
INSTALLATION GUIDE

SYSTEM A11

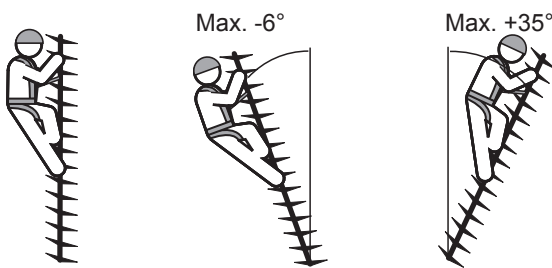
Climbing protection ladders / Climbing protection rail system FABA™ A11

The climbing protection system is designed in accordance with EN 353-1:2002 + CNB/P/11.073 from 13.10.2010. The FABA™- climbing protection ladders also comply with DIN 18799-2 and EN ISO 14122-4.

General

Masonry / support structures (e.g. steel constructions) as well as the installation base (concrete or stone) must be sufficiently supporting. A specialist must check that there is sufficient load bearing capacity before installation.

Accident prevention regulations must be observed.



Installation

The components are supplied ready for installation. In the case of accessories such as brackets, connectors, etc. the corresponding fastening is either attached in a hand-tight manner or enclosed.

Essentially all screw connections are selected so that they will not seize up even in systems where they are left in place for a long time.

The **screw locking devices** are chosen dependent on the type of use:

- **Screw connections with self-locking nut as per ISO 10511**
- **Screw connections with spring washers**
- **Screw connections with lock nuts**
- **Screws with plastic dry locking coating** (detachable and reusable up to three times)

All screw connections must be tightened / checked using the torques listed below:

Thread diameter	Screw connection / Material	Tightening torque	
		Stacked components	Non-stacked components (e.g. clamps)
M8	A2-70 / A4-70 / 8.8 tZn	18 Nm	12 Nm
M10	A2-70 / A4-70 / 8.8 tZn	35 Nm	23 Nm
M12	A2-70 / A4-70 / 8.8 tZn	60 Nm	40 Nm
M16	A2-70 / A4-70 / 8.8 tZn	120 Nm	80 Nm
M20	A2-70 / A4-70 / 8.8 tZn	240 Nm	158 Nm

Installation on buildings should take place from the bottom to the top. When **positioning securing holes** ensure that the vertical distance is always a **multiple of 280 mm**. The brackets are screwed into the backs of the rails using a T-head bolt, when fitting the bracket to the **climbing protection ladder**, the position of the rung must be observed. The individual ladder ends must be flush against each other without an air gap. The installation procedure is left up to the installation company.

For anchor fastenings, the guidelines of the anchor manufacturer are to be observed.

On site adjustment:

If ladder parts or rails must be adjusted on site, the cutting edges should be deburred and finished appropriately.

AFTER INSTALLATION check that all screws are correctly tightened. Check whether all necessary catches are fitted. Damaged surfaces must be made good.

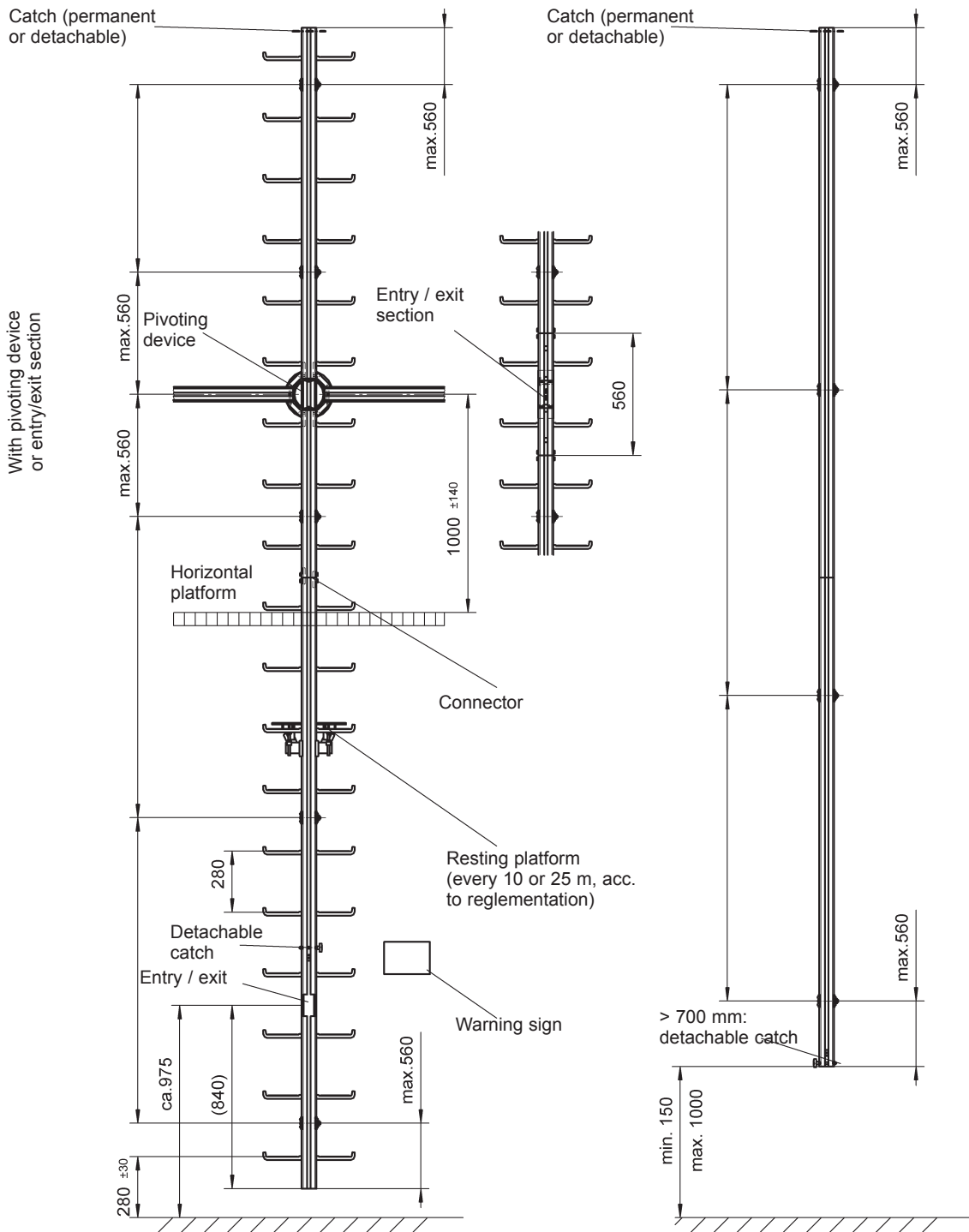
The complete climbing protection system must be run with the fall arrest slider. Fitted parts such as gates, detachable catches, entry and exit sections etc. are to be checked for correct operation.

