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BIODOT . . .

is the leading supplier of system for the research, development and manufacture of diagnostic tests. Its Mission is to enable, inspire and educate scientists to commercialize their R&D ideas through to manufactured product. Using its core competencies in low volume non-contact and contact dispensing, cutting and lamination equipment, and technology transfer services, BioDot has developed a range of equipment for the research and development, and manufacture of rapid tests.

With a commitment to fully understanding our customer requirements, BioDot's personnel have a genuine wish to help you develop your research ideas. Our sales teams are highly trained in providing expert advice in both process and material handling needs. They are backed by strong support from teams of applications scientists and service engineers.

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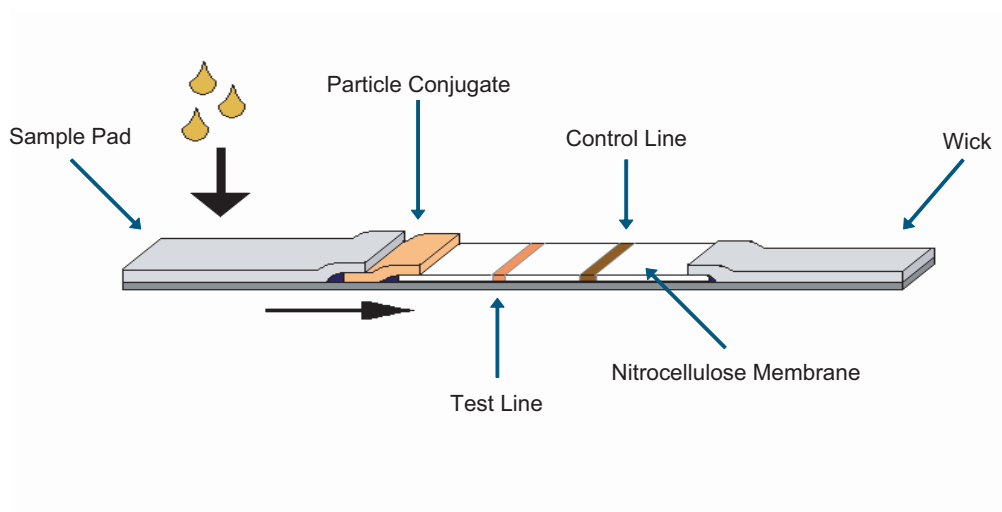
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**Bringing Manufacturing
Strength to the
Laboratory**

LATERAL FLOW

A lateral flow test typically incorporates a sample pad that is intimately associated with a conjugate pad. This in turn touches a membrane onto which test and control reagents have been immobilized. An absorbent pad wicks fluid away from the membrane.

