Designed as efficient, easy-to-use, low-cost alternatives, Brandel’s PHD™ (Punch, Harvest and Deposit) Harvesters are suited to labs that wish to add some level of automation, but don’t routinely process enough samples to justify one of our larger Harvesting Systems. Capable of harvesting 24 samples at a time, punching paper and depositing discs, a PHD™ Harvester can process a fully populated 96-well plate in 5 minutes. PHD™ Harvesters can deposit filter discs into any type of miniature scintillation vial, test tube or gamma tube. The geometry of the test plate or standard test tube rack is preserved throughout the operating sequence.
VERSATILE AND COST EFFECTIVE HARVESTING

VERSATILE SAMPLE HANDLING AND DEPOSIT CAPABILITIES

PHD™ Harvesters are compatible with any 96-well microtiter plate, all types of 24- and 48-well plates, test tubes in standard racks, and micro-tube racks. Standard quick-disconnect systems make it possible to change from one harvest head type to another in seconds.

These machines can deposit filter discs into any type of miniature scintillation vial, test tube or gamma tube. Geometry of the test plate or standard test tube rack is preserved throughout the entire operating sequence.

TEST SUITABILITY

Models 200A and 290 are suitable for a wide range of tests from MLC’s to many RBA’s up to 3.3 million lymphocytes or 2.5 mg of homogenized tissue can be harvested per sample. PHD™ Harvesters are compatible with a wide range of wash fluids and buffers, including saline, methanol, and 5% to 10% TCA.

ACCESSORIES ADD CAPABILITIES

Accessories and options are available for nearly every application. Adding a Dispenser, for example, can significantly speed results by filling 96 wells with cocktail in less than a minute. See our full complement of accessories (at right) for various wash options, filter handling options, harvesting heads, vacuum pump and vial plates.

MODIFICATIONS, OVERHAULS, UPDATES & CUSTOM EQUIPMENT

Modifications to existing products and development of completely new products can often be performed for modest engineering charges. An older PHD™ Harvester can be overhauled or sometimes modified to reflect the latest technology or additional requirements at low cost.

MODELS

MODEL 200A

Aspirates and deposits at the time of harvesting. Features a specially designed diaphragm wash valve which allows all wash needles to be turned on and off instantaneously, provides an equal flow to each needle and eliminates well-to-well flooding.

MODEL 290

Offers the choice of aspirating and depositing at the time of harvesting or later. This feature is useful if samples need to be absolutely dry before adding cocktail or when drying samples on the filter strip is preferable to drying in vials. Model 290 also minimizes the number of vial trays needed.

In the non-punching mode, filter strips can easily be removed after harvesting and stored. Small internal holes are made in the filter mat during harvesting for precise alignment when returned to the harvester for cutting and depositing. Indexing holes also preserve sample geometry.

Features a specially designed diaphragm wash valve which allows all wash needles to be turned on and off instantaneously, provides an equal flow to each needle and eliminates well-to-well flooding.

OPERATION

1. After the filter mat is placed in the instrument, a stainless steel punch and die set cuts 24 discs out of it in one easy motion and seals them into the collection mechanism. Cross-contamination of samples is impossible.

2. A 96-well plate is placed in the convenient workstation built into the base of the harvester. Samples are then harvested two rows at a time from the microtiter plate onto the discs. While the samples are sealed, they can be washed and dried.

3. After flipping a switch to reverse the vacuum direction, all 24 samples are elevated by raising the punch level.

4. The Vial tray slides under the elevated samples and is keyed into position. The samples can be dropped directly into the scintillation vials or test tubes and are kept in the same orientation as in the original 96-well plate. One instrument performs all operation; there is no additional filter transfer mechanism to purchase.

FEATURES

- Deposits 24 samples per operation directly into any type of small scintillation vials or test tubes.
- Completely harvests and deposits filtered samples from a 96-well plate in 5 minutes.
- PHD™ Accessories fill 96-vials with LS cocktail.
- Trays hold vials in the same orientation as original plate.
- Includes one vial tray of your choice; additional trays may be ordered separately.
- Easy operation saves labor and avoids handling of samples.
- Stainless steel and aluminum mechanism lasts a lifetime.

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- Trays hold vials in the same orientation as original plate.
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## Popular PHD™ Items

**Glass Fiber Filter Strips**
- 240-1 Filter Paper for 200A/290

**96-Vial Trays**
- 212-1 17.4mm Hole Size
- 212-2 16.25mm Hole Size
- 212-4 14.5mm Hole Size
- 212-5 For 12x75mm Test Tubes

**Harvester Heads (with Vacuum Chambers)**
- 220C-1 For 96-well plates (standard)

**Vacuum Pump**
- CH-728 Vacuum Pump for 200A/290

**Wash & Waste Fluid Accessories**
- 200-4 In-line Filter Assembly
- 217 Wash Pump for all PHD™ Models
- 250 Flow Control (Hot/Cold) Valve

**Setup Kits**
- 213 Basic Setup Kit
- 213-1 Deluxe Setup Kit

**Replacement Components**
- 200-1 O-Ring Set for 200A/290 (Glue Included)
- 200-2 Screen Set for 200A/290
- 200-5 Pre-cut Tubing for Plates
- 200-3 Coiled Tubing (not pre-cut)
- 230A-1 Vacuum Chamber Gasket (set) for 200A/290

## Also From Brandel
- Fully-Automated Harvesting Systems
- Semi-Automated Harvesters & Deposit/Dispensing Systems
- Micro Dispensing Systems
- Automatic Dispensers
- High-Capacity Plate Carousels
- CO₂ Incubators
- Automated Plate Sealers
- Suprafusion2500: Robotic Perfusion Systems
- Suprafusion1000: Semi-Automated Perfusion Systems
- Electrical Stimulators
- Microfractionator
- Gradient Fractionator
- Multi-Channel Fraction Collector
- Versaflow™ Multi-Channel Peristaltic Pumps
- Syringe Pump
- Filter Plates/Filter Paper