

Installation and User's Manual

Vertical Guide Rail FV-ST / FV-VA hot dip galvanized / stainless steel pickled

Foreword

Thank you for buying a guided type fall arrester including a rigid anchor line from MKL-Technik GmbH. The **MKL-Technik System** is made to be used with a fall arrester **Type Twinstop® accordingly EN 353-1:2014+A1:2017** approved and applies to the latest standards in worksafety.

In case of any further question on the following subjects please do not hesitate to contact our customer service phone+49 9284 8011465 or mail info@mkl-technik.de at any time.

Fall guided type fall arresters including a rigid anchor line in accordance with EN 353-1:2014+A1:2017 are a safety product category 3, which means that they are products that directly protect the user's life. Incorrect installation and usage of such systems are life threatening.

Therefore, we emphasize strict adherence to the installation instructions, user guidelines and maintenance guidelines that follow.

MKL-Technik GmbH will refuse any claim caused by incorrect installation and use. We also will not take responsibility for claims caused by non MKL components; therefore, we strongly recommend not using components that have not been approved by MKL-Technik GmbH

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Illegal use, especially copying and distributing to third parties is not permitted, and may lead to legal action. Errors and technical corrections are reserved. At retailing of our products abroad all manuals and documents have to be translated into the respective language.

General Safety Instructions

1. Before using a fall arrester including a rigid anchor line, every user needs to understand and comply with the user instructions.
2. In case personal protective equipment (PPE) will be used, this user instruction must be followed as well.
3. All user instructions must to be provided to the climbing staff on site.
4. The equipment may only be used within the specified operating conditions and for the intended use.
5. Incorrect combination of individual elements of the equipment may result in the impairment or even inefficiency of the safe operation of one or more elements.
6. Guided type fall arresters and the rigid anchor line must be visually inspected before each use. If any damage is determined, or if there are any doubts about proper functioning, the system must not be used. See §8 function test
7. Parts that have been damaged by an accidental falls or simply by using the system must be withdrawn from further use.
8. Manipulating or modifying the fall arrester or rigid rail without the consent of the manufacturer is prohibited.
9. The fall arrester needs to be attached on the front D-ring at belly or chest level on the harness, which has to be certified in accordance to EN 361.
10. Guided type fall arresters are for protection while climbing a vertical access. For any other activities, such as working from a ladder, the climber needs to use proper anchorage equipment, like shock absorbing lanyards / work positioning lanyards, etc.
11. Belly and chest harnesses need to be tight to the body
12. The safety of the user depends on the effectiveness and durability of the equipment. Therefore, guided type fall arresters and their rigid anchor line must be checked annually and within a period of 12 months by a qualified person. Repairs may only be carried out by the manufacturer.
13. It must be ensured that the necessary space below the user is sufficiently large so that in case of a fall no impact on the ground or against another obstacle is possible.
14. In principle, no changes may be made to the system that are not performed by the manufacturer or approved by the manufacturer.
15. All persons working on job sites using PPE against falls need to be in good physical conditions. A medical test, like the German G41 (DGUV 250-449), can help to confirm the condition of a potential climber. Exclusion criteria are e.g. Alcohol and drug use, dizziness, nausea, fear of heights or similar.
16. Fall protection systems may only be used by people that have been trained or that are experienced with the risks associated of high workplaces, and that are aware of how to use fall protection.

17. Before using a rescue plan must be set up specifying how to make rescue activities safe and efficient. When using the plan, the instruction needs to be followed correctly.
18. All information on the fall arrester, the rigid anchor line and PPE needs to be correct and visible to all. An unreadable label is equivalent to a lack of safety.
19. PPE that has gotten wet during use must be dry out naturally. It should be kept away from heaters, stove, sun, etc.
20. Responsible notified body:
TÜV AUSTRIA Deutschland GmbH, Seilfahrt 12, 44809 Bochum, Germany
notified body number: 0408

Beside the installation and user manuals from MKL-Technik GmbH, the following guidelines are important:

European standards and directives

EN 353-1	Personal protective equipment against falls from height Part 1 - Guided type fall arresters including a rigid anchor line
EN 365	Personal protective equipment against falls from a height General requirements for instructions for use, maintenance, periodic examination
EN 361	Personal protective equipment against falls from a height - Full body harnesses
EN 795	Anchor points

This summary might not be complete. Specific guidelines in respect to the individual projects have to be researched by the architects, planers, or installers themselves.

The final inspection as well as the annual inspection has to be done accordingly to MKL-Technik GmbH Checklist.

Storage

Rail segments and accessories have to be transported and stored in a way that mechanical impact, chemicals, sparks, airborne rust, cement or paint will not effect the lifetime and function of the elements.

Damages at the zinc coating have to be repaired accordingly DIN EN ISO 1461. We do recommend the thick film repair set LZ-09 of company ReiColor (www.reicolor.de) or similar.

Lifetime

The lifetime of installed elements of the fall protection systems is principally dependent upon the category of corrosion in the respective location (weather and atmospheric conditions).

The fall protection systems of MKL-Technik GmbH are available in following materials:

- Hot dipped galvanized steel (1.0037)
- Anodized aluminum (3.3206)
- Stainless steel pickled (1.4401/1.4571)

For the best long-term corrosion protection, we recommend the following use:

	Hot dip galv. steel	Anodized aluminum	Stainless steel
Country Side	X	X	X
Commercial env.	X	X	X
Industrial		X	X
Heavy industry			X
Coastal	X	X	X
offshore			X

CAUTION ! Components made of stainless steel quality 1.4401 and 1.4571 must not be installed in high corrosive environment (for instance chloric water or atmosphere in swimming pools). That can potentially cause invisible tension crack corrosion and lead to failing components.

