Semi-Annual Checkout Procedure (Muting Systems)

Perform the procedure contained on this semi-annual checkout card every six months following system installation, or whenever changes are made to the system (either a new configuration of the SGS or changes to the machine.) Semi-annual checkouts must be performed by a **Qualified Person** (appointed and identified in writing by the employer). Keep a copy of the checkout results on or near the machine (see OSHA 1910.217(e)(1)).

Perform the following procedure every six months following system installation:		
☐	1	To **prepare** for this checkout, configure the SGS as it will be during machine operation.
☐	2	**Examine** the guarded machine to verity it is compatible with the SGS. See the Instruction Manual for a list of inappropriate applications. • Emitter/Receiver with Integral Muting: *206065* • Active/Passive with Integral Muting: *206064* **Safety Distance (minimum distance):** _____
☐	3	**Calculate and record** the safety distance (minimum distance) according to the formula provided in the SGS Instruction Manual.
☐	4	**Verify** that the safety distance (minimum distance) from the closest hazard point of the guarded machine to the light grid is not less than the distance calculated above.
☐	5	**Verify** that: • Access to the guarded area is not possible from any area not protected by the SGS. Hard guarding or supplemental presence-sensing devices must be installed, wherever needed, to prevent any person from reaching over, under, or around the light grid or entering into the hazard area. • All supplemental guarding devices and hard guarding are in place and operating properly.
☐	6	**Verify** that it is not possible for a person to stand inside the guarded (dangerous) area, undetected by the SGS or other supplemental guarding (as described in appropriate standards).
☐	7	If used, **verify** that: • The Reset switch is mounted outside the guarded area, out of reach of anyone inside the guarded area; and • The means of preventing inadvertent use, such as rings or guards, is in place.
☐	8	**Examine** the electrical wiring connections between the SGS OSSD outputs and the guarded machine's control elements to verify the wiring meets the requirements stated in the Instruction Manual.
☐	9	**Inspect** the area near the light grid (including work pieces and the guarded machine) for reflective surfaces. Reflective surfaces may cause the System beams to reflect around a person in the light grid, preventing the person from being detected and not stopping the machine motion. Remove the reflective surfaces as possible by either relocating, painting, masking, or roughening them. Remaining problem reflections will become apparent during step 13.
☐	10	**Apply power** to the SGS. **Verify** that power to the guarded machine is off. **Remove** all obstructions from the light grid.
☐	11	**Observe** the Diagnostic Display and status indicators on the receiver/active transceiver to determine the system status: • **Clear**: OSSD Outputs On indicator—Green Diagnostic display—0 to 3 horizontal lines, based on the signal strength • **Blocked**: OSSD Outputs Off indicator—Red Diagnostic display—Blank, "1", or "2" (Scan Code) • **Latched**: OSSD Outputs Off indicator—Red Sync Beam—Amber Diagnostic Display—"L" • **Lockout**: OSSD Outputs Off indicator—Red All others—Off Diagnostic display—Error code • **Muted**: OSSD Outputs On indicator—Green Diagnostic display—0 to 3 horizontal lines based on signal strength Mute Lamp—Flashing

