Micro Drill

USER'S MANUAL

Micro Drill, USA power cord	75-0900
Micro Drill, Europe power cord	75-0901
Micro Drill, UK power cord	75-0902

Harvard Apparatus
a division of Harvard Bioscience, Inc.

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Warranty Information

Research Use Only

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Warranty

Harvard Apparatus warranties the Micro Drill for a period of one year from the date of purchase. At its option, Harvard Apparatus will repair or replace the unit if it is found to be defective as to workmanship or materials. This warranty does not extend to any instrumentation which has been (a) subjected to misuse, neglect, accident or abuse, (b) repaired or altered by anyone other than Harvard Apparatus without Harvard Apparatus express and prior approval, (c) used in violation of instructions furnished by Harvard Apparatus. This warranty extends only to the original customer purchaser. IN NO EVENT SHALL HARVARD APPARATUS BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. Some states and regions do not allow exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR USE, OR OF ANY OTHER NATURE. Some states or regions do not allow this limitation on an implied warranty, so the above limitation may not apply to you. Without limiting the generality of the foregoing, Harvard Apparatus shall not be liable for any claims of any kind whatsoever, as to the equipment delivered or for non-delivery of equipment, and whether or not based on negligence. Warranty is void if the device is changed in any way from its original factory design or if repairs are attempted without written authorization by Harvard Apparatus. Warranty is void if parts or connections not manufactured by Harvard Apparatus are used with the force transducer. If a defect arises within the warranty period, promptly contact Harvard Apparatus by phone at 800-547-6766 or 508-893-8999 or email: support@hbiosci.com).

Goods will not be accepted for return unless an RMA (Returned Materials Authorization) number has been issued by our customer service department. The customer is responsible for shipping charges. Please allow a reasonable period of time for completion of repairs, replacement and return. If the unit is replaced, the replacement unit is covered only for the remainder of the original warranty period dating from the purchase of the original device. This warranty gives you specific rights, and you may also have other rights, which vary from state to state.

Warranty Information

Out of Warranty Service

Proceed exactly as for Warranty Service above. If our service department can assist you by phone or other correspondence, we will be glad to help at no charge. Repair service will be billed on the basis of labor and materials. A complete statement of time spent and materials used will be supplied. Shipment should be prepaid. Your bill will include return shipment freight charges. Disassembly by the user is prohibited. Service should only be carried out by experienced Harvard Apparatus technicians.

Repair Facilities and Parts

Harvard Apparatus stocks replacement and repair parts. When ordering, please describe parts as completely as possible, preferably using our part numbers. If practical, enclose a sample photo or drawing.

Caution Notice 

Harvard Apparatus products are intended for laboratory use only and can be used in research and development applications. These systems have been designed to meet the standards for electromagnetic compatibility (EMC) and safety. This product should not be used in the presence of a flammable atmosphere such as an anesthetic mixture with air, oxygen, or nitrous oxide.

Safety Information

Please read the following safety precautions to ensure proper use of your micro drill. If the equipment is used in a manner not specified, the protection provided by the equipment may be impaired.

To Prevent Hazard or Injury

Use Proper Cord

Use only a line cord that is certified for country of use. The Operating voltage range is 100/220 VAC, 50/60 Hz.

Ground the Product

This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making any connections to the input or output terminals of the product, ensure that the product is properly grounded.

Make Proper Connections

Make sure all connections are made properly and securely. Any signal wire connections to the unit must be no longer than three meters.

Observe All Terminal Ratings

Review the operating manual to learn the ratings on all connections.

Avoid Exposed Circuitry

Do not touch any electronic circuitry inside of the product.

Do Not Operate with Suspected Failures

If damage is suspected on or to the product do not operate the product. Contact qualified service personnel to perform inspection.

Orient the Equipment Properly

Do not orient the equipment so that it is difficult to manage the connection and disconnection of devices.

Place Product in Proper Environment

Review the operating manual for guidelines for proper operating environments.

Observe all Warning Labels on Product

Read all labels on product to ensure proper usage.

If there are any questions about the operation of this instrument, call Harvard Apparatus Technical Services at 1-800-547-6766.

