

Owner's Manual

Assembly, Operation and

Service Manual for

Series H

Ball Bearing Power Tools
and Handpieces

For Your Own Safety:

- *Read Owner's Manual before operating your Freedom Power Tool.*
- *Always wear eye protection while using power tools.*
- *Only use accessories rated for use at the maximum speed (20,000 RPM) of these tools.*

www.freedom.com

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Safety Instructions

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

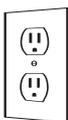
- ***Always wear proper eye and face protection.*** Safety glasses or face shields should be worn whenever you operate a Foredom or any power tool to prevent serious eye or face injuries.
- ***Always tie up long hair.*** Loose long hair poses a serious hazard, and must be tucked under a cap or hair net to prevent it from becoming entangled in rotating parts.
- ***Never operate any accessory at speeds above its maximum rated speed.*** When properly used, all Foredom's accessories can be operated at the speed ratings listed in the Foredom Accessory Catalog or the accessory kits and packages.

- **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.
- **Always** find out the manufacturer's speed rating before using accessories other than Foredom accessories. (Safety requirements for the use, care and protection of abrasive wheels are contained in ANSI Standards B7.1-1978 which are available from ANSI, 1430 Broadway, New York, New York 10018.)
- **Never wear loose clothing or jewelry** that can become entangled in the tool. Items such as ties, necklaces, scarves, etc. should not be worn when operating a flexible shaft power tool.
- **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.
- **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 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 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.
- **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 in diagram. 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. Use only 3-wire extension cords that have 3-prong grounding type plugs and 3-pole receptacles that accept the tool's plug.

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 Series H Power Tools

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

This instruction manual contains instructions for the assembly, operation and servicing of the Freedom power tools shown below.



H Hang-up Model



**HM Bench Model
with built-in control**



HB Bench Model

Foot and Manual Controls for Series H Power Tools



SCH



FCH



EMH

Specifications

Series H Ball Bearing Universal Motor:

115 Volts 3.0 Amps 50/60Hz Operable Speed Range 0-20,000 RPM

230 Volts 1.5 Amps 50/60Hz Operable Speed Range 0-20,000 RPM

SCH Control:

Variable speed, foot operated electronic control in metal housing for use only with Series H Motors. (AC only.) SCH-1 is for use with 115 Volt Series H motors; SCH-2 is for use with 230 Volt Series H motors.

FCH Control:

Variable speed, foot operated electronic control in heavy duty plastic housing for use only with Series H Motors. (AC only.) FCH-1 is for use with 115 Volt Series H motors; FCH-2 is for use with 230 Volt Series H motors.

EMH Control:

Variable speed, manually operated electronic control in plastic housing, for use with Series H Motors only. (AC only.) EMH-1 is for use with Series H 115 Volt motors; EMH-2 is for use with Series H 230 Volt motors.

Shaft/Sheath Assembly consists of the following:

Flexible Shaft (10805): 46 inches long, .187" diameter square drive.

Flexible Sheath (10802A): Heavy duty

Silencer (10822)

Complete Assembly (10804B)

Handpieces

The 44HT, 30H and 25H handpieces, shown below, are for use exclusively with Series H, HB and HM motors.



44HT – Collet-type, ball bearing handpiece. 1-inch diameter, 6¼" long. Supplied with 1/8" and 1/4" collets, pin and wrench. Additional collets are available separately. Collet Set 440 consists of 7 collets in sizes ranging from 1/16" to 1/4". Metric collets in 3mm and 6mm are also available.



30H – Chuck-type, ball bearing handpiece. 1-inch diameter, 5¾" long. Accommodates accessory shanks up to 5/32". Supplied with a CK-0 chuck key in plastic handle.



25H – Heavy duty, precision ball bearing handpiece. 1½/32" diameter, 6½" long. Supplied with 1/8" and 1/4" collets, pin and wrench. Additional collets are available separately. Collet Set 103000 consists of 5 collets in sizes ranging from 1/16" to 1/4". Metric collets in 3mm, 4mm, and 6mm are also available.

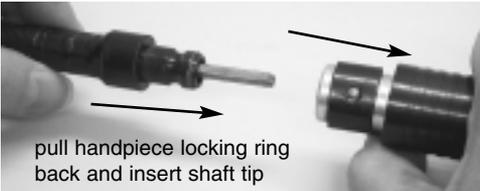
Assembly Instructions

Always make sure your power tool is unplugged during assembly.

Connecting and removing a square drive handpiece to a Series H flexible shaft–



Pull back the locking ring toward the front end of the handpiece while you insert the tip of the flex shaft. You may need to rotate the handpiece slightly until the square shaft tip engages the spindle.



Release the locking ring when you feel the shaft connect to the handpiece. You should hear a click.



To remove handpiece, pull back the locking ring in the same way and with a strong action remove the shaft and sheath from the handpiece.