Original Document
203651 Rev. A

16 January 2018

203651

ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

Perform the following procedure every six months following system installation:		
☐	12	If the machine is in a **Clear** condition, go to step 13. If the machine is in a **Latched** condition, activate the reset line to turn the outputs on. If the machine is in a **Lockout** condition, refer to the Troubleshooting section of the Instruction Manual. If the machine is in a **Blocked** condition, one or more beams is misaligned or interrupted. To correct this situation: 1. Check carefully for any obstruction in the beam path. 2. Check for contamination. Clean the emitter and receiver windows as required. 3. If the light grid is completely clear of obstructions, realign the emitter and receiver, as described in the Instruction Manual.
☐	13	After the OSSD Outputs On indicator is green, perform the trip test (see the Daily Checkout card) to verify proper System operation and to detect possible reflection problems. ⚠ **WARNING: If the Trip Test Indicates a Problem** If the SGS System does not respond properly to the trip test, do not attempt to use the System. If this occurs, the System cannot be relied on to stop dangerous machine motion when a person or object enters the sensing field. **Failure to follow these instructions could result in serious injury or death.** ⚠ **WARNING:** Before applying power to the machine, verify that the guarded area is clear of personnel and unwanted materials (such as tools). Failure to do so may result in serious bodily injury or death.
☐	14	**Apply power** to the guarded machine and verify the machine does not start up. **Block one of the grid beams** and **verify** that it is not possible for the guarded machine to be put into motion while a beam is blocked.
☐	15	**Initiate** machine motion of the guarded machine. While it is moving, use the test piece to block one of the grid beams. Do not attempt to insert the test piece into the dangerous parts of the machine. **Verify** that when the test piece is blocking a beam, the dangerous parts of the machine come to a stop with no apparent delay. When the test piece is removed from the beam, verify that the machine does not automatically restart and that the initiation devices must be engaged to restart the machine.
☐	16	**Remove electrical power to the SGS**. All OSSD outputs should immediately turn off and should not be capable to turning on until power is re-applied and, if in Manual Start/Restart (Latch) Output Mode, a manual reset is performed.
☐	17	**Test the machine stopping response time** using an instrument, such as an oscilloscope, to verify that it is the same or less than the overall system response time specified by the machine manufacturer. ☞ **Important:** Do not continue with this checkout procedure or operate the guarded machine until the situation is corrected and the indicators respond properly as described above.
☐	18	**If any decrease in machine braking ability has occurred**, make the necessary clutch/brake repairs. Readjust safety distance (minimum distance) appropriately, record the new distance calculation on the appropriate Daily Checkout Procedure card and/or in the manual, and perform the Daily Checkout procedure again.
☐	19	**Examine and test** the machine primary control elements (MPCEs) and any intermediary controls (such as interface modules) to verify they are functioning correctly and are not in need of maintenance or replacement.
☐	20	**Inspect** the guarded machine to verify that no other mechanical or structural problems could prevent the machine from stopping or assuming an otherwise safe condition when signalled to do so by the SGS.
☐	21	**Examine and inspect** the machine controls and connections to the SGS to verify that no modifications have been made that adversely affect the System.

Perform the following procedure every six months following system installation:		
☐	22	If the muting feature is used do not expose any individual to hazard while attempting to initiate a mute cycle. 1. Verify that the mute devices are intact and operating properly. 2. Initiate a normal mute cycle. Observe the receiver/active transceiver Diagnostic Display (see step 11). Verify: • OSSD Outputs On indicator—Green • Diagnostic display—0 to 3 horizontal lines based on signal strength • Mute Lamp—Flashing 3. If used, verify that the external mute indicator is ON. 4. Interrupt the light grid with the test piece. Verify: • OSSD Outputs On indicator—Green • Diagnostic display—0 to 3 horizontal lines based on signal strength • Mute Lamp—Flashing 5. Clear the safety light screen (before the Mute Timer expires). Verify: • OSSD Outputs On indicator—Green • Diagnostic display—0 to 3 horizontal lines based on signal strength • Mute Lamp—Flashing 6. Clear (or deactivate) the mute devices. Verify: • OSSD Outputs On indicator—Green • Diagnostic display—0 to 3 horizontal lines based on signal strength • Mute Lamp—Off 7. If used, verify that the external mute indicator is OFF. 8. Verify it is not possible for an individual to trigger the mute devices (block both photoelectric beams or actuate both switches) to initiate a mute and then pass through the defined area without being detected and a subsequent stop command being issued to the machine.
☐	23	If the Override feature is used: 1. Ensure that the positioning of the OR1 and OR2 switches allows the operator full view of the hazardous area and the area being guarded by the safety light grid. Verify that the location is not within reach from inside the safeguarded space. 2. With muting de-activated, interrupt the safety light grid with the test piece. If Mute Dependent Override is used, also block one mute device. Verify: • The external mute indicator, if used—Flashing • OSSD Outputs Off indicator—Red • Diagnostic display—Blank, "1", or "2" (Scan Code) • Mute Lamp—Flashing 3. Initiate an override by activating the OR1 and OR2 switches within 400 ms of each other. 4. While the light grid is interrupted, verify: • External mute indicator, if used—ON • OSSD Outputs On indicator—Green • Diagnostic display—0 to 3 horizontal 5. Verify that the override drops out after 120 seconds. To initiate another override, return switches to the original condition, wait 400 ms, and then activate both Override switches again within 400 ms of each other.

Important: Do not continue operation until the entire checkout procedure is complete and all problems are corrected.

WARNING: Do not use machine until the system is working properly. If any of these checks cannot be verified, do not attempt to use the SGS/guarded machine until the defect or problem has been corrected (see the Troubleshooting section of the Instruction Manual). Attempts to use the guarded machine under such conditions may result in serious bodily injury or death.

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