VERTICAL SAFETY CAGE LADDER EN 14122-4

TECHNICAL INFORMATIONS

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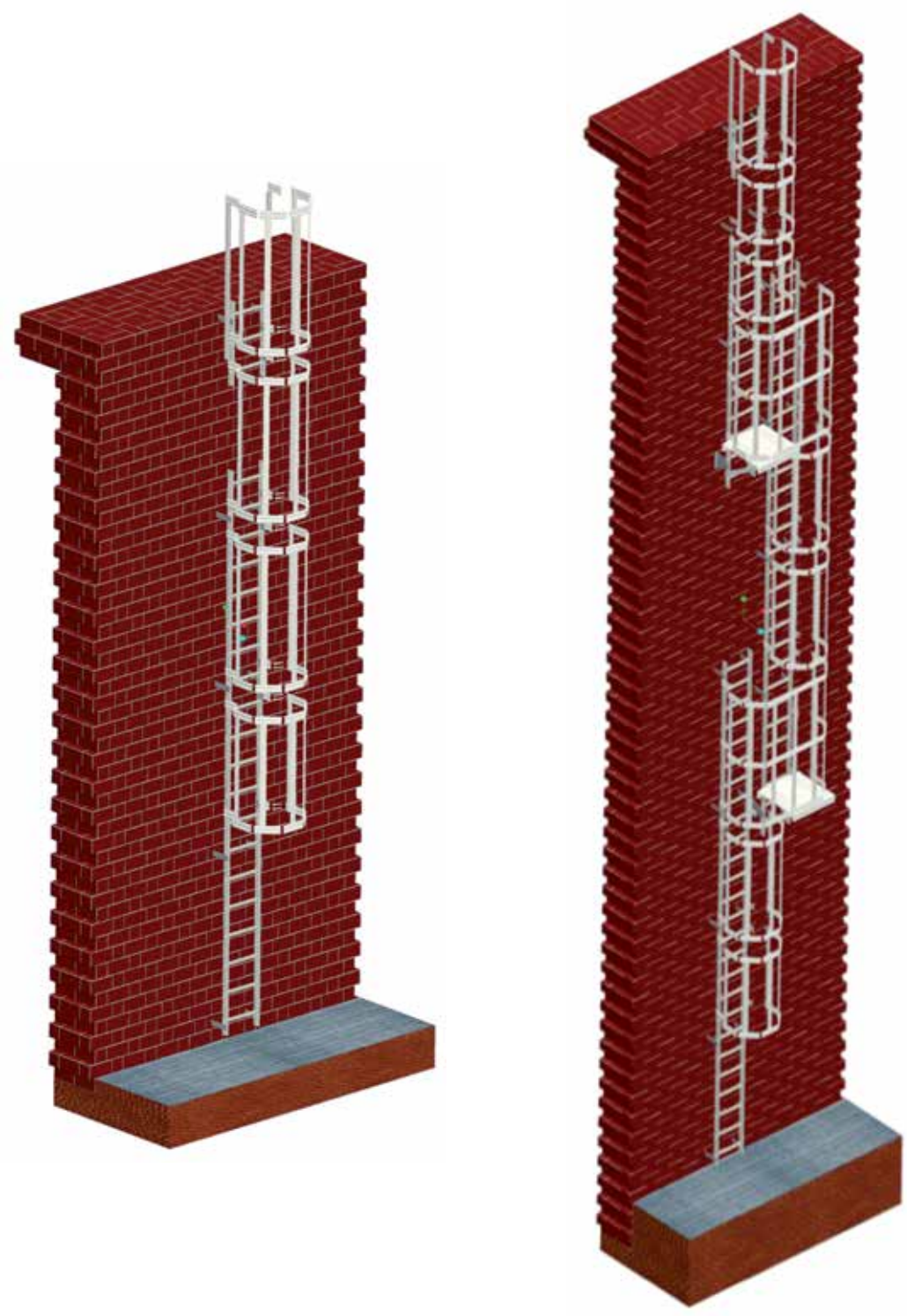
Safety cage ladders are designed to get to buildings, plants, machineries and wherever there is the necessity to safely reach a fixed structure. FACAL safety cage ladder is studied as a kit to fit all possible use situations that one can afford. The system complies with the European norm EN14122-4 and German norm DIN 18799-1.

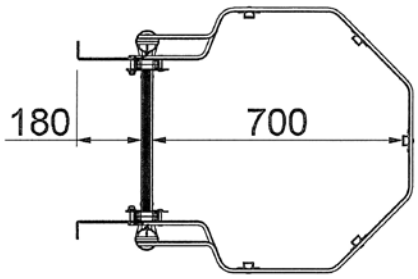


FEATURES
Cage ladder includes 2 main elements: ladders and cages. There are then all the fastening elements.

