

GPD Global[®]

Precision Dispensing Systems

Dispensing Systems & Pumps



GPD Global[®]
Precision Dispensing Systems

Compact Dispense Systems

Hyperion

Compact and Efficient

Implementing a Hyperion dispense system in your production line will reduce your setup and processing time and increase your UPH and overall quality.

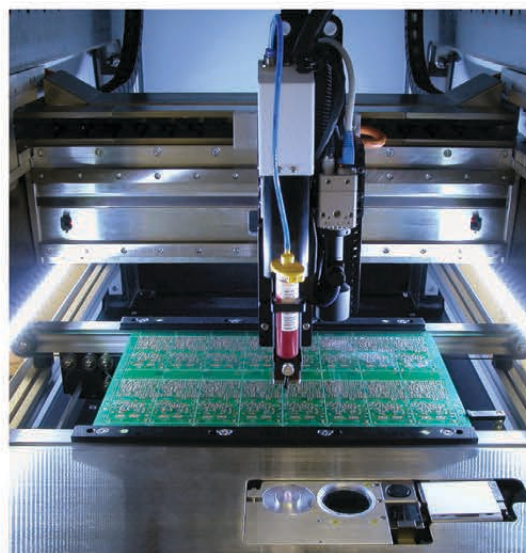
The GPD Global® Hyperion is a cutting-edge dispense system complete with a host of features that will improve your manufacturing experience. Smooth, quiet, and precise linear motor motion is perfect for clean room environments. The unique gantry design provides a large work area of 358 mm x 508 mm (14.09" x 20.0").

Hyperion operates a single pump during processing, but may accommodate different pump styles via an easy exchange. Each pump is equipped with a smart chip that indicates to the system which pump is installed and can support metrics tracking such as use and maintenance cycles. When pumps are exchanged, the operator executes a fully automatic nozzle calibration procedure that locates the nozzle tip in all axes, then cleans it with the integrated nozzle cleaner.

Hyperion is available in stand-alone and inline configurations. Inline configurations have a single zone used for processing. During transport, the belt moves with dynamic speed for quick, smooth transfer, reducing the time required to move a product through the system compared to traditional transport.

Vision images are crisp, clear, and in high definition for the best processing – no blurry images. The camera is located on a programmable axis used for focus so product of various heights and configurations can be processed without readjusting or refocusing the camera – another time saver.

Programming software with an intuitive interface for easy navigation is displayed on a large touch screen. Operators use common expressions and methods to navigate a feature-rich software system. Programming is quick and easy and files such as Gerber and 3D CAD may be used for on-screen programming. Traditional methods of jog and teach or manual data entry are also available.



Basic Specifications for Hyperion

SPECIFICATION	HYPERION
Footprint (X,Y)	0.61 m x 1.35 m (4.43' x 2.00')
Work Area (X, Y, Height)	358 mm x 508 mm x 70 mm (14.09" x 20.0" x 2.76")
Linear Speed	508 mm/s (20"/s)
Acceleration	1G
Operating System	Windows® based software
Number of Pumps	1
Automatic Vision System	Yes
Conveyor	Yes
Dual Rail	Optional

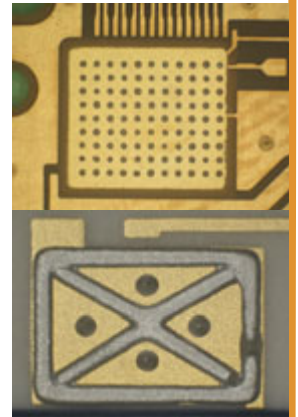
Fully Automated Dispense Systems

MAX Series

NON-HEATED Dispense Applications Demand This Precision Dispensing System



The MAX Series is the premier dispensing platforms in the GPD Global® Dispensing line up. These dispense systems are capable of a wide variety of dispense applications including MicroVolume, Solder Paste and Conductive Adhesive, LED Encapsulation, Surface Mount Adhesive, Encapsulations, and Masks, to name a few. Accuracy of the MAX Series is the highest in the industry at ± 0.025 mm (± 0.001 "). MAX Series systems are available in either stand-alone or inline configurations.



