Prodigy™ Dispensing System

Innovation, performance and flexibility driven specifically toward the needs of the Automotive, Smartphone and Semiconductor markets.

Smarter, Faster and Highly Versatile
Prodigy is designed and built to deliver high-speed, extremely accurate dispensing. To enable 1.5g’s of acceleration, Camalot engineers resourced more than two decades of experience with linear motors and motion control systems. A state-of-the-art XY gantry system is the heart of this next generation dispenser. A new, innovative and rigid frame design combined with advanced linear drive architecture enables fast point to point moves, high accuracy and long term repeatable performance.

Superior pump technology is the key to accurate and repeatable precision dispensing, Camalot owns and designs all of the pumps offered on our systems. These proprietary pump technologies are fully integrated within the motion control system and driven by innovative software controls to create a robust dispense process. Closed-loop control provided by a weight scale and vision inspection techniques facilitates a “hands off” setup and allows a continuous means to monitor and maintain the tightest of process requirements.

**Pump options and features**

**NuJet™**
*Compact, Fast and Flexible*
- Designed and developed by Camalot
- Speeds up to 300 Hz
- Auto-tune for closed-loop calibration
- Dot sizes < 300 microns
- Underfill, encapsulation, epoxy type applications
- Dual pump pitching down to 28 mm

**NanoShot™**
- Suited for underfill and UV coating
- High speed - Up to 600 Hz
- Auto-tune feature for closed-loop calibration
- Fine resolution - dot sizes < 300 microns
- Capable of 50,000 DPH

**SmartStream®**
- Non-contact dispense pump for underfill applications
- Patented design created a stream of material
- Auto-tune feature for closed-loop calibration
- High material flow rates

**635 SD**
- Suited for dot type applications
- Footed or un-footed needles
- Precise material delivery
- Controllable dispense speed
- Fine pitch auger for MicroDot applications

**680 SD**
- Suited for line type applications
- Positive shutoff/no drip design
- Carbide parts minimize wear from abrasive materials
- High material flow rates
Camalot Prodigy

Dual Dynamic Head™ (DDH) Patented, Unrivaled Technology

The proprietary design of Dynamic Dual Head (DDH) provides the only fast and fully accurate solution for dual head simultaneous dispensing. The DDH option uses a unique and patented mini XY drive system on a second Z-axis to correct “real-time” and allow synchronous dispensing of both heads regardless of part to part rotation. This technique guarantees increased productivity whilst maintaining yields through unsurpassed accuracy.

- Independent, real-time adjustment for both dispense pumps
- Incorporates a patented mini XY drive system attached to the second z-axis
- Only solution that can synchronously dispense with two pumps regardless of part to part rotation
- Dispense productivity increased up to 100%
- No yield loss due to second head inaccuracy

Gantry System
Rigid frame design utilizes a powerful and highly accurate drive architecture that’s proven to deliver 35 micron dispense accuracy at full system speed.

Conveyor System
Transport system allows for up to 3 regular or heated zones, dual lane and invert/return options to be configured. A board staging upgrade increases X dispense area to 740 mm.

Digital Auto Vision
Powerful optics and processing algorithms allow for sub-pixel definition maximizing the capability for locating fiducials, and components/pad edges.

Dual Mode Weight Scale
Patented closed-loop weighing process allows measurement of dispense patterns for maximum accuracy.
CAMALOT PRODIGY SPECIFICATIONS

SMT Applications SMA, solder paste conductive adhesives
Semiconductor Packaging Underfill, encapsulant, thermal grease, lid seal, die attach, spacer bead epoxies

XY AXIS
XY Placement Accuracy* ±35 microns (0.0014) @ 3 sigma
Repeatability* ±10 microns @ 3 sigma
Speed 1000 mm/sec (39.4"/sec)
Acceleration 1.5g peak
Encoder Resolution 0.5 microns
Gantry Drive System Linear motors/encoders

Z AXIS
Z-Axis Accuracy* ±25 microns (0.001") @ 3 sigma
Repeatability* ±10 microns @ 3 sigma
Speed 187.5 mm/sec (7.4"/sec)
Encoder Resolution 0.6 microns
Z-Axis Type Closed-loop DC servo, ballscrew drive
Z-Sense Type CCD laser

DOT PLACEMENT PERFORMANCE
3.00 mm pitch**
Needle 40,000 DPH
SST/NanoShot/NuJet 50,000 DPH

TRAVEL
Max Dispense Area (XY)*** 440 mm x 558 mm (17" x 22")

BOARD HANDLING
Conveyor Type Flat belt with auto width adjust
Min Conveyor Width 25.4 mm (1.0")
Above Board Clearance 25.4 mm (1.0")
Underboard Clearance 30.5 mm (1.2")
Transport Height 895 mm to 965 mm (35.2" to 38")
Conveyor Options SMT SMT edge clamps w/vacuum support, 3 or 5 mm rail inserts
Conveyor Lift Chucks 13" x 10" or 10" x 10" area - Contact with vacuum or non-contact convection heating
Chuck Temperature Range Ambient to 130°C
Dual Lane Consult Factory

STANDARD FEATURES
Auto-Width Conveyor XYZ calibration station
Pre-dispense Station Purge Station
Flip Chip Calculator Auto-vision alignment
Material low level sensor Digital Camera System

ADDITIONAL OPTIONS
Dual Mode Weight Scale Die edge detection algorithms
Needle Cleaner/Detector 2nd Dispenser head upgrade
Laser height sensor Bulk material feed options
Vision System Dual on axis lightning with CCD camera
Computer & Operating System Desktop PC with Microsoft Windows 7
Program Storage Local hard drive, DVD-RW, Ethernet and USB ports
Program Method Teach Camera, off-line programming or text file download

FACILITIES
Power Requirement 200 to 250 VAC, 50/60 Hz, 20A
Air Supply Requirement 10 CFM (4.71/s) at >80 PSI (5.5 bar) filtered @ 5 microns
Machine Footprint 848 mm x 1735.17 mm x 1531.04 mm (33.4" x 68.3" x 60.28")
Machine Weight 1000 kg to 1200 kg (2205 lbs to 2645 lbs)
Crated Dimensions 1420 mm x 2200 mm x 1910 mm (56" x 87" x 75")
Crated Weight 1250 kg to 1450 kg (2756 lbs to 3197 lbs)
Industry Standards SMEMA, CE, SEMI S2 and S8

* At full speed
** 0.5 mm dot diameter 2.5 mm needle lift
*** Consult factory for specifics.
Electronic data sheet available on request. Specifications are subject to change without notice.