Welch Allyn®

Z200+ v2

THERMAL WRITER

SERVICE MANUAL

Manufactured by Welch Allyn, Inc., Skaneateles Falls, NY U.S.A.

CAUTION: *Federal law restricts this device to sale by or on the order of a physician.*

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For patent information, please visit www.welchallyn.com/patents

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GENERAL

Service Manual Purpose

The purpose of this manual is to supply information to service personnel so they can maintain the Z200+ Ver. 2 at the assembly and subassembly level. Although the manual includes parts lists, mechanical assembly parts, and theory of operation, it is intended to function primarily as a guide to preventative and corrective maintenance and electrical repairs considered serviceable.

The Z200+ v2 device is identified by the USB Logo / Icon on the Upper Housing.

If the USB logo / icon is not present on the Z200+ Upper Housing, refer to Z200+ Ver. 1 Service Manual DIR# 9516-163-70-ENG.

Notice to EU Users and/or Patients

Any serious incident that has occurred in relation to the device, should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

Disposal

This product and its accessories must be disposed of according to local laws and regulations. Do not dispose of this product as unsorted municipal waste. For more specific disposal information see www.welchallyn.com/weee.

USER SAFETY INFORMATION

WARNING: Means there is the possibility of personal injury to you or others.

Caution: Means there is the possibility of damage to the device.

Note: Provides information to further assist in the use of the device.

***NOTE**: This manual may contain screen shots and pictures. Any screen shots and pictures are provided for reference only and are not intended to convey actual operating techniques. Consult the actual screen in the host language for specific wording.*

WARNING:
Only qualified technicians authorized by Welch Allyn, Inc. should perform any adjustments, modifications or repairs.

CAUTION:
The Printed Circuit Board contains static sensitive devices. Proper grounding is required when handling the Printed Circuit Board.

Make Periodic Safety Inspections

Follow the recommended maintenance schedule. Inspect the power cord and transmission cables periodically for fraying or other damage and replace as needed. Broken or frayed wires may cause interference or loss of signal. Pay particular attention to points where wires enter connectors.

Use the Proper Power Cord

Use only the power cord specified for the equipment. This product requires a three-wire, (18 gauge, SJT- grade) power cord which is supplied with a three-terminal, polarized plug (hospital grade) for connection to the power source and protective ground. Use only a power outlet with a protective ground outlet. An interruption of the grounding connection could cause an electrical shock hazard.

Do Not Operate in Explosive Atmospheres

Do not operate the Z200+ in the presence of flammable gasses or anesthetics; this environment could cause an explosion. Refer to the documents NFPA 56A, Standards for the Use of Inhalation Anesthetics, and NFPA 70, Health Care Facilities section of the National Electrical Code before using the product in the presence of flammable gasses or anesthetics.

Use Only Safe Methods of Interconnection

To prevent electrical shock from the product when it is connected to other electrical equipment, proper grounding is essential. Refer to the document NFPA 70-1981, article 517, Health Care Facilities section of the National Electric Code.

Do Not Mount Product Above Patient

Do not mount or place the product where it could fall on a patient or where it could be accidentally knocked off a shelf or other mounting arrangement.

Use Only Recommended Accessories

For the patient's safety and optimum equipment performance, use only the accessories specified by Welch Allyn, Inc.

Do Not Sterilize this Product

Do not sterilize this product or any accessories unless specifically directed by the manufacturer. Sterilization and sterilization environments can seriously damage many components and accessories.

Avoid Liquid Spills

Do not set beverages or other liquids on or near the writer.

Manufacturer's Responsibility

Welch Allyn, Inc. is responsible for the effects on safety and product reliability and performance only under the following conditions:

- Only qualified service technicians authorized by Welch Allyn, Inc. perform the required maintenance, assembly operations, adjustments, modifications, or repairs to the product.
- The electrical installation complies with the appropriate environmental and safety requirements.
- The Z200+ is used in accordance with the instructions for use.

EQUIPMENT SYMBOLS AND MARKINGS

Symbol Delineation

CAUTION The caution statements in this manual identify conditions or practices that could result in damage to the equipment or other property, or loss of data.

WARNING The warning statements in this manual identify conditions or practices that could lead to illness, injury, or death. In addition, when used on a patient applied part, this symbol indicates defibrillation protection is in the cables. Warning symbols will appear with a grey background in a black and white document.

Do not dispose as unsorted municipal waste. Requires separate handling for waste disposal according to local requirements

Consult directions for use (DFU) A copy of the DFU is available on this website. A printed copy of the DFU can be ordered from Welch Allyn for delivery within 7 calendar days.

Reorder Number

DESCRIPTION

Z200+ Overview

The Welch Allyn Z200+ writer is a stand-alone, thermal paper printer that works in conjunction with Welch Allyn Stress Testing Systems, and a variety of OEM equipment. The computer-controlled Z200+ uses an eight-dot per millimeter print head to print out ECG tracings and report data.

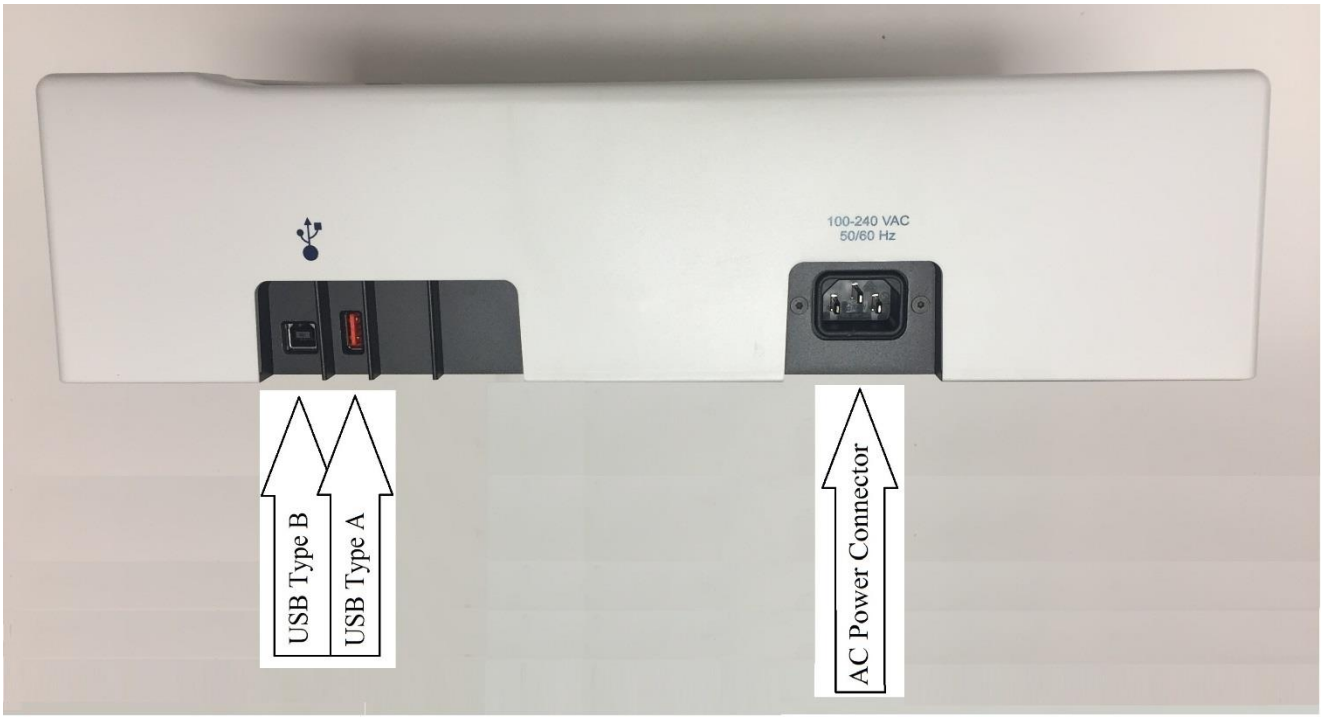
QStress/XScribe v6.x.x Communication Interface

Version 2.x.x Z200+ thermal printers require the use of a Proxy Service to properly communicate with Q-Stress and XScribe v6.x.x systems. This software is located on the Z200+ User Manual DVD (item #25 in the parts listing), or as software file number 11028-008-51.

Instructions for installing the Proxy Service are defined in the Z200+ v2 PROXY INSTALL GUIDE, document number 80024056.

Inputs

- AC Power Connector
- Form Feed Switch (on top panel)
- USB Type A Connection
- USB Type B Connection



Outputs

- Power on LED
- Hard copy paper printout
- Paper Out / Error LEDs
- USB Type A Connection

Input / Output Descriptions

AC Power

The Z200+ operates on 100/240 VAC at 50/60 Hz. When AC power is connected to the unit the Power LED will turn on.

Power On LED

This LED lights to signal when AC power is applied.

Form Feed

The form feed push button is a momentary contact switch that advances the paper until the cue mark is sensed by the unit.

Hard Copy Printout

The thermal printer uses either standard 8 1/2" x 11", or A4 size sheets of Z-fold, thermal sensitive paper with form feed marks. Printing speeds are determined by the software, the unit can print at 5, 10, 25, and 50 mm per second. Dot density is eight dots per millimeter or 200 dpi.

Paper Out/Error LED

LED Solid ON means paper jam or other printer problem.
LED Fast Blink (1 Blink Per Second) means no USB cable connection.
LED Slow Blink (1 Blink Per 2 Seconds) means USB connected but no pings are being received from the computer (sent by the proxy service).

USB Type A Connection

For Future Options

USB Type B Connection

Connection to Q-Stress / X-Scribe Systems for printing data transfer.

Main Sections

The Z200+ consists of the five main sections listed below.

Power Supply

The Z200+ derives its power from the AC lines. The power supply of the Z200+ is rated for 100-240 VAC operation without the need for any modification to the unit. The Z200+ must be connected to the isolation transformer to ensure patient and operator isolation.

Microprocessor and Memory

The Z200+ printer is a microprocessor controlled printer. Along with the microprocessor the unit has onboard FLASH and RAM memory.

Thermal Print Head Interface

The thermal print head prints eight dots per mm (200 dpi). The information is transferred from the main board to the print head via two cables.

Motor Interface

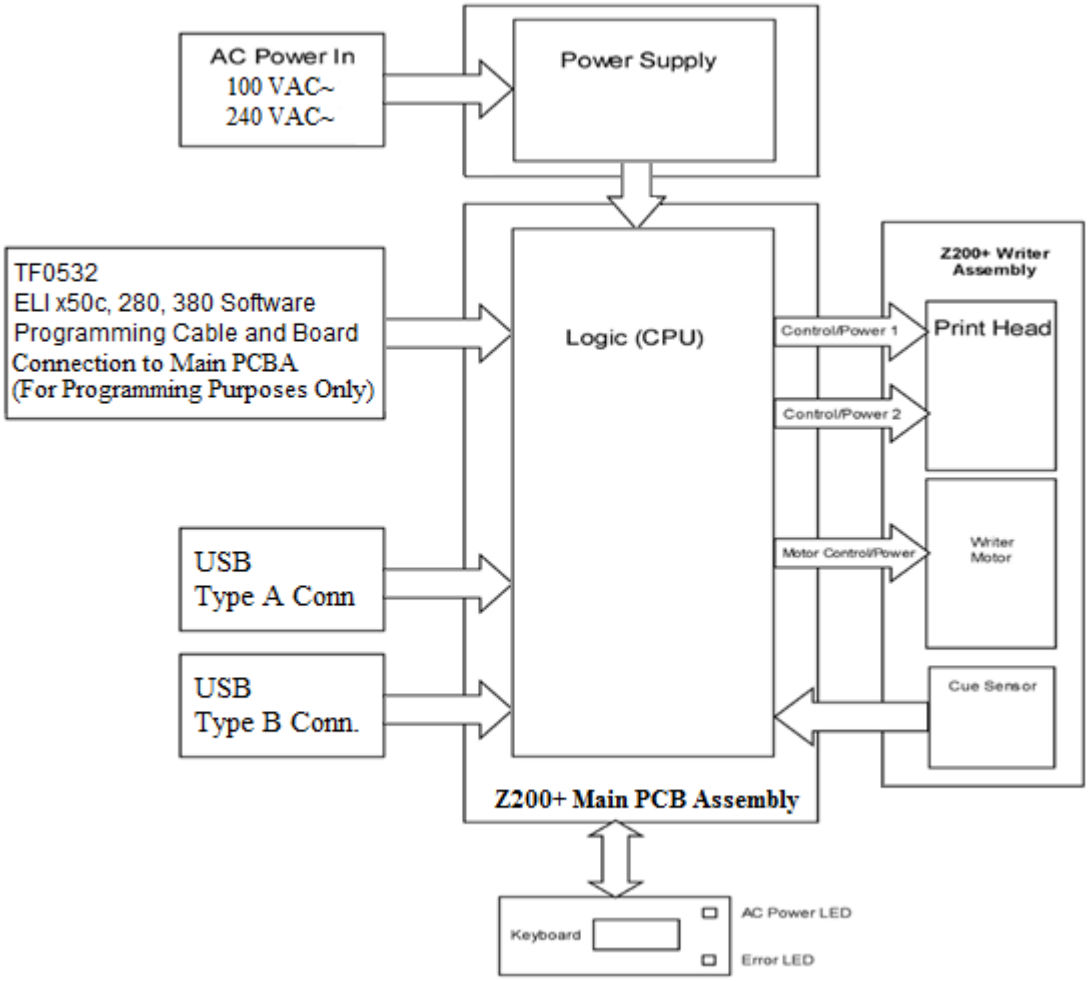
The Z200+ utilizes a stepper motor to advance the paper.

USB Interface

USB Type A Interface Connector: For Future Options

USB Type B Interface Connector: Digital Input to the Z200+ Writer.

Block Diagram of the Z200+ Printer



Z200+ Specifications

Instrument Type:	Thermal writer
Paper Type:	8 ½ x 11 inch or A4, cued, perforated, z-fold with full grid
Recording Technique:	Computer controlled, thermal dot array, 8 dots/mm
Writer Speeds:	5, 10, 25 or 50 mm/sec, computer-controlled
External Ports and Data Interfaces:	USB Interface to allow high speed data transfer for printing.
Chassis leakage current:	Meet or exceed requirements of IEC 60601-1
Power:	100-240 VAC at 50/60 Hz
Weight:	9 pounds
Dimensions:	15.5” wide, X 13” deep, X 4" high
Function:	Receives data from Main System for the purposes of printing.
Electrical Safety:	EN/IEC 60601-1 / EN/IEC 62353
EMC:	IEC 60601-1-2 4th Edition Approved with Q-Stress / X-Scribe Systems

TESTING AND TROUBLESHOOTING

Introduction

This section contains troubleshooting information and procedures. Since repair of the Z200+ is limited to the replacement of subassemblies, including the entire circuit board, the troubleshooting guide does not extend to the circuit board component level.

WARNING:

Only qualified technicians authorized by Welch Allyn, Inc. should perform any adjustments, modifications or repairs.

Caution:

The Printed Circuit Board contains static sensitive devices. Proper grounding is required when handling the printed circuit board.

Uneven Printing

Possible causes of uneven printing could be the print head itself, the platen, poor or damaged paper, or the mechanical alignment of the print head.

1. Check the platen for uneven wear.
2. Make sure that the writer door closes evenly across the print head.
3. Paper for the Z200+ should be stored in a cool dry area and not exposed to direct sunlight.
4. Perform periodic cleaning of the print head and platen.

Gaps in Printing, No Printing, or Missing Dots

Print Head/Circuit Board Fault Isolation

Missing Dots

A faulty print head can cause individual missing dots. If dots are missing on the printout the print head should be replaced. If the problem persists after the print head has been replaced there may be a problem on the motherboard of the unit, and it should be replaced.

Defective Paper

Thermal paper which is old or was improperly stored can cause light or uneven printing. Exposure to heat or chemical vapors may cause gaps in printing. Testing and operation of the unit should be performed with known good paper.

No Motor Drive or gears grinding

1. Open the writer door and make sure that only one piece of paper is going across the platen.
2. Check for obstructions in the writer motor and gearbox assembly.
3. Check for loose Pinion Gear on Platen Roller … See Vibra-Tite note below.
4. Writer motor may be damaged. Replace the writer motor and / or the gearbox assembly.
5. Possible problem with the motherboard. Replace the motherboard.

Vibra-Tite Note:
After applying Vibra-Tite to the Gear Set-Screw threads, allow the VibraTite to cure for a minimum of 10 minutes before installing the Set-Screw.

Unit will not process print request

1. Check to make sure that the power LED on the printer is on.

2. Check to make sure that the printer is not in an error state. The Error LED should not be on. If it is on press and hold the form-feed button for 7 seconds to reset the printer and clear the error, or simply cycle the power of the unit by disconnecting / reconnecting the AC Power Cord.