Ladder: it's in aluminium manufactured with 25 X 65 stiles, anti-slip aluminium 30x30 square rungs. Ladders are pre-pierced to hold nylon joints at the end parts. External width 450 mm- internal clear width 400 mm. Distance between rungs: 300 mm. Standard dimensions: 1195 mm, 1795 mm, 2095 mm, 2395 mm, 2995 mm, 3295 mm. Ladders are produced in compliance with the European norm 131-1/2.

Safety cage: it's made up by aluminium clamps with double ribs and vertical aluminium sections disposed at regular intervals. The assembly of clamps with vertical sections is done in the way that the empty surface doesn't exceed 0.4 square meters. (ref. EN 14122-4). The maximum distance between two consecutive clamps shouldn't exceed 1500 mm (ref. EN 14122-4). Fastening on the stiles is done through brackets and 10x45 zinc-plated screws (included).

Fastening brackets: standard fastening brackets have a length of 228 mm and keep the ladder at a distance of 180 mm (see picture).



EUROPEAN NORM EN 14122-4

If the fastening surface is irregular, you should use adjustable wall brackets with a maximum extension of 153 mm. You have to consider a maximum distance of 2 m between brackets. Cages wall fastening and hooking systems on ladders are designed to resist to horizontal and vertical force test expected from the European norm.

Module for change of flight including rest platform: The module for change of flight is made up by two opposing ladders (a 10 rungs one , on which the rest platform will be fixed, and a 8 rungs ladder) with a double safety cage permitting the walkway from one ladder to the other through a rest platform. The EN14122-4 norm indicates that every 6 m. a module for change of flight must be planned, for such a heights that exceed 10 m

Elements including in the change of flights module with rest platform:
3 special double clamps
7 vertical sections: 2024 mm long
1 rest platform 700x700 mm (pre-assembled)
2 fastening brackets for the rest platform

Fig. 1

Gates typology

Final simple module: the ladder ends with a final module with a width of 714 mm (code GA-SB714/EN)
The mass-produced compositions have this kind of gate.

Fig. 2

Final simple module with gate: the ladder ends with a final module with a width of 714 mm and a closing gate. (code GA-SB714C/EN)

Fig. 3

Final module with guardrail:
the ladder ends with a final module having a width of 714 mm and a safety guardrail.

Fig. 4

Final module with guardrail and gate:

The ladder ends with a final module having a width of 714 mm, a safety guardrail and a gate (code GA-SB714PC/EN)

Fig. 5

The ladder, complying with the EN14122-4 norm is guaranteed only with the use of components provided by FACAL, and only if the installation instructions are carefully followed; if not, FACAL will not assume the responsibility in case of non respect of these rules.

- The distance between the start area and the first rung shouldn't be higher than 300 mm.
- Last rung should be positioned at the same level of the landing area, at a distance lower than 75 mm

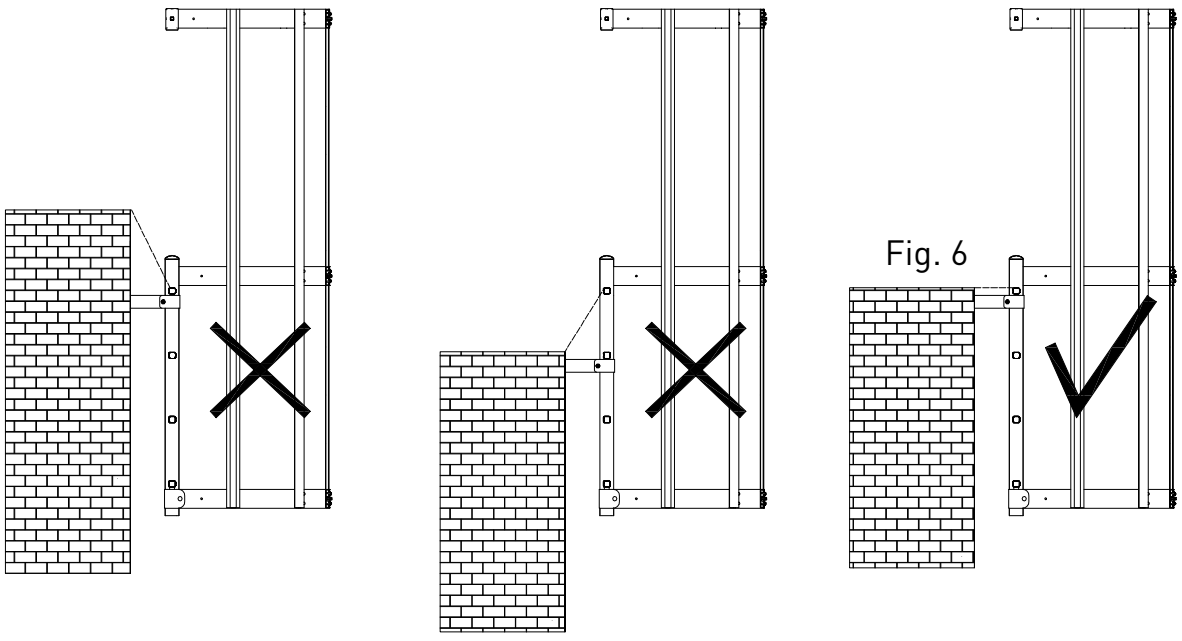


Fig. 6

SAFETY CAGE:

- The maximum distance between two consecutive clamps shouldn't be higher than 1500 mm (ref. EN14122-4)
- Clamps should be perpendicularly assembled to the vertical sections
- Vertical sections should be positioned in the inner part of the cage at regular distance, using the special holes.

Fig. 7

CHANGE OF FLIGHT LADDER

- If the height between the starting level and the landing level is higher than 10 m., a change of flight with a rest platform should be provided every 6 meters.
- In case of 2 or more changes of flight, the maximum height between the two rest platforms shouldn't be more than 6 m.
- The rest platform should have a minimum width of 700 mm.

CHANGE OF FLIGHT PICTURE

Fig. 8

INSTRUCTIONS ASSEMBLY

Every ladder is provided with technical picture, lising all the elements it is made up.
Before starting the installation, we advise you to check the entireness of all components.
Make sure to have all necessary materials for the assembling.
The assembly should be done by two people at least; they should work in safe conditions, with all necessary safety devices and with the help of scaffoldings according to the norm, or overhead platforms.

STAGE 1- SAFETY CAGE ASSEMBLY

Prepare all safety cages on the floor.
Insert the 8 x 20 square head screw in the nylon joint between clamp and vertical section.
Insert the nylon joint in the aluminium vertical profile.
Insert the screw thread in the clamp hole (see picture) and screw the nut in.
In this way fix all the horizontal elements with the respective vertical sections.
As above mentioned, prepare all the modules at your disposition.

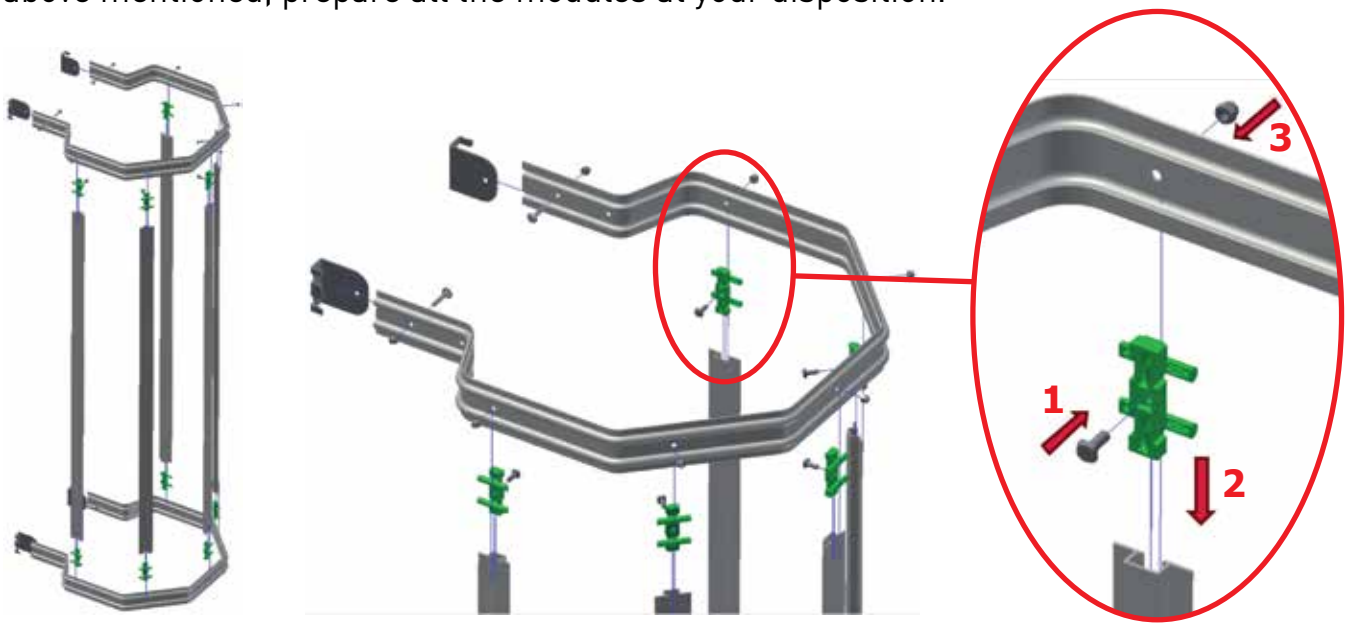


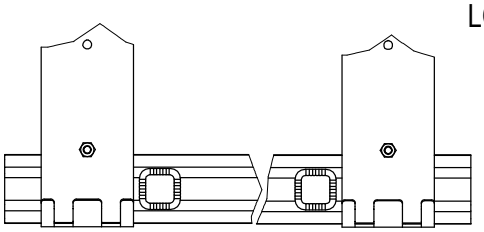
Fig. 9

STAGE 2 – SAFETY CAGE ASSEMBLY ON LADDER

Once completed the safety cage assembly, hook it to the ladder using the fastening brackets and the stainless steel bolt screw 8 x 40 (VI-171)