Typical Lateral-Flow Assay Format

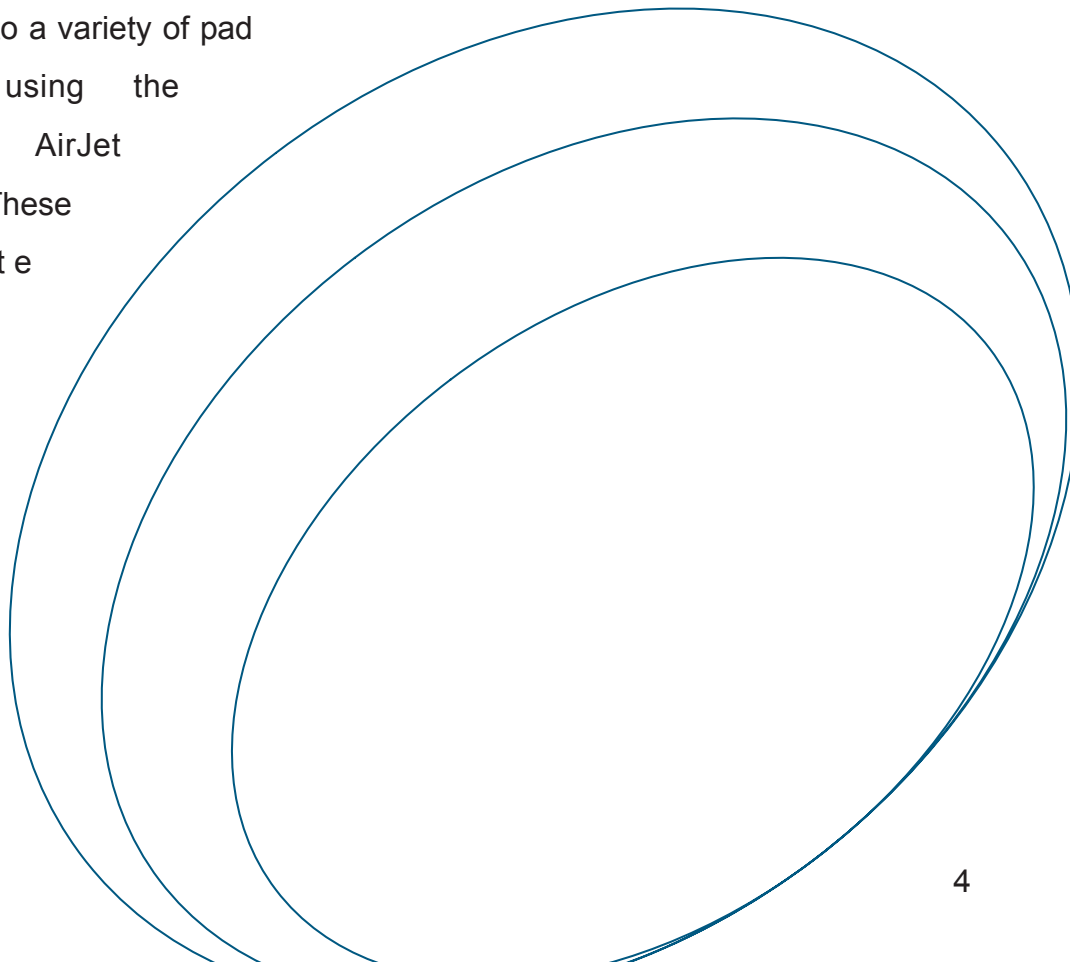


Dispensing Considerations for Lateral Flow

1. Test and control lines. These lines are typically an enzyme, antibody, antigen, or nucleic acid etc. These are immobilized on a membrane, usually made from nitrocellulose. The decision on whether to opt for contact versus non-contact will be down to membrane manufacturers' recommendations, and on the kinetics with which the immobilization occurs in the membrane matrix.

To apply the lines BioDot offers contact (FrontLine™) and non-contact (BioJet™) technologies. Both FrontLine and BioJet are fully quantitative dispensers. The Frontline meters liquid using a high-resolution pump to drive a low volume syringe connected to a dragging tip. The BioJet drop-on-demand technology dispenses individual drops from 20 nL to 4 μL. The BioJet systems produce clearly defined, fine lines by overlapping individual drops at a tight pitch . The ability to control drop size, line volume, and energy of the drop give the researcher the control needed in the critical step of marrying reagents to materials.

2. Conjugate. Colloidal gold, monodisperse latex or paramagnetic particle conjugates are applied to a variety of pad materials using the BioDot AirJet dispenser. These conjugate solutions typically contain high



concentrations of sugars and/or polymers for stabilization and release. BioDot offers the AirJet Quanti 3000 to evenly and quantitatively apply the conjugate to the pad in a surface coating, which vastly improves the efficiency of drying and conjugate release over immersion application methods. The dispensed pattern can be adjusted to provide more or less defined lines through control of the dispenser aperture size, air pressure, and dispensing rate. The use of quantitative AirJet dispensing is a critical component of the manufacturing process of quantitative or semi quantitative assays.

3. Pad and Membrane Treatments. Conjugate pads, sample pads and membranes all typically require either pre-treatment or post treatment in order to make them hydrophilic, to stabilize proteins and the membrane structure, and/or to prevent non specific binding. These treatments can be performed either by quantitative dispensing using an AirJet Quanti or by immersion followed by drying in high-efficiency forced air ovens.

4. Manufacturing needs. BioDot offers its dispensing technologies on both batch platforms and in-line reel to reel systems, allowing researchers to scale-up their ideas from bench, through pilot production onto full manufacturing with a minimum of process development issues.

Lamination: With over 10 years of experience in materials handling BioDot is able to offer both batch and in-line lamination systems. These marry the various components that constitute the lateral flow test. Full control of tensions and capstan drive mechanism allows handling of even fragile webs.

Cutting: The individual test strips need to be singulated from the laminated cards. BioDot offers both rotary and guillotine cutters with a variety of blade options to suit the researchers particular material. Furthermore, the cutting systems can incorporate magazine card feed and bottle collection to automate the manufacturing process. Reel feeds are also available for guillotine cutters for cutting of components to length from rollstock in batch processes.

Education Courses: Our One Step One Solution technology transfer services have been developed through long term associations and partnerships with complimentary suppliers to the rapid-test manufacturing sector. These services allow BioDot to offer a "one-stop shop" for scientists wishing to fast track their research and product development programs. BioDot offers these programs either at customer facilities, or from our laboratories in California and in the United Kingdom.

This wide range of equipment modules, technology service and customer support packages make BioDot an ideal partner for the successful diagnostic test producer.

DISPENSING TECHNOLOGIES



AirJet Quanti:

AirJet technology is non-contact, quantitative aerosol dispensing. BioDot's proprietary technology couples the AirJet with a high resolution syringe pump to meter exact amounts of reagents. This process produces a precise and easy to use method for dispensing microliter quantities of fluids. Unique design features ensure

repeatability and allow for disassembly and cleaning without affecting calibration.

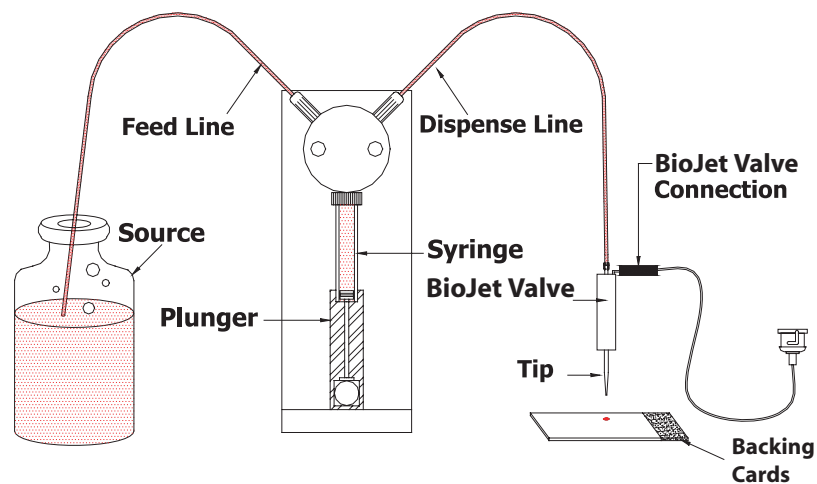
FrontLine:

FrontLine dispensing is ideal for printing lines on membranes and other substrates for rapid tests. The technology couples a high resolution syringe pump with a micro-tube. During dispensing the micro-tube glides across the surface of the membrane or substrate to create a quantitative line. The width of the line can be adjusted by increasing or decreasing the programmed volume of the line.

