby crystals firmly bonded to a metal frame. These long lasting abrasives provide a smooth finish on hard materials such as steel, porcelain, glass, acrylic, soft and precious metals and wood.

**Scotch-Brite™ Radial Bristle Discs** from 3M have thin flexible plastic bristles that get into hard to reach areas on flat and curved surfaces. Use on metal, acrylic, plaster, ceramics and wood without the need for compounds. These long lasting abrasives come in many size diameters and grits.

**Unique CeramCut Blue Stones** are made from a mixture of special man-made ceramic grain and aluminum oxide bonded together. The ceramic provides a faster cutting action and is more durable so burs hold their shape longer than standard abrasives. They are ideal for use on any hard metal such as steel, stainless steel, chrome cobalt, platinum and titanium, as well as on wood.

**Unique V Stones** have extra hard and long lasting vitrified aluminum oxide and ceramic grain with a special glass bead binder that makes them extremely long lasting, cool running and very aggressive — 40 to 60 grit. They work on the same materials as CeramCut Blue Stones, but much more aggressively.

**Unique CW Ceramic Impregnated Polishing Wheels** are used for smoothing and polishing precious metals including platinum, gold, and silver. They also work on titanium, chrome cobalt, and all hard alloys. Wheels are 7/8" in diameter and come in six grits.

### Cutters and Burs

**Vanadium Steel Cutters** are suitable for all materials except hardened steel and glass. They are used for cutting grooves and countersinking in soft materials, carving and hollowing woods, slotting and grooving woods, plastics, etc. **Steel Cutters** are good for shaping, grooving, slotting and cutting in wood, plastic and soft metals. Use **Carbide Burs** on wood, plastic and tough alloys. Carbide is generally referred to as the "hardest man-made metal".

**High Speed Fluted Burs** are used for fine detailing work on metal and other hard materials.

Generally use medium speeds for stock removal and higher speeds for finishing work and when using smaller points. **Cut-Off Wheels** are used to cut off, groove, and trim metal, wood and ceramics.

**Unique Typhoon® Carbide Burs** provide very fast and aggressive material removal. Made for use on soft and hard woods, diestone, and plastics (do not use Typhoon burs on metal). They have aligned teeth that leave a smoother finish than other types of non-fluted tungsten carbide burs.

**Duragrit® Carbides** are coated with tungsten carbide grit. Edges stay sharp and are thin enough for cut-off applications.

## Drills

**Steel, long-lasting Cobalt & Diamond Step Drills** are used to drill wood, precious metals, mild steel, bone, and mother of pearl. **Diamond Plated & Cobalt Steel Twist Drills**, made of wire gauge steel with diamond coating, are used to drill extremely fine holes in stone, ceramics, tile, glass, and hard metals. **New Cobalt Steel Pilot Drills** make starter holes in most metals. **Premium Steel Carving Drills** are used for internal carving of wood, acrylic and plastic.

## Plated and Sintered Diamond Points and Discs

are used to remove stock from extremely hard materials such as tungsten and tantalum carbide cutting tools, dies and molds, broaches, and for grinding and shaping stone, glass and precious metals, fiberglass, reinforced plastics, PVC and ceramics. Sintered diamonds last far longer than plated diamonds and can be re-sharpened as desired with a wet dressing stone to expose new diamond particles.

## Sanding Drums, Bands, and Discs

These are used for removing rust, smoothing rough surfaces and for sanding jobs on wood, plastic and metal. (Avoid using too much pressure which will cause clogging or a build-up on the work surface.) For best results, use medium speeds for coarser grits and larger diameters. Use higher speeds for finishing work or with smaller sizes. **Unique 3M Ceramic Purple Coated Abrasive Bands and Discs** contain patented Cubitron™ ceramic aluminum oxide mineral that sharpens itself with use. They last 2 to 4 times longer than traditional aluminum oxide discs and remove material faster with less heat and loading.

## Cotton or Felt Bobs and Buffs

**Solid Felt Buffs or Bobs** are used in combination with gritty or smooth compounds for a variety of buffing and polishing operations on plastic, wood, and metal. They vary in shape and come in three hardnesses — medium, hard, and rock hard.

**Loosely-stitched Soft Cotton Buffs** are used for delicate work on precious metal and during polishing operations. Generally use high speeds for cutting down and buffing. Medium speeds are used for more delicate, precise work and for polishing.

