

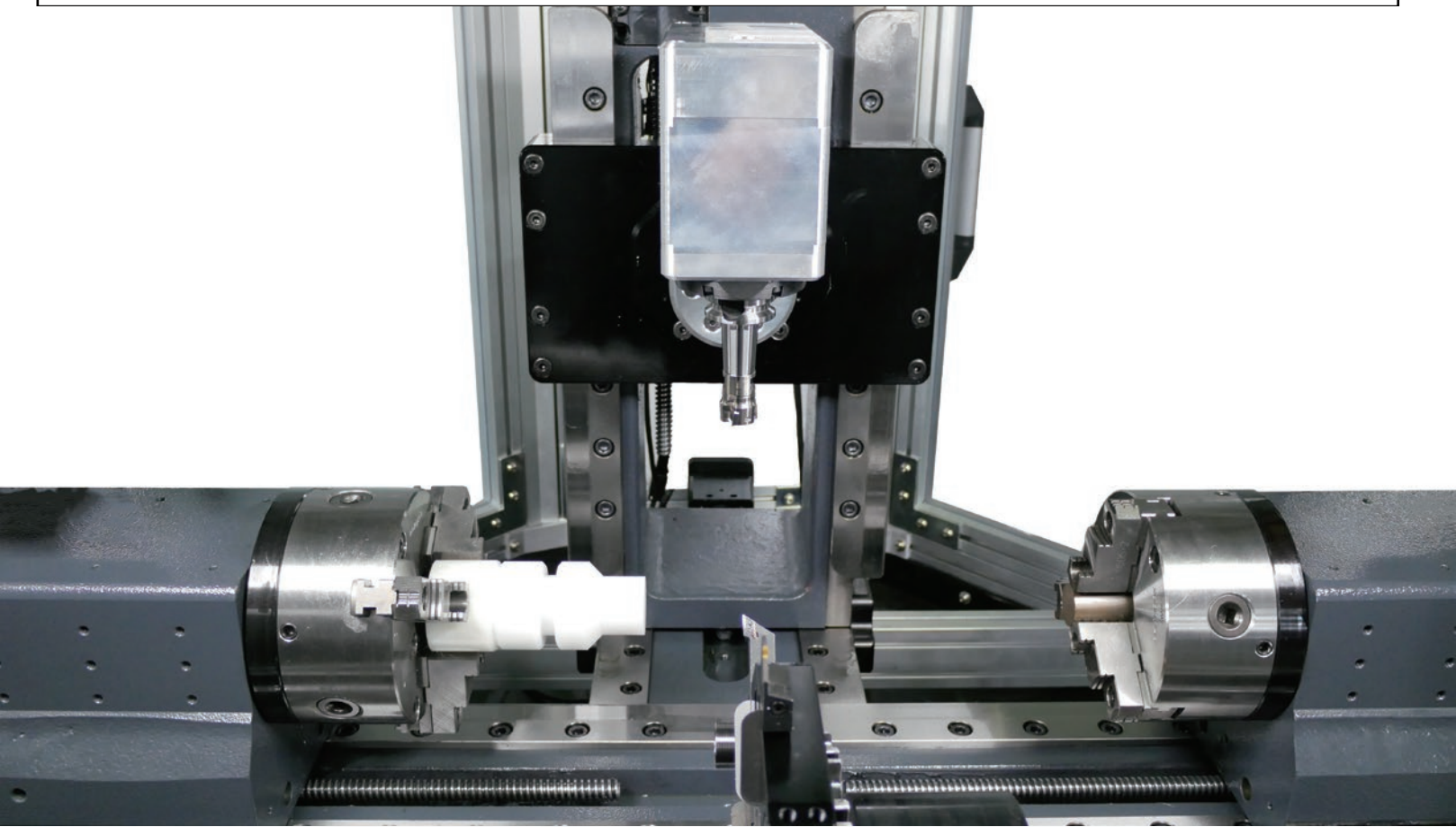
SwissMak

MT-210

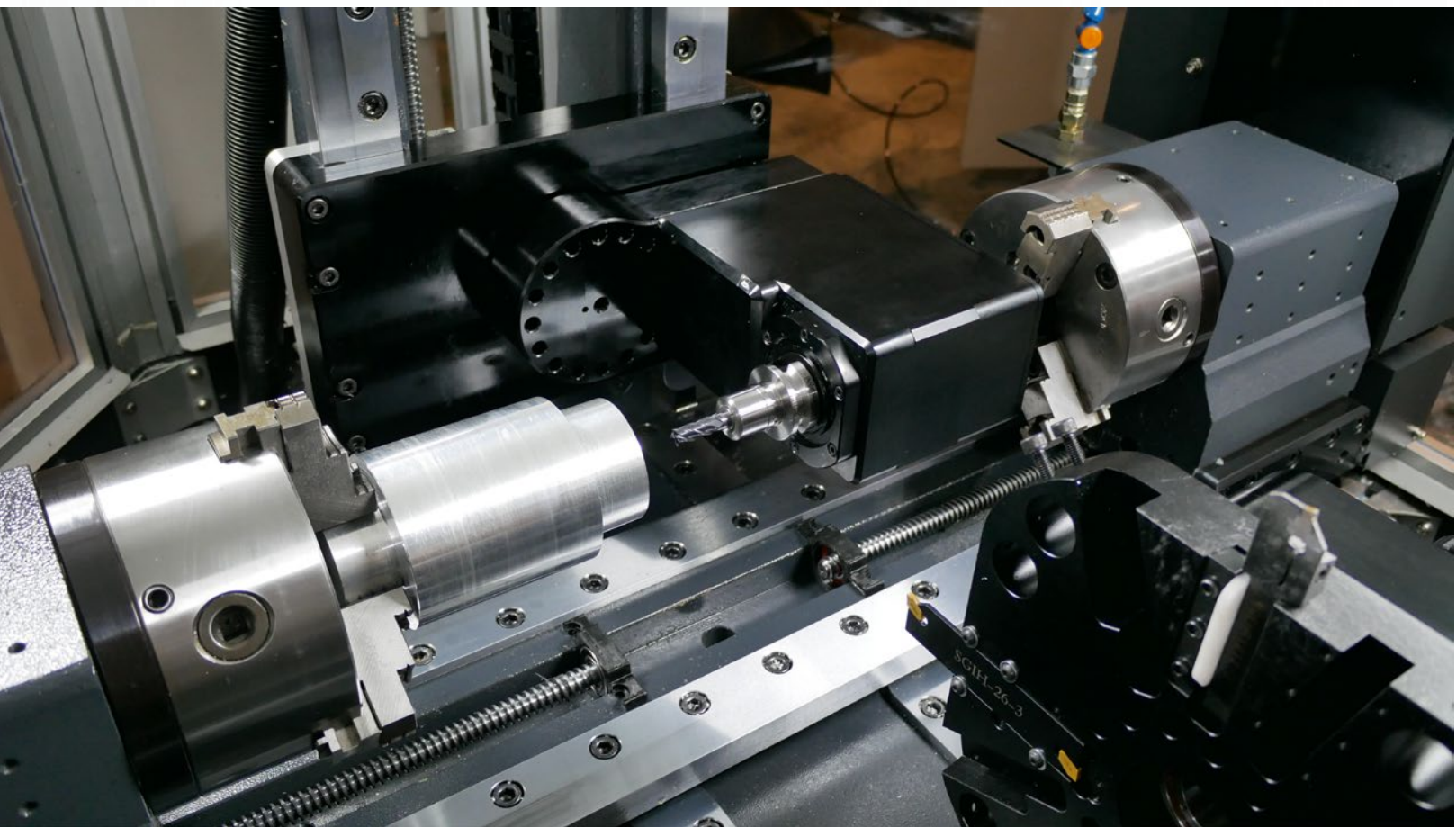
8 Axis CNC Mill-Turn Center



A Compact Mill-Turn Center -The Most Capable Machine Design-



The SwissMak MT-210 has 3 spindles, 8 axes, and 11 servos in total. Almost any workpiece can be machined. Two workholding spindles allow access to all sides of a part. The milling spindle rotates to cut any feature. The tool turret allows any turned features to be cut with up to 18 turning and drilling tools. The BT30 milling spindle accepts any 30 taper tooling in standard holders.



