Effective Compressor Maintenance

Keep Your Portable Power Plants Performing with Reliability and Regular Maintenance

By Chance Chartters

Portable compressors are the power plants of any construction site. The best way to ensure your power plant's continuing performance and reliability is a regular maintenance routine. The key is to plan preventive maintenance in advance to avoid unexpected and expensive downtime. Don't treat service as a once-a-year requirement. Make it a daily habit to check the engine oil, coolant and fuel levels in addition to checking air intake contamination alarms and the fuel water separator. Use the checklist below and recommended intervals to give your compressors regular check-ups.

Compressors can be divided into seven sub-assemblies: pump or airend, drivetrain, engine, chassis, lubricants/fluids, filters and radiator. These sub-assemblies must be checked and maintained on a regular basis. In addition, the benefits of using genuine filters and maintenance parts, and replacing them when needed should not be underestimated. Any contaminants not trapped in the filters will eventually damage the machinery. Using proper filtration and quality fluids is more cost effective than repairing damaged equipment later. Keep the following checklist as a guide for routine maintenance.

Maintenance Checklist

1. Pump or Airend — This is the unit's compression mechanism. While there are several methods, most portable units in today's market use a rotary screw airend.

Rotary Screw Airend — It compresses air internally using two helical lobe rotors inside a housing.

A. Check for mechanical seal leakage.

B. Check for inlet valve wear.

C. Check for excessive bearing "play."

D. Recommended rebuild: 50,000 to 100,000 hours.

2. Drivetrain — This mechanically connects the airend to the engine, allowing the engine to drive the airend.

Direct Drive *(without permanent alignment components)* — This is where the engine and motor are directly connected.

A. Verify that the direct drive system is perfectly aligned.

B. Check frame and mounting block for "settling," which may cause misalignment and coupling damage.

Direct Drive *(with permanent alignment components)* — This is where the engine and motor are directly connected with a maintenance-free coupling for "zero-loss" transmission efficiency. This relatively new concept is available only from some manufacturers.

A. You only need to check the coupling annually.

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Gear Drive — This is a system of gears used to connect the airend and engine.

A. Check spray bar for excessive contaminants and plugged orifices.

B. Check for wear and "backlash" (excessive play between the gears).

C. Ensure proper lubrication.

V-Belts Drive — A system of belts and pulleys that connect the airend and motor. It's only occasionally found in portable units.

A. Check V-belt tension. *Note*: V-belts should be taut (but not over tightened) with very little slack or play.

B. Check wear on v-belt/pulley.

3. Engine — Like the ones found in most automobiles, the internal combustion engine provides the energy to turn the airend that compresses the air.

A. Check engine lubricant level. Recommended engine lubricant change interval: 500 hours.

B. Check air intake filter contamination alarm.

C. Clean and replace air intake filter regularly. Recommended engine lubricant filter change interval: 500 hours.

D. Adjust valve clearance.

E. Check and adjust engine fan belt tension.

F. Inspect the fuel injectors.

4. Chassis — This is the frame and housing for compressor components. It also includes canopy, tow bar, tires, bumpers and a solid steel flooring from some manufacturers.

A. Check tire pressure and inspect for excessive tread wear.

B. Tighten wheel bolts if necessary.

C. Grease coupling head, joints and tow bar.

5. Lubricants — Lubricants in the airend cool, seal, lubricate and remove contaminants.

A. Use proper grade (see manufacturer's manual).

B. Drain existing lubricant before refilling.

C. Draw lubricant samples at regular intervals to determine maximum lubricant life.

D. Use synthetic lubricant for maximum service life.

6. Compressor Filters

Compressor Air Filter — Generally located prior to the airend inlet valve, the air filter removes bulk contaminants from the air entering the airend. Any contaminants not trapped in the filter will eventually damage machinery and equipment.

A. Use proper micron rating as specified by OEM.

B. Check pressure differential and, if necessary, carefully clean according to manufacturer's recommendations.

C. Check for worn/damaged seals.

D. Check structural integrity.

E. Recommended air filter change interval: 500 hours.

Compressor Lubricant Filter and Lubricant Separator — The compressor lubricant filter removes particulates from the lubricant circulated in the airend. The lubricant separator removes lubricant from the air before it is discharged.

A. Check the lubricant level and change regularly. Recommended lubricant change interval: 1,000 hours.

B. Replace compressor lubricant filter. Recommended compressor lubricant filter change interval: 1,000 hours.

C. Change the lubricant separator cartridge in the lubricant separator. Recommended lubricant separator cartridge change interval: two years or 1,000 hours.

Inspect the compressor lubricant filter and change regularly.

D. Clean the lubricant cooler.

E. Use only genuine replacement parts.

F. *Caution*: Do not change filters or check fluids while the compressor is running. Spraying fluids such as oil can cause burns or serious injury.

7. Radiator — This provides the cooling for the engine and in some cases will provide compressor fluid cooling.

A. Check the engine coolant level.

B. Check for visible contamination and clean regularly.

C. Check the anti-freeze protection and change coolant if necessary.

D. Inspect hoses and hose clamps for wear.

8. Other Components

A. Check the battery's electrolyte and pole connections.

B. Check the lifting frame.

C. Check hoses for wear and tightness.

D. Check all accessible screw connections, pipelines and clamps for wear and tightness.

E. Grease the canopy hinges.

F. Ensure that pressure and temperature gauges are working.

Once service is complete, double check that all protective guards and cover panels have been properly re-installed and that all tools have been removed from the compressor unit. Routine maintenance also helps ensure the compressor's safe operation on site as well. Never compromise operator safety by delaying required maintenance. In addition, advise users on the proper safety gear for the intended application. Provide a mini-instruction course and safety pamphlet on safe compressor operation. Review all precautions with regular users as well.

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