X35 New Black Electric Lab Handpiece System
Operating and Instruction Manual

X35 New Black HP System Complete, 120V AC  ITEM NO. 38000
X35 New Black HP System Complete, 220V AC  ITEM NO. 38020

Note: Please read these instructions carefully and completely before operating the Buffalo Dental X35 Handpiece System. Keep all loose clothing, long hair, and flammable materials away from the unit during operation. Ensure proper connection to a grounded electrical outlet of proper voltage and amperage, and ensure no liquids come in contact with the unit at any time. Accident or injury may occur if these precautions are not followed.

Note: Handpiece not intended for intraoral use. For laboratory use only.

Thank you for purchasing your new X35 Electric Laboratory Handpiece System. The following information will help you set up the system and familiarize yourself with its safe operation and care. Following these suggestions should provide the maximum performance and longest life of the system.
X35 Console Specifications

Electrical: 120 V or 230 V AC (for Item No. 37650), 50/60 Hz
Line Fuse: 2A  Handpiece Fuse: 3A
Handpiece(s) Required: 0 – 35,000 rpm, (0-30 Volts DC w/ proper Line Connector)
Foot Speed Control Required: Buffalo Dental X35 Foot Control
Shipping Weight: 8 lb. (3.7 kg)
Contents: X35 Console

New Black Signature Electric Handpiece Specifications

Handpiece Rotational Speed: 0 – 35,000 rpm
Chuck Size: 3/32 in. (2.35 mm)
Electrical Console Required: X35 or similar providing clean, smooth 0-30 V DC for handpiece via appropriate connector
Handpiece Line Fuse Recommendation: 3A
Shipping Weight: 1 lb. (.5 kg)

X35 Console Layout

Console Set-Up and Operation Procedures

1. Insert tool in handpiece, connect handpiece plug to Handpiece Outlet A(1) and put handpiece in Cradle.
2. For variable speed foot control operation, connect the Foot Control to the Foot Control Jack (10) at the rear of the Console. Note: Use in Foot Control mode (5) disables Speed Control Dial.
3. Select Handpiece A Setting on Handpiece Outlet Selector Switch (3) (if available.)
4. Select handpiece rotation direction (4) and hand or foot speed control (5).
5. Ensure X35 Console is plugged into a properly grounded, standard 120 VAC (or 220 VAC if ITEM No. 38015 electrical outlet capable of supplying a minimum 2A continuous power. Periodically inspect the cord and the connection to ensure safe operation.
7. With Handpiece in hand, set speed via Hand or Foot Control and begin operation.
8. Ensure Unit is turned off when not in use.

Note- Your X35 Console may be outfitted with one or two handpiece outlets (A and B) for connecting with two different handpieces at the same time, and an A/B Control Switch. Please note that for the two handpiece outlet version, only one handpiece can be operated at a time, and the A/B Switch determines which handpiece is being powered. When attaching a second handpiece to the Console, please ensure the handpiece is designed to run on 0 – 30 V DC power.

Warning- Never Reverse the rotational direction of the Handpiece while in operation. This can damage the handpiece and cause premature failure. Ensure Handpiece is completely stopped before reversing direction.

Handpiece Set-Up Procedure

1) Connect the Handpiece Plug to Handpiece Line Out A (or only outlet) and place handpiece in Cradle.
2) Select Handpiece A (if available) Setting on Handpiece Outlet Selector Switch (3) (optional).
3) Select handpiece rotation direction and hand or foot speed control as available.
4) Ensure tool is properly inserted into handpiece chuck and rotates freely (Chuck in “S” Secure position) before applying power to the handpiece (see following Instructions for complete details.)
5) Ensure Console is plugged into a properly grounded, standard AC electrical outlet capable of supplying a minimum 3A continuous power. Periodically inspect cords and connections to ensure safe operation.
Setting/Removing Tools

~Never attempt to install or remove tools while the handpiece is running. Always ensure the power is off before removing or installing tools!

~Never operate the handpiece when the chuck is locked in the "R" OPEN position!

~To OPEN the chuck and Remove the bur, hold the back of the handpiece in your left hand (with the handpiece facing away from you.) Refer to Figure A. Turn the front elliptical section in the "R" direction (left, or counterclockwise) approximately 70 degrees until it stops completely.

~To CLOSE the chuck and Secure the bur, turn the front elliptical section in the "S" direction (right, or clockwise) until it stops completely and the bur spins securely in the chuck.

Handpiece Automatic Overload Protection Circuit

The Handpiece is designed for continuous performance when operated according to recommendations. Handpiece operation should never be attempted while the handpiece is locked (no tool in handpiece or chuck locked in “R” Open position), or in situations creating excessive side pressures or forced-stall (or near-stall) speeds. In situations where dangerous operating conditions are created for the handpiece, an internal Automatic Overload Protection Circuit may be activated which temporarily disconnects power to the handpiece to protect it from damage.