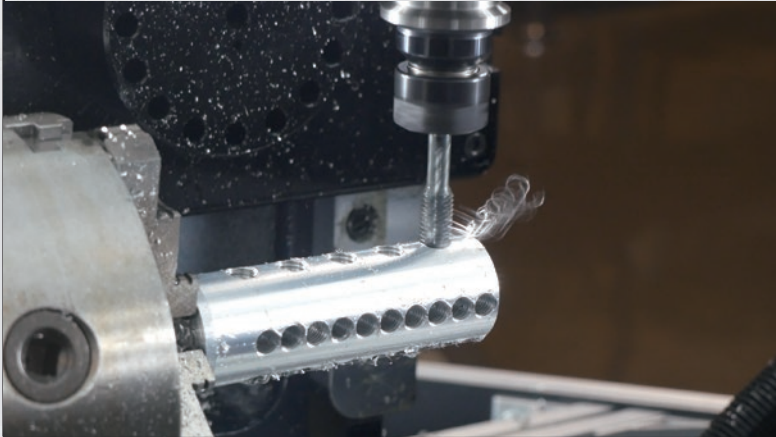
SwissMak Supports All Machining Operations

The SwissMak MT-210 runs standard Gcode, and is capable of creating all types of CNC machined features.

Turning *Facing* *Threading* *Drilling* *Tapping* *Grooving* *Broaching* *Skiving* *Hobbing* *Milling*
Circular Interpolation *Helical Interpolation* *Workpiece Indexing* *Spindle Indexing* *5 -Axis Simultaneous*