BioJet Quanti:

This quantitative non contact technology couples the BioDot "drop-on-demand" valve with a high resolution syringe pump to meter precise amounts of reagent. Incorporating the benefits of non-contact dispensing and the ability to program exact drop volumes, results in BioJet technology being a flexible and highly accurate technology.

BioJet Quanti™



CUTTING TECHNOLOGIES

Guillotine Cutting:

Guillotine cutting technology is designed to provide robustness, flexibility and precision in both R&D and high volume manufacturing environments.

Titanium nitrate coated, hardened steel blades with high cutting angles guarantee long blade life, while high cut angles coupled with controllable tension friction feed rollers guarantee cut quality and precision. Cut widths and processing speed are easily programmable via the hand-held terminal, so the unit can be used for processing product of different final widths or for cutting of longer sections of roll-stock for use as components. A reel-feed option completes the utility of the system



for component cutting, while anti-static and bottle attachments for collection of final product provide added utility for finished part processing.

Simplicity of operation and maintenance, coupled with flexibility and high throughput capability makes this technology ideal for trouble-free operation.



Rotary Card Cutting:

The Rotary Card Cutting System is a high speed precision strip cutting instrument used to cut sheet materials into thin strips down to 4 mm width. This module is also designed to cut a wide variety of rapid diagnostic test strip products from master sheets that include laminated and thick film circuit formats. A typical application is the cutting of lateral flow test strips which consist of a laminated card with up to 4 laminated layers. This system is primarily designed for high speed cutting of strips at rates in excess of 500 parts per minute which are typical for manufacturing operations. The module can be set up to collect slit parts in bulk or in bottles.

The Rotary Card Cutting System is designed for a quick exchange of blade set assemblies to modify cut widths. The module can be provided with a magazine feed and/or different collection chute options.

Its easy operation makes it ideal for use in either development or manufacturing environments.

IN-LINE TECHNOLOGIES

Reel-To-Reel Systems:

The Reel-To-Reel system has been designed to accommodate a wide range of reagent application and drying processes for web materials used in test strip product. The Reel-To-Reel is a module system and is used to prepare these different materials in a web format that if necessary, can be slit to appropriate widths that are then used for automatic lamination to assemble the test configuration.

The types of operations that can be included within the Reel-To-Reel are:

- Reel feed with tension control of membrane or other web material for coating.
- Reagent dispensing is based on positive displacement systems and can include BioJet, AirJet or Syringe dispensing.
- Inspection and marking of dispensed operations
- Automatic tracking of dispense positions on the web
- Dispensing motion axis transverse to web path
- Impregnation using immersion methods
- Tunnel drying using convection heating
- Lamination of secondary web materials to the main web
- Reel take-up of web with automatic web tracking
- Cutting of web into strips

Diagnostic application such as immunological test formats are evolving from only binary "positive-negative" responses to quantitation. This is requiring the application of reagents with a higher degree of accuracy in terms of both reagent volume and position on the web. Since the immunological test format is based on sample flow across the material webs the positions of the test and control lines need to be held to very accurate tolerances relative to a reference such as the membrane edge or conjugate position overlap on the membrane.

Additionally, most web materials show large variations in fluid impregnation capacities which result in significant variations in reagents used for conjugates, sample pad and blood separation pads. Thus, replacing impregnation processes with quantitative dispensing would result in very accurate linear volume concentrations.

The Reel-To-Reel is a modular system that is based on the use of 9 process modules arranged on a chassis that can accommodate a wide range of test product configurations. The module nature allows for the system to be easily reconfigured for different product requirements. This product line can also include a web slitter used to convert wider web formats to smaller web formats for lamination.

LAMINATING TECHNOLOGIES

The laminating step can be done in either batch or automated inline modes.

Clamshell Lamination: For batch mode, a Clamshell or manual approach is designed for the accurate assembly of precut materials into a specific test strip product. Precut membrane, absorbent material, conjugate pads and plastic backing are brought together to form a laminated lateral flow test strip. The Clamshell laminator contains top and bottom vacuum nests to hold test strip materials in place for the lamination process. The nests are customized to the customer's design but are easily interchangeable so other designs can be laminated as well. When the nests are brought together accurate alignment of the laminate is achieved.

Automated Lamination: For a continuous lamination process, automated lamination is needed. BioDot has evolved a modular lamination system suitable for test formats comprised of multiple layers joined by adhesives.


The first module is typically the [Reel Feed](#). The Reel Feed is used to feed the roll stock of bare plastic backing or plastic backing with kiss cut liners. This module also includes one liner take up reel. The second module is the [Magazine Strip Feed](#). In many test designs the plastic backing is too thick to be supplied in a roll format due to curl problems with the plastic. In this case the plastic is supplied as bare, flat sheets in the range of 300-1500 mm long and up to 100 mm wide. This module consists of a magazine feed system for sheet feeding the plastics sheets to an adhesive application station. The adhesive station applies layers of adhesive with release liners and joins the plastic sheets into a continuous web format for feeding through the system. Following the Magazine Strip Feed is the [Material Feed, Roll Feed module](#). This module is used to feed up to three rolls of materials in roll formats. A take up reel for release liners can also be configured.

