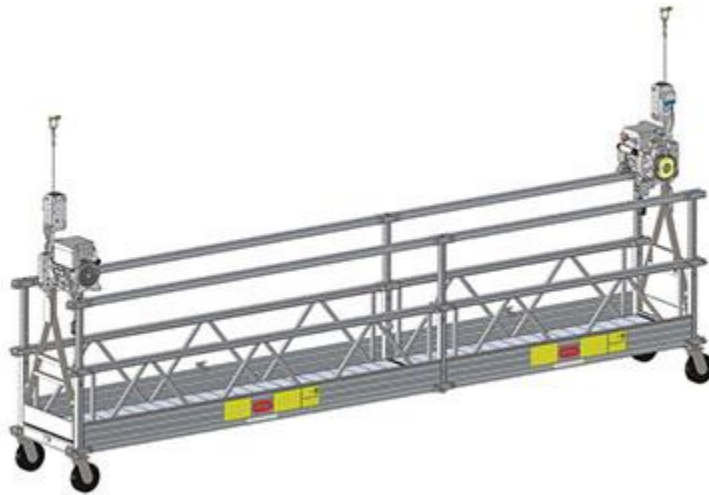


## Cherry Hill Glass Safety, Assembly And Operating Instructions For Suspended Platform System



### Anchorage

The safe use of a suspended scaffold begins with secure anchorage. The weight of the scaffold and its occupants must be supported by both the structure to which it is attached and by each of the scaffold components that make up the anchorage system.

*NOTE:* Except where indicated, these requirements also apply to multi-level, single-point adjustable, multi-point adjustable, interior hung, needle-beam, catenary, and float (ship) scaffolds.

### Tiebacks

- Tiebacks must be secured to a structurally sound anchorage on the building or structure, which may include structural members, but not vents, electrical conduit, or standpipes and other piping systems.
- Tiebacks must be installed perpendicular to the face of the building or structure, or opposing angle tiebacks must be installed. Single tiebacks installed at an angle are prohibited.
- Tiebacks must be equivalent in strength to the suspension ropes and hoisting rope.

### Counterweights

- Suspended scaffold outrigger beams must be stabilized to the floor or deck by :
  - Counterweights
  - Or bolts or other direct connections to the floor or deck.
- Counterweights used to balance adjustable suspension scaffolds must be capable of resisting:
  - At least 4 times the tipping moment imposed by the scaffold when it is operating at the rated load of the hoist.

- Or a minimum of 1½ times the tipping moment imposed by the scaffold when it is operating at the stall load of the hoist, whichever is greater.
- Only items specifically designed as counterweights may be used to counterweight scaffold systems.
- Masonry units, rolls of roofing felt, and other similar construction materials shall not be used as counterweights.
- Counterweights must not be made of flowable materials such as sand, gravel, and similar materials that can be easily dislocated.
- Counterweights must be secured by mechanical means to the outrigger beams to prevent accidental displacement.
- Counterweights must not be removed from an outrigger beam until the scaffold is disassembled.

### Direct connections

- Suspended scaffold outrigger beams must be stabilized by:
  - Bolts or other direct connections to the floor or deck.
  - Or Counterweights
- Direct connections to roofs and floors must be capable of resisting:
  - At least 4 times the tipping moment imposed by the scaffold when it is operating at the rated load of the hoist.
  - Or a minimum of 1½ times the tipping moment imposed by the scaffold when it is operating at the stall load of the hoist, whichever is greater.

### Support

- Adjustable suspension scaffolds are designed to be raised and lowered while occupied by workers and materials and must be capable of bearing their load whether stationary or in motion.  
*NOTE:* Except where indicated, these requirements also apply to multi-level, single-point adjustable, multi-point adjustable, interior hung, needle beam, catenary, and float (ship) scaffolds.

### Capacity

- Scaffolds and scaffold components must be capable of supporting, without failure, their own weight and at least 4 times their maximum intended load.
- Each suspension rope, including connecting hardware, must be capable of supporting, without failure, at least 6 times the maximum intended load applied to that rope while the scaffold is operating at the greater of either:
  - The rated load of the hoist.
  - Or 2 times the stall load of the hoist.
- All suspension scaffold support devices, such as outrigger beams, cornice hooks, and parapet clamps, must:
  - Rest on surfaces capable of supporting at least 4 times the load imposed on them by the scaffold operating at the greater of either:
    - The rated load of the hoist.
    - Or 1½ times the stall capacity of the hoist.
  - Be supported by bearing blocks.
  - Be secured against movement by tiebacks installed at right angles to the face of the building or structure, or by opposing angle tiebacks installed and secured to a structurally sound point of anchorage (structurally sound points of anchorage include

structural members, but not vents, electrical conduit, or standpipes and other piping systems)

- No more than two employees should occupy suspension scaffolds designed for a working load of 500 pounds (non-mandatory).
- No more than three employees should occupy suspension scaffolds designed for a working load of 750 pounds (non-mandatory).
- Scaffolds shall be altered only under the supervision and direction of a competent person.

