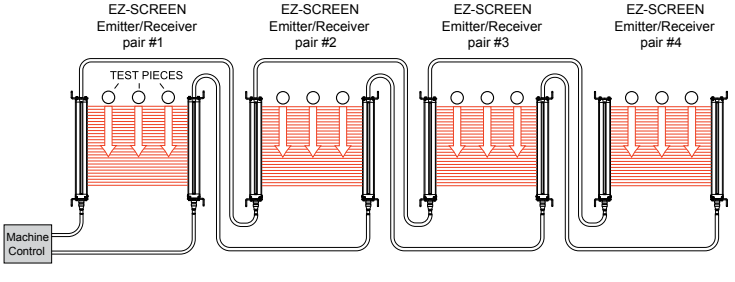
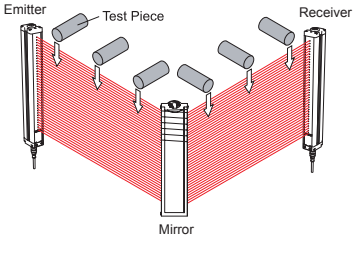
Daily Checkout Procedure for Cascaded Systems

Banner Engineering highly recommends performing the System checkouts as described. However, a Qualified Person (or team) should evaluate these generic recommendations considering their specific application and determine the appropriate frequency of checkouts. This will generally be determined by a risk assessment, such as the one contained in ANSI B11.0. The result of the risk assessment will drive the frequency and content of the periodic checkout procedures and must be followed.

Daily checkout and checkouts after tooling and machine changes must be performed by a Designated Person (appointed and identified in writing by the employer). During continuous machine run periods, this checkout must be performed at regular intervals. A copy of the checkout results should be kept on or near the machine: see OSHA 1910.217(e)(1).

The Instruction Manual is p/n 112852.

If cascadable models are used individually (stand-alone), follow the Daily Checkout procedure on document p/n 113361.

Perform at every power-up, shift change, and machine set up.		
☐	1	Verify that: • Access to the guarded area is not possible from any area not protected by the EZ-SCREEN System. Hard guarding or supplemental presence-sensing devices must be installed, wherever needed, to prevent any person from reaching over, under or around the defined area or entering into the hazard area. • All supplemental guarding devices and hard guarding are in place and operating properly.
☐	2	Verify that the Safety Distance from the closest hazard point of the guarded machine to the defined area is not less than the distance calculated in the instruction manual and recorded here: _____.
☐	3	Verify that it is not possible for a person to stand inside the guarded (dangerous) area, undetected by the EZ-SCREEN System or other supplemental guarding (as described in ANSI/RIA R15.06, or other appropriate standards).
☐	4	If used, verify that: • The Reset switch is mounted outside the guarded area, out of reach of anyone inside the guarded area • The means of preventing inadvertent use (for example, rings or guards) is in place
☐	5	Once all Zone indicators are green, test the effectiveness of the EZ-SCREEN System with the power on, using the trip test. Select the appropriate piece: **14 mm Models:** STP-13 (Reduced Resolution OFF) or STP-14 (Reduced Resolution Enabled) **30 mm Models:** STP-14 (Reduced Resolution OFF) or STP-15 (Reduced Resolution Enabled)
	5a	Trip Test: With the power on, verify that the EZ-SCREEN System is in Run mode; receiver (see figure "Daily Checkout Procedure for Cascaded Systems" on page 0) status indicators should be as follows: Status indicator: Green All Zone indicators: Green Reset Indicator: ON Yellow Diagnostic Display: • "-" (Trip Output mode) • "L" (Latch Output mode) A manual reset may be required in Latch output mode (see *Reset Switch Location* in the instruction manual).
	5b	*With the guarded machine at rest,* pass the test piece downward through the defined area of emitter/receiver pair #1 in three paths: near the receiver, near the emitter, and midway between them. If the emitter and receiver are far apart, a second person may be needed to monitor the indicators while the test piece is used near the emitter or in the midway position. If corner mirrors are used in the application, the beams must be tested in three places on each leg of the beam path (between emitter and mirror, and also between mirror and receiver). *Trip test on cascaded systems*  *Trip test for corner mirror applications* 

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Perform at every power-up, shift change, and machine set up.