Typical applications would include adhesives, conjugate pads, sample pads, absorbent pads, and cover layers. The individual pad positions are adjustable. In a dry chemistry application, up to 10 chemistry pads can be laminated, and the different reagent pad rolls can be placed on a single spindle with spacers if the pad thickness are similar. In some cases either materials or processes limit the materials used in sheet formats. In this scenario a [Materials Feed: Strip Feed module](#) is incorporated. This module consists of a sheet feed system with adjustable widths and position to provide for the feeding of individual sheets to an exposed adhesive layer. The strips are fed end-to-end to each other. This module also includes a pneumatically controlled lamination layer. The roller pressure is

adjustable up to 40 psi. The [Membrane Feed module](#) is used to feed backed or un-backed membrane for lamination to the plastic backing with adhesive. The station also includes take-up reels for the membrane liners and for adhesive release liners. This module provides for precision tension control and guidance of the membrane while being laminated onto the plastic backing. The module includes a pneumatically controlled lamination roller. The roller pressure is adjustable up to 40 psi. The [Dispenser module](#) is used to dispense onto the web at some point in the lamination process. A typical application would be to dispense lines onto the membrane after lamination. The module can accommodate up to 8 dispense heads which could be either BioJet or AirJet dispensers. Each dispenser can be configured with an inspection/mark system. This module is equipped with an ionizer to eliminate static charge build-up on the membrane prior to dispensing. The [Drive Capstan module](#) consists of a pneumatically controlled pinch roller which is used to move the web through the system. The pinch roller speed is variable from 1-100 mm/sec. The roller pressure is also adjustable up to 40 psi.

A [Cutter/Dancer module](#) can also be configured into the Automated Laminator system. This module provides an option for cutting the web into individual strips that are collected in a chute. The dancer is used as a buffer for the cut process that momentarily stops the





web motion at the cut position. The dancer radii are maintained at 50 mm (2") to minimize bending stress. The cutter is a guillotine type that has a collection chute configured to receive the cut strips. A cut strip length is generally in the range of 300 to 1500 mm in length. If re-reeling the laminate is needed a [Take-up Reel module](#) can be configured. This module is used when the lamination is thin enough so as not to damage any of the layers with bending stresses generated by re-rolling. A [Vision/Inspection Mark module](#) can also be configured and consists of a vision camera with a marker system to inspect the laminate. Two inspections are performed. The first is for mechanical alignment of different layers. The second inspection is for marks from previous process steps. In the latter case a final mark is placed on the membrane which can be machine read at the final cut and assembly stage. A final module that can be incorporated is a [Punching module](#). The punching module consists of a die punch with a cam actuator and a pressurized pinch roller. The die punch is used to punch simple hole configurations such as circles, squares prior to lamination processes.

The types of tests formats would include immunoassays based on the lateral flow format or dry chemistry formats using treated pads laminated to a plastic backing. A typical application would be the lamination of a rapid diagnostic test strip or urine test strip. After lamination is complete, other processes can be performed such as addition of impregnation steps, additional lamination and/or cutting of the lamination into final test strips.

PRODUCTS & OPTIONS . . .

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Dispensing Systems

XYZ Dispense Workstations

Batch Rapid Test Systems



PRODUCT DESCRIPTION

The XYZ series are a powerful and productive tool for Rapid Test development and manufacturing. The simplest of three platforms, the ZX1000 is an X-only striper with simultaneous dispensing. The ZX system can have a maximum of 8 FrontLine, 8 BioJet Quanti, or 1 AirJet Quanti dispenser.

The second model in the series is the XYZ3050. The 3050 is a flexible XY dispense system with motorized Z-axis and fully programmable co-ordinates and dispense parameters. The XYZ3050 also has the capability for simultaneous dispensing or individual dispense of lines and dots. Using the 3050 platform, a maximum of 8 FrontLine, or 8 BioJet Quanti, or 4 AirJet Quanti dispensers can be configured.

The XYZ3200 has all the features of the XYZ3050 plus a larger working area for larger membranes. Using the 3200 platform, a maximum of 8 FrontLine, or 8 BioJet Quanti, or 4 AirJet Quanti dispensers can be configured

FEATURES AND BENEFITS

PRECISION DISPENSING

- Quantitative Dispense Volumes

FLEXIBLE

- Optional Configuration to have FrontLine, BioJet Quanti, or AirJet Quanti Dispensers
- Menu Driven Operating Software
- Vacuum Magnetic holddown Nest

FOOTPRINT

- Small design that can accommodate R&D & Manufacturing Needs

PERFORMANCE

AirJet Quanti Repeatability :
 $\pm 1\%$ (line dispensing)

AirJet Quanti Dynamic Dispense Range:
1 μL per cm - 22 μL per cm

FrontLine Repeatability :
 $\pm 1\%$ (line dispensing)

Front Line Minimum Continuous Line Width:
0.33 mm*

BioJet Quanti Dynamic Dispense Range
20 nL - 2 μL

Positional Accuracy :
 $\pm 10\mu\text{m}$ in one axis and $\pm 20\mu\text{m}$ in two axis

* Dependent on fluid rheology and substrate properties

SPECIFICATIONS

DIMENSIONS (L x W x H)

ZX1000: 17" x 14" x 16"

XYZ3050: 17" x 14" x 16"

XYZ3200: 19" x 32" x 16"

WEIGHT

ZX1000: 55 lbs

XYZ3050: 55 lbs

XYZ3200: 98 lbs

POWER REQUIREMENT

110/220 VAC; 50/60 Hz (for all models)

AIR REQUIREMENT

Air Supply: 45-60 psi (when AirJets are configured)