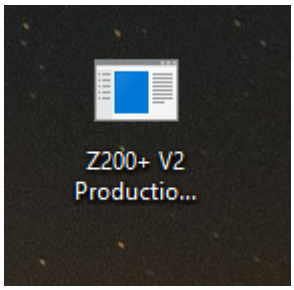
   Note: See "Paper Out / Error LED" Section (Page 5) for details on Error LED behavior.

3. Check to make sure that the USB Cable is connected properly (and not damaged) from the Q-Stress / X-Scribe System / Computer.

4. Calibrate the Cue Sensor and Print Test Page:

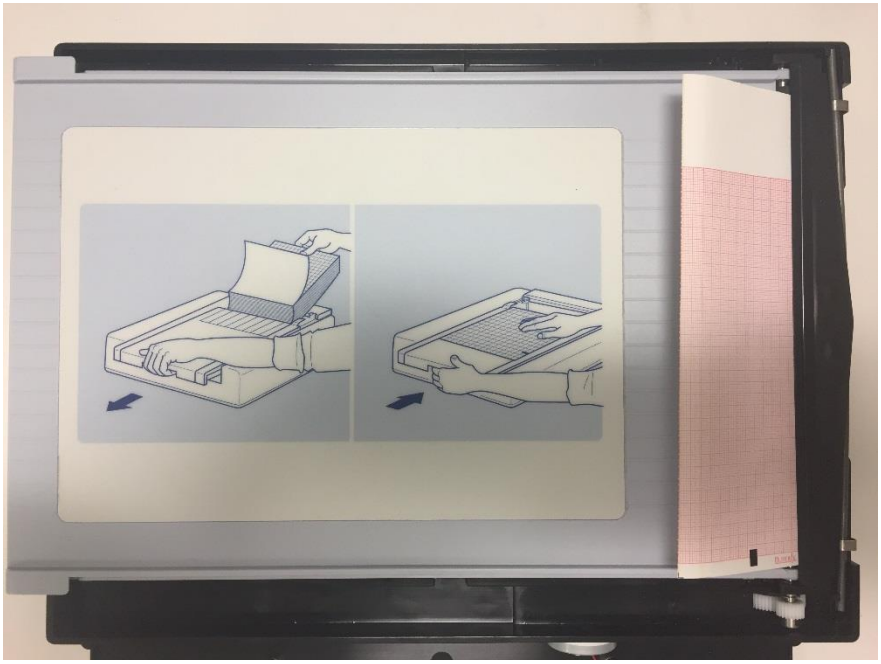
   A. Close the application that is using the Z200+ printer.

   B. From the Windows PC, run the "Z200+ V2 TEST SW TOOL" (DIR#: 11032-001-54):

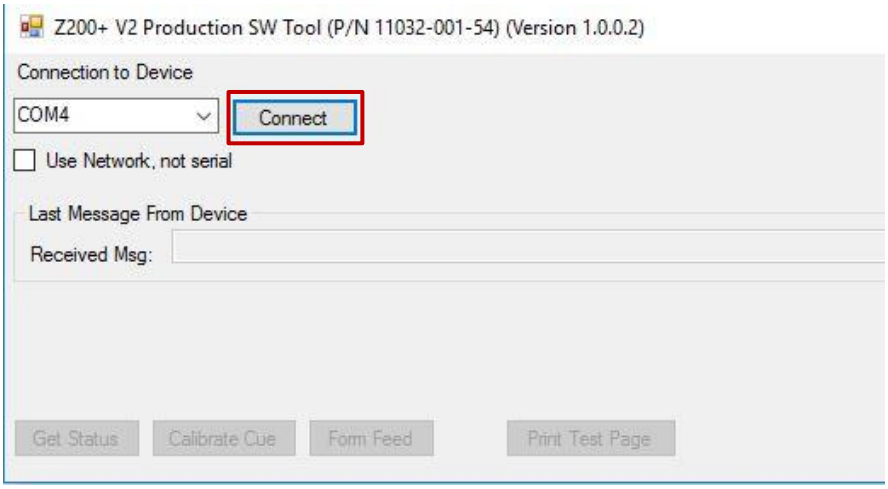


   *Picture is for reference only.

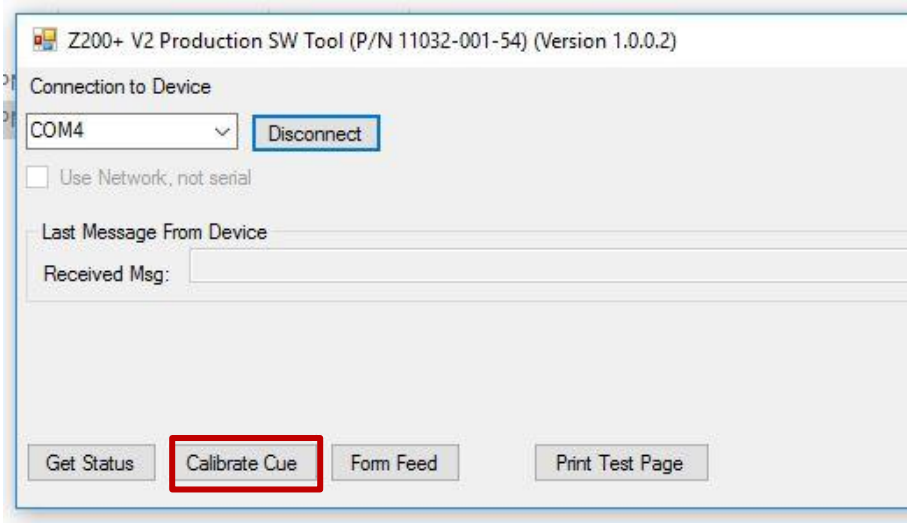
   C. Place paper in the writer assembly tray and position it such that there is approximately 2-3 inches of paper between the roller and the perforations on the paper. Close the writer drawer.



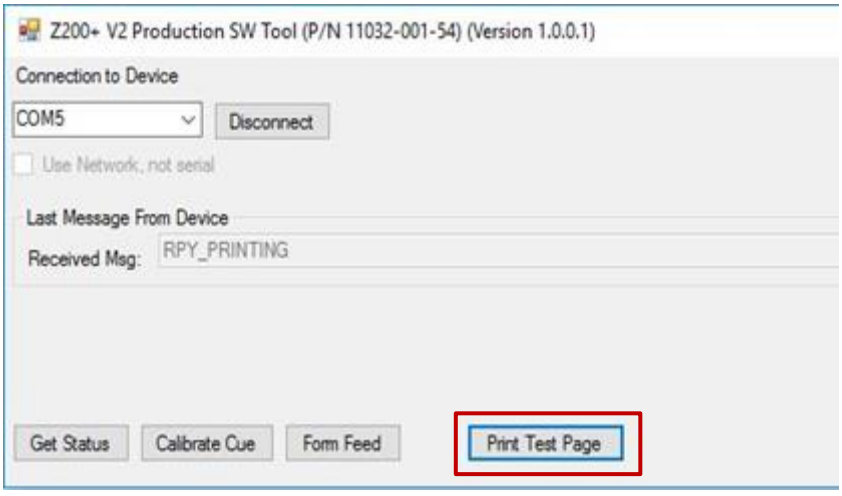
D. Select the “Connect” Button to connect the application to the Z200+:



E. Click “Calibrate Cue” button to Calibrate the Writer Assembly Cue Sensor:



F. Click “Print Test Page” to print the test page.
Repeat “Print Test Page” 3 times.



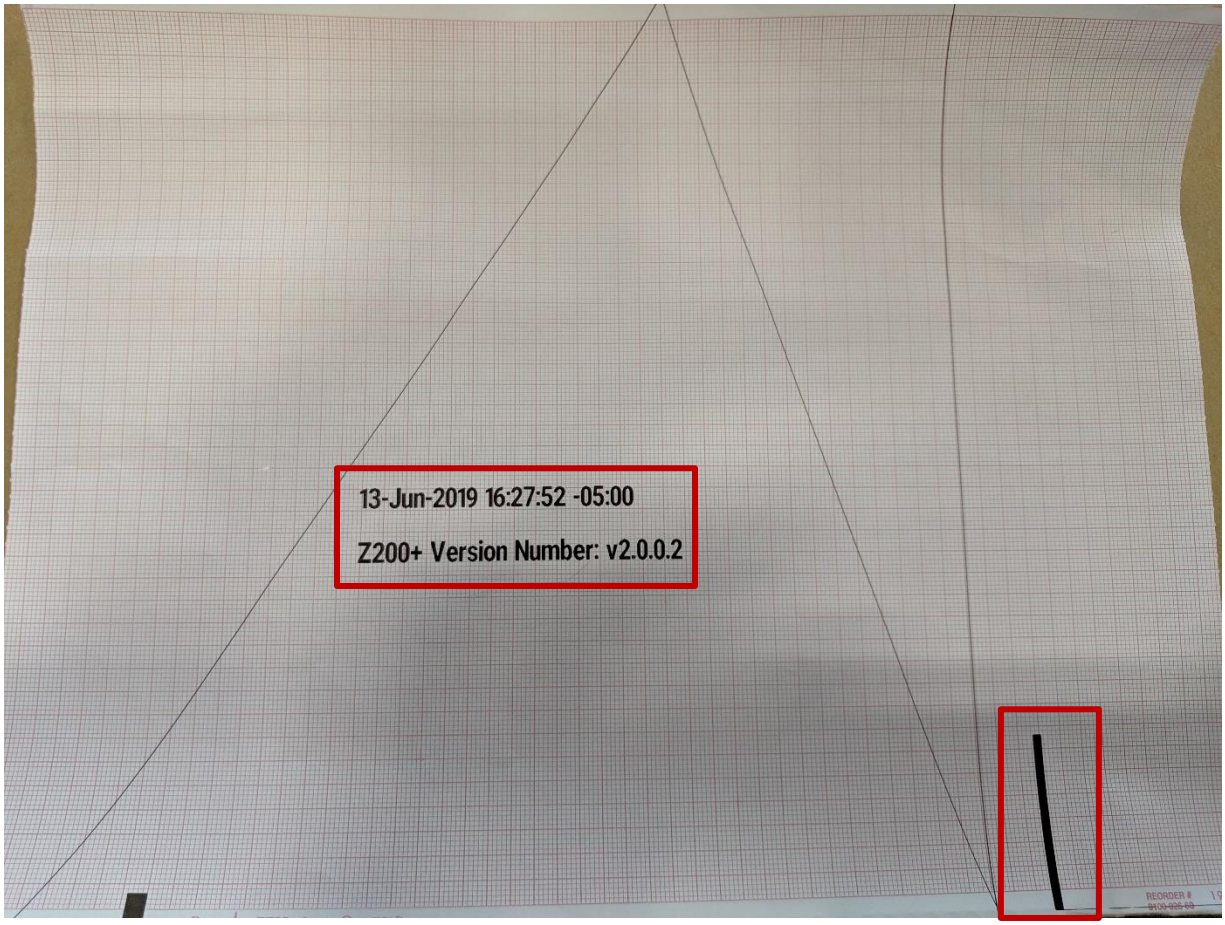
G. Examine the Test Page for overall print quality.

Confirm Text is legible and print darkness is uniform across the page.

Confirm a continuous slanted line across the printing page along with current date, time, and Z200+ software version number (See SAP DIR# 11028-00X-50 for latest software version) (The “00X” in the DIR# will numerically increment when the software version changes) (Version number in below picture is for reference only).

Confirm the small dark bar is uniformly printed.

Confirm that the paper stops on the cue mark (The perforation on the paper should line up with the tear edge on the unit).



5. If the Power and USB cables are intact, the Power Led is illuminated on the Printer, and there is still no printing, the problem can either be in the Z200+ printer or with the computer USB output.
    - Verify that the Computer USB Port is working properly.
    - Check the internal cabling of the Z200+ printer.
    - Replace the Main PCB Assembly of the Z200+ Printer.

MAINTENANCE AND DISASSEMBLY

Introduction

This section contains information for preventative and corrective maintenance of the Z200+ Writer. Preventative maintenance includes inspection and cleaning techniques to ensure optimum equipment performance. Corrective maintenance includes removal and replacement procedures for equipment repairs.

Recommended Cleaning Supplies

- Anti-static mat & wrist band, properly grounded
- Clean, lint-free cloth
- Mild detergent
- Clorox Healthcare® Bleach Germicidal Wipes (use according to instructions on product label), or Sodium Hypochlorite (10% Household bleach and water solution) minimum 1:500 dilution (minimum 100 ppm free chlorine) and maximum of 1:10 dilution as recommended by the APIC Guidelines for Selection and Use of Disinfectants.
- DRY, low pressure, compressed air (30 psi)
- Masking or clear tape
- Non-metallic, soft-bristle brush
- Isopropyl Alcohol 80 – 99% (For Cleaning Print Head)

Recommended Tools

- Torque Driver - 7.0 in-lbs - Torx T8
- Torque Driver - 7.0 in-Lbs - Torx T10
- Torque Driver – 3.5 in-lbs – Torx T10
- Torque Driver – 3.5 in-lbs - 1.3mm Hex Bit

Preventative Maintenance Schedule

Required Maintenance	Time Period
Clean and inspect	Every six months (If unit is in heavy use, Do every three months.)
Print head cleaning	Every 40 hours of use.

WARNING:

Disconnect the power cord and the USB cable before performing any maintenance procedures on this device.

Visual Inspection Techniques

Although a simple visual inspection may seem trivial, equipment malfunctions are often caused by the obvious such as disconnected cables or loose components. Take the time to inspect all of the following:

- Look over the entire instrument for wear, including corrosion, damage from dropping, warping, or any other deterioration.
- Check the power cord. Verify that the line, neutral and ground wires are not shorted and that the plug connects firmly to the wall receptacle.
- Inspect the PCB for damaged traces, lifted components, charring, cracking, scratches, nicks, and pin holes. (NOTE: Some PCB surface discoloration may naturally occur around components with high operating temperatures.)
- Check for moisture, dust or debris. Make sure the printed circuit board is clean before re-installing it.
- Check the power and interface cables. Make sure they are firmly connected. They should not show signs of wear or excessive tension. Also, look for loose, bent or corroded contact points on the connectors.
- Check screws and hardware connections. Make sure the screws and mounting hardware are secure.

Cleaning & Disinfecting Techniques

***WARNING*:**

Ventilate work area when using solvents. Observe manufacturers' warnings on solvent containers for personnel safety, emergency first aid, and fire hazards.

Exterior Surfaces

During Cleaning & Disinfecting:

- Remove power from the Device by disconnecting the AC power cord.
- Disconnect patient cables and accessories from the device.
- Avoid contact with open vents, plugs, and jacks.
- Use masking tape to clean platen.

Disinfecting agents

The Z200+ Writer is compatible with the following disinfectants:

- Clorox Healthcare® Bleach Germicidal Wipes (use according to instructions on product label), or a soft, lint-free cloth dampened with a solution of sodium hypochlorite (10% household bleach and water solution) minimum 1:500 dilution (minimum 100 ppm free chlorine) and maximum 1:10 dilution as recommended by the APIC Guidelines for Selection and Use of Disinfectants.

Caution: Disinfecting or cleaning agents that contain **Ammonium Chloride** have been identified as having negative effects if used to disinfect the product. Use of such agents may result in discoloration, cracking, and deterioration of the external housing of the device.

Cleaning

To clean the Z200+ Writer:

1. Thoroughly wipe the surface of the Z200+ Writer with a clean, lint-free cloth dampened with a mild detergent and water for general cleaning, or use one of the above recommended agents for disinfection.