Purpose of guided type fall arresters including a rigid anchor line

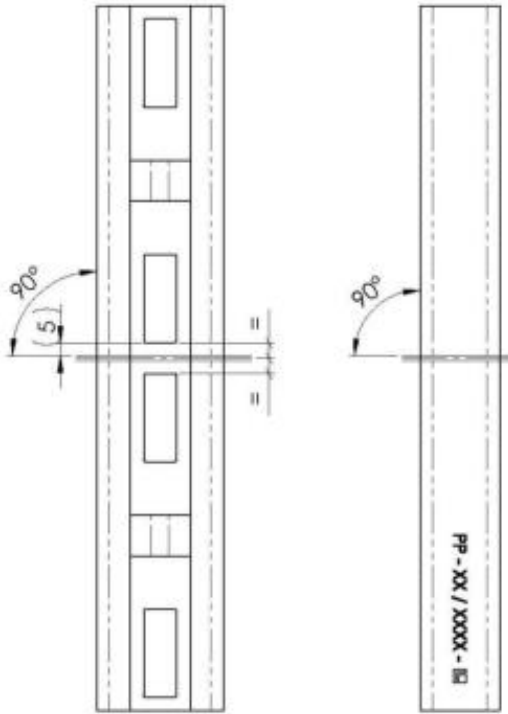
Guided type fall arresters including a rigid anchor line provide safe access to higher workplaces and other areas where a risk of falling exists, such as GSM base stations, Power Transmission towers, Wind turbines, etc.

The climber is wearing a full body harness with a front D-ring at stomach or chest level. Through this D-ring the climber is connected to the Twinstop fall arrester which is guided in the fix installed ladder or guide rail system. In case of an accidental fall, the person will be stopped by the arresting mechanism in the shuttle.

The impact of the fall is fully absorbed by substructure of the building; therefore it is of paramount importance to fix the fall protection system on a solid base that can bear the impact of the fall (as described on page 7). Substructures with insufficient strength that can not absorb the static load are life threatening. These substructures must be reinforced before implementing a fall protection system.

Example: Tower of 16 m = 5 x 2800 mm + 1 x 1960 mm = 15,96 m

Rails can be shortened at site accordingly to MKL guidelines, if following steps will be followed:



The cut has to be rectangular to the rail. If a segment in the between of a system installation, has to be shortened it has to be always in 140 mm steps and centric between the two slots which are near to each other.

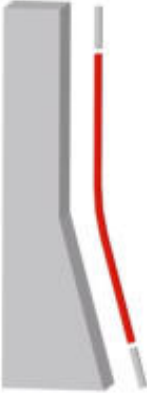
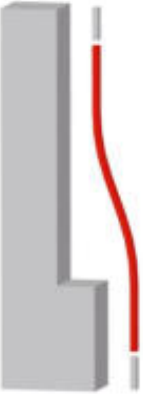
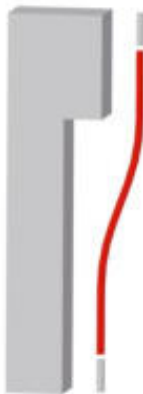


Only by following this, the joint connector will continuously fit between the rails.

Marking: Individually manufactured and commissioned orders are numbered in ascending order from bottom to top (therefore segment number 1 is the first element installed at the bottom of the structure).

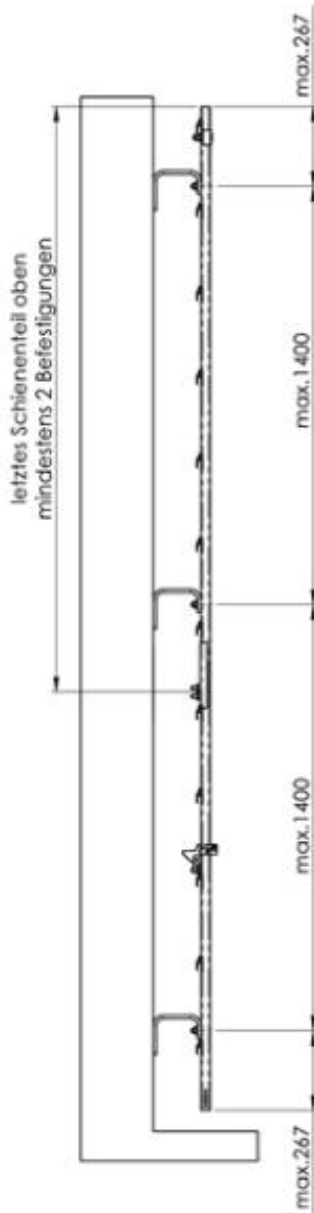
In case of a guiderail installed on an existing ladder, the load capacity of this ladder has to be proofed and confirmed in advance. See chapter "*Force Transmission on Fall Protection Systems*" Page12 in this manual.

The guiderail has to be installed centric to the ladder. The remaining step left and right of the rail has to be 125 mm. That means the clear width between the side rungs has to be 300 mm ($125+50+125 = 300$).

Curving: In order to follow the individual surface of a structure, the rail segments can be pre-manufactured with curves in a radius of 1.000 mm.

Curve No.1	Curve No.3	Curve No.5
		
Curve No.2	Curve No.4	
		

ATTENTION ! The Twinstop® fall arrester can be used in rails at inclination + 20° or – 20° reclined, as well as a sidewise inclination (left and right) of 15°.



Standoff:

Rails may have a maximum stand off of 267 mm above the last fastening element. If a longer stand off is required, the center rail has to be reinforced by a reinforcing profile. In these cases the maximum stand off is 1434 mm.

ATTENTION !

The last rail section has to be fastened at at least two fixation brackets.

