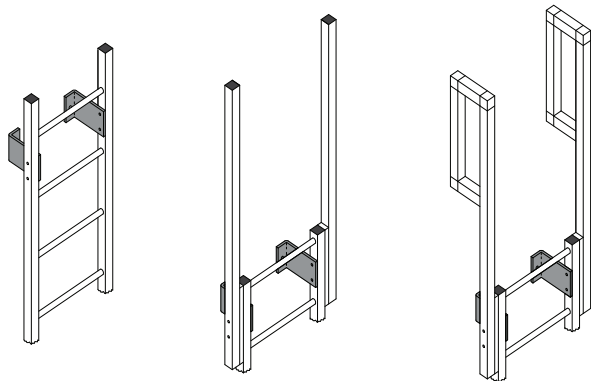




EXCLUSIVELY
 MADE IN THE
USA

SAF RAIL™

FIBERGLASS LADDER AND CAGE SYSTEM



FIBERGLASS LADDER & CAGE SYSTEMS



This fiberglass ladder and cage provide worker access to a maintenance platform at a Ciba Geigy plant in the northeastern United States.



NSF International

Strongwell ladder and cage systems can be manufactured using NSF-61 certified materials. Contact Strongwell for details.

American Bureau of Shipping

Approved for use on a variety of ABS Class ships.



Fiberglass access ladders are used throughout the service areas of Sea World in Orlando, FL, and resist saltwater corrosion and reduce maintenance costs.

SAFRAIL™ fiberglass ladders and ladder cages mounted on the sides of tanks and buildings are a common sight in a wide range of industries. Fiberglass ladder and ladder cage systems have been in use since the 1950's in chemical plants and other corrosive environments. Even in complete immersion applications, fiberglass has outlasted aluminum and steel and required little or no maintenance.

Sizes & Availability

SAFRAIL™ ladders are fabricated in a standard 18" (457mm) rung width configuration with 12" (305mm) rung spacings. Various ladder lengths can be produced as practical. Standard SAFRAIL™ ladder and ladder cage systems are designed and fabricated to meet the requirements of OSHA 1910.23 and 1926.1053. Custom colors and custom designed ladders and access cages can be fabricated upon request. Ladders can be shipped pre-assembled for installation in the field.

Materials of Construction

SAFRAIL™ ladders and ladder cage systems are produced using a premium grade polyester resin system with flame retardant and ultraviolet (UV) inhibitor additives. A vinyl ester resin system is available upon request for additional corrosion resistance. Standard side rails and cages are pigmented OSHA safety yellow. The rungs are a pultruded fiberglass polyester tube with a fluted, non-skid surface.

****Strongwell recommends a coating to reduce color fade for outdoor applications. If a coating is not applied, color will fade.***

HOW TO SPECIFY

SAFRAIL™ fiberglass ladder systems shall be fabricated from pultruded fiberglass components as produced by Strongwell. Cage hoops shall be produced by the open molded hand lay-up method.

The pultruded parts shall be made with a fire retardant polyester resin which meets the ASTM E-84 test for flame spread of 25 or less and contains a UV inhibitor. The color shall be OSHA safety yellow.

SAFRAIL™ Ladders and Ladder Cages

SAFRAIL™ fiberglass reinforced plastic (FRP) ladder and cage systems shall meet the requirements set forth in OSHA 1910.23 and 1926.1053.

Ladders shall be shop assembled and may be pre-drilled and prepared for field attachment of standoff clips.

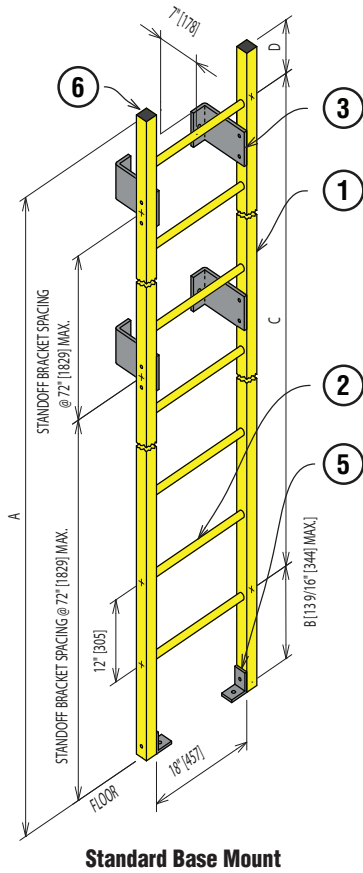
Materials

The side rails, rungs and cage straps shall be pultruded fiberglass reinforced components. The side rails shall be 2" (51mm) or 2.375" (60mm) square tube with a wall thickness of 0.156" (4mm) or greater. The rungs shall be pultruded 1.25" (31.75mm) diameter FRP fluted tube.

