

Self-Propelled Glazing Manipulator Operation JHA

Worked instructional example

Work and worksite

A glazing crew will use a Smartlift SL 309 vacuum-equipped, self-propelled manipulator to move one identified large, flat glass panel from a restrained rack to an accepted ground-level opening. Travel and positioning take place on a released solid surface; the receiving system provides independent panel support. This fictional learning example describes planned controls and records no actual inspection or authorization.

- The identified machine, vacuum yoke and pane are compatible. The applicable SL 309 instructions and load chart govern reach, load, environment and travel; a headline lifting capacity alone cannot approve the move.
- The entire route and receiving position are assessed for combined machine/load weight, level working positions, clearance and pedestrian separation. Locate and control energized sources. No suspended slab, improvised ramp or unsettled ground is accepted by assumption.
- Connections to mechanical glass handling 238150-04 and large-panel installation 238150-16 are partial. This cycle excludes separate-hoist lifting, elevated platform glazing, support-system construction, charging, transport loading and machine repair.

Questions before work

- Who verifies the actual machine configuration, panel identity and permitted travel and positioning envelope?
- Where can the pane be safely set down if vacuum, stability, visibility or access is lost?
- Which receiving supports and retention checks must be complete before the operator releases vacuum?

Task Hazard Control

1 Accept the machine and complete movement plan

Hazard: An unsuitable configuration, unknown pane weight or unassessed floor can allow overturning, loss of vacuum grip or failure beneath the combined load.

Control: Lead identifies the SL 309, fitted equipment, panel dimensions and weight, and applicable manual and chart. Review pickup, travel and positioning with the operator and receiving lead. Resolve surface capacity, environment and clearance before accepting the route; a load-limit device does not authorize extending the plan.

Verification: Lead verifies the documented route, actual configuration and receiving readiness.

Reasoning: Capacity must fit every stage, including travel and final reach.

2 Protect the route and check operational readiness

Hazard: People, obstructions or defective controls can place someone in a crush zone or leave a carried pane without a safe recovery position.

Control: Crew separates the route from pedestrians and equipment and keeps planned set-down positions clear. Operator completes required manufacturer checks, including vacuum equipment and safety signals, from the safe position. Quarantine defects. Assign a signaler where needed; lost visibility or communication stops movement.

Verification: Operator confirms required checks; lead checks boundaries and recovery space.

Reasoning: A clear route and usable stop decision support controlled movement.

3 Establish vacuum attachment before rack restraint changes

Hazard: Poor cup contact, off-center attachment or premature rack release can pull the panel free, rotate the machine or expose adjacent panes.

Control: Keep selected and remaining panes restrained while the operator arranges the approved cups and diagonal dual-circuit layout. Use suitable clean, dry surfaces and prescribed centered attachment, support legs and locks. Verify required vacuum on both circuits and that pumps stop before the restraint transition. Workers' hands never substitute for rack stability.

Verification: Operator verifies attachment readiness; rack lead controls the identified restraint transition.

Reasoning: The selected pane needs an accepted support path before release.

Complete the work and hand over

4 Travel and position within the accepted envelope

Hazard: A raised or extended load, route change, bystander intrusion or side rotation can reduce stability and trap someone between the pane and structure.

Control: Operator follows actual loaded-travel limits, keeping the pane close to the machine and surface as instructed. Maintain clear sight and separation; stop for changed conditions. Position from an accepted level location within the chart. Do not improvise side-loading or ask workers to steady the machine.

Verification: Operator and signaler monitor clearance, permitted configuration and route conditions.

Reasoning: Travel and positioning impose different demands on the same machine.

5 Transfer to independent receiving support

Hazard: Disabling vacuum before the receiving assembly supports and retains the pane can cause an unexpected glass fall or collapse into the crew.

Control: Receiving crew works from protected positions while the manipulator maintains support. Complete specified independent bearing and retention without unauthorized machine forces. Receiving lead verifies actual release criteria, then communicates permission for the prescribed vacuum release. Keep the area separated until the attachment is clear.

Verification: Receiving lead confirms support and retention before the operator releases attachment.

Reasoning: The receiving system must carry the pane without machine assistance.

6 Secure the machine and transfer actual findings

Hazard: Leaving a loaded machine unattended, concealing an alarm or reopening a route too soon can expose the next crew to an unstable condition.

Control: After independent pane retention, operator withdraws and parks the unloaded machine under the manual. Maintain unfinished-work boundaries and record alarms, defects or deviations. Refer breakdowns to authorized service personnel; never bypass a warning. Transfer panel status and remaining responsibilities before reopening the route.

Verification: Lead verifies unloaded parking, open issues and receiving-team handoff.

Reasoning: Closeout preserves the true state of the pane and machine.

Pause and reassess

- Panel identity, weight, cup compatibility, load chart or receiving support differs from the accepted movement plan.
- Vacuum readiness, a safety signal, communication, surface condition or route separation cannot be maintained.
- Weather, reach, side orientation or unexpected contact changes stability; stop and use the planned protected response.

Improve the controls

Needs improvement: The robot is rated for more than this pane weighs.

More useful: Operator verifies the actual chart, attachment and surface for pickup, loaded travel and final positioning, with changes held for review.

Needs improvement: Switch off the vacuum once the panel looks seated.

More useful: Receiving lead verifies independent support and retention and communicates release before the operator follows the prescribed detachment sequence.

Decisions that change the analysis

What happens if a vacuum warning occurs while the pane is carried?

Use the model's prescribed immediate lowering and solid-surface set-down response from protected positions, without sending anyone into the load path. Keep others clear and remove the machine from use for the required assessment. A warning is not an invitation to race toward the opening or let workers hold the glass; the recovery position must be planned before pickup.

What must the crew record for actual use?

Record machine and configuration, manual and chart revisions, panel identity and weight basis, route and surface acceptance, operational check results, environment and recovery positions. Identify operator, signal arrangements, independent receiving support, retention checks, release communication, alarms, defects and unresolved installation work. Enter actual evidence; this learning example provides none.

Training needs

- Model-specific instruction and demonstrated operation of the SL 309 controls, vacuum indicators, load chart, travel limits and safe response to an alarm or breakdown.
- Team instruction on the protected route, signal arrangements, rack-restraint transition and independent-support handoff, including keeping people outside the machine and pane crush zones.

Confirm applicable qualifications and actual training evidence for the people assigned. Related toolbox talks support discussion; they do not establish competence.

References and adaptation

Smartlift SL 309-609 User Manual, EN 03, operating limits and operation

<https://smartliftpublic.blob.core.windows.net/documents/Technical/01%20User%20manuals/Machines/309-409-609/User%20manual%20-%20309-409-509-609%20EN.pdf?v=1791085561647>

OSHA 1926.600 Equipment

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.600>

OSHA 1926.21 Safety training and education

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.21>

References reviewed October 12, 2026. Use actual equipment and product instructions, project design and site requirements. This original draft supplies no fabricated inspection, signature or approval.