## Brushes

**Miniature Power Brushes** are generally used on metal surfaces and hard-to-reach areas. They are ideal for deburring, surface finishing, edge blending, roughening to create a good bonding surface,

and general cleaning. Use high speeds for cleaning and deburring. Medium speeds are needed when cleaning hard-to-reach areas and edge blending.

## Compounds

Freedom has seven different compounds. In addition to Emery, Tripoli, and Red and White Rouges, there is **unique Platinum Blue** for pre-polishing and cutting down platinum and other metals, and for final polishing **unique Platinum White** (8000 grit) that produces a deep luster on platinum, other metals, and acrylics. **Carnauba** is the hardest wax available. It produces a high luster on wood and painted surfaces.

## 2" Wheels and Discs for Angle Grinder Attachment

Freedom continues to expand its offerings of several types of wheels with 3/8" arbor holes for grinding, deburring, shaping, and cutting on various materials. Also new are screw lok type accessories, psa backed abrasive discs, screens and velcro heads for sanding on wood, metal, plastic, glass, stone and more.

These accessories work with Freedom's Angle Grinder Attachment for use on H.30®, H.30H, or H.30SJ Chuck-Style Handpieces. It is excellent for a broad range of sanding, polishing and finishing work.

## Bur and Tool Holders

Freedom has three rotating bur holders and two small holders with covers. Two of the rotating models have center cups for holding small tools such as files and screwdrivers. A bur holder is the perfect companion product for your collection of burs, drill bits, and other accessories of various size shanks.

**Freedom's Accessory Catalog** features the right accessories for your specific applications. Accessories may be purchased from your local dealer or directly from Freedom. Contact:

### Freedom Electric Company,

16 Stony Hill Road, Bethel, CT 06801

Phone: (203)792-8622 • Fax: (203)796-7861

Visit us online at [www.foredom.net](http://www.foredom.net).

# Operation and General Guidelines

**Always wear proper eye and face protection when operating a Foredom® power tool.**

**Read all the safety instructions in this manual before operating your Foredom Power Tool. Proper eye and face protection must be worn to protect you from injuries caused by flying debris, chips, or sparks which might result from the work being done.**

**It is possible to use rotary or chisel handpieces not made by Foredom with your Foredom flexible shaft power tool. However, this is not recommended since their function and safety cannot be assured by Foredom.**

Your Foredom motor may be operated in a vertical or horizontal position, but it should **not** be enclosed or confined so as to restrict air circulation. If the motor is hung up above a workbench, be sure it is fastened securely to the wall or a motor hanger. **The motor may develop a high operating temperature (up to 100°F + ambient) after prolonged use, and it will be too hot to hold. This will not harm the motor which is designed to operate at this temperature for prolonged periods.**

## **Do not force the tool**

Let the speed of the tool do the work. Avoid using too much pressure. Generally, slower speeds are used for rougher, heavier work or when greater control over the accessory is required for precise, delicate work. Higher speeds are used for buffing, cutting and polishing. Read Accessory Recommendations on pages 10 and 11 of this manual.

## **Voltage Decreases**

Never operate a power tool during a perceptible power decrease. Turn off tool and unplug until full power is restored.



## **Shaft Tips**



**Key Tip**



**Square Drive**



**Slip Joint**



**Minimum Operating Radius**

4" radius

## **Do not bend shaft and sheath at tight angle**

When operating your Foredom tool **be careful not to bend the flexible shaft too much at either the handpiece or motor shaft connections.** Shafts and sheaths last longer when they are used without sharp bends. If used at angles or loops, wear will occur at the points of greatest friction. Excessive heat and wear will occur if the bend is too great.

### **Torsional Breaking Point:**

**Key Tip (Standard) Shaft** 24-lbs.-in.

**Square Drive (Heavy Duty) Shaft** 50-lbs.-in.

**Slip Joint (European) Shaft** 24-lbs.-in.

**Follow these guidelines for trouble-free use: avoid bending the flexible shaft tighter than a 4" radius.** There is no way to avoid ultimate wear and under normal conditions a flexible shaft machine may require several replacement shafts and sheaths during its lifetime. (Follow shaft and sheath assembly instruction in the Assembly section of this manual.)

## Maintenance Procedures

***Always make sure your power tool is unplugged during maintenance procedures!***

It is very important to routinely clean your Foredom® Power Tool and lubricate the shaft (NOT the motor), especially in areas that generate a lot of dust.

