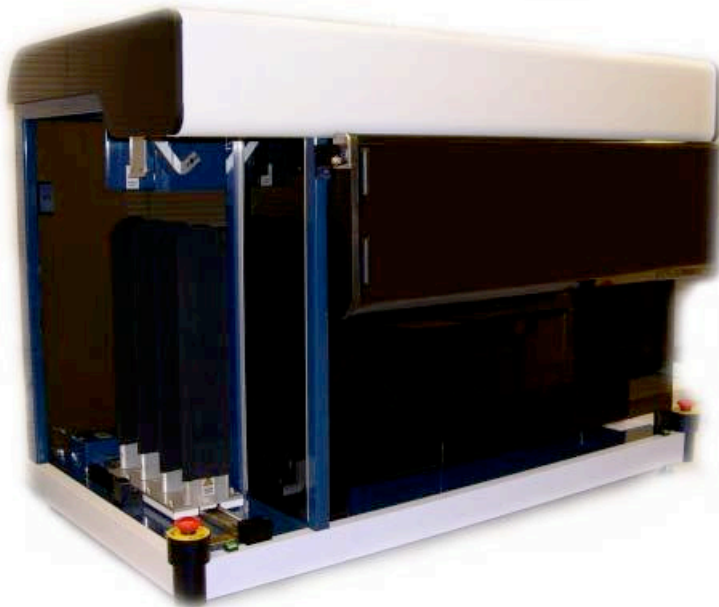


BSD1000 GenePunch

automated punch system



The BSD1000 GenePunch represents the new generation in punch robots. A fully automated walkaway punch robot, it is designed specifically for medium to high throughput DNA analysis laboratories processing dried samples on filter paper.

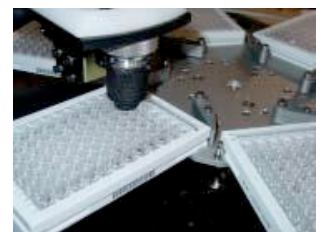
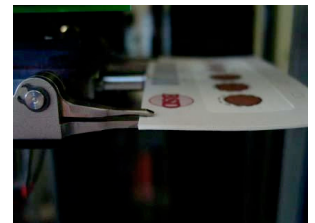
The BSD1000 GenePunch automatically punches sample cards without the need for operator involvement. The robot provides reliable punching and sample tracking capabilities.

The BSD1000 GenePunch has been designed to accommodate internationally accepted and standardised framed cards.

BSD GenePunch

FEATURES & FUNCTIONS

- **Magazine System**
Accommodates up to 3 magazines that are automatically fed into the robot for processing.
Enables the operator to prepare the robot to process up to 300 sample cards.
- **Card Grippers**
Grippers transport the cards from module to module.
The automation of the card transportation virtually removes the necessity of having an operator handle the cards during punching.
- **Scanner Module**
Scans sample areas on card and automatically determines the positions to punch full sample disks.
Ensures that the optimum sample will be punched from the sample card.
- **Punch Module**
Punches the required size and number of disks into plates.
Punches reliably into the predetermined wells aided by a built-in disk detection system and low-pressure air system.
- **Plate Carousel**
A unique tray rotary platform, holding up to a maximum of 6 PCR plates, microplates and/or deep well plates.
Extends beyond frame for extraction of plates by external robotic arm.
- **Barcode Readers**
Read the barcodes on the magazines, sample cards, and plates
Allows for traceability at all levels of the punching process delivering unique identification information that will travel with the punch on its journey to analysis.



BSD GenePunch TYPICAL PROCESS

The BSD1000 GenePunch is a fully automated dried sample punch robot. It automatically punches without the need for the operator to insert the sample card.

Framed sample cards are preloaded into a card magazine that is placed into the magazine storage module. The card gripper extracts the sample card from the magazine and transports the card to the scanner module. The sample area on the card is scanned to determine possible areas for punching full sample discs. The card gripper then transports the sample card to the punch module for punching of the disks into a predetermined well of a 96 well plate, deep well plate or PCR plate. The sample card is then returned to its original position in the card magazine for storage.

When punching is complete, the plate carousel moves automatically to a position where a liquid handling platform robot can pick up the plates for downstream processing.

