Fixed Ladders

EN ISO 14122-4: 2016

CAGSAN

Index

EN ISO 14122-4: 2016

1. Introduction

Fixed ladders with safety cages are permanent access solutions mounted on building facades, machines, silos, and chimneys to provide safe access to high points. For systems over 3 meters in height, the use of a safety cage is mandatory to provide fall protection.

These systems can be customized for different height requirements thanks to their modular designs. By combining different structural elements found in the guide it is possible to reach the desired access height.

Basic Features:

- Installation possibility at different heights due to modular structure,
- Ladder and cage system made from EN AW-6063 series aluminum,
- High corrosion resistance: suitable for outdoor and industrial use,
- Lightweight structure: facilitates transport and installation

2. Applied Standards

Fixed ladders with safety cages must be designed and installed in accordance with the following standards to ensure user safety and system integrity:

EN ISO 14122-4: Safety of machinery – Permanent means of access to machinery – Fixed ladders

Note: Installation, maintenance, and periodic inspections must be carried out in full compliance with these standards

3. Intended Use

Fixed ladders with safety cages are designed to provide permanent and safe access on building facades, industrial facilities, and machines. They must only be used for this intended purpose.

Application Areas:

- Access to roofs, silos, towers, and industrial machines
- Access for maintenance, inspection, and service operations

Usage Precautions:

- Only trained and authorized personnel should use them.
- Unauthorized modifications to the ladder structure are prohibited.
- Only original components must be used for assembly and repairs.
- The use of parts or accessories from third-party manufacturers is strictly forbidden.
- They must not be used under severe weather conditions without additional safety measures

4. Basic Safety Requirements

Fixed ladder systems with safety cages must meet specific structural and functional safety criteria to allow users to work safely at heights. These criteria are determined in accordance with international standards (especially EN ISO 14122-4).

4.1 Safety Cage:

- If access is provided from the ground level at heights above 3 meters, the safety cage system that protects the user against falling is mandatory.
- The cage diameter must be between 650–800 mm; the gap between vertical elements ≤300 mm, and the ring spacing ≤1,500 mm **(see Figure-1)**

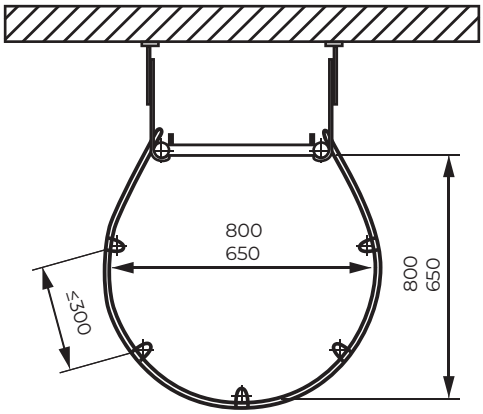


Figure-1 – Clear Distances Inside the Safety Cage

- The cage overlap distance (Do) between the intermediate platform and the upper ladder must be ≥2,000 mm. **(see Figure-2)**

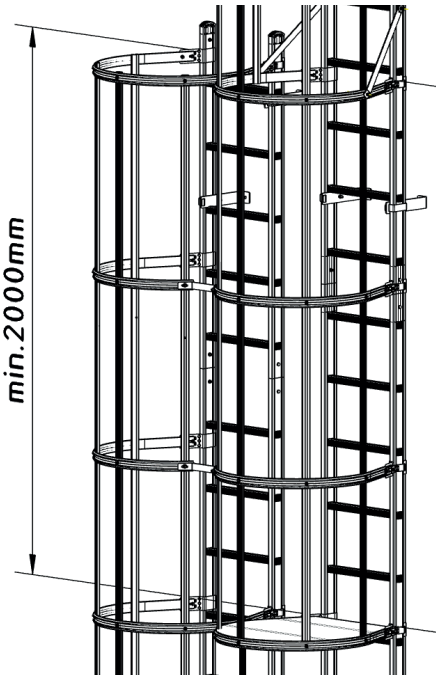


Figure-2 – Overlap Distance of the Safety Cage

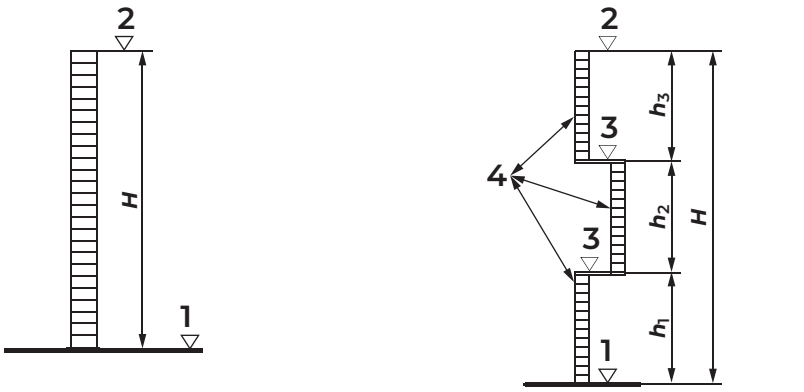
4.2 Intermediate Rest Platforms:

- **Systems up to 10 meters:**

- The ladder can be designed as a single piece.
- The use of a safety cage is mandatory.
- Intermediate platforms are not mandatory but recommended for user comfort and safety if the ladder section exceeds 6 meters.

- **Systems over 10 meters:**

- The ladder must be designed in sections with a maximum length of 6 meters.
- An intermediate platform is mandatory every 6 meters.
- Each section must have a safety cage system.
- These systems must only be used by trained and authorized personnel **(see Figure-3)**



a) Single ladder flight **b)** Staggered ladder flights

1	Departure area
2	Arrival area
H	Climbing height of ladder system (total height)
3	Intermediate platform or intermediate landing
4	Ladder flight
h	Height of ladder flight

Figure-3 - Height of Flights and Location of Intermediate Platforms/Landings

4.3 Structural Stability:

- The ladder must be fixed to the supporting structure with approved anchors and fasteners.
- Wall connection spacing should generally not exceed 2 meters.
- Each ladder section must be fixed with at least two wall connections.
- Fasteners must be tightened according to the torque values specified by the manufacturer.

4.4 Top Exit Safety:

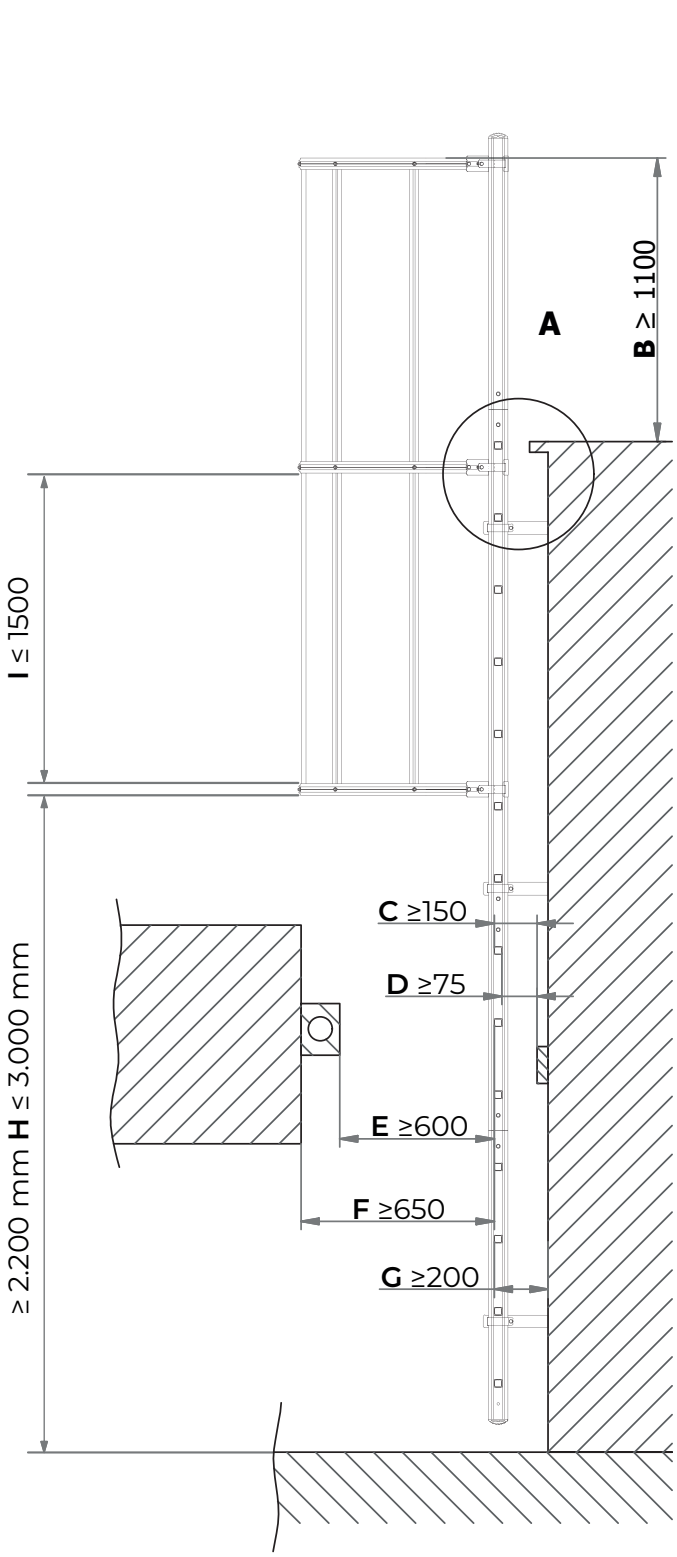
- Exit steps, protective railings, and doors must be provided at top exit areas.

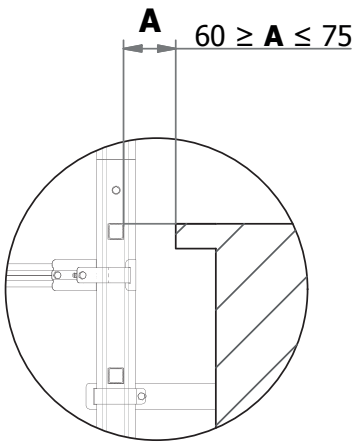
Note: All safety equipment must be installed in accordance with manufacturer instructions and relevant standards.

4.5 Other Design Criteria:

According to the EN ISO 14122-4 standard, additional structural design criteria related to fixed ladders with safety cages are defined as follows. **(see Figure 4)**

These requirements are implemented to ensure user safety and to guarantee that the system operates reliably and has a long service life.





Clearances Between the Ladder and Permanent Obstacles

a) Clearances measured from the front of the rungs:

- **In front of the ladder:**
  - Must be at least 650 mm. **(F)**
  - If obstacles such as pipes or cable trays are present, this distance may be reduced to 600 mm. **(E)**

- **Behind the ladder:**
  - Must be at least 200 mm. **(G)**
  - If obstacles such as pipes or cable trays are present, this distance may be reduced to 150 mm. **(C)**

b) Clearances measured from behind the rungs:

- **Behind the ladder:**
  - Must be at least 75 mm. **(D)**
  - For the top rung, this distance shall be between 60 mm and 75 mm. **(A)**

- The vertical distance between the rung level and the top of the guardrail shall be at least 1100 mm. **(B)**
- The lowest hoop of the safety cage shall begin at a height of not less than 2.2 m and not more than 3.0 m from the ground. **(H)**
- The distance between two hoops shall be no more than 1500 mm. **(I)**

Figure-4 - Other Design Criteria

5. 5. Usage Safety Instructions:

- Maximum load capacity per step is 150 kg; this value must not be exceeded.
- Fixed access ladders (except emergency escape systems) must not be used under adverse weather conditions or when safe use cannot be ensured due to contamination/dirt.
- Dynamic loads (e.g., swinging, jumping) are strictly prohibited.
- After use, ensure moving parts (e.g., barriers, doors) are returned to the closed position.
- Safety cages and railings provide only passive protection and must not be used for climbing, leaning, or carrying loads.
- The product must be climbed from the front only; the user must hold onto the steps with at least one hand.
- Climbing from the back or side or hanging while climbing is strictly prohibited.
- The access path must be clear. Tools, materials, or any obstacles must not be on the path during climbing or descending.
- Protective gloves suitable for environmental conditions (e.g., hot, cold, wet, dirty) must be worn while climbing vertical ladders

6. Pre-Installation Requirements

Description:
Before installation, the mounting surface, measurements, and components must be thoroughly inspected. These preparations ensure the system is installed safely and according to standards

Preparation Steps:

- **Site Analysis and Ground Inspection:**
  The load-bearing capacity and structural integrity of the mounting surface must be checked.
- **Measurement and Accuracy Check:**
  Total climbing height and anchoring points must be measured precisely.
- **Load Capacity Verification:**
  The supporting structure must withstand all loads imposed by the system and users.
- **Component Inspection:**
  All parts (steps, side rails, cages, anchors) must be complete and flawless.
- **Personal Protective Equipment (PPE) Preparation:**
  Suitable PPE (helmet, safety harness, gloves, etc.) must be ready.

Note: Installation must not begin until all pre-installation checks are successfully completed

7. Installation Instructions

Description:
To ensure safe and durable operation of the fixed ladder system, installation must follow a specific sequence and technical rules. This section summarizes installation steps compliant with EN ISO 14122-4 and manufacturer instructions

7.1 General Warnings:

- A Risk Assessment must be performed before installation, and actions must follow its results.
- Falling parts can cause serious injuries or fatalities; the work area must be secured.

- Only authorized and trained personnel shall perform load securing, lifting equipment use, and guidance operations.
- Appropriate lifting equipment (crane, scaffolding, etc.) must be used following their manuals.
- Be cautious of pinch and injury risks during installation.
- Maintain sufficient distance from surrounding personnel during positioning.
- Ensure the technician works in a balanced and safe posture during installation.
- Do not load the product until fully assembled and all connections are secured.

7.2 Pre-Installation Checks:

- All parts must be complete and undamaged.
- All required tools and auxiliary equipment must be operational and safe.
- The structure/facade where the cage ladder will be installed must have sufficient load capacity.
- Correct anchoring materials must be chosen, and each anchorage point must be calculated to withstand a tensile force of 3 kN (3000 N).
- Aluminum ladders must not be placed closer than 2.5 meters to uninsulated low-voltage electrical installations and must never be used near high-voltage systems

7.3 Basic Installation Steps:

- **Floor and Wall Anchorage:**
  - The ladder base must be fixed to a solid surface using approved anchors or base plates.
  - Wall connection spacing must be a maximum of 2 meters; each ladder section must be fixed with at least two connection points

- **Tensile Strength:**
  Each connection point must withstand at least 3 kN tensile force.

- **Assembly of Ladder Sections:**
  - Ladder sections (modules) must be connected using compatible fasteners provided by the manufacturer.
  - Fasteners must be tightened to eliminate gaps and secured against rotation or slipping.
  - Welding is prohibited; only bolted connections are allowed

- **Safety Cage and Intermediate Rest Platform Installation:**
  - If access is provided above 3 meters from ground level, a safety cage is mandatory. The lowest ring of the safety cage must start at a height of at least 2.2 meters and at most 3.0 meters above the ground.
  - The cage overlap distance (Do) between the intermediate platform and the upper ladder must be ≥2,000 mm.
  - The cage diameter must be between 650–800 mm; the gap between vertical elements ≤300 mm, and the ring spacing ≤1,500 mm.

  - **Systems Up to 10 Meters:**
  - The ladder can be designed as a single piece.

  - **Systems Over 10 Meters :**
  - The ladder must be designed in sections with a maximum length of 6 meters.An intermediate platform is mandatory every 6 meters.

- **Top Exit Installation:**
  - Exit steps, protective railings, and doors must be provided at top exit areas.

7.4 Final Inspection:

- All components must be tightened and inspected before commissioning.
- The cage internal diameter must be arranged so it does not obstruct descent areas.
- All connections, components, and safety equipment must be visually and manually checked.
- Corrosion protection must be applied where necessary.
- Platforms, doors, and barriers must operate freely without obstruction.

Note: Installation and commissioning must only be carried out by authorized and trained technical personnel.

Other design criteria related to installation according to EN ISO 14122-4 are shown in **Figure-4**

8. Usage Instructions

Description:
Correct and careful use of fixed ladders with safety cages ensures maximum user safety during climbing and descending. The following rules are mandatory for safe system operation.

8.1 Pre-Use Visual Inspection

- Check for visible deformation, corrosion, cracks, loosening, or damage on the ladder structure.
- Verify the integrity and tightness of all connection and anchoring points.
- Ensure the safety cage, intermediate platforms, and, if any, exit doors/railings are installed according to standards.

