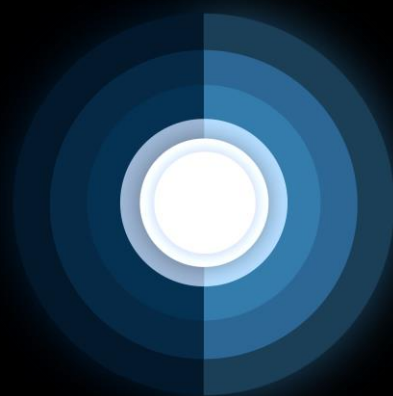




Samurai 120H

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High performance desktop  
machining centre



Samurai Machine tools





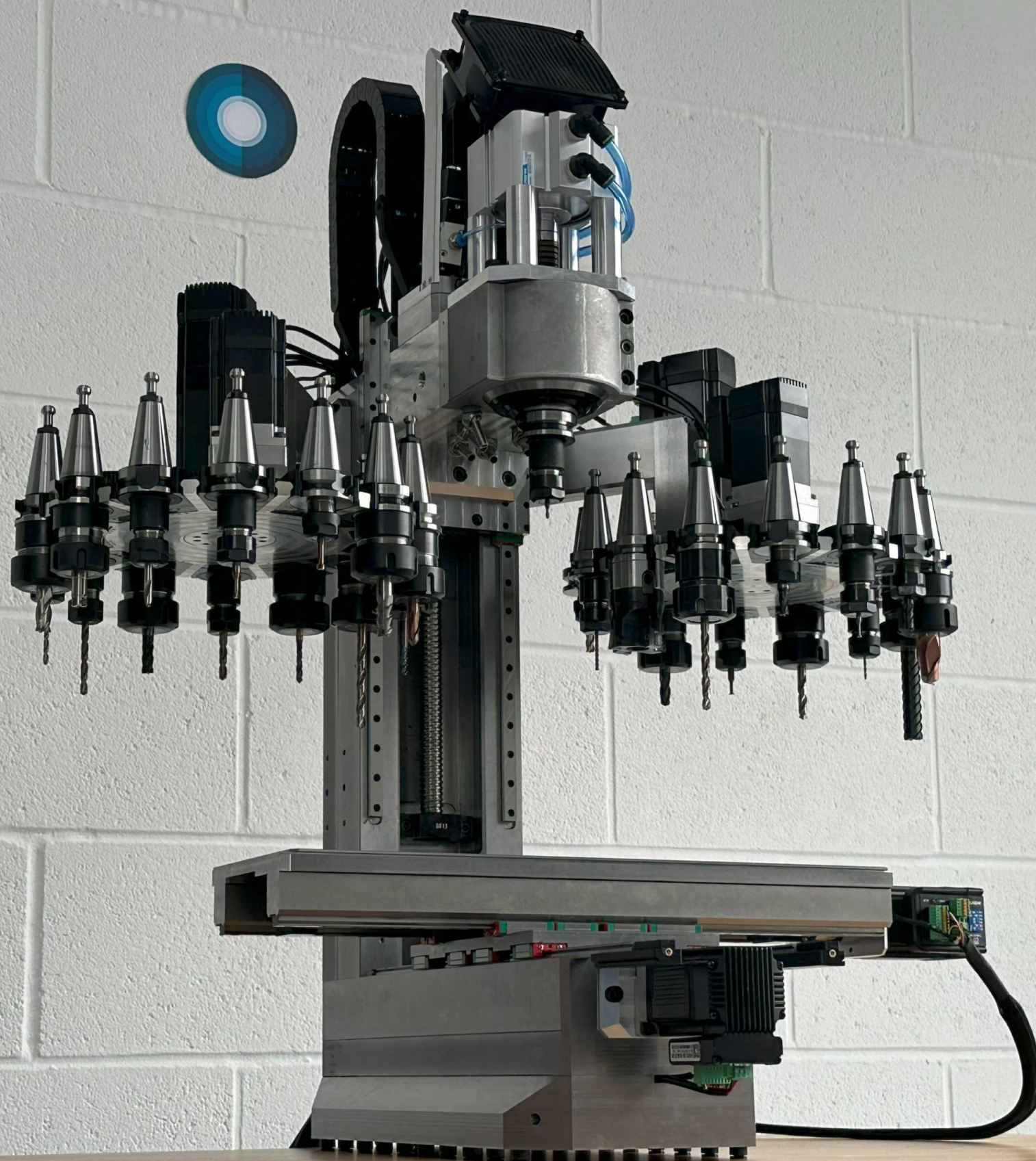
# Samurai 120H

The Samurai 120 desktop machining center has been developed to meet the increased demand for capable desktop milling machines in the hobby and light industrial market.

Optimised for quick setting of tools and fixtures, and capable of light production of aluminium and steel components. In addition, it can be used for light-duty machining of hard metals.

The machine's performance has been optimized to reduce non-cutting times, by keeping mass of the spindle and table low therefore allowing for faster acceleration/deceleration.

In order to design a machine that can handle a wide range of parts, Samurai M.T. has created a machine with the largest X and Z envelope in its class, and a 6% expandable Y axis. Along with many other important features such as BT30 Pneumatic drawbar servo driven spindle as standard, through spindle air, and high-performance tool changer.







# Samurai 120H



Drastically reduced non-cutting times to achieve the highest productivity in its class

Optimised frame design for maximum rigidity allowing high feed milling capability

New style of supreme-performance tool changer exclusive to Samurai machines.





# Basic Structure

The 120 uses a traditional c-frame design structure, with a new type of frame material.

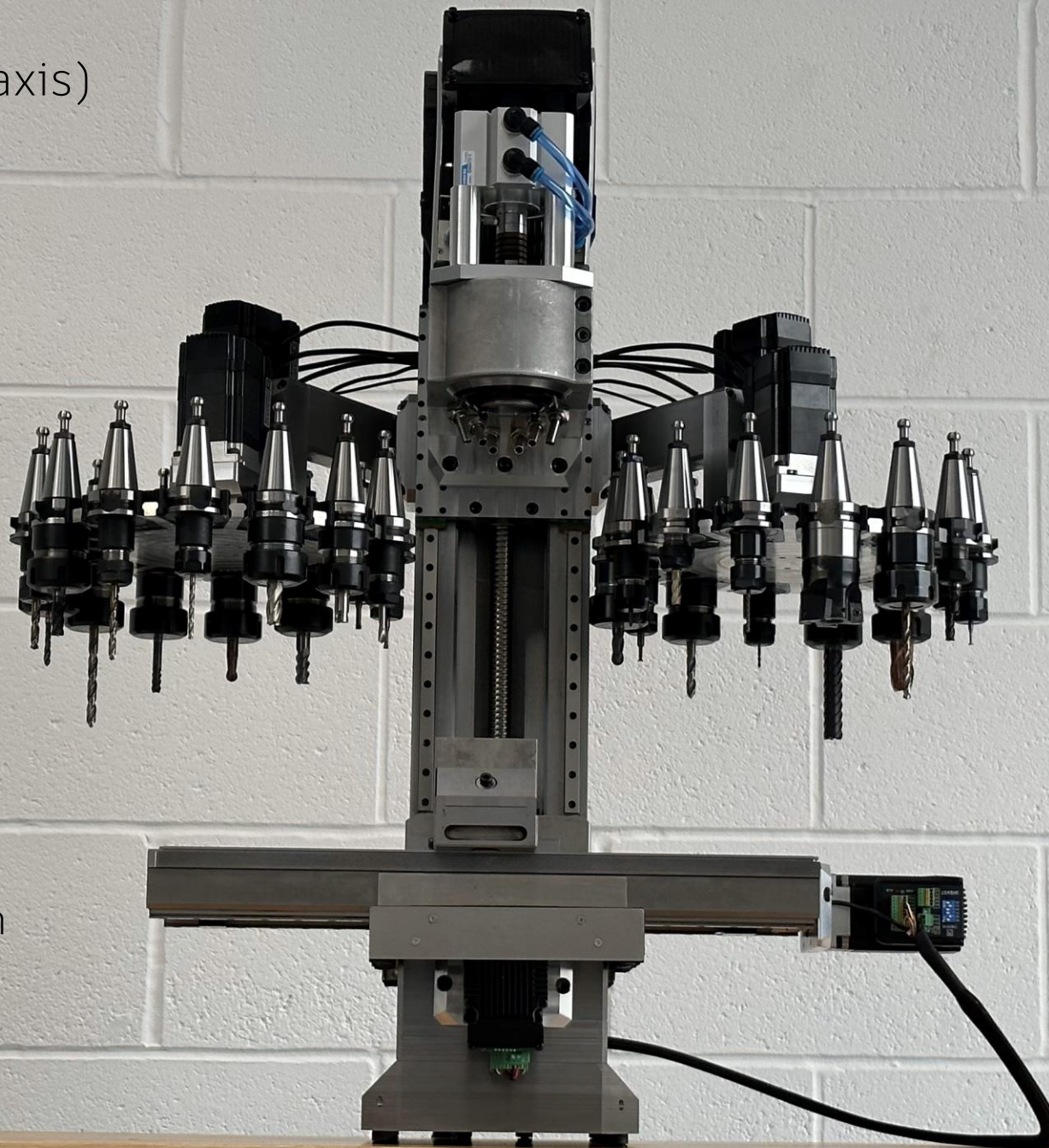
Travel distance (X Y Z axis)