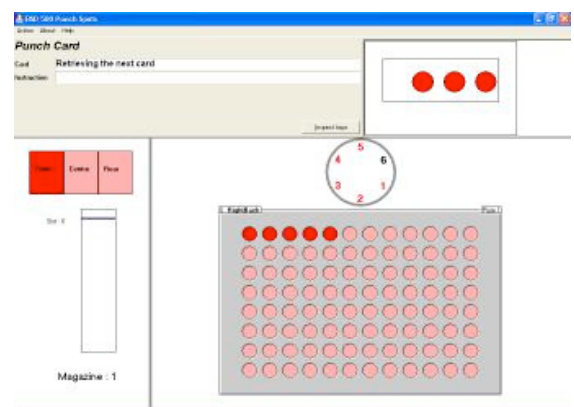
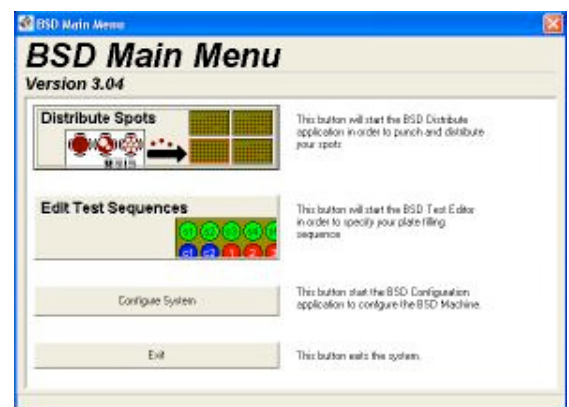
Barcode readers are incorporated in the robot to scan card magazine barcodes, sample card barcodes and plate barcodes, providing sample tracking throughout the entire process.

At the completion of each punch cycle, an output file is created by the system recording information of the magazine sourced and the slot number, including all barcode numbers and the location of receiving wells. In this way, total positive identification of samples can be achieved.

BSD GenePunch SOFTWARE CAPABILITY

The **BSD1000 GENE PUNCH** software consists of 4 modules:

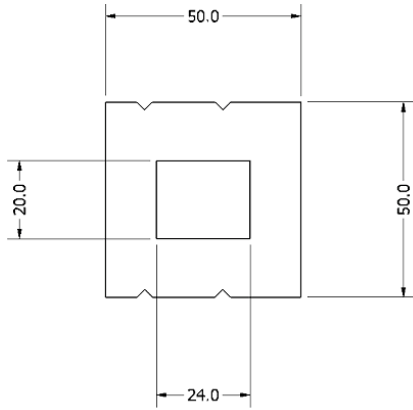
- **Menu Module**
 - Controls the access to the other software modules.
 - Access to Menu Module is controlled using dedicated Supervisor and User level passwords.
- **Test Editor Module**
 - Allows for the individual tests to be defined.
 - Independently program punching orientation and order of individual plates and wells.
 - Allows the programming of 96-well format.
 - Access is restricted to Supervisor Level.
- **Configuration Module**
 - Used to access the predefined configuration setting for the instrument.
 - Allows for configuration setting of instrument to be determine according to requirements.
 - Access is restricted to Supervisor Level.
- **Distribution Module**
 - Used to define individual punching runs and control of the instrument.
 - Displays current status of the instrument.



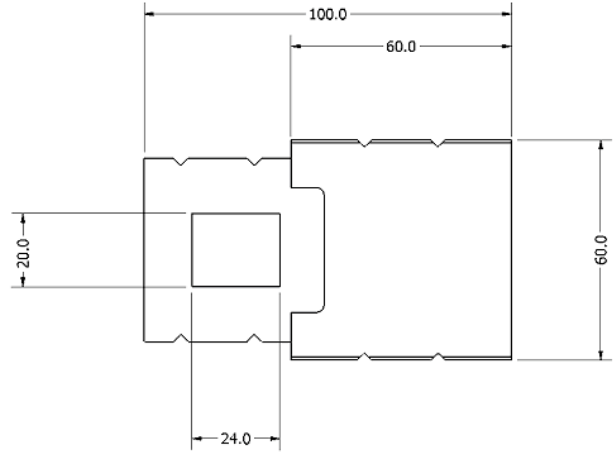
ACCEPTED CARD DESIGNS

The BSD1000 GenePunch has been designed to accommodate six internationally accepted and standardised framed cards.