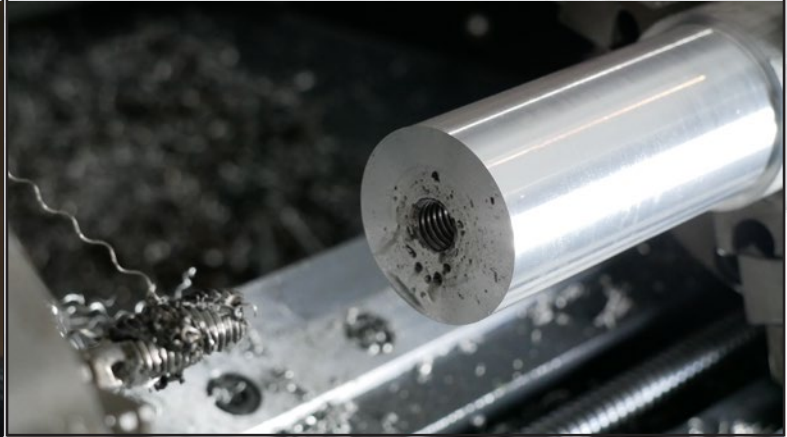
Rigid Tapping with Milling Spindle

Tap up to M12 in Aluminum - G84



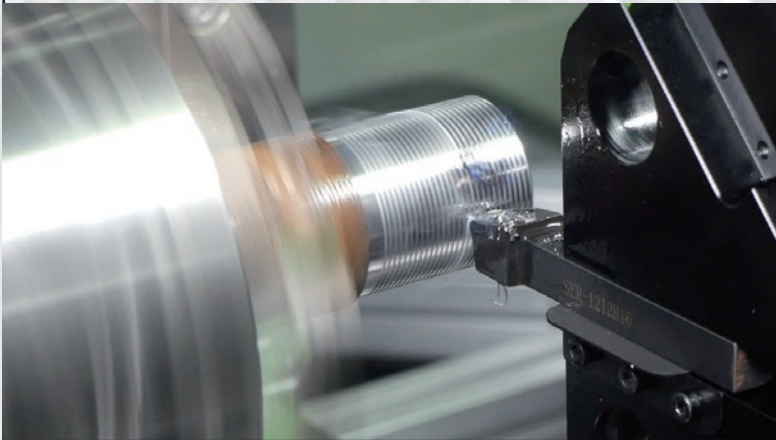
Rigid Tapping with Lathe Spindle

Tap up to M20 in Aluminum - G84



Thread Cutting Cycles

Cut any programmable thread - G76



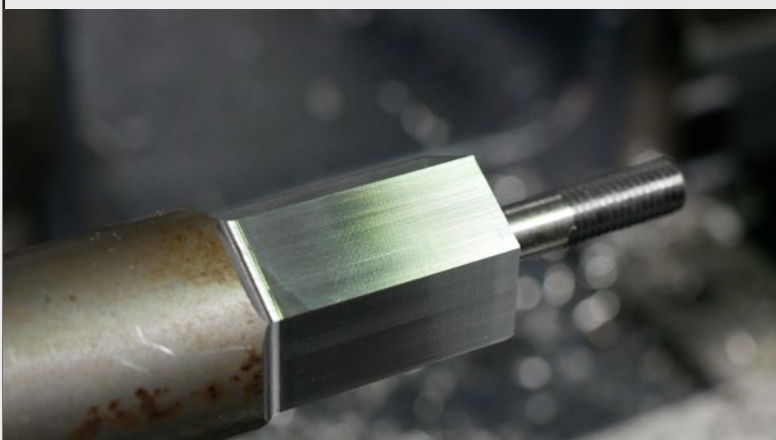
Single Point Broaching

Cut grooves, keys, and notches



Polygon Milling

Parametric M-Codes to generate polygons



Large Diameter Drilling

Hold big drills in the tailstock

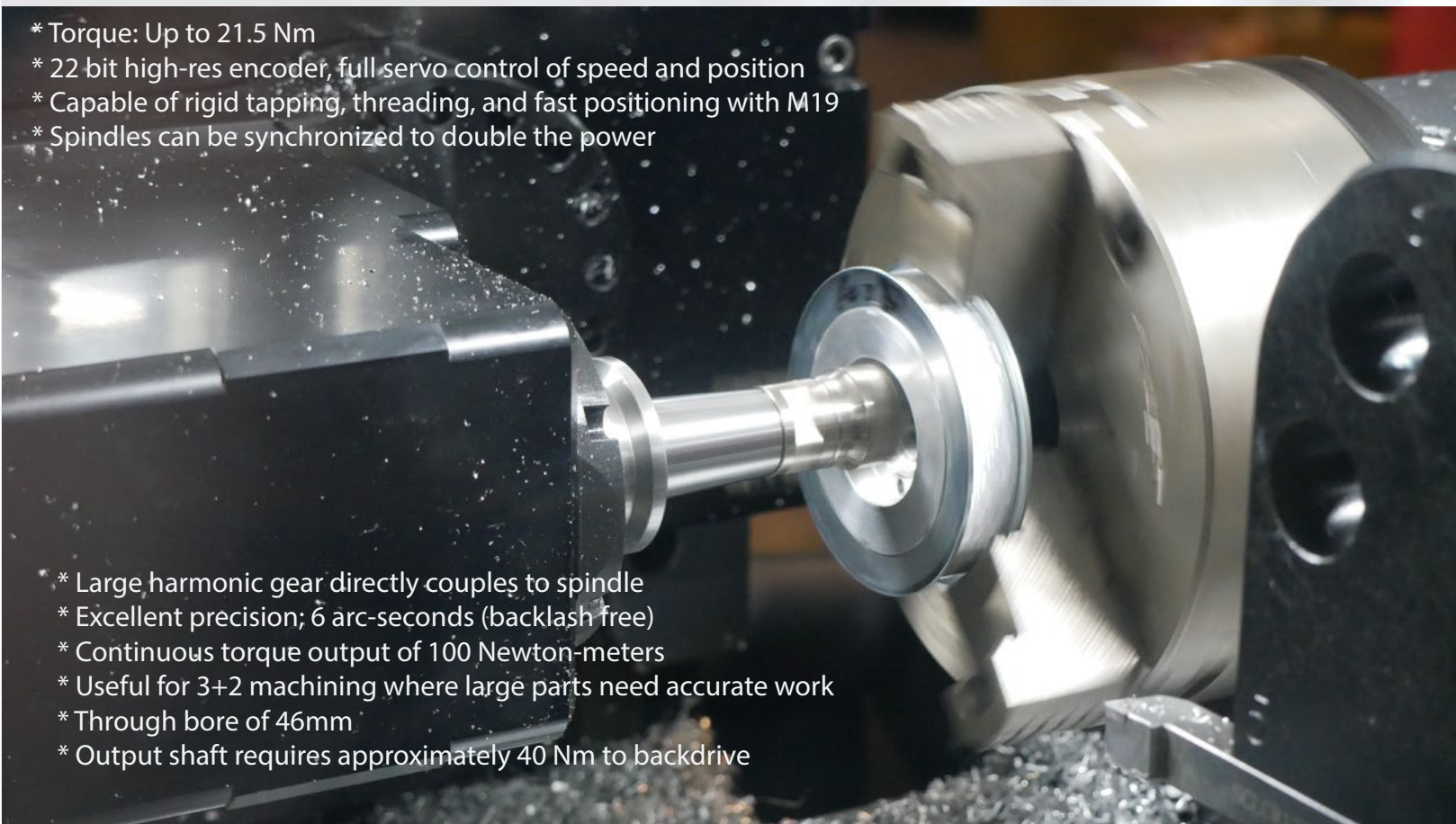


Identical Headstock and Tailstock



- * Faceplates fit DIN 6" (160mm) 3 Jaw Chucks
- * Faceplates accept 5" (125mm) 5c collet chucks
- * Faceplates accept 4" (100mm) ER40 fixtures
- * Power (Peak): 8.6 horsepower (6.4 kW)
- * Power (Continuous): 2 horsepower (1.5 kW)
- * Speed: 0-3000 RPM

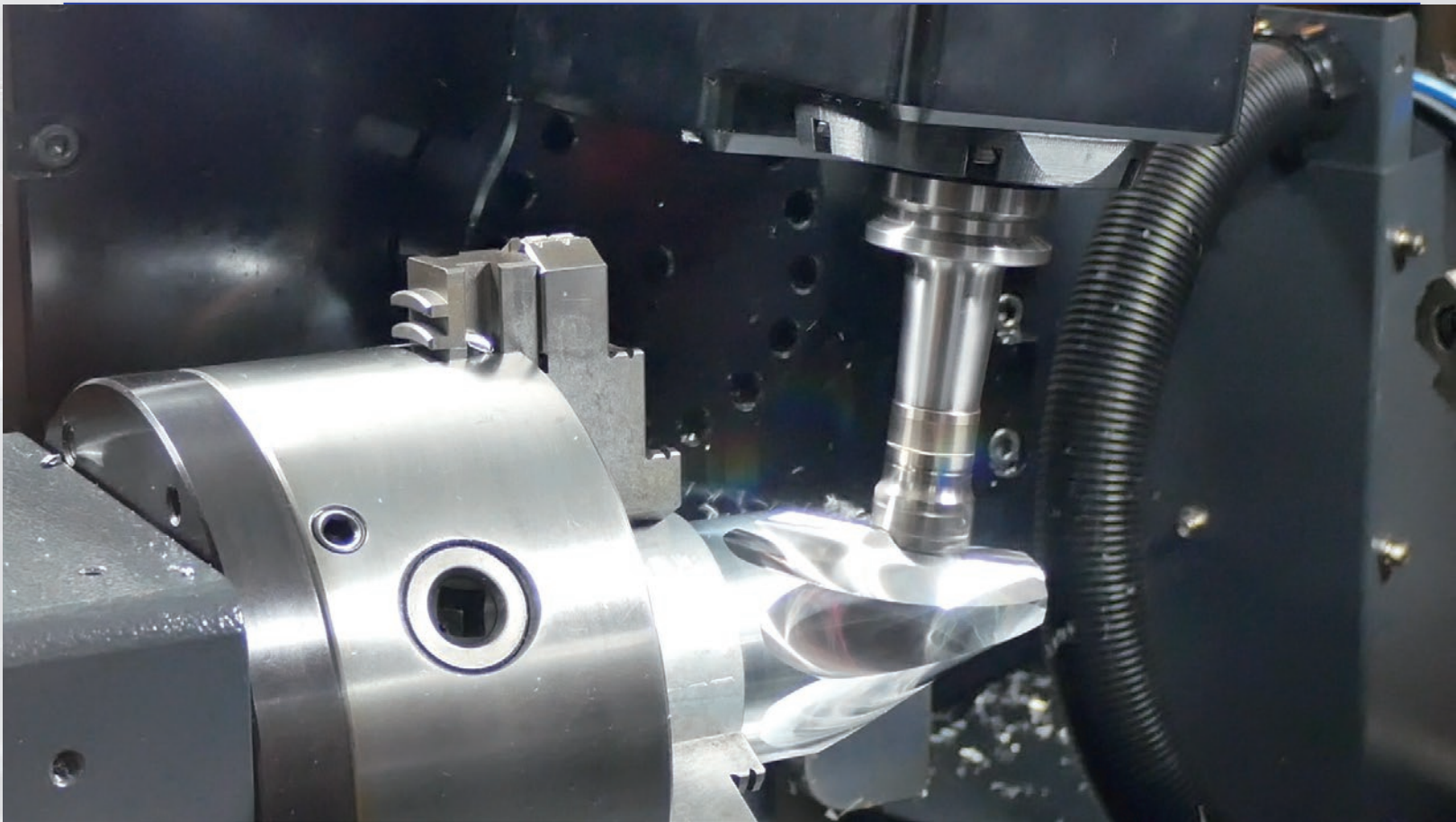
Dual Spindle Capabilities



- * Torque: Up to 21.5 Nm
- * 22 bit high-res encoder, full servo control of speed and position
- * Capable of rigid tapping, threading, and fast positioning with M19
- * Spindles can be synchronized to double the power

- * Large, harmonic gear directly couples to spindle
- * Excellent precision; 6 arc-seconds (backlash free)
- * Continuous torque output of 100 Newton-meters
- * Useful for 3+2 machining where large parts need accurate work
- * Through bore of 46mm
- * Output shaft requires approximately 40 Nm to backdrive