DISPENSE AREA

ZX1000: 450 x 70 mm

XYZ3050: 450 x 70 mm

XYZ3200: 450 x 260 mm

OPTIONS

DISPENSE MODES

FrontLine: Gliding tips for multiple fine lines

AirJet Quanti: Quantitative spraying and coating

BioJet Quanti: Quantitative non contact line and drop dispensing

OPTICAL (wet/dry) SENSING WITH BAD PART MARKING

SUBSTRATE NEST

HUMIDITY CONTROL

VACUUM PUMP

REAGENT DEGASSER



XYZ3050 Configured with 2
BioJet Quanti and 1 AirJet
Quanti Dispenser



XYZ3200 Configured with 4
BioJet Quanti

Ordering Information

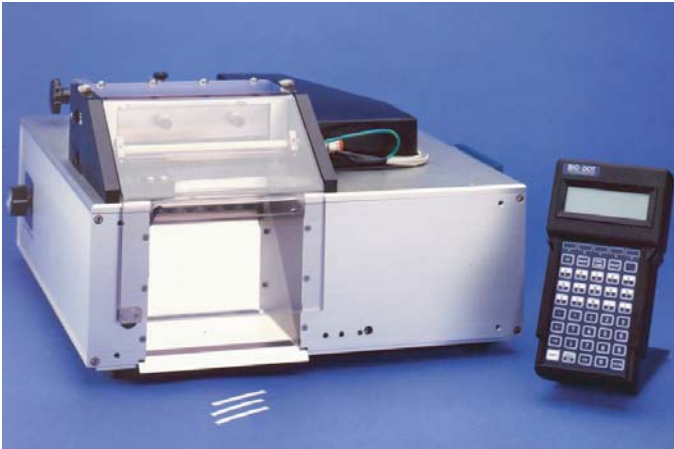
<p>ZX1000</p> <p>Simultaneous Dispensing Dispense Area: 450 x 70 mm Pneumatic Z Axis Vacuum Magnetic Nest Handheld Controller</p>	<p>Options:</p> <p>Dispensers: FrontLine: FL1000 AirJet Quanti: AJQ3000 BioJet Quanti: BJQ3000</p>
<p>XYZ3050</p> <p>Simultaneous Dispensing Dispense Area: 450 x 70 mm Motorized Z Axis Vacuum Magnetic Nest Handheld Controller</p>	<p>Options:</p> <p>Dispensers: FrontLine: FL1000 AirJet Quanti: AJQ3000 BioJet Quanti: BJQ3000</p> <p>Humidity Chamber: HC 3050</p> <p>Vision Inspection: VS 1000</p>
<p>XYZ3200</p> <p>Simultaneous Dispensing Dispense Area: 450 x 260 mm Motorized Z Axis Vacuum Magnetic Nest Handheld Controller</p>	<p>Options:</p> <p>Dispensers: FrontLine: FL1000 AirJet Quanti: AJQ3000 BioJet Quanti: BJQ3000</p> <p>Humidity Chamber: HC3200</p> <p>Vision Inspection: VS1000</p>

PRODUCTS & OPTIONS

Cutting Systems

CM4000

Batch Cutting System



PRODUCT DESCRIPTION

The Guillotine Cutting module is a resilient, fully automatic system. The standard hold-down bar provides high quality cut precision. Additionally, two set screws allow the blade to be easily removed and cleaned without recalibration. Various blade angles are available to optimize cuts.

Cut widths and quantities are easily programmed through its Handheld terminal. Programs may be stored for system reference in either development or manufacturing environments.

FEATURES AND BENEFITS

COST EFFICIENT

- Friction Fed Mini Rollers Eliminate
- Unnecessary Waste of the Master Strip

USER FRIENDLY

- Simple Handheld Operation
- Safety Interlock Device
- Easy Blade Cleaning

FLEXIBLE

- Adjustable Material Guides
- Various Blade Speeds

PERFORMANCE

Cut Accuracy

± 0.25 mm (or 5% cut length)

Cutting Speed

240 Maximum Cuts/minute *

Cut Width

Minimum: 1 mm

Maximum: Infinite

Material Handling

Individual Components

Assembled Devices

* Faster cycle time is operator dependent

SPECIFICATIONS

DIMENSIONS (L x W x H)

36 cm x 43 cm x 25 cm

WEIGHT

24 Kg

POWER REQUIREMENTS

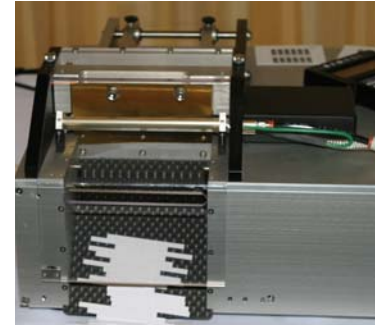
110/220 VAC; 50/60 Hz

0-90 psi Air Pressure (for anti-static option)

MATERIAL REQUIREMENTS

Standard Strip Width: <10 cm

Optional Strip Width: <20 cm



CM4000 shown with cut
sensor cards

OPERATION

MANUAL CARD FEED

SAFETY INTERLOCK

OPTIONS

BLADE ASSEMBLIES

30, 45, 60

Various compound angles

LEADING EDGE SENSOR

REEL FEED WITH DANCER

REEL FEED WITHOUT DANCER

ACCEPT/REJECT CHUTE

MAGAZINE FEED

ANTI STATIC

RCC4000

Batch Cutting System



PRODUCT DESCRIPTION

The Rotary Card Cutter is a compact system designed for fast cutting of paper, assembled cards, or other diagnostic materials. The standard configuration is with 5 mm blades, however other optional blade assemblies are available.