Basic Specifications for MAX & MAX II		
SPECIFICATIONS	MAX SERIES	MAX II SERIES
Work Area (X, Y, height): 2 pump stations 1 pump station	305 mm x 305 mm x 83 mm (12" x 12" x 3.25") 358 mm x 305 mm x 83 mm (14.1" x 12" x 3.25")	
Number of Pumps	1 or 2	
Accuracy	± 0.025 mm (± 0.001 ")	
Configurations	Inline Conveyor System or Stand-alone System	
Standard Features	• Automatic Vision • Automatic Calibration • Nozzle Cleaner	
Heat:		
Max Temperature	Not applicable	150° C maximum
Heated Zones	Not applicable	3 Heated Zones

MAX II Series

HEATED Dispense Applications Demand This Precision Dispensing System



When heat is required on the substrate or fluid, the MAX II Series delivers. With an available 3 zones of heat for inline systems as well as fluid heating, your process will be completely under control. For batch applications, the work table is heated and can be customized for your product. In both system configurations heat is transmitted via heated vacuum fixtures or via forced air. The PCD dispense pump is a perfect match for heated applications as the volume of dispensed fluid will not vary, even when the viscosity changes, and will not drip or drool.



Fully Automated for Large Products

DS Series

For Applications that Demand
Large Board Processing and/or Versatility

The DS Series of dispensers is a robust, large format platform designed to handle all types of applications with ease. Ideal for dispense applications utilizing adhesive, solder paste, conductive adhesive, potting compounds, and more.

DS Series systems are compatible with all GPD Global® dispense pumps. For the utmost in versatility and capability the DS Series is able to handle up to 3 different dispense pumps. The system is able to toggle between each of the pumps in a single program.

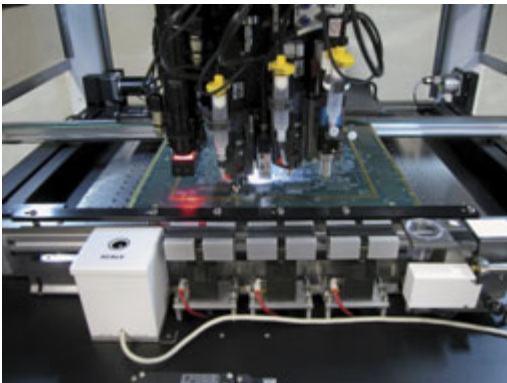
The DS Series has a host of standard features making it a well-rounded performer. All systems come with Automatic Vision for product alignment, fully automatic XYZ nozzle calibration, automatic nozzle cleaner, and a contact surface sensor. For sensitive applications, a laser surface sensor is available. The DS Series is versatile enough that the operator can change between a laser and contact surface sensor when applications demand it.

Numerous optional items are available to optimize your dispensing experience. ClearVu™ Vision is a programmable zoom and focus camera that allows your system to align on the smallest of product features. The Process View Camera will magnify the dispense process at the dispense tip in real-time. These speed up process development as well as allowing the operator to keep an eye on product. Contact the factory regarding other available features.

The DS Series is highlighted by its large work area, up to 609 mm x 609 mm (24" x 24"), the largest standard platform in the industry. Available in standalone or inline it can be configured to meet your production needs.

Heating for large boards is available in the DS Series. Inline configurations are available with 3 zones of heat. When configured as a stand-alone system, the entire work table may be heated and include vacuum or forced air.

DS Series with 3 Dispense Pumps



Basic Specifications for DS Series		
SPECIFICATION	DS9000	DS9100
Work Area (X, Y)	457 mm x 457 mm (18" x 18")	609 mm x 609 mm (24" x 24")
Number of Pumps	Up to 3 mounted	
Accuracy	±0.038 mm (±0.0015")	
Configurations	Inline or Stand-alone	
Standard Features	• Automatic Vision • Automatic Calibration • Nozzle Cleaner	
Heat:	150° C maximum	
Max Temperature	3 Heated Zones + Fluid and Pump	
Heated Zones		

Bench Top Manufacturing

Island Series

Table Top Dispense System

Island Series robots give you versatility to do simple, repetitive automation jobs. Work areas range from 12" square to 16" square with 4" of Z-axis travel. All Island Series robots are compatible with our line of precision dispensing pump systems that include the Micro-Dot, HyFlo, NCM, and PCD lines. Going to an entry level robot no longer requires compromising dispense quality!