Safety Information

Caution Notice 

This micro drill is intended for laboratory use only and can be used in research and development applications. These systems have been designed to meet the standards for electromagnetic compatibility (EMC) intended for laboratory equipment applications as well as the applicable safety requirements for electrical equipment for measurement, control, and laboratory use. The unit itself does not generate waste, but may be used with samples that are hazardous. Please use appropriate PPE and ensure disposal in accordance with local regulations and practices. This product should not be used in the presence of a flammable atmosphere such as an anesthetic mixture with air, oxygen, or nitrous oxide.

Product Overview

The Microtorque Micro Drill is a high speed drill used for breaking through the skull during stereotaxic procedures. When used with the 75-1888 Micro Drill Holder, the micro drill easily interfaces with Harvard Apparatus stereotaxic instruments.

The micro drill can operate in either forward or reverse rotation and can be controlled either manually (through the control box) or with the foot pedal.

The micro drill includes the controller, handpiece, handpiece stand, controller, foot pedal and connectors. Drill bits must be purchased separately.

Specifications

Power Input:	110/220 VAC, 50/60 Hz
Power Output:	0 to 30 VDC, 1 Amp
Tool Speed:	0 to 35000 RPM fully variable
Tool Shank:	.093" (2.36 mm) diameter
Fuse:	1 Amp or 1/2 Amp

Parts List

Please check the contents of the shipment for completeness and note whether any damage has occurred during transport. If the contents are incomplete, or if there is a damage, notify the supplier from whom you have ordered the device or Harvard Apparatus directly.

Check to ensure that all micro drill parts are included in the shipment. The shipment includes the following items:

1. Control Box
2. Power Cord
3. Foot Pedal
4. Handpiece (Micromotor drill)
5. Handpiece Connector Cord
6. Rubber Stand (Handpiece Rest)
7. Assembly Tools
8. Replacement Motor Brushes

Assembly

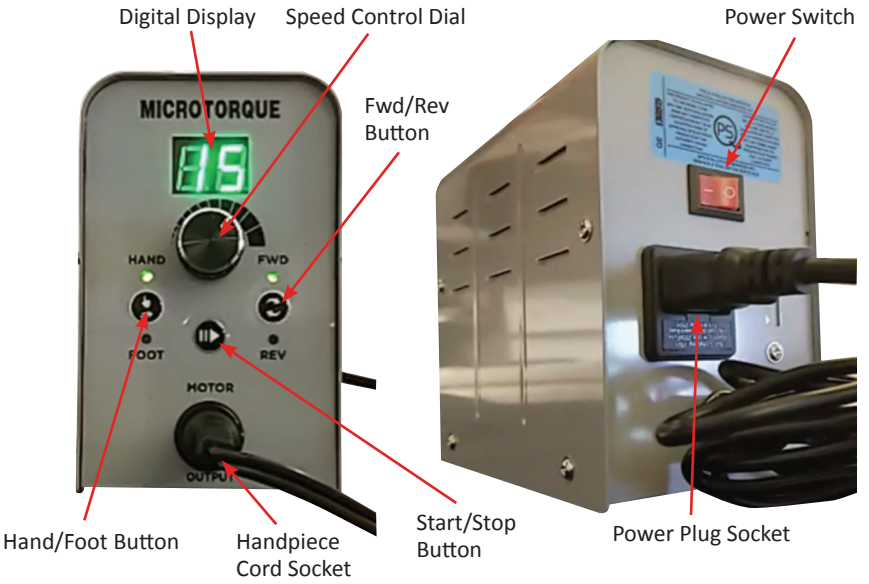
1. Plug the **handpiece cord** into the socket marked “Motor” on the front of the control box.
2. Plug the **foot pedal** into the back socket marked “Foot Switch” on the control box.
3. Connect the **power cord** to the socket on the back of the control box.
4. Plug the power cord into an electrical outlet that is properly grounded and compatible to the voltage input requirement. (The voltage rating is marked on the **back** of the control box.)

   Note: Please make sure the power switch is in the “off” position before plugging the power cord into an electrical outlet and the speed control is set to minimum. Unplug when not in use.
5. Insert a **drill bit** into the **handpiece** and secure it. (See Inserting and Changing Drill Bits, below.)