The Rotary Card Cutter can be configured with various types of collection chutes. Whether a bottle fill or removable collection chute, the Rotary Card Cutter can be modified for most cutting applications.

Its easy operation makes it ideal for use in either development or manufacturing environments.

FEATURES AND BENEFITS

THROUGHPUT

- Up to 500 Parts/minute

EASE OF USE

- Touch Button Control
- Easy Blade Replacement
- Simple Cleaning Operation

FLEXIBLE

- Suitable for High Speed Cutting
- Optional Collection Chutes

PERFORMANCE

Cut Precision
0.1 mm

Cutting Speed
7 sec. cycle time *

Material Handling
Individual Components
Assembled Devices

* Faster cycle time is operator dependent

SPECIFICATIONS

DIMENSIONS (L x W x H)

67.69 cm x 34.51 cm x 39.09 cm

POWER REQUIREMENTS

110/220 VAC; 50/60 Hz

0-90 psi Air Pressure

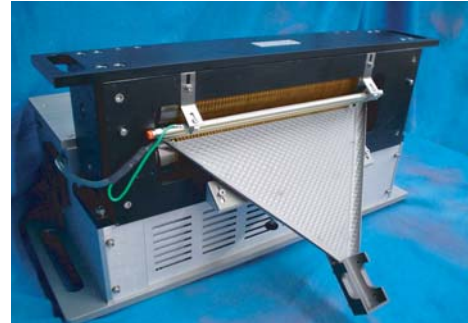
(for anti-static option)

MATERIAL REQUIREMENTS

Maximum Source Width: 300 mm

Minimum Cut Width: 3 mm

Maximum Card Thickness: 2 mm



Rotary Card Cutter shown with an optional Single Bottle Fill

OPERATION

MANUAL CARD FEED

SAFETY INTERLOCK

OPTIONS

BLADE ASSEMBLIES

5 mm - 6 mm

Various angles

SINGLE or DUAL BOTTLE FILL

SINGLE or DUAL COLLECTION CHUTE

AUTOMATIC REJECTION OF END PIECES

MAGAZINE FEED

ANTI STATIC

Ordering Information

<p>CM4000</p> <p>Guillotine Cutting Module Titanium Nitrate Coated Blade Handheld Controller</p>	<p>Options:</p> <p>Blades: 30 Blade: 6008-0021-01 45 Blade: 6008-0021-02 60 Blade: 6008-0021-03</p> <p>Leading Edge Sensor: 6008-A006</p> <p>Anti Static: 115 V: 6002-A007-01 230 V: 6002-A007-02</p>
<p>RCC4000</p> <p>Rotary Card Cutting Module Titanium Nitrate Coated Blade Set</p>	<p>Options:</p> <p>Blade Set: 5 mm: 6013-A101-01 6 mm: 6013-A101-03 7 mm: 6013-A101-04</p> <p>Collection Trays: Removable Inspection Tray: 6013-A114 Fixed Inspection Tray: 6013-A104 Pivoting Inspection Tray: 6013-A112 Dual Bottle Tray: 6013-A113</p>

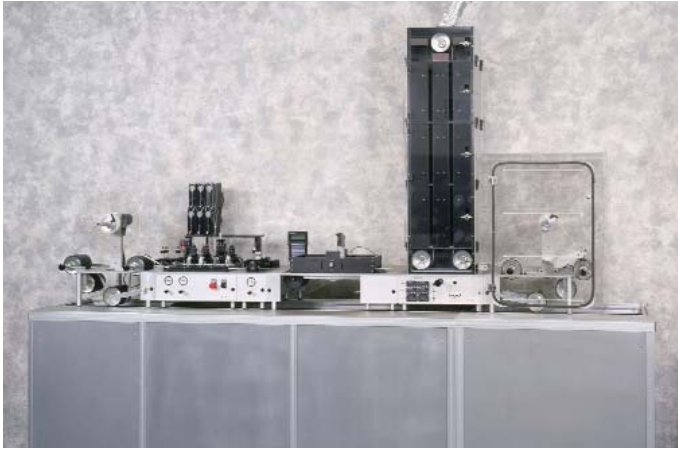
PRODUCTS & OPTIONS

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In-Line Systems

RR4500

In-Line Web Handling System



PRODUCT DESCRIPTION

The RR4500 is designed to provide reagent application and drying capabilities for web processing. The reagent application options include precision dispensing as well as dip coat impregnation.

A wide range of dispensers can be integrated into the system including the patented BioJet Quanti and AirJet Quanti dispensers for non contact dispensing as well as FrontLine for contact dispensing. Dispensing options provide for printing arrays of lines or full coating of webs using wide angle AirJets.

The Reel to Reel system also incorporates two tracking systems. The first is an automatic tracking of the web on the take-up reel and the second is a web edge tracking to maintain the position of the dispensed lines relative to the web edge. Web speed, pinch roller pressure, tension, drying time and temperature are all adjustable. Low-tension versions are also available for processing materials with low tensile strength.

