

MILLS COMPARISON

TECHNICAL DOCUMENT

TORMACH MILLS	1100MX	770MX	1100M	770M	PCNC 440		
TRAVELS							
X-Axis	18" (457 mm)	14" (356 mm)	18" (457 mm)	14" (356 mm)	10" (254 mm)		
Y-Axis	11" (279 mm)	7.5" (191 mm)	11" (279 mm)	7.5" (191 mm)	6.25" (159 mm)		
Z-Axis	16.25" (413 mm)	13.25" (337 mm)	16.25" (413 mm)	13.25" (337 mm)	10" (254 mm)		
SPINDLE							
Spindle Power	2 hp (1.5 kW)	1.5 hp (1.12 kW)	2 hp (1.5 kW)	1.5 hp (1.12 kW)	0.75 hp (0.56 kW)		
Maximum Speed	10,000 rpm		7,500 rpm	10,000 rpm			
Transmission	Poly-V Belt						
Spindle Taper	BT30		R8				
Thread Machining	Rigid Tapping, Tension/Compression, Thread Mill		Tension/Compression, Auto-Reversing, Thread Mill		Thread Mill		
MAXIMUM FEED RATE							
X- and Y-Axis	300 IPM (7.6 m/min)		110 IPM (2.8 m/min)	135 IPM (3.4 m/min)			
Z-Axis	230 IPM (5.8 m/min)	250 IPM (6.3 m/min)	90 IPM (2.2 m/min)	110 IPM (2.8 m/min)			
Axis Motor	Servo Driven		Stepper Driven				
POWER							
Power Required	Single-Phase 230 Vac, 50/60 Hz, Dedicated 20A breaker	Single-Phase 115 Vac, 50/60 Hz, Dedicated 15A breaker	Single-Phase 230 Vac, 50/60 Hz, Dedicated 20A breaker	Single-Phase 115 Vac, 50/60 Hz, Dedicated 15A breaker			
MACHINE SPECIFICATIONS							
Table Size	34" x 9.5" (864 x 241 mm)	26" x 8" (660 x 203 mm)	34" x 9.5" (864 x 241 mm)	26" x 8" (660 x 203 mm)	18" x 6.3" (457 x 160 mm)		
Table Slot Size (three slots)	5/8" (16 mm)				3/8" (9.5 mm)		
Spindle Nose to Table Maximum Clearance	18" (457 mm)	14.25" (362 mm)	17.5" (438 mm)	13.75" (349 mm)	12" (305 mm)		
Spindle Centerline to Machine Column	11" (279 mm)	8.6" (218 mm)	11" (279 mm)	8.6" (218 mm)	6.5" (165 mm)		
Machine Size	69" x 56" (1.8 m x 1.4 m)	56" x 49" (1.4 m x 1.2 m)	69" x 56" (1.8 m x 1.4 m)	56" x 49" (1.4 m x 1.2 m)	42" x 32" (1.1 m x 0.8 m)		
Overall System Height	96" (2.4 m)	88" (2.2 m)	96" (2.4 m)	88" (2.2 m)	72" (1.8 m)		
Typical System Weight	1580 lb (726 kg)	908 lb (431 kg)	1580 lb (726 kg)	908 lb (431 kg)	600 lb (272 kg)		

WHAT'S THE DIFFERENCE BETWEEN M & MX MILLS?

For most owners, machine selection boils down to working envelope, budget, and throughput.

The 1100MX is about \$5200 and the 770MX is about \$6,400 more expensive than their similarly-equipped M machine counterparts.

SPEED

RAPID SPEEDS

1100MX and 770MX boast 300 inches per minute (IPM) rapid speeds, while PCNC and M machines boast rapid speeds of 110-135 (IPM).

CYCLE TIMES

Generally speaking, the MX machines have 20% faster cycle times (varies based on tool path and part geometry).

M? MX? WHAT ABOUT PCNC?

Where does the PCNC 440 fit in? Think of it like a little sibling to the 770M/1100M. It has the same size spindle taper and it runs on stepper motors.

MOTION CONTROL

STEPPER DRIVE MOTORS

Stepper motors have no positional feedback loop. When the controller tells an axis to move, it's assumed the motor in fact moves that much.

The only time you are in real danger of losing position with a stepper motor in our machines is if you crash or stall your machine.

SERVO DRIVE MOTORS

Servo motors provide positional feedback. When the controller calls for an axis to move, then the motor sends positional feedback, verifying it's where it should be. **This allows for crash detection, much higher rapid speeds and more accurate homing.**

SPINDLE

BT30

MX machines have a BT30 spindle, which is an industry-standard tapered tool holder with a 45 degree pull stud and drive dogs. This combination allows for a **more rigid connection** between the spindle and the tool and **reducing the risk of tool pull out**.

In addition, this is an encoded spindle, giving the controller awareness of position, **allowing for rigid tapping**.

TTS

PCNC and M machines have an R8 collet in the spindle, compatible with Tormach's patented TTS tool holders.