Dirt and improper lubrication are the most common causes of poor operation and excessive wear.

***Note: The motor has permanently lubricated ball bearings and does not require additional lubrication.***

### Routine Cleaning of Motors

Foredom motors need air circulation through the motor housing to remove waste heat and cool the windings. Inlet and outlet slots provide the means



for air flow. However, saw dust and conductive debris (like metal filings or gold dust) can enter in through these slots. If not cleaned regularly, dust can collect, making a bridge between parts, causing an electrical short.

***In high dust environments, Foredom recommends cleaning the motor every 40 hours of use.***

To remove dirt and dust buildup, motor brushes should be removed, cleaned and replaced, and air should be blown through the motor.

### Routine Cleaning and Lubrication of Flexible Inner Shaft

The shaft should be checked, wiped clean, and re-lubricated with grease every 40 hours of use. With every 200 hours of use, the shaft should be thoroughly cleaned with solvent and lubricated. Use Foredom flex shaft grease (p/n MS10006) or high temperature, quality white lubricating grease.

## Exposing the Inner Shaft

1. Remove handpiece (see page 5).
2. Loosen set screw on motor connector.
3. Slide outer sheath out of motor connector and wipe inner shaft clean.



4. Apply a very light coating of lubrication to shaft starting at the top and working



downward to about three inches from the handpiece end. Apply grease with your finger tip or small brush. Don't overdo, apply a light film of grease. Once the machine is running, the shaft itself will spread the grease. If too much grease is applied, the excess will work its way into the handpiece and eventually seep out between the handpiece and sheath. For this reason, apply a bit less near the handpiece end of the shaft.

***Never operate the motor with the outer sheath removed from the flexible shaft.***

5. Replace and adjust sheath so that shaft key tip extends 3/4" (19mm) from sheath. Retighten the set screw in motor connector. See page 5, No. 2.
6. Clean outside of sheath by wiping with a cloth.
7. Hang and run the motor for about 10 minutes before attaching the handpiece to allow enough time for the grease to warm up, spread and drain off. Wipe off any excess grease at tip end of sheath.
8. Re-attach handpiece. See page 5.



**IMPORTANT!**

Visit [www.foredom.net](http://www.foredom.net)

How-To Videos on Foredom flex shaft set-up, maintenance and operation!

**Always make sure your power tool is unplugged when conducting maintenance procedures!**

## Replacement of Worn Shafts and Sheaths

Shafts and sheaths last longer when they are not used at sharp angles or loops, since wear occurs at the points of greatest friction. There is no way to avoid ultimate wear, and under normal conditions a flexible shaft machine may require several replacement shafts and sheaths during its lifetime.

To expose the inner shaft follow steps 1, 2, and 3 on the previous page.

Next, remove motor connector with 1" open end or adjustable wrench. **Motor connector has a left hand thread and must be turned clockwise (right) for removal.**



Loosen set screw on the flexible shaft motor coupling and slide shaft off the motor shaft.

## Installation of New Shaft

**1.** After removing old shaft, loosen set screw on the new flexible shaft motor coupling and slide coupling onto motor shaft.

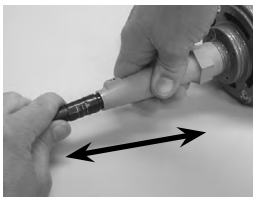
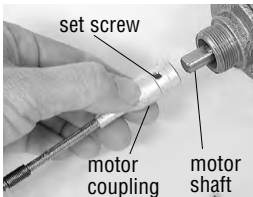
**2.** Tighten set screw securely onto the flat of the motor shaft.

**3.** Grease shaft prior to putting on the sheath. (See lubrication instructions on page 13.)

**4.** Slide motor connector back up over the shaft and tighten to the left (counterclockwise).

**5.** Slide sheath over flexible shaft with plain fitting directed toward the motor and into the motor connector. (Each end of the sheath has a metal fitting. One is plain, the other has a groove around it to fit the handpiece.)

**6.** Adjust the shaft (page 5 and top right) and tighten sheath set screw in motor connector.



Visit [www.foreedom.net](http://www.foreedom.net)

How-To Videos on Foreodom flex shaft set-up, maintenance and operation!

## Shaft and Sheath Adjustment



Place the entire unit on a flat surface with shaft and sheath extended straight.

**Adjust the exposed tip of the flexible shaft at the handpiece end so that it extends 3/4" (19mm) beyond the sheath.**

This is done by moving the sheath in or out of the motor connector. When the correct adjustment is made, tighten the screw in the motor connector.