2. Dry the device with a clean, soft, dry, lint-free cloth.

Printed Circuit Boards

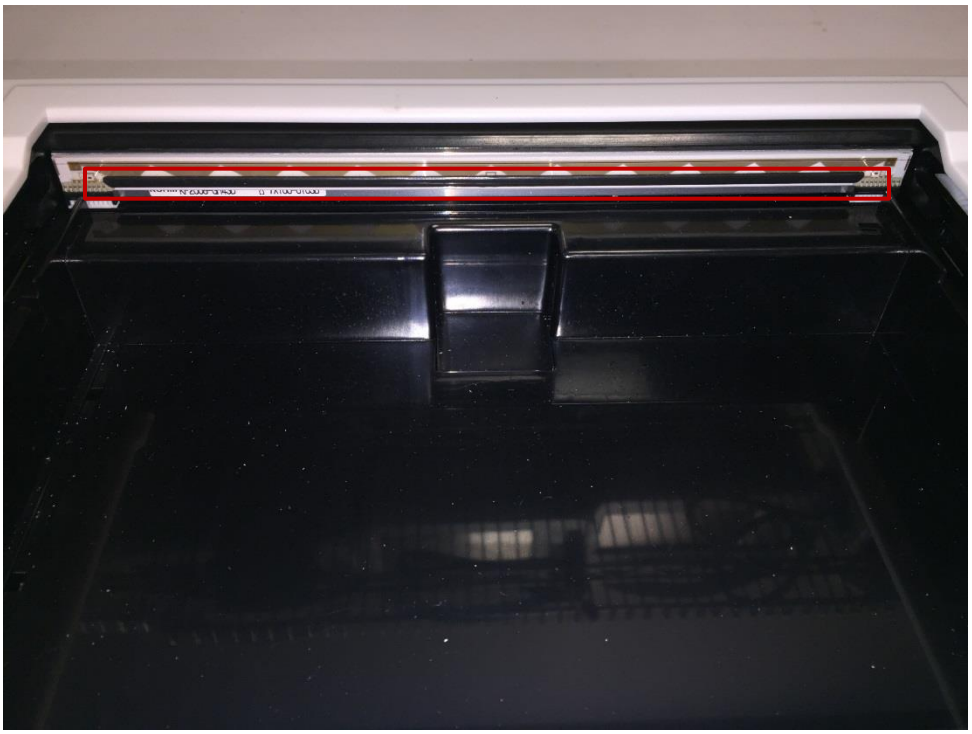
> ***CAUTION*:**
>
> The PCB contains static-sensitive devices. Proper grounding is required when handling the PC board.

Clean assembled parts with a vacuum cleaner or low pressure, compressed air. Use care not to bend wires or component leads, which weakens them and may eventually cause them to break off.

Prior to soldering (if repairs are necessary), clean surfaces with a non-metallic, soft-bristle brush soaked in a non-residue, electronics approved solvent.

Print Head

Apply isopropyl alcohol to a clean, nonabrasive cloth and wipe all foreign matter from the print head. Any stubborn deposits may be removed with a wooden or soft plastic implement. Clean writer gears using a soft bristle brush. No lubricant should be applied.



Clean the Print-Head thoroughly, taking extra care to remove any carbon deposits.

Assembly/Disassembly Instructions

> ***WARNING*:**
>
> Disconnect the power cord and the network interface cable before performing any assembly or disassembly procedures on this device.

Upper Housing Removal/Replacement

The following procedure describes how to remove the cover from the Z200+ Writer.

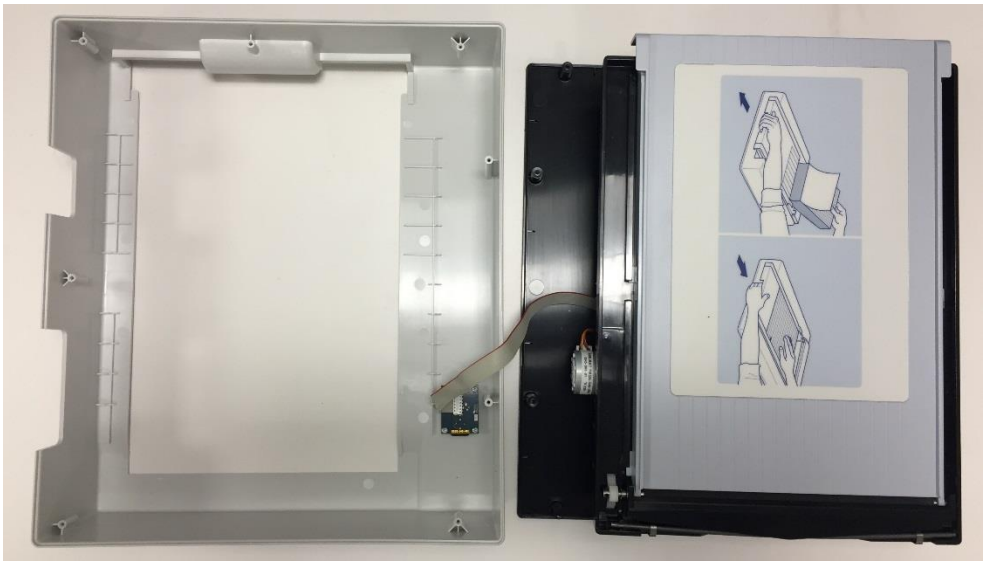
2. Place the unit on a table upside down
3. Remove the 8 Screws (Item# 12) using a T10 Torx Screwdriver in the marked areas. Note: Each screw that needs to be removed is marked by an arrow in the below image. Tape can be placed over the screw holes once the screw has been loosened to retain the screw.

4. Flip the unit over to its normal position.

5. Open the Writer Paper Drawer 3 to 4 inches.

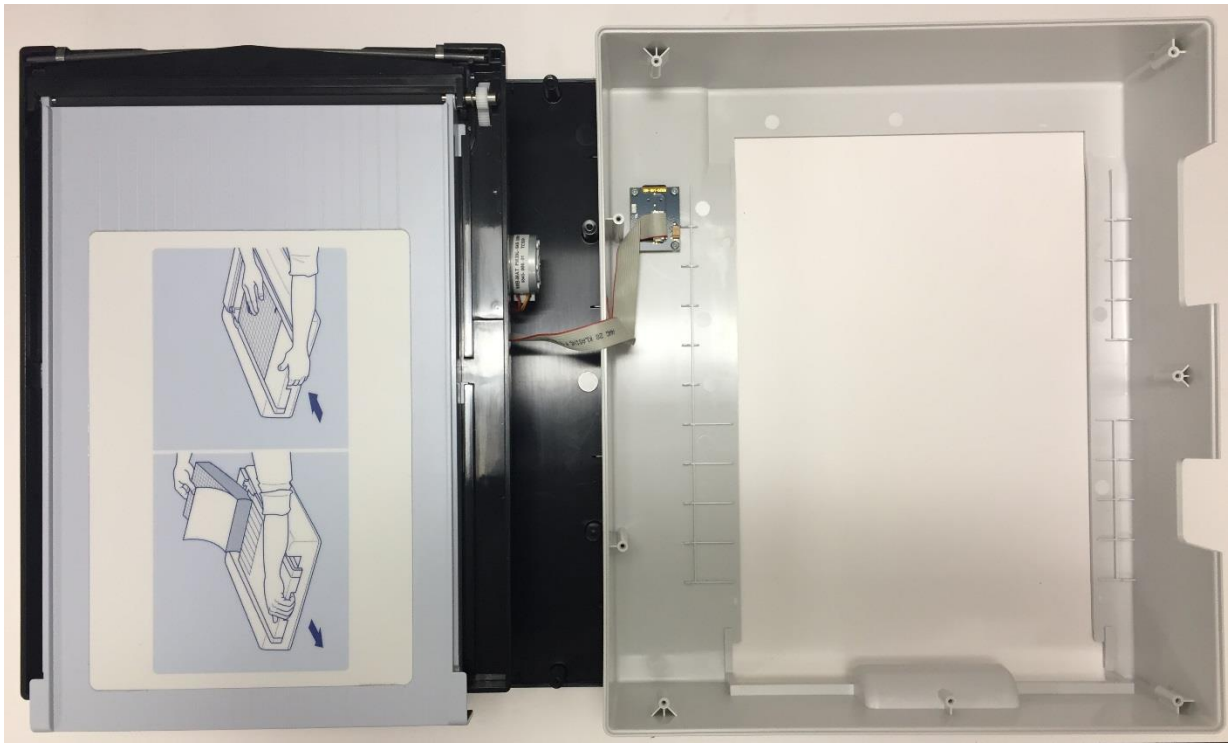
6. To remove the Upper Housing (Item# 15) rotate/tilt the cover around the open Writer door. The cover should slide off. Take care to not stretch/stress the Keyboard Ribbon Cable.

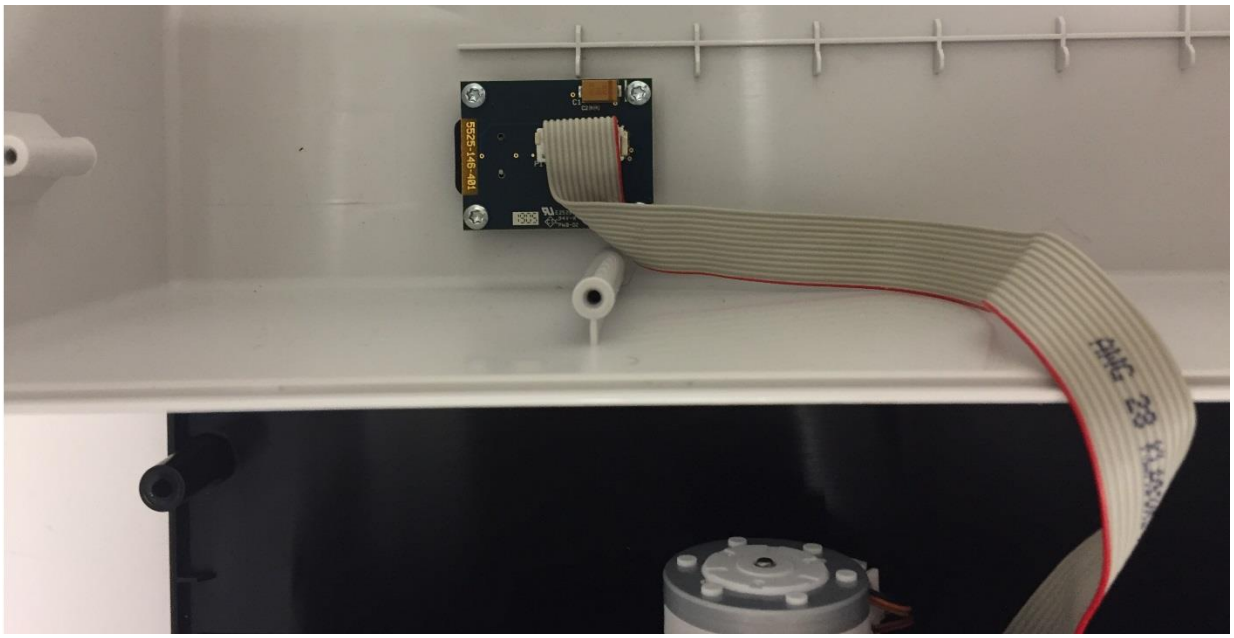
7. Open Upper Housing:



Reassemble in reverse order, tightening the housing screws to 7.0 in-lbs. of torque (Replace Screw Fasteners as necessary).

Configure the Keyboard Ribbon Harness as shown below, to insure that it does not interfere with the Platen Roller Gear when the device is fully assembled.

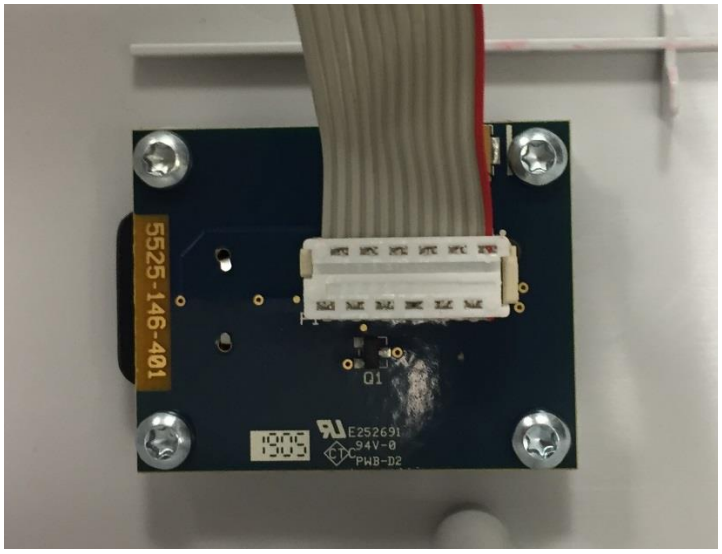




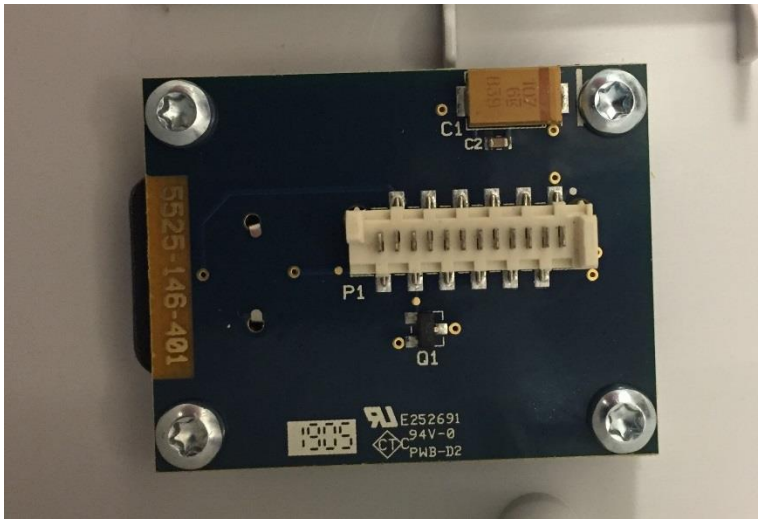
Keyboard Removal/Replacement

To remove the keyboard assembly from the unit, follow these steps.

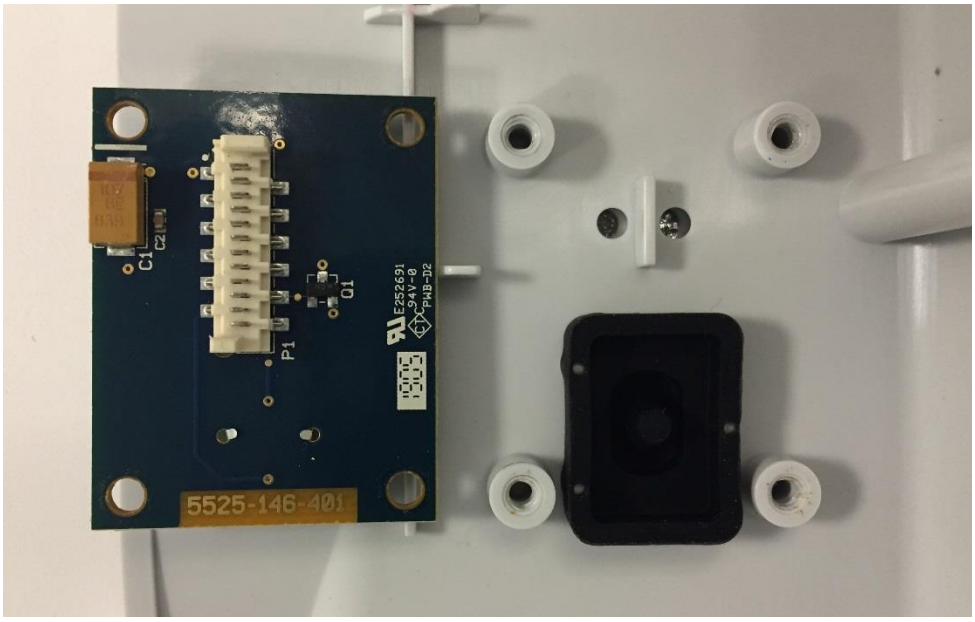
1. Remove the cable (Item# 2) from the keyboard (Item# 5) by pulling it out of the connector.
   Note: Connector is Keyed … Improper assembly could damage the header / connector.



2.) Remove the 4 Screws (Item# 11) using a T10 Torx Screwdriver holding the keyboard to the cover.



3.) Remove the Keyboard PCB (Item# 5) from the top cover.

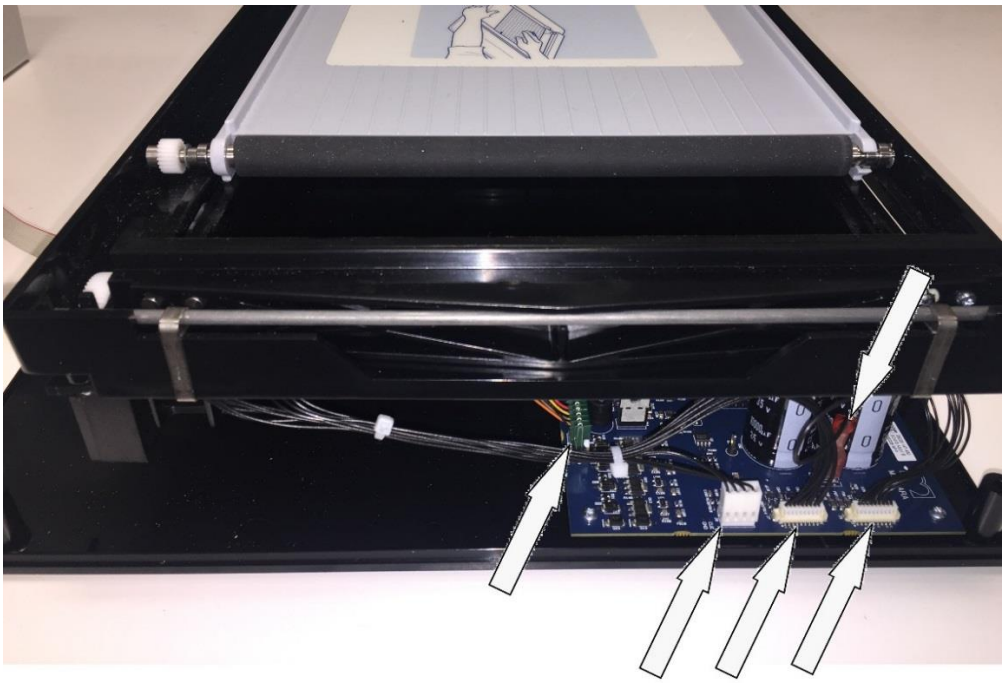


Reassemble in reverse order, tightening the Keyboard PCB screws to 7.0 in-lbs. of torque (Replace Screw Fasteners as necessary).

