Paint Shaker Timer Calibration & Verification Procedure

1.0 Maintenance Objective & Frequency

The objective of this procedure is to calibrate the paint shaker timer to ensure the mixing cycle duration matches the set value within ±1 second tolerance. Accurate timer calibration prevents under-mixing (causing paint defects) or over-mixing (wasting energy and reducing machine life). This PM is to be performed quarterly (every 3 months) or whenever a timer drift is suspected due to inconsistent paint quality.

2.0 Lockout/Tagout (LOTO) & Safety

- Electrical Isolation: Disconnect the paint shaker from its power source (unplug or lock out the circuit breaker). Apply a personal lock and tag.
- Pneumatic Isolation: If the shaker uses pneumatic clamping, close the shut-off valve and bleed residual air from the cylinder lines.
- Mechanical Lockout: Ensure the shaker clamp is fully open and the machine is at rest before accessing the timer panel.
- PPE: Wear safety glasses, cut-resistant gloves, and hearing protection (if the shaker is in a noisy environment).

3.0 Required Tools, Parts & Lubricants

- Digital stopwatch (certified, resolution 0.01 seconds)
- Small flathead screwdriver (for timer potentiometer adjustment)
- Multimeter (to verify timer relay contacts if needed)
- Replacement timer module (if adjustment fails; OEM part number per machine manual)
- Isopropyl alcohol wipes (for cleaning timer contacts)
- Lockout/tagout kit (personal lock, hasp, tag)

4.0 Step-by-Step Maintenance Procedure

1. Perform lockout/tagout: disconnect power, apply personal lock, and verify zero energy state with a multimeter at the machine's main disconnect.
2. Open the timer control panel enclosure. Use the flathead screwdriver to carefully remove the cover screws. Set screws aside in a magnetic tray.
3. Visually inspect the timer module for signs of damage: burnt contacts, cracked casing, or loose wiring. Clean any dust or debris from the timer face and contacts using isopropyl alcohol wipes.
4. Locate the timer adjustment potentiometer (typically a small screw or dial marked 'TIME ADJ' or 'CAL'). Note the current setting position.
5. Re-energize the machine temporarily for the calibration test. Ensure the shaker is empty and the clamp is open. Set the timer to a known test value (e.g., 60 seconds) using the machine's control interface.

6. Start the shaker cycle and simultaneously start the digital stopwatch. Allow the shaker to run until the timer stops the cycle. Record the actual elapsed time on the stopwatch.

7. If the actual time deviates by more than ±1 second from the set value, adjust the potentiometer slightly (e.g., 1/8 turn clockwise to increase time, counterclockwise to decrease). Repeat steps 5-6 until the deviation is within ±0.5 seconds.

8. Once calibrated, run three consecutive test cycles at the same set value (60 seconds). Record all three times. The maximum deviation between any two readings must not exceed 0.5 seconds. If it does, the timer module may be faulty and should be replaced.

9. If replacement is needed, de-energize the machine again, remove the old timer module, install the new one per OEM wiring diagram, and repeat steps 5-8 to calibrate the new unit.

10. After successful calibration, secure the timer panel cover with the screws. Torque screws to 1.5 Nm (finger-tight plus 1/4 turn) to avoid cracking the enclosure.

11. Remove lockout/tagout. Restore power to the machine. Run one final verification cycle with a typical paint can (e.g., 1 gallon) to ensure the shaker operates smoothly and the timer stops the cycle at the correct time.

5.0 Verification & Return to Service

1. Confirm the paint shaker timer stops the cycle within ±1 second of the set value for three consecutive runs using the digital stopwatch.

2. Visually inspect the shaker for any abnormal noise, vibration, or leaks during the test run. Ensure the clamp opens and closes properly.

3. Document the calibration results (set value, actual times, adjustment made) on the PM work order in ServiceGrid. Include any parts replaced.

4. Sign off on the PM work order in ServiceGrid, marking the equipment as 'In Service' and noting the next calibration due date (quarterly).

5. Notify the production supervisor that the paint shaker is ready for use. Provide a brief summary of the calibration performed.

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.