Note: If any non-conformity is detected, the system must not be used until corrective action is completed.

8.2 Climbing and Descending Rules

- Always maintain three points of contact (two hands and one foot or two feet and one hand).
- The user must face the ladder while climbing and descending.
- Movements must be slow, steady, and controlled.
- Do not carry tools or materials by hand; use tool belts or waist bags instead.
- Personal protective equipment (PPE) must be used as required (e.g., fall arrest system)

8.3 Prohibited Behaviors

The following behaviors are strictly prohibited for safety reasons:
- Jumping over steps or skipping steps,
- Swaying, jumping, or creating vibrations through rhythmic movements on the ladder,
- Exceeding the maximum load capacity specified on the product label (150 kg).

Note: The ladder must not be used for load-carrying purposes.

8.4 Environmental Conditions

- The system must not be used in weather conditions such as strong wind, heavy rain, snow, or icing.
- If the steps or the surrounding area are wet, oily, or icy, climbing must be postponed or the surface must be cleaned.
- If lighting is insufficient, the system must not be used without providing additional lighting.

8.5 Authorized Users

- The system may only be used by personnel who have received the necessary training and authorization.
- The use of personal protective equipment (PPE) (e.g., helmet, gloves, harness) must be assessed based on environmental conditions and work risks.

9. Maintenance and Inspection Instructions

To ensure the safety and structural integrity of ladder systems with safety cages, periodic inspections and maintenance procedures must be carried out regularly throughout the entire service life of the system.

9.1 Inspection Frequency

- Daily: Visual inspections performed by the operator before use
- Monthly: Functional inspections carried out by the facility maintenance officer
- Annually: Detailed structural inspections carried out by authorized technical personnel or independent experts

EN ISO 14122-4 mandates increased inspection frequency in harsh environmental conditions such as outdoor exposure, chemical effects, high humidity, or salty air.

9.2 Main Components to Be Inspected

- Support profiles: Check for bending, warping, rotting, rusting, cracking, or deformation
- Steps: Check for missing, loose, worn, damaged, or rusty steps
- Fasteners (screws, bolts, rivets): Check for missing, loose, or corroded parts
- Safety cage: Ensure all connections and rings are intact; check for deformation or cracks
- Hinges (if any): Check for damage, loosening, or rust; ensure regular lubrication
- Intermediate supports and connection parts: Check for bending, missing parts, wear, or contamination
- Platform and platform connectors (if any): Check for missing, broken, or rusty components
- Safety locks / Cover systems: Check for proper functioning, rust, or deformation
- Floor and wall anchors: Ensure dowels, bolts, and mounting plates are secure
- Welds: Look for cracks or signs of breakage
- Surface condition: Check for dirt, oil, paint, ice, snow, or chemical residues

9.3 Procedures in Case of Damage

- The ladder system with safety cage must be immediately taken out of service
- All damaged or non-functional parts must be replaced with original spare parts
- Repairs must be performed only by authorized personnel or using manufacturer-approved methods
- The damage detection process and replaced parts must be documented and recorded.

9.4 Cleaning and Surface Protection

- Use neutral cleaning agents that do not cause corrosion and are suitable for the surface
- Abrasive materials (e.g., sandpaper, steel brushes) and solvent-based cleaners (e.g., acetone, thinner) must not be used
- During cleaning, also check for loosening or deformation at connection points

9.5 Inspection and Maintenance Records

- A record including date, responsible person, and description must be kept for all inspections, maintenance, replacements, and repair operations
- These records must be preserved to ensure traceability of inspection history
- Major repairs or system modifications must be reflected in the up-to-date technical drawings and any relevant certifications.
- These documents must be accessible to authorized personnel during inspections.

9.6 Periodic Training and Awareness

- All personnel using or inspecting the ladder system must receive occupational safety training
- In the event of changes in standards, usage procedures, or installation, user instructions and internal documentation must be updated.

Not: Failure to comply with general safety warnings may result in serious injury, legal liability, or system malfunction.

10. General Safety Warnings

Description:
The following general safety measures apply to the use, inspection, maintenance, and any possible modifications of fixed ladders with safety cages.

10.1 Unauthorized Modifications

- Any modification to the ladder system without the manufacturer's approval is strictly prohibited
- Only original spare parts and components must be used.

10.2 Emergencies

- If damage occurs during use, descend immediately and stop using the system
- In case of structural instability, the area must be secured and the responsible personnel must be informed.

10.3 Warning Signs and Access Restrictions

- Appropriate warning signs indicating restricted access must be placed at access points
- Access must be limited to trained and authorized personnel only

Note: Failure to comply with general safety warnings may result in serious injury, legal liability, or system malfunction.

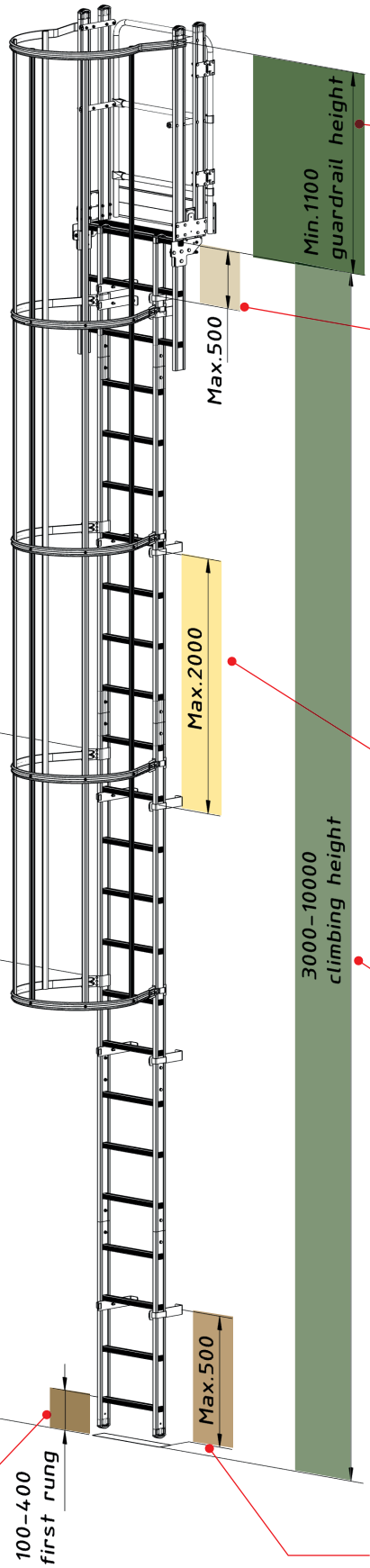
EN ISO 14122-4

Safety of machinery – Permanent means of access to machinery – Fixed ladders.

	EN ISO 14122-4: 2016 Safety of machinery Permanent means of access to machinery Fixed ladders.
Fall Protection	Safety Cage ↓ > 3 m
Ladder Flight	**< 10 m** Systems up to 10 meters in height may consist of a single ladder section **> 10 m** For systems exceeding 10 meters, ladder sections must be limited to a maximum length of 6 meters.
Intermediate Platform or Landing	**> 10 m** For access heights exceeding 10 meters, intermediate rest platforms must be installed at intervals of every 6 meters to ensure user safety.

Dimensional Requirements (Access Height: 3000–10000 mm)

EN ISO 14122-4: 2016



Guardrail Height:
When standing on the top step/platform, the minimum height must be at least 1100 mm.

Distance Between Hoops:
The maximum distance from the ground to the first hoop must not exceed 1500 mm.

Anchor Spacing
The maximum distance between two anchor points must not exceed 2000 mm.

Distance Between Hoops:
The distance between two consecutive hoops must not exceed 1500 mm.

Access Height
For a single ladder section, the maximum access height must not exceed 10,000 mm.

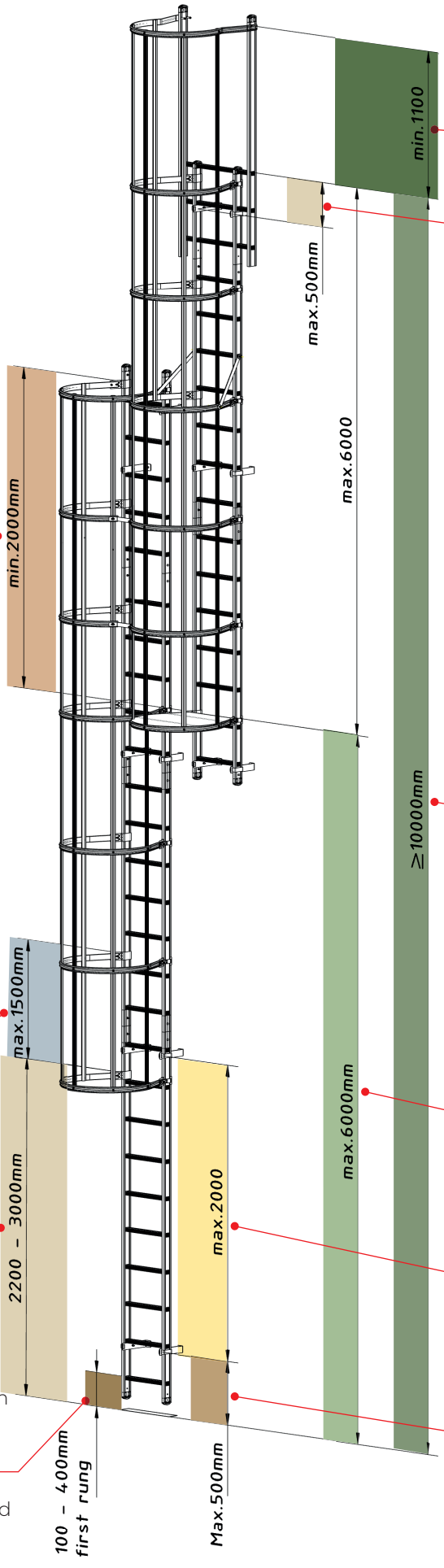
Ground-to-First Hoop Distance
The distance between the ground and the first hoop must be between 2200 mm and 3000 mm.

First Step Height:
The height from the ground to the first step must be between 100 mm and 400 mm.

Lower Anchor Spacing
The distance between the ground and the first anchor point must not exceed 500 mm.

Dimensional Requirements (Access Height: 10,000 mm and Above)

EN ISO 14122-4: 2016



Guardrail Height:
When standing on the top step/platform, the minimum height must be at least 1100 mm.

Upper Anchor Spacing
The distance between the footstep and the nearest anchor point must not exceed 500 mm.

Cage Overlap Distance
The cage overlap distance between the intermediate rest platform and the upper ladder section must be at least 2,000 mm (≥ 2,000 mm).

Access Height
For access heights of 10,000 mm and above, the ladder system must be divided into sections, each with a maximum height of 6,000 mm.

Distance Between Hoops:
The distance between two consecutive hoops must not exceed 1500 mm.

Maximum Height of Ladder Sections
The maximum height that can be climbed in a single ascent must not exceed 6,000 mm.

Ground-to-First Hoop Distance
The distance between the ground and the first hoop must be between 2200 mm and 3000 mm.

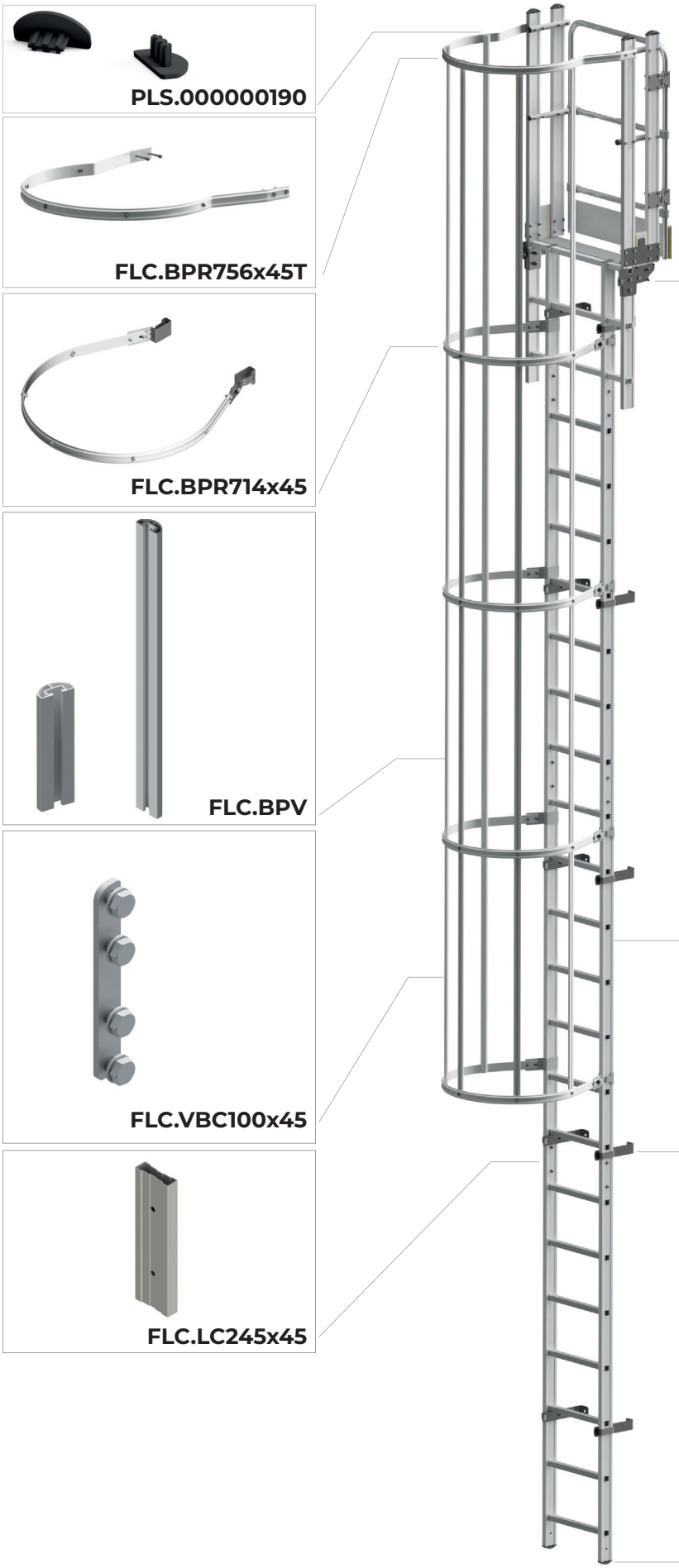
Anchor Spacing
The maximum distance between two anchor points must not exceed 2000 mm.

First Step Height:
The height from the ground to the first step must be between 100 mm and 400 mm.

Lower Anchor Spacing
The distance between the ground and the first anchor point must not exceed 500 mm.