Writer Assembly Removal/Replacement

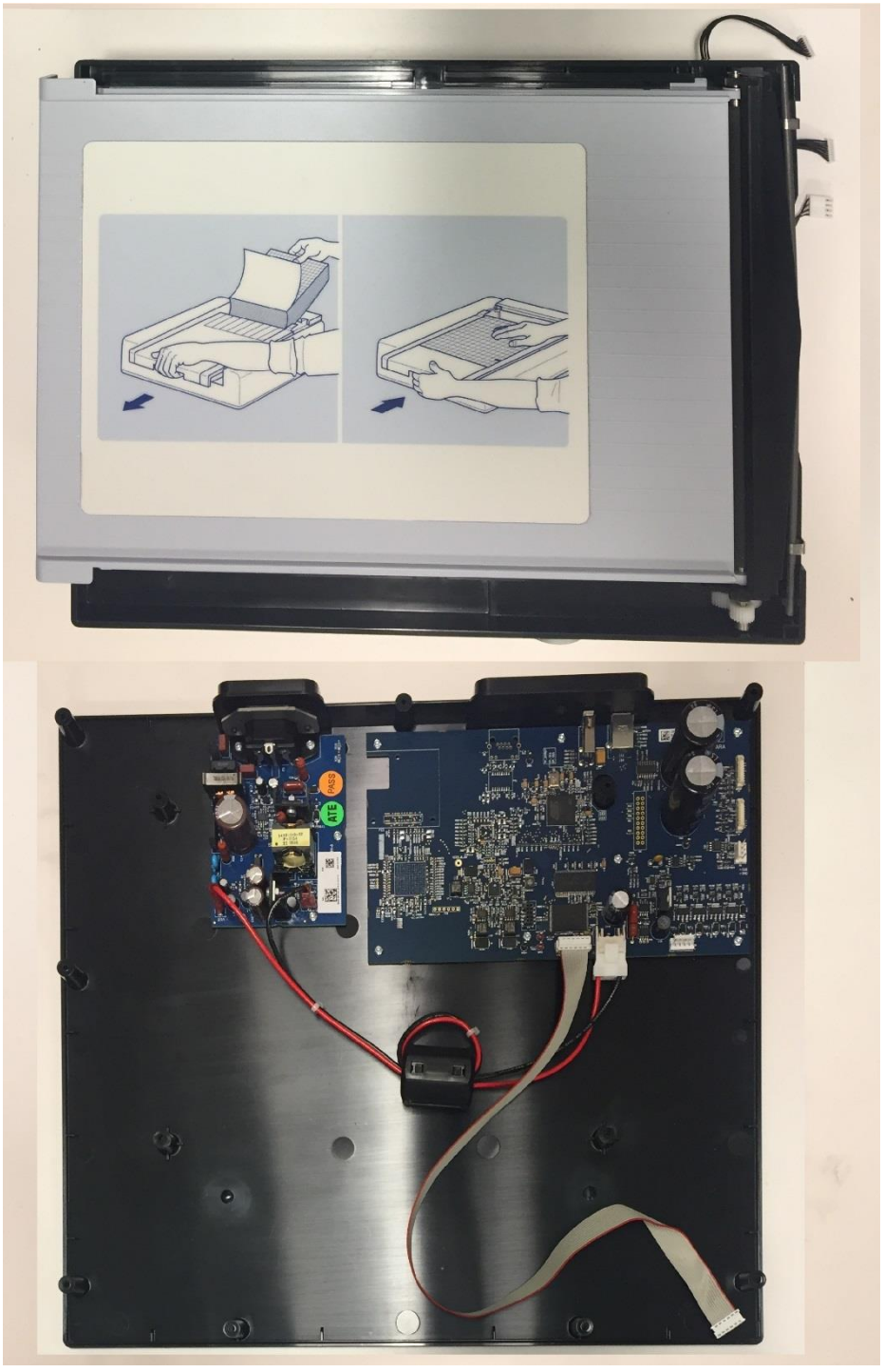
To remove the writer assembly from the unit, follow these steps.

1. Remove the Upper Housing of the unit (see Upper Housing Removal/Replacement)
2. Remove the indicated cables from the Main PCB Assembly (Item# 6).
    - Printer Motor Cable
    - Print Head Cables (Qty 2)
    - Ground Cable
    - Cue Sensor Cable



3. Flip the unit over onto the writer assembly and remove the 4 indicated screws (Item# 8) using a T10 Torx Screwdriver. Note: Tape can be placed over the screw holes after the screws are loosened so that the screws do not get lost.

4. Lift the bottom of the unit straight up to separate the Writer Assembly (Item# 1) from the bottom chassis.

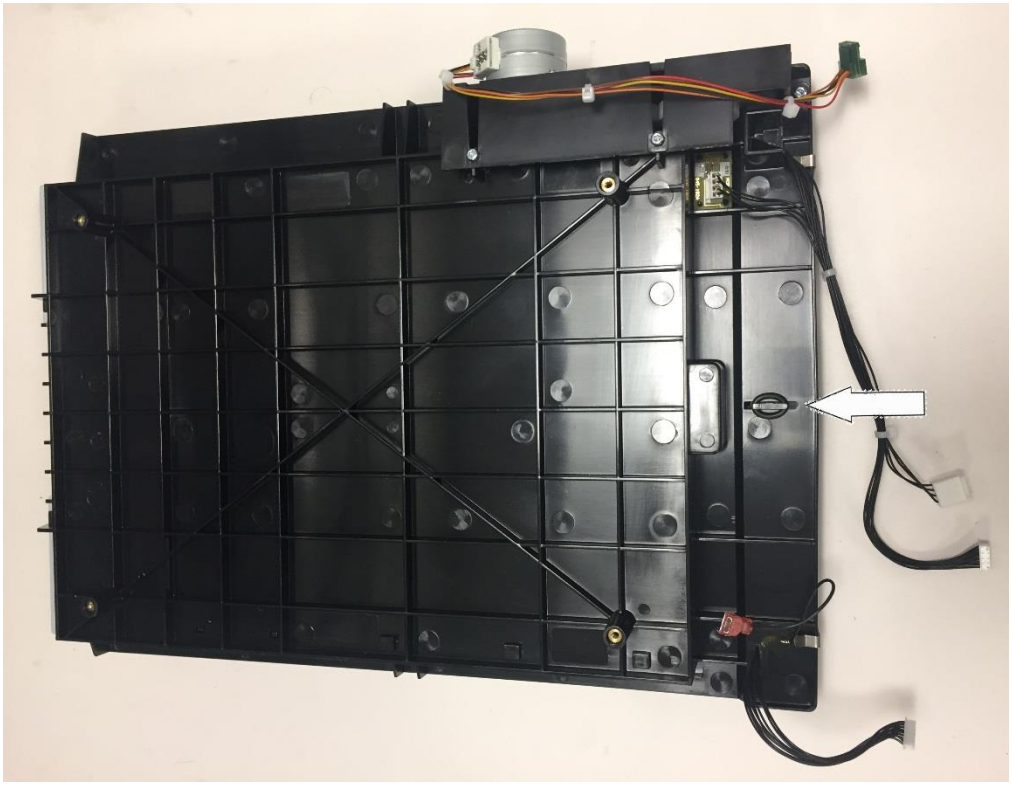


Reassemble unit in reverse order, tightening the Writer Assembly screws to 7.0 in-lbs of torque (Replace Screw Fasteners as necessary).

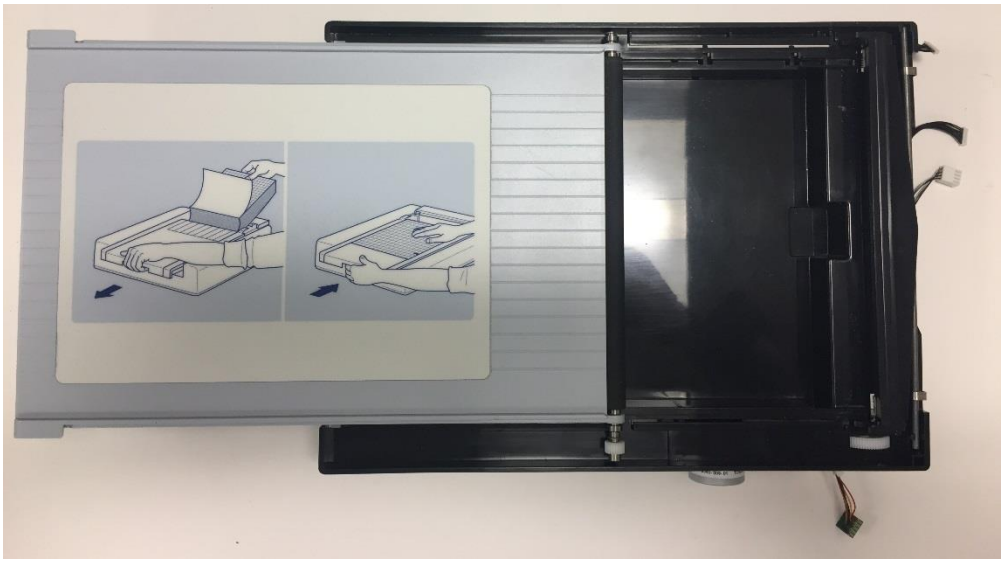
Upon reassembly, insure that the Writer Mounting Bosses are aligned / fully seated on the Lower Housing Bosses and that wires are not pinched.

Print head Assembly Removal/Replacement

1. With the writer door closed, flip the writer assembly over and locate the “O”-Ring, (Item# 33), that retains the print head to the writer assembly and remove it.



2. Turn the writer assembly over and open the writer door.



3. Un-Clip the two Spring-Clip Fasteners (Item#35) that retain the Spring-Bar, then remove the Spring-Bar (Item# 34).

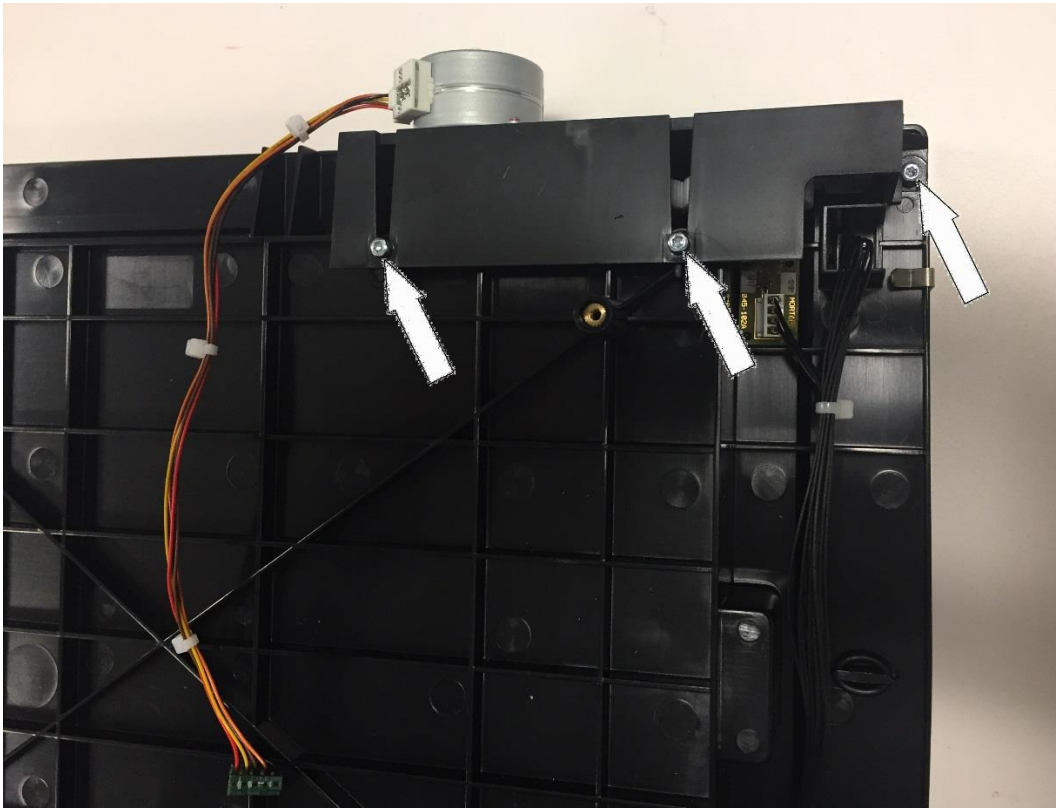
4. With the writer door open, carefully lift the print head assembly up and out of the writer assembly.

Reassemble unit in reverse order.

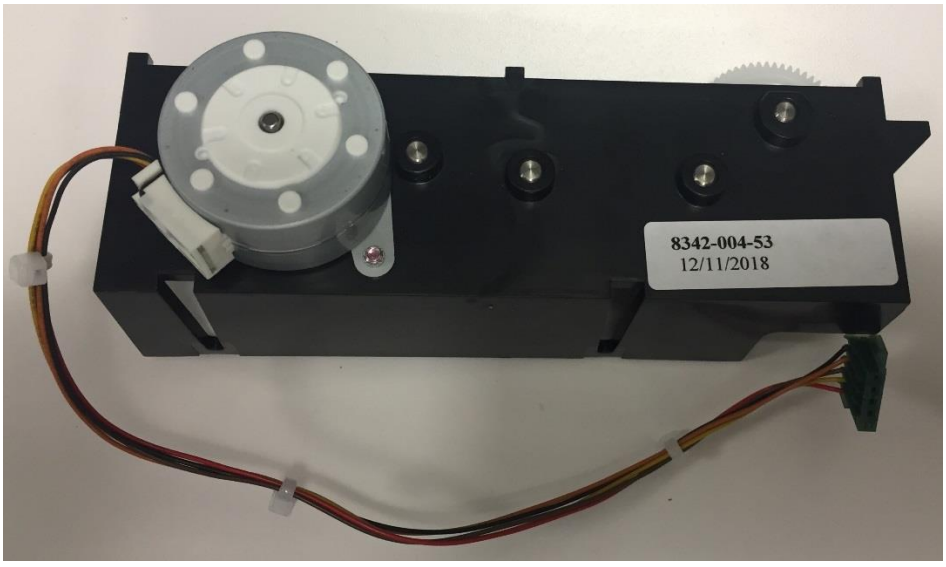
For more information on “Print Head Assembly”, see ELI 280/380 WRITER ASSEMBLY PROCEDURE (DIR# MIS-04-181-01).

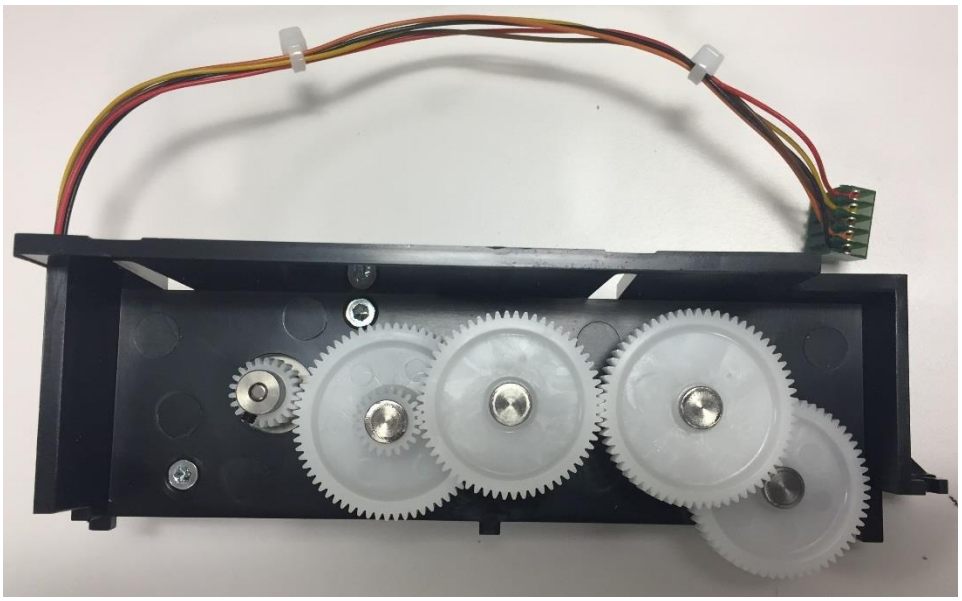
Writer Motor & Gear Box Removal/Replacement

1. With the Writer upside down, locate the 3 Screws (Item# 8) that secure the Gear-Box Assembly. Remove the Screws using a Torx T10 Screwdriver.