		WARNING: • **Trip test failure** • Using a system that has failed a trip test can result in serious bodily injury or death. If the trip test has failed, the system might not stop dangerous machine motion when a person or object enters the sensing field. • Do not attempt to use the system if the system does not respond properly to the trip test.
		WARNING: • **Clear the guarded area before applying power or resetting the system** • Failure to clear the guarded area before applying power could result in serious injury or death. • Verify that the guarded area is clear of personnel and any unwanted materials before applying power to the guarded machine or before resetting the system.
	5c	With the guarded machine at rest, pass the test piece downward through the defined area of emitter/receiver pair #2 in three paths as described in 5b. Repeat for each emitter/receiver pair in the system.
	5d	Verify that when the test piece is interrupting the defined area of emitter-receiver #1, at least one Zone indicator must be red. Different red Zone indicator(s) will be lit, according to the position of the test piece. **NOTE:** If beam 1 is blocked, Zone 1 indicator will be red and all other Zone indicators will be off because beam 1 provides the synchronization signal for all the beams. The display will indicate CH1. Of emitter/receiver pairs #2, 3, or 4 - At least one Zone indicator on the blocked receiver must be red, The specific red Zone indicator lit changes according to the position of the test piece. **Trip Output Operation:** The Status indicator must turn red and remain red while the test piece remains in the defined area. If not, the installation has failed the trip test. **Latch Output Operation (receiver #1 configured for Latch Output, all other receivers configured for Trip Output):** The Status Indicator must turn red and remain red, and the yellow Reset Indicator must remain ON steady while the test piece remains in the defined area. If the Reset Indicator begins to flash at any time while the test piece is interrupting the defined area, the installation has failed the trip test. **If all Zone indicators are green or do not follow the position of the test piece, or if the Status indicator turns green while the test piece is interrupting the defined area,** the installation has failed the trip test. Check for correct sensor orientation, for the presence of reflective surfaces (see below), or for unguarded areas created by the use of blanking. **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.
	5e	Verify that when the test piece is removed from the defined area, all Zone indicators turn green. If the System is operating in Latch Mode, the yellow Reset indicator should be flashing. Perform a manual reset. Verify that the receiver Status Indicator is steady green (or flashing green if Reduced Resolution is enabled)
☐	6	Initiate machine motion of the guarded machine, and while it is moving, insert the appropriate (optional) test piece into the defined area. **Do not attempt to insert the test piece into the dangerous parts of the machine.** Verify that, when the test piece is in the defined area, the dangerous parts of the machine come to a stop with no apparent delay. Remove the test piece from the defined area and verify that: • The machine does not automatically restart, and • Initiation devices must be engaged to restart the machine.
☐	7	With the guarded machine at rest, insert the test piece into the defined area and verify that the guarded machine cannot be put into motion while the test piece is in the defined area.
☐	8	Check carefully for external signs of damage or changes to the EZ-SCREEN System, the guarded machine, and their electrical wiring. Any damage or changes found should be immediately reported to management. **IMPORTANT:** Do not continue operation until the entire checkout procedure is complete and all problems are corrected.
		Eliminating Problems with Reflective Surfaces If possible, relocate the emitter and/or receiver to move the defined area away from the reflective surface(s), being careful to maintain adequate separation distance (see step 2). Otherwise, if possible, paint, mask or roughen the surface to reduce the reflectivity. Where these are not possible (as with a shiny workpiece), include a means of restricting the receiver's field of view or the emitter's spread of light in the sensor mounting. Repeat the trip test to verify that these changes have eliminated the problem reflection(s). If the workpiece is especially reflective and comes close to the defined area, perform the trip test with the workpiece in place.

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