TEAM 271 MACHINE MAINTENANCE

Tormach 24R CNC Router

Revised November 5, 2026

Before maintenance: E-stop, exit PathPilot, Main Disconnect off, air off, lock out the disconnect and air line. The machine can start at any time. ANSI Z87+ eye protection. Gloves for swarf only, machine stopped.

	Task	Notes	Date Last Serviced	Serviced By	Next Service Date
Each day used	Clear dust and swarf from the machine with a vacuum and brushes.	No compressed air. Brush or scraper, never bare hands.	No date needed		
	Wipe the linear rails and X and Z ball screws with a clean, lint-free cloth.	Check the Y screw with a flashlight. Then power on, reference, Z up, jog full travel.			
	Inspect cutting tools, holders, spindle taper, collet nuts and collets for chips, wear and buildup.	Nut and collet again at each tool change. Son of ColletCare on a swab, spindle stopped.			
	Inspect the ATC rack and ETS; clean if needed.	Forks level, no cracks. ETS pad clean.			
	Check and refill the Kool Mist.	Eye protection on.			
	Put rust inhibitor on exposed, non-lubricated, non-painted metal surfaces.	LPS 3, machine off. Not on screws, rails, tapers, collets, holders or the ETS pad.			
Weekly	Clean the exterior with a mild cleaner; check rails and screws show a thin grease film.				
	Inspect the dust collection hose, collector and dust shoe for blockages; empty the bin.	Never mix aluminum chips with wood dust.			
	Check the chiller's water level, vents and flow in the clear line.	Distilled water only.			
	Check the air filter-regulator: 90 to 120 psi, air tool oil, drain the water bowl.	Air back on before the spindle runs.			
Monthly	Clean dust from outside the cabinet vents with a clean cloth or vacuum.	Cabinet stays locked; keys with a mentor.			
	Inspect the spindle's ISO20 taper and the holder tapers for wear, damage or dust.	Son of ColletCare on a swab, spindle stopped.			
	Test the E-stop, limit switches, and that the spindle stops with the chiller off.	If one fails, tag the machine out and tell a mentor.			
	Back up PathPilot to USB (ADMIN SETTINGS BACKUP in MDI).	Include G-code and tool table. Check the files on another computer.			
Quarterly	Chiller off (mentor): drain, clean the filter, refill, bleed the air, check for flow and leaks.	Distilled water. Never run it dry. Replace lines if stiff or cracked.			
	Lubricate the ball screws at the three remote ports (mentor).	Amount: _____ per Tormach. Hiwin G05 or Mobilux EP 2 (NLGI No. 2). Max 30 bar. No graphite or MoS2.			
Semi-annually	Lubricate the linear blocks (mentor).	0.3 cm^3 per block. Hiwin G05 or Mobilux EP 2 (NLGI No. 2). Max 30 bar. No graphite or MoS2.			
	Lubricate the axis motor couplers (mentor): block the Z head first, one motor at a time.	Synthetic silicone grease, not multi-purpose. Small amount on the bushing faces.			
	Check level, spindle tram, drag chains, cables, and air and water lines (mentor).	Also after any crash.			
Long break	Before 2 weeks or more idle: clean, LPS 3, back up, fresh chiller water, chiller off.	Protect the chiller if the room can drop below 36 F.			

Problems found (dry-erase): tag the machine out and tell a mentor.

Procedures: Tormach 24R Operator's Manual UM10564 (0826A), chapter 10, and the CW-3000 chiller manual. The ATC, ETS, Kool Mist, air and test rows are the team's. Too much grease or pressure can damage the machine.

TEAM 271 MACHINE MAINTENANCE

Precision Matthews PM-1130V Lathe

Lathe no. _____

Revised November 5, 2026

Before any maintenance, press the E-stop and switch off the power strip the lathe plugs into. Remove chips before lubricating. Eye protection on. No gloves near a turning spindle.

	Task	Notes	Date Last Serviced	Serviced By	Next Service Date
Each day used	Before power: wrench out of the chuck, feed levers neutral, locks off, speed knob down.		No date needed		
	Check the gearbox and apron sight glasses; top up if low.	75W80 gear oil, to the red dot (halfway), no higher.			
	Clear chips with a vacuum and brushes; empty the chip tray.	No compressed air: it forces debris into the ways.			
	Wipe the ways, leadscrew and feed shaft with a clean, lint-free cloth.	Keep oil and chips off any DRO scale.			
	Inspect the chuck and jaws for chips and damage; clean if needed.	Rag and light oil, spindle stopped.			
	Examine cutting tools for chips or dull cutting edges.				
	Brush way oil onto the bed ways, dovetails and leadscrew.	ISO 68 way oil (Mobil Vactra No. 2), short-bristle brush. Repeat every few hours of running.			
	Oil all ball oilers, including the 2 behind the gear cover. Check each ball is free first.	ISO 68 way oil (Mobil Vactra No. 2), pump can. Repeat every few hours of running.			
Weekly	Test the E-stop, chuck guard and gear cover: each must stop the motor.	Power on, slow speed, chuck clear. If one fails, tag the machine out and tell a mentor.			
	Check the three camlocks are tight; also at every chuck mount.	Markers between the two Vees.			
	Wipe down the exterior with a clean rag.				
Monthly	Clean dust from outside the electrical box and motor vents; check the belt, cord, plug and power strip.	Never open the box. Belt: 1/4 in. deflection. No extension cord.			
	Check the cross-slide, compound and saddle gibs (mentor).	Loosen one screw before tightening the other. Too tight wears the ways; too loose chatters.			
	Chuck off (mentor): clean and inspect the spindle nose, MT5 taper and chuck mount.	Bed board down, support the chuck. Son of ColletCare on a swab, spindle stopped.			
	Clean and oil the tailstock socket and quill, rests, tool post, spare chucks and collets.	LPS 3 on stored parts only. Not on ways, screws, tapers or seats.			
Semi-annually	Drain and refill the gearbox and apron oil (mentor).	75W80 gear oil. Warm it, then E-stop and power strip off. Add 1-2 oz, check leaks, fill to the red dot: about 14 oz, 2 oz.			
	Check and align the tailstock (mentor); also after any taper job.	Offset must be zero; do not trust the scale. Manual page 23.			
	Clean and lightly grease the chuck scroll (mentor).	Pull the jaws; refit them in number order.			
Annually	Grease the external change gears; also after every gear change.	Light general-purpose grease, NLGI No. 2.			
	Check bed level, cross-slide backlash and spindle end play (mentor).	Spindle bearings need no grease.			
	Summer shutdown: clean, oil all points, coat bare metal, relax the belt.	Turn it over by hand monthly.			

Problems found (dry-erase): tag the machine out and tell a mentor.

Procedures: PM-1130V manual V1.1. Only the before-use oil check and the every-few-hours oiling are manual intervals; the others are the team's. A new lathe gets its first drain and refill after 20 hours.