Should the handpiece stop running during system operation:

1) Immediately turn off the main power switch on the Console
2) Check all system settings to ensure operation according to safe recommendations
3) Allow a 1 minute delay for the Overload Protection Circuit to automatically reset
4) Turn on the main power switch and begin using the handpiece within the safe operational range

Note: After the system reset is complete, the handpiece will immediately return to original performance levels.

Helpful Hints For Use

~Only Open/Close the Handpiece Chuck When Rotation Is Stopped, and Only Operate The Handpiece When A Tool Is In The Chuck~ Operating the handpiece with the chuck open or with no tool in the chuck can wear out the chuck quickly.

~Never Reverse the Direction of the Handpiece While the Tool is Spinning~ This can damage internal parts of the Console and Handpiece.

~Avoid Excessive Side Pressure on the Handpiece During Grinding~ Listen carefully to the sound of the handpiece when spinning freely, prior to contacting the work material. As you contact the work material, attempt to keep the RPM (and sound) of the handpiece close to that which you heard initially. Too much of a sound change during grinding indicates heavy side-loading on the tool and handpiece. Constant use in this fashion can lead to blown fuses and premature failure of handpiece bearings, chuck, and armature.

~Ensure The Use of Straight, Concentric Cutting Tools During Operation~ Bent tools may cause excessive noise and vibration during handpiece operation, and may pose a serious safety hazard. When excess noise or vibration originally occurs, first substitute in a new cutting tool and test-run the handpiece to see if this solves the problem. If so, discard the faulty cutting instrument.

~Only Use the Handpiece With Adequate Dust Collection~ If your handpiece appears dirty or clogged, feels hot, or has a different sound than before, remove the back cover of the handpiece for a brief cleaning and inspection. Refer to the Cleaning & Maintenance Section in this Instruction Sheet for complete details.

~Check the Handpiece Brushes~ It is important to check the carbon brushes (in the rear of the handpiece) every few months for excessive wear and possible replacement. The brushes are responsible for transferring power to the armature, and when they are worn out, they force the handpiece to overwork to maintain power and RPM. Worn brushes will eventually cause the handpiece to overheat, generate smell and smoke, and ultimately stop working! An extra set of brushes is included with each new handpiece, so save them for future use. Contact Buffalo Dental if you have questions.

~When The Chuck No Longer Holds Tools~ Your handpiece may need a new chuck. Contact Buffalo Dental or replace the chuck yourself.
~Power Loss / Sound Change / Vibration Change~ If the handpiece appears to be losing power, or is beginning to get noisier, or is vibrating excessively, the carbon brushes in the rear of the handpiece may be worn out. Carefully inspect and replace the brushes if needed. Failure to correct this problem can lead to excessive wear and premature failure of the motor, and continuous problems with blown fuses in the console unit. Excess noise or vibration may also be caused by use of a bent cutting tool. Please replace the cutting tool to see if this helps cure the vibration problem.

In general, it is always a good idea to notice and take immediate action when your handpiece begins to make a different sound, has a different feel, seems to have less power, has more vibration than normal, or is getting warm during operation. All of these symptoms can indicate wear of critical components within the handpiece, and early detection and correction will help your handpiece live to a ripe, old age. Always consult Buffalo Dental if you have any questions about the sound or feel of your handpiece.

Maintenance & Cleaning

Console Surfaces: Ensure unit is disconnected from power source during cleaning. Periodically wipe clean all external surfaces with a dry cloth as necessary.

Fuses: Should either the Console or the Handpiece not operate, or fail to display that proper power is available, first check to ensure the handpiece is properly connected to the Console, the Console is properly connected to the correct AC outlet, and the Console Power Switch is in the “On” position.

If power is still not available to the Console, immediately shut off the Console, disconnect it from the AC outlet, and remove and test the Line Fuse on the back of the Console to ensure it is in proper working order. Replace with a properly sized fuse if required. Before reenergizing the unit, thoroughly inspect the Console and Handpiece to ensure all wires are intact and not damaged. Also ensure the handpiece is able to freely rotate with no noticeable difficulties. Then ensure all connections are complete and retest the unit.

Alternatively, if the Console registers proper AC power but the Handpiece still fails to operate, please shut off and unplug the Console, remove and inspect the Handpiece Fuse on the back of the Console, and replace with an identical fuse if required. Before reenergizing the unit, thoroughly inspect the Console and Handpiece to ensure all wires are intact and not damaged. Also ensure the handpiece is able to freely rotate with no noticeable difficulties. Then ensure all connections are complete and retest the unit.

Please Call Buffalo Dental if the X35 Console or the Handpiece in use repeatedly blows fuses, or if you have any questions during analysis of fuse related problems.