Fixed Ladder Components

Access Height <10000 mm



PLS.000000190

FLC.BPR756x45T

FLC.BPR714x45

FLC.BPV

FLC.VBC100x45

FLC.LC245x45

FLC.EHSG750x45

FLC.T1960x45

FLC.WB252

FLC.PLS.000000002

Fixed Ladder Components

Access Height ≥10000 mm

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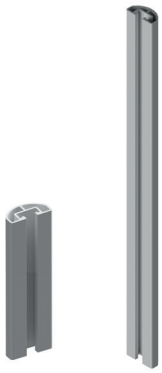
FLC.PLS.000000190

FLC.BPDR1400x45

FLC.BPR714x45

FLC.VBC100x45



FLC.BPV

FLC.FBAx45

FLC.PLS.000000002

FLC.CP750x725

FLC.CP750x725

FLC.DBX45

FLC.FP750x45

FLC.T1960x45

FLC.LC245x45

FLC.T2800x45

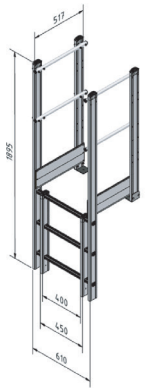
FLC.WB252

Fixed Ladder Components

Access Ladders and Platforms

Access Ladder 610

Access Ladder 750

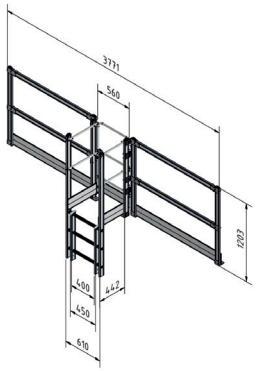


Access Ladder 517

Item Code	FLC.E610x45	FLC.E750x45	FLC.EH610x45
Size	610x1895mm	750x1895mm	610x1895x517 mm
Material	Aluminum	Aluminum	Aluminum
Details	Access Ladder (narrow)	Access Ladder (wide)	Access Ladder with Guardrail

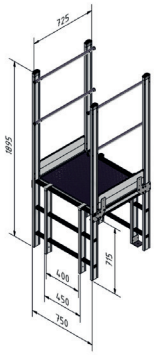
Wide Step Access Ladder 517

Wide Step Access Ladder 230

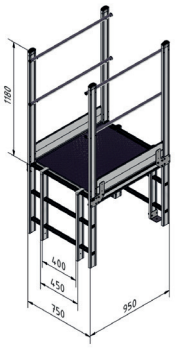


Wide Facade Access Ladder

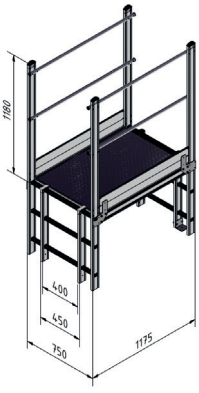
Item Code	FLC.EHSGW750x45	FLC.EHSG750x45	FLC.EHWDG610x3800
Size	750x517x1895	750x230x1895 mm	610x442x3771 mm
Material	Aluminum	Aluminum	Aluminum
Details	Exit ladder with wide steps, spring gate, and guardrails	Exit ladder with wide steps, spring gate, and guardrails	Guardrailed exit ladder with spring gate for wide-fronted roofs



Crossover Platform 725



Crossover Platform 950

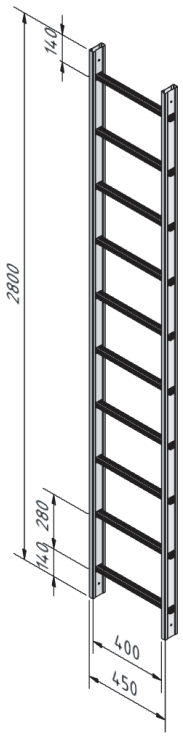


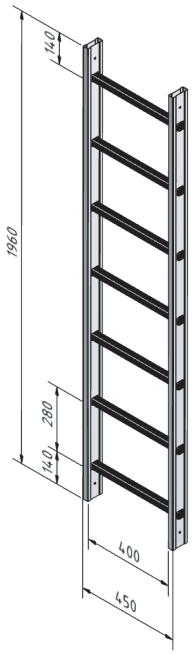
Crossover Platform 1175

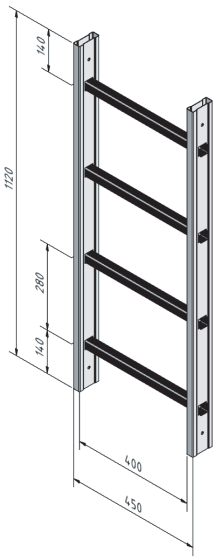
Item Code	FLC.CP750x725	FLC.CP750x950	FLC.CP750x1175
Size	750x1895x725 mm	750x1895x950 mm	750x1895x1175 mm
Material	Aluminum	Aluminum	Aluminum
Details	725 mm platform depth	950 mm platform depth	1175 mm platform depth

Fixed Ladder Components

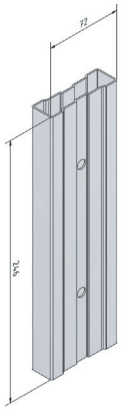
Access Ladders and Platforms

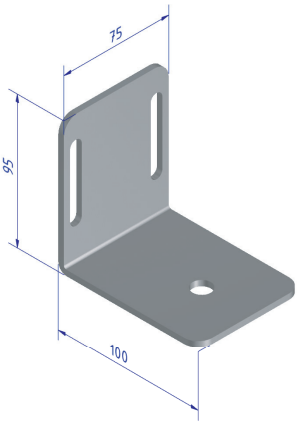






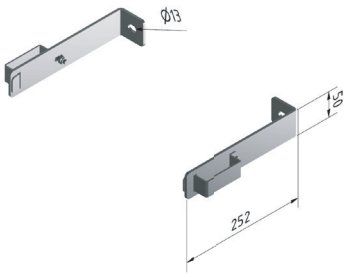
	10 Rung Ladder	7 Rung Ladder	4 Rung Ladder
Item Code	FLC.T2800x45	FLC.T1960x45	FLC.T1120x45
Size	450x2800 mm	450x1960 mm	450x1120 mm
Material	Aluminum	Aluminum	Aluminum
Details	10 rung Aluminium Ladder	7 rung Aluminium Ladder	4 rung Aluminium Ladder



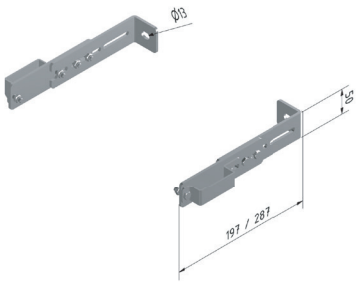


	Ladder Connection Component	Ladder Cap	Floor Bracket
Item Code	FLC.LC245x45	FLC.PLS.000000002	FLC.FBAX45
Size	246x72 mm	75x25 mm	100x70x75 cm
Material	Aluminum	Plastic	Galvanized Steel
Details	Ladder Connection Component	Ladder Cap	Floor Bracket

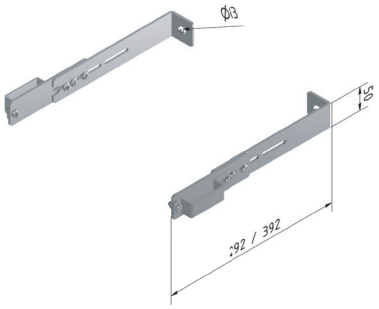
Wall Bracket Components



Standard Wall Bracket 252

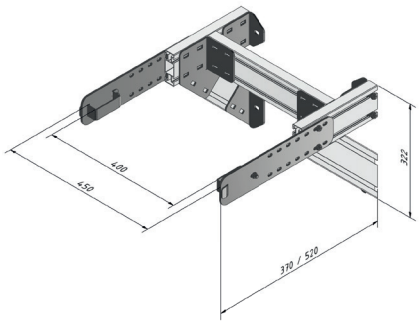


Adjustable Wall Bracket 197/287

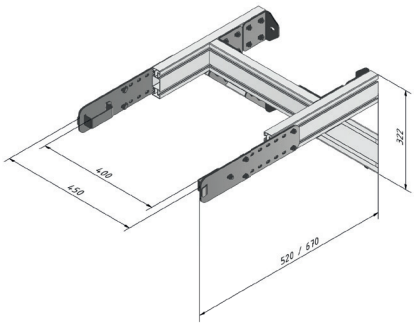


Adjustable Wall Bracket 292/392

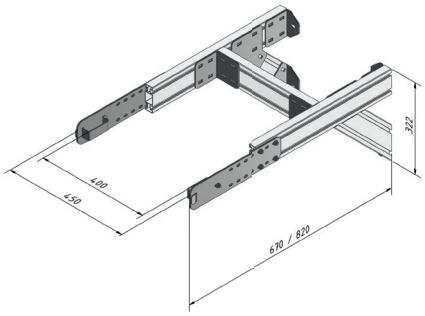
Item Code	FLC.WB252	FLC.WBA287	FLC.WBA292
Size	252x50 mm	197/287x50 mm	292/392x50 mm
Material	Galvanized Steel	Galvanized Steel	Galvanized Steel
Details	Standard Wall Bracket	Adjustable Wall Bracket (Short)	Adjustable Wall Bracket (Long)



Adjustable Wall Bracket 370/520

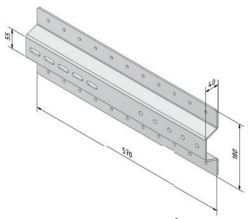


Adjustable Wall Bracket 520/670



Adjustable Wall Bracket 670/820

Item Code	FLC.WBAS520	FLC.WBAS670	FLC.WBAS820
Size	370/520x450x322 mm	520/670x450x322 mm	670/820x450x322 mm
Material	Aluminum Galvanized Steel	Aluminum Galvanized Steel	Aluminum Galvanized Steel
Details	Adjustable Wall Bracket (Short)	Adjustable Wall Bracket (Medium)	Adjustable Wall Bracket (Long)

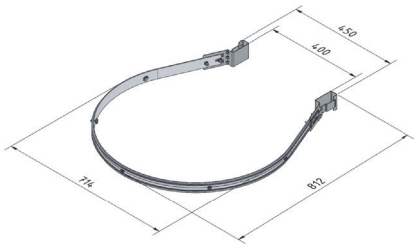


Omega mounting sheet for sandwich panels

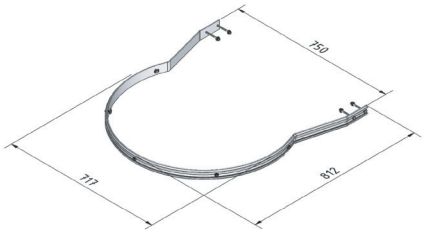
Item Code	FLC.FPx45
Size	570x180x40 mm
Material	Aluminium
Details	Omega mounting sheet for sandwich panels

Fixed Ladder Components

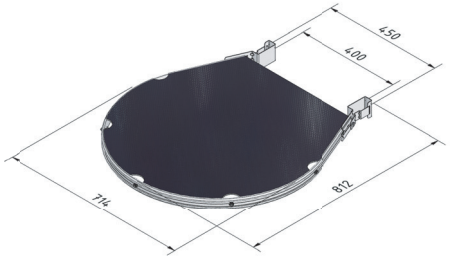
Safety Cage Components



Hoop

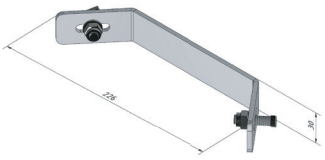


Top Hoop

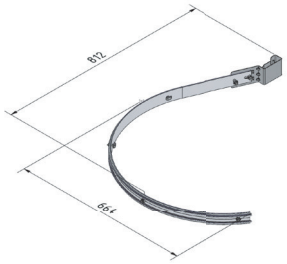


Intermediate Platform

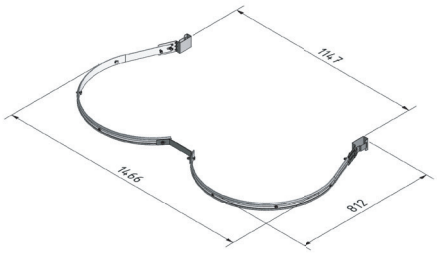
Item Code	FLC.BPR714x45	FLC.BPR756x45T	FLC.FP750x45
Size	714x812x450 mm	717x812x750 mm	714x812x450 mm
Material	Aluminum Galvanized Steel	Aluminum Galvanized Steel	Aluminum Galvanized Steel
Details	Standard safety cage hoop	Top hoop	Intermediate platform between ladder sections



Connection for 3/4 Hoop

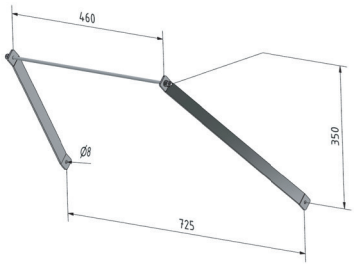


3/4 Hoop

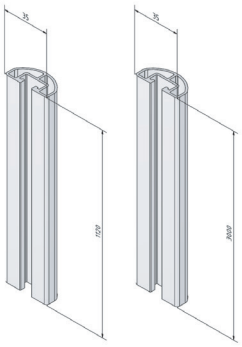


Double Hoop

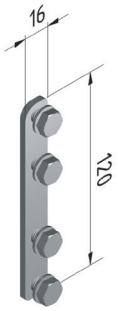
Item Code	FLC.CFDR275	FLC.BPR3.4x45	FLC.BPDR1400x45
Size	226x30 mm	292/392x50 mm	1466x812x1147 mm
Material	Galvanized Steel	Aluminum	Aluminum
Details	Connection for Double Hoop	Component forassembling a Double Hoop	Double Hoop 1x CFDR275 2x BPR3.4x45



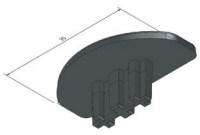
Intermediate Platform Support



Vertical Brace



Vertical Brace Connection

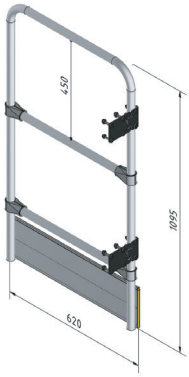


Vertical Brace Cap

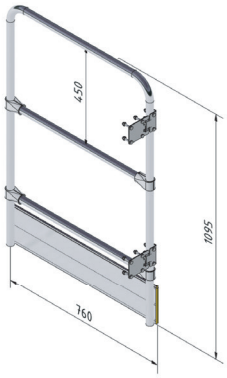
Item Code	FLC.DBX45	FLC.BPV1120x45 - FLC.BPV3000x45	FLC.VBC100x45	FLC.PLS190
Size	460x725x350 mm	1120x35 mm - 3000x35 mm	16x120 mm	35 mm
Material	Galvanized Steel	Aluminum	Galvanized Steel	PP Plastic
Details	Used to support the Intermediate Platform	Vertical Brace profile 1120mm / 3000mm	Vertical Brace Connection	Vertical Brace Cap

Fixed Ladder Components

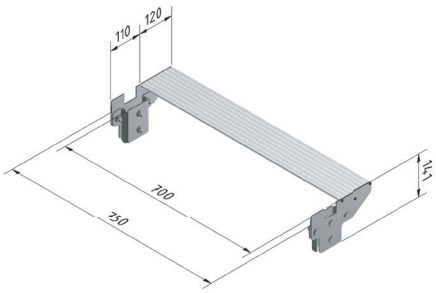
Accessory Components



Access Ladder Gate 610

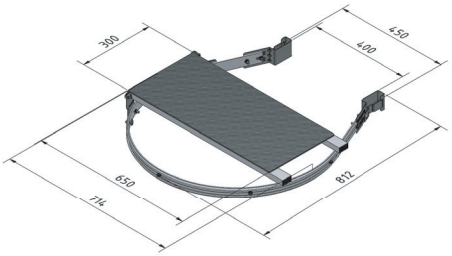


Access Ladder Gate 750

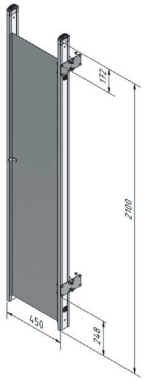


Top Wide Step

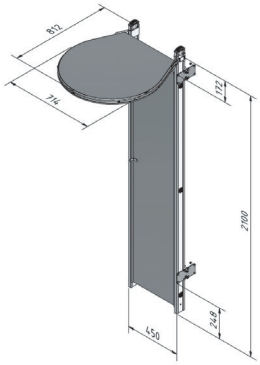
Item Code	FLC.GT610x1095	FLC.GT750x1095	FLC.STP750x169
Size	620x1095 mm	760x1095 mm	120mm basamak
Material	Aluminum	Aluminum	Aluminum
Details	Self-closing gate for access ladders	Self-closing gate for access ladders	Top wide Step



