

**PCB Prototyping Machine**  
**Accurate 637R (A637R)**



- ▶ Working Area: Large (16x11x1.3 inch)
- ▶ Tool Change: Automatic (16 tools)
- ▶ Tool Calibration: Automatic with Precise Linear Gauge
- ▶ Depth Adjustment: Constant Automatic Surface Tracking
- ▶ Spindle Speed [rpm]: 5,000 to 100,000 programmable
- ▶ Spindle Motor: 3-phase induction motor; 100K/300W
- ▶ High precision positioning system with servo feedback
- ▶ Temperature compensation for the axes and material
- ▶ Video Camera / Microscope included

**Detailed Specification:**

<b>Model:</b>	<b>A637R</b>
<b>Working area (XxYxZ)</b>	406x279x33 mm, 16x11x1.3 inch
<b>Machine design</b>	Heavy duty aluminum and stainless steel platform
<b>Machine table</b>	16 mm, 0.625 inch stress relieved high stability aluminum alloy
<b>Tool holders</b>	16
<b>Internal Resolution (X,Y,Z)</b>	<b>0.1 μm</b> , 0.0000039 inch (0.0039 mil) *
<b>Positioning Repeatability (X,Y,Z)</b>	<b>1 μm</b> , 0.000039 inch (0.039 mil)
<b>Absolute Accuracy (X,Y)</b>	<b>7.5 μm at 254 mm (10 inch) **</b>
<b>Tool penetration control</b>	Constant Automatic Surface Tracking - <b>CAST™</b> , surface tracking relative to tool tip, fully programmable fully automatic. Uses a linear gauge with <b>1 μm</b> , 0.039 mil resolution.
<b>Tool Calibration</b>	Precise Linear Gauge on the Z axis (0.039 mil, 1 micron resolution)
<b>Spindle speed [rpm]</b>	5,000 to 100,000 programmable
<b>Spindle motor</b>	3-phase induction motor; 100K/300W
<b>Spindle drive</b>	<b>PhACdrive™</b> (sensorless, vector control, DSP based)
<b>Tool collet</b>	3.175 mm, 0.125 inch
<b>Spindle run out</b>	5 μm, 0.0002 inch max
<b>Collet control</b>	Pneumatic direct, 6-8 Bars (85-115 PSI)
<b>Tool Change</b>	Automatic
<b>Minimum drill diameter</b>	0.2 mm (8 mil)
<b>Minimum track size</b>	0.1 mm (4 mil)
<b>Minimum gap size</b>	0.1 mm (4 mil)
<b>Drilling speed</b>	Up to 180 drill cycles per minute (varies with the distance between holes)
<b>Homing system</b>	Gold plated precision needle contacts
<b>Max Travel speed (X,Y,Z)</b>	Up to 150 mm/s, 5.9 inch/s
<b>X/Y/Z positioning system</b>	2 phase bipolar stepper motors with servo feedback, precision lead screws anti-backlash nuts Precise Linear Gauge on the Z axis ( <b>1 μm</b> )
<b>X/Y/Z stepper drivers</b>	<b>PhSTdrive™</b> SMART stepper drive with servo closed loop control (DSP based), supporting temperature compensation for the screw and material **
<b>Interface to PC</b>	USB 2.0
<b>Spindle and vacuum start-stop</b>	Program controlled, manual override available
<b>Feed rate and Spindle speed</b>	Program controlled, manual override available
<b>Dimensions (WxDxH)</b>	610x483x330 mm, 24x19x13 inch
<b>Weight</b>	41 Kg, 90 Lbs
<b>Power Supply</b>	100~240VAC, 50/60Hz 415W (45W stand by)
<b>Machine control system</b>	<b>PhCNC440™</b> CNC motion controller (up to 3000 command/sec)
<b>Machine control programs</b>	Industry standard G & M codes ASCII, PHJ job files
<b>Control and Edit software</b>	PhCNC, Windows based (Windows XP / Vista / 7 / 8) x86 & x64 Supporting firmware update for <b>PhCNC440™</b> , <b>PhACdrive™</b> & <b>PhSTdrive™</b> (X/Y/Z)
<b>Imports</b>	Gerber RS-274X files; Excellon Drill and Definition files; AutoCAD DXF 2D files; CAM350 files; PhCNC printer driver.
<b>Camera</b>	Fiducial / inspection video camera / microscope (USB 2.0) included.
<b>Warranty</b>	1 year included in the price of the machine. It is an option to buy second and third year of warranty.

\* The high internal resolution is used to achieve better servo control; temperature compensation for the screw and material; low noise and smooth movement

\*\* To achieve the max accuracy, machine must be warm up for at least 30 min.