General layout of a FABA™ climbing protection system A11

FABA™ climbing protection ladder

FABA™ climbing protection rail

(e.g. on climbing irons or twin-rail ladders, resp.)



ATTENTION! Only components approved for the system may be used.

For every FABA™ climbing protection system a warning sign should be attached at the entry point.

The climbing protection ladder with release facility may only be installed as the lowermost ladder segment in the access level area (safe standing point).

Catches must be mounted at all points where the slider can leave the rail:

- Detachable catches if the slider may be removed (including position above the release facility),
- Permanent catches if the slider may not be removed.

*) = Fitting of brackets and bracket spacing see pages 4 and 5

Fitting of support brackets

Fastening method	Implementation	
	Climbing protection ladder with double rung	Climbing protection rail
max. system distance	1960	1960
Weld-on bracket or clamping device	1960	1960
Connection to steel structures with M12	1960	1960
in manhole rings with anchor bolt FZA 14x60, M10/20 ¹⁾	1680	1960
in concrete at least B25 with anchor bolt FZA 14x60, M10/20 ¹⁾	1960	1960
with brickwork ²⁾	1120	1120
on existing twin-rail ladder	not applicable	1960
on existing step irons	not applicable	1960

Notes:

- 1) Fastening can also be carried out using other similar anchor fittings authorized by the building authorities.
- 2) Since there are no approved anchor fittings for use with brickwork, it will be necessary for an anchor fitting manufacturer to check and determine the type and size of anchor fittings to be used by means of tensile tests carried out on-site prior to installation. Documentation and certification of the anchor fittings used must be available.

Number of support brackets

- Calculation = total ladder or rail length divided by separation distance given above between support brackets, round up, + 1 support bracket
- Example (ladder length = 15000 mm, distance between support brackets = 1960 mm) = $15000 / 1960 = 7.7$ round up + 1 = 9 support brackets, or = 9 + x, if special components require the use of additional support brackets.

- When using special components, such as entry and exit sections or gates, etc., additional support brackets must be incorporated and their minimum distances observed in accordance with the applicable system installation manual. The support brackets required therefore must be included in the example calculation shown above.

PLEASE OBSERVE

- FABA™ A11 Climbing protection systems with an overall height of less than 2800 mm must be connected to the ground beneath by means of at least 2 fasteners.
- For climbing protection systems with an overall height of less than 4200 mm, at least 3 brackets are to be used.
- For climbing protection systems with an overall height of more than 4200 mm, at least 4 brackets are to be used.
- The ground to which the FABA™ A11 climbing protection system is secured, must be capable of absorbing a falling load of at least 6 kN.
- Each FABA™ A11 ladder or rail element is to be fastened to the floor with at least one bracket. Climbing protection systems installed before 07/2005 do not require upgrading.

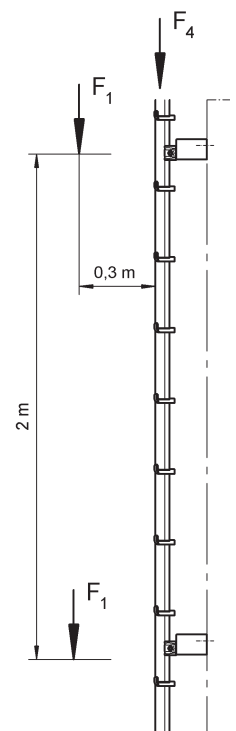
Mounting on brickwork

The maximum bracket distance is dependent on what loading can be absorbed by the anchor fastening. If it can be demonstrated in an anchor pull-out test that the pull-out force in an unfavourable position is at least 10 kN, the maximum bracket distance is 1120 mm.