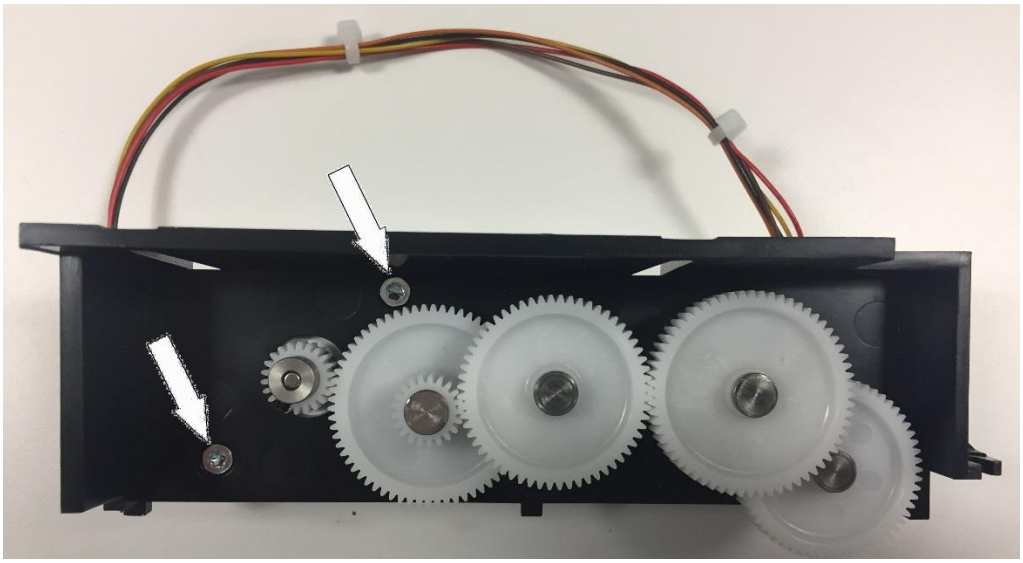


2. Lift the Gear-Box and Motor Assembly off the Writer Assembly.

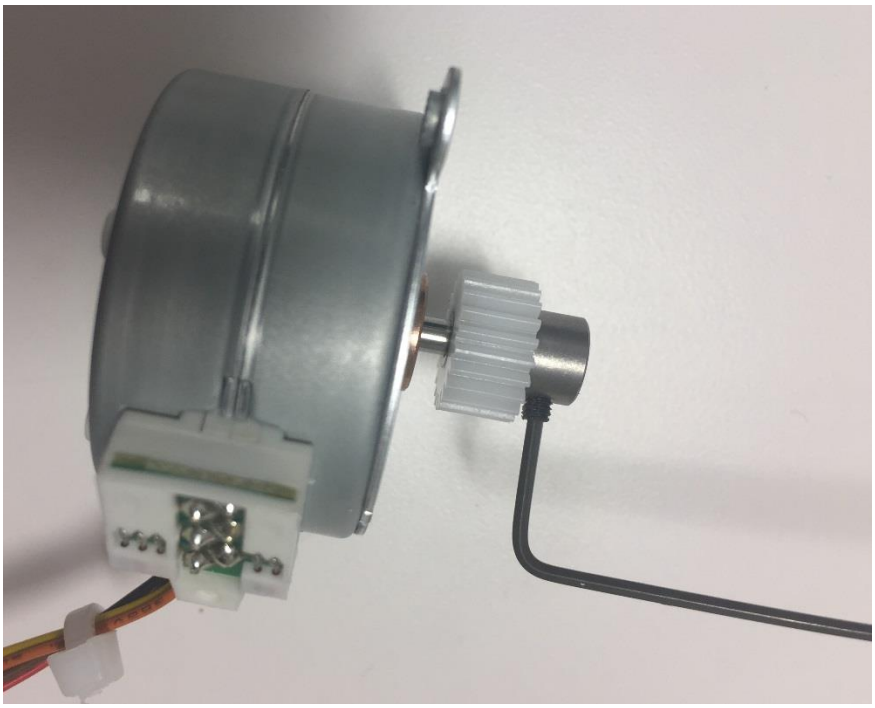




3. To remove/replace the Writer Motor, remove the two mounting screws (Item# 36) that secure the Motor Assembly using a T10 Torx Screwdriver.



4. If necessary, the Motor Gear can be removed with a 1.3mm Hex Key.



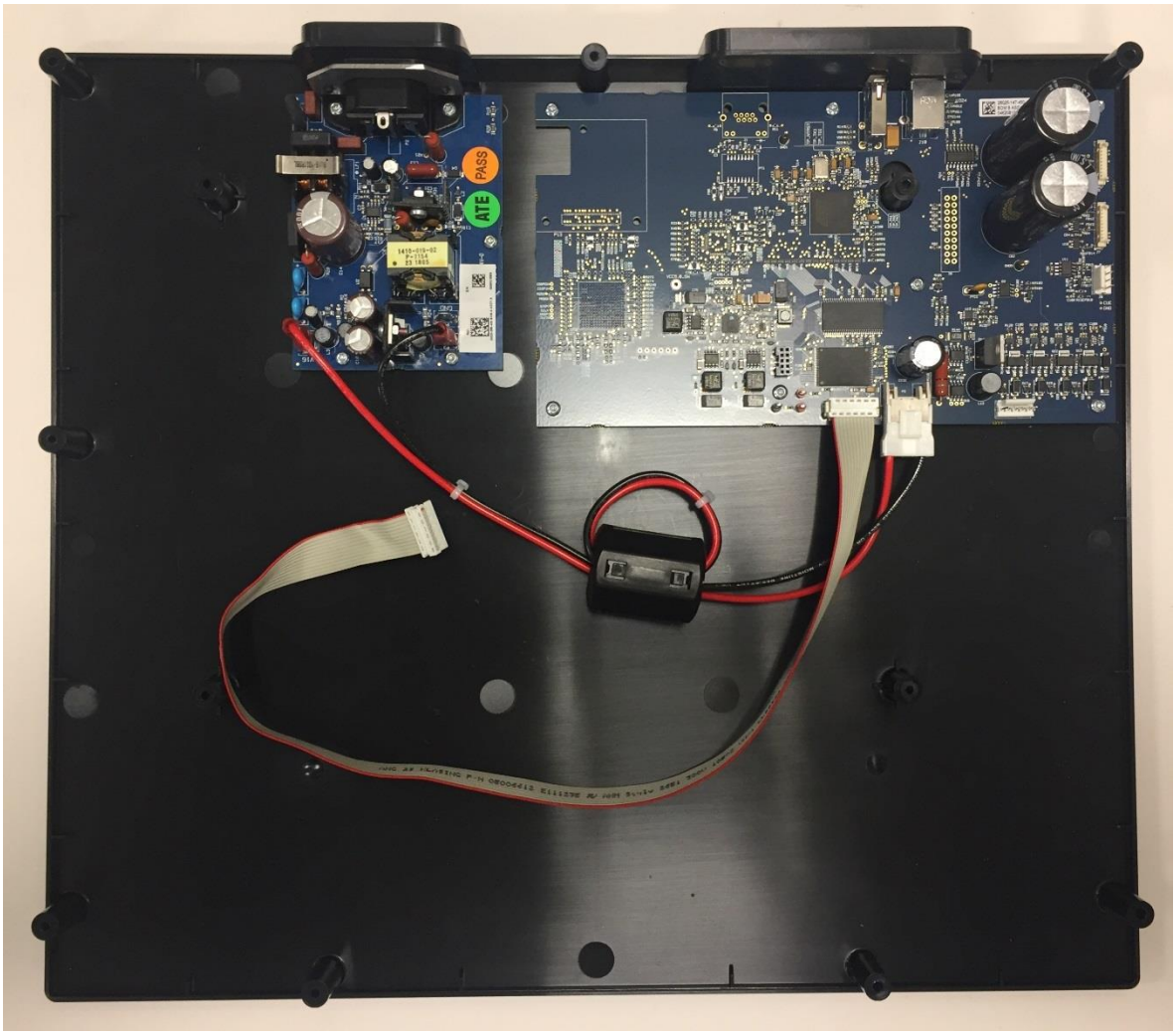
Reassemble the unit in reverse order, tightening the Gear Box Mounting Screws, Motor Screws, and Gear Set-Screw to 3.5 in-lbs of torque. Insure that the Set-Screw Threads are coated with Vibra-Tite (Replace Screw Fasteners as necessary).

Vibra-Tite Note:
After applying Vibra-Tite to the Gear Set-Screw threads, allow the VibraTite to cure for a minimum of 10 minutes before installing the Set-Screw.

Circuit Board Removal/Replacement

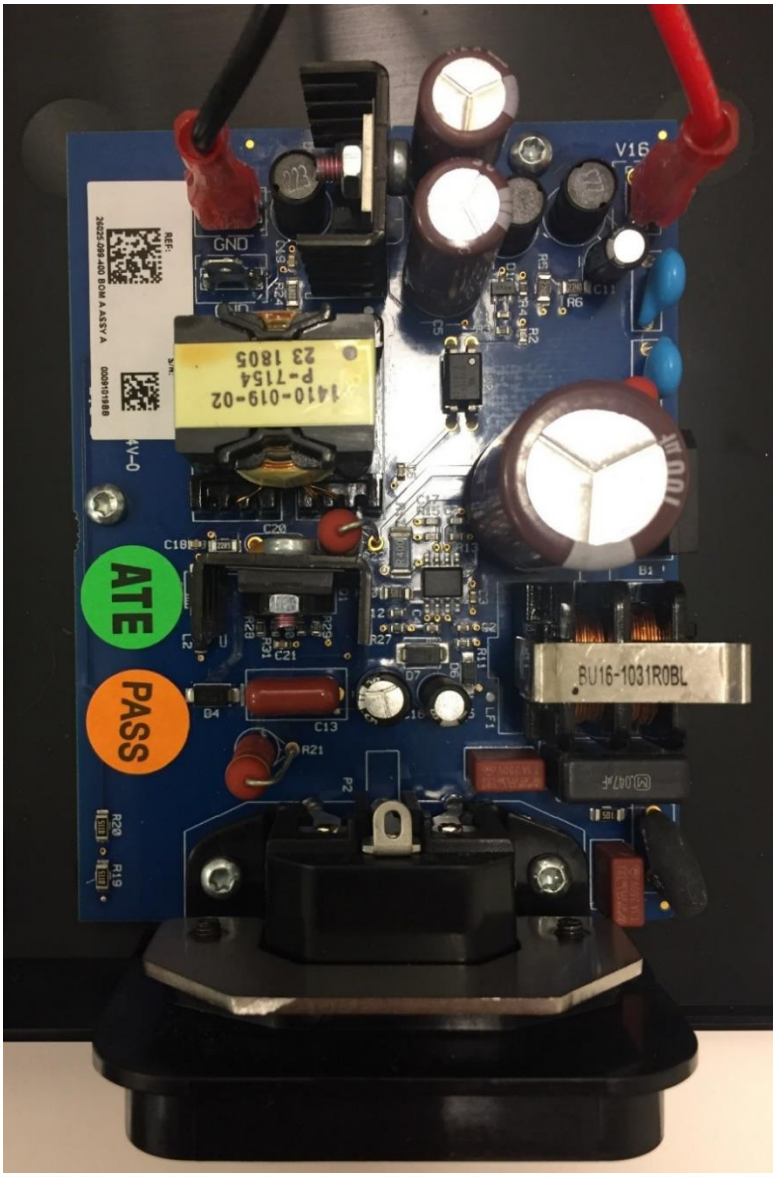
> ***CAUTION*:**
>
> The PCB contains static-sensitive devices. Proper grounding is required when handling the PC board.

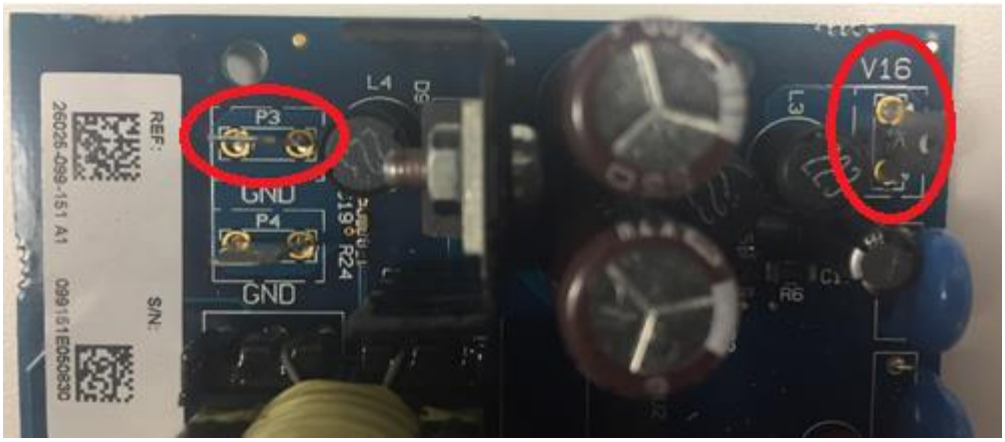
Once the writer cover and the writer assembly have been removed the circuit boards can be accessed.



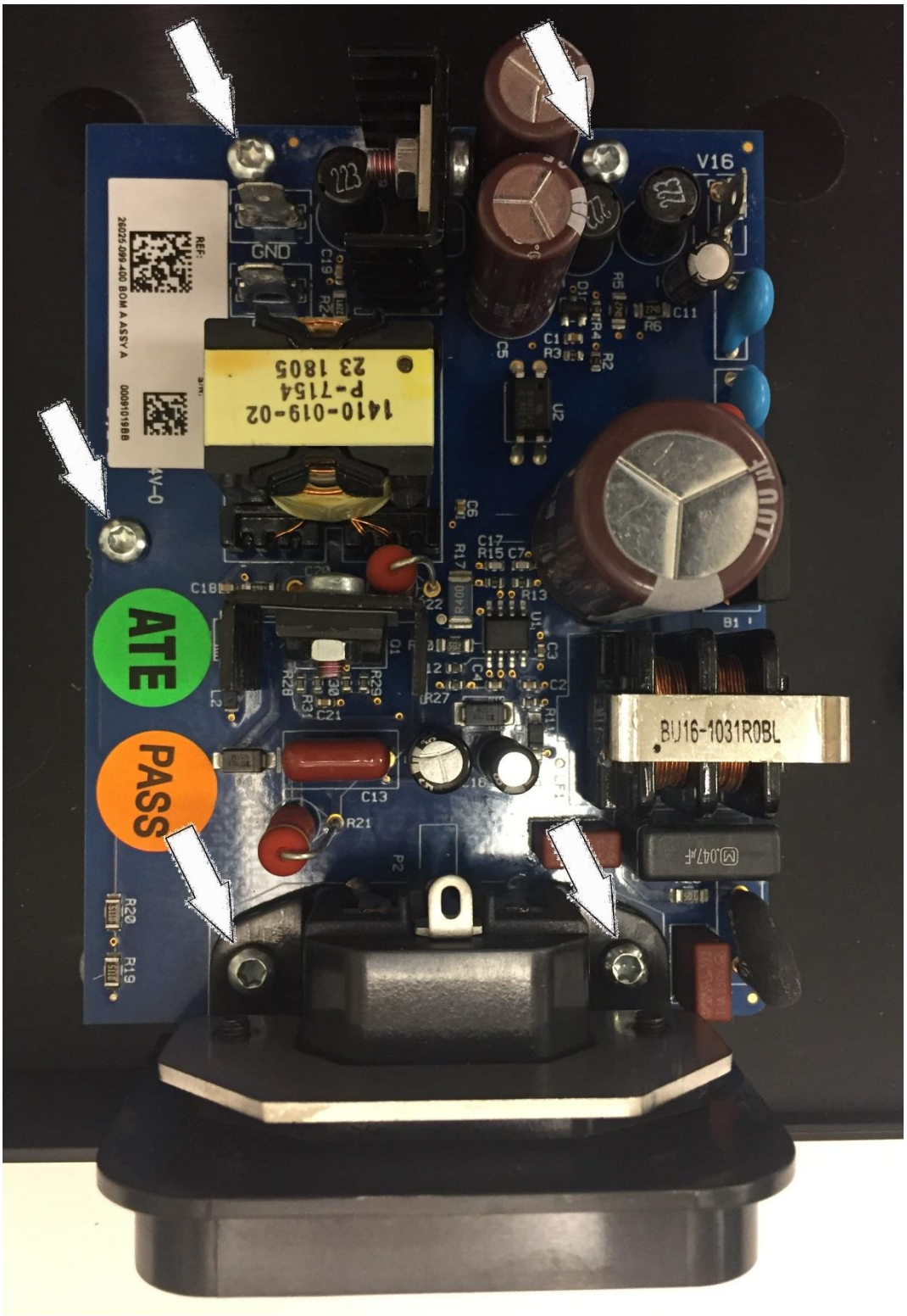
Power Supply Board Removal/Replacement

1.) Remove Power Supply Output Wires … Red from V16 Tab Connector … Black from P3 Tab Connector.