## Components

- Scaffold components manufactured by different manufacturers must not be intermixed, unless they fit together without being forced, and the scaffold's structural integrity is maintained.
- Scaffold components manufactured by different manufacturers are not allowed to be modified to make them fit together, unless a competent person determines that the resulting scaffold is structurally sound.
- Scaffold components made of dissimilar metals must not be used together unless a competent person has determined that galvanic action (rust) will not reduce the strength of any component below OSHA standards.
- Scaffold support devices such as cornice hooks, roof hooks, roof irons, parapet clamps, or similar devices must be made of steel, wrought iron, or materials of equivalent strength.

## Outrigger beams

- Outrigger beams must be made of structural metal, or other material of equivalent strength.
- Outrigger beams must be restrained to prevent movement.
- The inboard ends of outrigger beams must be stabilized by bolts or other direct connections to the floor or roof deck, or by counterweights.
- Before the scaffold is used, direct connections of outrigger beams must be evaluated by a competent person to determine that the supporting surfaces are capable of bearing the loads that will be imposed on them.
- When outrigger beams are not stabilized by bolts or other direct connections to the floor or roof deck, they must instead be secured by tiebacks.
- Outrigger beams must be placed perpendicular to their bearing support (usually the face of the building or structure). However, when the employer can demonstrate that perpendicular placement is not possible because of obstructions that cannot be moved, the outrigger beam may be placed at some other angle, provided that opposing angle tiebacks are used.
- Outrigger beams shall be:
  - Provided with stop bolts or shackles at both ends.
  - Securely fastened together with the flanges turned out when channel iron beams are used instead of I-beams.
  - Installed with all bearing supports perpendicular to the beam center line.
  - Set and maintained with the web in a vertical position.
  - Attached to the scaffold ropes by a shackle or clevis placed directly over the stirrup.

## Suspension ropes

- Suspension ropes supporting adjustable suspension scaffolds must have a diameter large enough to permit proper functioning of brake and hoist mechanisms.

- The use of repaired wire rope as suspension rope is prohibited.
- Wire suspension ropes must not be joined together except through the use of eye splice thimbles connected with shackles or cover plates and bolts.
- The load end of wire suspension ropes must be equipped with proper size thimbles, and secured by eye splicing or equivalent means.
- Ropes must be inspected for defects by a competent person prior to each work shift, and after every occurrence which could affect a rope's integrity.
- Ropes are to be replaced when any of the following conditions exist:
  - Any physical damage which impairs the function and strength of the rope.
  - Kinks that might impair the tracking or wrapping of the rope around the drum or sheave of the hoist.
  - Six randomly distributed wires are broken in one rope lay, or three broken wires in one strand in one rope lay.
  - Loss of more than one-third of the original diameter of the outside wires due to abrasion, corrosion, scrubbing, flattening, or peening.
  - Heat damage caused by a torch, or any damage caused by contact with electrical wires.
  - Evidence that the secondary brake has been activated during an overspeed condition and has engaged the suspension rope.
- Swaged attachments or spliced eyes on wire suspension ropes may not be used unless they are made by the manufacturer or a qualified person.
- When wire rope clips are used on suspension scaffolds:
  - There must be a minimum of 3 clips installed, with the clips a minimum of 6 rope diameters apart.
  - Clips must be installed according to the manufacturer's recommendations.
  - Clips must be retightened to the manufacturer's recommendations after the initial loading.
  - Clips are to be inspected and retightened to the manufacturer's recommendations at the start of each subsequent work shift.
  - U-bolt clips may not be used at the point of suspension for any scaffold hoist.
  - When U-bolt clips are used, the U-bolt must be placed over the dead end of the rope, and the saddle must be placed over the live end of the rope.
- Suspension ropes are to be shielded from heat-producing processes. When acids or other corrosive substances are used on a scaffold, the ropes shall be shielded, treated to protect against the corrosive substances, or shall be of a material that will not be damaged by the substances.

## Hoists

- The stall load of any scaffold hoist must not exceed 3 times its rated load.
- When winding drum hoists are used and the scaffold is extended to its lowest point of travel, there must be enough rope to still wrap four times around the drum.
- When other types of hoists are used, the suspension ropes must be long enough to allow the scaffold to travel to the level below without the rope end passing through the hoist, or else the rope end must be provided with means to prevent the end from passing through the hoist.
- Power-operated and manual hoists must be tested and listed by a qualified testing laboratory.
- Gasoline-powered hoists may not be used on suspension scaffolds.
- Gears and brakes of power-operated hoists used on suspension scaffolds must be enclosed.
- In addition to the normal operating brake, both power-operated and manual hoists must have a braking device or locking pawl which engages automatically when a hoist experiences:
  - An instantaneous change in momentum.