Since there are no approved anchor fittings for use with brickwork, it will be necessary for an anchor fitting manufacturer to check and determine the type and size of anchor fittings to be used by means of tensile tests carried out on-site prior to installation. Documentation and certification of the anchor fittings used must be available.

The climbing protection system must be secured with at least 4 brackets. We recommend brackets with square tubing for fastening on brickwork.

The falling load (extreme effects) should be assumed to be equal to an equivalent load along the rail axis of $F_4 = 6$ kN. Derivation of the load may be carried out on a square element (see also DIN 18799, part 2). The traffic load (variable effect) is to be set with $F_1 = 1.5$ kN in a line of action 30 cm parallel to the longitudinal axis of the ladder every 2 m (see drawing on right).



Position of the FABA™ climbing protection rail or ladder

The FABA™ climbing protection rail is symmetrical. The rail cannot be mounted the wrong way up. (figure 1)



Figure 1

Fitting the FABA™ climbing protection rail or ladder into the fixing clamps

Secure the bracket to the ground using the pre-mounted fixing clamps.

Guide the FABA™ climbing protection rail or ladder into the clamps (figures 2 and 3) and tighten the screws. See page 1 for the torque for M10.



Figure 2

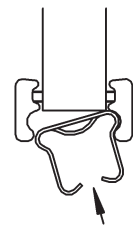


Figure 3

Assembly of detachable catch

Guide the catch plate and flat spring into the rail profile. Move the side with the eyelets up in line with the existing holes in the rail profile. Fit the fastening axle with one washer on each side of the profile and then secure the axle with the cotton pin, turning the pin completely, figure 4.

Installed above or below, or using the release in the rail profile; catch above in figure 4a and below in figure 4b.

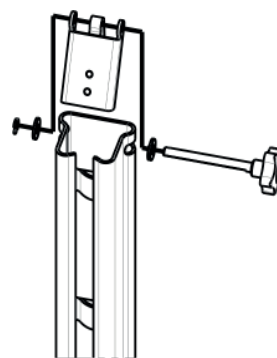


Figure 4

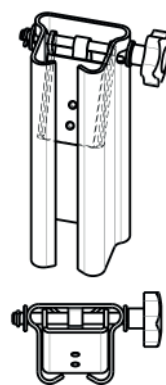


Figure 4a

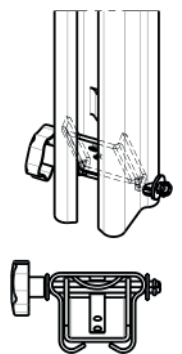


Figure 4b

Assembly of a fixed catch

Insert the U iron into the rail profile. Move the side with the punched holes up in line with the existing holes in the rail profile. Insert the securing screw with a washer on each side of the profile and then tighten the screw (max. 20 Nm). Figure 5 shows the catch attached from above. (attached from below is the same rotated by 180°).

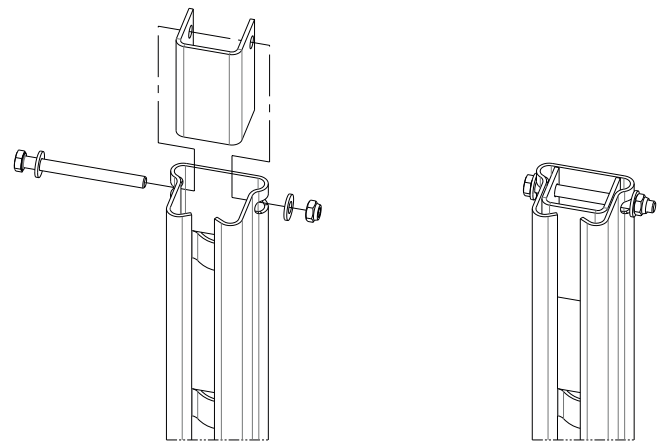


Figure 5

Installation of a joint connection

The connecting bolts are tightened by hand in the mounted FABA™ climbing protection rail. The next rail is positioned and attached with the two remaining screws, tightened by hand. Once the climbing facility has been correctly positioned, tighten all 4 screw connections (figures 6 and 7).

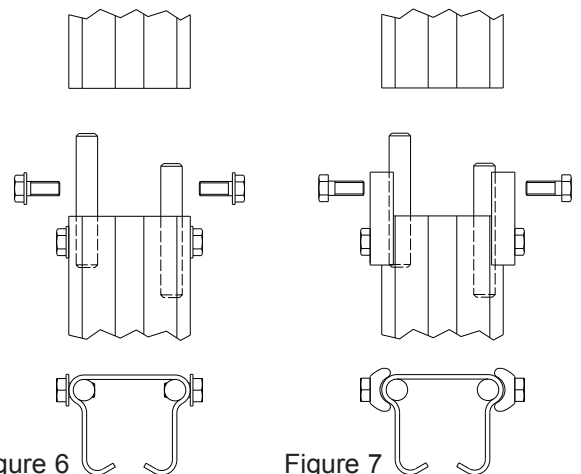


Figure 6

Figure 7

Figure 6

Fitting support brackets to the building

The brackets are mounted to the building. The FABA™ climbing protection ladders or rails are installed in accordance with figures 3 and 4.

