



How-to

Your Machine Maintenance Checklist

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What You Need to Know

Learn what to check (and change) to extend the life of your equipment.

You can fight and win the battle with bacteria.

Options are available for busy shop owners to keep machines in top shape.

Use this preventive maintenance guide to keep your equipment in tiptop shape.

Maintaining the longevity of any machine, whether a computer or a new car, means taking it in for its annual tuneup before there are major problems. Avoid forcing your team into firefighting mode and having to make unpleasant phone calls to customers. Instead, schedule regular maintenance and repair plans for your machines. Doing so will help you extend equipment life, reduce costs and avoid unplanned downtime.

With this much on the line, it only makes sense to develop a routine preventive maintenance (PM) checklist and then stick to it. Here's how:

1. Keep Machinery Clean

Take a few minutes at the end of every shift to wipe down the sheet metal, empty the chip pan and apply a thin film of clean oil to unprotected metal surfaces.

And don't use an air hose to blow everything off, as this drives chips and debris under the way covers and into bearing seals. Instead, use the machine's supply of cutting fluid, teeing off the main coolant line with a short garden hose and spray nozzle if the machine is not already so equipped.

2. Lube Your Machine Up

A good lubrication plan means more than keeping the turret, spindle and way oil reservoirs full. Yes, these fluids should be topped off as needed, but it's just as important to routinely monitor the

levels, and here's why:

Your preventive maintenance plan should include following the machine builder's recommendations on oil change frequency, increasing it only under heavy use and purchasing only high-quality fluids. Once you do, store them in a designated area and properly secure the lids.

- Reduced oil use can mean a clogged lubrication line, spelling trouble with competent wear and part accuracy in the future if not quickly addressed.
- A sudden increase could indicate a leak somewhere, leading to contaminated cutting fluid, dry gears and bearings, and environmental concerns.

3. Skim Oil Off Your Machine

Speaking of oil, guess where it goes after it has done its job? Thanks to gravity, used lubricant runs downhill from bearing and way surfaces and ends up in the sump as tramp oil, where it contaminates the cutting fluid and creates a perfect breeding ground for bacteria.

The results are deplorable: dermatitis, dry skin, nasty smells and poor tool life. The simplest solution is an *oil skimmer*, a low-cost, easy-to-install device that automatically and continuously removes tramp oil, greatly increasing the life and performance of any cutting fluid.

4. Monitor Machine Cutting Fluid

Whether your shop uses neat oils, synthetics or emulsion cutting fluids, they should be kept clean and well maintained. The results are improved tool life and productivity, better part quality and longer-lasting machine tools. Here are several other machine cutting fluid rules to keep in mind:

- Clean sumps at least every couple of months, more often with cast irons and other fine-chipping materials.
- Monitor water-based fluid concentration weekly with a refractometer, and check PH levels with a strip or test kit.
- Keep funky smells at bay with a good-quality bactericide. And when cutting fluid is past its prime, send it to the recycler. You don't want to throw it down the drain and risk stiff fines from environmental regulatory agencies.
- Inspect your filters monthly and replace them according to the manufacturer's recommendations, or more often in dirtier environments.
- Check electrical connections at least annually (don't forget to first power down and lock out the machine).
- Inspect worn way covers, belts and seals quarterly and replace as needed.

- Check machine backlash and alignment quarterly using a dial indicator (or ball-bar if available), and laser-calibrate annually.

Machine tools are big investments and should be treated as such. A good rule of thumb is to arrange one day of scheduled maintenance for every 1,000 hours of machine operation, but that's assuming you already work in a fairly clean, temperature-controlled environment and are the type of operator who takes pride in his or her machine.

Think you're too busy to get all of this done? Consider hiring it out. Many machine tool distributors (Methods Machine Tools and Gosiger are just two examples) offer maintenance contracts and can perform annual calibration, a requirement of some ISO-9001 or comparable quality programs. These service providers can also train shop personnel on machine tool best practices. Either way, right now is the time to get busy, keep it clean and start checking the boxes on your PM plan. Your bottom line will thank you.

Special thanks to Methods Machine Tools Inc., in Sudbury, Massachusetts, for its input on this article.

Key Takeaways

- At the end of every shift, prep your machines by wiping them clean, discarding debris and applying clean oil.
- Consider purchasing only high-quality fluids.
- Typically, you should schedule maintenance for every 1,000 hours of machine operation.

What tips do you use in your machine tool maintenance plan?

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