

Granulator Shredder Blade Sharpening And Gap Adjustment

1.0 Maintenance Objective & Frequency

The objective of this procedure is to restore sharp cutting edges on granulator shredder blades and precisely set the gap between the rotor blades and the bed knife. Proper blade sharpness and gap adjustment ensure consistent particle size, reduce motor load, prevent material jamming, and extend blade life. This PM is to be performed every 200 operating hours or when a noticeable decline in cutting quality is observed.

2.0 Lockout/Tagout (LOTO) & Safety

- Electrical Isolation: Disconnect and lock out the main disconnect switch. Verify zero energy state with a voltmeter.
- Mechanical Isolation: Ensure the rotor is completely stopped and cannot rotate. Engage the rotor lock pin if equipped.
- Residual Energy: Check for any stored energy in the drive system (e.g., flywheel). Wait 5 minutes after shutdown for capacitors to discharge.
- PPE: Wear cut-resistant gloves, safety glasses with side shields, hearing protection, and steel-toed boots. Use a face shield when grinding.

3.0 Required Tools, Parts & Lubricants

- Surface grinder or bench grinder with fine grit wheel (e.g., 60-80 grit aluminum oxide)
- Feeler gauge set (0.001 inch to 0.050 inch)
- Torque wrench (range 20-100 Nm)
- Socket set and Allen keys (metric, sizes as per OEM)
- Dial indicator with magnetic base (0.001 inch resolution)
- Blade sharpening fixture or angle guide (to maintain OEM bevel angle)
- Replacement blades (if sharpening limit is reached)
- Anti-seize compound (for blade bolts)
- Cleaning solvent and lint-free rags

4.0 Step-by-Step Maintenance Procedure

1. Perform Lockout/Tagout (LOTO) as per Section 2.0. Verify zero energy state.
2. Remove the granulator hopper and access covers to expose the cutting chamber. Clean out any residual material using a brush and vacuum.
3. Inspect all rotor blades and the bed knife for chips, cracks, or excessive wear. Measure blade thickness with a caliper; if below OEM minimum thickness, replace the blade.
4. Remove the rotor blades by loosening the retaining bolts in a crisscross pattern. Apply anti-seize to threads before reinstallation. Mark each blade's position for reinstallation in the same location.

5. Secure each blade in the sharpening fixture. Grind the cutting edge to the OEM-specified bevel angle (typically 30-45 degrees). Use light passes and coolant to avoid overheating the blade. Remove only enough material to achieve a clean, sharp edge (typically 0.005-0.010 inch per pass).
6. Deburr the sharpened edge with a fine stone or 400-grit sandpaper. Wipe the blade clean with solvent.
7. Reinstall the rotor blades in their original positions. Torque the retaining bolts to OEM specification (e.g., 45 Nm for M10 bolts) using a crisscross pattern. Do not overtighten.
8. Remove the bed knife. Sharpen it using the same procedure as the rotor blades. Reinstall the bed knife and torque bolts to specification.
9. Set the rotor-to-bed knife gap. Rotate the rotor by hand to bring one blade to the closest point to the bed knife. Insert a feeler gauge between the blade and bed knife. Adjust the bed knife position until the feeler gauge slides with slight drag. The gap should be 0.010-0.020 inch for most granulators (refer to OEM manual). Repeat for all rotor blades.
10. Verify gap consistency using a dial indicator. Mount the indicator on the bed knife and zero it against a rotor blade. Rotate the rotor and record the runout. The gap variation should not exceed 0.002 inch across all blades. Re-adjust if necessary.
11. Reinstall the hopper and access covers. Ensure all fasteners are torqued to specification.

5.0 Verification & Return to Service

1. Remove all LOTO devices. Restore power to the granulator.
2. Perform a dry run (no material) for 30 seconds. Listen for unusual noises (rubbing, knocking). Check that the rotor rotates freely and stops smoothly.
3. Run a test batch of scrap material (e.g., 5 kg of plastic purgings). Verify that the output particle size is consistent and within specification. Monitor motor amperage; it should not exceed 80% of rated full load amps.
4. Inspect the cutting chamber for any signs of blade contact or scoring after the test run. If damage is found, re-check the gap adjustment.
5. Record the PM completion in ServiceGrid, including blade thickness measurements, gap settings, and any observations. Sign off on the work order.

Regulatory Disclaimer: This document is a generic maintenance template provided for educational and informational purposes only. It does not constitute professional engineering or reliability advice. The end-user assumes all liability for validating all step sequences, torque specs, and LOTO protocols against specific machinery OEM manuals before deployment to a live production floor.