Attachment with anchor fittings

- The securing point on the building is above the rail attachment with the fixing clamps.
- Use approved anchor fittings only.
- Observe the specifications from the manufacturer of the anchor fittings.
- In exceptional cases a support bracket may be turned for mounting.

See Figure 8.

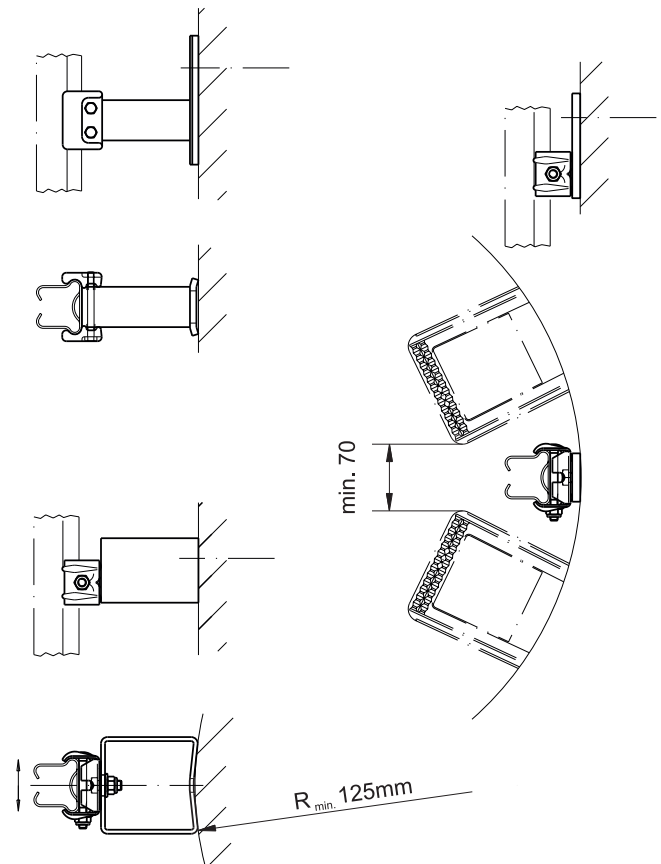


Figure 8

Welding on steel constructions

- Welding seam thickness, min. 4 mm
- After welding, protect the weld-on bracket against corrosion

See Figure 9.

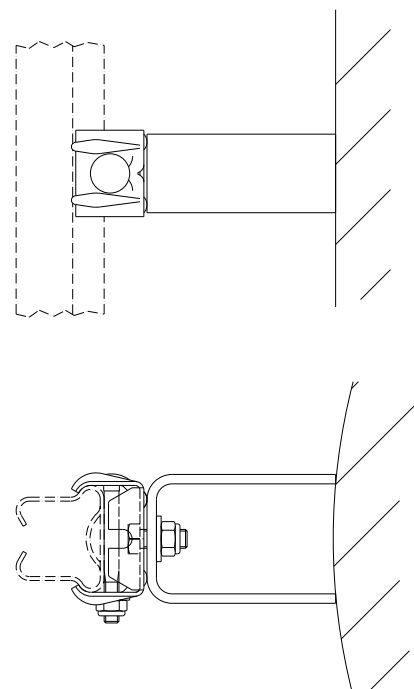


Figure 9

Central attachment on rungs or climbing irons

- Mount the brackets in the middle of the rungs or climbing irons.
- Fitting of the rails is shown in figures 2 and 3.

See Figure 10 for an example.

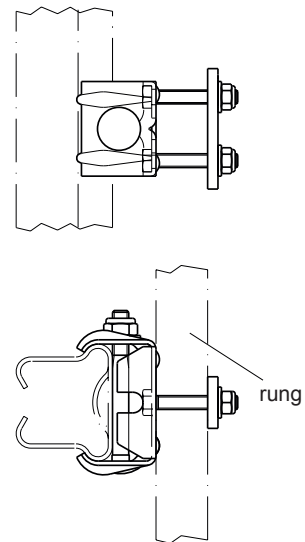


Figure 10

Side attachment to existing climbing facilities

- Mount the brackets to the side of the climbing facility.
- Pay attention to the position of the rails, slit shows climbing towards the person.
- Fitting of the rails is shown in figures 2 and 3.

See Figure 11 for an example.

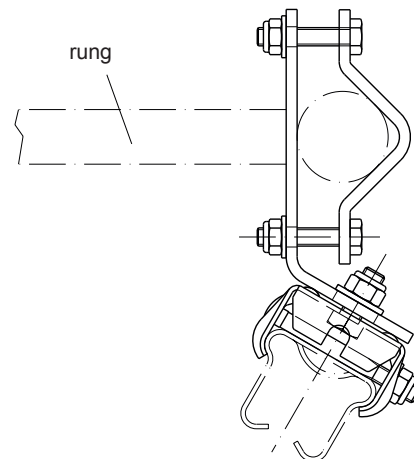


Figure 11

Installation of resting platforms

Resting platform – foldable

The resting platform is attached to the back of the rail profile, see also instructions for installation of fixing clamps, see figure 3.

Installation on climbing protection ladder

The tread surfaces rest on the double rungs of the ladder. The height of the platform must be adjusted so that the unfolded tread surfaces are horizontal. Tighten the screws on the clamping jaws.

Once assembled, check that the platform works correctly.

See Figure 12.

