

Space Engineers 2 – Automation Reliability Bug Report

Event Controller and Timer actions intermittently fail with Hinges / mechanical subgrids

Summary

I am reporting reproducible and intermittent failures in Space Engineers 2 automation when controlling a three-section folding solar-panel assembly made from hinges. The mechanical assembly itself works when hinges are controlled manually. However, Event Controller and Timer Block automation can fail to execute the expected hinge movement, even when the automation block visibly triggers and even when the hinge velocity value changes in the terminal.

The most concerning behavior is that the failure is not consistently tied to one hinge or one timer. In repeated tests from the same folded geometry, one run can unfold all three sections, while another run can skip Hinge 2 but still unfold Hinge 3, or unfold Hinge 2 but fail to unfold Hinge 3. This makes the automation unreliable for normal gameplay and for engineering builds that depend on deterministic mechanical sequencing.

Environment / build information

- Game: Space Engineers 2 (PC, current public build at time of report; exact build number can be taken from the attached log/save or added before submission).
- Mode: Single-player engineering build; no scripts are required for the reproduction.
- Assembly: Three 5 m solar-panel sections connected in series with three hinges. Hinge 1 is attached to the main grid; Hinge 2 and Hinge 3 are on successive mechanically connected subgrids.
- Hinge travel: Hinge 1 = 0–90°; Hinge 2 = 0–180°; Hinge 3 = 0–180°.
- Typical hinge velocity magnitude: 1 RPM. Torque was also tested at very high/maximal values to rule out insufficient torque.

Expected behavior

Automation actions should execute deterministically. If an Event Controller or Timer Block fires an action such as Reverse Velocity on a hinge, the hinge should respond exactly as it does when the same action is issued manually. Repeated tests from the same mechanical state should produce the same result.

Observed behavior

- Event Controller configured to monitor Hinge Angle can visibly trigger (including its sound/indicator), but the target hinge does not move.
- The same hinge can be moved immediately by manually pressing Reverse Velocity, proving the hinge and mechanical geometry are functional.
- A physical button using Reverse Velocity on Hinge 2 works, and once Hinge 2 is manually started, downstream automation can continue and unfold Hinge 3.
- Timer Block tests are intermittent. In one test, Hinge 1 unfolded and Hinge 3 unfolded, while Hinge 2 remained stationary.
- In another test from the same folded geometry, Hinge 1 and Hinge 2 unfolded, but Hinge 3 did not.
- In a diagnostic test, Timer 1 fired and changed Hinge 2 Angular Velocity from -1.0 RPM to +1.0 RPM, but Hinge 2 still did not physically rotate. At the same time, Timer 2 later fired and Hinge 3 began moving.

- Reset/Restart state also appears to affect repeatability. Re-running the same sequence after Reset can produce a different failed stage than a previous run.

Reference hinge states used during testing

- Fully folded state:
 - Hinge 1 = -1 RPM; Hinge 2 = -1 RPM; Hinge 3 = +1 RPM
- Fully unfolded state:
 - Hinge 1 = +1 RPM; Hinge 2 = +1 RPM; Hinge 3 = -1 RPM

These signs are expected because Hinge 3 is mounted in the opposite orientation. Reverse Velocity is therefore a valid intended action; the issue is that the same command does not produce a reliable physical response when invoked through automation.

Reproduction A – Event Controller

1. Build a three-section folding assembly with Hinge 1 on the main grid and Hinge 2 / Hinge 3 on mechanically connected child subgrids.
2. Set Hinge 1 limits to 0–90°. Set Hinge 2 and Hinge 3 for approximately 0–180° travel.
3. Create an Event Controller and select parameter “Block Hinge Angle”. Select Hinge 1 as the monitored block.
4. Set comparison to Greater Than and threshold to approximately 89°.
5. Assign the When True action: Hinge 2 → Reverse Velocity.
6. Fold the assembly, then manually start Hinge 1 so it rotates from 0° to 90°.
7. Observe the Event Controller trigger at the threshold. In the failing case, Hinge 2 does not move.
8. Manually execute Reverse Velocity on Hinge 2. Hinge 2 moves normally.