Island Series are ideal for applications such as thermal gels, gasketing, masking, etc. A wide range of reservoir sizes may be used – from small syringes to 30 oz containers to external reservoirs. This wide range of fluid volume ensures you will spend time producing and not continually replacing fluid.

Versatility is built into the Island Series robot. The work area has a versatile plate that may be customized to accommodate a wide range of product geometry. Custom fixturing with or without vacuum may also be used. All pumps are connected to the system via our Taper-Lock™ mounting hardware for easy exchange and set up.

Easy to Program

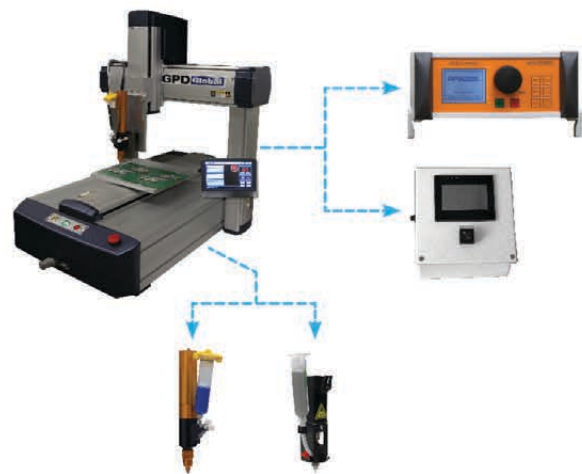
Operation of the robot is done via a hand-held, full color touch screen or computer interface. All programming functions are available in both teach formats so either can be used. The touch screen has intuitive function and, when not in use, mounts on an ergonomic swing arm. A system may be programmed on the computer, then stored and started with the touch screen or by pressing the start key on the front of the robot.

Up to 100 programs may be stored in the controller. Programs are easily exchanged between robots via an SD card. No need to program the same product into multiple units.



Interface with GPD Pumps

All Island Series robots are compatible with our line of precision dispensing pumps that include the Micro-Dot, HyFlo, and PCD lines.



Basic Specifications for Island Series		
SPECIFICATION	ISLAND 3S4	ISLAND 4S4
Range of Operation (X,Y)	300 mm x 400 mm (11.8" x 15.75")	400 mm x 400 mm (15.75" x 15.75")
Range of Operation (Z)	100 mm (4")	
Number of Pumps	1, Tandem operation available	
Repeatability (X,Y)	±0.05 mm (±0.002")	
Repeatability (Z)	0.02 mm (0.0007")	
Programming Method	Touch screen	
Program Capacity	100 programs	

Award-Winning Fluid Dispense Pump

PCD Pump

It's Not an Auger –

It's Continuously Volumetric Dispensing

PCD Technology revolutionizes how you dispense and how you perceive dispensing. Proprietary progressive cavity dispense technology for continuously volumetric dispensing. Outstanding capabilities for low-to-mid/high viscosity fluids. No drip or drool and repeatable results over the entire pot life of the fluid.

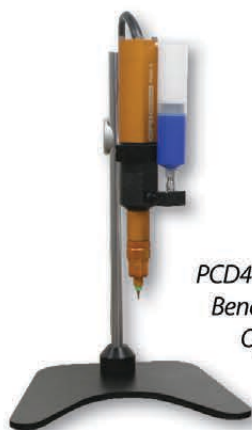
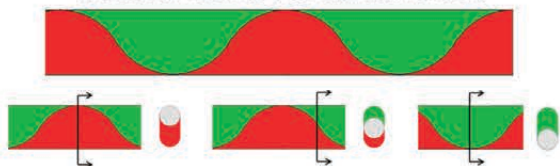
No Drip or Drool with Water Under Pressure Plus a Wide Viscosity Range



Progressive Cavity

The primary components of a PCD are a single helix rotor and a dual helix stator. The rotor rotates inside the stator and generates cavities of fluid that are 180 degrees out of phase. As the rotor rotates, the cavities of fluid are moved through the stator. The results is volumetric dispensing with the dispense determined by how much the rotor is rotated.