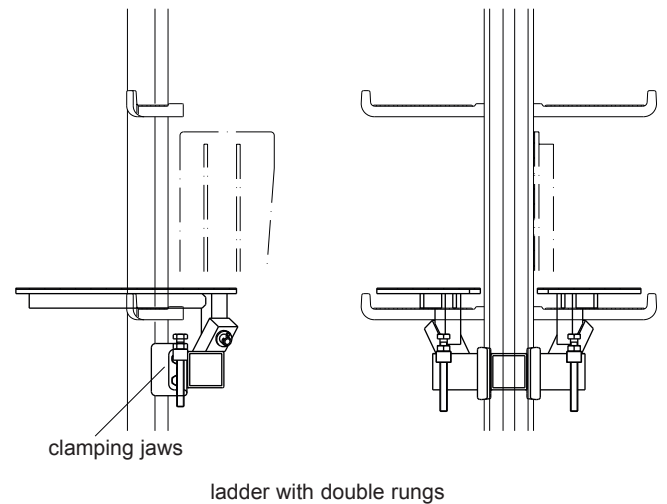


Figure 12

Central attachment on the climbing protection rails

The tread surfaces rest on the climbing irons; the height of the platform is adjusted so that the tread surfaces are horizontal. To stabilise, unscrew the adjusting screws until they are under the climbing iron, tighten the locking nuts.

Once assembled, check that the platform works correctly.

See Figure 13.

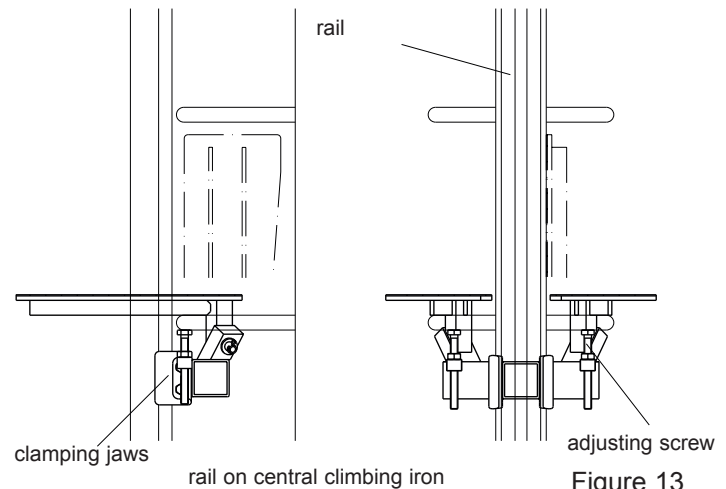


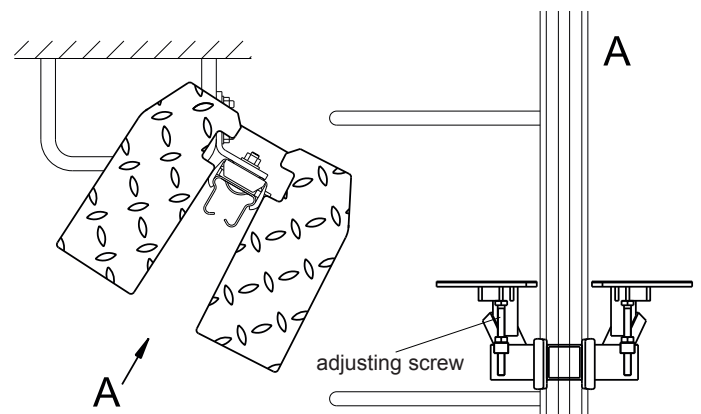
Figure 13

Side attachment on the climbing protection rails

When positioning the climbing protection rail on the side of the climbing iron, the platform's tread surfaces rest directly on the adjusting screws. These must then be adjusted accordingly.

Once assembled, check that the platform works correctly.

See Figure 14.



position with climbing protection rail on the side

Figure 14

Assembly of the entry and exit sections

The entry and exit sections are supplied pre-assembled. They are installed as ladder or rail pieces in the climbing facility.

See figure 6 for assembly of the joint connectors.

Note the max. distance (1) between brackets in the area of the entry and exist sections.

See Figure 15.

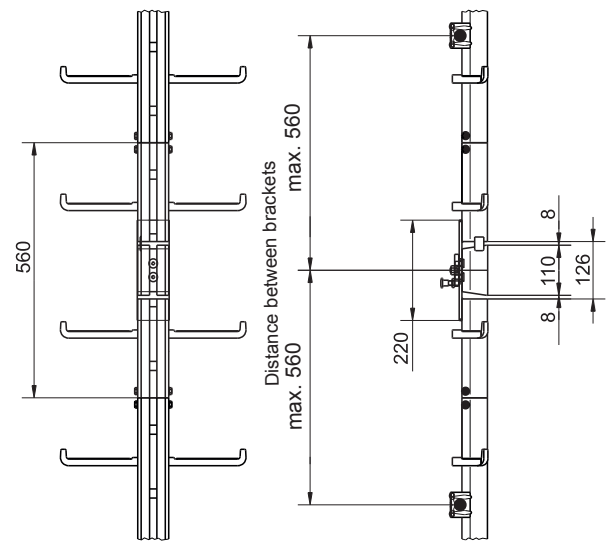


Figure 15

Assembly of the pivoting gate

The pivoting gate is supplied pre-assembled. It is fitted with two catches to block off any branches that are not needed. The pivoting gate is installed in a section of the ladder frame.

