



Enabling Your Ideas

# Certificate of Inspection

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**PCNC 1100 Mill**

**Serial Number:**

**Made in China**

Tormach Inc.  
1071 Uniek Drive, Waunakee, WI 53597  
Phone: 608.849.8381 / Fax: 209.885.4534

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Specifications subject to change without notice.  
TD10105\_PCNC1100\_CertInspect\_0116A



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# Certificate of Inspection

## Part A: Certification

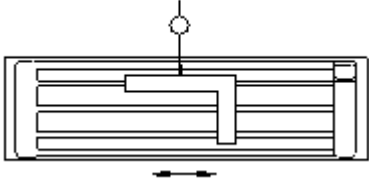
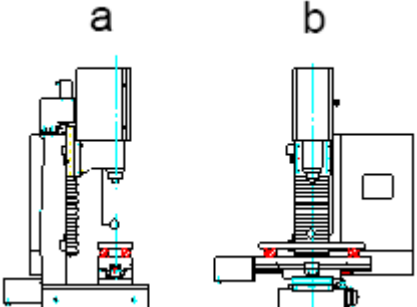
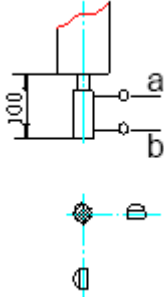
### Machinery Certification

Title	Seal or Signature <sup>1</sup>	Date
Inspection Director		
Inspector		
Tormach QA Representative		

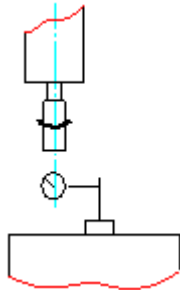
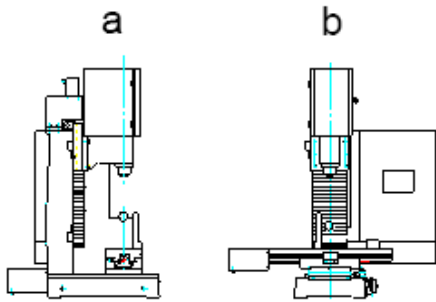
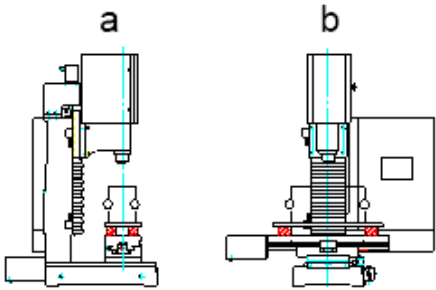
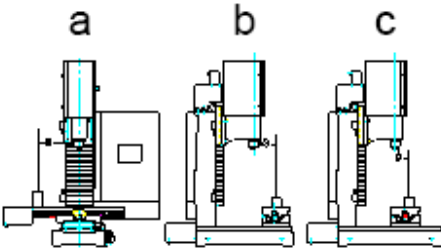
<sup>1</sup>The above signatures certify this machine has passed all precision-inspection requirements and is approved for delivery. See attached inspection documentation.

## Part B: Quality Detail

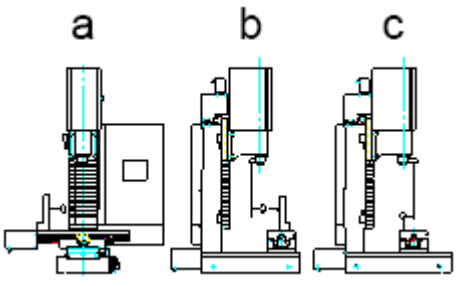
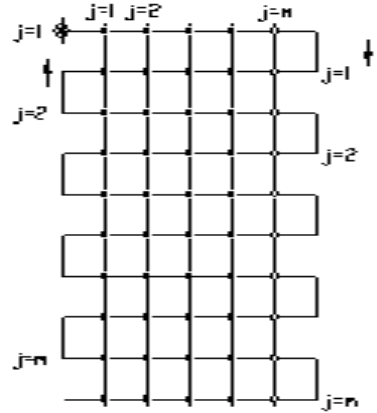
### QA I: Precision Inspection

No.	Inspection Sketch	Inspection Item	Allowable Error (mm)	Actual (mm)
G1		Perpendicularity of X-Y motion	a: 0.04/200	
G2		Parallelism of axis motion to the table surface <b>a:</b> With respect to Y-axis <b>b:</b> With respect to X-axis	<b>a:</b> Within measure length of 100: 0.04/100 <b>b:</b> Within random measure length of 200: 0.03/200 Within the total travel length: ≤400 0.04 >400 0.06	
G3		Spindle radial runout <b>a:</b> <10mm below spindle face <b>b:</b> 100mm below spindle face	<b>a:</b> 0.02 <b>b:</b> 0.03	

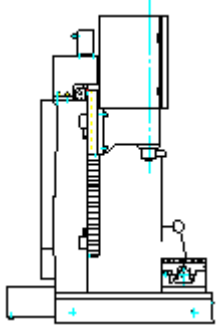
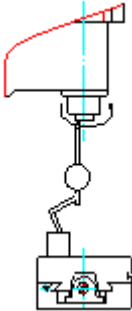
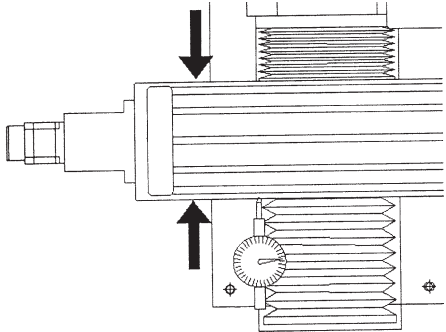
## QA I: Precision Inspection