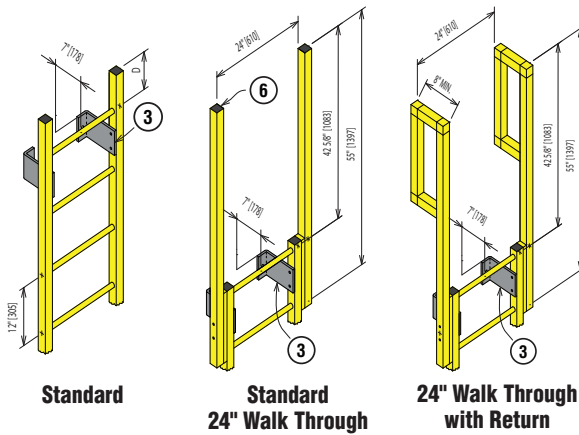
Cage hoops shall be manufactured by the open mold hand lay-up process with a width of 3" (76mm) and thickness of 1/4" (6mm) minimum. The cage shall be interconnected with 2" x 3/16" (51mm x 5mm) pultruded straps spaced 9" (230mm) on center around the hoop.

STANDARD LADDER SYSTEMS

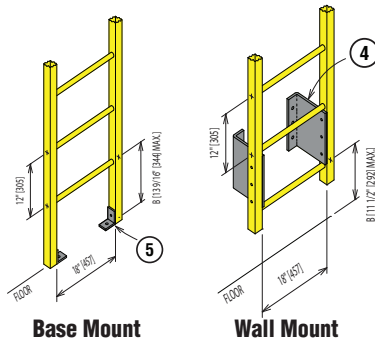
STANDARD LADDER



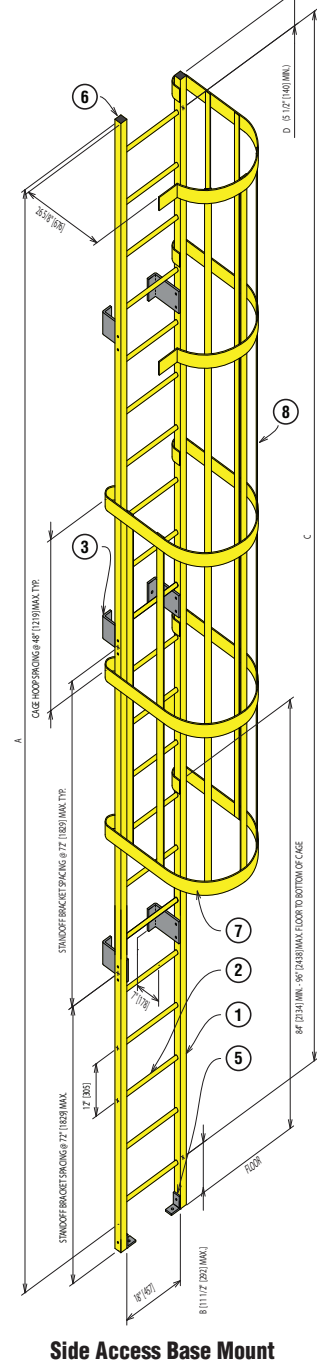
TOP OPTIONS



BOTTOM OPTIONS



CAGE OPTIONS



PART IDENTIFICATION

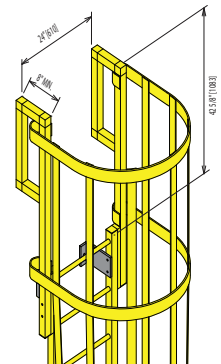
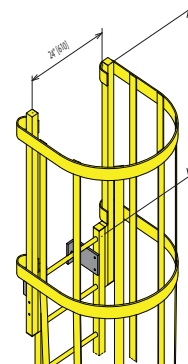
NAME	DESCRIPTION	
1	Side Rail	2" x 0.156" (51mm x 4mm) square tube
2	Rung	1.25" (31.75mm) diameter fluted tube
3	Standoff Bracket	5" (127mm) bracket plate
4	Standoff Bracket	10-1/2" (267mm) bracket plate
5	Base Angle	3" (76mm) angle
6	End Plug	Molded end cap
7	Cage Hoop	3" x 1/4" (76mm x 6mm) strip
8	Cage Straps	2" x 3/16" (51mm x 5mm) strip

Note: All FRP to FRP fasteners are SS 316.