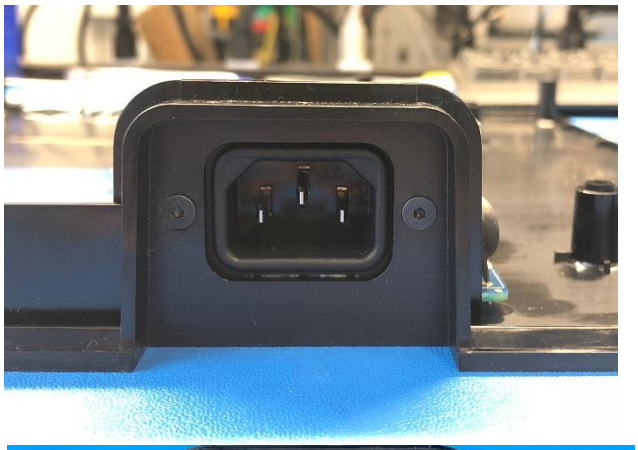




2.) Remove 3 Screws (Item# 11) from Power Supply PC Board (Item# 4) using T10 Torx Screwdriver … And 2 Screws (Item# 10) from Power Supply Power Entry Module using T10 Torx Screwdriver.



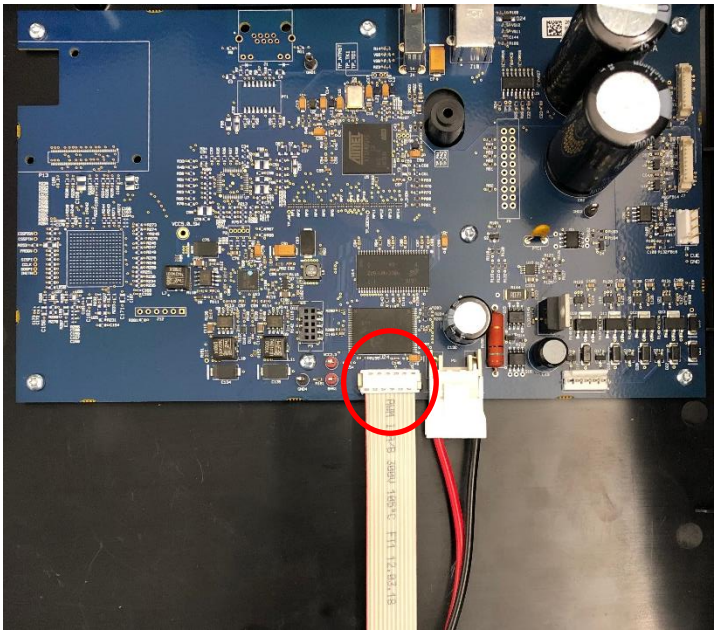
3.) Remove 2 Flat-Head Screws (Item# 9) from Power Entry Module using Torx T8 Screwdriver. Remove AC Inlet Module Bracket (Item# 18).



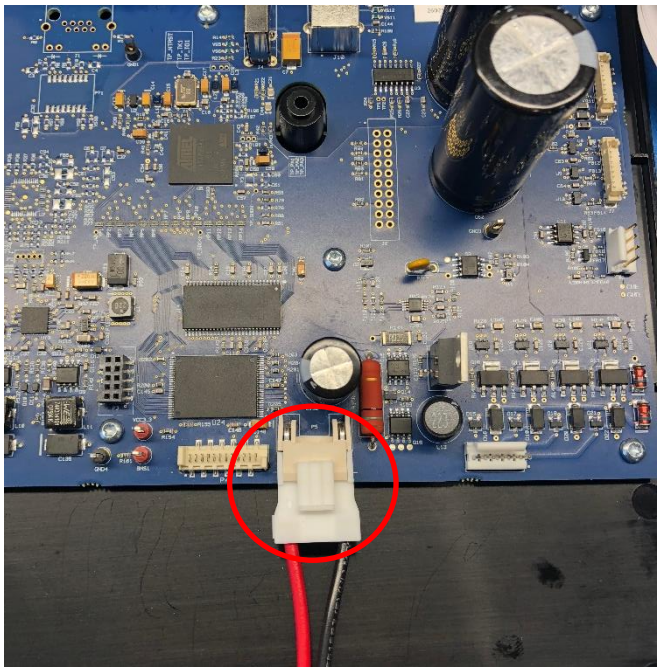
Reassemble in reverse order, tightening screws to 7.0 in-lbs of torque (Replace Screw Fasteners as necessary).

Main Circuit Board Removal/Replacement

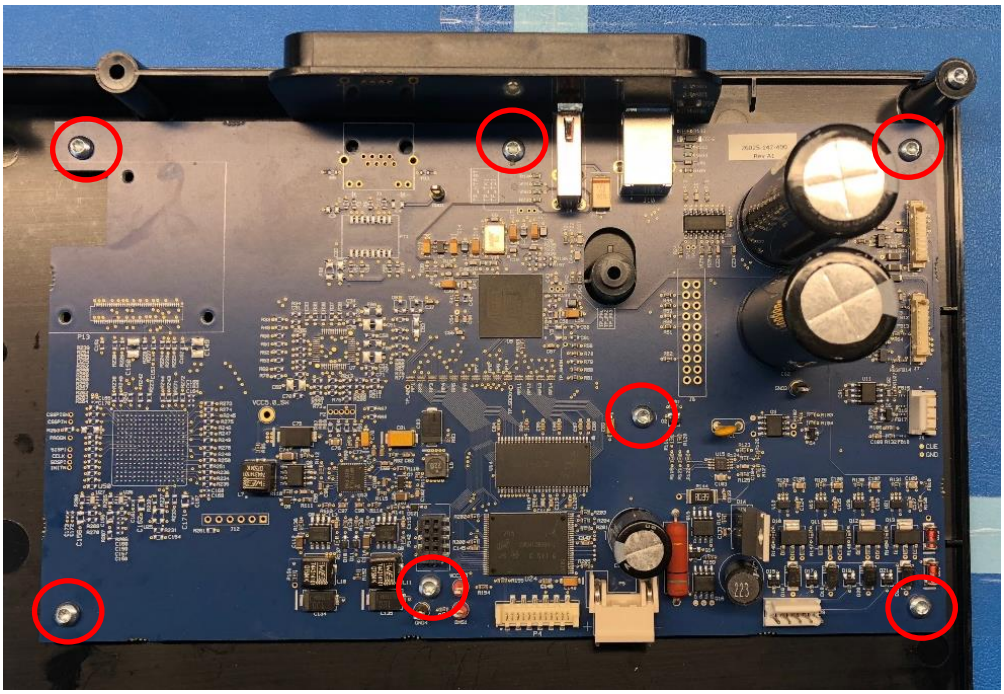
1. Disconnect the “Cable Assembly PicoFlex Ribbon” (Item# 2) from the Z200_ Main PCB Assembly (Item# 6):



2. Disconnect DC Power Cable from location P5 on Z200+ Main PCB Assembly:



1. Remove 7 Screws (Item# 11) from Main Circuit Board using T10 Torx Screwdriver



2. The board can now be lifted out of the Lower Housing.

Reassemble in reverse order tightening screws to 7.0 in-lbs of torque (Replace Screw Fasteners as necessary).

Software Loading & Functional Test

Required Equipment

Qty	Equipment ID	Description/Requirements
1	N/A	PC (Personal Computer) with Serial Port. (Windows 7or10 with 64 Bit OS) If no Serial Port is available, a USB to Serial (RS232) adapter can be used.
1	11010-030-03	ELI x50c 280 380 Z200+ SW Loader
1	11028-00X-50, Latest version (for reference only)	Z200+ Application Code, this may change with future releases of application software. Use version 2.X software only. (The “00X” in the DIR# will numerically increment when the software version changes)
1	TF0532-XX	ELI x50c, 280, 380 Software Programming Cable and Board
1	25000-027-61	CABLE ASSY 9 POS CPU TO ELI 250 Serial Download Cable)
1	11032-001-54	Z200+ V2 TEST SW TOOL
1	N/A	Mini-Clip Jumper Wire
1	N/A	Power Supply Cord

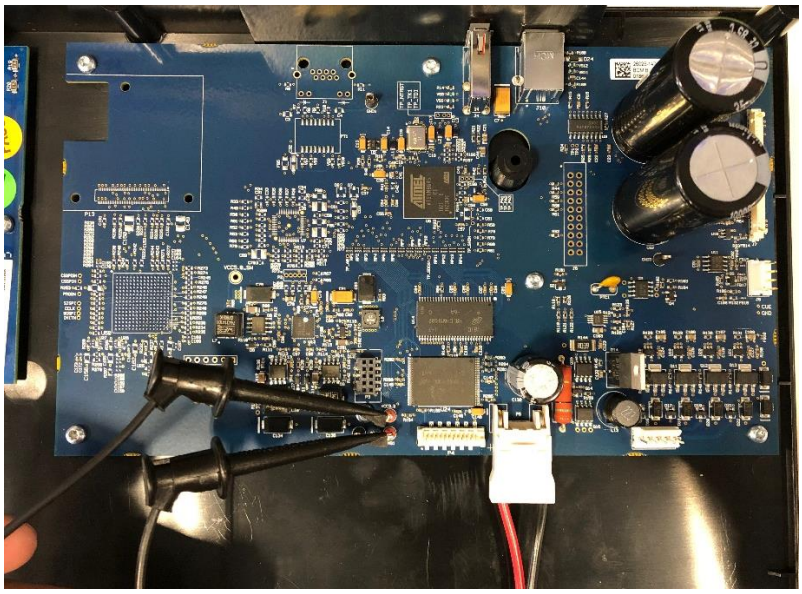
Process Steps

Prepare Z200+ for Programming

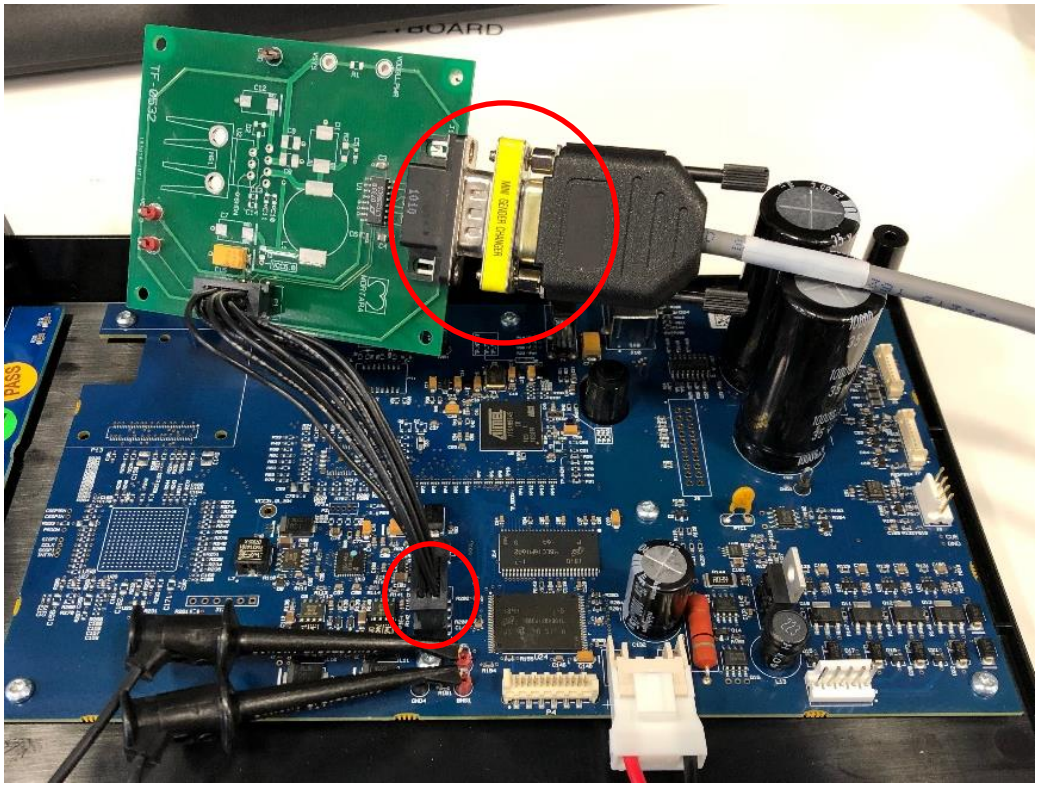
- Remove the Upper Housing of the unit (See Upper Housing Removal/Replacement Section)
- Disconnect the Keyboard Ribbon Cable (See Keyboard Removal/Replacement Section)
- Remove the Writer Assembly (See Writer Assembly Removal/Replacement Section)

1.) Remove power from the Z200+ by disconnecting the AC power cord from the unit.

2.) Install a jumper wire between locations BMS1 and VCC3.3 on Z200+ Main PCB Assembly.

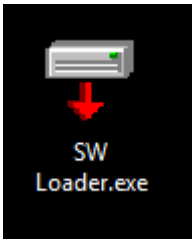


3.) Connect TF0532-XX to Location P3 on Z200+ Main PCB Assembly.
4.) Connect the Serial Download Cable between the PC serial port and the serial port on TF0532-XX.
Note: USB to Serial adapter may be needed here.



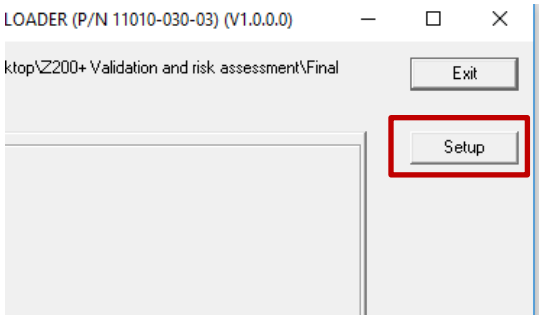
5.) Connect the Power Supply Cord to the Z200+ Writer.

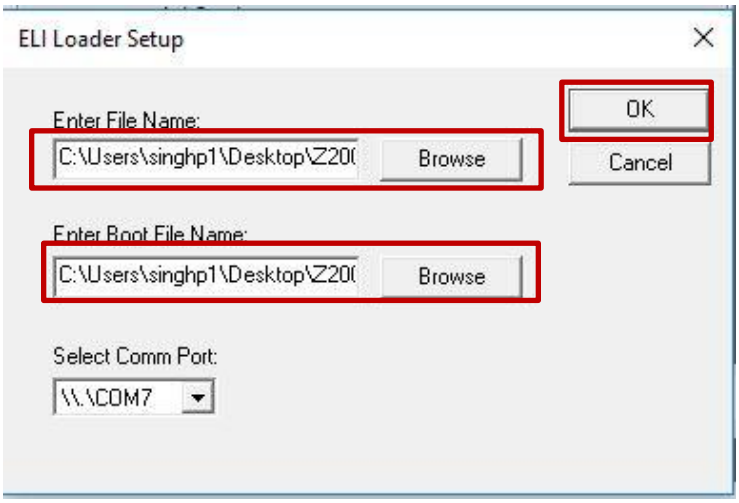
6.) On the PC, Open the Software Loader “ELI x50c 280 380 Z200+ Software Loader” (11010-030-03).



7.) Click on “Setup” button and ensure the File Name and Boot File Name are of the current version.