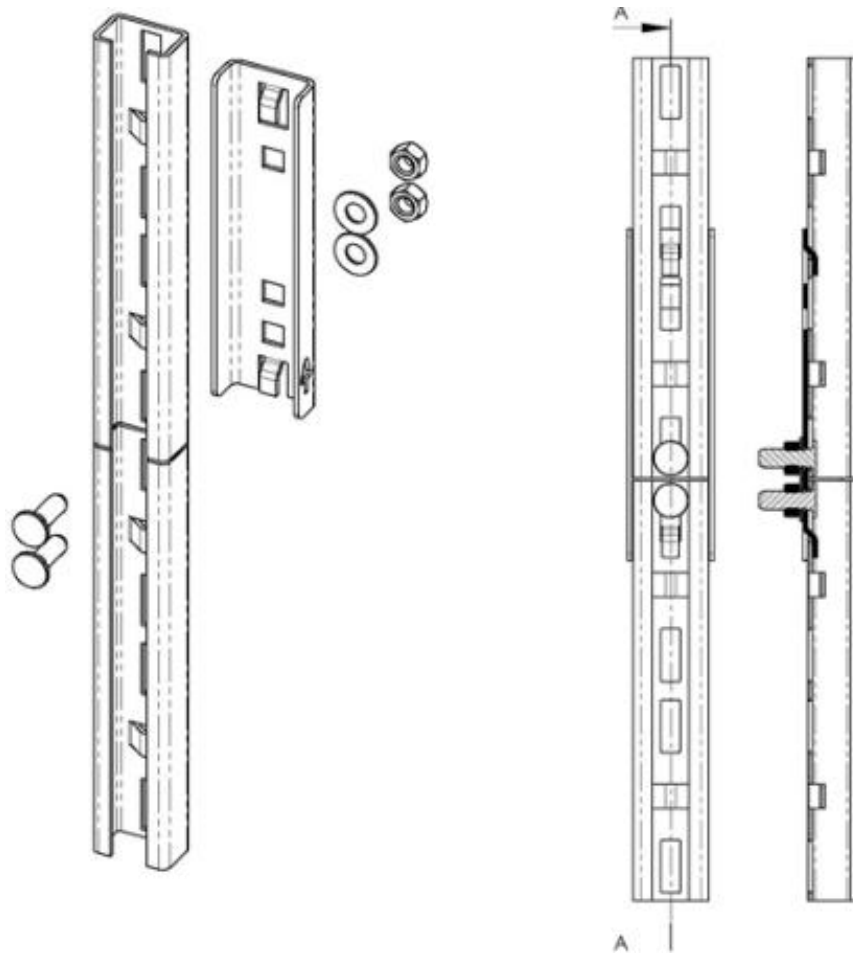
ATTENTION !

At a minimum, the reinforcement must be fastened over the last two brackets of the rail fasteners. The rail fasteners have to be at least 1120 mm away from each other. Furthermore, the reinforcement has to be bolted every 560 mm with the reinforcement.

The projection of the fastening elements along the reinforcement has to be reduced by 50 mm versus the projection of the rest.

Joint Plates:

Are principally included in the rail deliveries. The joint plates are fastened with screws at the respective upper and lower rail segments. Additionally, the joint plates are equipped with a metal tongue that fits in the oblong holes of the rail. This serves as an additional fastener in case the bolts become loose. The engraved arrow always has to show upwards.



End stops

Attention! End stops must be placed at the beginning and the end of a rail. At least one openable end stop per climb way is requested in order to take the fall arrester from the rail. All end stops correspond to type B (breaking load > 12 kN)

Purpose: The end stops prohibit an unintentional disconnect from the systems. Additionally, it insures that the user can not insert the fall arrester up side down into the system.

Position: Every end stop is marked with an arrow. This arrow has to point up. Furthermore, the rigid gate has to be placed to the left of the center rail.

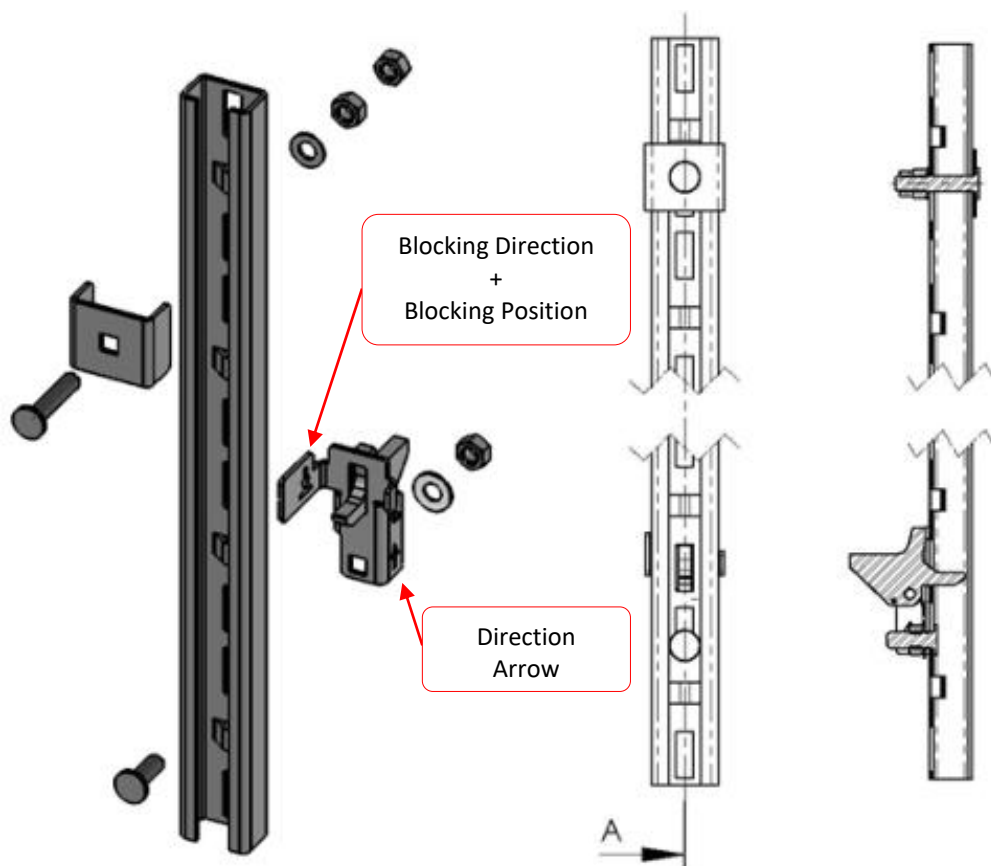
The bottom end stop must be placed immediately after the beginning of the rail or in cases of a recess, immediately after the recess. The end stop must be placed with a maximum of 280 mm after the beginning of the rail or respectively above the recess.