X-axis 320 mm  
12.60 inch

Y-axis 180 mm  
7.08 inch

Z-axis 240 mm  
9.44 inch

Spindle – table 350 mm  
13.77 inch



# Axis System

Non-cutting times are drastically lower than competitor machines, achieved by minimizing the mass of assemblies in motion.

Rapid traverse rate (maximum, 40% recommended for daily use)

15 / 15 / 15 m/min

590 / 590 / 590 inch/min

Acceleration / deceleration time (maximum, 30% recommended for daily use)

0.4 / 0.4 / 0.5 G





# Spindle

HTD Belt driven spindle ensures timing and prevents slipping. Noise and vibration levels are reduced to improve operator comfort.

Max. spindle speed

**6400 r/min**

Max. spindle motor power

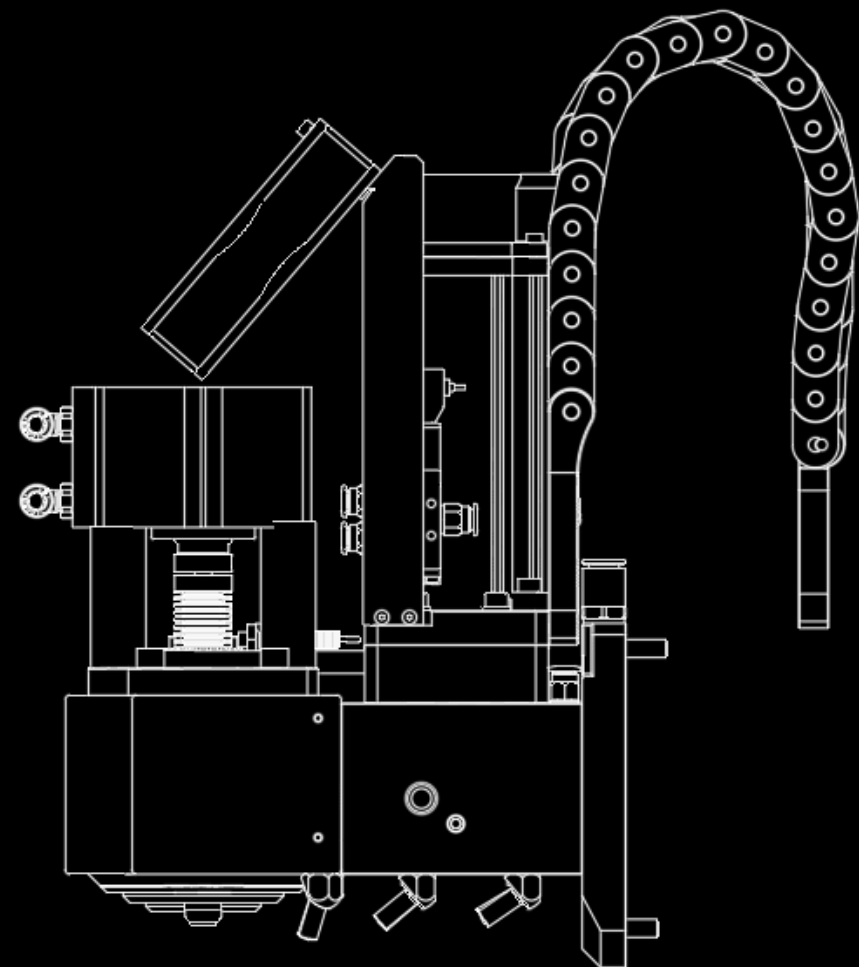
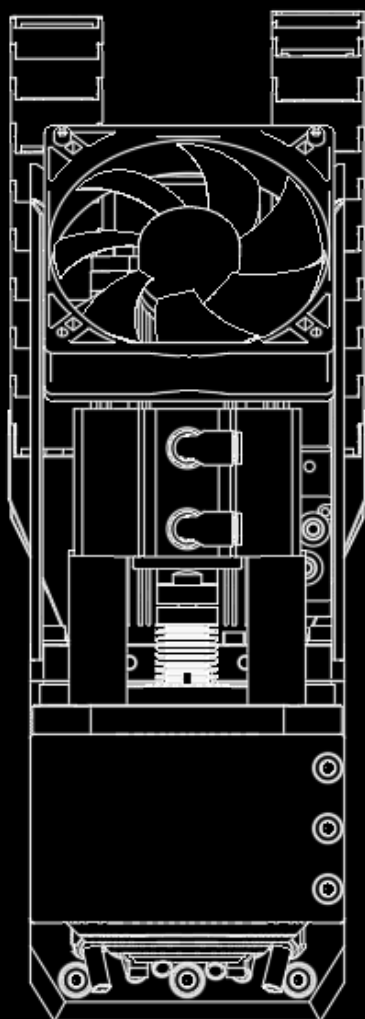
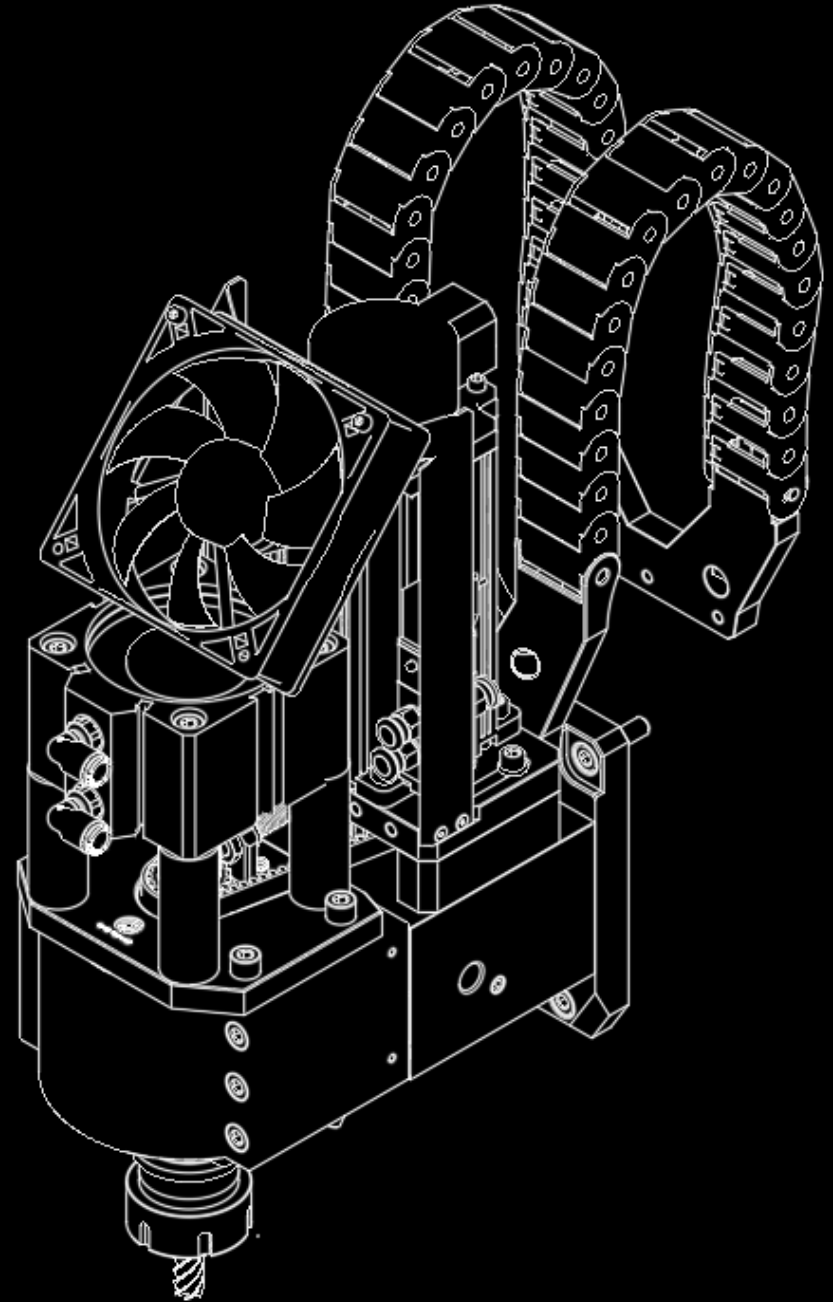
**1.2 kW**