Simultaneous 5-Axis Machining



Machine the Front, Back, and Sides



B-Axis Milling Head



* BT30 Taper

* Power (Peak): 5 horsepower (3.7 kW)

* Power (Continuous): 1 horsepower (0.75 kW)

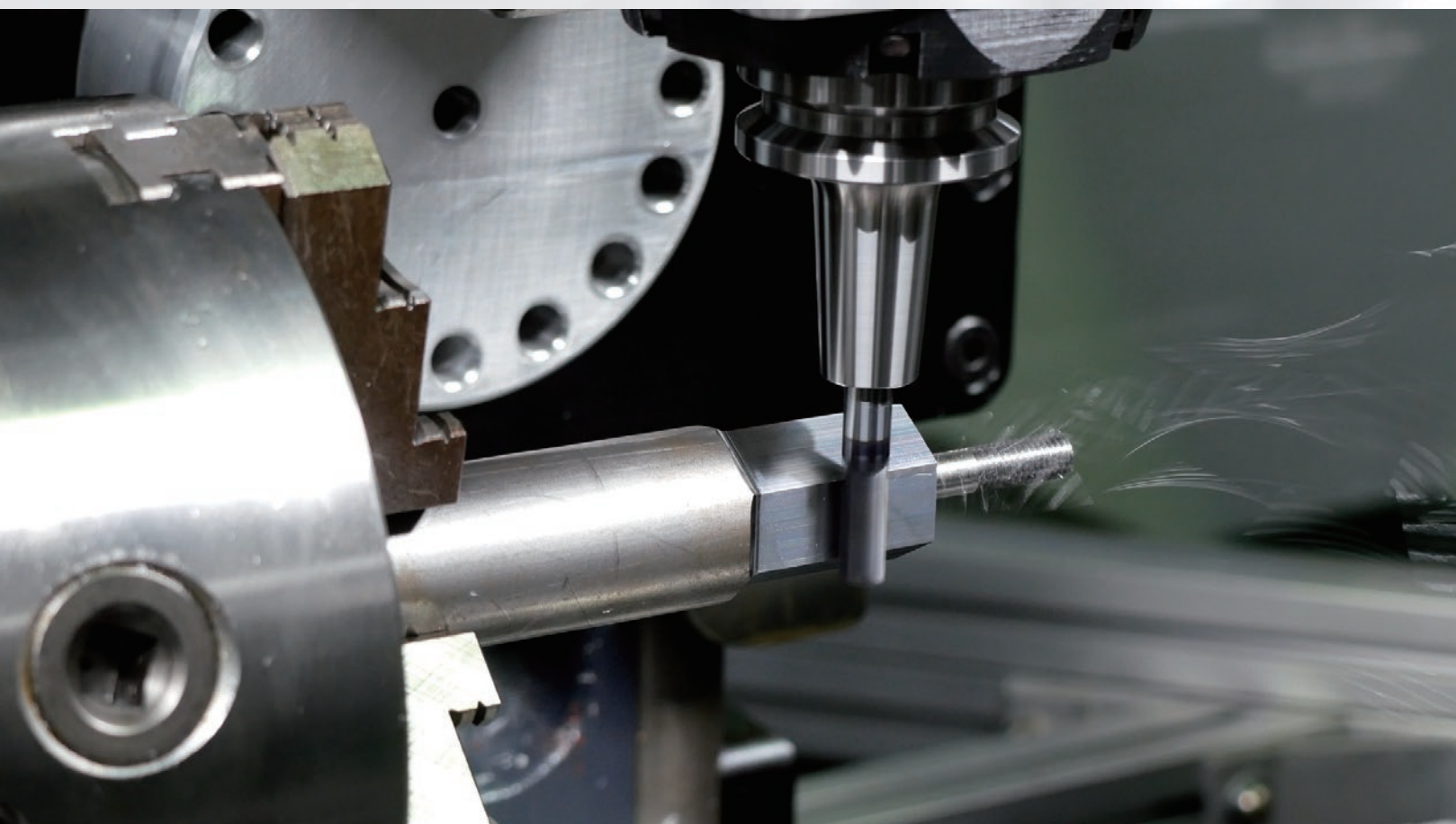
* Speed: 6000 RPM

* Torque: Up to 8.4 Nm

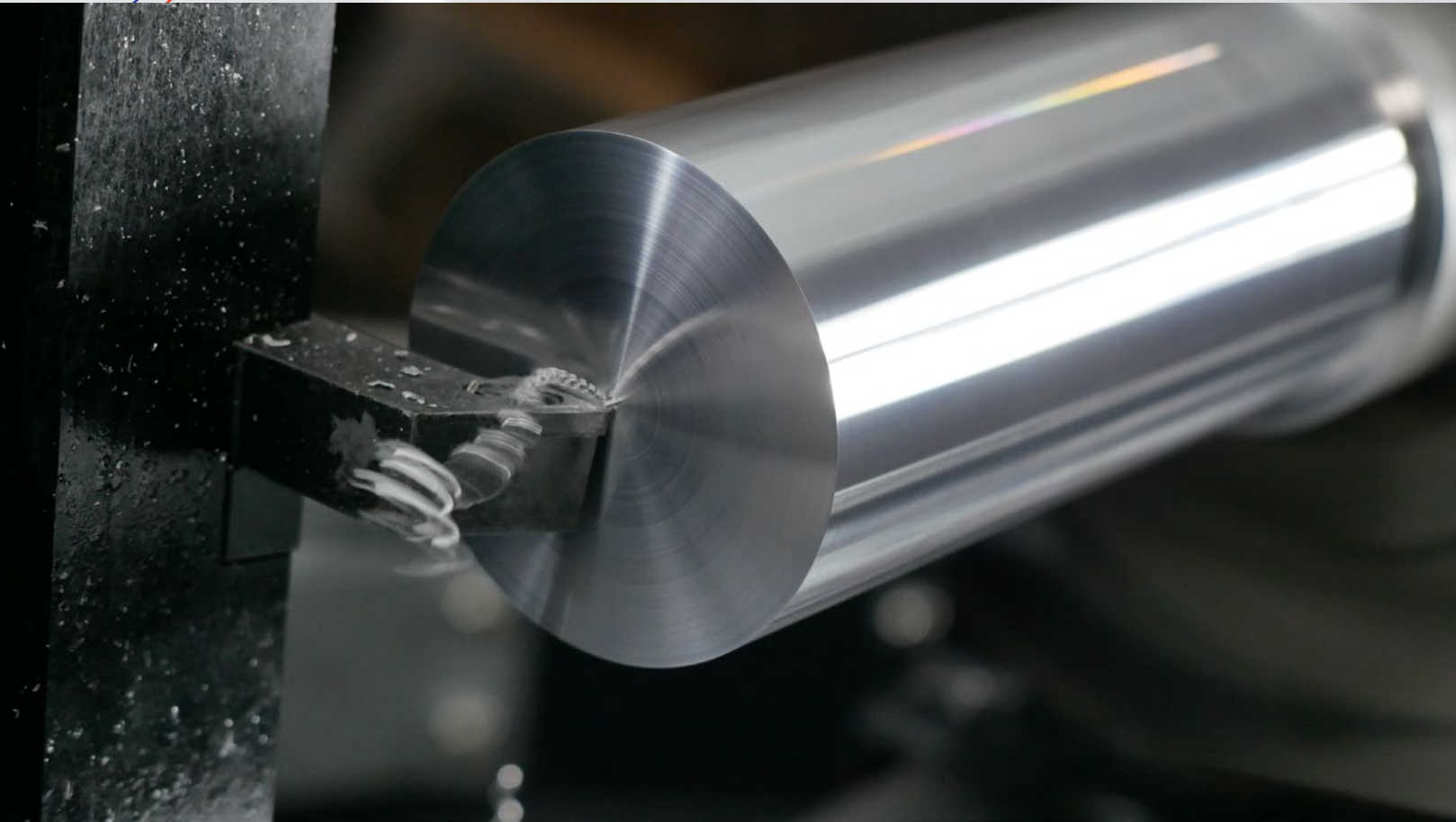
* 22 bit high-res encoder, servo control of speed and position