- Or an accelerated overspeed episode.
- Manually operated hoists must require a positive crank force to descend.

## ▪ Access

Employees must be able to safely access any level of a scaffold that is 2 feet above or below an access point.

### Direct Access

- Direct access to or from another surface is permitted only when the scaffold is not more than 14 inches horizontally and not more than 24 inches vertically from the other surface.
- For two-point adjustable suspension scaffolds, access to one platform from another may only take place when the platforms:
  - Are the same height.
  - Are abutting.
  - Have walk-through stirrups specifically designed for that purpose.

### Fall-arrest systems

- In addition to meeting the requirements of, personal fall-arrest systems used on scaffolds are to be attached by lanyard to a vertical lifeline, horizontal lifeline, or scaffold structural member.
- The employer must designate a competent person, who would be responsible for determining the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds.

*NOTE:* Vertical lifelines may not be used on two-point adjustable suspension scaffolds that have overhead components such as overhead protection or additional platform levels.

- When vertical lifelines are used, they must be fastened to a fixed safe point of anchorage, independent of the scaffold, and be protected from sharp edges and abrasion. Safe points of anchorage include structural members of buildings, but not standpipes, vents, electrical conduit, etc., which may give way under the force of a fall.
- It is dangerous and therefore impermissible for two or more vertical lifelines to be attached to each other, or to the same point of anchorage.
- When horizontal lifelines are used, they must be secured to two or more structural members of the scaffold.
- When lanyards are connected to horizontal lifelines or structural members, the scaffold must have additional independent support lines and automatic locking devices capable of stopping the fall of the scaffold in case one or both of the suspension ropes fail. These independent support lines must be equal in number and strength to the suspension ropes.
- On suspended scaffolds with horizontal lifelines that may become vertical lifelines, the devices used to connect to the horizontal lifeline must be capable of locking in both directions.

### Guardrail systems

- Guardrail systems must be installed along all open sides and ends of platforms, and must be in place before the scaffold is released for use by employees other than erection/dismantling crews.

- Each toprail or equivalent member of a guardrail system must be able to withstand a force of at least 200 pounds applied in any downward or horizontal direction, at any point along its top edge.
  - The top edge height of top rails on supported scaffolds must be between 36 inches and 45 inches. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria.

*NOTE:* The minimum top edge height on scaffolds manufactured or placed in service after January 1, 2000 is 38 inches.

- Midrails, screens, mesh, intermediate vertical members, solid panels, etc., must be able to withstand a force of at least 150 pounds applied in any downward or horizontal direction, at any point along the midrail or other member.
  - When midrails are used, they must be installed at a height approximately midway between the top edge of the guardrail system and the platform surface.
  - When screens and mesh are used, they must extend from the top edge of the guardrail system to the scaffold platform, and along the entire opening between the supports.
  - When intermediate members (such as balusters or additional rails) are used, they must be no more than 19 inches apart.
- Guardrails must be surfaced to prevent punctures or lacerations to employees, and to prevent snagging of clothing, which may cause employees to lose their balance.
- Ends of rails may not extend beyond their terminal posts, unless they do not constitute a projection hazard to employees.
- In lieu of guardrails, cross bracing may serve as a top rail or midrail, providing the crossing point is:
  - Between 20 and 30 inches above the work platform for a midrail.
  - Or between 38 and 48 inches above the work platform for a top rail.

## Training

- Scaffolds are to be erected, moved, dismantled, or altered only by experienced and trained employees who have been selected for that work by the competent person.
- Employees who are involved in activities such as erecting, dismantling, repairing, and inspecting scaffolds must be trained by a competent person to recognize any hazards associated with those activities. Training shall include:
  - The nature of scaffold hazards.
  - Correct procedures for erecting, disassembling, etc. the type of scaffold in question.
  - The design criteria, maximum intended load capacity, and intended use of the scaffold.
  - Any other pertinent requirements.
- Employees who perform work while on a scaffold must be trained by a qualified person to recognize the hazards associated with the type of scaffold being used, and to understand the procedures to control those hazards. Training shall include:
  - The nature of any electrical hazards, fall hazards, and falling object hazards in the work area.
  - The correct procedures for dealing with those hazards.
  - The proper use of the scaffold, and the proper handling of materials on the scaffold.
  - The maximum intended load and the load-carrying capacity of the scaffold.
  - Any other pertinent requirements.
- Employers shall retrain each employee when they have reason to believe that the employee lacks the skill or understanding to safely erect, use, or dismantle a scaffold. Such retraining is required in at least the following situations:

- Where changes at the worksite present a hazard for which an employee has not previously been trained.
- Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard for which an employee has not previously been trained.
- Where inadequacies in an affected employee's work indicate that the employee has not retained the necessary proficiency.