No.	Inspection Sketch	Inspection Item	Allowable Error (mm)	Actual (mm)
G4		Spindle float within cartridge with respect to Z motion	0.015	
G5		Perpendicularity of spindle head to table surface a: With respect to Y-axis b: With respect to X-axis	a: 0.035/150 b: 0.035/150	
G6		Perpendicularity of centerline of spindle to table surface a: With respect to Y-axis b: With respect to X-axis	a: 0.04/200 b: 0.04/200	
G7		Lost motion of linear axes a: X-axis b: Y-axis c: Z-axis	a: 0.025 b: 0.025 c: 0.035	

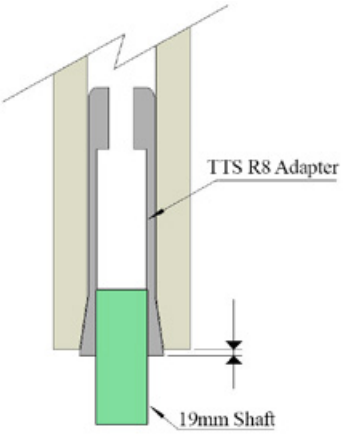
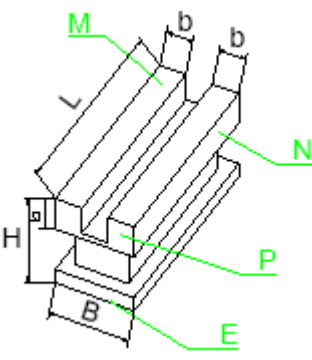
## QA I: Precision Inspection

No.	Inspection Sketch	Inspection Item	Allowable Error (mm)	Actual (mm)
G8		Axis repeatability	0.02	
G9		<p>Positioning accuracy, to be completed with laser interferometer.</p> <p>One machine is selected for each production batch (or each 20 machines produced, whichever is fewer).</p> <p>If the selected machine does not meet specification, then all machines in production batch must be completely inspected.</p> <p>If the selected machine does meet specification, all other machines in the production batch will be reported as not selected (NS).</p>	0.03/200	

## QA I: Precision Inspection

No.	Inspection Sketch	Inspection Item	Allowable Error (mm)	Actual (mm)
G10		<p>Parallelism of center T-slot to X-motion</p>	<p>At any measuring length of 200; 0.015/200</p>	
G11		<p>Flatness of spindle face</p>	<p>0.02</p>	
G12		<p>Lateral displacement of work table to external load &lt; 300 N</p>	<p>0.04</p>	

## QA I: Precision Inspection

No.	Inspection Sketch	Inspection Item	Allowable Error (mm)	Actual (mm)
G13	 <p>TTS R8 Adapter</p> <p>19mm Shaft</p>	<p>Projection of TTS R8 collet past spindle face when drawbar is tightened around 19.05mm shaft</p>	<p>0.8 minimum 1.4 maximum</p>	
PI	 <p>Size of test piece (bulk piece) L x B x H L ≥ 1/3 longitudinal travel H ≥ L/3 B ≥ L/3 b ≥ 16mm Material: HT150</p>	<p>Milling accuracy:</p> <p><b>a:</b> Flatness of surface M <b>b:</b> Parallelism of surface M to surface E <b>c:</b> Perpendicularity of surface P to surface M, and surface N to surface P</p> <p>One machine is selected for each production batch (or each 20 machines produced, whichever is fewer).</p> <p>If the selected machine does not meet specification, then all machines in production batch must be completely inspected.</p> <p>If the selected machine does meet specification, all other machines in the production batch will be reported as not selected (NS).</p>	<p><b>a:</b> 0.04/150 <b>b:</b> 0.06 <b>c:</b> 0.06/50</p>	



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## QA 2: Function/Appearance

No.	Test Name	Description	Completed
T1	Spindle Speed	Minimum and maximum speeds calibrated	
T2	Spindle Direction	Clockwise and counterclockwise correct	
T3	Spindle Door Switch	Spindle drive contactor opens when spindle access door is opened	
T4	Spindle Key Switch	Spindle drive contactor opens when spindle lockout key switch is operated	
T5	Coolant Outlet	Coolant outlet operational in manual and automatic	
T6	Safety Signs	Safety signs 30223, 30224 and 30225 have been installed	
T7	Information Signs	Information signs 30222 and 30226 have been installed	
T8	Computer Outlet	Computer outlet and switch operate	
T9	Probe Input	Probe input check for operation	
T10	X Limits	X left and X right limits operate	
T11	Y Limits	Y front and Y back limits operate	
T12	Z Limits	Z up limit switches operate	
T13	Belt Position Change	Belt position can be changed without binding or collision	
T14	Smooth Operation	X, Y, Z and spindle operate without unusual noise or vibration	
T15	24-hour Test	24-hour run test has been completed	
T16	Adjusting Screw of Gib	Position of adjusting screw	
T17	T-slot of Work Table	Width of T-slot	
T18	Test resistance from each prong of the plug to the ground copper plate	If the test result is zero, the machine needs to be repaired	



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## QA 3: Packing List

No.	Name <sup>1</sup>	Specification and Mark	Quantity	PN
1	Drawbar	—	1	30507
2	Allen Wrench	4. 5. 6. 8. 10	5	—
3	Double Open End Wrench	13x16	1	—
4	Phillips Screwdriver	100	1	—
5	Key for Cabinet	—	1 set	—
6	Key for Spindle Lockout	—	1	—
7	Light Grey Touch-up Paint	30 ml	1	30571
8	Dark Grey Touch-up Paint	30 ml	1	30572
9	Drawbar Thrust Washer	—	1	30560

<sup>1</sup>These items are stored in the wooden accessory box, located on the right side of the shipping pallet.