* Simultaneous 5-axis machining

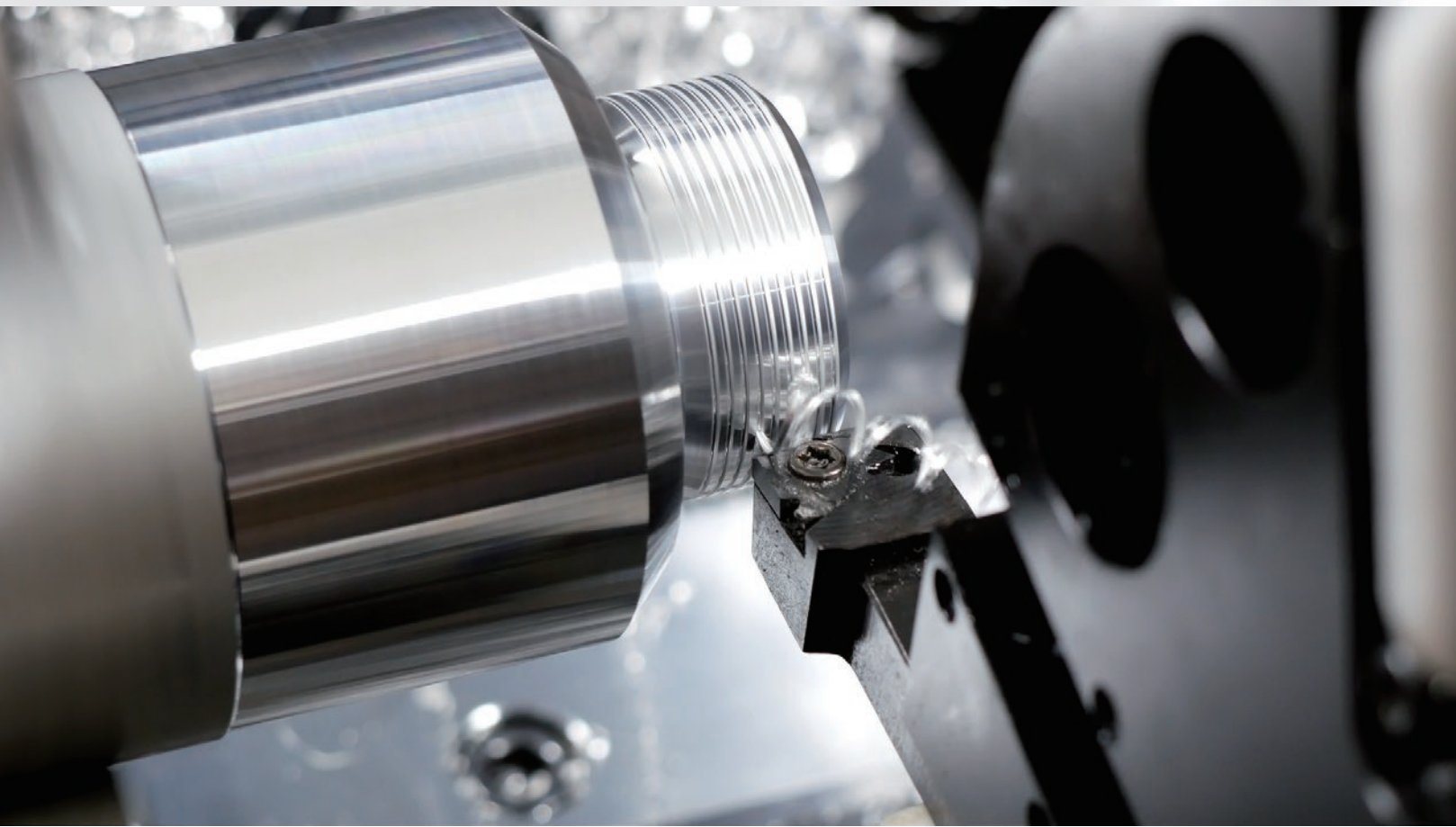
* Capable of rigid tapping, gear hobbing, and power skiving