Reproduction B – Timer Blocks

1. Disable/remove Event Controller actions so only Timer Blocks are involved.
2. Timer 1: delay about 15 s; action = Hinge 2 → Reverse Velocity.
3. Timer 2: delay about 46 s when tested independently (or 31 s when started after Timer 1); action = Hinge 3 → Reverse Velocity.
4. Start from the exact folded reference state: H1 -1 RPM, H2 -1 RPM, H3 +1 RPM.
5. Reset the timers, manually start Hinge 1, then start Timer 1 and Timer 2.
6. Repeat the exact sequence multiple times.
7. Observed intermittent outcomes include: (a) all three unfold correctly; (b) Hinge 2 is skipped but Hinge 3 unfolds; (c) Hinge 2 unfolds but Hinge 3 is skipped.

8. In at least one failure, Hinge 2 terminal value changed from -1 RPM to +1 RPM after Timer 1 fired, confirming the action reached the property/state, yet the physical hinge did not rotate.

Troubleshooting already performed

- Verified that all three hinges can move manually.
- Verified Hinge 2 Reverse Velocity works from a physical button.
- Raised hinge torque to a very high/maximal value to exclude insufficient torque.
- Tested repeated cycles from known folded and unfolded velocity-sign states.
- Reset timers before tests; also tested without Reset to compare behavior.
- Separated timers so Timer 1 no longer had to start Timer 2, to rule out timer-cascade dependency.
- Temporarily disabled Fold timers to prevent accidental reverse commands from another automation chain.
- Observed different failure points across otherwise equivalent repeated runs, suggesting action/state synchronization rather than a fixed mechanical obstruction.

Why this appears to be an automation bug

The hinges are mechanically functional and can be controlled manually. The same action sometimes works and sometimes does not. Downstream timers can still execute after an earlier hinge fails to move, which indicates the timers themselves are reaching their trigger point. Most importantly, a failing test showed the Hinge 2 Angular Velocity value changing from -1 to +1 after the Timer action while the physical hinge remained stationary. This suggests a synchronization or action-execution issue between toolbar automation and mechanical-block simulation/state, potentially involving subgrids.

Impact

This prevents reliable construction of folding solar arrays, ramps, doors, cranes, robotic mechanisms, and other multi-stage engineering systems using the intended automation blocks. Because the failure is intermittent, players cannot work around it simply by adjusting delays or torque; the same setup may pass one run and fail on the next.

Requested investigation

- Please test Event Controller → Hinge actions across mechanically connected subgrids.
- Please test Timer Block → Reverse Velocity on hinges repeatedly from identical initial states.
- Please verify whether toolbar/automation actions can update the displayed Angular Velocity state without correctly waking/applying motion to the hinge physics component.
- Please verify Reset / Start / Restart state handling for Timer Blocks across repeated cycles.
- Please test whether action delivery differs when the target hinge is on a child subgrid rather than the same grid as the automation block.

Attachments recommended

- I can provide the following with this report:
 - Screenshots below showing Event Controller, Timer 1, Timer 2 and Hinge 2 states.
 - A short screen recording demonstrating two identical runs with different outcomes.
 - The world/save containing the complete solar-panel mechanism.

- Game logs from the reproduction session. Keen documents the SE2 log location as: C:\Users\<username>\AppData\Roaming\SpaceEngineers2\Temp\Logs.

Screenshots



Figure 1. Event Controller configured for Block Hinge Angle on Hinge 1, threshold 89°, action: Reverse Velocity on Hinge 2.



Figure 2. Timer 1 configuration used during testing: delay 15 s, action on Hinge 2 plus Timer 2 start (before later isolation tests).



Figure 3. Timer 2 configuration: delay 31 s, action Reverse Velocity on Hinge 3.



Figure 4. Hinge 2 before timer action: Angular Velocity = -1.0 RPM.



Figure 5. Hinge 2 after Timer 1 fired: Angular Velocity changed to +1.0 RPM, yet the hinge did not physically move in that test.

Suggested report title

Event Controller and Timer Block actions intermittently fail to move Hinges on mechanical subgrids

Contact / submission

Preferred: Keen Software House Space Engineers 2 support portal → Bug Reports.

Direct support email (if the portal is not convenient): support@keenswh.com