- Connecting bolts and cylinder head screws are used for vertical connection.
- Insert the first connecting bolts without any overhang on the rails.
- Position the pivoting gate and tighten the cylinder head screws.
- Secure the remaining connecting bolts with screws.
- When tightening the screws, position the pivoting gate in the middle of the rails.

See Figure 16 and Figure 17.

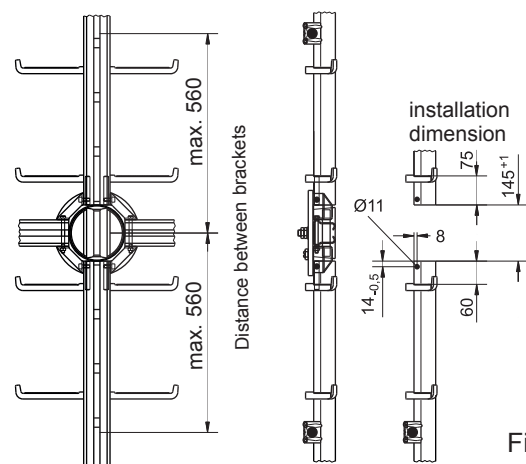


Figure 16

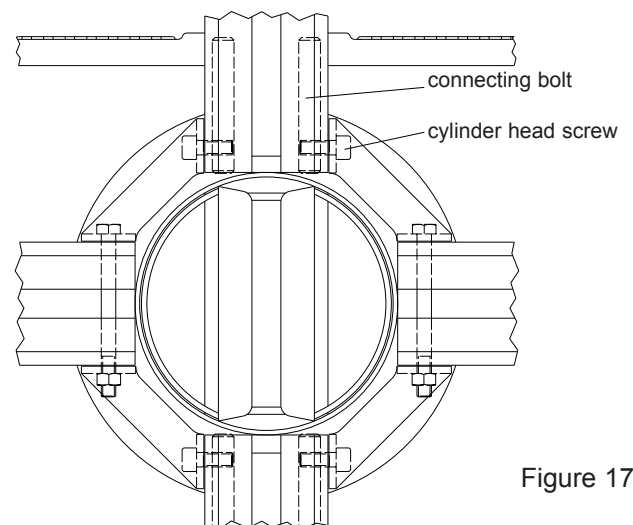


Figure 17

Note:

Peripheral rails and horizontal connections to gates are planned on a project by project basis.
For fitting and corresponding connection measures, the corresponding project drawing applies.

Installation of a straight step-over

The step-over is fitted to the building in accordance with the figure to the right. Please observe the guidelines from the anchor manufacturer.

The step-over is mounted using 2 brackets. The upper-most rung must not be higher than the base (see DIN 18799-2 and DIN EN ISO 14122-4).

The upper bracket is mounted a maximum of 400 mm below the base.

A detachable catch must be fitted at the top end of the climbing facility

See Figure 18.

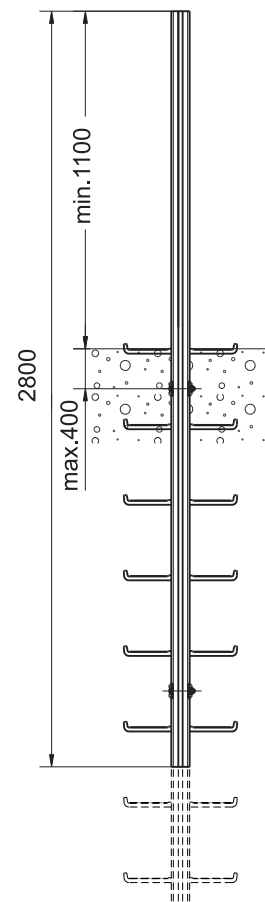


Figure 18

Installation of a bent step-over

The bent step-over (2) is fitted to the top ladder (3). The upper-most rung must not be higher than the base (see DIN 18799-2 and DIN EN ISO 14122-4).

The upper bracket is pre-installed on the reinforcement pipe. When attaching to buildings, the upper bracket must be a maximum of 400 mm from the base.

Please observe the guidelines from the anchor manufacturer.

Tighten the screws on the upper bracket and joint connection.

A detachable catch must be fitted at the top end of the climbing facility.

See Figure 19.