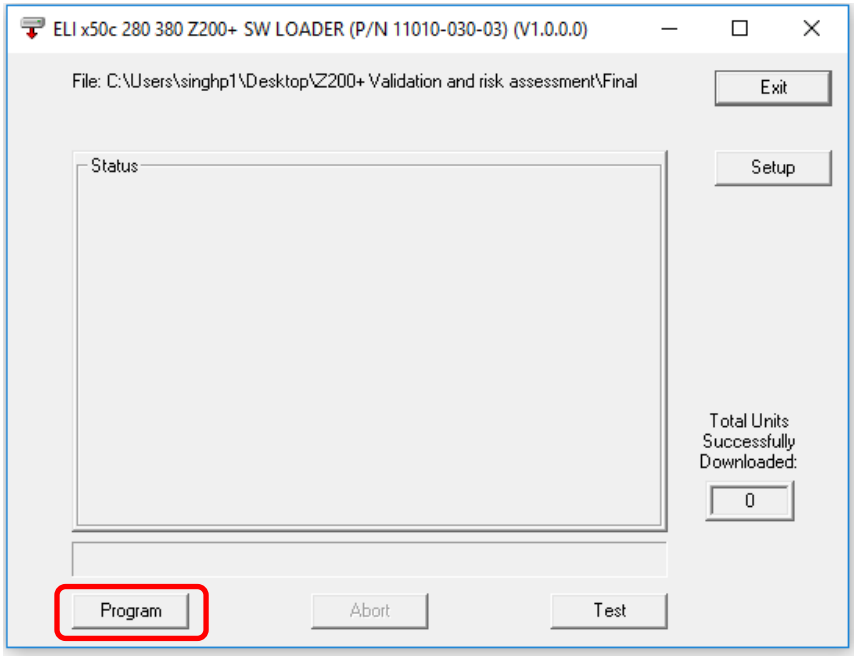
File Name: Z280PlusV?_?_?_?.run (Latest release)
Boot File Name: bootG45.mem
Click OK.



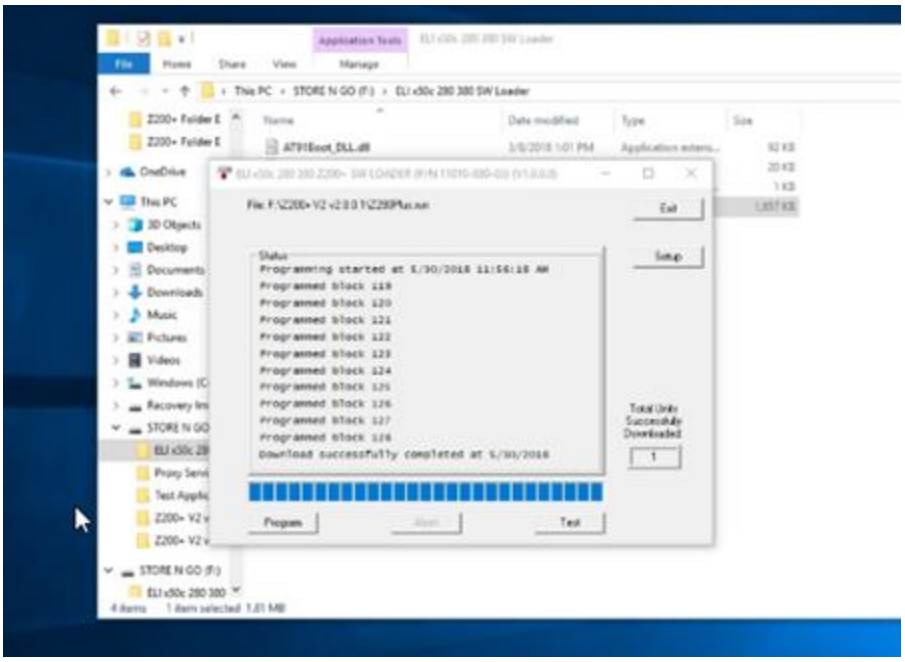


Note: The files shown here are for reference only.

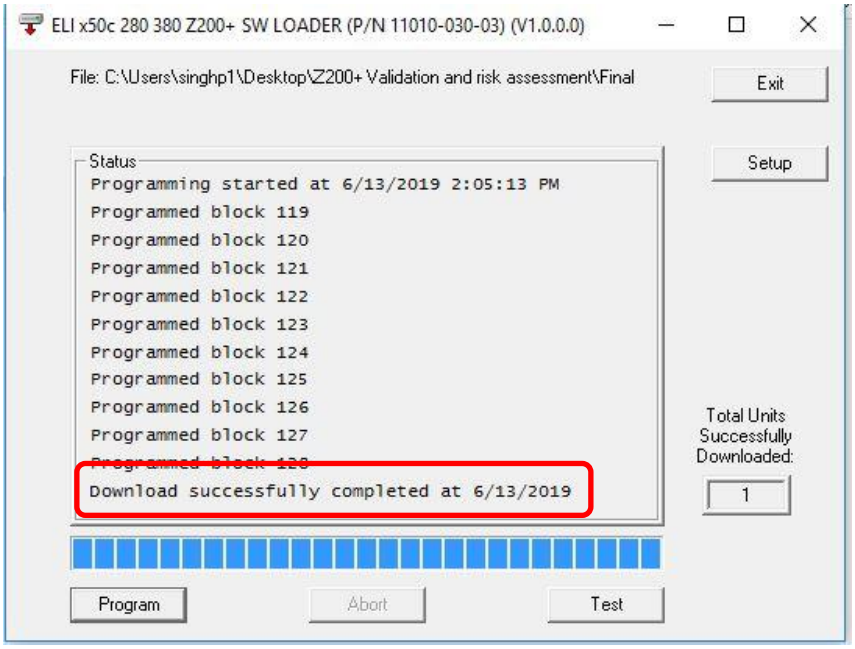
8.) Click “Program” button:



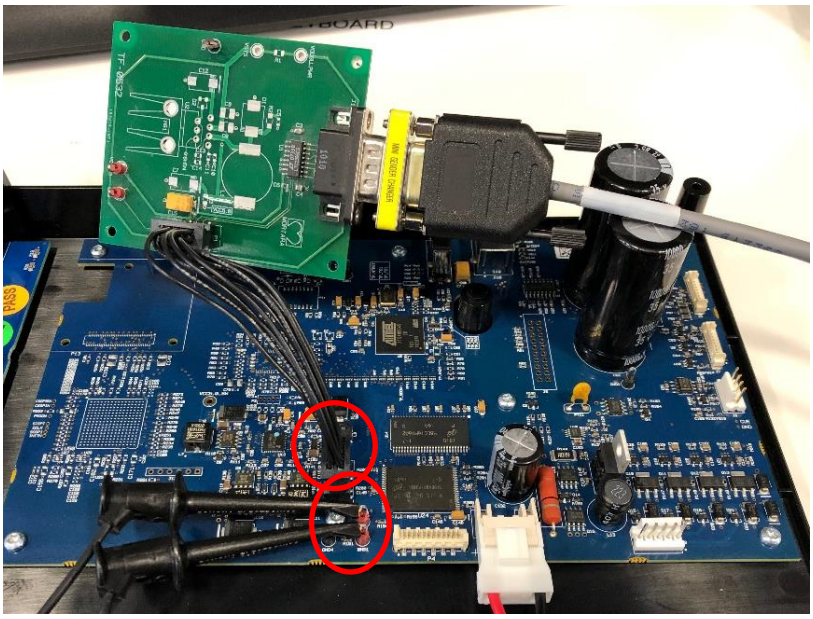
9.) The Status Bar will indicate Programming Progress.



10.) The Program will indicate when the Download is Successfully Complete.



11.) Disconnect the Jumper Wire and the TF0532-XX from Z200+ Main PCB Assembly:



12.) Remove power from the Z200+ by disconnecting the AC Power Cord from the unit.

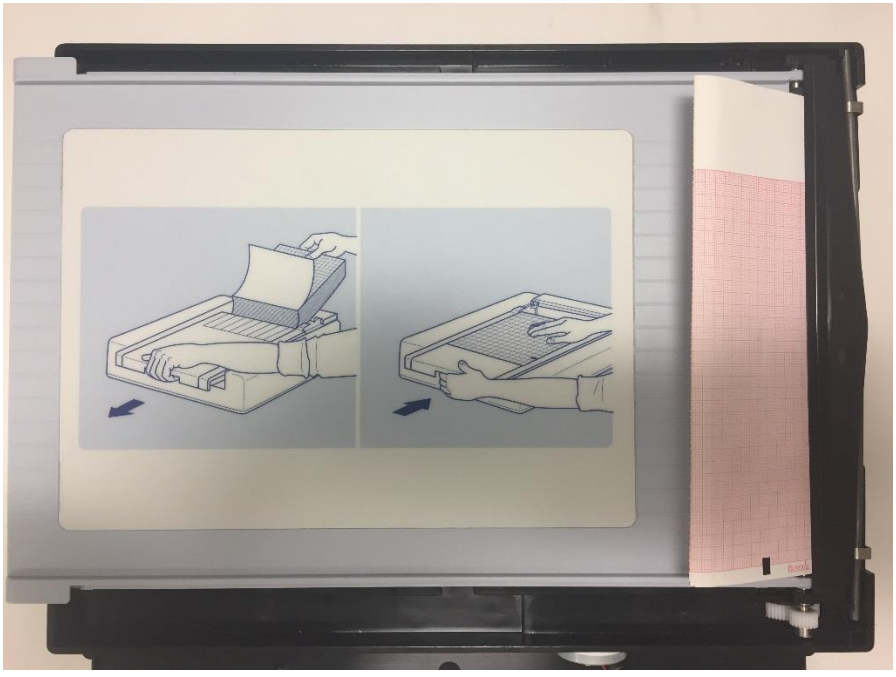
13.) Reassemble the Writer Assembly onto the Z200+ Lower Housing (See Writer Assembly Removal/Replacement Section)

14.) Reapply power to the Z200+ Writer by Reconnecting the Power Cord.

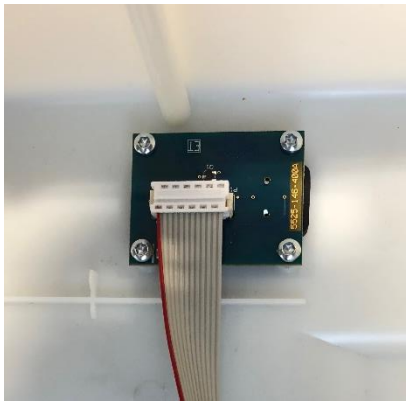
Cue Sensor Calibration

15.) Insert Paper in the Writer Assembly Tray and position it such that there is approximately 2-3 inches of paper between the roller and the perforations on the paper:

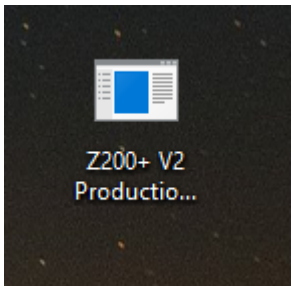
Close the Writer Assembly door.



16.) Connect “Cable Assembly, PicoFlex Ribbon” to “Z200+ Indicator Board PCBA” (Keyboard).
(Temporarily plug in the Cover connection … This is needed to test the unit)
Note: Connector is Keyed … Improper assembly could damage the header / connector.

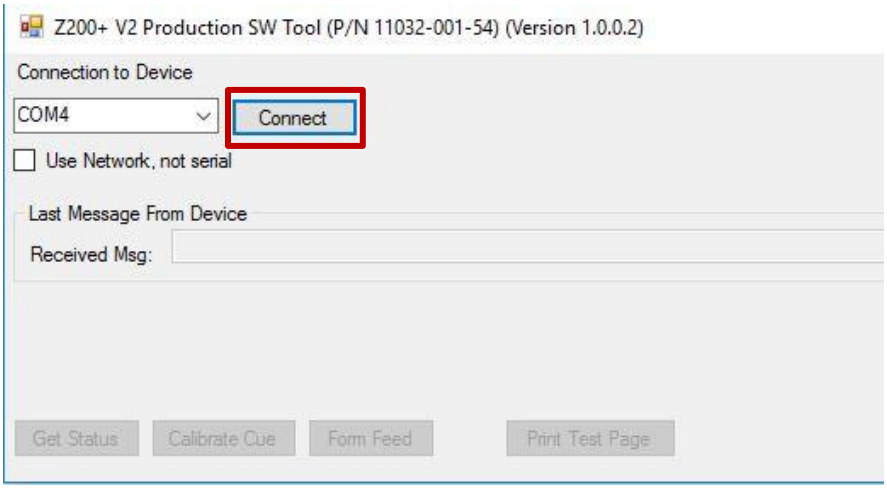


17.) From the PC, run the “Z200+ V2 Production SW Tool” (DIR# 11032-001-54):

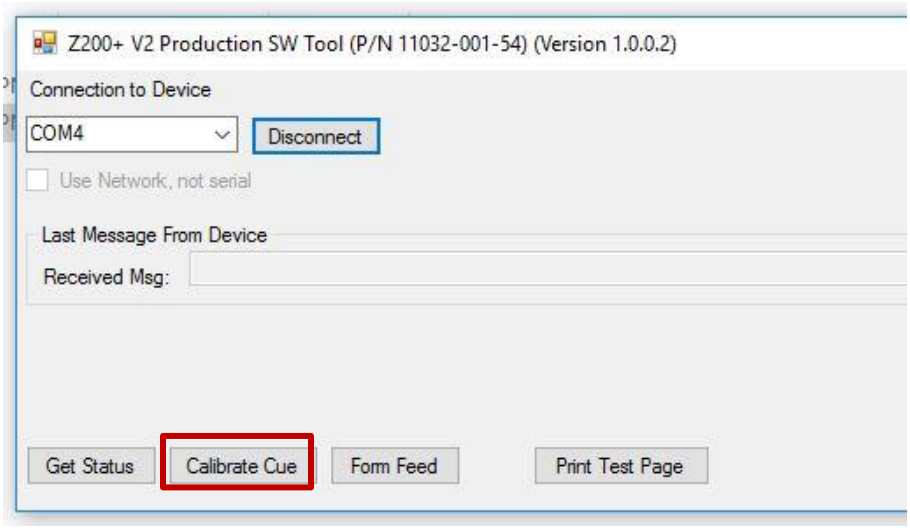


*Picture is for reference only.

18.) Select the Connect button to connect the application to the Z200+.

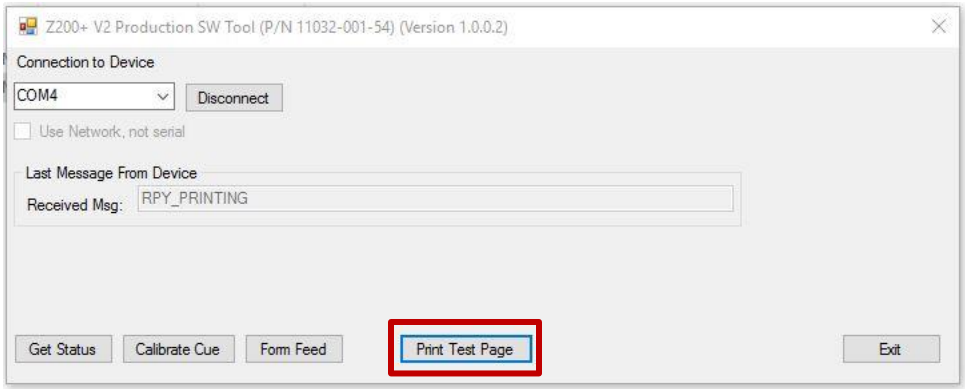


19.) Click “Calibrate Cue” button to Calibrate the Writer Assembly Cue Sensor:



20.) Press the form feed button on Upper Housing and verify it feeds the paper.
Confirm that the paper stops on the cue mark (The perforation on the paper should line up with the tear edge on the unit).

21.) Click “Print Test Page” button to print the Test Page … Repeat it 3 times.



22.) Examine the Test page for overall print quality.