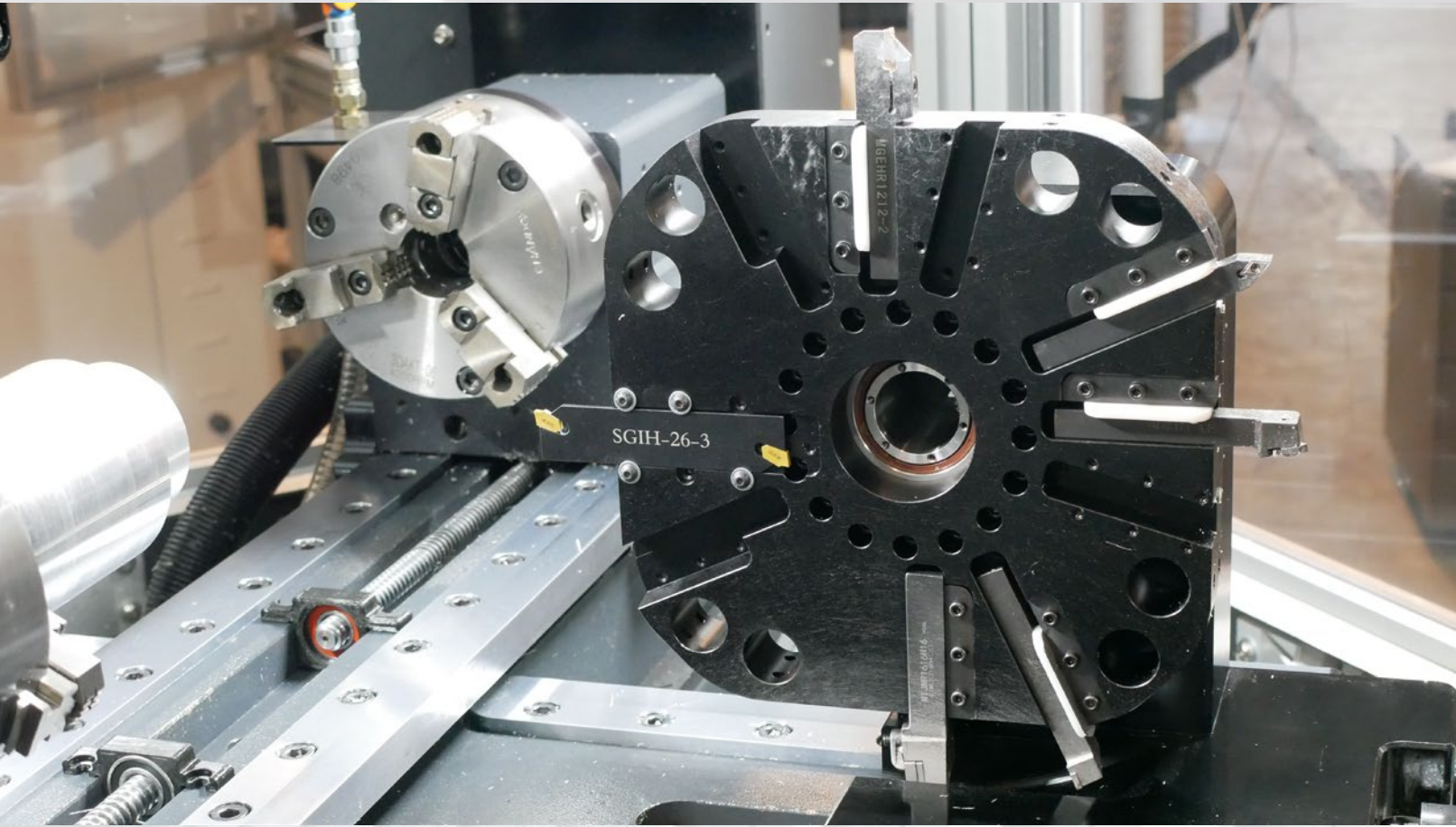
Turning



Threading



Lathe Turret - Up to 18 Tools



**Big Bore Spindle
For Longer Bar work**



Large Diameter, Deep Drilling



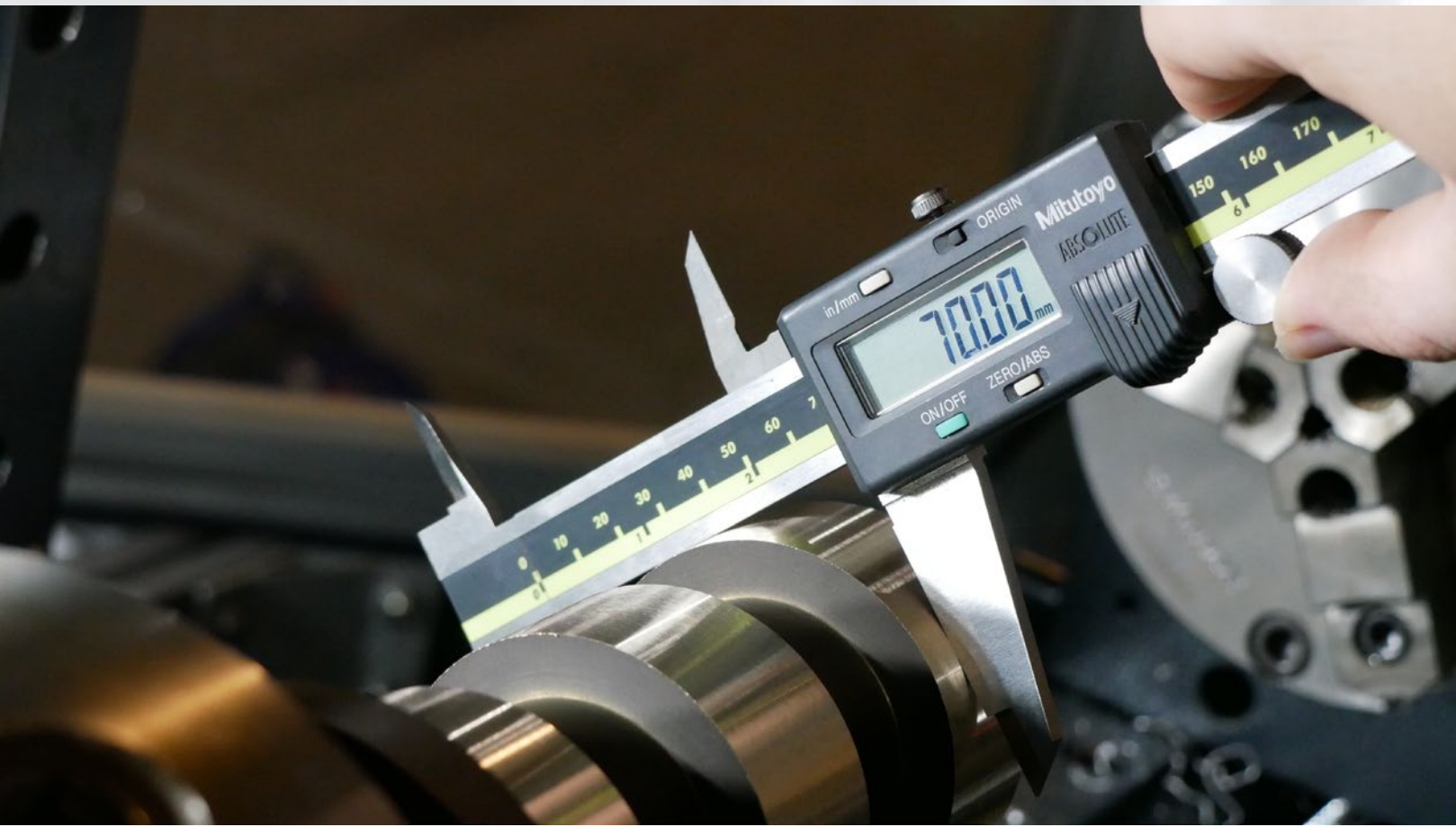
Hold Gun Drills in the Tailstock



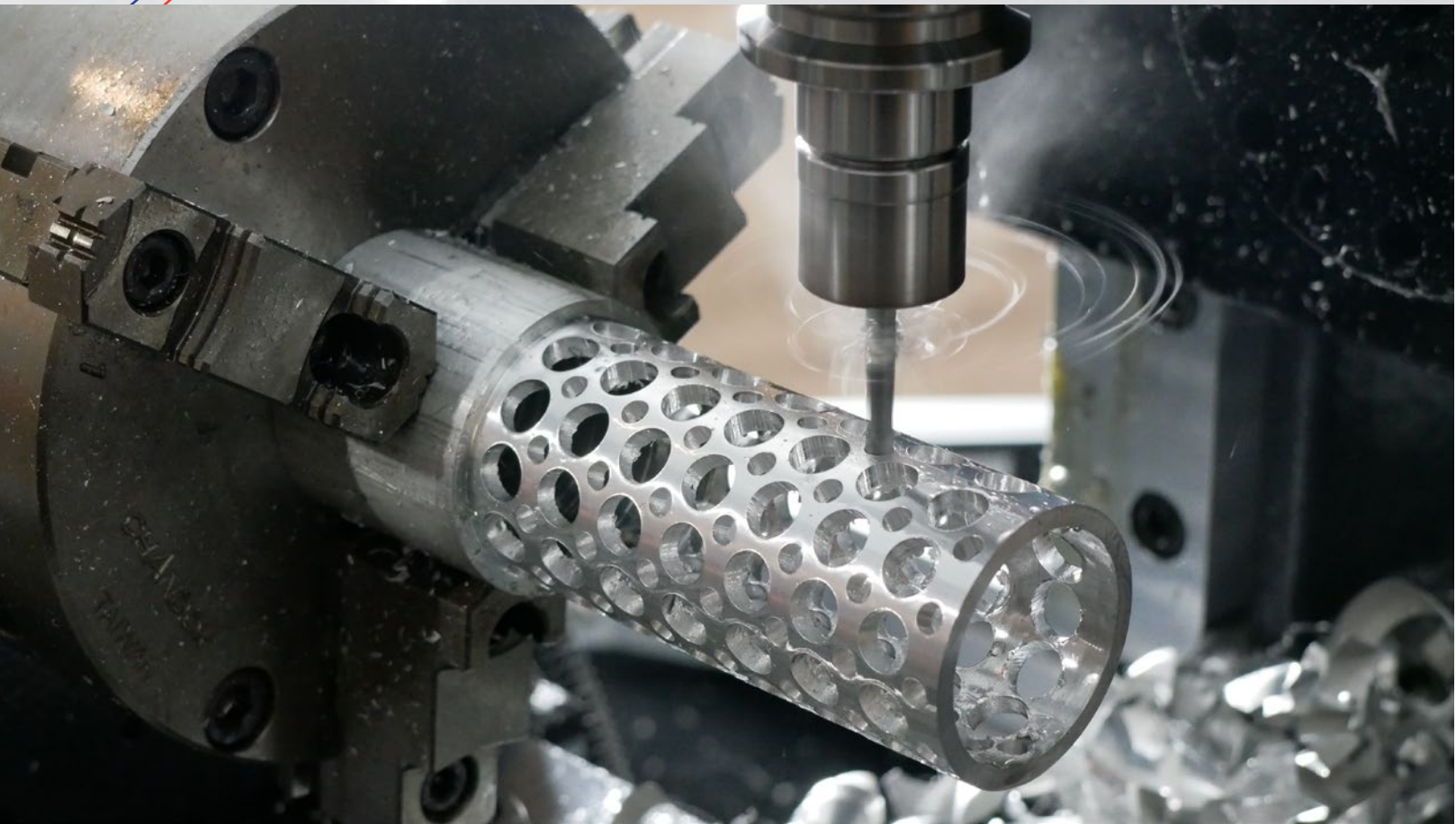
Cut any Material - Hard Turn



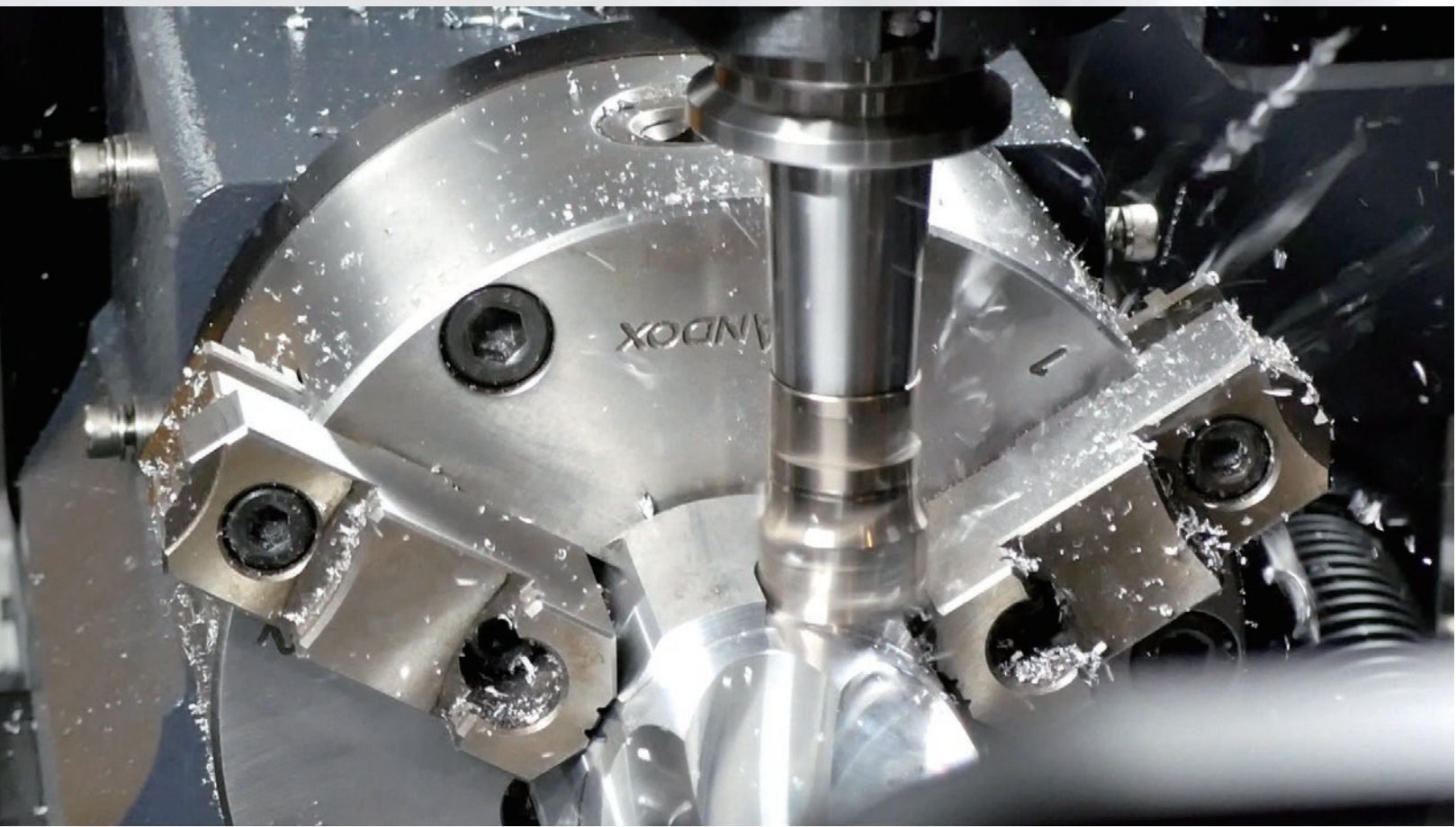
Machine Precise Tolerances



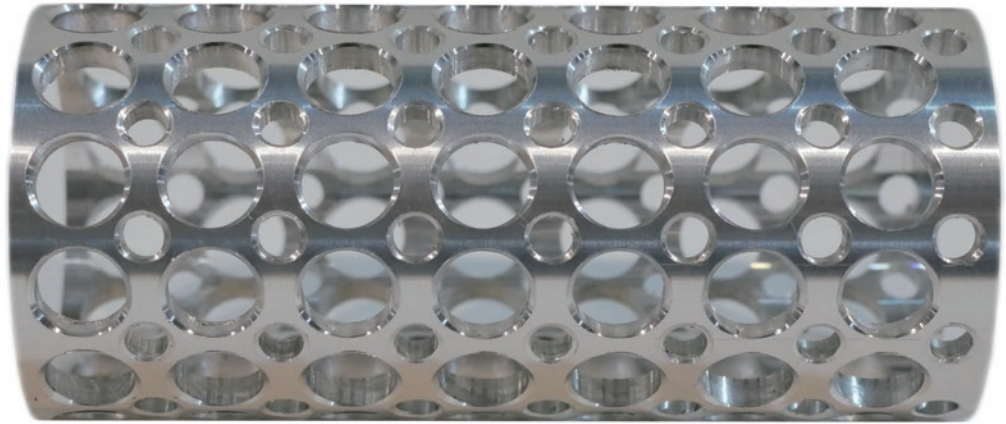
Canned Cycles for Patterns



Zero-Backlash A/C Rotary Axes



Create Complex Workpieces in One Machining Setup



Travel

- * X (Milling Head Horizontal Traverse) -78mm to +125 mm
- * Y (Milling Head Vertical Traverse) -50mm to +240mm
- * Z (Headstock Traverse) - 400mm
- * A (Tailstock Spindle) - Continuous Rotation
- * B (Milling Head Swivel) +/- 110 Degrees from Vertical
- * C (Headstock Spindle) - Continuous Rotation
- * U (Turret Traverse) -7.5mm to + 200mm
- * V (Turret Indexing) - Continuous Indexing
- * W (Tailstock Traverse) - 400mm