According to the latest EN regulation, the breaking load of an end stop must be greater than 12 kN

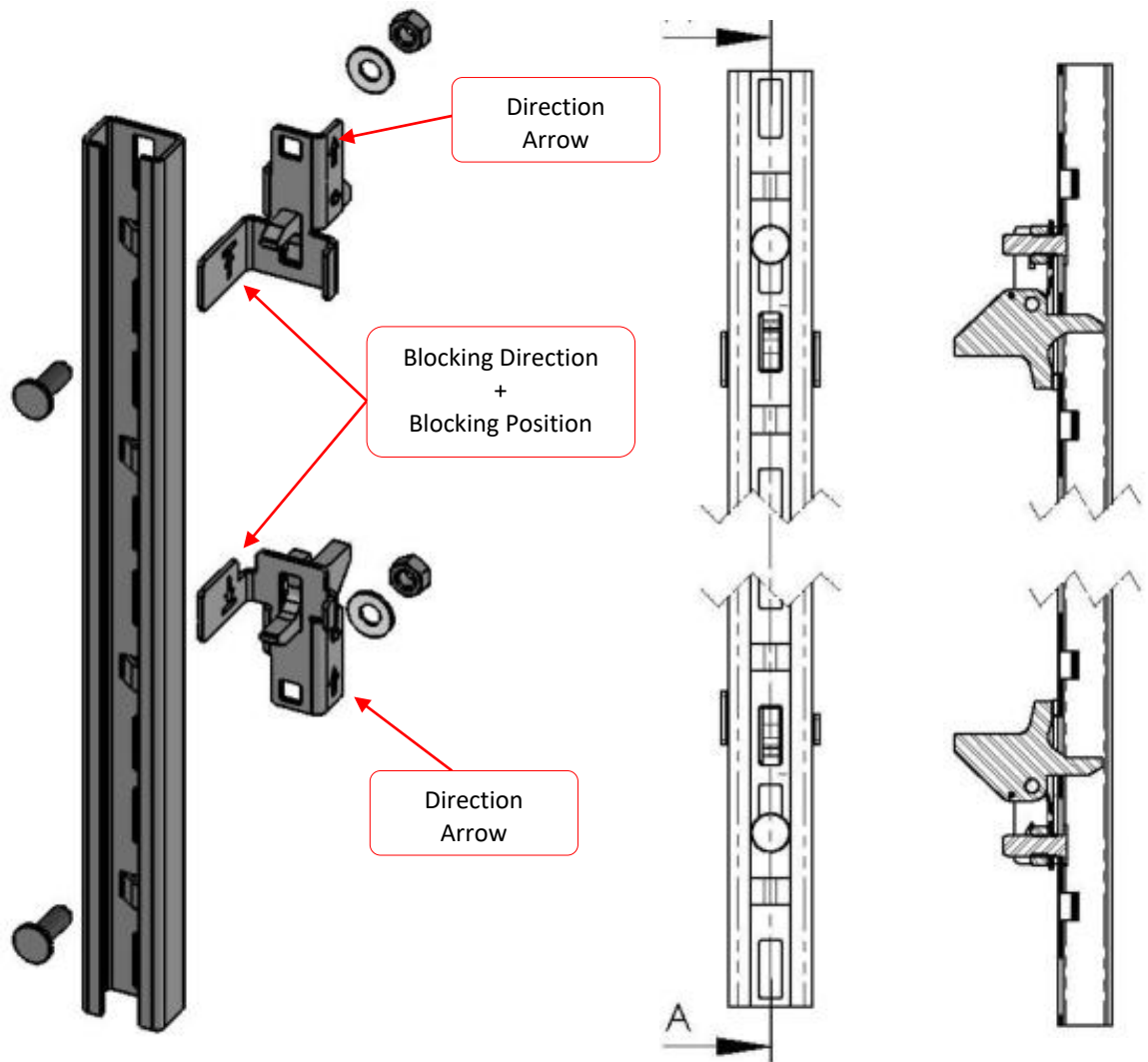
All end stops correspond to type B (breaking load > 12 kN)

The rigid endstop always has to be fixed at the second last hole or below.

Installation examples below:

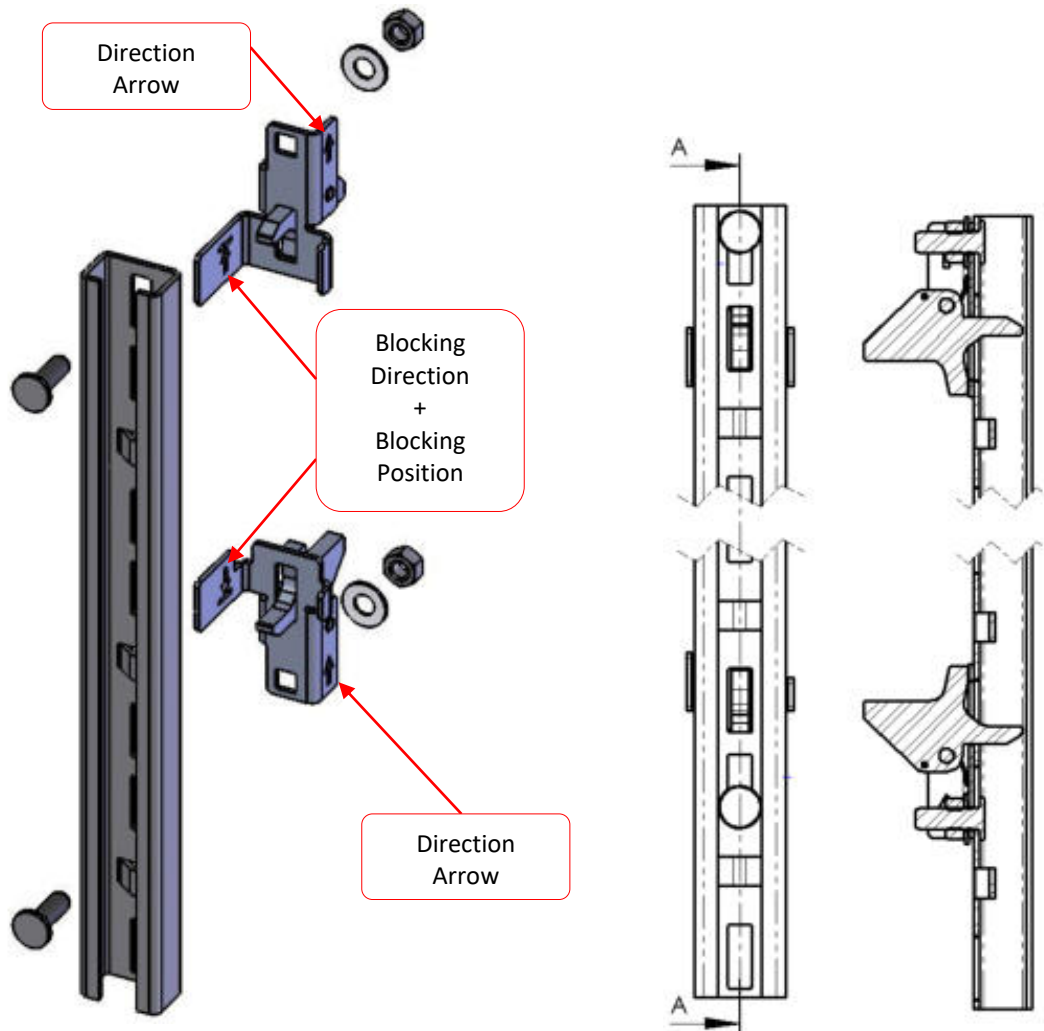


Picture shows climbway with openable bottom endstop and rigid top endstop



Picture shows climbway with openable bottom endstop and openable top endstop

Occasionally it might happen, that the guiderail needs to be shortened by 90 mm / 230 mm. In that case the end stop needs to be placed as described below:



Picture shows climb way with openable bottom end stop and openable top end stop

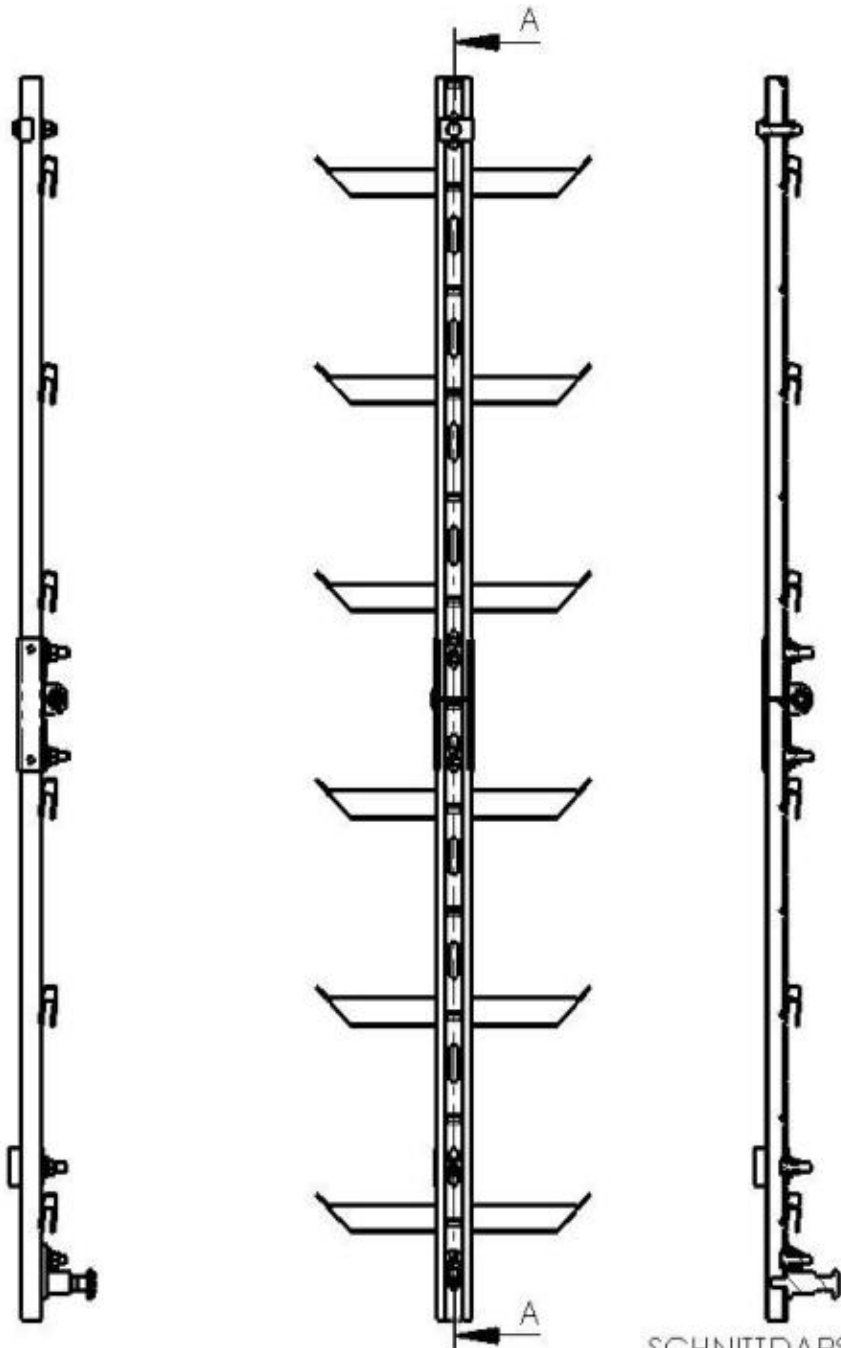
I-type ladder/guide rail low temperature approved down to -40°C