Folding Intermadiate Platform



Access Safety Gate

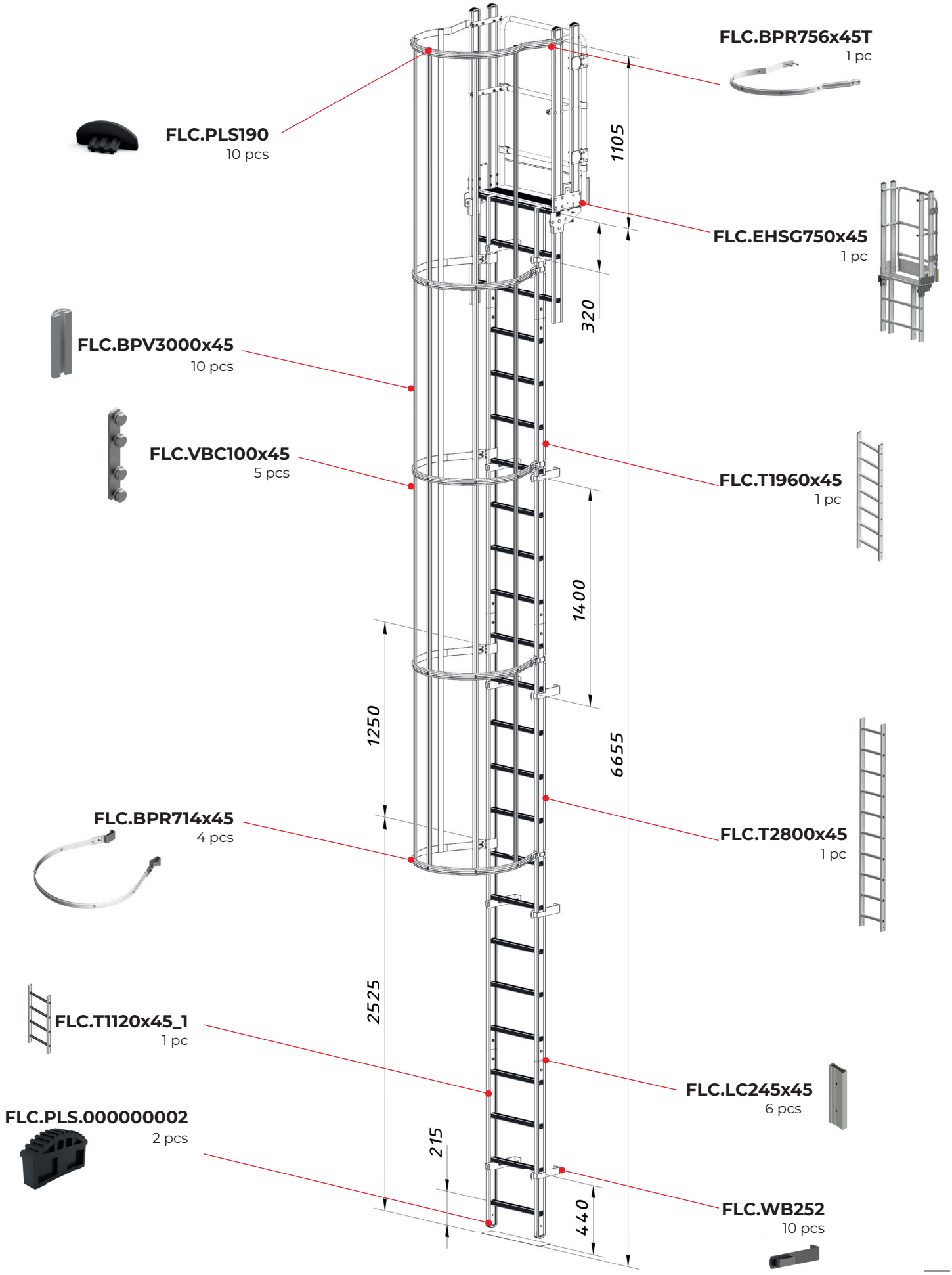


Access Safety Gate with Hoop

Item Code	FLC.FIP730x300	FLC.ABx45	FLC.ABWCx45
Size	714x812x450 mm	450x2100 mm	450x2100 mm
Material	Aluminum	Aluminum	Aluminum
Details	Foldable Intermediate Platform	Anti-climb gate	Anti-climb gate with Hoop

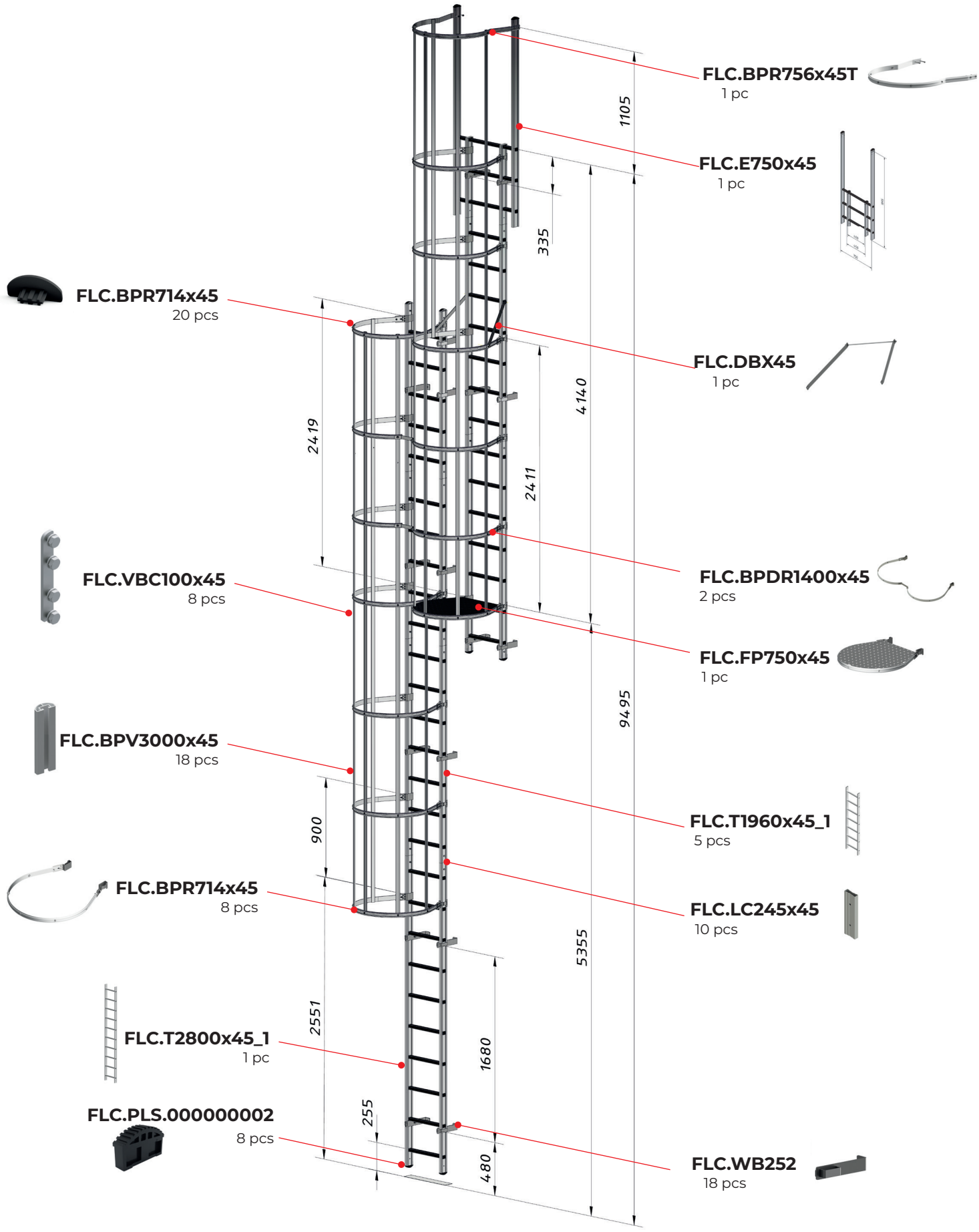
Sample Configuration 1

Sample Application for Access Heights Below 10 m

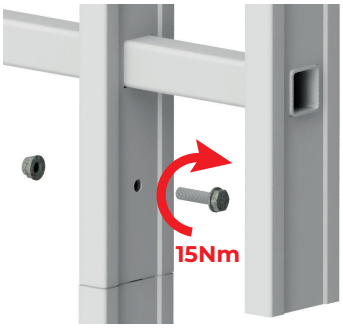


Sample Configuration 2

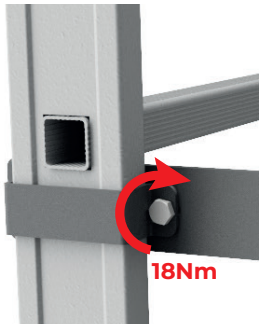
Sample Application for Access Heights of 10 m and Above



Tightening Torques of Connection Equipment

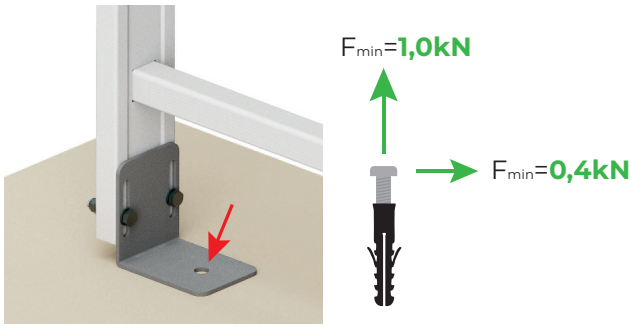


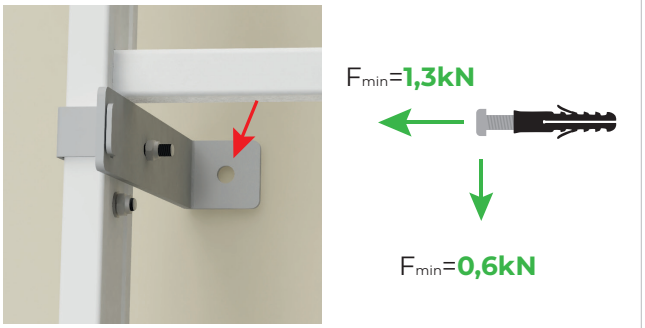
Tightening torque for aluminium parts 15 Nm



Tightening torque for steel parts 18 Nm

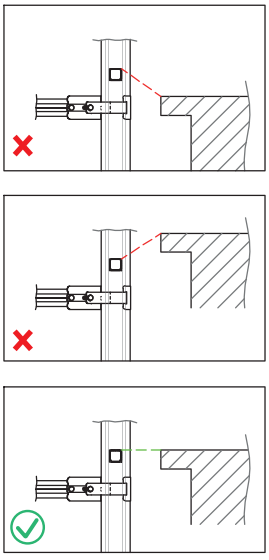
Anchor loads



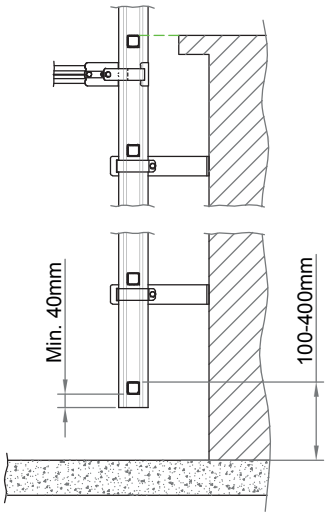


Ladder Alignment and Cutting

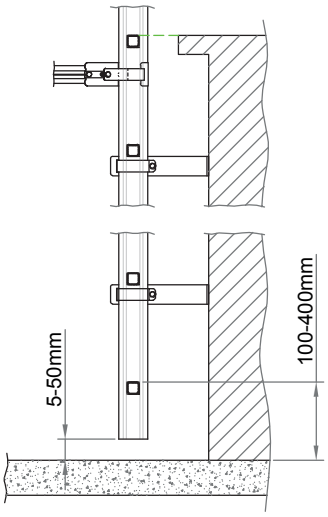
The upper step and the access surface must be at the same height.



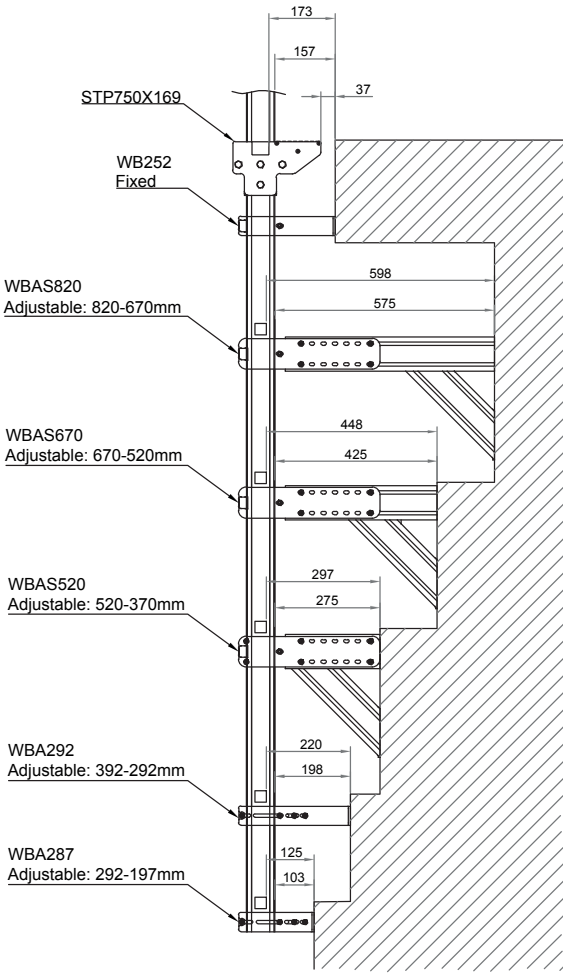
Undercut for Plastic Cap



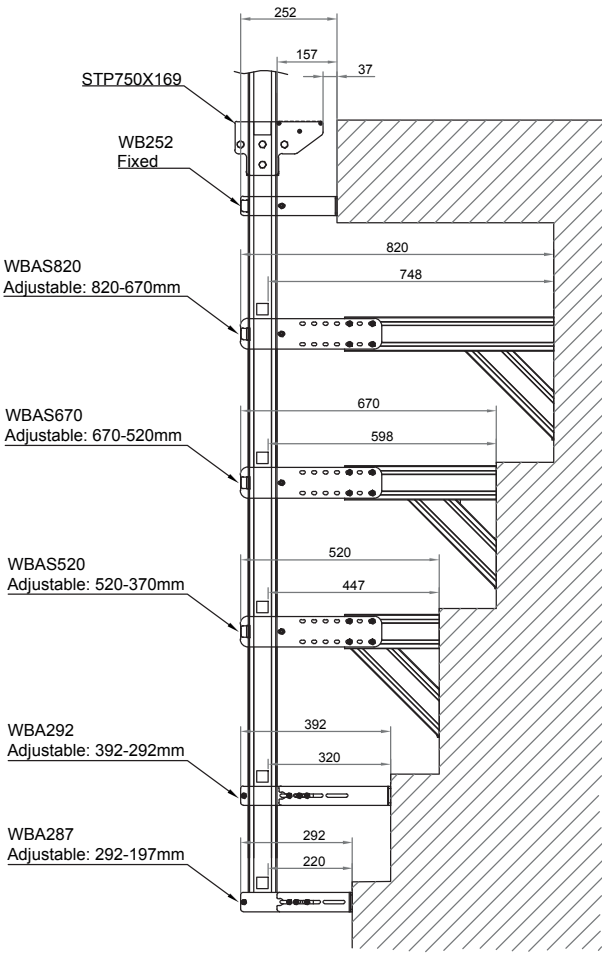
Undercut for floor bracket



Selection of Wall Mounting Brackets

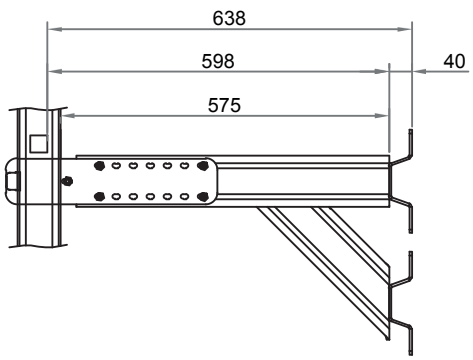


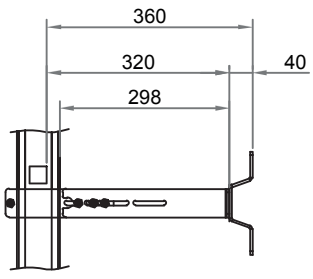
Wall Mounting Brackets (min.)

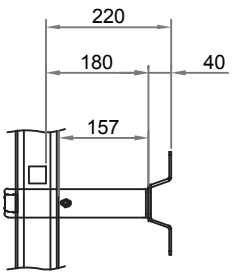


Wall Mounting Brackets (max.)

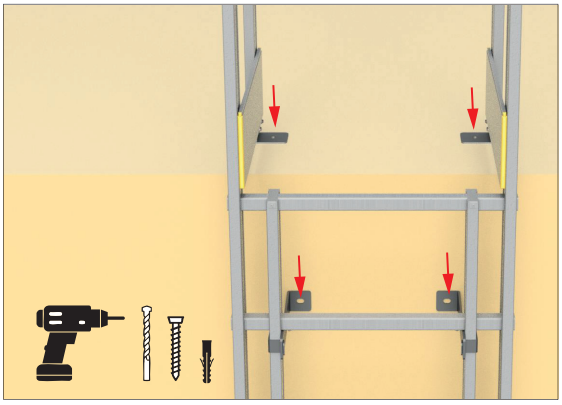
*Note: If omega sheet is used on surfaces such as sandwich panels, composites, etc., the distance of the product from the wall increases by 40mm.