1.6hp

Max. spindle torque

**5.5 n·m**

4 ft-lbs







# Table

20 x 20 mm M6 fixture pattern built into the table as standard, with custom options available.

Table size	Max undistributed weight on table	Max distributed weight on table
490 x 150 mm	25kg	40kg
19.3 x 5.9 inch	55 lbs	88 lbs



Samurai Machine tools have partnered with Saunders Machine Works to offer the ultimate fixturing solution. Find out more at <https://saundersmachineworks.com/>

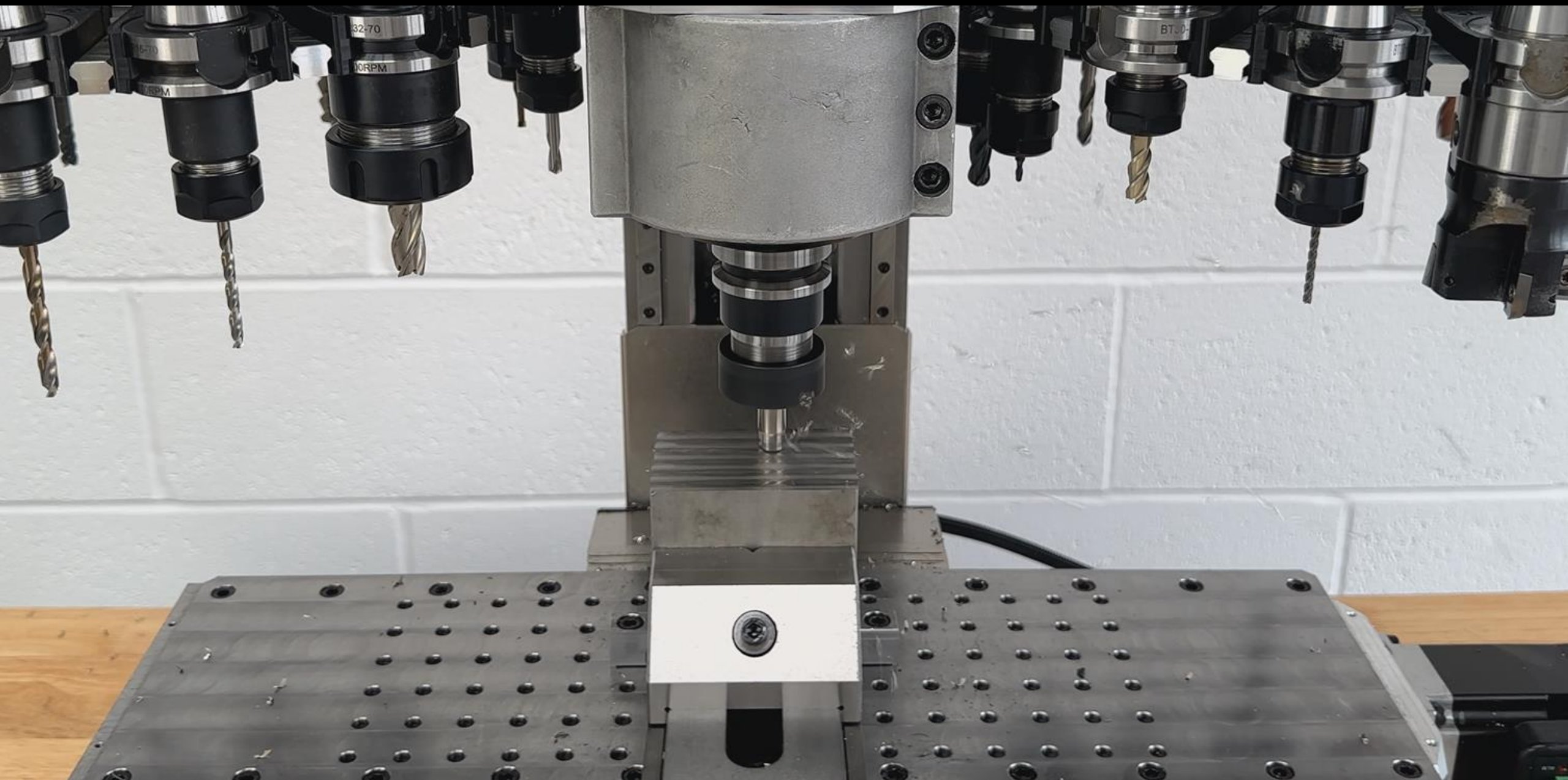






# Machining Performance

The 120 has excellent machining capability for its size and can handle a full range of operations such as face milling, high feed milling, end milling, U – drilling, and tap machining.