Rigid Endstop

Joint connector

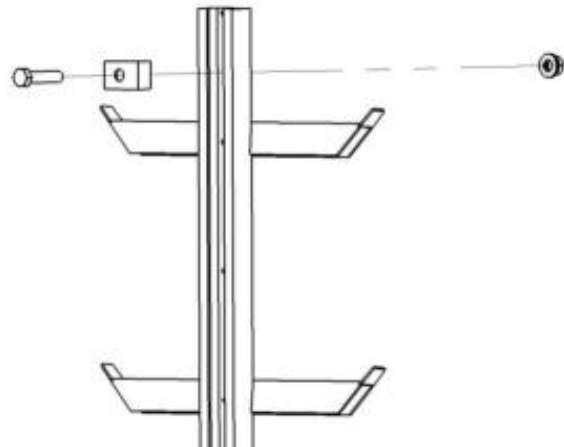
Slide-in module lock

Openable
Endstop

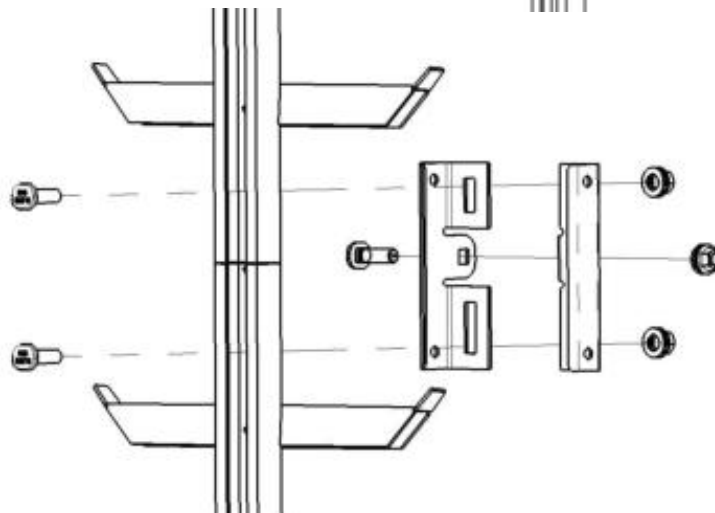


SCHNITTDARSTELLUNG A-A

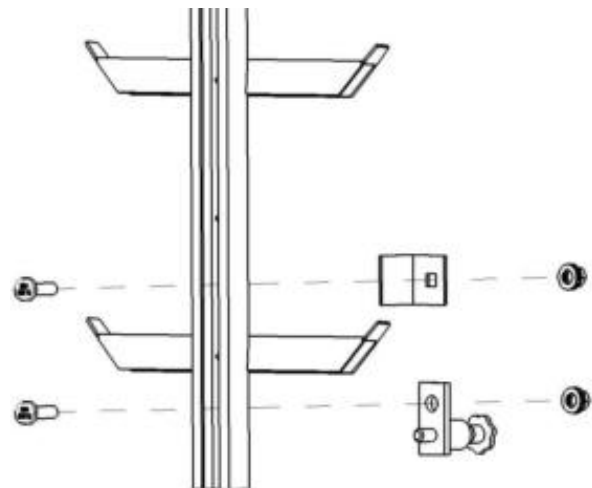
Rigid Endstop



Joint connector



Slide-in module lock



Openable Endstop

The Slide-in module lock must always be mounted in the climbing direction above the openable endstop. It ensures the correct insertion of the fall arrester.

The openable end stop must be placed immediately after the beginning of the ladder or in cases of a recess, immediately after the recess. The end stop must be placed with a maximum of 280 mm after the beginning of the ladder or respectively above the recess.

All end stops correspond to type B (breaking load > 12 kN)

Fastening Elements

Specification: The specification of sufficient fastening elements depends on the design of the ladder or steps where the rail is to be installed. In this regard, the geometry as well as the material and the condition of the ladder or steps is extremely important.

In case the installed ladder is apparently not in proper conditions to absorb the impact in case of an accidentally fall, the ladder must be refurbished or replaced by a MKL ladder system.

For anchors, the following forces have to be considered:

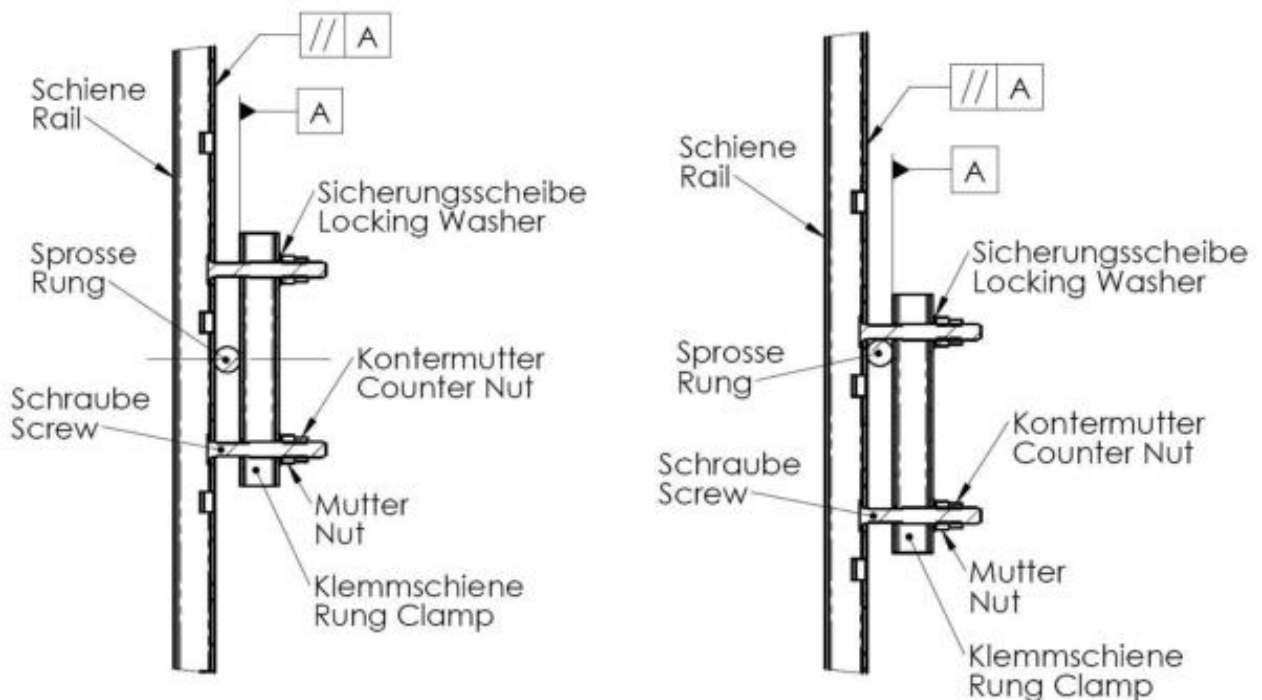
In order to determine the load capacity of the fastening elements on buildings with unknown or insufficient strength (for instance bricks walls), load tests have to be carried out on site. Preferable, this test should be carried out by the supplier of the dowels.

