
Procedure for BSD600 Ascent A2 Semi-Automated Puncher

1.0 Purpose –To instruct users in the operation of the BSD600 Ascent A2 Semi-Automated Puncher (Puncher) for the semi-automated punching of database samples.

2.0 Scope – This procedure applies to DNA Database Section Forensic Scientists and trainees who perform DNA analysis using the BSD600 Ascent Semi-Automated Puncher.

3.0 Definitions – See Section Definitions List

4.0 Equipment

- BSD600 Ascent A2 Semi-Automated Puncher
- BSD Studio Software
- 96 well amplification plates
- Various laboratory equipment involved in DNA analysis (gloves, trays, centrifuges, biohazard waste containers, S&S filter paper, distilled water)

5.0 Procedure

5.1 Basic Operation Instructions

5.1.1 DNA Database Forensic Scientists shall wear gloves, lab coat and face mask when punching samples or handling puncher materials (including puncher components, disposables, or the plate deck). DNA Database Forensic Scientists shall wear gloves when using the puncher computer system.

NOTE: The Forensic Scientist Manager/Supervisor and Technical Leader shall be notified in the event of a technical issue and informed of any issues with puncher function. The Technical Leader shall investigate root causes.

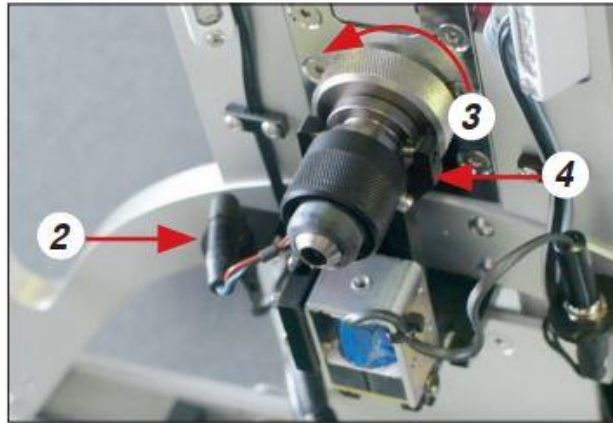
5.1.2 When cleaning/maintaining the instrument, the use of a general-purpose alcohol cleaning solution is acceptable.

5.2 Pre-Run Maintenance – Prior to each run perform the following maintenance:

5.2.1 Removing the Chute

5.2.1.1 Ensure the instrument is switched off. Unplug the connector carefully from the connector plug mount located to the left of the chute assembly. Do not pull on the chute cables. Unscrew the inner chute by turning it in a counterclockwise direction. Push down the chute lifting lever arm that is supporting the chute with one hand, while the other hand carefully removes it from the lever arm

Note: The inner chute slides easily out from the outer chute. Take care not to drop either chute.



Removing the chutes

5.2.2 Cleaning the Inner Chute

5.2.2.1 Clean the inside and outer surfaces of the inner chute with cotton swab sprayed with 100% ethanol. Use a can of compressed air to blow through the chute.

5.2.3 Cleaning the Outer Chute

5.2.3.1 Use a can of compressed air to blow through the openings. Gently clean the lower section of the outer chute to remove any paper dust.

NOTE: Do not clean the outer chute with alcohol.

5.2.4 Reassemble the Chutes

5.2.4.1 Place inner chute into outer chute. Push down chute lifting lever arm. While still holding it down, slide in the chutes. Screw the inner chute into position by turning in clockwise direction. Plug in the chute connector.

5.2.5 Cleaning Around the Punch Mechanism

5.2.5.1 Remove the punch head by rotating the center card pad into the lower position. Turn release lever 180 degrees towards front. Lift out punch head.



Figure 9 - Removing the punch head

5.2.5.2 Using a can of compressed air, blow through the holes on the underside of the manifold to remove any build-up of lint on and around the die and associated parts.

5.2.5.3 Direct a stream of compressed air horizontally between the punch guide and die to remove dust.

5.2.5.4 To replace the punch head, ensure the release lever is pointing forward and insert the punch head into position. With one hand push punch head all the way in, use the other hand to turn the lever clockwise to lock the punch head in position. Make sure the lever is turned all the way back. Rotate the center card back to original position.