Work Envelope

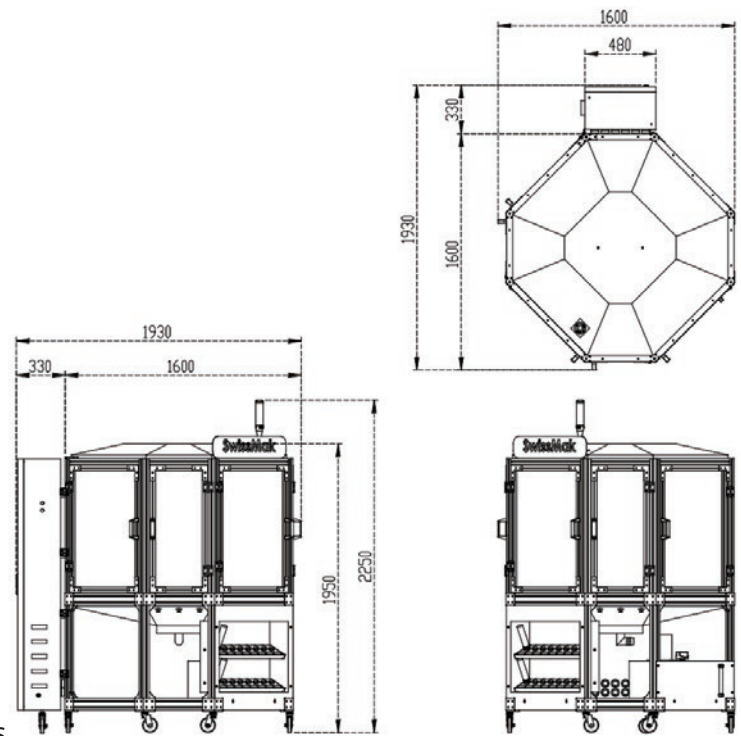
- * Chuck to Chuck workpiece max length - 440mm (17 inches)
- * Maximum distance between faceplates - 670mm (26 inches)
 - * Swing diameter over boxways - 290mm (11 inches)
- * Maximum uninterrupted turning length - 215mm (8.5 inches)
 - * Spindle Bore - 52mm (2 inches)
 - * Chuck Bore - 42mm (1.65 inches)
- * Long parts can be passed through the tailstock, or supported by it



A Versatile Machine for your Shop Floor

Floor Space and Accessibility

The 8 sided SwissMak enclosure is approximately 1.6 meters (5 feet) across. For door accessibility, we recommend you leave walking space between the enclosure and the nearest wall. All 8 sides are door-windows and can be opened for accessibility. Windows are impact rated PETG.



PC Touchscreen Control

- * Easy to use software. Drag and drop your G-code files
- * Create simple macro programs with the included editor
- * SwissMak is controlled by open source 3d printer electronics
- * The software is open source, and runs on any Windows PC
- * No internet connection required, but capable of remote operation



Electrical Requirements

- * Runs on standard Residential / Commercial power outlets
- * You do not need 3 phase power to operate the SwissMak
- * 200-240 volts, 50/60 Hz, single phase AC input. 3 prong plug.
- * Peak current at max spindle load can be up to 30 amps
- * Machine requires compressed air for gearbox use, but does not bleed air
- * Machine enclosure is waterproofed for coolant and oil use

產品規格表 Specifications

產品型號 SW2021

加工範圍 Capacity	最大旋徑	Max. swing over Boxways	250 (10")	mm(in)
	滑板上旋徑	Distance between faceplates	640 (25")	mm(in)
	最大加工直徑	Max. turning diameter	250 (10")	mm(in)
	最大加工長度	Uninterrupted turning length	210 (8.5")	mm(in)
	棒材孔徑	Through Spindle Bar capacity	46 (1.81")	mm(in)
	最大工件重量	Max. workpiece weight (with tailstock)	30 (65)	Kg(lbs)
行程 Travel	橫軸(X)	Cross milling travel	210 (8.5")	mm(in)
	垂直軸(Z)	Vertical milling travel	323 (12.7")	mm(in)
	頭部軸(B)	Headstock travel	400 (15.7")	mm(in)
	尾座軸(X2)	Sub-Spindle / Tailstock travel	400 (15.7")	mm(in)
	刀塔軸(Z2)	Tool Turret travel	210 (8.5")	mm(in)
主 軸 Headstock Spindle Tailstock Spindle	主軸轉速	Spindle speed range	0-3,000	rpm
	夾頭尺寸	Chuck size	160 (6")	mm(in)
	主軸鼻端	Type of spindle nose	Faceplate	DIN
	夾頭孔徑	Through Chuck diameter	42	mm(in)
	前端軸承內外徑	Front bearing ID/OD	65/100 (2.4/4)	mm(in)
	後端軸承內外徑	Rear bearing ID/OD	65/100 (2.4/4)	mm(in)
	主軸馬達最大出力	Spindle power max.	6.5 (8.6)	KW(HP)
	主軸馬達連續出力	Spindle power continuous	1.5 (2)	KW(HP)
	主軸最大扭力	Max. spindle torque	21.5 (15.8)	N-m(ft*lb)
	最大扭力轉速	Max. spindle speed torque	2,450	rpm
Milling Head 銑床主軸	主軸定位解析度	Spindle Positioning Resolution	0.2 (12)	Deg(Arcmin)
	主軸轉速	Spindle speed range	0-6,000	rpm
	主軸錐度	Spindle Taper	BT30	
	減速機背隙	B Axis Harmonic Backlash	6	Arcseconds
	B軸最快速度	B Axis Rapid Traverse	20	rpm
	主軸馬達最大出力	Spindle power max.	3.7 (5)	KW(HP)
	主軸馬達連續出力	Spindle power continuous	0.75 (1)	KW(HP)
	主軸最大扭力	Max. spindle torque	8.4	N-m(ft*lb)
	最大扭力轉速	Max. spindle speed torque	3,000	rpm
	主軸定位解析度	Spindle Positioning Resolution	0.2 (12)	Deg(Arcmin)
A / C Axis Harmonic Gearbox 諧波減速器	主軸轉速	Spindle speed range	15	rpm
	主軸最大扭力	Max. Spindle Torque	400 (300)	N-m(ft*lb)
	主軸連續扭力	Continuous Torque	100 (75)	N-m(ft*lb)
	背隙	Backlash	6	Arcseconds
	重覆精度	Repeatability at Chuck OD	0.005 (0.0002)	mm(in)
	扭力剛性	Torsional Rigidity	~50	Nm/Arcmin
	減速比	Gear Ratio	202 : 1	
	主軸皮帶型式	Motor Belt Types	8YU	GT5
	減速機螺柱孔尺寸	Harmonic Gear Bore	46(1.81")	mm(in)
回原點重覆精度	Homing Repeatability	4	Arcsec	
Turret 刀塔	刀座數量	Number of tools	10 Radial (16mm)	8 Axial (25mm)
	換刀時間(鄰刀)	Turret indexing time(Nearest Tool)	1.3	sec
Feedrate	全部直線軸快速進給	All Linear axes rapid traverse	15	M/min

SwissMak

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