

## PHOENIX

### Phoenix Liquid Handling System

Fast...

Accurate...

Compact...

Precise...



## The Phoenix Liquid Handling System

The Phoenix is a multiposition, high-throughput liquid-handling platform used around the world that incorporates a space-saving design with flexible dispensing options. The competitively priced Phoenix provides increased efficiency and cost-effectiveness. It is designed to meet the demanding requirements of protein crystallography, high throughput screening and genomics laboratories. This unique instrument combines the precise low-volume dispensing capabilities of a syringe head with an on-the-fly non-contact nanodispenser.

## Ideal for Protein Crystallography

The Phoenix has found its widest use in the Protein Crystallography area, where its accuracy, speed and precision makes it the perfect instrument for doing sitting drop, hanging drop and microbatching. It takes less than 50 seconds to dispense the protein and the screen to the small wells or membranes. The speed of dispensing the screen and protein eliminates the problem of evaporation even when dispensing as little as 100 nanoliters. Both the 96 syringe head and the nanodispenser have a large volume range. The 96 syringes are equipped with flexible needles that will not be damaged in the event of a misplaced plate. The 96 head can dispense from 100 nanoliters to 100 microliters and the nano dispenser has a range of 50 nanoliters to over 10 microliters. The precision and accuracy are found in the graphs that follow.

## Quick Change Dispensing Heads

The Phoenix accomplishes fast, efficient liquid handling by moving air-tight seals inside 96 or 384 precision glass syringes arrayed in microplate spacing. The innovative design of the Phoenix dispensing head allows users to easily remove the entire syringe head for servicing or for changing to a different syringe style. An operator can change syringe heads in minutes, without the use of any tools.



The removable head design enables users to optimize the configuration of the Phoenix for a specific application by installing the proper dispensing head. The 96-syringe head is available in 100, 250, 500, 1000 volumes with a choice of flexible, TFA-coated stainless steel or wide bore stainless steel needles—or choose the 384 head with flexible or stainless steel needles.

## Nine Plate Position Deck

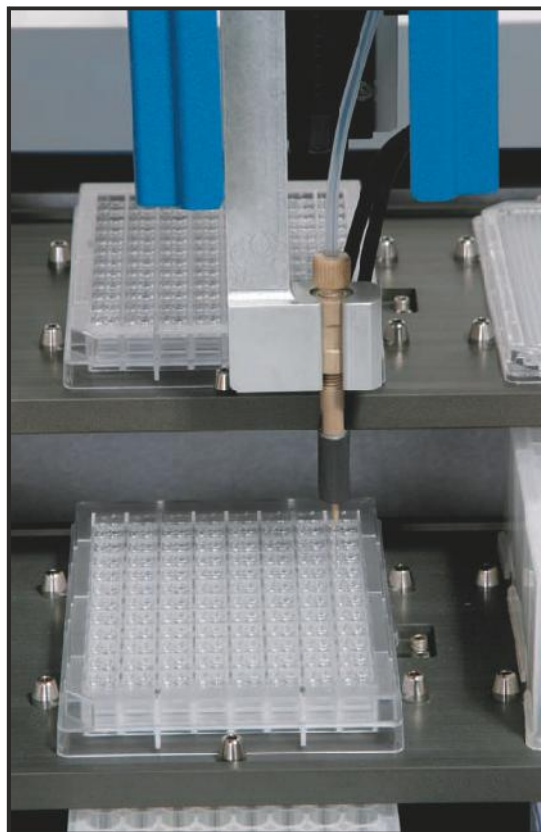
The Phoenix has nine assay positions: 6 source or destination, plate positions, 2 reagent positions, 1 wash station position, and 1 nano wash station. All motion is verified through the use of encoders. The deck will accommodate deep well blocks as well as 96, 384, 1536, or 3456-well plates.

## Washing

The Phoenix system includes computer controlled peristaltic pumps and wash reservoirs for the syringe head as well as the nanodispenser.

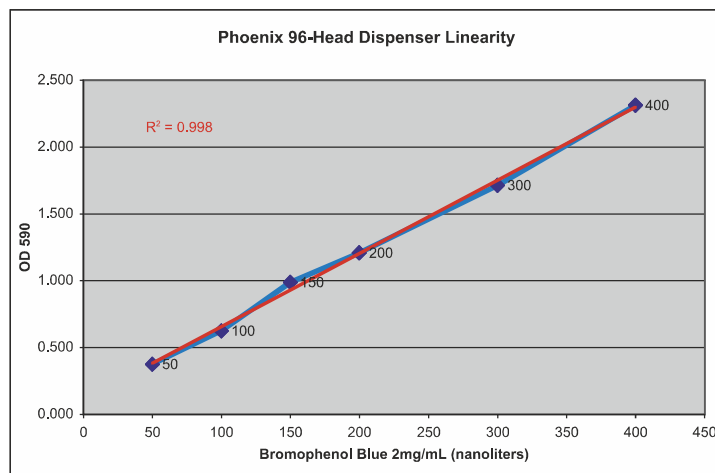
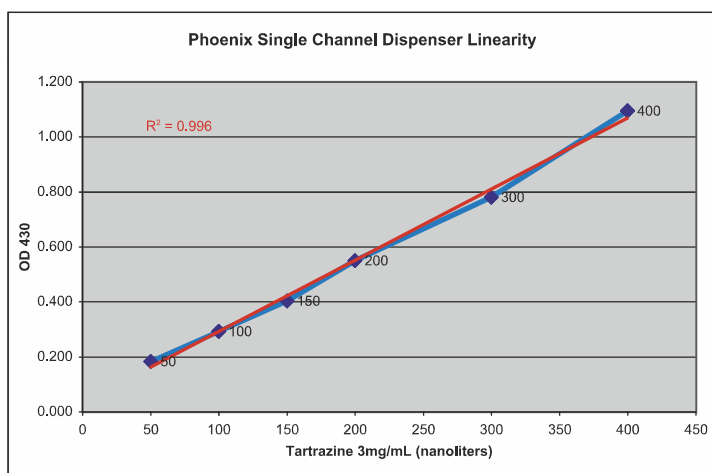
## Fast, Accurate, Non-contact Dispensing

The optional non-contact dispensing head is capable of dispensing volumes down to 100 nL. With on-the-fly dispensing, a 96-well plate can be filled in as little as 20 seconds. The system uses self-contained air pressure and a vacuum pump to aspirate and dispense, so there is no dilution or contamination with system liquid, as is common with other dispensers. Samples can be recovered with no contamination with system liquid. The nanodispenser is available in 1, 2, 3 and 4 channel versions.



Phoenix with 100 mL 96-Head with Flexible Needles and Single Channel Dispenser

Dispense Volume nL	96 head dispenser (OD 590)	CV%	Nano dispenser (OD 430)	CV%
400	2.312	4.28	1.095	3.25
300	1.712	4.33	0.781	3.84
200	1.206	4.82	0.550	3.61
150	0.988	2.92	0.404	3.33
100	0.623	3.09	0.292	3.83
50	0.375	5.45	0.183	4.13
0 (background)	0.068	1.91	0.072	1.67



## Graphics-Based Drag-and-Drop Software

Easy-to-learn and easy-to-use graphical interface features drag-and-drop protocol creation and real time protocol validation. The Windows-based software allows for user control of all parameters to optimize sample dispensing. Plates can be easily selected from the plate library, or new plates can be quickly defined.