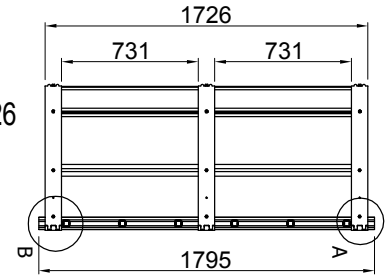
Fig. 10

STAGE 3 - SAFETY CAGE ASSEMBLY ON LADDER

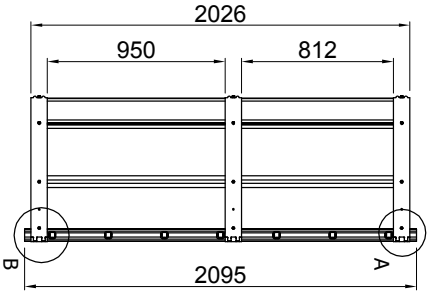


DETAIL B DETAIL A

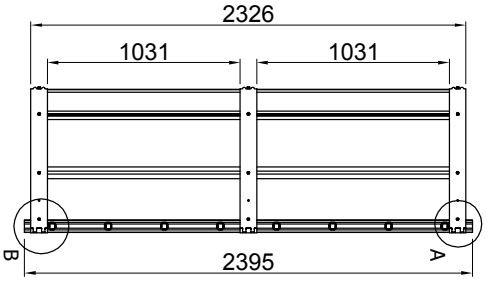
LOTRECHTER RUCKENSCHUTZ 1726
+
LEITER MIT 6 SPROSSEN 1795



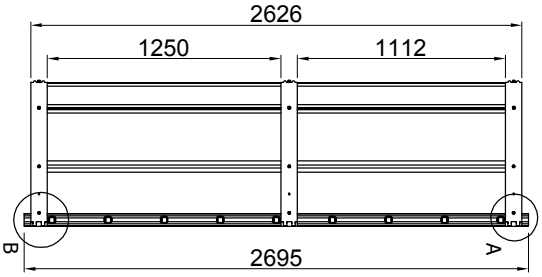
LOTRECHTER RUCKENSCHUTZ 2026
+
LEITER MIT 7 SPROSSEN 2095



LOTRECHTER RUCKENSCHUTZ 2326
+
LEITER MIT 8 SPROSSEN 2395



LOTRECHTER RUCKENSCHUTZ 2626
+
LEITER MIT 9 SPROSSEN 2695



LOTRECHTER RUCKENSCHUTZ 2926
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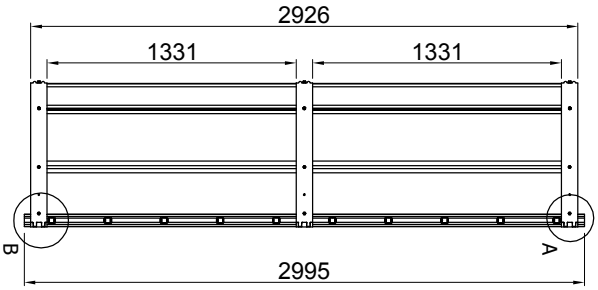
LEITER MIT 10 SPROSSEN 2995



LOTRECHTER RUCKENSCHUTZ 3226
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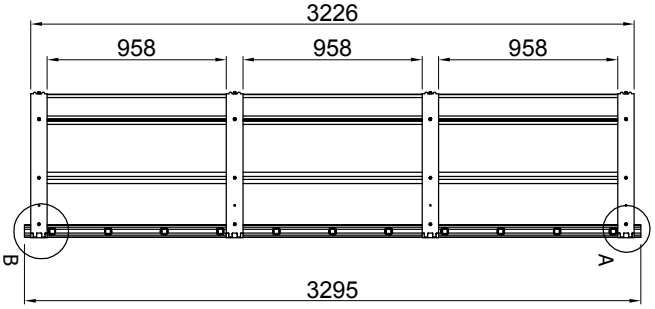
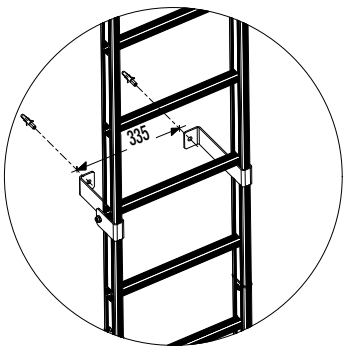
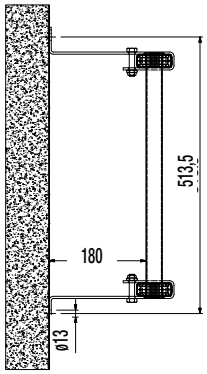
LEITER MIT 11 SPROSSEN 3295