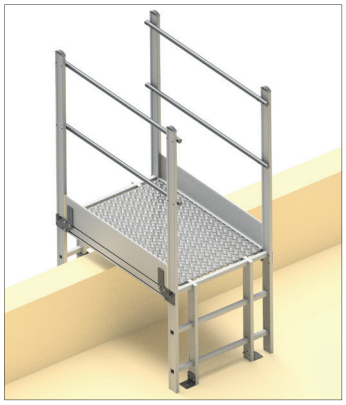
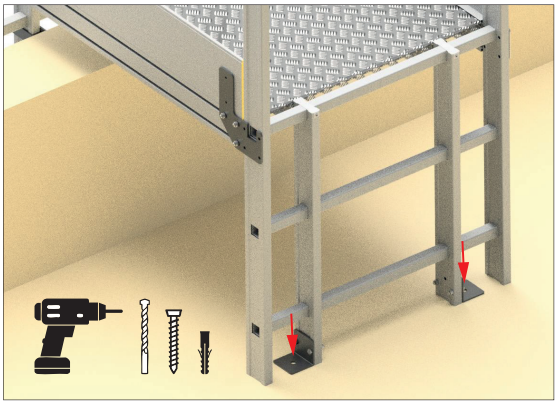




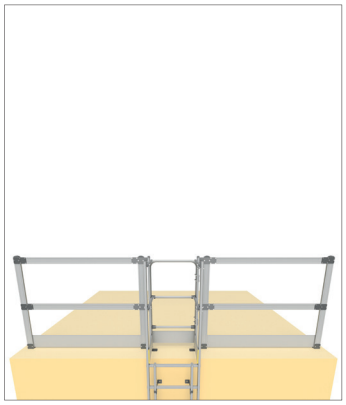
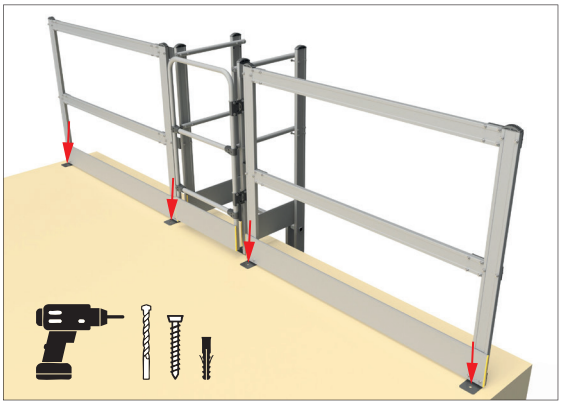
Exit Stairs Installation EH610x45, EHSGW750x45

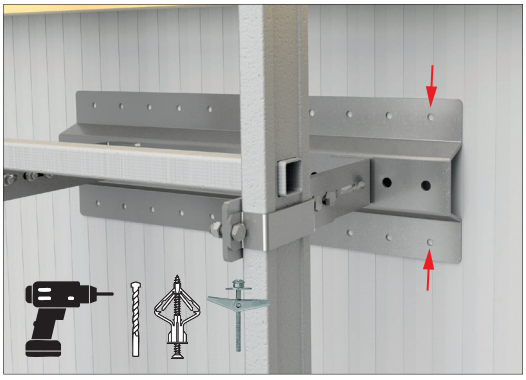
Crossover Platforms Installation CP750x725, CP750x950, CP750x1175

Wide Facade Exit Staircase Installation EHWDG610x3800

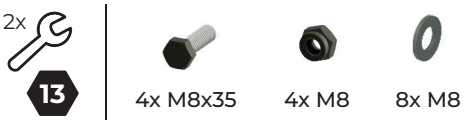
Omega Sheet Installation FPx45

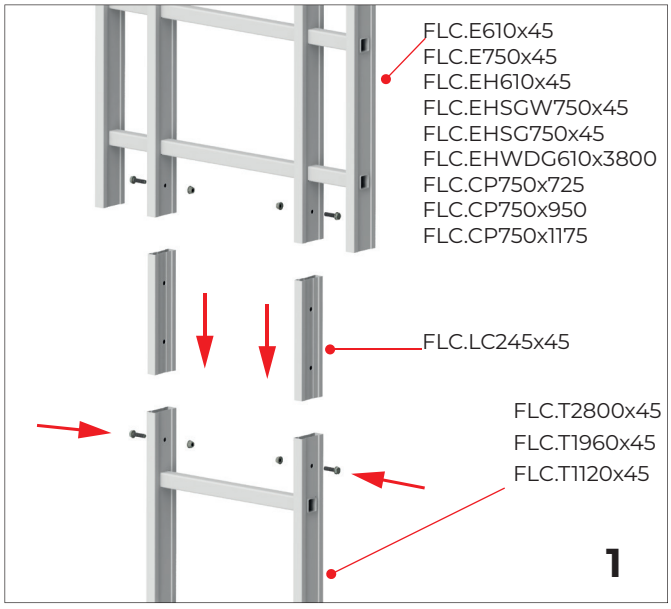



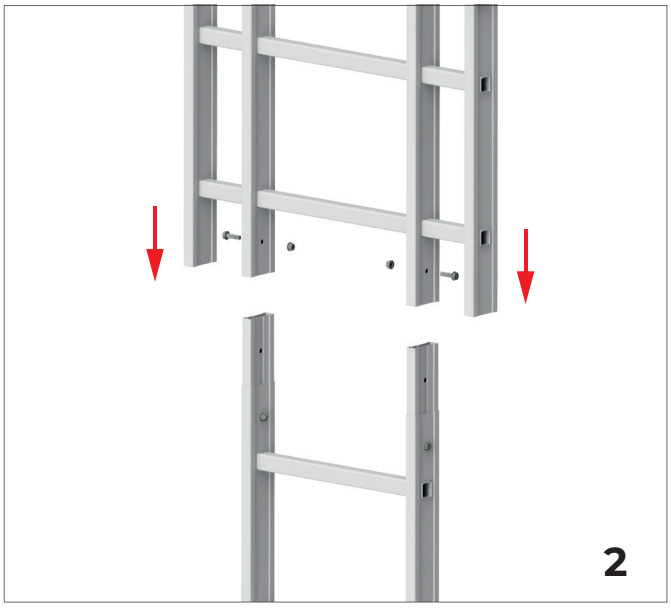

NOTE: According to the type of sandwich panel, the type and number of fasteners should be selected.

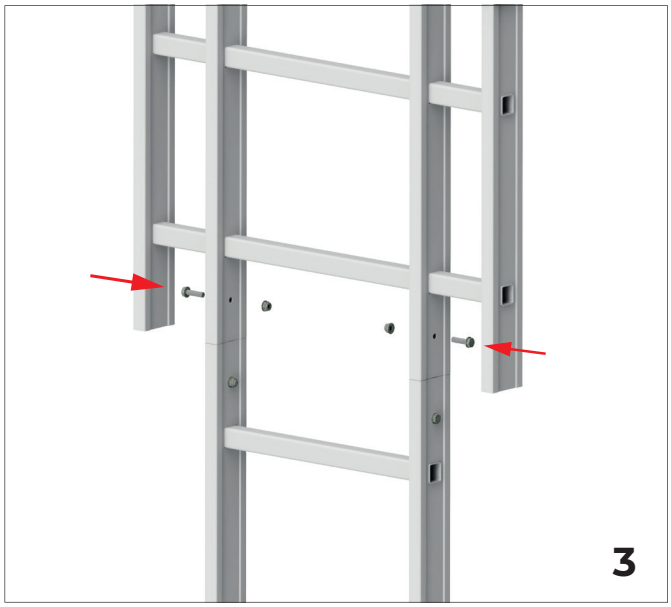
Component Installation Guide

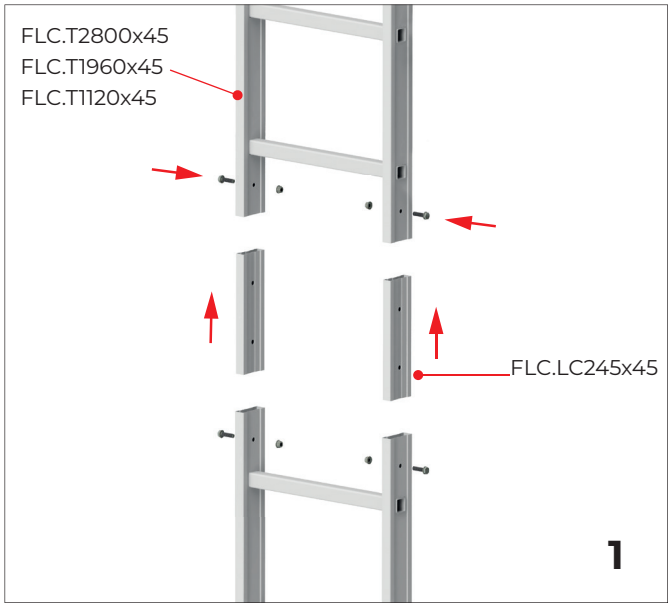
Ladder Connections and Exiting Ladder Installation