CUSTOM OPTIONS

Custom Ladder and Cage System options include:

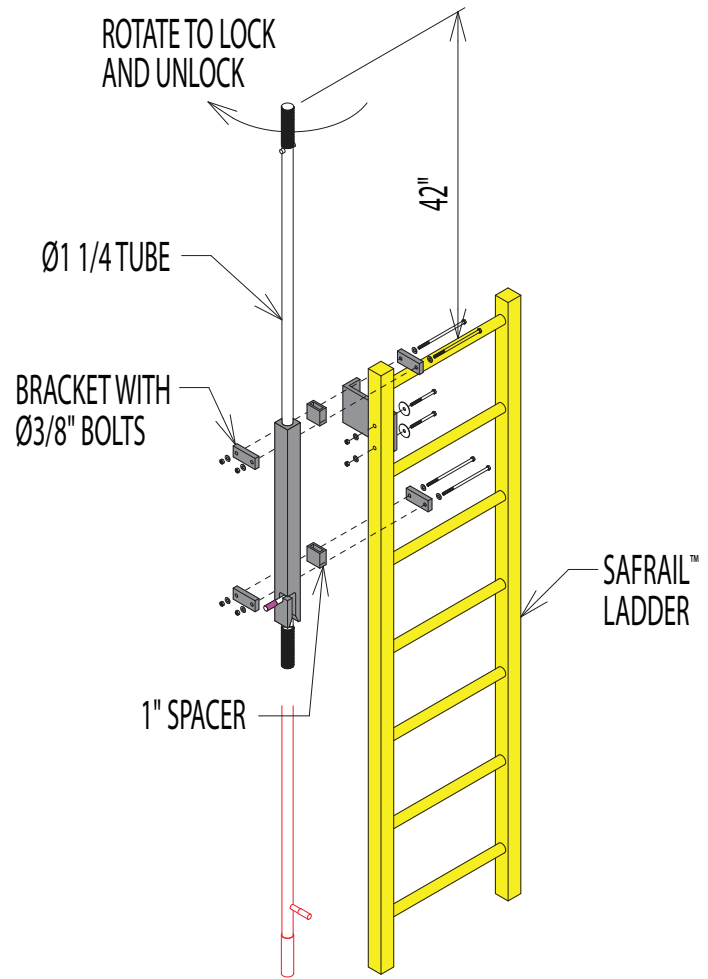
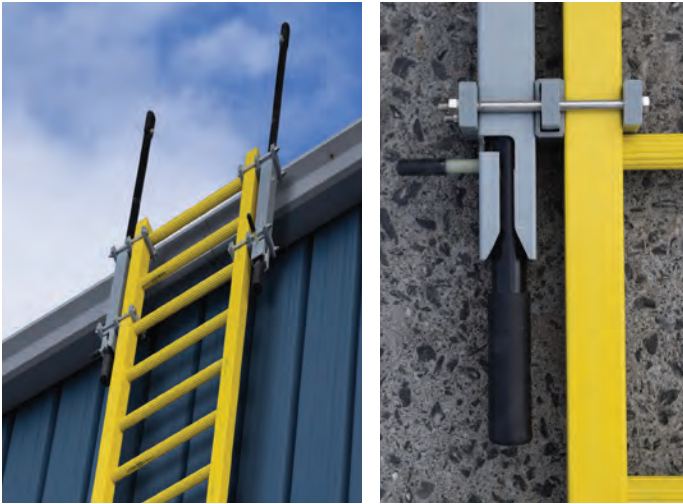
- Custom rung widths
- Custom rail options for unsupported ladder heights, including larger tubes, trusses, or solid bars
- Custom 1" gritted solid rungs: round, square, diamond
- Larger stand-off brackets to avoid obstructions
- End returns and safety gates
- Cages available fully assembled or unassembled for field assembly



ACCESSORIES

Extendable Ladder Rail:

- Provides stability at the top of the ladder when a walk through ladder is not an option
- All FRP components attached to 2" square ladder rail with metallic fasteners
- Left- or right-side installation
- Withstands 200 lb horizontal load at top handle in fully extended position
- Bolt-action, locking mechanism
- Available for ladders 7' and taller
- Can be manufactured using NSF-61 certified materials



HOW TO ORDER

RESIN SYSTEM: The standard resin system is a polyester with flame retardant. A vinyl ester resin system is available upon request.

LADDER CAGE: Note if a ladder cage is required. Determine the exit method at the top of the ladder cage. Strongwell will choose the starting height if none is given. The starting height will be between 7' and 8' as required by OSHA. Note if the cage is to be assembled or if it is to be shipped with the ladder as a kit. The ladder cage is made using a polyester resin system with a flame retardant. A vinyl ester resin system is available upon request.

NOTE: To assist our customers in submitting the necessary data for quotation, fabrication worksheets are available at www.strongwell.com.

COLOR: Standard SAFRAIL™ ladders feature yellow side rails and rungs. Custom colors are available upon request.

PAINTING: Strongwell recommends a coating to reduce color fade for outdoor applications. If a coating is not applied, color will fade.

ORDERING: Choose one of the four standard ladder types. Add optional return if required. Determine the dimensions required per the type of ladder chosen.

SPECIAL ORDERS: If none of the standard ladder types meet the customer's requirements, a drawing or a sketch must be submitted for pricing purposes.



ISO 9001 Quality Certified Manufacturing Plants



BRISTOL LOCATION

400 Commonwealth Ave., Bristol, VA 24201 USA
(276) 645-8000

CHATFIELD LOCATION

1610 Highway 52 South, Chatfield, MN 55923-9799 USA
(507) 867-3479

www.strongwell.com

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