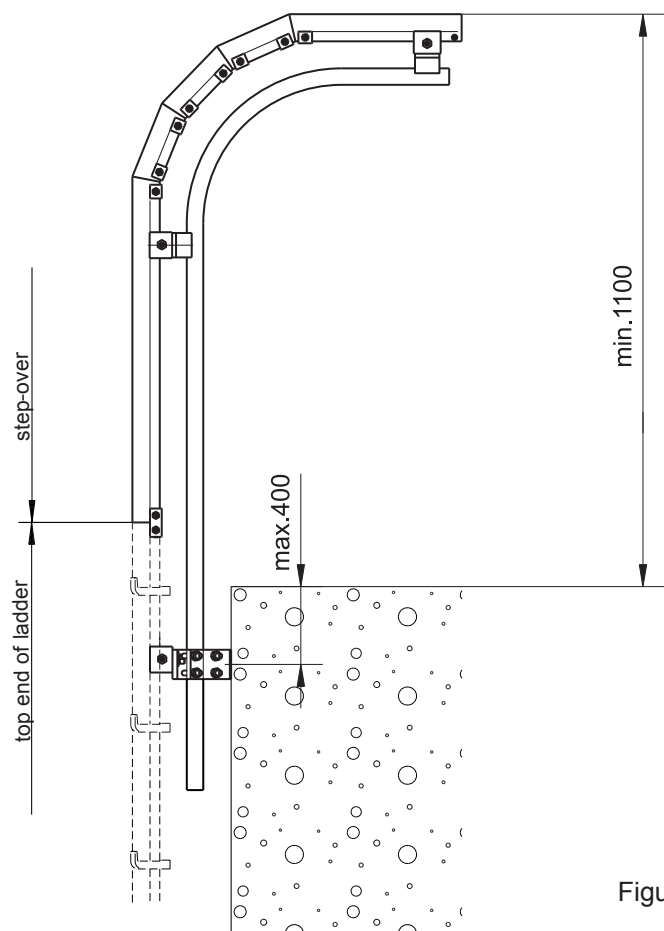


Figure 19

Coupling for portable entry aid

- For shafts with FABA™ fall protection.
- See sketch for unit dimensions.
- Position the coupling on the upper end of the rail.
- Insert the T-head bolt and screw the hex. nut on from the outside.
- Tighten the screws on the clamping jaws (see also figure 2).

See Figure 20.

Note: For the installation of the coupling, a useful height of 1000 mm above the shaft entrance must be guaranteed when positioning the entry aid.

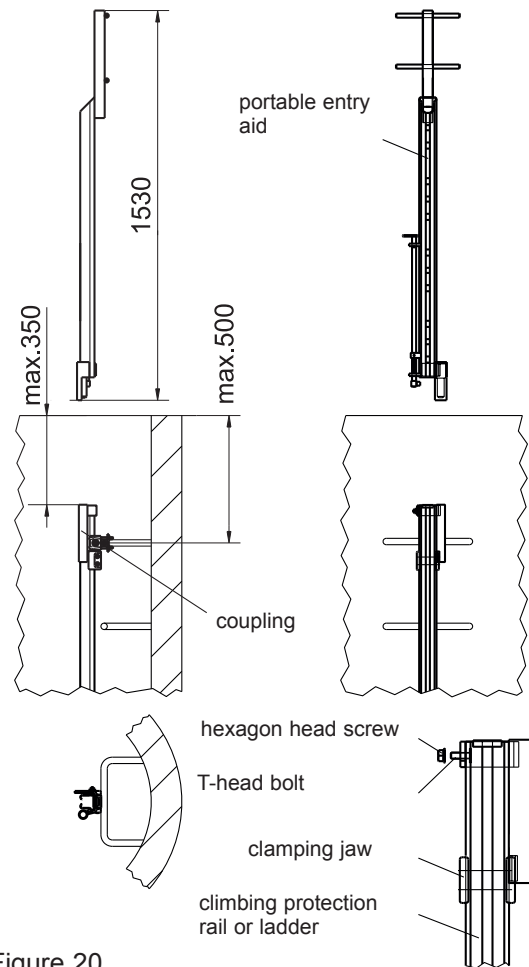


Figure 20

Push-in sleeve for portable entry aid

- For shafts without FABA™ fall protection.
- Anchor mounted in the shaft below the upper edge.
- Use approved anchor fittings only (for concrete \geq B25). Please observe the guidelines from the anchor manufacturer.

See Figure 21.

Note: For the installation of the coupling and push-in sleeves, a useful height of 1000 mm above the shaft entrance must be guaranteed when positioning the entry aid.

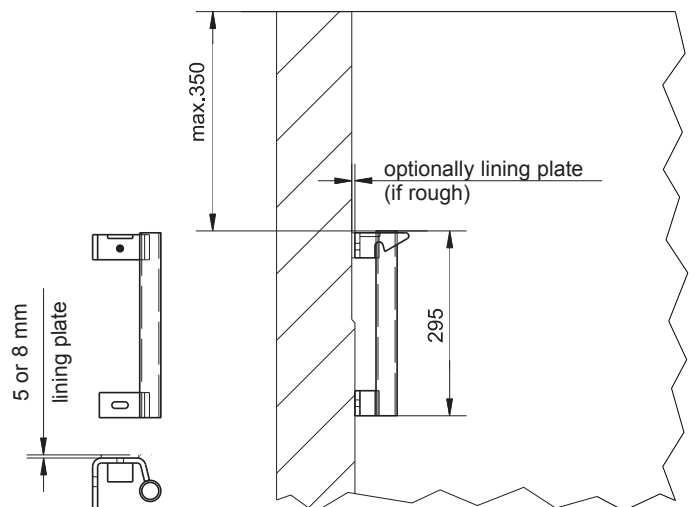


Figure 21

Climbing protection rail with mounting hook

for securing the system against unauthorized access

The climbing protection rail with mounting hooks may only be installed as the lower-most segment.

The lowest bracket on the building should be fitted as low as possible.

The height of the lowest bracket for the hooking ladder may have to be adjusted.

See Figure 22.