Material : 304 Stainless

Tool : KYOCERA MFH Micro 12/3 mm

Insert : LPGT 010210 ER-GM ST1400

## Metric

$V_c = 180 \text{ m/min}$

$f_z = 0.4 \text{ mm/t}$

$a_p = 0.3 \text{ mm}$

$a_e = 11.6 \text{ mm}$

## Imperial

$V_c = 590 \text{ sfm}$

$f_z = 0.016 \text{ ipt}$

$a_p = 0.012 \text{ "}$

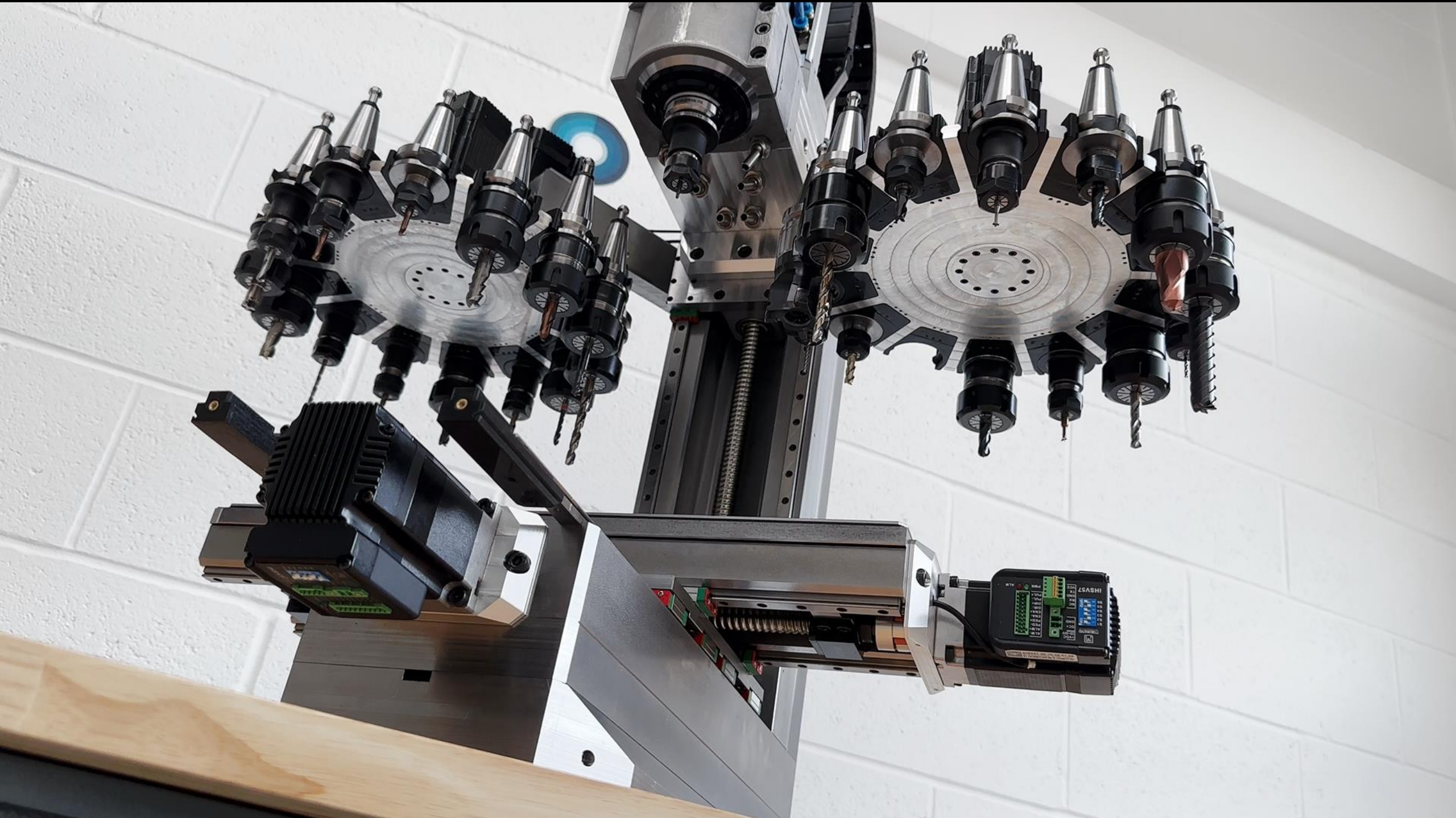
$a_e = 0.46 \text{ "}$





# Samurai Type 1 ATC

In order to maximise productivity, the 120 is capable of changing tools 1000% faster than competitors, while holding 300% more tools. This level of performance requires a new style of tool changer. Designed by Samurai M.T, the Type 1 ATC.



Tool to tool\* time

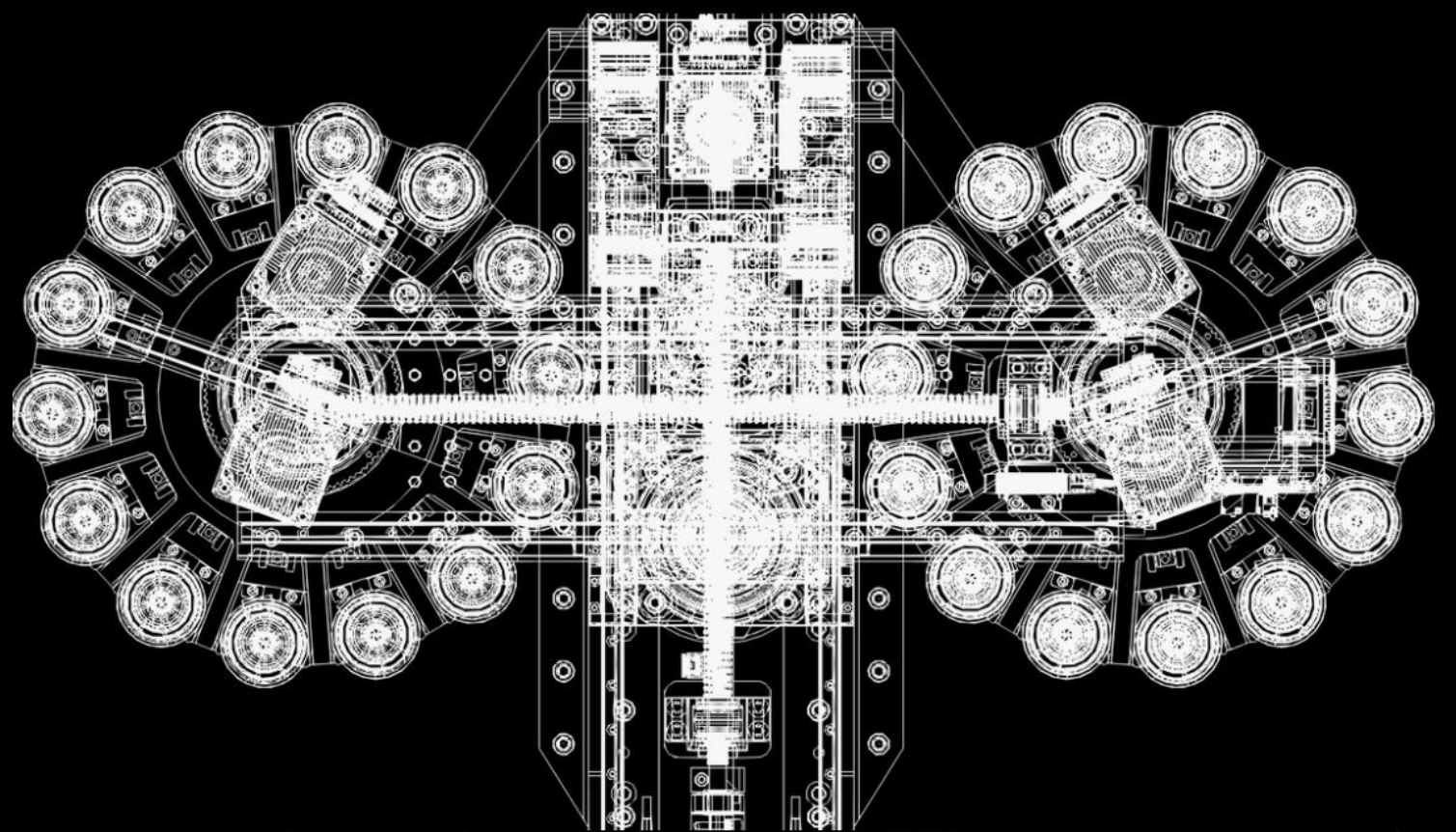
2.3 S

Chip to chip\*\* time

4.0 S

Tool storage capacity

28



\*Based on dual ATC at max speed.