At any point in the rotation of the rotor, the slice of fluid has a constant dimension.



PCD4 with Stand for Bench or Manual Operations

PCD for Integration

The PCD4 dispense pump may be used in a stand-alone, laboratory environment or integrated into other systems through a fully programmable controller. The controller allows the pump to be programmed in 1 of 3 modes: Volumetric, Time, or Start/Stop.

Your Robot



PCD4 Integration Kit



Basic Specifications for PCD3L & PCD4L

SPECIFICATION	PCD3L	PCD4L
Theoretical flow rate per minute	0.12-1.48 ml/min*	0.004-6.0 ml/min*
Minimum dispensing amount ml	0.001 ml	0.004 ml**
Priming volume	<1cc	
Parts touched by medium	HD-POM / Stainless Steel	
*Volume flow dependent on viscosity and primary pressure.		
**Reference medium approx. 1.000 mPas at 20° C.		

Jetting Simplified

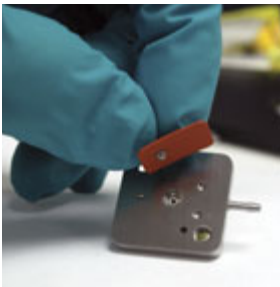
NCM5000 Pump

Compatible with Wide Range of Fluids

Jetting pumps are excellent for dispensing small volumes of fluid at high rates of speed. The NCM5000 simplifies jetting to its basic elements - this means easy set up, cleaning, and maintenance for you. The drive system is designed for reliable pneumatic operation at high speeds.

Dispense Range

The NCM5000 is compatible with a wide range of fluids: UV curables, SMT Glue, Underfills and LED encapsulants to name a few.



Easy Setup & Cleaning

Consisting of only 3 primary parts, the NCM5000 has a main body, a flexible diaphragm with ball, and a nozzle plate, all of which are easy to install, disassemble, and clean. With only two screws to disassemble the entire pump and only two wetted parts, jetting couldn't be simpler.



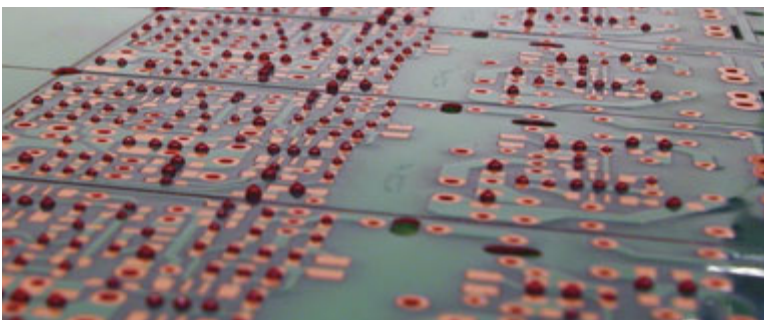
Optimizing Dispense Process

When not used on a GPD Global platform, the pump can be controlled with an offline controller on a bench top or from an external control system.

- **Pump Operation Pressure** - controls the force of fluid exiting the pump
- **Pump Open Time** - adjusts fluid volume of a single shot
- **Reservoir Pressure** - controls reservoir fill speed
- **Pump Dispense Dwell** - controls droplet frequency
- **Nozzle Temperature** - compensates for temperature fluctuations within the facility and enhances compatibility of fluid characteristics for jetting



Nozzle Selection	
DESCRIPTION	PART No.
Carbide Nozzle Plate, 100 µm	2650-0153
Carbide Nozzle Plate, 125 µm	2650-0132
Carbide Nozzle Plate, 150 µm	2650-0133
Carbide Nozzle Plate, 200 µm	2650-0134
Ceramic Nozzle Plate, 75 µm	2650-0135
Ceramic Nozzle Plate, 100 µm	2650-0154
Ceramic Nozzle Plate, 125 µm	2650-0136
Ceramic Nozzle Plate, 200 µm	2650-0137



Small Volume & High Viscosity Pumps

Micro-Dot Pump

Specifically Designed for MicroVolume Dispensing

An Auger based pump with precision motion control and machining to dispense the smallest volumes of fluid with ease. Suitable for solder pastes, conductive adhesives and glues.