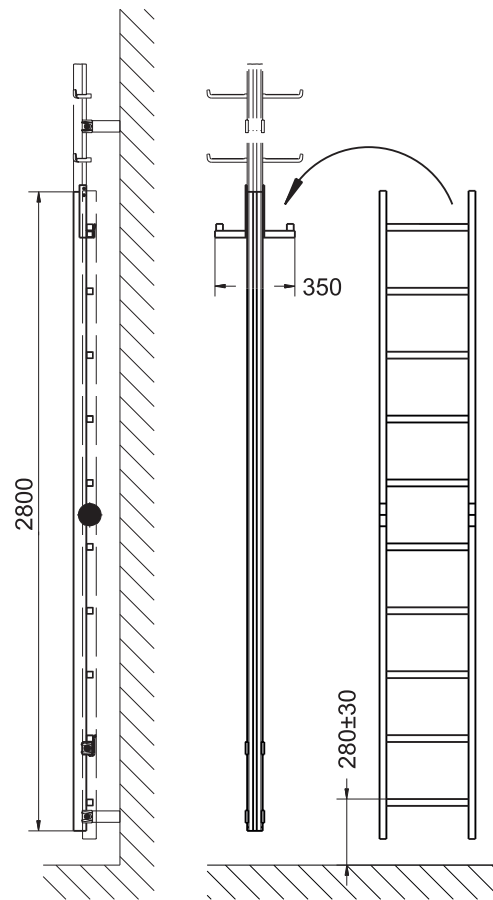


Figure 22

Cover plate

No additional fastenings to the ground or climbing protection ladder are required for the cover plate.

It is hung with the top corners on the rung. A safety bolt is pushed through the back of the rail and secured with a padlock at the bottom corners.

See Figure 23.

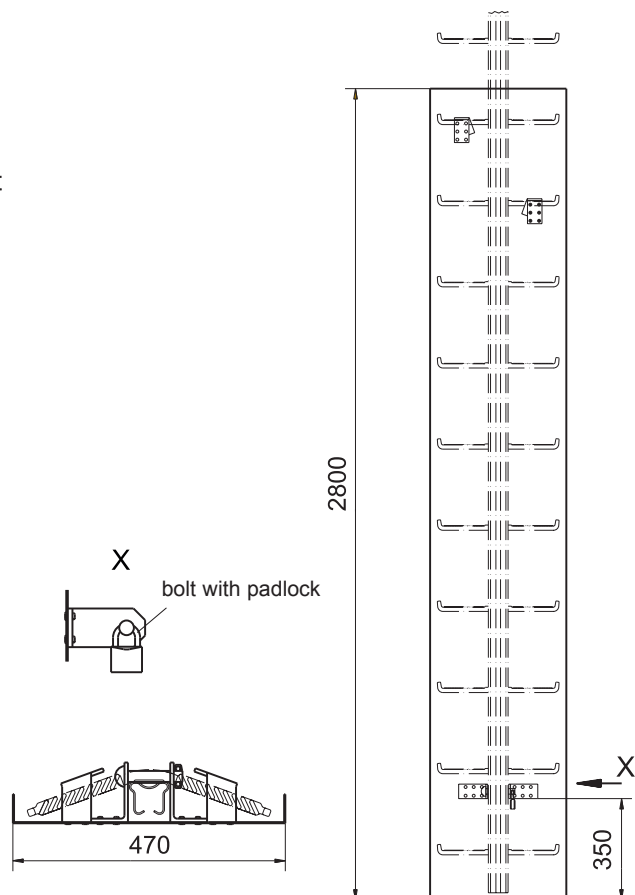


Figure 23

Checks and tests after installation

1. Check that all rail ends and entry and exit points are protected with a suitable catch.
2. Ensure that the number of brackets and their distances from each other conform to the regulations on page 4 and 5.
3. Check torques of all screw connections (table 1, column “During installation”).
4. Run through the whole installation with a fall arrest slider FABA™-Klassik A11 (observe the operating manual of the slider).
5. Check the functionality of all mechanical components (e.g.: entry and exit sections, resting platforms, etc.), also in conjunction with use of the FABA™ slider.

Table 1: Tightening torques for screw connections

Thread diameter	Screw connection / Material	Tightening torque during assembly	Tightening torque during assembly	Tightening torque Repeated inspection	Tightening torque Repeated inspection
		Stacked components	Non-stacked components (e.g. clamps)	Stacked components	Non-stacked components (e.g. clamps)
M8	A2-70 / A4-70 / 8.8 tZn	18 Nm	12 Nm	16 Nm	11 Nm
M10	A2-70 / A4-70 / 8.8 tZn	35 Nm	23 Nm	31 Nm	21 Nm
M12	A2-70 / A4-70 / 8.8 tZn	60 Nm	40 Nm	50 Nm	36 Nm
M16	A2-70 / A4-70 / 8.8 tZn	120 Nm	80 Nm	108 Nm	72 Nm
M20	A2-70 / A4-70 / 8.8 tZn	240 Nm	158 Nm	216 Nm	142 Nm

Table 2: Minimum number of components to be checked in the repeated checks

Component	Length of the FABA™ climbing protection system			
	up to 10 m	up to 25 m	up to 50 m	over 50 m
Brackets	2	4	8	10
Connectors	1	1	2	3
End-stops	all	all	all	all
Gates	all	all	all	all
Other accessories	1	1	1	1

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