Torque specification

Basic Bracket: For fastening a metric galvanized steel bolt M12 - 8.8. we recommending a torque of 40 Nm. When using self locking nuts M12 accordingly to EN 985, a torque of 60 Nm is recommended.

Clamp: For fastening a metric stainless steel bolt M12 we recommending a torque of 25 Nm. After that you have to counter lock the screw with the self locking nut EN 985 with a torque of 70 Nm.

Rung Clamp: For fastening a metric galvanized steel bolt M12 – 8. there are basically the following two mounting cases, which require different torques:



Case 1:

Rung Clamp is centered on the rung:
Bias both screws parallel with a torque of 10 Nm.
Then fasten both screws with a torque of 15 Nm.
After that you have to counter lock with a counter nut and 70 Nm.

Case 2:

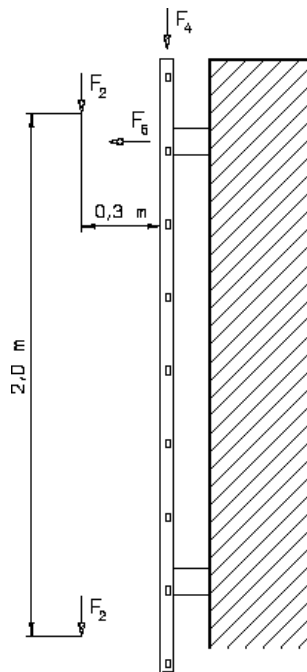
Rung Clamp is located off-center on the rung:
Bias both screws parallel with your hand. Then only fasten the screw directly next to the rung (here the upper screw) with a torque of 25 Nm.
After that you have to counter lock both screws with a counter nut and 70 Nm.

ATTENTION!

Always make sure that the square of the screw is in the rectangular hole!

Force Transmission on Fall Protection Systems:

Accordingly to EN353-1 a fall protection system is impacted 3 minutes with 15 kN in the direction of a fall. In the scenario it has to be proofed that no component is collapsing. Plastically deformation is accepted.
It has to be ensured that the impact of 15 kN can be taken by the substructure as well as by any interfaces in the above mentioned manner.



Accordingly to DIN 18799 following data are requested:

The Delay action load

is an extraordinary load. The delay action load is limited by the shock absorbing element, so that it is 6 kN max. This load F_4 needs to be calculated once per total length vertical to the centre rail of a fall arrest system. It can be considered to be shared by max. 4 fixation elements if available. This impact is generated by an accidental fall. See sketch.

Working load

The Working load is an ordinary load, its generated by the weight of the climbing person. It needs to be calculated with load $F_2 = 1,5$ kN, which is generated 30 cm in front of the center rail, as well as with load $F_5 = 0,3$ kN horizontal from the center rail. Since this load is the equivalent for a person climbing the ladder, it needs to repeat every 2 m. The working load must be assumed every 2 m over the total length of the ladder.

The two variants are to be compared and the worse load case is to be used for the dimensioning of the fastening and substructure.

Fastening distance:

The recommended fastening distance is 1120 mm, the maximum distance is 1500 mm. However, you need to ensure that the load is allocated in such a way that the substructure can resist the accidental impact of 6 kN.

MKL-Technik can provide all necessary parameters to determine the static capacities.

ATTENTION!

Each rail segment has to be fastened at least once to the substructure, the last rail segment twice. This is true even if the length of the less segment is less than 1500 mm and the advantage of the maximum distance of 1500 mm can't be fully taken. Each climbing path must be secured with a sufficient number of fastening elements so that the traffic load and crash load can be absorbed. If the existing ladder is not sufficiently loadable, the guide rail must be attached directly to the building.

Distance to building: The distance according to the applicable directive in Germany is at least 150 mm, this also corresponds to the standard projection of our fastening elements.

In the area of curvings and in the area of attachments (for example, reinforcement of the spar), the distance must always be selected in such a way that the conductor is stress-free attached to the structure or is not deformed.

Installation

In order to ensure a safe and economic installation, we strongly recommend performing the installation with minimum 2 people.

In this regard we point out that 2 complete sets of PPE are needed. Furthermore, we recommend having a rescue device with lifting device for each team. If there is an accident, the casualty can be evacuated immediately from the ladder.

A rescue plan should be always located on site.

DGUV Prescription 1

The employer has to provide sufficient equipment and staff to execute first aid at site. The employer has to ensure that first aid and medical service is provided immediately after an accident.

DGUV Information 203-047

The employer has to set up proper procedures to rescue casualties from power transmission lines, and to ensure that the necessary devices and equipment to rescue people is available. The employer has to take care that the insurant can execute an alert in case of an accident and is having the necessary devices for instance walky talkies

DGUV 112-198

For the event of an accident proper measurements have to be taken for an immediate rescue service. Suspending in a harness for more than 20 minutes can cause life danger.