The Micro-Dot pump is a refined dispense pump based on auger technology. Depending on the volume of fluid and the type of fluid being dispensed, we offer a wide range of auger designs from Ultra Shallow to Ultra Deep.

Dispensed dots 0.250 mm (0.010") and smaller may be dispensed with the Micro-Dot pump when coupled with our Precision Dispense Tips. Precision Dispense Tips enhance fluid flow for small volume applications by reducing pressure at the dispense tip. The primary fluid path has a larger diameter while the final I.D. is only at the tip. Nozzle sizes range from 15 to 32 gauge and are available in metal or ceramic.

The Micro-Dot pump works very well for pastes and glues that need to be dispensed in very small volumes, like dots smaller than 0.250 mm (0.010") at high flow rates.



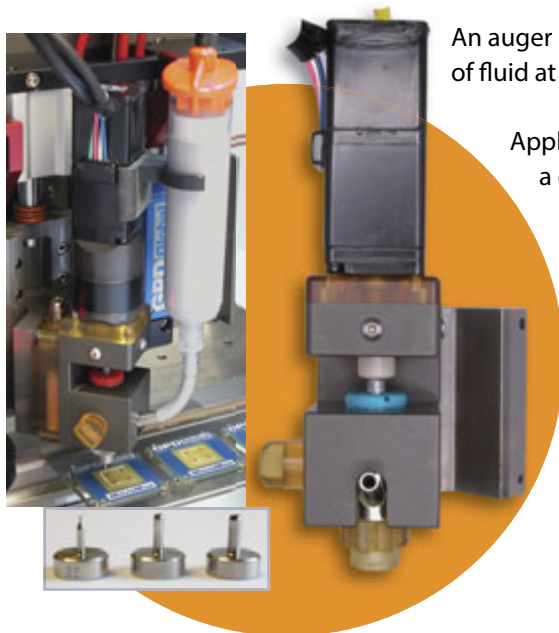
Auger/Cartridge Assembly Selection

DESCRIPTION	PART NO.
Auger and Cartridge, RT, Standard	22142012
Auger and Cartridge, RT, DP	22142014
Auger and Cartridge, RT, UD	22142011

Both **Micro-Dot** and **HyFlo** pumps may be interfaced with other dispense systems via our tabletop controller. Simply provide a start signal and the pump will dispense the desired quantity or will remain on until the pump is turned off.

HyFlo Pump

High Volumes & Flow Rates for Mid-to-High Viscosity & Abrasive Fluids



An auger based pump with the design criteria of accurately moving large volumes of fluid at a high rate of speed. Especially well suited for abrasive fluids.

Applications that require fluids in high volumes or of a high viscosity require a diversion from the standard dispense pump. The HyFlo dispense pump is designed to push large volumes of mid-to-high viscosity and abrasive fluids at high flow rates.

To accommodate abrasive fluids, the auger may be customized to allow abrasive particles to float between the auger and cartridge wall.

Auger/Cartridge Assembly Selection

DESCRIPTION	PART NO.
Carbide Cartridge, 16P Ultra Shallow	22140029
Carbide Cartridge, 16P Shallow	22141014
Carbide Cartridge, 16P Shallow, Relieved	22141049
Carbide Cartridge, 16P Standard	22141011
Carbide Cartridge, 16P Standard, Relieved	22141067
Carbide Cartridge, 16P Deep	22141009
Carbide Cartridge, 16P Ultra Deep	22141010
Cartridge, 16P Plastic, Standard Auger	22141015

Ultra Small Volume Dispensing

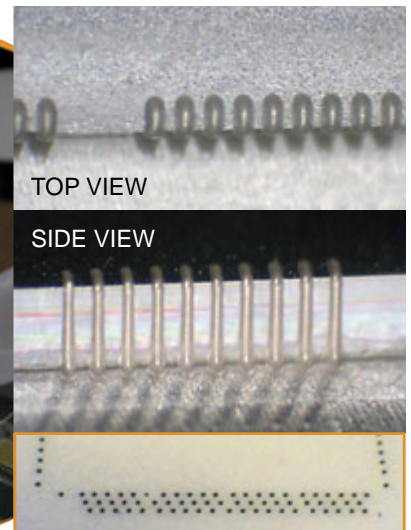
Nano-Piston Pump

For the Smallest Shots in Dispensing

Push the limits of small-volume dispensing with the Nano-Piston pump. Dots of conductive adhesive down to 100 μm and solder paste for 01005s are possible with the Nano-Piston pump.

