Tormach Policy and Guidance

Spindle Door Notice
Spindle door switch is hard wired, spindle will run in any position, even if locked! Take care when running spindle.

Referencing Tips
Reference Z, then Y, then X

Standards of Cleanliness
This machine must be cleaned after every use.

- Insert an empty tool holder into the spindle if one is not mounted. This will prevent chips and dust from being blown into the spindle during cleaning.
- Sweep chips from the vise and blow it out with compressed air. Wipe the vise down with a shop rag and wipe clean any parallels you used before returning them to their box.
- Vacuum any chips that have accumulated in the way covers (the black accordion baffles on the Y and Z axis)
- Sweep any chips off the table and blow it off with compressed air.
- Vacuum remaining chips from the pan and wipe down the machine enclosure to remove remaining cutting fluid or chips.

Access to Use Tool
The CNC Mill requires a special steps to use beyond standard badging.
The tool can be used only after one of two conditions are met.

1. Complete Official CNC Metal Milling Class. From time to time MakeHaven may offer a class on milling with the Tormach. When offered this class will be an additional fee and graduation to use of the machine is subject to approval of the instructor. This class has experience and proficiency with the shapeoko CNC as a prerequisite so we recommend starting on that CNC.
2. Experience Based Pass. Some members may have experience with CNC and metal working that quality them to be able to use the Tormach CNC without a MakeHaven sponsored class. In this case they must take time to learn the particularities of this machine and the standards of operation that makehaven users must abide. To achieve this learning one must spend time observing a super user (Currently, Alex Murdock, Eben Olson, Joel Edelstein or Kevin Wang) as they work on a project. This is an optional courtesy extended by the super users, subject to their own timing on projects and the responsibility the person aspiring to use the tool to make arrangements. After observing the tool in use, and entirely at the discretion of the super user someone may be badged for using the tormach.

Currently Badged Users Are:
Alex Murdock, Eben Olson, Joel Edelstein, Kevin Wang, John Chay, Erik Rios…. In addition to.

Name	Checked out By

Maintenance

As a cooperative organization the burden of maintenance is shared between volunteer members and staff. On the machine is a series of maintenance tasks and a schedule. If a maintenance task assigned to the user community is not complete the machine can not be used until a volunteer completes that task. As a general preventative maintenance practice a member should spray down and remove any rust that they notice on the machine using WD40 and a red brillo pad. Take care to ensure that WD40 is not sprayed into the spindle bearings or ways.

Endmill and Drill Bit Use

Endmills and drills are consumables and the user is expected to supply their own. There are a selection of used endmills and drill bits which have been donated and may be usable for some projects. These are free to use with care, but are meant for shared general use by members. The availability of these is not guaranteed and subject to donations. As a convenience MakeHaven keeps a small inventory of ⅛ inch and ¼ inch carbide endmills which can be purchased for $5 or $10 respectively if you need one for a project. Payment should be made at: makehaven.org/store

Materials

- ***Always read the MSDS for any material you want to cut on the mill and use proper PPE!***

Recommended Materials are:

- Aluminum 6061 T6 or T6511. Untempered 6061 will easily gum up and damage your endmill.
- Mild Steel
- Machinable Wax (http://www.machinablewax.com/)
- Cast Iron
- Delrin/Acetal
- Nylon

Additionally there are materials which are allowed but require additional care and cleanup. These include:

- Wood (Vacuum frequently and ensure that wood fibers are not getting into the spindle or machine ways and do not use an air blast)
- MDF (Ensure proper speeds and feeds and do not use an air blast)
- Machinable foams (keep it clean and vacuum frequently)

These Materials are only allowed if added precautions are taken by the member. These materials are only to be machined by experienced members. The machine shall not be left unattended when cutting these materials and a safety plan must be in place before cutting. :

- Titanium (serious fire hazard, fires must be dry extinguished and burn hot)
- Brass (can be a serious lung irritant, particularly alloys with high lead content)
- Stainless Steel (must machine wet, known carcinogen if burned)
- 12L14 Carbon Steel or other high lead content metals

These materials are not to be machined on the mill:

- Lead or any heavy metal
- Teflon/PTFE
- Graphite
- Carbon fiber
- Magnets

Misting
MQL / Dry Machining, be careful with MQL misting, it can be a long irritant use coolant.

Machine Damage
As with all tools in the shop, if any damage occurs it must be reported. Please follow procedures in the Emergencies and Accidents document.