Connecting Foot or Manual Speed Control

The power cord of the Series H Motor is equipped with a special polarized male plug and can only be powered through FCH, SCH, or EMH controls which have mating female plugs. **Be sure this connection is made before standard 3-prong plug on control is plugged into the electrical outlet.**

Installing and 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 4. Attach the accessory according to the following specific directions.

30H Handpiece:

This handpiece has a Jacobs® type chuck. Open chuck jaws with key provided. Insert shank of accessory into the chuck as far as possible. Using the chuck key in each of the three holes, tighten jaws until accessory is secure and centered. If accessory does not run "true", re-open jaws, rotate accessory and tighten again. To release accessory, simply re-open chuck jaws with key and pull out accessory.

44HT and 25H Handpieces:

To insert or change accessories, insert pin provided into the cross hole and through the spindle hole (turn spindle to align holes). Loosen chuck nut slightly

with wrench provided. Insert shank of accessory into collet. Be sure the shank diameter matches the collet size. Tighten chuck nut with wrench provided, keeping pin in cross hole. Test for a secure hold by pulling on accessory. Remove pin before operating power tool.

General Accessory Recommendations

A wide assortment of accessories are available from Foredom® and other manufacturers. The Series H Motor, combined with a variety of accessories, makes a very versatile power tool for grinding, sanding, brushing, cutting, buffing, carving and polishing virtually any material. When selecting an accessory for use with your Series H machine:

Always use accessories with a manufacturer's minimum speed rating of 20,000 RPM or higher. Using accessories with a lower rating could result in serious injury to the user or others in the work area.

Make certain that the shanks of accessories are securely inserted into the handpiece collet or chuck. Failure to do so could result in personal injury or cause accessory failure.

The Foredom Accessory Catalog contains information on hundreds of accessories rated at 20,000 RPM or higher. Also visit www.foredom.com to view the complete selection of rotary accessories

Operation

Read all of the safety instructions in this manual before operating any 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.

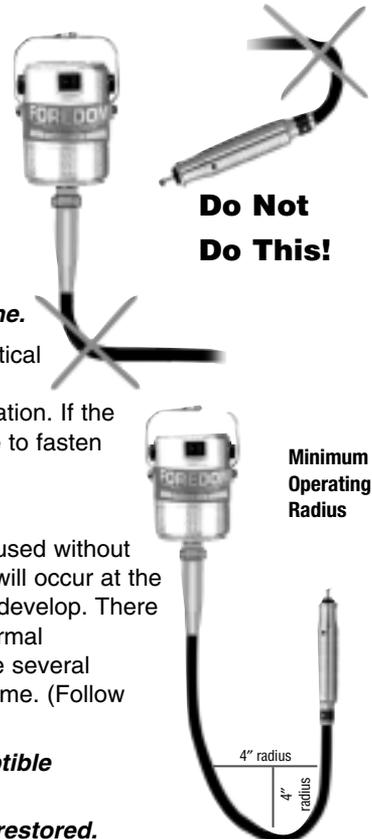
Your Foredom motor may be operated in a vertical or horizontal position, but it should not be enclosed or confined so as to restrict air circulation. If the motor is hung up above a work bench, be sure to fasten the wall bracket securely to a wall or post.

Do Not Bend Shaft at Tight Angle

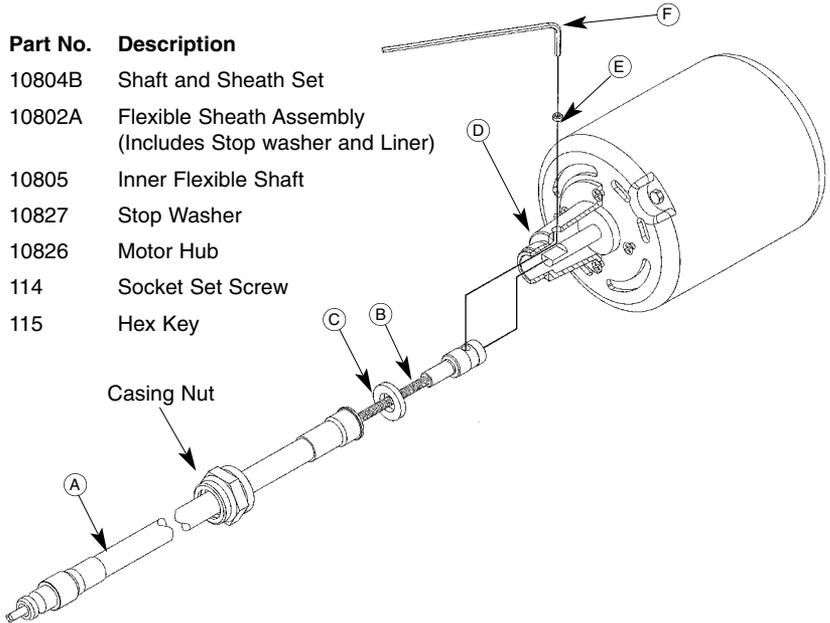
Shafts and sheaths last longer when they are used without sharp bends. If used at angles or loops, wear will occur at the points of greatest friction and excess heat will develop. There is no way to avoid ultimate wear and under normal conditions a flexible shaft machine may require several replacement shafts and sheaths during its lifetime. (Follow instructions in Maintenance Section.)