The pneumatically-driven pump is easy to maintain while the precision nozzles and pistons provide continuous, accurate dispense results. Unlike other dispense technologies, the Nano-Piston pump has excellent startup and first shot repeatability.

The pump has interchangeable pistons and nozzles to meet any small shot requirements. For larger dots, multiple small shots may be combined into one. Alternatively, the piston and nozzle configuration may be changed to accommodate a larger single shot. Continuous bead dispensing is performed by cycling the pump at a high frequency and moving the gantry in the desired pattern. Additionally, bead widths down to 80 μm have been achieved with conductive adhesive.

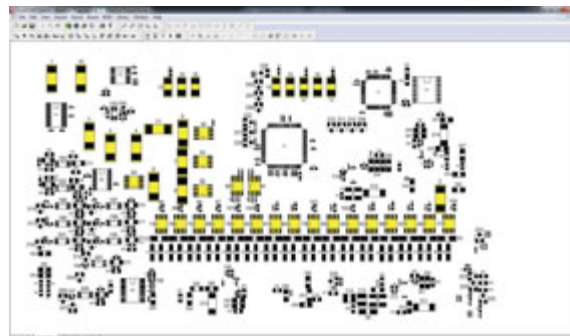
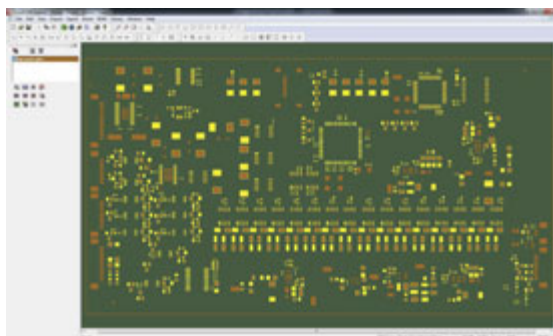


CircuitCam Data Translation

Quick & Accurate Conversion

CircuitCAM Data translation allows you to convert numerous data formats to a functional FLOWare® program. Formats such as Gerber and P&P data can quickly and accurately be converted, reducing process setup time and errors made in manual programming. Circuit Cam may be used from the comfort of your desk. Programs can be accessed by the dispense system over your internal network or by transferring via USB.

To see the benefits of CircuitCAM, we offer a free 30 day trial. Contact GPD Global Service department about obtaining your trial download.



Uniform Fluid Pressure Control



**Automatic Dispense
Repeatability for
All Fluid Types**

Pump Compatibility

FPC is compatible with a wide range of pump technologies: Auger, Piston, Needle, and even Jetting. The off-line control box allows you to enhance your current dispense technology quickly and easily. No programming or changes to your dispense routine are required. Just install FPC (electricity and air required), set your desired feed pressure, and experience a reduction in rework and reject product.



FPC - Fluid Pressure Control

**You Spend a Lot on Your Dispense Pumps –
Why Settle for Less than Optimal Performance?**

Patent pending

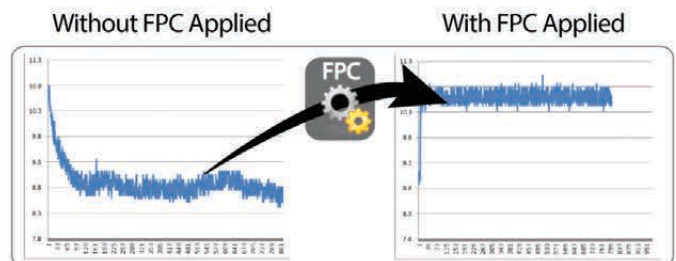
FPC solves the problem of varying dispense volume based on fluid level in the syringe or fluid reservoir. Dispense pumps by themselves are very repeatable. They will rotate the same amount when given a command and open and close at the same frequency for thousands or millions of cycles.

