SOP Template: Machine Operation and Calibration Guidelines

This SOP provides detailed **machine operation and calibration guidelines** to ensure safe, efficient, and accurate use of machinery. It covers the proper startup and shutdown procedures, routine maintenance checks, calibration protocols for optimal performance, troubleshooting techniques, and safety precautions. Adhering to these guidelines minimizes equipment downtime, enhances productivity, and promotes workplace safety by reducing the risk of accidents and machine malfunction.

1. Purpose

To establish standard operating procedures for the operation and calibration of machinery, ensuring safe, accurate, and efficient use.

2. Scope

This SOP applies to all personnel responsible for operating, maintaining, and calibrating machinery within the facility.

3. Responsibilities

- **Operators:** Follow operating and calibration instructions, report malfunctions, and carry out daily checks.
- **Maintenance Personnel:** Perform scheduled maintenance, calibrate equipment, and document activities.
- **Supervisors:** Ensure compliance with this SOP, review logs, and arrange necessary training.

4. Definitions

Term	Definition
Calibration	Adjusting machinery to ensure accurate readings and optimal performance.
Startup Procedure	The process required to safely power up and prepare machinery for operation.
Shutdown Procedure	The process for safely powering down equipment and securing it against unauthorized use.
Preventive Maintenance	Regularly scheduled inspection, cleaning, and servicing to avoid equipment failure.

5. Procedure

5.1 Startup Procedure

1. Ensure machine area is clean and free of obstructions.
2. Perform pre-operation checks (power supply, safety guards, lubricants, etc.).
3. Switch on the main power supply.
4. Inspect control panels for any alerts or warnings.
5. Start the machine as per manufacturer instructions.
6. Confirm normal operation before use.

5.2 Shutdown Procedure

1. Power down the machinery following the standard sequence.
2. Allow all moving parts to come to a complete stop.
3. Turn off the main power supply or unplug the machine.
4. Secure area and tag out if maintenance is required.

5.3 Routine Maintenance Checks

- Check lubricant and coolant levels.
- Inspect safety features and guards.
- Remove debris and clean surfaces.

- Tighten loose bolts and fasteners.
- Document all findings and corrective actions.

5.4 Calibration Protocol

1. Refer to the manufacturer calibration schedule and standards.
2. Power up the machine and allow it to reach operating conditions.
3. Use certified calibration tools and reference materials.
4. Adjust settings as required and record calibration values.
5. Retest machine output to confirm accuracy.
6. Complete calibration logs and report anomalies.

5.5 Troubleshooting

- If abnormal sounds, error messages, or unexpected behavior occur, follow the troubleshooting chart in the user manual.
- Document all incidents and report to the supervisor.
- Do not bypass or disable safety devices during troubleshooting.

6. Safety Precautions

- Always use required PPE (personal protective equipment).
- Never operate machinery without proper training.
- Follow lockout/tagout procedures during repairs or maintenance.
- Keep hands, clothing, and tools away from moving parts.
- Report any unsafe conditions to a supervisor immediately.

7. Documentation

1. Maintain daily operation checklists and calibration logs.
2. Record all maintenance and repairs performed.
3. File incident and deviation reports as necessary.

> **Note:** This SOP should be reviewed annually or whenever major changes are made to equipment or operating requirements.

8. Revision History

Version	Date	Description	Approved By
1.0	2024-06-01	Initial release	[Name/Title]