## Replacement of Motor Brushes



Motor brushes should be checked for wear periodically. When new they are approximately 3/4" (19mm) long. Replace them when they have worn to 1/4" (6mm). To remove brushes, disconnect motor power cord and unscrew the brush caps. Remove the worn motor brushes, replace with new motor brushes, and screw motor brush caps back on. Be sure to replace both motor brushes even if one of them is less worn than the other.



New Motor Brush



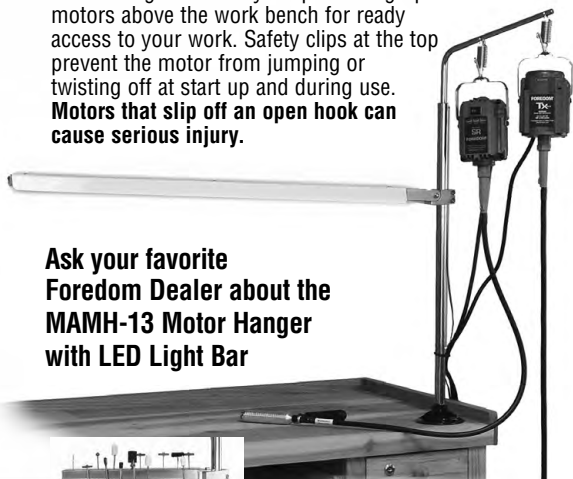
Motor Brush that needs replacement

## Motor Hangers

Motor hangers securely suspend hang-up motors above the work bench for ready access to your work. Safety clips at the top prevent the motor from jumping or twisting off at start up and during use.

**Motors that slip off an open hook can cause serious injury.**

Ask your favorite  
Foredom Dealer about the  
**MAMH-13 Motor Hanger**  
with LED Light Bar



**Additional attachment arms for MAMH-13 Motor Hanger are available separately.**

**MAMH-1** (left) has a 3-piece hexagonal support rod. It can hold either one or two motors and handpieces. It *clamps* onto a work bench.

**MAMH-2** (right) has a 3-piece hexagonal support rod and can hold either one or two motors and handpieces. Its base *screws* into a work bench and can also be wall mounted.



## Recommended Spare Parts & Supplies

The following parts and supplies are recommended as spares to keep on hand to insure continuous operation of your Foredom power tool.

- Pair Motor Brushes (MP319P)
- Outer Sheath (S-77)
- Inner Shaft (S-93)
- Foredom Flexible Shaft Grease (MS10006)
- Motor Connector (UA111P)

### For Series TX, TXB, TXM, LX, LXB, and LXM **MSMK-16 Maintenance Kit**

which contains:

- flexible shaft (S-93)
- pair motor brushes (MP319P)
- Foredom flexible shaft grease (MS10006)
- Owner's Manual

## Repair Services

Authorized repair service is available at the Foredom factory in Bethel, CT. Send items for repair to the factory marked:

**“Attention: Repair Department”**

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

Enclose the item(s), a packing list, information regarding the problem or repairs required, and your contact information including daytime phone number, email and mailing address. Estimates of repair cost will be made upon request.

If the cost (labor plus parts) is more than fifty percent of the price for a new replacement we will contact you and recommend a trade-in offer.

### Storage

Store your Foredom power tools in a DRY, clean, dust-free area, and out of the reach of children.

## Visit [www.foredom.net](http://www.foredom.net)

**How-To Videos on Foredom flex shaft set-up, maintenance and operation!**

## LIMITED WARRANTY

### Series TX, TXH, LX, and LXH Flexible Shaft Power Tools

Warranty period is 2 years for flexible shaft motors and speed controls.

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, Connecticut 06801**

All warranty repairs must be done at our factory at the above address. We will not pay any shipping or transportation charges. Armatures, bearings, shafts, sheaths, duplex springs and duplex adapters are not covered by this warranty.

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.**

## Contact Information

If you have a warranty issue with your Foredom power tool please use the contact information below. For more information on Foredom machines, handpieces or accessories, contact your local dealer. When no local dealer is available visit our website or contact Foredom at:

### Foredom Electric Company

16 Stony Hill Road, Bethel, CT 06801

Tel.: (203) 792-8622 - Fax: (203) 796-7861

Email: [customerservice@blackstoneind.com](mailto:customerservice@blackstoneind.com)

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