Why then do operators need to make adjustments to the dispense process to maintain a uniform dispense weight? The primary cause is a change in the supply of fluid to the pump. Variations in fluid feed result primarily from the changing level of fluid in the reservoir.

Use FPC for Optimal Performance

FPC monitors the input fluid pressure to your pump and automatically adjusts the feed pressure to the reservoir. The result is uniform dispense weight over the life of the reservoir and reduced operator interaction.

Dispensed Weight Testing



FPC is an upgrade for existing GPD MAX Series and DS Series platforms and can be configured into new systems.

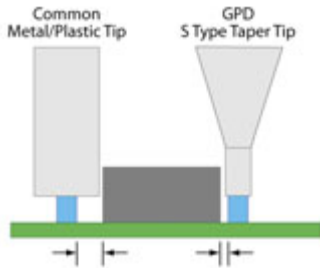
Optimize Both Flow & Control

S Type Taper Nozzles

Unique Design = Numerous Benefits

Unique conical design reduces back pressure through the material path, improving your existing dispense results. Eliminates clogging due to high pressure build-up through a long tube.

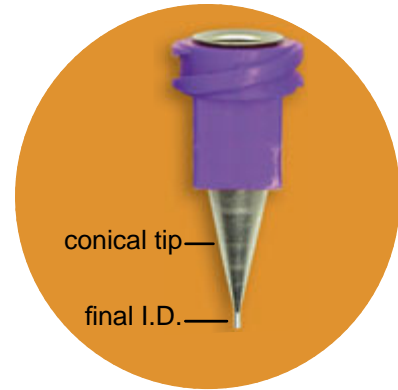
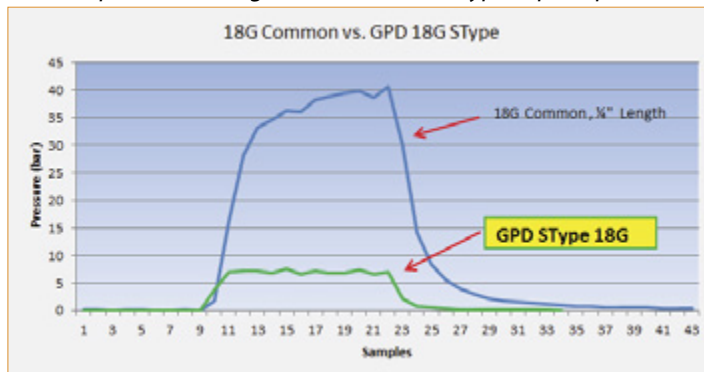
Dramatic difference in distance between needle tip & component



Benefits of S Type Taper Tips

- Use with any Luer nozzle system for immediate improvement
- Improved flow over commonly available Luer nozzles
- Better repeatability
- Less material wicking to nozzle side
- Smallest O.D. for given I.D.
- More rigid for given I.D.
- Can be cleaned for re-use
- Special coatings to meet process requirements

Dramatic pressure differential between a common metal, plastic-housing nozzle and GPD S Type Taper Tips



O.D. Comparison		
GAUGE	MEDICAL TUBING O.D.	GPD S TYPE O.D.
17 G	0.058" / 1.473 mm	0.049" / 1.245 mm
18 G	0.050" / 1.270 mm	0.042" / 1.067 mm
19 G	0.042" / 1.067 mm	0.035" / 0.889 mm
20 G	0.036" / 0.909 mm	0.032" / 0.813 mm
21 G	0.032" / 0.812 mm	0.025" / 0.635 mm
22 G	0.028" / 0.711 mm	0.020" / 0.508 mm
23 G	0.025" / 0.642 mm	0.016" / 0.406 mm
25 G	0.020" / 0.516 mm	0.012" / 0.305 mm