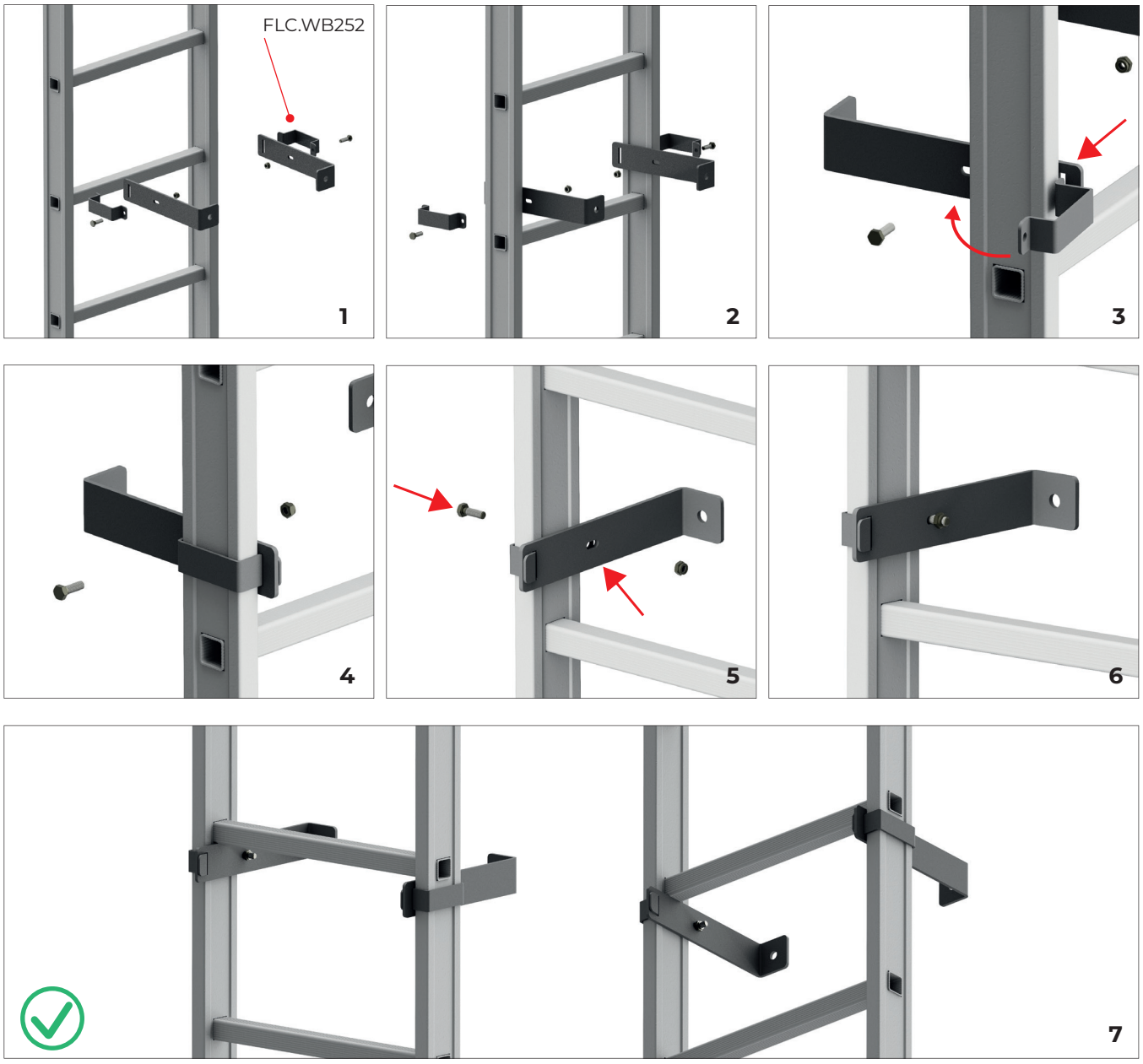


Component Installation Guide

Standard Wall Bracket

2x 13

2x M8x20 | 2x M8 | 4x M8

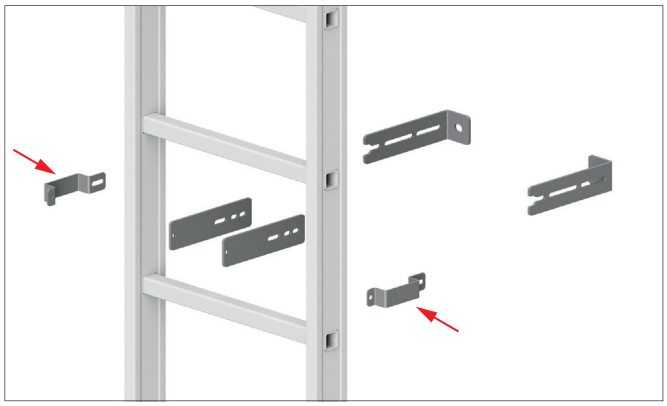


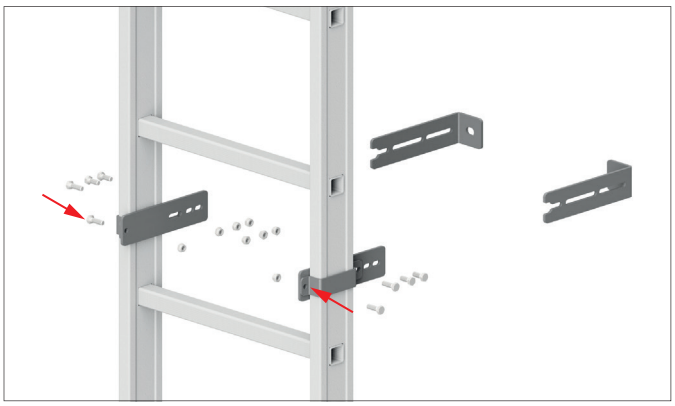
Component Installation Guide

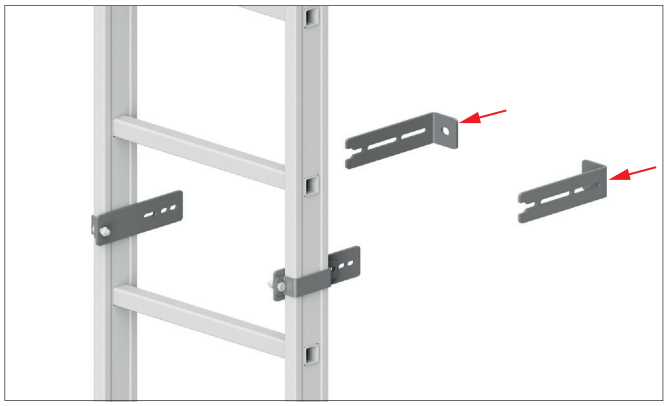
Adjustable Wall Bracket

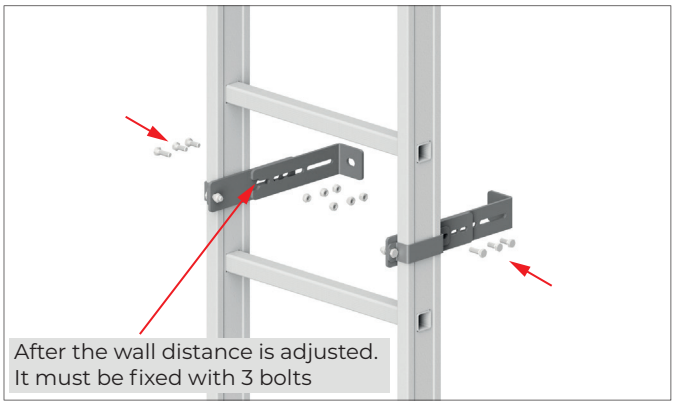
2x 13

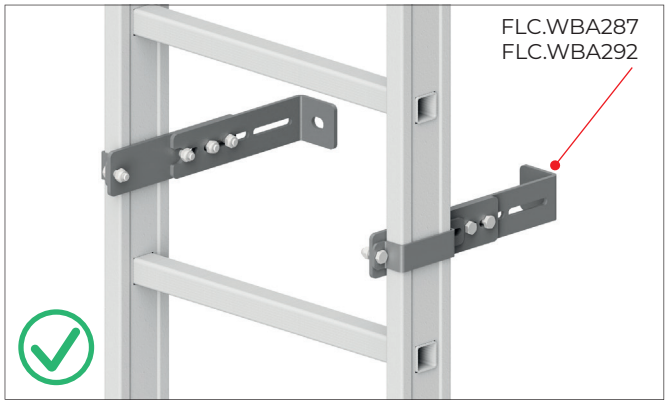
8x M8x30 | 8x M8 | 16x M8









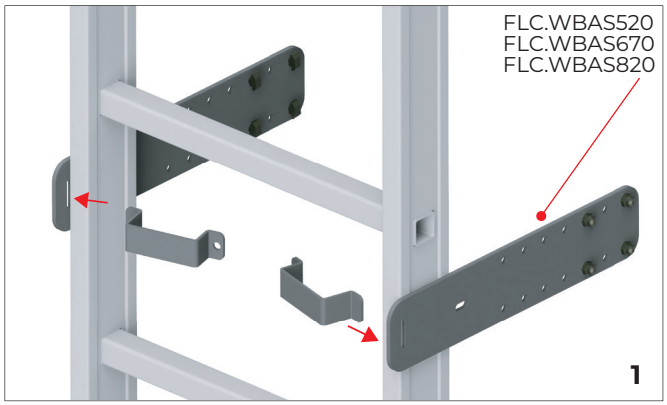


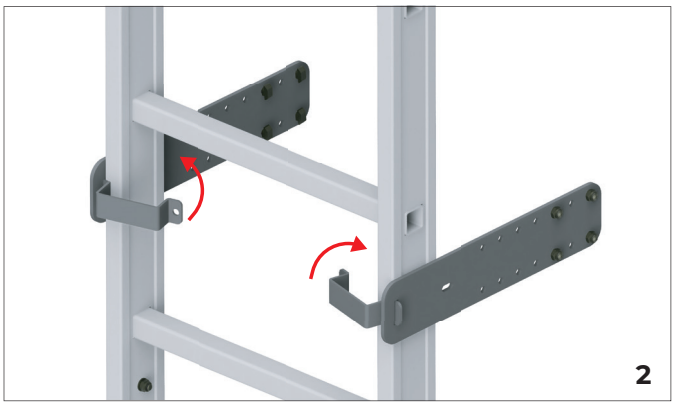
Component Installation Guide

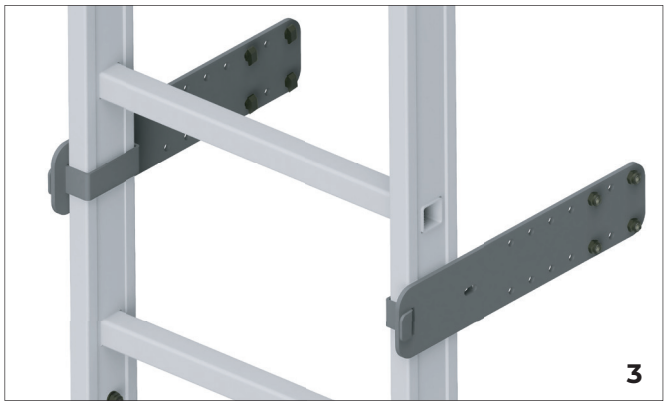
Adjustable Wall Bracket

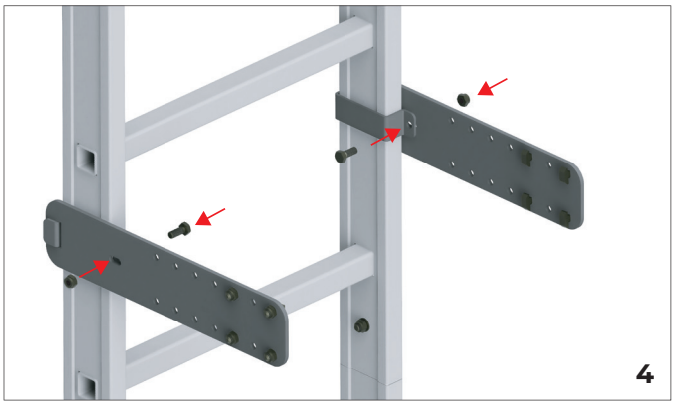
2x 13

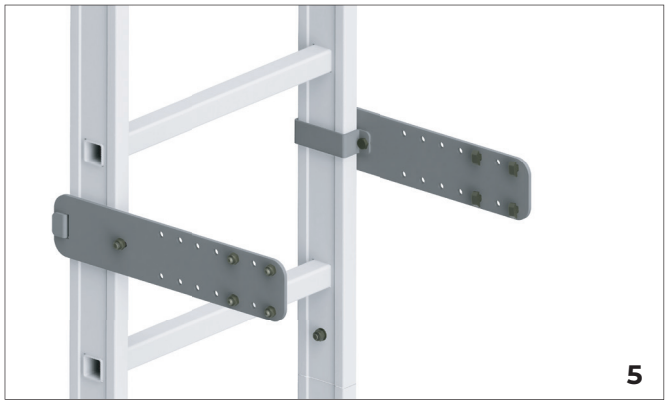
2x M8x20 | 2x M8 | 4x M8

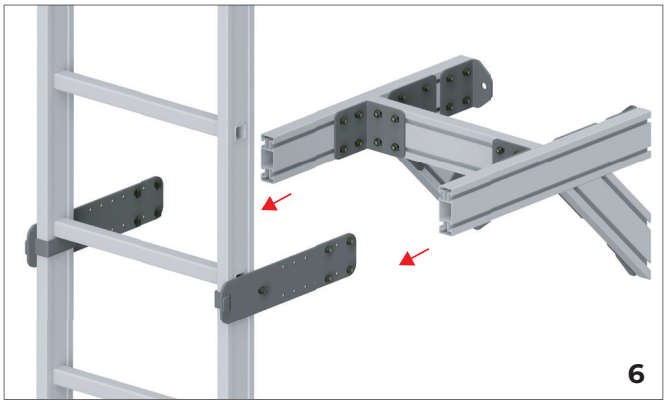


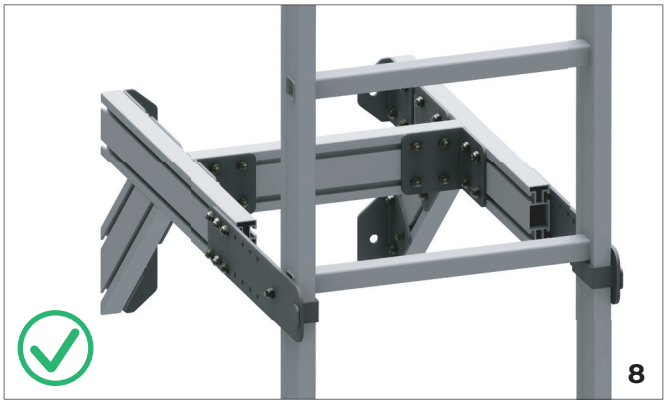








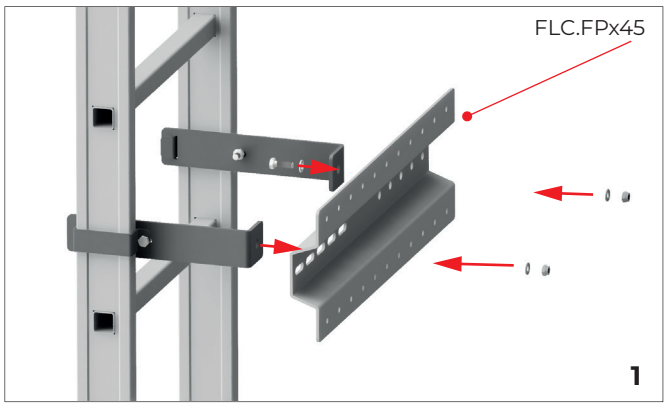


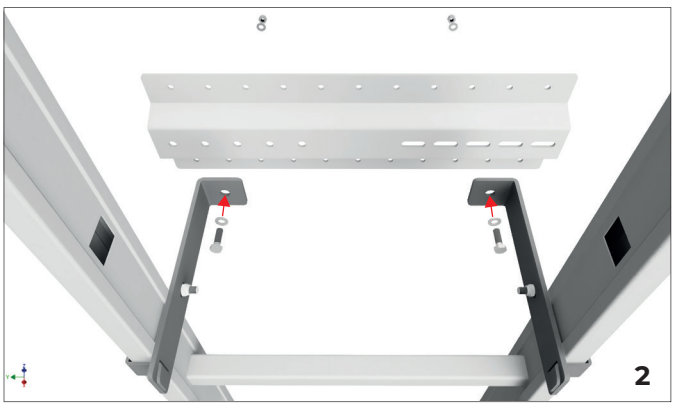


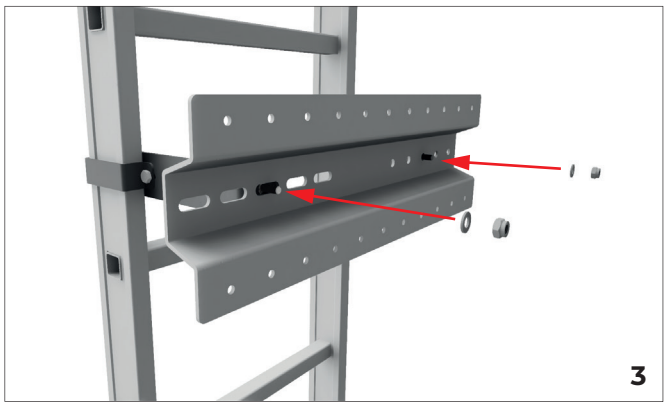
Component Installation Guide

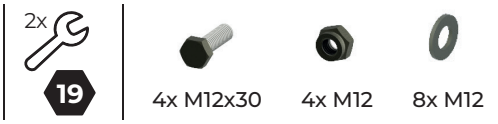
Omega Sheet For Sandwich Panels

Omega Sheet (WB,WBA)

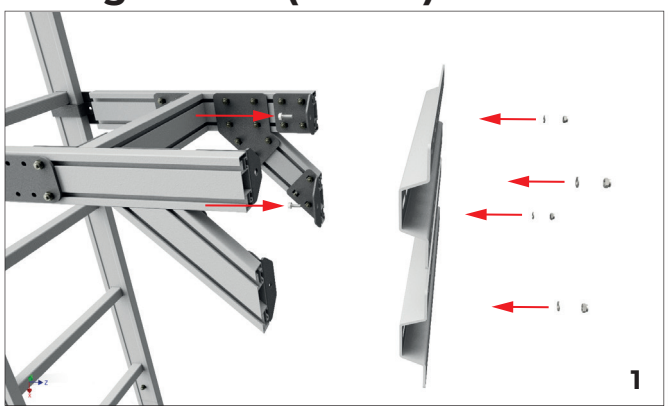


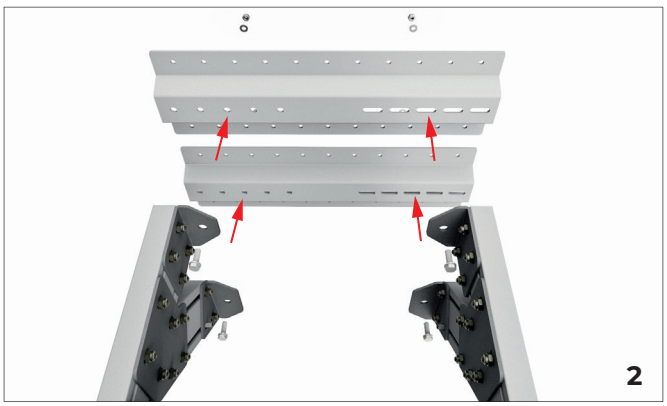


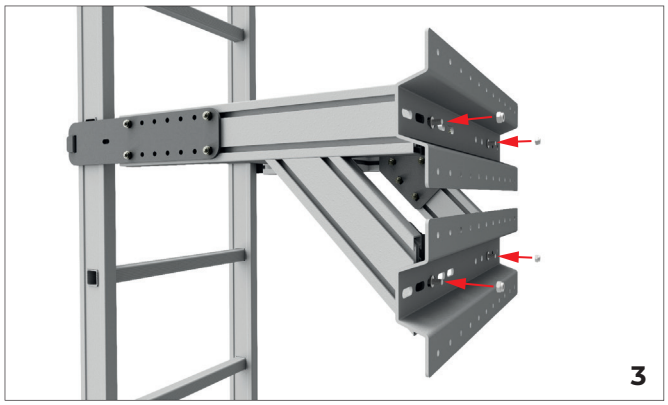


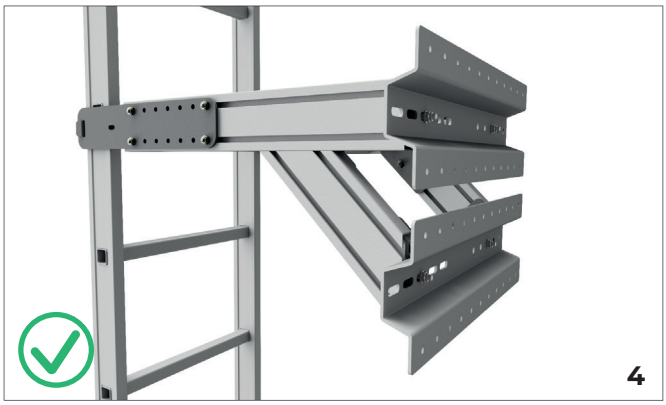


Omega Sheet (WBAS)