\*\*Tested with dual ATC. May vary depending on operating conditions.





# Standard / Optional Specifications

Various optional features are available to satisfy specific customer needs.

Description	Features	120	
ATC	Single ATC	○	
	Dual ATC	○	
	None	•	
Axis drive system	Motor	Integrated servo	○
		Integrated closed loop stepper	○
	Ballscrew	5mm lead	•
		4mm lead	○
Spindle	16 position rotation lock		○
	6400 r/min 5.5 n·m		•
	5100 r/min 7.1 n·m		○
Coolant	Stainless steel jet nozzle		○
	Loc line plastic nozzle		○
Sheet metal	Y axis shielded way cover protection		•
	Full coolant proof protection		○
Base	Base plate		○
Lubrication	Manual grease application		•
	Automatic grease lubrication system		○
Motion components	Generic manufacturer C7		•
	Hiwin / THK C3-5		○
Axis	3 axis		•
	4 axis		○
	5 axis		○

\* Please contact Samurai Machine tools to select detail specifications

• Standard  
○ Optional





# NK530M Integrated controller

The Samurai 120 hobby is the ultimate desktop machining centre package. Unlike other machines of similar price, the Samurai has the option of a fully integrated high end cnc controller and pendant.

- Supports G-code files
- 2GB Memory
- 10" display size
- HPCS Contour smoothing
- Network port 1000 mb/s
- 3-6 axis
- Hard disk capacity 30GB
- S-type algorithm/ LEP algorithm, acceleration trapezoidal algorithm, high speed trapezoidal algorithm, high precision and high quality

# NK530M

HIGH END INTELLIGENCE  
**CNC CONTROLLER**

**WEIHONG**



Please contact for more information

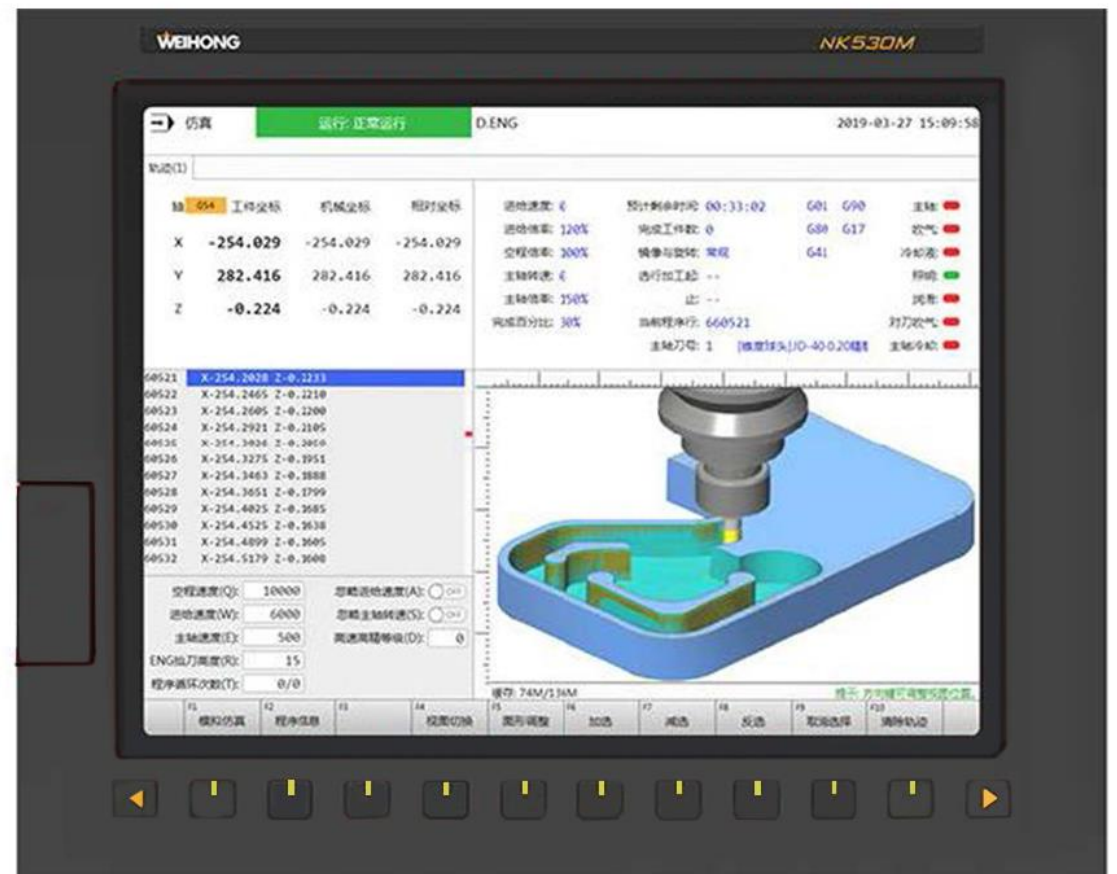
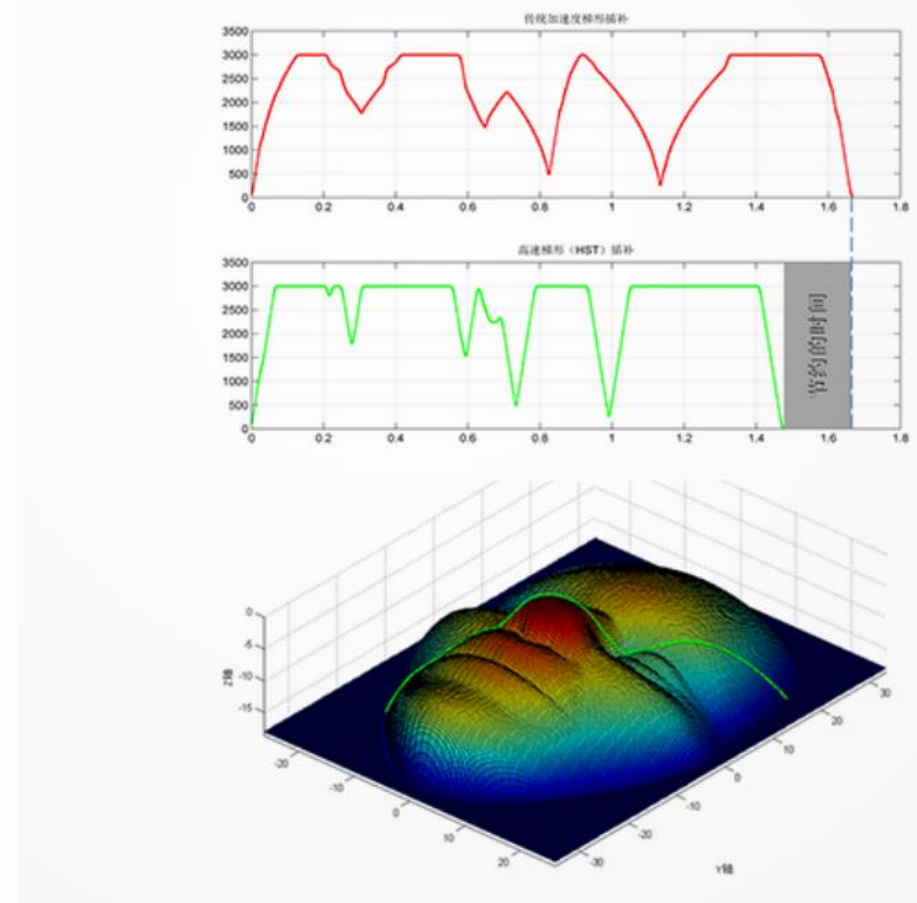
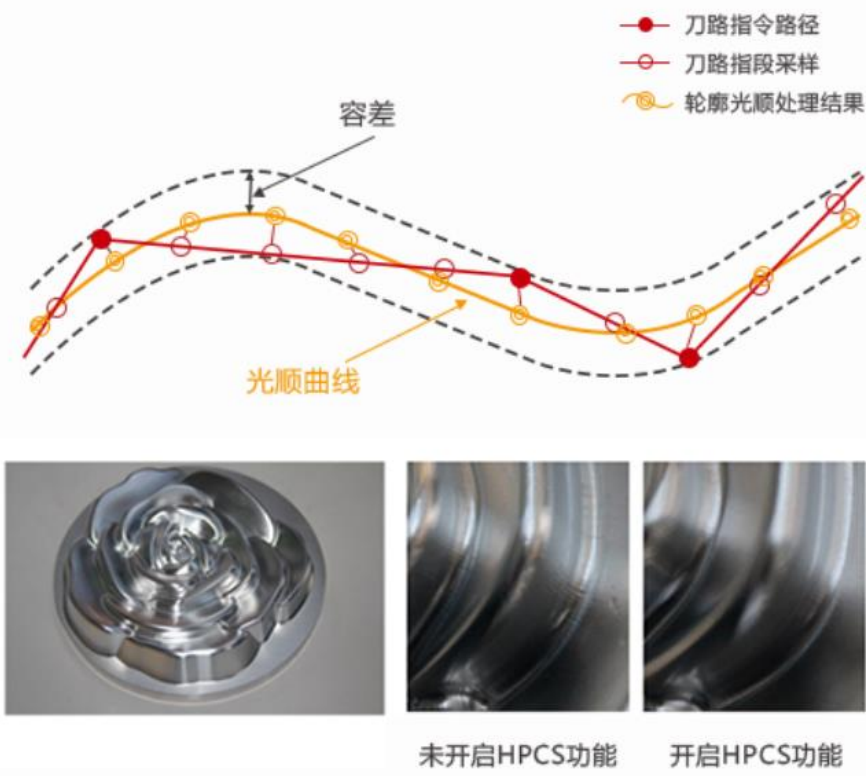