GPD S Type Taper Nozzles				
I.D.	O.D.	GAUGE	COLOR	PART No.
0.041" / 1.041 mm	0.049" / 1.245 mm	17 G	Pink	10/4784
0.034" / 0.864 mm	0.042" / 1.067 mm	18 G	Tan	10/4785
0.027" / 0.686 mm	0.035" / 0.889 mm	19 G	Green	10/4786
0.024" / 0.609 mm	0.032" / 0.813 mm	20 G	Light Blue	10/4787
0.022" / 0.564 mm	0.025" / 0.635 mm	21 G	Purple	10/4788
0.017" / 0.437 mm	0.020" / 0.508 mm	22 G	White	10/4789
0.013" / 0.335 mm	0.016" / 0.406 mm	23 G	Red	10/4790
0.009" / 0.233 mm	0.012" / 0.305 mm	25 G	Black	10/4791
0.006" / 0.152 mm	0.010" / 0.254 mm	30 G	Dark Blue	10/4792
0.004" / 0.102 mm	0.008" / 0.200 mm	32 G	Orange	10/4793
0.002" / 0.051 mm	0.006" / 0.150 mm	---	Yellow	10/4794

Summary

Machines

Machine Overview							
	HYPERION	MAX SERIES	MAX II SERIES	DS9000	DS9100	ISLAND 3S4	ISLAND 4S4
Work Area (XYZ)	36 x 51 x 7 cm (14.09" x 20.0" x 2.76")	36 x 31 x 8 cm (14.1" x 12.0" x 3.25")	36 x 31 x 8 cm (14.1" x 12.0" x 3.25")	46 x 46 x 9.5 cm (18" x 18" x 3.75")	61 x 61 x 9.5 cm (24" x 24" x 3.75")	30 x 40 x 10 cm (11.8" x 15.7" x 4")	40 x 40 x 10 cm (15.7" x 15.7" x 4")
Drive System	XY - Linear Motors Z - Servo	Servo	Servo	Servo	Servo	Micro Stepping Motor	Micro Stepping Motor
Accuracy	±0.0254 mm @ 3σ (±0.0010" @ 3σ)	±0.0254 mm (±0.001")	±0.0254 mm (±0.001")	±0.038 mm (±0.0015")	±0.038 mm (±0.0015")	±0.02 mm (±0.0007")	±0.02 mm (±0.0007")
Acceleration	1G	0.7G	0.7G	0.5G	0.5G	0.5G	0.5G
Linear Speed	100 cm/sec (39"/sec)	69 cm/sec (27"/sec)	69 cm/sec (27"/sec)	51 cm/sec (20"/sec)	51 cm/sec (20"/sec)	51 cm/sec (20"/sec)	51 cm/sec (20"/sec)
Footprint (XY)	61 x 135 cm (24.02" x 53.19")	94 x 119 cm (36.9" x 47")	135 x 119 cm (53" x 47")	117 x 99 cm (46" x 39")	132 x 119 cm (52" x 47")	60 x 78 cm (23.8" x 30.9")	70 x 78 cm (27.7" x 30.7")
Pump Capacity*	1	Up to 2	Up to 2	Up to 3	Up to 3	1	1
Vision System	Automatic Digital	Automatic	Automatic	Automatic	Automatic	N/A	N/A

* Tandem pumps is optional for all machines

Pumps

Pump Overview						
	PCD3	PCD4	MICRO-DOT	HyFlo	NANO-PISTON	NCM5000
Viscosity Range	0 < 65,000 cps	0 < 65,000 cps	8,000 - 500 K+ cps	8,000 - 500 K+ cps	8,000 - 50,000 cps	1-50,000 cps
Dispense Technology	Progressive cavity	Progressive cavity	Auger	Auger	Piston	Jet
Controls Type	Encoded Motor	Encoded Motor	Encoded Motor	Encoded Motor	Pneumatic	Pneumatic
Materials	HD-POM/ Stainless Steel	HD-POM/ Stainless Steel	Carbide	Carbide	Steel	Carbide, or Ceramic EPDM, Viton, or Silicon
Smallest Shot Size	1 µL	4 µL	0.152 mm Ø (0.006" Ø)	N/A	80 µm Ø	10 nL
Nozzle Type	Luer or Precision	Luer or Precision	Precision	Precision	Piston Precision	Flat or Capillary

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* Specifications are subject to change without notice
Rev. 10/25/2013

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