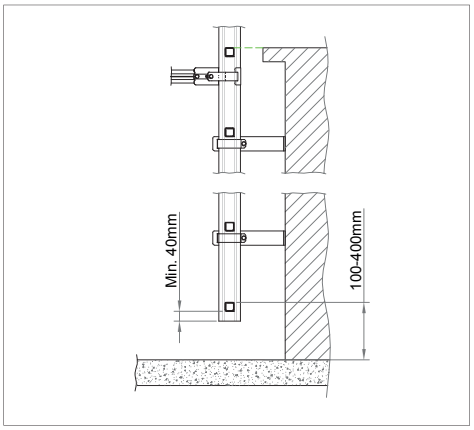


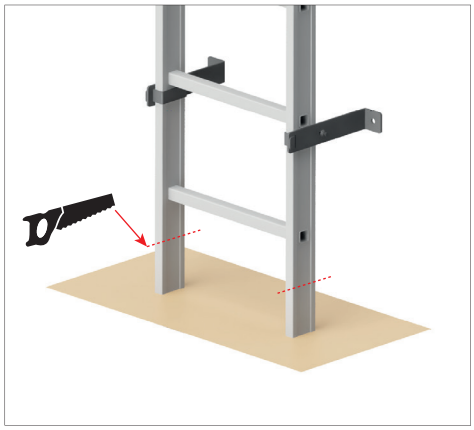


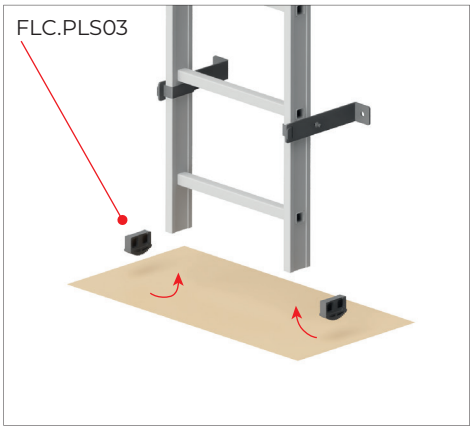




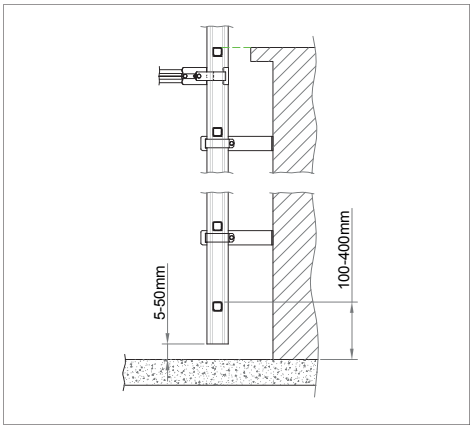
Cutting for Plastic Cap

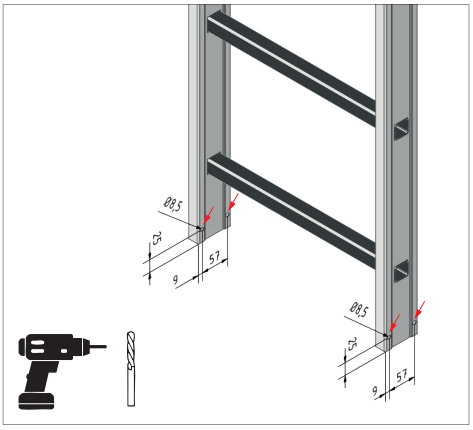


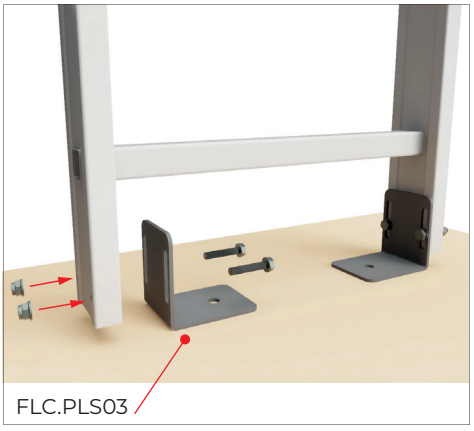


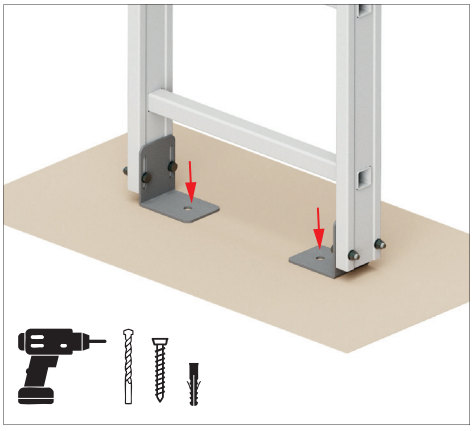


Floor Mounting Bracket









Component Installation Guide

Hoop Assembly

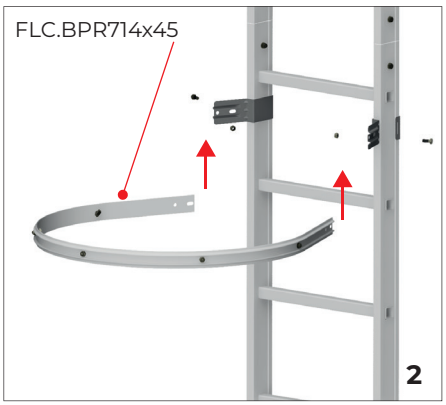
2x 13

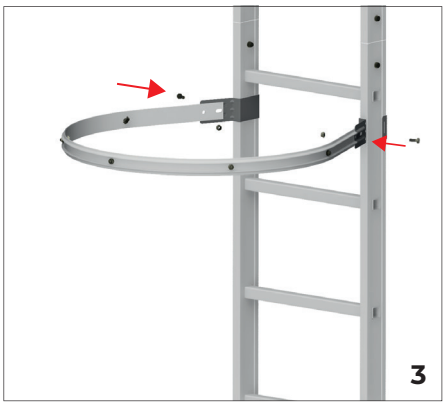

2x M8x30

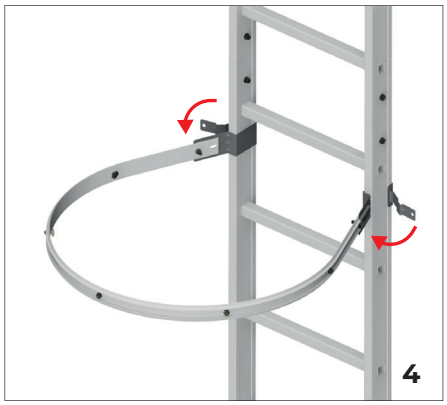

2x M8x20

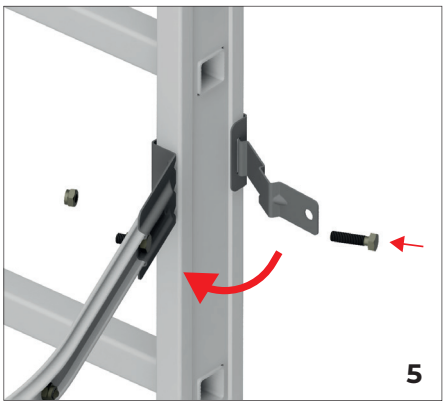

4x M8

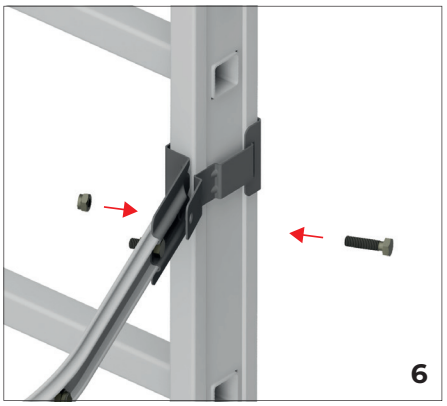

8x M8

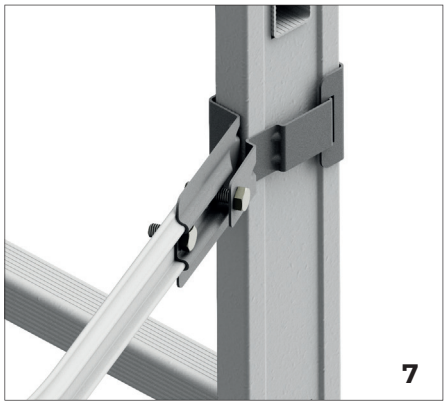












Top Hoop Assembly

FLC.E610x45
FLC.E750x45

2x 13

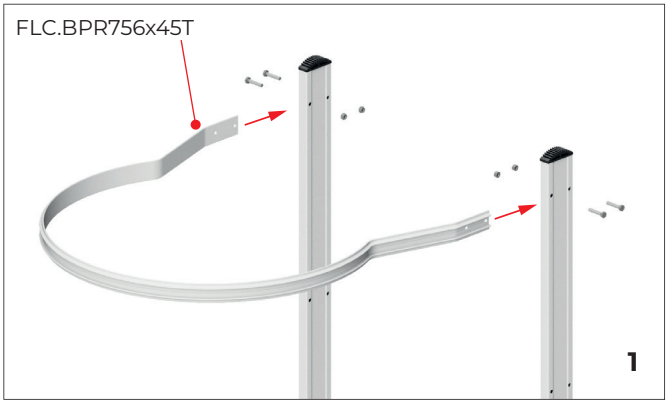
4x M8x40 4x M8

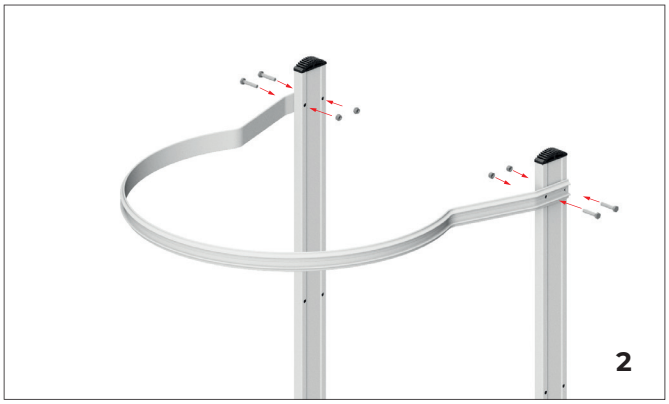
FLC.EH610x45
FLC.EHSGW750x45
FLC.EHSG750x45
FLC.EHWDG610x3800
FLC.CP750x725
FLC.CP750x950
FLC.CP750x1175