Pre-pierce the wall in order to fix the ladder supporting brackets. Pay attention to respect the distance between the brackets as shown on the picture, in accordance to the norm declares. Once you have pierced the wall, fix the brackets on the ladder, always respecting the distances as the picture shows. These distances assure you that the brackets don't coincide with a rung of the ladder.

Fig. 11





STAGE 4 - CHANGE OF FLIGHT ASSEMBLY:

Prepare all the safety cages on the floor.
Insert the 8 x 20 square head screw in the nylon joint between clamp and vertical section.
Insert the nylon joint in the aluminium vertical profile.
Insert the screw thread in the clamp drill (see picture) and screw the nut in.
In this way fix all the horizontal elements with the respective vertical sections, then fix the safety cage on the ladder as indicated in the stage 2 by positioning the lower clamp on the step on which the rest platform hooks on (see picture 13)

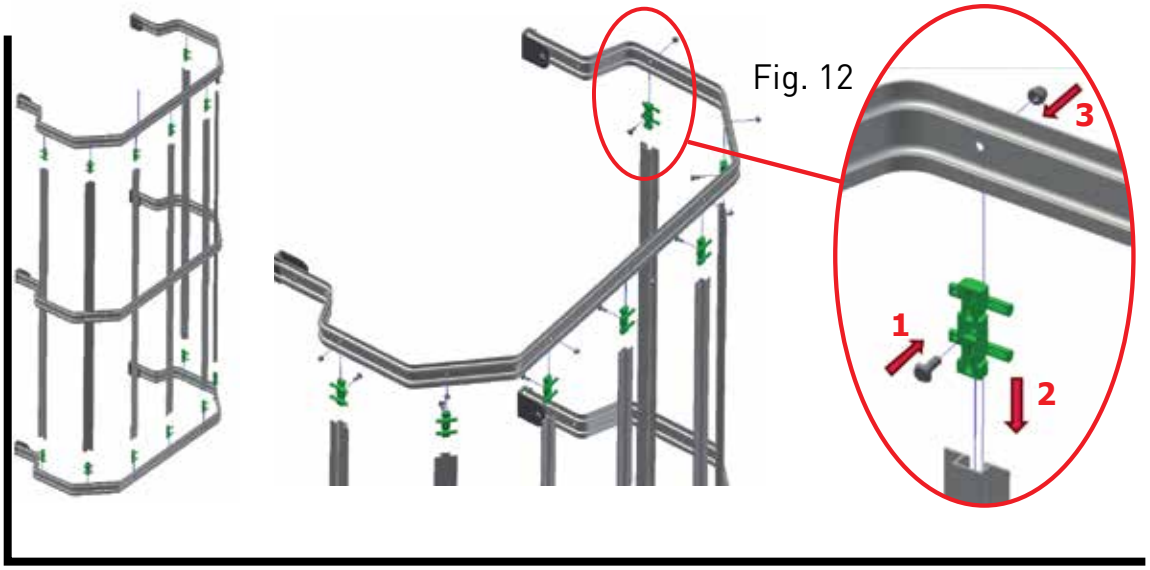


Fig. 12

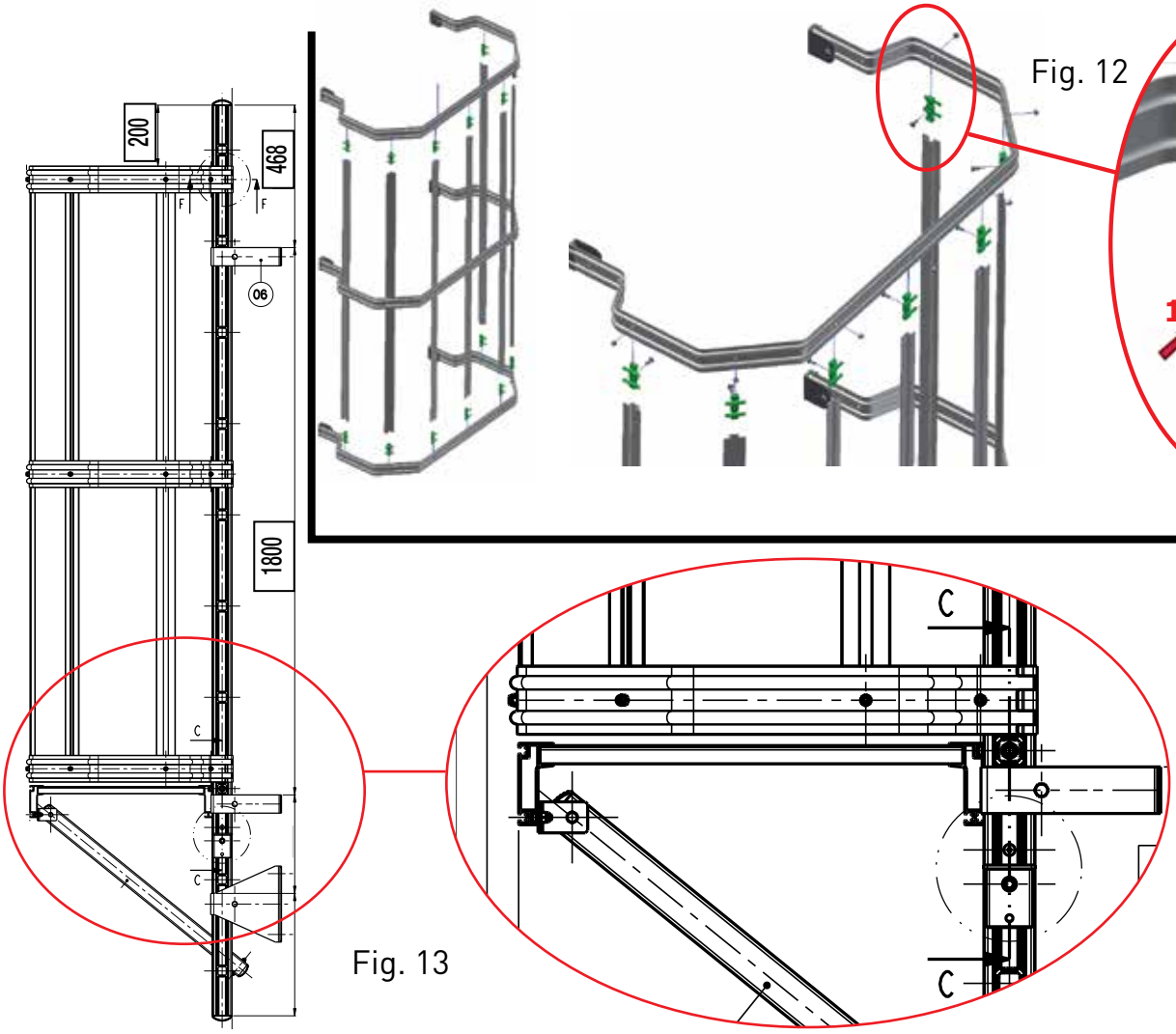
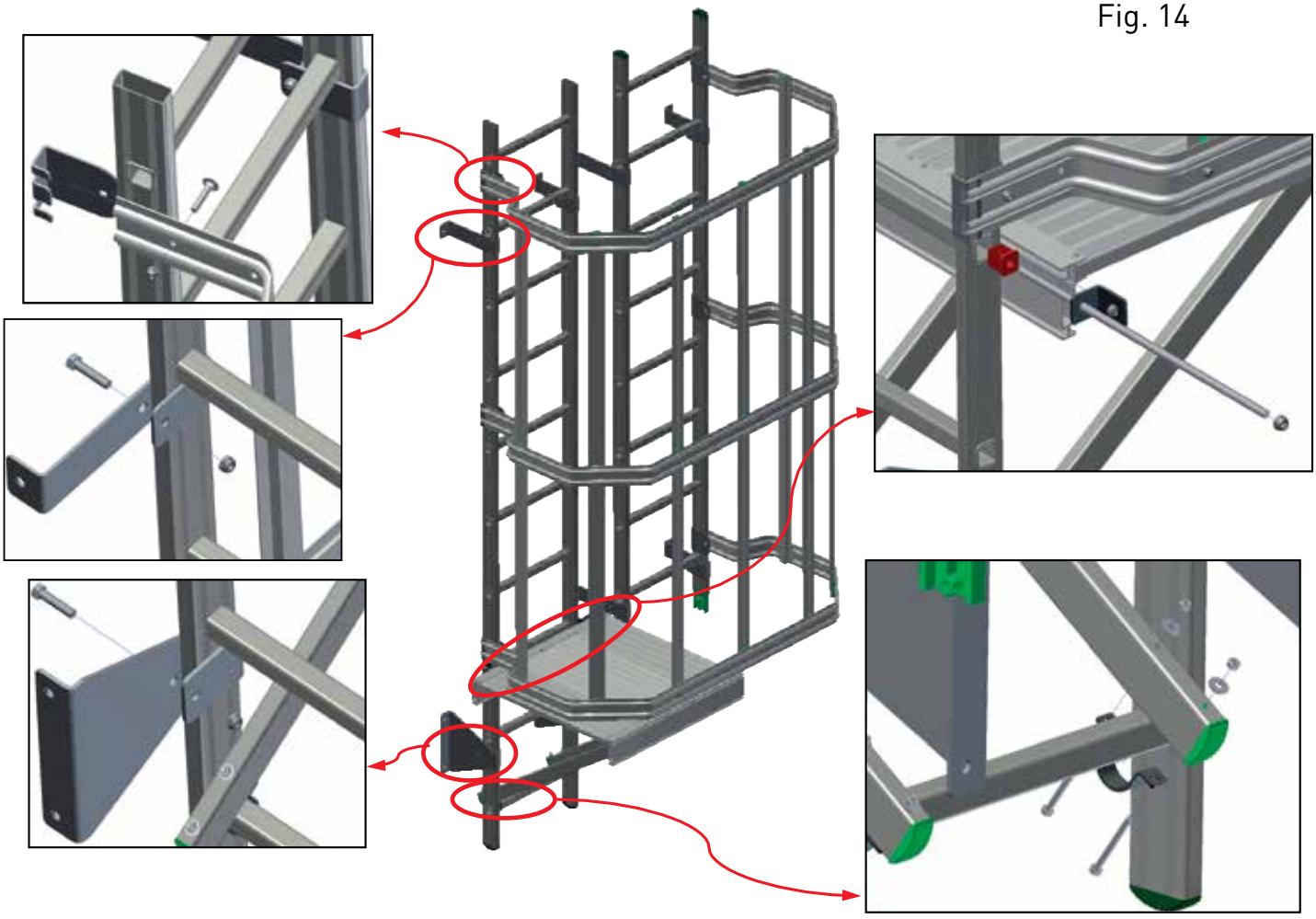