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FEATURES AND BENEFITS

PRECISION

- Accurate Positioning of the Dispensed Lines and Drops on the Web Material

FLEXIBLE

- Modular Design provides a Wide Range of Process Capabilities for Reagent Application and Drying

USER FRIENDLY

- Handheld Controller

PERFORMANCE

AirJet Quanti Repeatability:
 $\pm 1\%$ (line dispensing)

AirJet Quanti Dynamic Dispense Range:
1 μL per cm - 50 μL per cm

FrontLine Repeatability:
 $\pm 1\%$ (line dispensing)

Front Line Minimum Continuous Line
Width: 0.6 μL to 3 $\mu\text{L}/\text{cm}$

BioJet Quanti Dynamic Dispense Range
0.8 to 3 $\mu\text{L}/\text{cm}$

Dependent on fluid rheology and
substrate properties




SPECIFICATIONS**DIMENSIONS (L x W x H)**

9" x 22" x 40"
(configuration dependent)

WEIGHT

~1047 lbs (configuration dependent)

POWER REQUIREMENTS

110/220 VAC; 50/60 Hz (for all models)

AIR REQUIREMENTS

Air Supply: 0 - 90 psi (when AirJets
& Capstan are configured)

DISPENSING SPECIFICATIONS**DISPENSERS**

Up to 8 in any combination

MEMBRANE WIDTH

Minimum: 0.20" (5 mm) *
Maximum: 3.85" (98 mm)
* Material dependent

LINEAR WEB SPEED

Up to 4"/sec (100 mm/sec)

WEB TRACKING

± 0.25 mm on take-up roll
± 0.25 mm on dispense tracking

OPTIONS**DISPENSE MODES**

FrontLine Quanti: Gliding tips for multiple fine lines
AirJet Quanti: Quantitative spraying and coating
BioJet Quanti: Quantitative non contact line and drop dispensing

INSPECTION STATIONS**DIP TANKS****DRY TOWERS****ENVIRONMENTAL ENCLOSURES**

Dip Tank



PRODUCT DESCRIPTION

The Dip Tank Reel-To-Reel option, provides for reagent dip coating, membrane blocking or washing via full liquid immersion of the web.

The module contains three mandrels to guide membrane or other reeled substrates through the tank containing liquid solutions. Liquid reagent is added by a peristaltic pump with optical liquid level height detection.

The Dip Tank is easily removed from its support platform for disposal or cleaning. The Dip Tank is constructed of Teflon and polypropylene thus providing high chemical resistance.

FEATURES AND BENEFITS

FLEXIBLE

- Adjustable submersion level
- Removable polypropylene tank for easy cleaning and level replacement

LIQUID CONTROL

- Liquid level sensor for controlling the liquid level of the DipTank
- Peristaltic fluid pump for automatic reagent filling

CONVENIENT HANDLING

- Easy removal for emptying and cleaning

CHEMICALLY RESISTANT

- Constructed of polypropylene and Teflon coated aluminum

SPECIFICATIONS

MATERIAL

Teflon Coated Aluminum polypropylene

DIMENSIONS

Width: 26" (66 cm)

Height: 16" (41 cm)

Depth: 18" (46 cm)

MAXIMUM VOLUME

Less than 600 mL

Web Width

3.85" (10 cm)

POWER REQUIREMENTS

110/ 220 VAC; 50-60 Hz

(motorized module only)



Dip Tanks with Liquid
Level Sensor

Dry Towers



PRODUCT DESCRIPTION

The Drying Tower is a modular addition to the Reel-to-Reel Web Handling Module. It allows previously dispensed webs of material to be continuously dried. Three drying stages are assembled into a dry tower. Each drying stage provides a two foot (61 cm) drying zone which is temperature controlled in both flow directions; thus a 3-stage drying tower module provides 6 feet (182 cm) of drying zone. Multiple 3-stage drying tower modules may be employed in series, saving work space.

The BioDot drying tower modules provides forced heated air convection supplemented with far infrared radiation. The independent controls for each drying tower module incorporate a close loop set point temperature control, sensing air at a site adjacent to the membrane path. The drying tower modules are connected to the emergency-stop interlock of the reel-to-reel web handling system.

FEATURES AND BENEFITS

CONTROL

Each drying zone has independent controls for temperature.

FLEXIBLE

Each drying module will accommodate membranes or absorbent material in widths up to 4" (10 cm)

HIGH PRODUCTIVITY

Multiple tower additions offer increased throughput capacity.

DRYER SPEED

Typical speed range is from 0.20"/ sec to 1.96"/ sec. (5 mm/sec to 50 mm/sec) Dependent upon drying temperature, air velocity, number of drying towers, and liquid content to be removed.

SPECIFICATIONS

DIMENSIONS (L x W x H)

Three Stage (RR3130)

Width: 17" (43 cm)

Height: 53" (135 cm)

Depth: 14" (36 cm)

WEIGHT

Three Stage: 111 lbs. (50 kg)

TEMPERATURE

Ambient to 158° F (70° C) at maximum air flow

AIR FLOW RANGE

Up to 90 SCFM (2550 L/M) with the operation
of 3 drying tower modules

EXHAUST PROVISIONS

4" (10 cm) diameter outlet duct exhausting vertically

POWER REQUIREMENTS

120/ 208 VAC, 3 phase. 60 Hz, 20 A



Ordering Information

RR4500

Payout Reel
Take-up Reel
Capstan
Autotracking for Dispense
Handheld Controller

Options:

Dispensers :

FrontLine: FL1000 RR
AirJet Quanti: AJQ3000 RR
BioJet Quanti : BJQ3000 RR

DipTank:

DP3000 RR

Dry Tower:

RR3130

Cutter & Dancer:

CD1000 RR

Take-Up Enclosure:

EC1000 RR

Vision Inspection:

VS1000

Optical Sensors:

OCX2000

7 Ft Chassis:

6007-A020-01

PRODUCTS & OPTIONS

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Laminating Systems

LM5000

Batch Laminating System



PRODUCT DESCRIPTION

The LM5000, also known as the Clamshell, is a manually operated module designed for the accurate assembly of precut materials into a specific test strip product. Precut membrane, absorbent material, conjugate pads and plastic backing are brought together to form a laminated lateral flow test strip. The Clamshell laminator offers maximum productivity for a manually operated system.