2x 13

4x M8x70 4x M8

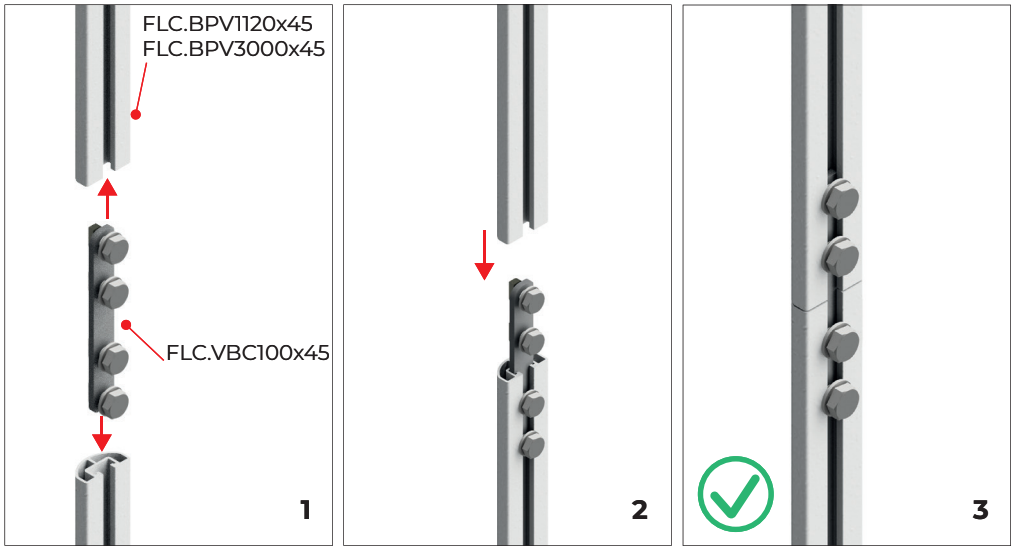
Top Hoop Assembly Guide





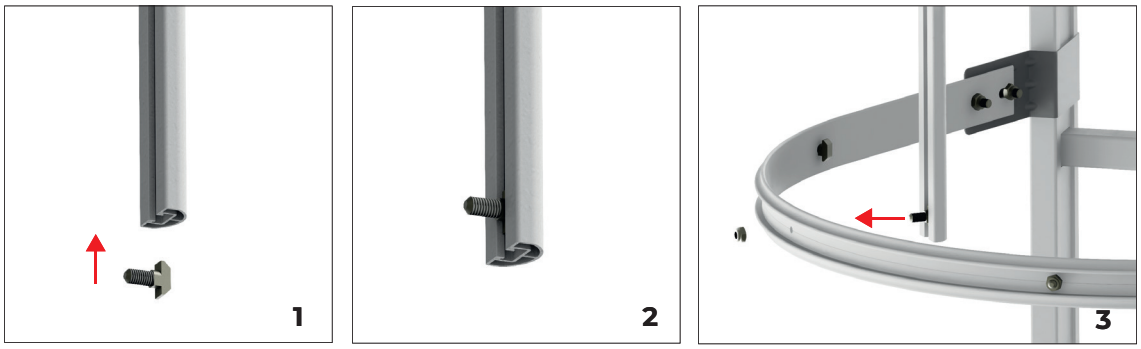
Component Installation Guide

Back Protection Vertical Brace Assembly

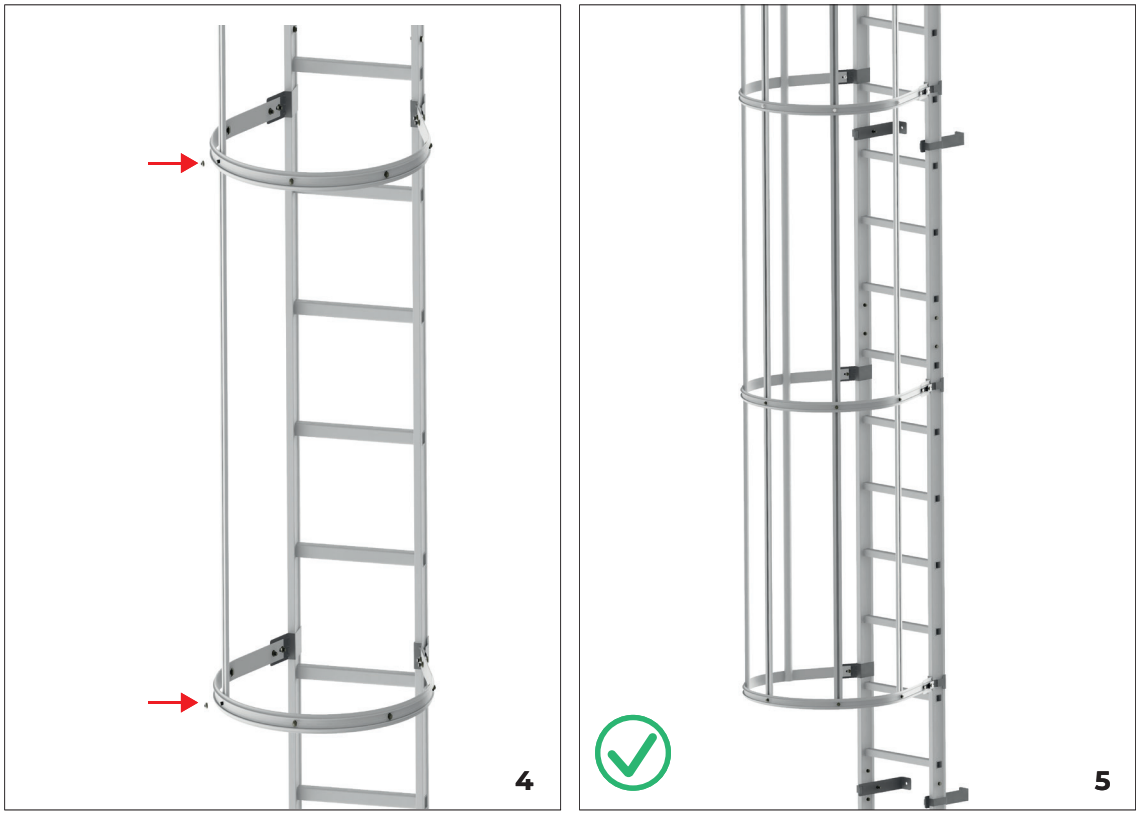


For 1 vertical truss profile

Hoop Assembly with Cage Vertical Profile



For 1 hoop

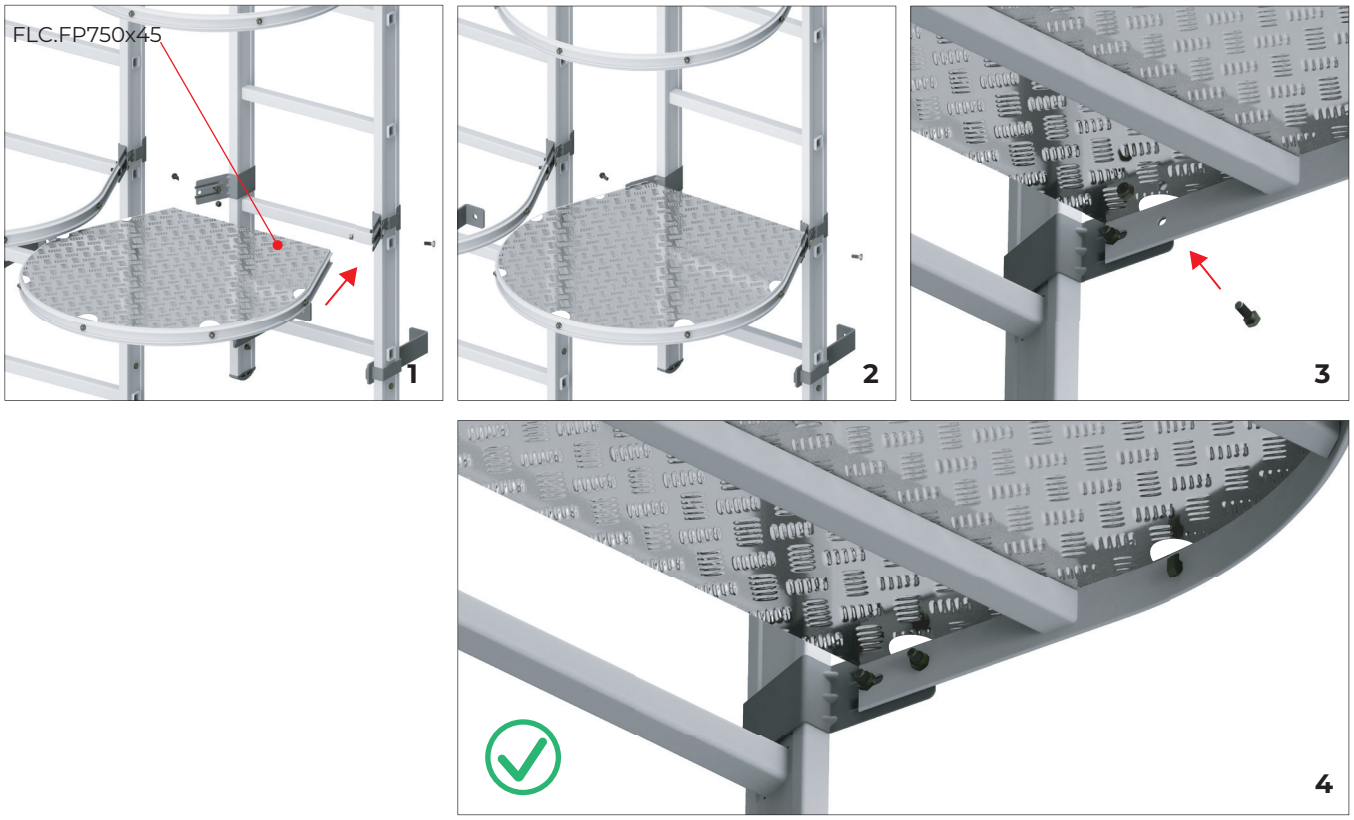


Component Installation Guide

Intermediate Platform Assembly

2x 13

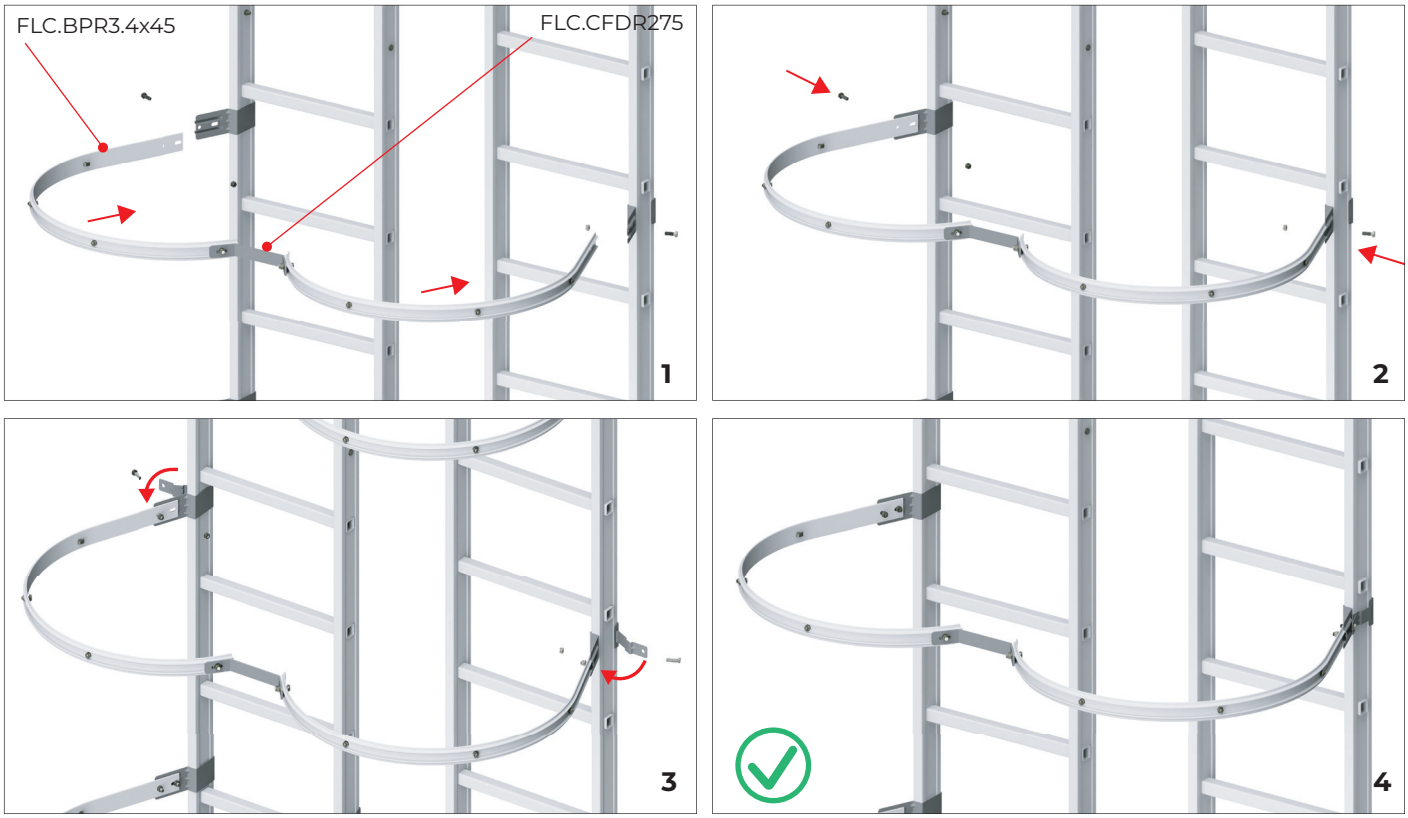
2x M8x30 | 2x M8x20 | 4x M8 | 8x M8



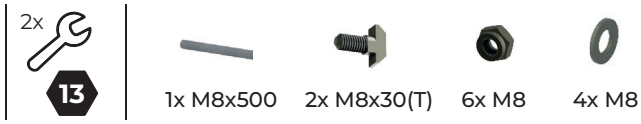
Intermediate Hoop Assembly

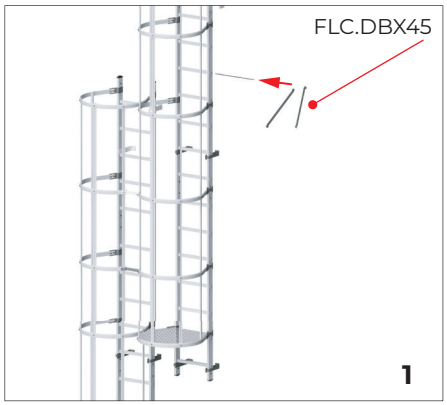
2x 13

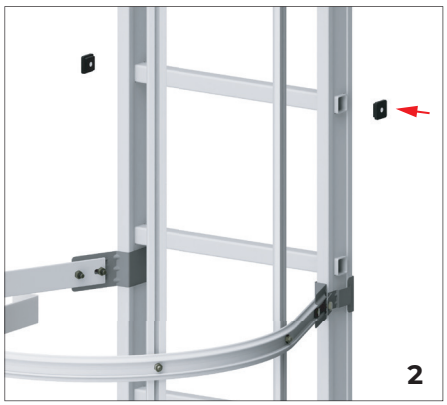
4x M8x30 | 2x M8x20 | 6x M8 | 12x M8

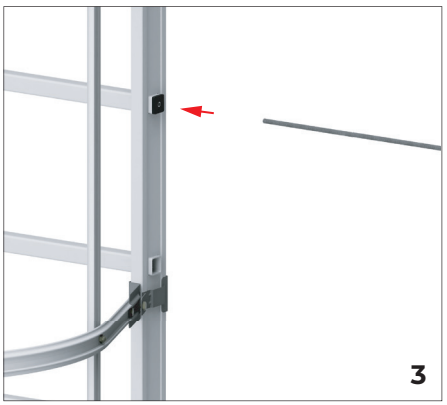


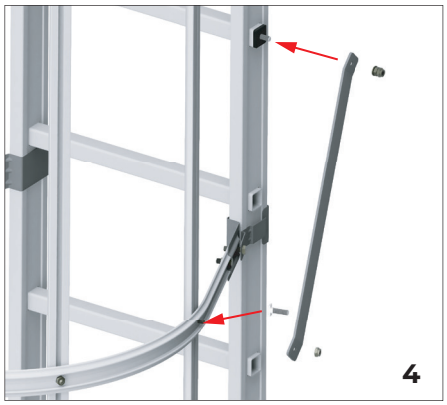
Intermediate Hoop and Platform Support Bracket Assembly

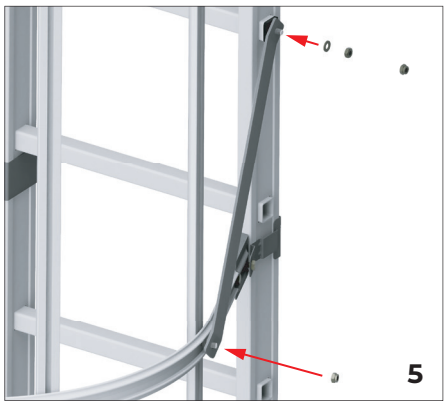












Component Installation Guide

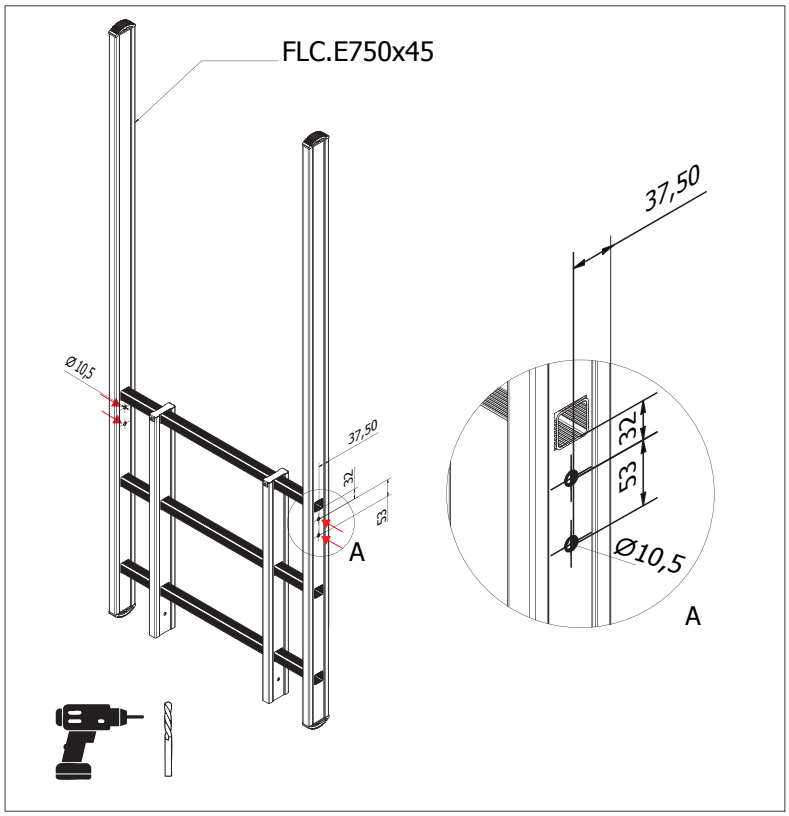
Wide Step Assembly

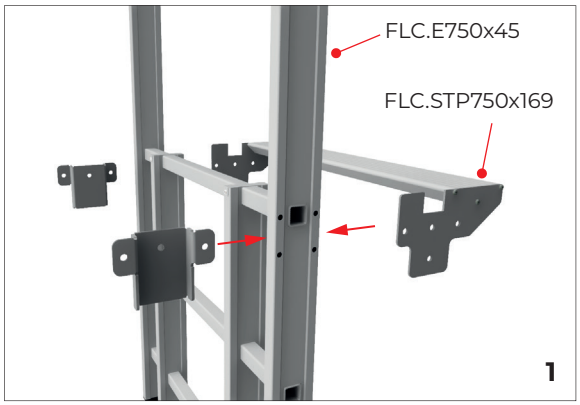
2x 17

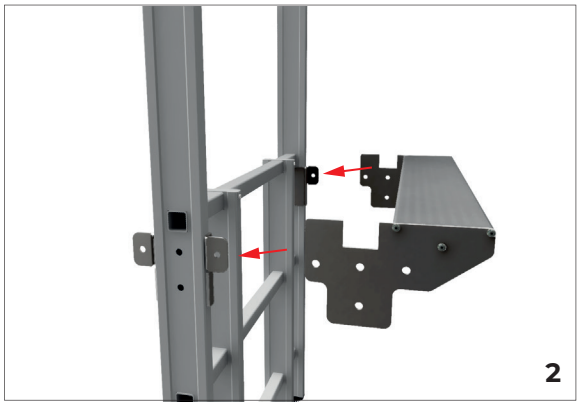

4x M10x50

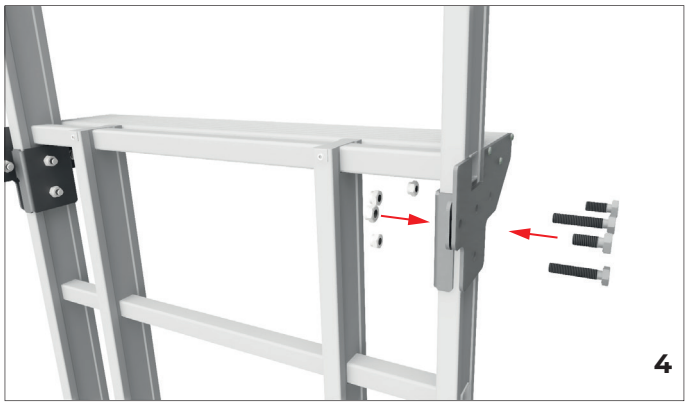

4x M10x25

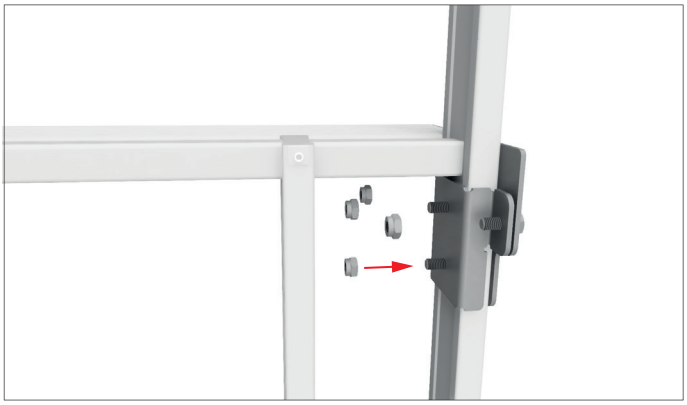

8x M8











Sample Use Cases by Roof and Cladding Type

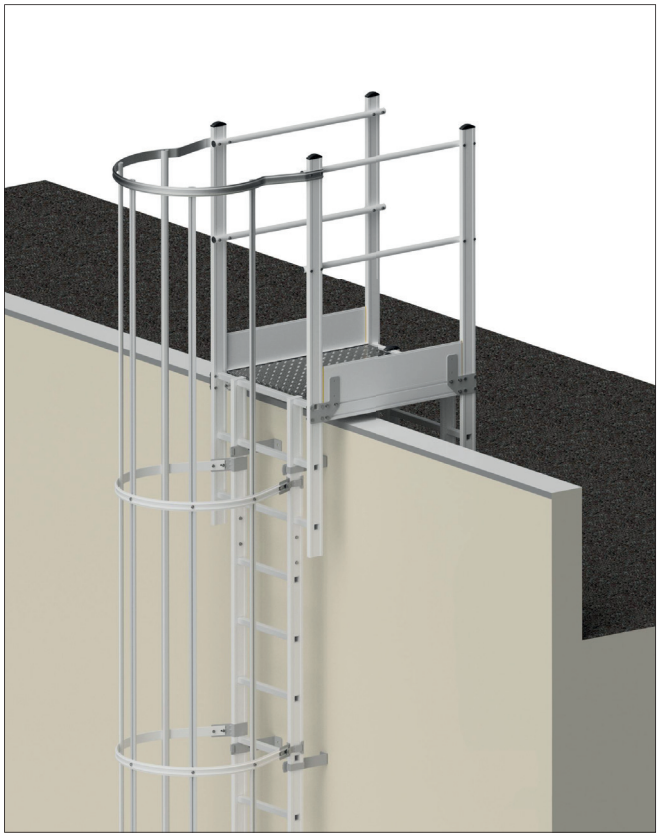
Access Options

Access Ladder with Large Step 230

Wide-step exit ladders may be preferred on roofs without projections

Wide Facade Access Ladder

Shall be preferred on wide-fronted roofs that lack guardrails or similar safety measures.



Crossover Platform

Bridge crossover platforms can be used on roofs with parapets. They may be preferred with different platform lengths and spring-loaded gate options.

Access Ladder with Adjustable Wall Bracket

This component is designed for secure wall installation on structures with facade panels or exterior cladding.

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