# NK530M Integrated controller

## High speed Trapezoidal algorithm

- Processing performance of small line segments is improved by 2 times
- Increase in efficiency by 9% - 20%
- Optimization of connecting actions, rapid positioning and superposition



Controller language will be English

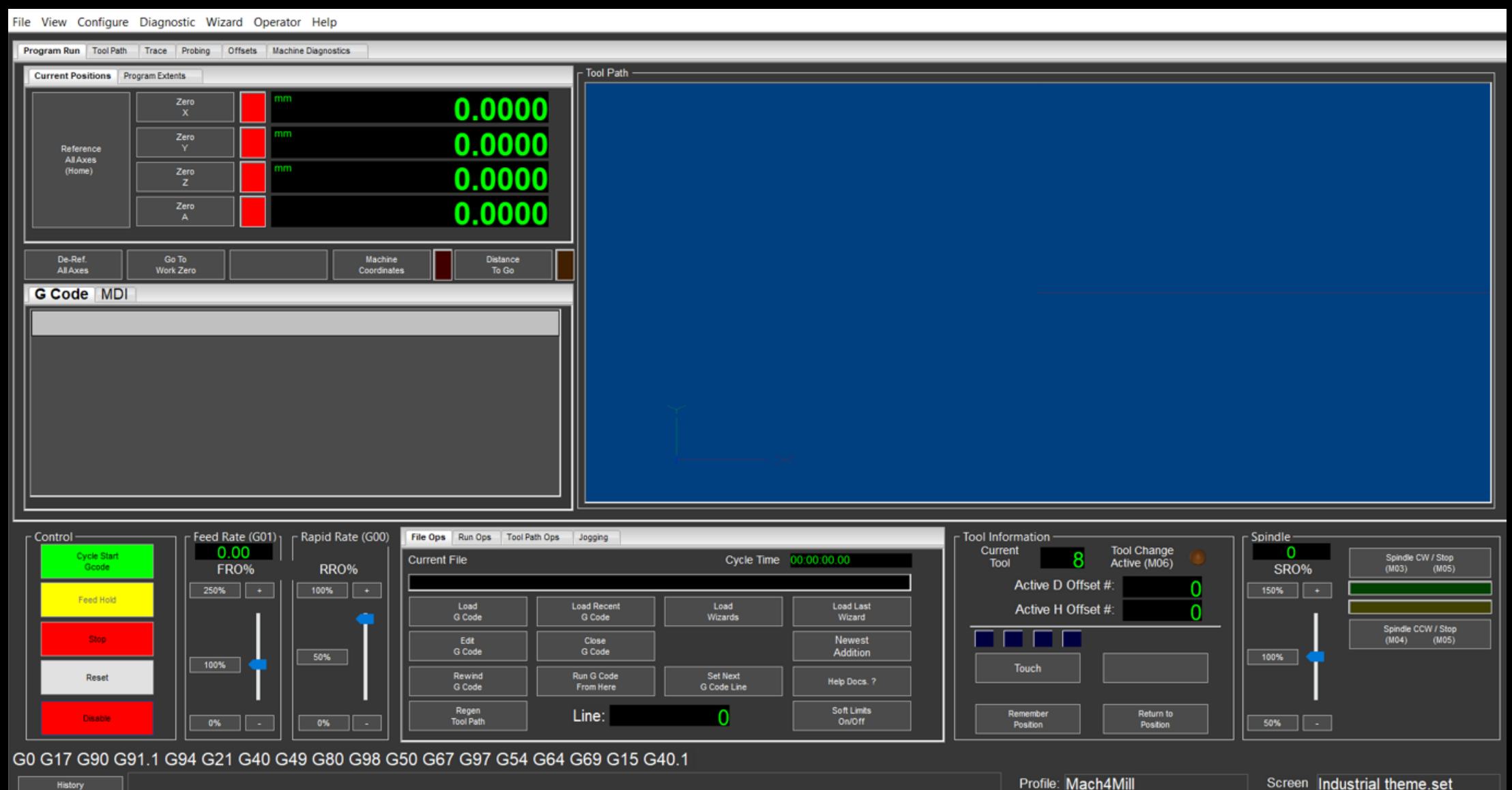




# Mach 4

The machine is also available with a Windows based cnc controller.

Please contact for more information on the high-end integrated controller.



The Samurai 120 comes with a Mach 4 hobby licence, as well as a cnc controller to allow connectivity to the machine via ethernet or USB.

## Mach4 Motion

Mach4 can control CNC machinery, PLC equipment, and robotics. The core is a full featured 'brain' that ensures all input and output devices are coordinated with motion.

All Motion control calculated in the core = less dependence on hardware and associated software driver.

Motion Device Drivers (Plug Ins) have standard format = common level of functionality between components, less complexity, easier and less costly to troubleshoot and support.

### Motion Control at the Core

All motion control calculations are completed in the core. Mach 4's core adapts to the speed (frequency) of the motion controllers attached. Mach 3 software relied on the hardware plug-in software and complex buffering schemes to ensure accuracy and coordinated motion. This redesign has several advantages.