### Overhead power lines

- Scaffolds may be closer to overhead power lines than specified above if such proximity is necessary for the type of work being done, and if the power company or electrical system operator has been notified and has either:
  - De-energized the lines
  - Relocated the lines
  - Or installed protective coverings to prevent accidental contact with the lines.
- Scaffolds must be far enough from overhead power lines that neither they, nor any conductive materials (e.g. building materials, paint roller extensions, scaffold components) that may be handled on them, come closer than 10 feet to the power line.
  - Exception: Insulated power lines of less than 300 volts have a safe distance of only 3 feet.

## ARRANGEMENT OF PLATFORMS WITH END STIRRUPS

TOTAL LENGTH		PLATFORM ARRANGEMENT ↑ = END STIRRUP - = U FRAME	TOTAL PLATFORM WEIGHT		MAX RATED WORKING LOAD	
FT./IN	M		LBS.	KG.	LBS.	KG.
6'9"	2	↑ 2 ↑	240	110	1500	680
9'9"	3	↑ 3 ↑	282	129	1500	680
13'6"	4	↑ 2 - 2 ↑	358	163	1500	680
16'6"	5	↑ 3 - 2 ↑	400	182	1500	680
19'6"	6	↑ 3 - 3 ↑	440	201	1500	680
23'3"	7	↑ 2 - 3 - 2 ↑	518	236	1500	680
26'3"	8	↑ 3 - 2 - 3 ↑	560	255	1500	680
29'3"	9	↑ 3 - 3 - 3 ↑	602	274	1000	450
33'	10	↑ 3 - 2 - 2 - 3 ↑	678	309	1000	450
36'	11	↑ 3 - 2 - 3 - 3 ↑	720	328	1000	450
39'	12	↑ 3 - 3 - 3 - 3 ↑	762	347	1000	450
42'9"	13	↑ 3 - 3 - 2 - 2 - 3 ↑	838	381	750	340
45'9"	14	↑ 3 - 3 - 2 - 3 - 3 ↑	880	400	750	340
48'9"	15	↑ 3 - 3 - 3 - 3 - 3 ↑	922	420	750	340

## LIFELINE/ROPE GRAB INSPECTION

Lifeline ropes must be pulled up and inspected prior to use; items to check for include:

- Excessive abrasion or wear. fuzz/strands of rope fiber that are longer than 25mm (1in.) in length.
- Discoloration or staining from exposure to paint, oil, grease etc.

- presence of any adhesive substances on the fibers of the rope.
- back-twisted strands or any inconsistency in the diameter of the rope at any point.
- extreme soiling to the point where dirt has made its way inside the fibres of the rope.



### ROPE GRAB/FALL ARRESTOR INSPECTION CRITERIA:

- ANY OBVIOUS PHYSICAL DAMAGE.
- ANY HINDRANCE OF PROPER FUNCTIONALITY OF THE CAM/SPRINGS OR PAWL/LOCKING MECHANISM.
- THE GRAB AND LIFELINE MUST BE THE SAME SIZE.

TEST THE ROPE GRAB BY ATTACHING IT TO A LIFELINE AND SHARPLY PULLING DOWN ON THE D-RING IN THE DIRECTION OF THE FALL. DO NOT USE THE ROPE GRAB AS PART OF A PERSONAL FALL ARREST SYSTEM IF IT DOES NOT LOCK WITHIN 305MM (12 INCHES).



### DAILY CLIMBER CHECKS

1. Ensure the **emergency stop** button (electrical disconnect) is functioning properly by engaging the switch and pressing the up and/or down buttons on the climber. The climber passes this test if it does not activate when either the up or down buttons are pressed.
2. Test the **overspeed brake**. raise the climber up off the ground/landing, push the black button on the overspeed assembly (the one with a stop sign



beside it) and try to lower the climber/stage. the climber passes this test

if it cannot descend the suspension ropes. raise the climber up at least ½ an inch and reset the overspeed reset wheel on the side of the climber just beside the insertion point of the rope.

3. Test the **controlled descent** feature of the hoist. pull up on the yellow bar opposite the main controls to lower the stage (note that occasionally extra weight will have to be added. the climber passes this test if the stage lowers at a controlled rate that does not trip the overspeed brake.

## RUN-OFF TEST

Whenever the stage is moved or upon first use, insert 305mm (12 in.) of suspension cable into the climber and pull up sharply. The overspeed device should lock on to the cable before it can escape the rope port. reset the overspeed brake and repeat the run-off test two more times for a total of three pulls. perform this test on each climber in service at least once a week to ensure the overspeed device is working correctly.

