

PROCESS PLATFORM: AXIOM™ X-1020 SERIES

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Asymtek's Axiom™ X-1020 dispensing system meets high-volume dispensing requirements for inline semiconductor package manufacturing (flip chip and CSP), MEMs (micro-electromechanical systems), MOEMs (micro-opto-electromechanical systems), and other operations, like disk drive assembly.

When configured with Asymtek's DJ-9000 DispenseJet® valve for non-contact jetting, the Axiom is the system of choice for jetting precise volumes of fluid in dots, lines and patterns. Asymtek's patented jet dispensing is an enabling technology for applications such as wafer level packaging, stacked die underfill, CSP underfill on cell phone boards, and UV gaskets for LCDs.

Dispensing into 200 µm gaps between components, shields or into slots can be difficult or impossible with needle dispensing (e.g., the needle can clip and damage die, requiring needle calibration to compensate for bent needles, etc.). The Axiom system with the DJ-9000 can jet an underfill stream size of 50 µm from a safe distance above the component, shield or slot, achieving fillet sizes as small as 250 µm.

The Axiom system is configured with Asymtek's Fluidmove® for Windows® XP (FmXP) software. The FmXP software is easy to use and provides precise control of the dispensing pattern and various subsystems, including heat management, fluid management and part handling.

The Axiom X-1020 system features technologically advanced process control, including Asymtek's patented Mass Flow Control module (MFC) and Calibrated Process Jetting (CPJ™). MFC and CPJ ensure automatic fluid weight measurement and flow rate adjustment. Asymtek's contact or impingement heating ensures a reliable thermal environment with pre-dispense, dispense-, and post-dispense heat stations.

The X-1020 system is configurable for single- or dual-pump dispensing to accommodate a wide variety of fluids, processes and applications, and it flexibly fits a variety of assembly line configurations. Loaders/unloaders, film frame, or bare wafer handling equipment can be added for ultimate process flexibility. Dual lane systems are also available for high-volume production.

The Axiom system interfaces with other equipment upstream and downstream using SMEMA-standard hardware and software protocols.



FEATURES:

- Precise jetting of a wide variety of materials such as underfill, encapsulants, no-flow underfill, stacked die adhesives and more
- Superior closed-loop control of process variables — fluid weight, flow rate, and substrate heat — for optimized throughput and yield with minimal operator interface
- Enhanced pattern recognition system with robust blue-red on-axis lighting for a larger range of vision capability
- Linear-encoded X-Y drive system for ± 0.050 mm high-precision placement accuracy and ± 0.076 mm for high-speed applications

X-1020 SYSTEM SPECIFICATIONS

MOTION SYSTEM:

X-Y Placement Accuracy: ± 0.050 mm (0.002 in.), 3 Sigma
 ± 0.076 mm (0.003 in.), 3 Sigma (fast mode)
 Z Accuracy: ± 0.025 mm (0.001 in.), 3 Sigma
 High Precision Z Accuracy: ± 0.012 mm (0.0005 in.), 3 Sigma
 X-Y Repeatability: ± 0.025 mm (0.001 in.)
 Encoder Resolution: 5 micrometer
 X-Y Acceleration: 1.0 g peak with S-curve jerk control
 X-Y Velocity: 1 m/s (40 in/s) peak
 X-Y Travel: 501.4 x 541.5 mm (19.7 x 21.3 in.)
 Z Travel: 89.0 mm (3.5 in.)
 X-Y Type: Brushless DC servomotor driven, low-inertia, closed-loop, high-resolution cable drive with linear-encoder feedback
 Z Type: Brushless DC servomotor, rack and pinion Z-drive with precision encoder feedback

DISPENSE AREA (X-Y):

DJ-9000, DV-8K, DV-7K: 458.2 x 459.0 mm (18.0 x 18.1 in.)
 DP Pump: 442.2 x 418.6 mm (17.4 x 16.5 in.)