Fig. 13

STAGE 5 – REST PLATFORM ASSEMBLY ON THE LADDER

Insert the threaded bar (1) in the third rung of the ladder with 10 rungs (ladder code SG300) and lock it using the two red finned caps (2); then insert the two brackets (3), and fix them with the nut (d. 8).
Place the rest platform with its bottom part, (that is on the side of the platform) in correspondence with the rung with the threaded bar inserted. Insert two 8 x 20 square head screws in the profile's hollow and fix them in the L bracket, previously fixed on the threaded bar.
Then fasten the rest platform supporting diagonals to the first ladder rung with the staple, already inserted in the diagonal.

Fig. 14

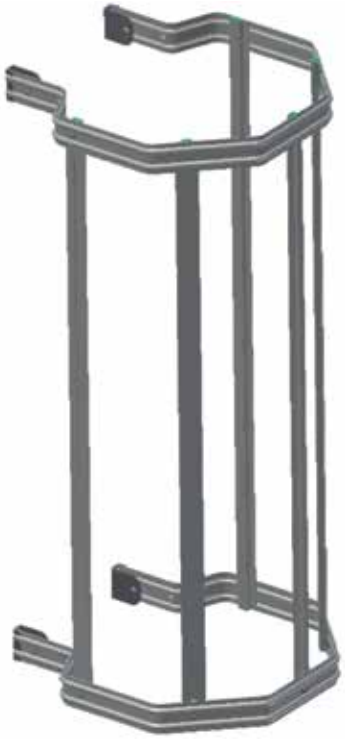


Once the different modules are assembled on the floor, it is possible to insert from the top the modules provided with safety cage and fastening clamps and fix them to the wall.

Ladders don't need particular maintenance. Verify periodically the screws holding, and the material good conditions.

MAIN COMPONENTS NOMENCLATURE

Safety cage (including hook brackets, nylon joints and screws)



code	Description
GA388/EN	Safety cage h 388 mm
GA688/EN	Safety cage h 688 mm
GA1726/EN	Safety cage h 1726 mm
GA2026/EN	Safety cage h 2026 mm
GA2326/EN	Safety cage h 2326 mm
GA2626/EN	Safety cage h 2626 mm
GA2926/EN	Safety cage h 2926 mm
GA3226/EN	Safety cage h 3226 mm
2GA2026/EN	Double safety cage for change of flight h 2026

Ladder: (Ladders are already pre-pierced for the coated steel connectors assembly)

code	Description
SG120	Single ladder h 1195 - width 450 mm – 4 rungs
SG180	Single ladder h 1795 - width 450 mm – 6 rungs
SG210	Single ladder h 2095 - width 450 mm – 7 rungs
SG240	Single ladder h 2395 - width 450 mm – 8 rungs
SG270	Single ladder h 2695 - width 450 mm – 9 rungs
SG300	Single ladder h 2995 - width 450 mm – 10 rungs
SG330	Single ladder h 3295 - width 450 mm – 11 rungs

Final modules (including ladder h 1195 – 4 rungs) – The mass-produced compositions include