Up to 100x faster response from button click to machine action  
Machine hold or speed changes happen as quickly as GUI buttons are selected on the screen  
Improved backlash control & more accurate screw mapping = less jitter and more accurate cuts  
Higher quality manual pulse generator (MPG) = very smooth jogging and positioning without lag time

### Some New Features

Type C (Fanuc) cutter compensation standard in Mach 4  
More accurate tool path compensation for different size tools  
Improved Anti-gouging  
Synchronous Motion of up to 6 completely separate coordinate systems (instances) at the same time  
Multiple heads, machines and processes to produce complex parts  
Asynchronous Motion (out of band axis) to control uncoordinated motion, such as Dual ATC carousels  
Pre-change tool changers  
Robotic loaders  
Multi-Axis Work Shifts and Head shifts to offset cutting tool path for multiple work piece holders and fixtures – Remote Control of machinery (IPC)





# Mach 4

## New Features Continued

Control or track CNC equipment from a remote location  
Greatly expanded troubleshooting  
Track the operation of equipment  
Link information between other computer applications  
Excel, e.c.t...

New Dynamic tool path display

View, rotate, pan, and scale the tool path quickly and easily to ensure G-code is creating the path you expect.

Improved screen layout and easily customizable screen modification tool.  
Change buttons, displays, and indicators easily, quickly, and on the fly.

- advanced motion interpolation and kinematic algorithms
- start, stop, pause, and resume execution of the program on your machine
- support for user-defined M-codes
- customizable M-codes (e.g.: custom M6, M3,... behavior)
- tested with DeskProto, SheetCAM, SolidCAM, MasterCAM, ArtCAM, Vectric, CamBam, MeshCAM ... generated G-code · 4-axes G-code supported
- rotational axes G-code supported
- measuring and probing supported
- spindle synchronization supported
- canned cycles supported
- transformations, different coordinate systems and offsets supported
- automatic and fully configurable homing procedure
- fully configurable tool change procedure
- automatic tool length measuring

## SOFTWARE REQUIREMENTS

Mach 4 Recommended Requirements

PREFERRED: 32 or 64-bit Laptop or Desktop

Windows 10, Windows 8, Windows 7

2Ghz CPU

1GB RAM

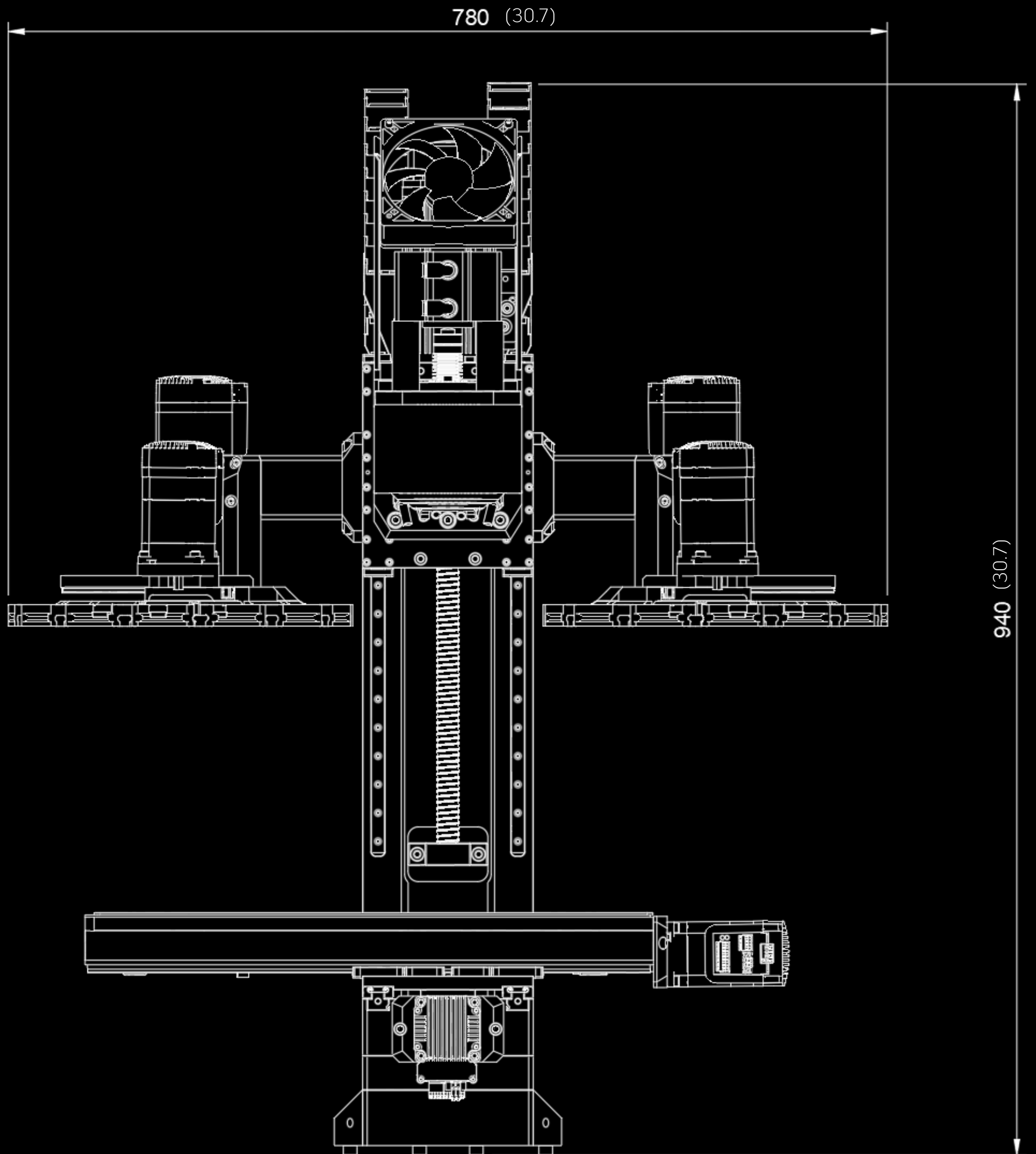
Video Card with 256MB RAM (Large G-code files, especially 3D files will require a video card with 512MB RAM or higher)