6. Turn on the **power switch** on the back of the control box and note that the display on the front flashes green. Turn the power back off until ready to use.

Keep the handpiece on the rubber stand when not in use to avoid dropping. Permanent damage may occur to the handpiece if dropped.

Control Box Controls



1. **Power Plug Socket:** located on the back of the control box. The power cord is connected to the power plug socket and to an appropriate electrical outlet.
2. **Power Switch:** located on the back of the control box. Turns the control box on and off. The switch should be in the "off" position when the device is not in use.
3. **Digital Display:** located on the top front of the control box, displays the speed of the handpiece
4. **Speed Control Dial:** located under the digital display. Turn clockwise to increase speed and counterclockwise to reduce speed. Dial should be turned counterclockwise to minimum speed when the device is not in use or turned off.
5. **Hand/Foot Button:** switches the device between hand operation and foot pedal operation.
6. **Fwd/Rev Button:** switches the operation of the handpiece from the forward (clockwise) direction and the reverse (counter-clockwise) direction.
7. **Handpiece Cord Socket:** the handpiece is plugged in here.
8. **Start/Stop Button:** starts operation of the handpiece either automatically in "hand" mode or using the foot pedal in "foot" mode.

   *Note: The handpiece operates in "hand" mode continuously once the start button is pushed. There is no additional manual start/stop **control** on the handpiece itself to keep it running—a significant ergonomic advantage. This feature is also very useful if the handpiece is mounted on a stereotaxic frame.*

Operation

1. Plug the control box into an electrical outlet and turn the power switch to the “on” position.
2. The display will blink green until the Start/Stop button is pushed to start.
3. The handpiece (with drill bit inserted) is now ready for operation.
4. For operation in Hand Mode: Push the Hand/Foot button so that the green “Hand” light is lit. The digital display will be blinking. Push the Start/Stop button, the digital display become solid green, and the handpiece starts. Adjust speed as needed. Push the Start/Stop button to stop the handpiece operation.
5. For operation in Foot Control Mode: Push the Hand/Foot button so that the green “Foot” light is lit. The digital display will be solid. Start operation of the handpiece by pressing the foot pedal. Releasing the foot pedal will stop the handpiece.

Inserting and Changing Drill Bits

Inserting, changing, and adjusting the extended length of drill bits is simple with the Micro Drill.

1. Locate the section in the center of the handpiece that can rotate.
2. With the drill bit to your right, rotate the center section of the handpiece away from you until you feel a release.
3. The drill bit can now be removed, replaced or extended.
4. With a new drill bit in place, rotate the center section towards you until you feel it lock.
5. The drill bit is now securely placed. With the power off, pull the drill bit to verify it is secure.

Maintenance

1. Keep the control box and handpiece clean from dust and grinding as well as possible
2. Only use isopropyl alcohol to wipe the handpiece and avoid getting it wet.
3. Use only the carbine drill bits recommended by Harvard Apparatus.
4. Do not drop the handpiece

Ordering Information

ORDER #	DESCRIPTION
75-0900	Micro Drill, USA power cord, with footswitch (Purchase drill bits separately)
75-0901	Micro Drill, Europe power cord with footswitch (Purchase drill bits separately)
75-0902	Micro Drill, UK power cord with footswitch (Purchase drill bits separately)
75-1888	Micro Drill holder, 16 mm diameter
62-0020	Carbide Drill Bit, Round, 0.6 mm, pkg. of 5
62-0021	Carbide Drill Bit, Round, 0.8 mm, pkg. of 5
62-0022	Carbide Drill Bit, Round, 1.0 mm, pkg. of 5
62-0023	Carbide Drill Bit, Round, 1.2 mm, pkg. of 5
62-0024	Carbide Drill Bit, Round, 1.4 mm, pkg. of 5
62-0025	Carbide Drill Bit, Round, 1.6 mm, pkg. of 5
62-0026	Carbide Drill Bit, Round, 1.85 mm, pkg. of 5
62-0027	Carbide Drill Bit, Round, 2.1 mm, pkg. of 5
62-0028	Carbide Drill Bit, Round, 2.3 mm, pkg. of 5

Harvard Apparatus

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