Dual Action (Valve 1/Valve 2):

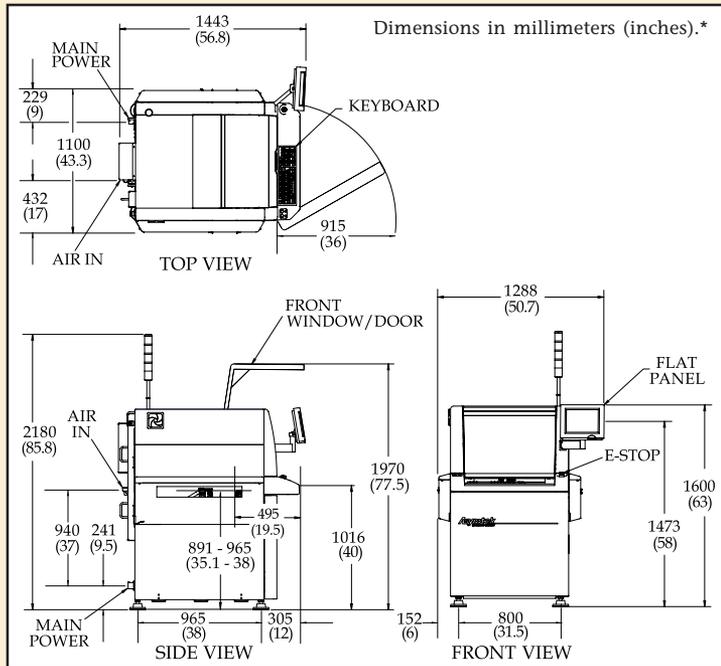
DV or DJ/DV or DJ: 356.9 x 432.5 mm (14.1 x 17.0 in.)
 DV or DJ/DP: 353.0 x 394.2 mm (13.9 x 15.5 in.)
 DP/DP: 309.0 x 394.2 mm (12.2 x 15.5 in.)

VISION AND LIGHTING:

Vision: Automatic pattern recognition system allows for optical registration of the work piece to reliably locate dispensing sites (compensates for up to $\pm 7^\circ$ rotational part misalignment)
 Lighting: On-axis red/blue LED with 255 independent light levels for each color
 Field of View: 7.0 x 5.0 mm (0.28 x 0.20 in.)

CONVEYOR:

Three-station O-Ring (Flat Belt optional)
 SMEMA-compatible: Height adjustable between 891.0 to 965.0 mm (35.1 to 38.0 in.)
 Width-Adjustment: Motorized, variable 19.0 to 459.7 mm (0.75 to 18.1 in.)



*All dimensions taken with board transfer height of 965 mm (38 in.)

COMPUTER:

Computer: Windows® XP PC
 User Interface: Color flat-panel display; ASCII keyboard/mouse; 10-100 MBS Ethernet port; DVD \pm RW; USB port

SOFTWARE:

User Software: Fluidmove® for Windows® XP
 Operating System: Windows® XP

FLUID DELIVERY METHOD:

Supports all Asymtek jets, encoded auger pumps, positive displacement, spool and pressure/time valves

FACILITIES REQUIREMENTS:

System Footprint: See illustration
 Air Supply: 621 kPa (6.2 Bar, 90 psi)
 Power (Mains): Adaptive power supply that accommodates supply voltages between 200-240 VAC, single phase, 30A, 50/60 Hz
 System Weight: 435.0 to 490.0 kg (960.0 to 1080 lbs.) depending on configuration
 Crate Dimensions: 1930.0 x 1321.0 x 1981.0 mm (76.0 x 52.0 x 78.0 in.)
 Crated Weight: 680 kg (1500 lbs.)

Standards Compliance:

SEMI-S2; SEMI-S8; SMEMA; CE

OTHER STANDARD FEATURES:

Calibration Module: patented Mass Flow Control module with scale, needle sensor and vacuum purge
 Light Beacon with audible alarm
 Low Pressure Sensor
 Tactile Height Sensor
 Three-station Lift Tables with Heat Control

OPTIONAL FEATURES:

Cleanroom Compatible
 Contact or Impingement, Three-station Substrate Heating
 Dual-action Dispense Head for selective dispensing of two different materials
 Enhanced Pre-heat Conveyor (over-the-board heat)
 Exterior 600 cc (20 oz.) reservoir for offline bulk fluid feed
 High Precision Z Axis
 Laser Height Sensor
 Low Fluid Sensor
 Material Handling: Freestanding Loaders/Unloaders, Film Frame Wafer; Bare Wafer, Dual Lane
 Process Development Hot Plate
 RTD Needle Heater
 SECS/GEM Interface

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All specifications are believed to be a true and accurate representation of system capabilities and are subject to change without notice. Contact Asymtek for your specific application requirements.

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