5.2.6 Humidification System

5.2.6.1 Unscrew the filler cap on lid top. Fill the bottle with ~5ml of distilled water (sterile water for molecular testing). Allow 3 minutes for sponge to fully absorb water. Do not overfill (7ml max). Replace filler cap on lid.

5.2.7 Clean puncher deck with alcohol.

5.2.8 Empty the waste container.

5.3 Puncher Operation

5.3.1 Use the following sequence when initializing the instrument:

5.3.1.1 Computer

5.3.1.2 Instrument

5.3.1.3 Software

5.3.1.4 Vacuum

5.3.2 In the BSD Studio software, enter the individualized user name and password.

5.3.3 Ensure open screen shows “BSD600 Ascent A2|Online” and click the **Start** button.

5.3.4 Add plates to proper position on plate deck.

5.3.5 To punch a plate, select **Punch** on the bottom right of the screen.

5.3.6 Select the deck position to be used for punching the plate.

5.3.7 Load the “Plate Template” test from the **Selected Test** dropdown menu.

5.3.7.1 The “Plate Template” test contains the following settings:

5.3.7.1.1 Specifies puncher head to be used

5.3.7.1.2 Specifies puncher size

5.3.7.1.3 How many punches per sample

5.3.7.1.4 Fill order and start position

- 5.3.8** In the pop-up window import the input file to load the plate map for the specified plate and click **OK**. Ensure the imported plate map is consistent with the expected plate map layout. Once confirmed click **Close**.

Note: Reagent blanks are notated on the worksheets but do not get punched.

- 5.3.9** Click **Start Punch Run**.

- 5.3.10** Follow the prompts to enter the plate name. Click **Scan Barcodes** to hand type the plate name. Click **Ok**. Click **Continue**.

Note: The plate name should match the plate name listed in the import file.

- 5.3.11** Punch the plate following the prompts from the instrument.

5.3.11.1 All punch runs begin with punching cleaning strikes.

5.3.11.2 To punch samples, scan the sample barcode. If the sample barcode is consistent with the expected sample number, the instrument will prompt for punching of the sample. If the sample barcode is different from the expected sample number, the software will notify the analyst of the expected barcode and give an option to rescan.

- 5.3.12** Continue punching until all samples have been punched.

- 5.3.13** When plate punching has been completed, instrument will prompt that punching finished. Click **Continue**. Click **End Punch Run**. A pop-up will prompt asking "Are you sure you want to stop punching?". Click **Yes**.

- 5.3.14** After the puncher has completed the run, verify that each well expected to have a punch has one. Should any well expected to contain a punch not have one, it may be re-punched manually.

- 5.3.15** When the protocol is finished, save the output file for run onto a thumb drive. Open the shortcut: (C:\BSD\Logs). Open the file corresponding to the run. Utilize the file to generate the Amplification Worksheet for the run.

6.0 **Limitations - N/A**

7.0 **Safety**

- 7.1** The use of the procedures in this document may cause exposure to the following, and precautions as noted in the Laboratory and Section Safety Manuals shall be used:

7.1.1 Blood borne pathogens

7.1.2 Chemical hazards

- 7.2** This instrument contains moving parts, and their movement is not always indicated. Use caution during operation.

8.0 References

DNA Database Administrative Policy and Procedure
DNA Database Administrative Procedure for Safety and Hazardous Waste Disposal
DNA Database Section Procedure for DNA Reagent Quality Control
DNA Database Section Procedure for Instrument and Equipment Quality Control
DNA Database Section Procedure for PCR Amplification with PowerPlex® Fusion
DNA Database Section Procedure for PCR Amplification with PowerPlex® Y23
DNA Database Section Procedure for Sample Processing Quality Control
BSD600 Ascent User Manual
State Crime Laboratory Quality Manual
State Crime Laboratory Safety Manual

9.0 Records – N/A

10.0 Attachments – N/A

Revision History		
Effective Date	Version Number	Reason
06/09/2023	1	Original Document