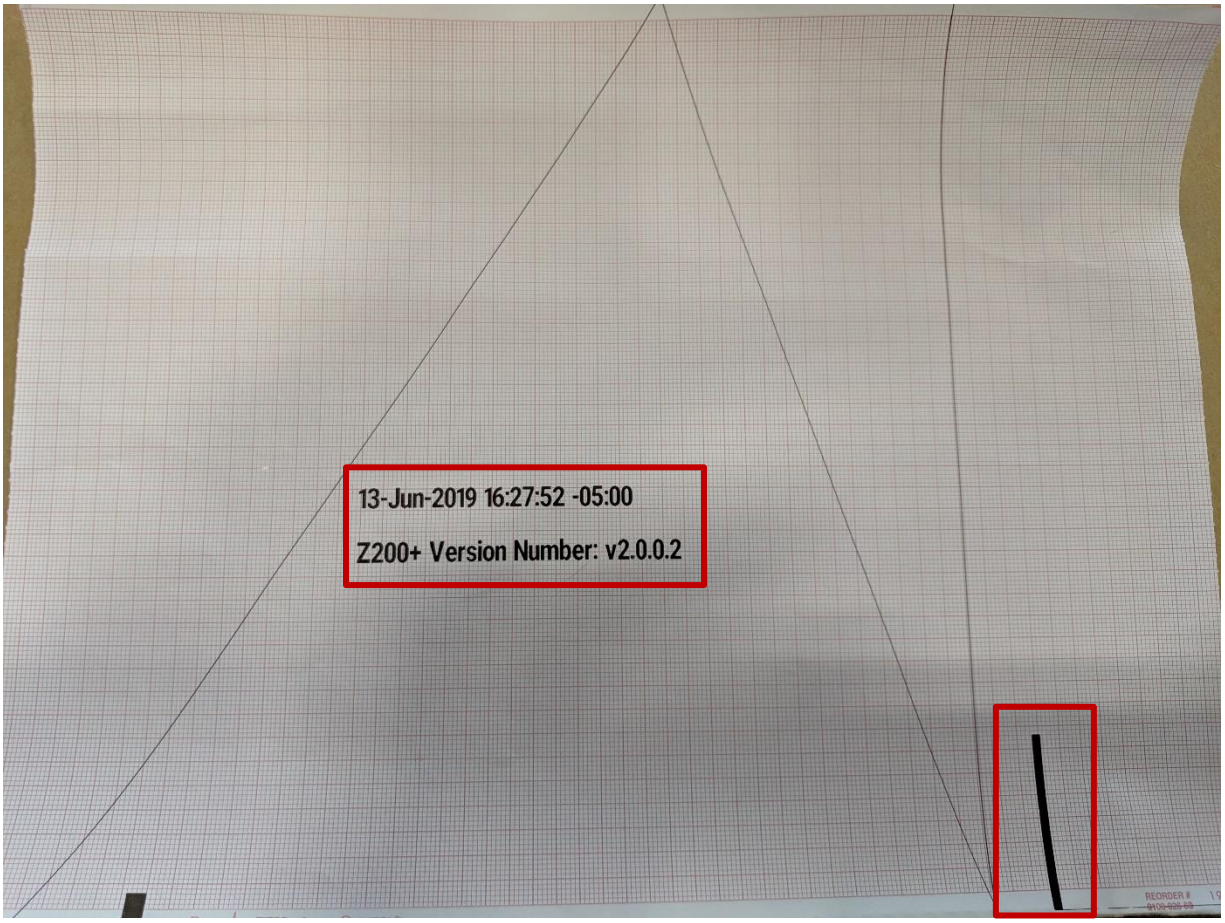
Confirm Text is legible and print darkness is uniform across the page.

Confirm a continuous slanted line across the printing page along with current date, time, and Z200+ software version number (See SAP DIR# 11028-00X-50 for latest software version) (The “00X” in the DIR# will numerically increment when the software version changes) (Version number in below picture is for reference only).

Confirm the small dark bar is uniformly printed.

.

Confirm that the paper stops on the cue mark (The perforation on the paper should line up with the tear edge on the unit).



23.) Disconnect Power Cord and USB Type A to B Cable from Z200+ Device.

24.) Software Install & Functional Test Complete.

ORDERING PARTS AND PARTS LIST

Ordering Information

There are two types of items required for proper maintenance of the Z200+ printer: **Service Parts** and **Supply Products**. Service parts refer to items not expended during normal operation such as electronic components, software, hardware assemblies, and technical manuals. Supply products refer to items that are expendable such as paper, electrodes, pens, lead-wires, and patient cables.

Ordering Service and Supply Parts

To make inquiries or to place an order for service or supply parts contact:

Hillrom Inc.
Customer Support Department
Order Direct Online: https://direct.hill-rom.com/
Telephone: **1-800-535-663, Option 1**
Email: customerservicewelchallyn@hillrom.com

The information required to order a service part is the part number. If you cannot locate the part number, the following information will help Customer Service personnel determine the correct part number:

- Equipment model number and serial number
- Name and part number of the assembly where the part is used
- Part name and reference location

Technical Support / Repair Service

Hillrom provides phone and email support and employs field-service technicians nationwide for a fast, efficient response time.

Hillrom Inc.
Technical Support Department
Telephone: **1-888-667-8272**
Email: mor_tech.support@hillrom.com

Parts Lists

All metric hardware items are identified with an **M** prefix (e.g., Set Screw M2.5 X 4). Hardware items that are not prefixed with an M follow American dimensioning standards

Item Number	Description	Welch Allyn Part Number
1	WRITER ASSEMBLY ELI280/ELI380 - NO LABEL	22500-280-50
2	CBL ASSY PICOFLEX RIBBON CBL 12CCT 45cm (Keyboard to Main Board Ribbon Cable)	25018-048-50
3	CABLE ASSEMBLY BATTERY TO PCB ELI 280 (Power Supply to Main PCA Cable Assy)	25020-078-50
4	AC POWER SUPPLY 16VDC PCB ASSY w/UL 4TH ED	26025-099-400
5	Z200+ INDICATOR BOARD PCB ASSEMBLY (Keyboard)	26025-146-450
6	Z200+ MAIN PCB ASSEMBLY (Not Programmed)	26025-147-450
7	Z200+ FORM FEED BUTTON	4160-028-50
8	SCREW PAN HD TORX M3 x 8 COATED (Writer Assy. Mtg. Screws & Gear Box Mtg Screws)	6020-835-02
9	SCREW FLAT HD ALLEN M3x10 COATED (AC Inlet Module Bracket)	6020-010-02
10	SCREW THD-FORM PAN HD TORX 4-20x3/8" T10 (Power Supply Screws – Power Entry Module)	6020-062
11	SCREW THD-FORM PAN HD TORX 4-20x1/4" T10 (Keyboard, Main PCB, & Power Supply Screws)	6020-060
12	SCREW THD-FORM PAN HD TORX 4-20x1/2" T10 (Upper / Lower Housing Screws)	6020-061
13	FOOT BLACK 0.64 OD X 0.125 ADHESIVE	6320-003
14	Z200+ LOWER HOUSING	8373-002-50
15	Z200+ UPPER HOUSING	8373-001-50
16	LABEL AC ON / PAPER OUT Z200+ V2	728753
17	SOFTWARE Z200+ V2.0.0 (The “00X” in the file/DIR number will numerically increment when the software version changes)	11028-00X-50
18	BRACKET AC INLET MODULE	8365-017-50
19	CABLE USB TYPE A-TO-B FULL SPD (Accessory)	6400-012
20	ELI 250/250c SHIPPING CARTON OUTER BOX	9205-079-01
21	MOTOR STEPPER PM 35mm 24V 40 Ohm No PTC	6545-008-01
22	GEAR SPUR 22 TEETH WITH STAINLESS HUB (Motor Gear)	8342-009-01
23	SET SCREW SOCKET M2.5 X 40MM STEEL CUP PT (Motor Gear Set-Screw)	6030-025
24	LABEL Z200+ V2 NAMEPLATE	421482
25	Z200+V2 UM/PROXY SERVICE DVD v1.0.1	419875
26	SPACER A4 PAPER ELI 200+ BLACK	8342-007-02
27	ELI 250/250c SHIPPING CARTON BOTTOM CUSH	9205-079-03
28	ELI 250/250c SHIPPING CARTON TOP CUSHION	9205-079-04
29	CARTON SHIPPING Z200+ FRONT SPACER	9205-079-05
30	CARTON SHIPPING Z200+ SIDE SPACER	9205-079-06

Item Number	Description	Welch Allyn Part Number
31	Z200+ A4 PAPER SPACER INSTALLING INSTR	MIS-11-151-02
32	ASSY, UDI LABEL	412953
33	O-RING BUNA-N 1/2 OD X 5/16 ID (Print Head Retaining O-Ring)	6141-003
34	SPRING BAR 10.125 X .156 DIA	8342-017-01
35	RETAINER CLIP ELI 2XX WRITER SPRING BAR	8342-025-50
36	SCREW FLAT-HEAD TORX M3 x 6 COATED T10 (Printer Motor Mounting Screws)	6020-735-02
37	FERRITE CORE SNAP ON (Power Supply to Main PCA Cable Assy. Ferrite)	728833
38	LABEL LOADING INSTRRUCTIONS Z200+ CG	9042-038-02
39	VIBRA-TITE VC3 (Screw Threadlocker)	M30326
40	GEAR BOX ELI 200+ IML/IPM	8342-004-53
41	CABLE ASSY ELI 200+ PRINTHEAD TO PCB	25018-034-50
42	PRINTHEAD THERMAL 216mm 8.50"	5450-004
43	CABLE ASSY ELI 350 PRINTHEAD TO PCB	25018-041-50
44	BRUSH ANTI-STATIC 90mm FLEXIBLE	7480-090
45	GROUND WIRE FOR ELI 200+ PRINTHEAD	25020-058-50
46	CABLE ASSY ELI 350 CUE SENSOR TO MTHRBD	25020-066-50
47	ELI 280/350/380 PRINTHEAD ASSY BLACK	41000-028-54

CONFORMANCE AND SAFETY TESTING

This procedure describes the functional testing for the Z200+ Writer.

Equipment and Tooling Required

Qty	Equipment ID Description / Requirements
1	Thermal Paper (Standard 9100-026-01 or A4 as appropriate)
1	AC Line Cord
1	PC (Personal Computer) with Z200+ V2 Test Software Tool (DIR# 11032-001-54)
1	Leakage Current Test Equipment with 200cm^2 Conductive Foil.

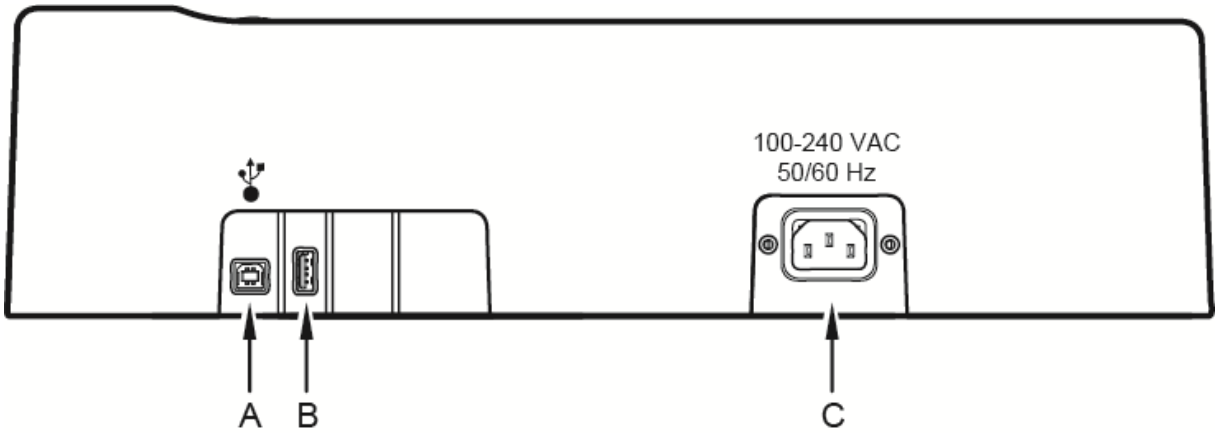
Conformance Test Procedure

Test Set Up

1. Connect the AC Power Cord to the AC connector on the printer and to an AC power outlet.

2. Connect the USB Cable from the back of the Q-Stress / X-Scribe PC (Type "A" Connection) to the Z200+ thermal printer (Type "B" Connection).

Z200+ Thermal Printer Connectors



USB "A" Connector. **C.) AC Connector (For Power Cord)**

A.) USB "B" Connector.

Testing Printer Operation/Quality

With the Z200+ writer connected to a PC loaded with the "Z200+ V2 Test Software Tool" (DIR# 11032-001-54), click the "Connect" button. Then print a test page.

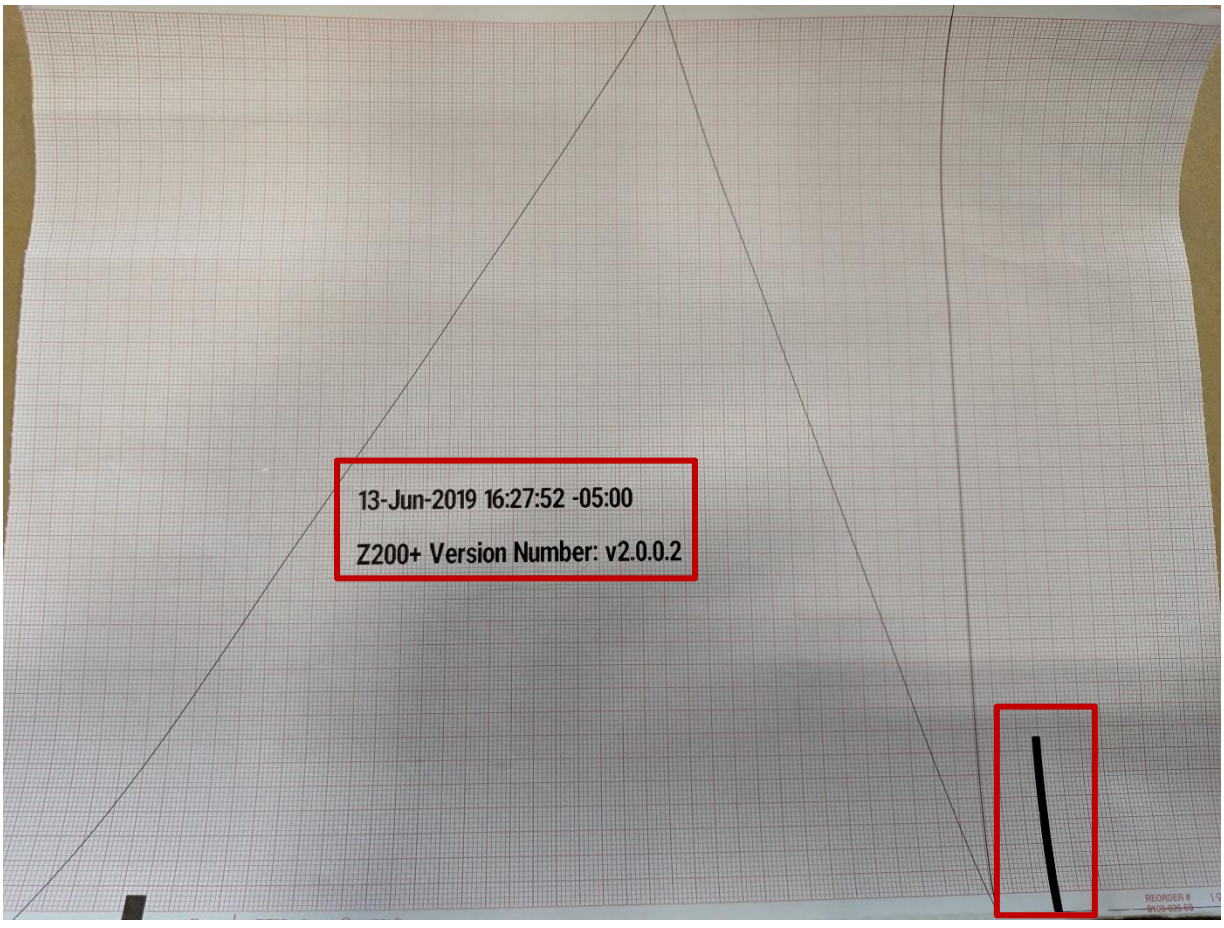
A successfully printed test page has the following characteristics (refer to following image for example):

The text is legible and print darkness is uniform across the page.

A continuous slanted line across the printing page along with current date, time, and Z200+ software version number (See SAP DIR# 11028-00X-50 for latest software version) (The "00X" in the DIR# will numerically increment when the software version changes) (Version number in below picture is for reference only).

The small dark bar is uniformly printed.

The paper should stop on the cue mark (The perforation on the paper should line up with the tear edge on the unit).



Paper Advance Function

Once the “Test-Page” printing is completed, press the Z200+ interface button once to test the paper advance function. The paper should advance quickly to the next page perforation.

Safety Testing

If the cardiograph housing was opened for repair or inspection work, the following safety tests must be performed in accordance with the EN/IEC 60601-1 or EN/IEC 62353 methods and limits.

In countries with different national legislation, the country specific standards and guidelines for retesting of electrical medical devices are obligatory.

Objective evidence of testing results versus the defined standards must be provided as part of the servicing record.

The Z200+ has no direct patient connection and is considered a component of a Q-Stress or X-Scribe system.

- Earth Leakage
- Enclosure Leakage

  Non-conductive (fully insulated) chassis testing should be performed utilizing 200 cm2 conductive foil or equivalent, earth ground on AC input is utilized for functional earth (not safety grounding).

  Place 200cm^2 Conductive Foil onto User Interface portion of UUT (Place Foil onto “AC On / Paper Out Label”).

Z200+ Test Data Record

Unit Serial #: _____

Printing Quality

Print darkness	PASS / FAIL (CIRCLE ONE)
Printhead check (missing pixels)	PASS / FAIL (CIRCLE ONE)
Paper motion check	PASS / FAIL (CIRCLE ONE)
Software Version Check	PASS / FAIL (CIRCLE ONE)
Paper Advance Function	PASS / FAIL (CIRCLE ONE)

Safety Test

Earth Leakage	PASS / FAIL (CIRCLE ONE)
Enclosure Leakage	PASS / FAIL (CIRCLE ONE)

Performed by:_____Date:_____/_____/_____