



# EQUIPMENT LIST

## MANUFACTURING

Crabil's major in-house equipment is listed below. Additional machines are under consideration and will be added as demand/schedules require.

HAAS VM-3 Vertical Machining Center – 2008	40 X 26 X 25 (X, Y, Z) 12000 rpm, 30 hp Inline Drive Spindle 40-Tool, Side Mount Tool Changer HRT 210 4 <sup>th</sup> Axis with Horizontal Tombstone High Speed Machining
HAAS VF-3SS Vertical Machining Center – 2004	40 X 20 X 25 (X, Y, Z) 12000 rpm, 30 hp Inline Drive Spindle 24-Tool, High Speed Side Mount Tool Changer HRT 210 4 <sup>th</sup> Axis High Speed Machining, 1400 IPM rapids
HAAS VF-2 Vertical Machining Center – 2006	30 X 16 X 20 (X, Y, Z) 7500 rpm, 20 hp with 2 Speed Gear Driven Spindle 20-Tool Changer HRT 210 4 <sup>th</sup> Axis
Mori Seiki NL-1500Y – 2006	10.2 X 23.2 X +-2.0 (X, Z, Y) 20 hp, 6000 rpm Main Spindle, 6000 rpm Rotary Tooling 12- Tool Turret Maximum Turning Diameter 14.0, Maximum Turning length 20.2"
Mori Seiki NL-1500SY – 2008	10.2 X 23.2 X +-2.0 (X, Z, Y) 20 hp, 6000 rpm Main Spindle, 6000 rpm Sub Spindle, 6000 rpm Rotary Tooling 12- Tool Turret Maximum Turning Diameter 14.0, Maximum Turning length 20.2"
Mori Seiki NH-4000 Horizontal Machining Center – 2006	22.0 X 22.0 X 24.8 (X, Y, Z) 14000 rpm, 25 hp High-Efficiency DDS Motor 60-Tool, Twin Pallet, High Speed Machining, Full 4 <sup>th</sup> Axis Tool Probing, Work Probing, 1970 IPM Rapid Thru Spindle Coolant, Tool Life Management
HAAS Mini Mill Vertical Machining Center – 2005	16 X 12 x 10 (X, Y, Z) 6000 rpm, 7.5 hp Belt-Drive 10- Tool, Carousel, High Speed Machining, 600 IPM Rapid

## INSPECTION

Crabil retains a third party company to perform tool inspection, maintenance and certification on a scheduled basis, appropriate for the tool and its use. Tools that are used more often than anticipated are re-certified as needed. Records are available upon request.

Mitutoyo Crysta Plus Manual CMM - 2004	20 X 28 X 16 (X, Y, Z) Resolution .00002" Accuracy .00006" volumetric error including probe error
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## SUPPORT EQUIPMENT

Crabil has tooling and machinery for second operation manufacturing, i.e. tapping, deburring, sanding, polishing, drilling, inserting etc. We use the most advanced tooling for special CNC operations like deep pocket machining and 3-D machining. Programming and translation of customer-supplied models is accomplished using *MasterCamX*®.

### Miscellaneous Inspection Support Equipment

Crabil keeps Gage Pins, Bore Gages, Micrometers, Anvil Micrometers, Depth Micrometers, Disc Micrometers, ID Micrometers, Blade Micrometers, Thread Micrometers, Radius Gages, Thread Gages, Sin Plates, Dial Indicators (.001, .0001, .00005), Height Gages, Dial & Digital Calipers, and Drop Indicators.

## SCOPE

In addition to machining capabilities, Crabil routinely provides the following additional services as a part of its supply:

- Engineering design
- Plating/Anodizing
- Coatings
- Precision assembly, welding
- Marking, screen printing and painting