Handpiece: Ensure all Handpieces are disconnected from Console (and Console is unplugged) during cleaning. Handpieces works best when clean, so always attempt to keep dust and grinding debris away from handpieces, and always use with adequate dust collection. Clogged cooling vents on handpieces will lead to higher operating temperatures, which can lead to premature wear and failure. Inspect and clean the handpiece as follows:

- **Back:** Remove the back cover of the handpiece periodically (turn in “L” Loosen direction to unscrew and remove back cover- see Figure B) for a brief cleaning and inspection if your handpiece appears dirty or clogged, feels hot, or has a different sound than before.

- **Brushes:** To check or replace the two Square Carbon Brushes, refer to Figure B. After the back housing has been removed and the power cord is unplugged from the motor, notice the two brass-colored pieces (180 degrees apart) on the back of the motor. Each is held in place with a small screw. Remove these two screws (using a small Jewelers-type screwdriver) and the Carbon Brush Assemblies will pull free from the motor.

  Compare the length and condition of the used Brushes with the two new Carbon Brushes included with the Handpiece. If the used brushes shows signs of considerable wear or are much shorter than the new brushes, discard the old brushes, install the new Brushes, and order a new set of two Carbon Brushes.

- **Cleaning/Replacing Chuck:** Make sure the collet is closed. Carefully wrap the Spindle Sheath in a cloth or piece of rubber to protect the plastic covering, and securely grip the Spindle Sheath with Pliers or Channel Locks (use extreme caution to avoid damaging the Spindle Sheath.)

  Grip the back of the Handpiece in your hand, and turn the Spindle Sheath counter-
clockwise (see Figure C) until it loosens, then remove it the rest of the way with your fingers. When the Spindle Sheath is fully loosened, carefully open the handpiece and pull the Spindle Assembly out the back of the Spindle Sheath, ensuring the Coil Spring and all parts of the Spindle remain in exact order (see Figure D).

Carefully clean off the outside of the Spindle Assembly, and clean out the inside of the Spindle Sheath (blow out dust and wipe out debris). The Spindle Bearings are permanently lubricated, so do not lubricate! It is ok to clean the spindle with a lightly oiled cloth and to lubricate the chuck opening with a drop of light oil.

To replace the Chuck, insert the chuck end of the Spindle Assembly into the triangular-shaped opening in the Chuck Multi-Wrench, and carefully grip the opposite end (shiny steel Chuck Joint) of the Spindle Assembly with Pliers, using padding between the Pliers jaws and the spindle (use extreme caution to avoid damaging the spindle.) Unscrew (counter-clockwise) and remove the Chuck. Clean, re-insert, or replace as appropriate, screwing it back in all of the way until it is tight.

Reassemble in reverse order using extreme care to ensure the fine female threads on the inside of the Spindle Sheath are perfectly engaged with the male threads on the outside of the Motor Case. Tighten securely, ensuring the Spindle Assembly is spinning freely and holding Burs securely, and the Spindle Sheath does not loosen during normal use.

**Repair**

Please contact Buffalo Dental for information regarding repair of your X35 Console, Foot Control, and New Black Signature Electric Handpiece.

**New Black Signature Handpiece Replacement Parts List**

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<th>Description</th>
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<th>Description</th>
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<tr>
<td>38025-102LN1</td>
<td>Nose Tip</td>
<td>38025RR</td>
<td>Roller Ring</td>
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<tr>
<td>38025-1021</td>
<td>Snap Ring</td>
<td>38025-101202</td>
<td>Roller Pin, 1 of 2 Required</td>
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<td>38025-102L5</td>
<td>Inner Diameter Collar</td>
<td>38025R</td>
<td>Roller, 1 of 2 Required</td>
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<td>38025-1023</td>
<td>Outer Diameter Collar</td>
<td>38025-019</td>
<td>Set Ring Handle Assembly</td>
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<td>38025WW</td>
<td>Wave Washer</td>
<td>38025TR</td>
<td>Thrust Ring (Washer)</td>
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<td>Flat Washer</td>
<td>38025-420</td>
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<td>Spindle Small Bearing 1260ZZ</td>
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<td>Motor and Brush Screw, 1 of 2 Required</td>
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<td>Ball Bearing 940ZZ</td>
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<td>Front Bearing Spacer (Flat Washer)</td>
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<td>Chuck Blank</td>
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<td>Brush Holder Assembly for Square Brushes</td>
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<td>&quot;O&quot; Ring</td>
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Warranty

Buffalo Dental Mfg. Co., Inc. warrants the X35 Console, Foot Control, and New Black Signature Electric Handpiece to be free from defect due to manufacturing for one year from date of installation. Refer to the Warranty Card or www.buffalodental.com for details.

Ordering Information

X35 New Black Electric Handpiece System, 120 VAC- ITEM #: 38000
X35 New Black Electric Handpiece System, 220 VAC- ITEM #: 38020
New Black Signature Electric Handpiece Only- ITEM #: 38025
Square Carbon Brushes, Set of 2- ITEM #: 38025BS

For further technical assistance, please call: 516.496.7200, or EMail: tech.support@bdm1.com

In Canada: Bolton Dental: Tel: 519.651.2444