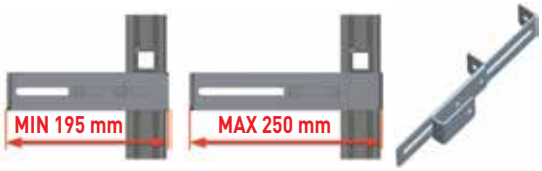
a simple final module **714** mm.

code	Description
GA-SB714/EN	Final module 714 mm wide
GA-SB714C/EN	Final module 714 mm wide with gate
GA-SB714P/EN	Final module 714 mm wide with guardrail
GA-SB714PC/EN	Final module 714 mm wide with guardrail and gate

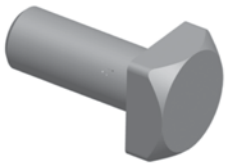
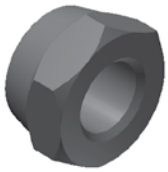
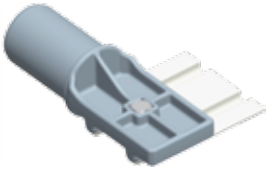
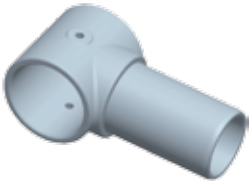
Change of flight element: It includes 1 ladder h. 2995 mm (on which the rest platform will be assembled), 1 ladder h. 2395 mm, 1 double safety cage (code 2GA2026), 1 rest platform, brackets for the ladder hooking, nylon joints, screws, and 2 big brackets for the fastening under platform (FE-170)

code	Description
GA-MSD	Module for change of flight with rest platform

MINOR COMPONENTS NOMENCLATURE

Code	DESCRIPTION	PICTURE	TECHNICAL FEATURES
FE-165	Standard zinc-plated steel fastening bracket – 228 mm long		Length mm 228. Distance between wall and ladder rung 180 mm. Fastening on the ladder through zinc-plated screw 10x45
FE-164	Fastening bracket to fix clamp on ladder		It is fastened to the ladder with a 8x40 stainless steel bolt screw and a low M8 self-locking nut.
FE-167	Adjustable zinc-plated steel bracket (extension from 195 to 250 mm)		It allows an adjustment where the he wall is irregular. Extension: from 195 to 250 mm
FE-166	Straight wall bracket		It's fixed on the ladder with zinc-plated hexagon head, screw 10x45
FE-170	Zinc-plated fastening brackets to fix the rest platform to the wall		Brackets to use under the rest platform to fix the ladder to the wall. It is fastened to the ladder with zinc-plated hexagon head screw 10x45
FE-168	Bracket to fix the rest platform diagonal to the ladder rung		It allows the fastening of the supporting diagonal of the rest platform with the ladder rung. It is fixed with zinc plated hexagon head screw 6X65 and low M8 self-locking nut.

Code	DESCRIPTION	PICTURE	TECHNICAL FEATURES
FE-169	Zinc-plated steel bracket of the rest platform to the ladder		It's fixed with zinc-plated square head 8x20 and stainless steel low M8 self-locking nut
FE-171	Zinc plated steel bracket to fix the under part rest platform diagonal with the rest platform		It's fixed with zinc plated square head 8x20 and stainless steel low M8 self-locking nut and a 8x40 zinc-plated hexagon head screw and a low M8 self-locking nut
PL-300	Coated steel connector		Coated steel connector to join 2 ladders.
ANSTD/EN	Clamp Ø 680 for standard safety cage		Clamp to use on vertical cages
ANSB634/EN	Clamp Ø 680 for final module – 684 mm wide		Clamp to use on final module. It's the last clamp at the top.
2AN	Double clamp for change of flight element with rest platform – 2026 mm - according to EN 14122-4 norm.		Double clamp to use on the change of flight safety cage.
PL-334	Nylon joint to connect the clamp to the vertical section		It holds the 8x20 screw and it slides into the rail of the vertical profile. It connects the clamps with the vertical profile.

Code	DESCRIPTION	PICTURE	TECHNICAL FEATURES
VI-134	Zinc-plated iron square head screw 13x13 T.5		
VI-168	Low M8 stainless steel self-locking nut		
GA-V386 **GA-V686** **GA-V1724** **GA-V2024** **GA-V2324** **GA-V2624** **GA-V2924** **GA-V3224**	Aluminium vertical profile for safety cage – different sizes • Mm 386 • Mm 686 • Mm 1724 • Mm 2024 • Mm 2324 • Mm 2624 • Mm 2924 • Mm 3224		Aluminium vertical profile for cage. It's provided with a slide for the nylon joint that connects the clamp to the vertical section.
FU-124	Two ways hinge for gate tubular section Ø 50		
FU-127	Final fastening part for last final module clamp		
FU-126	1 way support Ø 50 with eye Ø 50		
F-128	Long 1 way square hinge 30x30 with eye