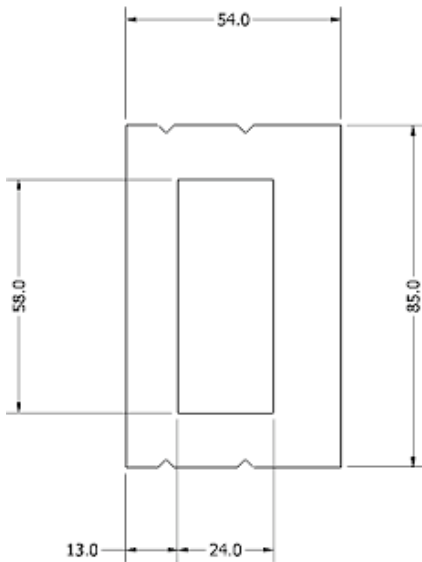
Card Design 1



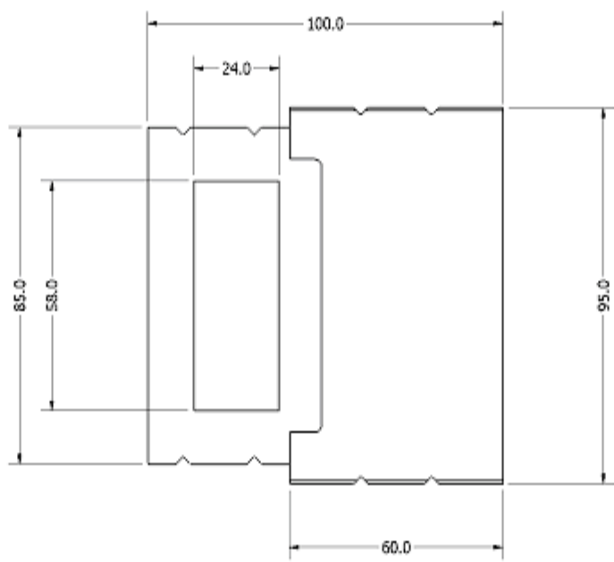
Card Design 2



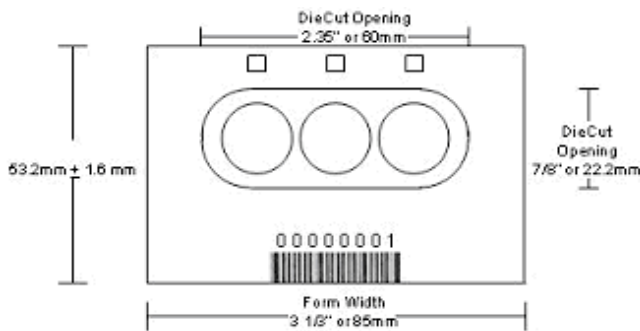
Card Design 3



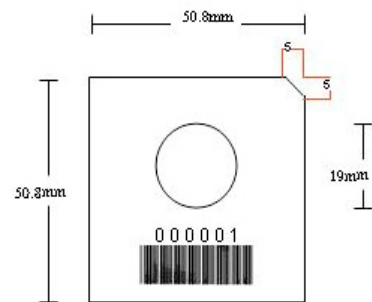
Card Design 4



Card Design 5



Card Design 6



***Dimensions are not to scale**

TECHNICAL SPECIFICATIONS

- 1. Tray Capacity:** Six Sample Bays, each capable of accommodating 1 standard 96 well microplate, deep well plate or PCR plate
- 2. Card Magazine Capacity:** 80, 100 or 160 cards per Magazine, depending on card design
- 3. Card Designs Accepted:** Designs 1 through 6. Custom cards may be accepted, subject to agreement and cost. Custom card designs may greatly affect the automation, performance, reliability, and cycle times
- 4. Magazine Loader:** Up to 3 magazines
- 5. Disk Distribution Patterns for samples, controls, unused wells:** Totally flexible, independent for each plate, defined by laboratory, Computer Programmed & Controlled.
- 6. Dual Punch System Combinations:** 1.2mm/1.2mm, 1.2mm/1.5mm, 1.2mm/2.0mm, 1.2mm/3.2mm, 2.0mm/3.2mm, 3.2mm/4.7mm, or 3.2mm/6mm or any same size combination
- 7. Mains Power Requirements:** 110-240 volts (General purpose electrical outlet)
- 8. Punch Activation:** Fully automatic. Cards are loaded into magazine, which is then unloaded by the equipment
- 9. Approximate Cycle Speed:** 20s-1 disk, 22s-2 disks, 24s-3 disks, 26s-4 disks, 28s-5 disks, and 30s-6 disks
- 10. Computer Software:** Supplied by BSD Robotics:
 - BSD1000 Software, supplied on CD based on Microsoft Windows 98/ME/NT/2000/XP
- 11. Computer Hardware:** Supplied by laboratory:
 - IBM compatible

Minimum System Requirements:

 - Windows 98/ME/NT/2000/XP
 - Pentium 4 with SVGA capability
 - Colour monitor (Min. resolution 800 x 600)
 - CD ROM min. 12 x speed
 - 1GB HD (250Mb free space)
 - 256Mb RAM
 - 1 X USB port
- 12. Barcoding:** System is supplied with three barcode readers:
 - Sample Card Magazine barcode reader
 - Sample Card barcode reader
 - Plate barcode reader
- 13. Sample Scanner:** Scans sample areas on card and automatically determines the positions to punch full sample disks; or to identify locations of previously punched sites
- 14. Disk Detector:** System is supplied with a disk detector comprised of a number of sensors (located in the lower section of the chute) designed to detect that each disk has been punched, and respond by automatically re-punching up to three times if it has not
- 15. Patented Air System:** Incorporates a low-pressure air pump. The system is designed to assist in stripping the punched disks from the cutting edge of the punch. Includes humidifier system to minimise effects of static electricity
- 16. Physical Dimensions:** (L) 1200mm x (W) 750mm x (H) 650mm, 85kg
- 17. Bench Dimensions Required:** Supplied by laboratory - (L) 1200mm x (W) 750mm x (H) 750mm
- 18. Total Space Required:** (L) 1800mm x (W) 1350mm x (H) 1500mm
- 19. Installation, Commissioning, & Training:** Installation is included for End Users in the price:
 - To be undertaken by representative of BSD Robotics
 - Operator Training of up to 4 hours is included in the price for End Users
 - Provided at time of installation of instrument
- 20. Warranty:** A 12-month warranty is included, covering parts, labour, and up to three preventative maintenance visits



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