The Clamshell Laminator contains top and bottom vacuum nests to hold test strip materials in place for the lamination process. The nests are customized to the customer's design but are easily interchangeable so other designs can be laminated. When the nests are brought together accurate alignment of the laminate is achieved.

FEATURES AND BENEFITS

PRECISION ALIGNMENT

- Material Aligned with Dowel pins and a Custom Design Nest

CONVENIENT

- All Materials are Laminated at Once
- Does Not Require Scored Plastic Backing
- Versatile for R&D and Manufacturing Needs

SIMPLE

- Easy Operation
- High Throughput

SPECIFICATIONS

DIMENSIONS (L x W x H)

Standard: 16" x 12" x 3"

500 mm Nest: 24" x 12" x 3"

WEIGHT

27 lbs

VACUUM REQUIREMENT

25 CRM @ 18 in Hg

OPTIONS

ADDITIONAL CUSTOM NESTS

VACUUM PUMP

LM6000

In-Line Laminating System



PRODUCT DESCRIPTION

The LM6000 provides continuous lamination of materials onto a plastic support backing with adhesive. Typical applications would be lamination of a rapid diagnostic test strips or urine dip sticks.

The Automated Laminating system is a modular design to accommodate various numbers and types of materials. Each material is fed from adjustable spindles through guides and under a pressure roller to assure complete adhesion to the plastic support backing. The system provides ability to individually remove kiss cut adhesive liners for individual laminate materials. For fragile materials like nitrocellulose, alignment is controlled through automated tracking. After lamination the materials can either be cut and stacked in a collection chute or rewound onto a take-up reel.

Other process steps such as dispensing, slitting, punching and inspection can also be integrated into the system. For materials that are not available or cannot be processed in roll formats a magazine feeding system has been designed. Magazines for feeding the plastic support backing as well as more fragile materials are available. The system can also be partially or completely enclosed for control of the manufacturing environment.

FEATURES AND BENEFITS

PRECISION AND ACCURACY

- Sensor and Guides accurately align material during lamination.

FLEXIBILITY

- Various numbers and types of materials can be used.

USER-FRIENDLY

- Microprocessor control with the ease of keypad entry.

PERFORMANCE

Linear Web Speed:

Up to 4"/sec (100 mm/sec)

Lamination Roller Pressure:

0-40 PSIG

Lamination Tolerance:

<+/-0.01"(0.25mm)

Liner Take-up Reel:

Max OD 8.0" (200 mm)



SPECIFICATIONS

DIMENSIONS (L X W X H)

9' x 22' x 40' (configuration dependent)

WEIGHT

~1047 lbs (configuration dependent)

POWER REQUIREMENT

110/220 VAC; 50/60 Hz (for all models)

AIR REQUIREMENT

Air Supply: 0 - 90 psi (when AirJets & Capstan are configured)

DISPENSING SPECIFICATIONS

DISPENSERS

Up to 8 in any combination

MEMBRANE WIDTH

Minimum: 0.20" (5 mm) *

Maximum: 3.85" (98 mm)

* Material dependent

LINEAR WEB SPEED

Up to 4"/sec (100 mm/sec)

WEB TRACKING

± 0.25 mm on take-up roll

± 0.25 mm on dispense tracking



Laminating System configured with a Guillotine Cutting Module

MATERIALS SPECIFICATIONS

PLASTIC BACKING:

Width up to 100 mm

Reel Core 3.0" (35 mm)

Reel OD 18.0" (460 mm) max

LAMINATION WEBS: 13-100 MM WIDTH

Reel Core: 3.0" (75 mm)

Reel OD: 12" or 16" max

OPTIONS

DISPENSE MODES

FrontLine Quanti

AirJet Quanti

BioJet Quanti

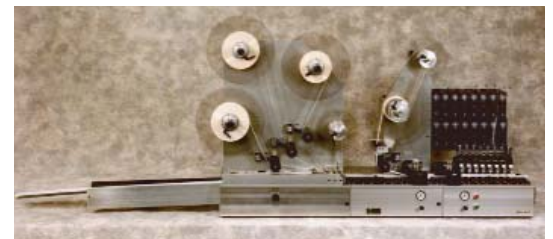
CUTTING MODULES

SLITTING MODULES

INSPECTION STATIONS

PUNCHING MODULES

ENVIRONMENTAL ENCLOSURES



Laminating System configured with a Dispensing Module

Ordering Information

<p>LM5000</p> <p>300 mm Nest or 500 mm Nest</p>	<p>Options:</p> <p>Additional Nests: LM5000 N</p>
<p>LM6000</p> <p>In-Line Continuous Laminator Modular Design Handheld Controller</p>	<p>Options:</p> <p>Reel Feed: 6033-A022</p> <p>Material Feed 1: 6033-A004</p> <p>Material Feed 2: 6033-A005</p> <p>Material Feed 3: 6033-A006</p> <p>Membrane Feed: 6033-A003</p> <p>Capstan: 6033-A001</p> <p>Inspect & Mark: 6033-A012</p> <p>Cutter: 6033-A008</p> <p>Dancer: 6033-A020-01</p> <p>Magazine Collection: 6033-A009</p> <p>7 ft. Chassis: 6007-A020-01</p>