Never operate a power tool during a perceptible power decrease.

Turn off tool and unplug until full power is restored.



Item	Part No.	Description
A&B	10804B	Shaft and Sheath Set
A	10802A	Flexible Sheath Assembly (Includes Stop washer and Liner)
B	10805	Inner Flexible Shaft
C	10827	Stop Washer
D	10826	Motor Hub
E	114	Socket Set Screw
F	115	Hex Key



Maintenance

Handpieces—No lubrication required. Remove any buildup of dirt, chips, dust or other debris from collet seat or chuck.

Removal/Replacement of Flexible Shaft and Sheath— (See illustration Above)

1. Disconnect power cord from motor to control and disconnect handpiece.
2. Unscrew the casing nut which holds sheath (A) to motor hub (D), note that it has a left hand thread, and slide sheath off inner shaft.
3. Insert the hex key through access hole in motor hub. Loosen the socket set screw (E) that holds the flexible shaft assembly (B) onto the motor shaft. Remove flexible shaft assembly.
4. Install new flexible shaft assembly by inserting it fully onto the motor shaft and tighten socket set screw.
5. Apply a light film of Foredom grease (10006) to new flexible shaft or the one you have cleaned.
6. Make sure stop washer (C) is inserted into casing nut. **Connect flexible sheath assembly (A) to motor hub and tighten.**
7. Run motor *without* handpiece for one or two minutes, then turn off motor and wipe off excess grease from tip of drive shaft. Re-connect handpiece per instructions on page 5. **Never operate the motor with the outer sheath removed from the flexible shaft.**

Routine Cleaning and Lubrication of Flexible Shaft

The shaft should be checked, wiped clean, and relubricated with grease every 50 hours of use. With every 200 hours of use, the shaft should be thoroughly cleaned with solvent and lubricated. Follow steps 1 and 2 at left and then wipe exposed shaft with a cloth to remove old grease. Remove inner shaft and soak in a solvent if necessary, to remove all dirt and grease. Use Freedom flex shaft grease (p/n 10006) or high quality white lubricating grease according to directions below. Then follow steps 4 through 7 (opposite page) for correct re-assembly.

Lubricating the Inner Shaft

1. Remove handpiece (see page 5).

2. Slide sheath out of connector and remove it from shaft.

3. Apply a very light coating of lubrication to shaft starting at the top and working downward to about one inch from the 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.**



4. Replace sheath. Retighten the set screw in motor connector.

5. Clean exterior of sheath by wiping with a cloth.

6. Hang and run the motor for about 4 to 5 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.

7. Re-attach handpiece.

Replacement of Motor Brushes

The motor brushes should be checked for wear periodically. When new, they are approximately 3/4" long. Replace them when they have worn to 1/4".

To remove brushes, disconnect motor power cord and unscrew the brush caps. Be sure the curvature or contour of the motor brush tip matches that of the outside of the housing curve.



New Motor Brush



Motor Brush that needs replacement

Recommended Spare Parts and Supplies

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

For Series H, HB, and HM

- 1 flexible shaft (10805)
- 1 pair motor brushes (2019P)
- 1 Foredom flexible shaft grease (10006)
- 1 3/32" Hex key (115)

Repair Services

Factory repairs are done promptly and at reasonable cost. If you wish, you can send your equipment directly to the factory marked "Attention: Service Department". Be sure to give your street address. The equipment should be accompanied by a brief note describing the problem with the equipment. Estimates will be made upon request.

Owner's Registration Card

Send your Owner's Registration Card to Foredom right away. We will keep your card in our Registration and Serial Number File.

For More Information

For more information on Foredom machines, handpieces or accessories, contact your local dealer. When no local dealer is available, contact Foredom at: The Foredom Electric Company, 16 Stony Hill Road, Bethel, CT USA 06801
Phone: (203)792-8622, Fax: 203-796-7861, or on-line at: www.foredom.com.

LIMITED WARRANTY

Foredom warrants the Series H, HB and HM Motors to be free of defects in material or workmanship for a period of 1 year after purchase. During the warranty period, the defective product will be repaired or replaced without charge or, at our 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 BUT NOT LIMITED TO WARRANTIES OF FITNESS AND MERCHANTABILITY, ARE HEREBY LIMITED IN DURATION TO A PERIOD ENDING 1 YEAR FROM DATE OF PURCHASE, AND WE WILL NOT BE LIABLE OR RESPONSIBLE FOR ANY SPECIAL OR CONSEQUENTIAL DAMAGES.

Repair or replacement will be made at our option if the product is returned post-paid to:

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

All warranty repairs must be done at the factory at the above address. We will not pay any shipping or transportation charges. The #76 Duplex Spring is not covered by this warranty since it is especially sensitive to the pressure and stress variables of each individual operator. This warranty only covers the original purchaser of the product. 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 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.

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