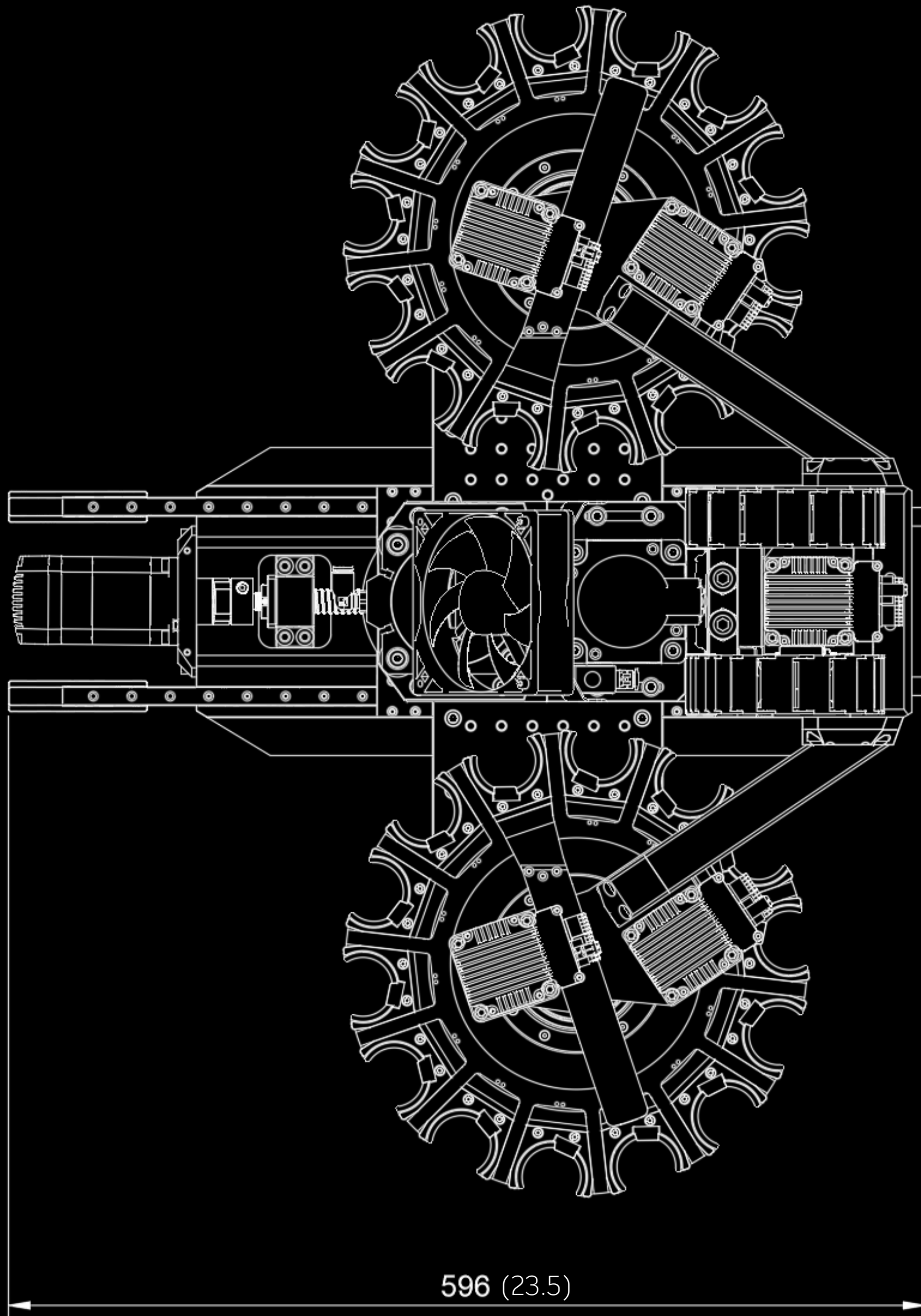
# Dimensions







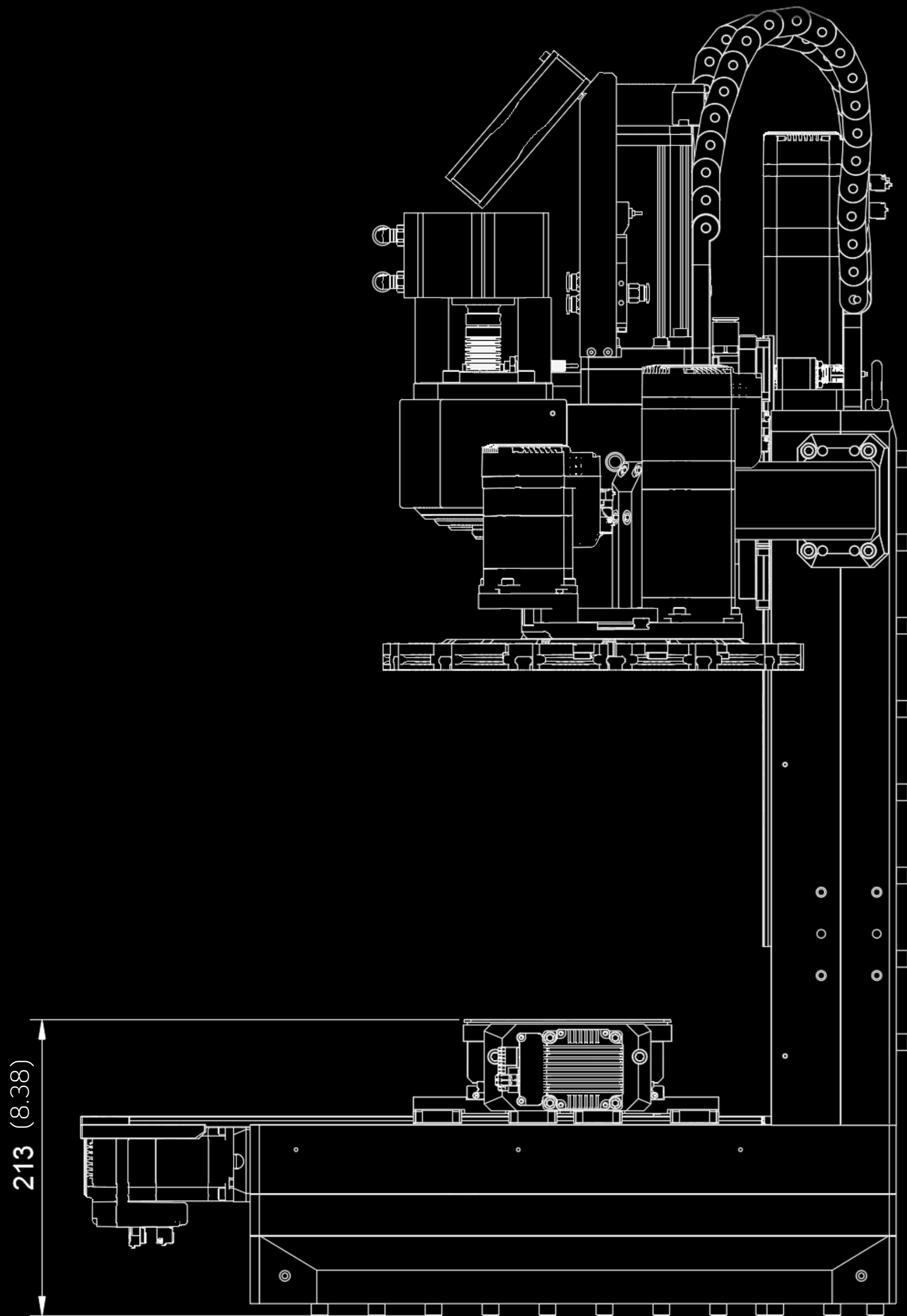
# Dimensions







# Dimensions







# Machine Specifications

Description		Unit	120	
Travels	Travel distance	X axis	mm (inch)	320 (12.6)
		Y axis	mm (inch)	180(7.08)
		Z axis	mm (inch)	240 (9.44)
	Distance from spindle nose to table top		mm (inch)	350 (13.77)
Table	Table size		mm (inch)	490 x 150 (19.3 x 5.9)
	Table loading capacity		Kg (lb)	25 (55)
	Table surface type		mm	M6 + 6H8 dowel 20x20
Spindle	Max. spindle speed		r/min	6400
	Taper		-	BT30
	Max. spindle torque		N · m (ft-lbs)	5.5 (4)
	Max. spindle power (5min/continuous)		kW (Hp)	1.2/0.4 (1.6/0.54)
Feedrates	Rapid traverse rate	X axis	m/min (ipm)	15 (590)
		Y axis	m/min (ipm)	15 (590)
		Z axis	m/min (ipm)	15 (590)
Automatic tool changer	Tool storage capacity		-	28
	Max. tool diameter		mm (inch)	50 (1.97)
	Max. tool length		mm (inch)	175 (6.9)
	Max. tool weight		kg (lb)	1.2 (2.64)
	Tool selection		-	Fixed pocket
	Tool change time (Tool-to-tool)		sec	2.3
	Tool change time (Chip-to-chip)		sec	4.0
Power requirements	Machine power supply	Rated voltage	VAC	220
		Rated capacity	kVA	2.5
	Compressed air supply		bar (psi)	7-8 (101-116)
Machine dimensions	Height		mm (inch)	940 (30.7)
	Length		mm (inch)	596 (23.5)
	Width		mm (inch)	780 (30.7)
	Weight		kg (lb)	180 (400)

\* For more details please contact Samurai Machine tools

\* Specifications and information contained within this catalogue may be changed without prior notice.