

Lubrication system checklist

What to check so the oil, and the system around it, keep running

Machine:

Date:

Checked by:

It helps to have a plan when designing, re-designing or modifying a lubrication system. Fourteen things to confirm; details on each at oilviscositychart.com/learn/checklist.php.

The oil

- ☐ 1. Lubricant has the right viscosity. Oils need to be thin enough to flow in high-speed systems, but thick enough to provide a cushion. Based on the speed and temperature of your machine, you can [calculate the right viscosity](#).
- ☐ 2. Sufficient Viscosity Index for temperature range. If your equipment experiences a wide temperature range, you may need a [higher Viscosity Index](#) to make sure it doesn't thin out too much when hot.
- ☐ 3. Pour Point low enough. Cold oil doesn't flow well. The Pour Point should be at least 5 °C below the expected minimum ambient temperature.
- ☐ 4. Flash Point high enough. Hot oil might catch fire. The Flash Point should be above the highest expected operating temperature.
- ☐ 5. The right additives for the job. Extreme Pressure (EP) additives help with high load or shock in the system, while Rust & Oxidation (R&O) additives offer protection against corrosion.

The system around it: clean, cool oil where it should be, and nowhere else

- ☐ 6. Materials are compatible with oil. Your choice of oil should be compatible with everything it touches, including seals, O-rings, piping, hoses, paint, sight gauge and sealant. Some oils aggressively attack copper or bronze, and should be avoided when those metals are present.
- ☐ 7. Compatible with previous oils. If you switch oil types, the old oil should be compatible with the new, or properly and thoroughly flushed out. This is most important when switching between mineral oil and polyalkylene glycol (PAG) based oils.
- ☐ 8. Sight glass or level management. Being able to monitor the oil level will help identify leaks and know when it's time to add more oil to the system.
- ☐ 9. Oil is sufficiently clean. Solid particles can get into oil during manufacturing, transport, or operation. These particles can block lines or increase wear on the equipment. Proper filtration keeps these particles out of your machine.
- ☐ 10. Additives are compatible with filter. Most oil additives are liquid, but some can be solid. If performance additives are necessary to the process it's important they don't get caught up in the filter.
- ☐ 11. Minimal air entrainment. Pumping and circulating oil can introduce air to the liquid. This air reduces the amount of oil that actually helps lubricate the system. Increasing your sump size can give more time for air to escape before it's recirculated. A volume equivalent to 1–3 minutes of flow is recommended.
- ☐ 12. Foaming is limited or mitigated. Entrained air can also lead to foaming in the oil. Foam inhibitors (often silicone-based) can reduce the volume of foam.
- ☐ 13. Stable against oxidation and temperature. As temperature increases so does the risk of degradation of the oil or its additives. Areas with high ambient or operating temperatures should consider oils with enhanced protection against heat.
- ☐ 14. Oil can be contained in a leak. If your oil system leaks, where does it go? Putting a tray or berm underneath your equipment can prevent oil from leaching into the environment, especially important if you store equipment outside. The recommended containment volume is at least 1.5× the maximum volume of your oil system.