Using of rails

Our rails are made to be used with one person every two meters, considered that the substructure is proofed for this impact (6 kN for the first person and 1,5 kN for each further person).

Please familiarize yourself with all safety norms and procedures that pertain to your individual country.

List of recommended Tools

1 Plummet – colored string (alternative Laser)
1 Deflection Pulley / Pulley Block with rope (9 mm stranded respect. braided) Length appropriated the height of the construction
2 Carabiner
2 webbing slings á 1 m
Ring ratchet spanner SW17; SW19, SW24
Fork wrench SW17; SW19, SW24
Socket wrench SW17; SW19, SW24
Measuring tape (min. 3 m)
1000 g Hammer
Rechargeable drill (alternative drill + extension cable)
Portable Aluminum ladder 2 m
Level
Tool Bag
Walkie-Talkie
PPE

This list represents most of tools needed for installing an MKL fall protection system, However, it might not cover all eventualities at the installation site.

Mounting of the guide rail

Before using the rail with a fall arrester, the bottom end stop has to be in place.

Before using the fall arrester the locking function has to be tested

ATTENTION! Rail section must not be used until the next rail section is fastened with fixation elements and the joint plate at the top end of the previous rail.











ATTENTION! When installing the rail on a non metallic construction (e.g. brick walls, concrete) make sure that a gap of 2-5 mm is kept between the joint plates. This is needed to avoid distortions cause by changing temperatures

The fastening distance should be a maximum of 1120 mm. This will provide an ergonomic standpoint to fix the fasteners.

ATTENTION! While installing segments, the climber has to be backed up by a secondary means to a solid base, preferable at the ladder side rung. The maximum distance a fall arrester can be used above the last bracket is 350 mm.

Marking

A type plate has to be placed at the very beginning of each rail way, as well as on every entry section that can be accessed from any place other than the ground level.

 <p>certifies the conformity of a rail system that must be used with Twinstop® fall arrester</p> <p><u>EN 353-1:2014+ A1:2017</u> European standard designation number</p> <p><u>Date of manufacturing</u> must correspond with the year of construction</p> <p>CE 0408 EC-type examination conformity stamp and NB-number of the notified body</p>  <p>Use only with fall arrester type Twinstop®</p>  <p>User and maintenance instructions available, these must be read before using.</p>  <p>Use a full body harness must comply to EN 361</p> <p><u>MKL-Technik GmbH</u> Manufacturer of the guided type fall arresters including a rigid anchor line</p>	 <p>Rigid anchor line for guided type fall arresters Certified accordingly EN 353-1:2014+A1:2017</p> <div>  <p>CE 0408</p>  </div> <div>  <p>Only to be used with fall arrester MKL Twinstop®. Max. 1 user per fall arrester, min. 3,36 m distance between 2 users climbing the system.</p> </div> <div>   <p>MKL-Technik GmbH Kirchenlamitzer Straße 20 95126 Schwarzenbach/Saale Germany ☎ +49(0)9284 / 8011465 ✉ info@mkl-technik.de</p> </div>
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Checklist for final Inspection

The attached checklist has to be fully and correctly filled in. If one or more of the criteria are not or can not be fulfilled, it must be reported immediately and the failure must be corrected before use. The safety engineer or a competent person has the responsibility of correctly and completely filling out the checklist. After this person is certain that all features have been checked and deemed safe, he or she must sign the checklist.

Annual Inspection

EN 365

The owner has to inspect Personal Protective Equipment and Safe Climbing Systems on demand according to the application, situation and environment. At the very least, these systems must be inspected annually by a competent Person.

Principally, Personal Protective Equipment and Safe Climbing Systems have to be inspected visually for defects and proper functioning before each use.

Failures and defects have to be announced and reported to the owner. The systems and personal protection equipment must not be used until the system or personal protection equipment is repaired.

Visual inspection before climbing

Before each use, the climber must check the proper condition of the fall arrest device. The following points are to be considered:

- The type label corresponds to the name of the fall arrest device
- The last inspection is no longer than 12 months
- Lower climbing barrier available
- Upper step lock / end stop available
- Fastening distance of the brackets not more than 5 rungs
- No corrosion or cross-sectional corrosion
- no deformed parts
- no mechanical effects
- no loose parts

Maintenance and Care

As a rule, MKL-Technik GmbH does not have to be separately serviced. All components are designed to work without lubrication.

If contamination by cement, paint, glue, etc., remove with a wire brush or sharp-edged tool. For moving parts, continue until the complete function is restored. For spring loaded parts, until the moving part moves independently into the rest position. Connect spot with zinc paint generously.

This manual is just a translation. Only the German version is valid.

Checklist for vertical anchor line (guide rail / ladder) for guided type fall arrester Twinstop®

Principals

The EN 365 and German BGV D36 and "DGUV 112-198" are requiring a competent person to inspect the fall protection system after the final installation. Furthermore, regular inspections have to be carried out on demand. On demand means after any type of incidents, in case the system has been modified, and the frequency, stress at using the system occurrence and seriousness of the lacks of previous inspections. At least inspections have to be done annually.

The results of this examination have to be recorded on the form below and achieved by the owner and/or by the inspector (competent person).

Control Sheet

1. Object-Number

2. Site

- Street
- City
- User
-

3. Manufacturer / Supplier

- Name
- Street
- City
-

4. Installed by

- Name
- Street
- City

5. Date of Installation

Checklist for vertical anchor line (guide rail / ladder) for guided type fall arrester Twinstop®

6. Signature of the competent person

- Name
- Address
- Phone / Fax
- Date / City
- Signature

7. Guide Rail Structure

- Length
- Building
- Top End-stop ☐
- Bottom End-stop ☐
- Rigid End-stop ☐
- Exit Section ☐
- Turntable ☐
- other

8. Material

- Steel galvanized ☐
- Stainless Steel ☐
- Aluminum ☐

9. Style

- Guide Rail ☐
- I-Type Ladder ☐
- H-Type Ladder ☐

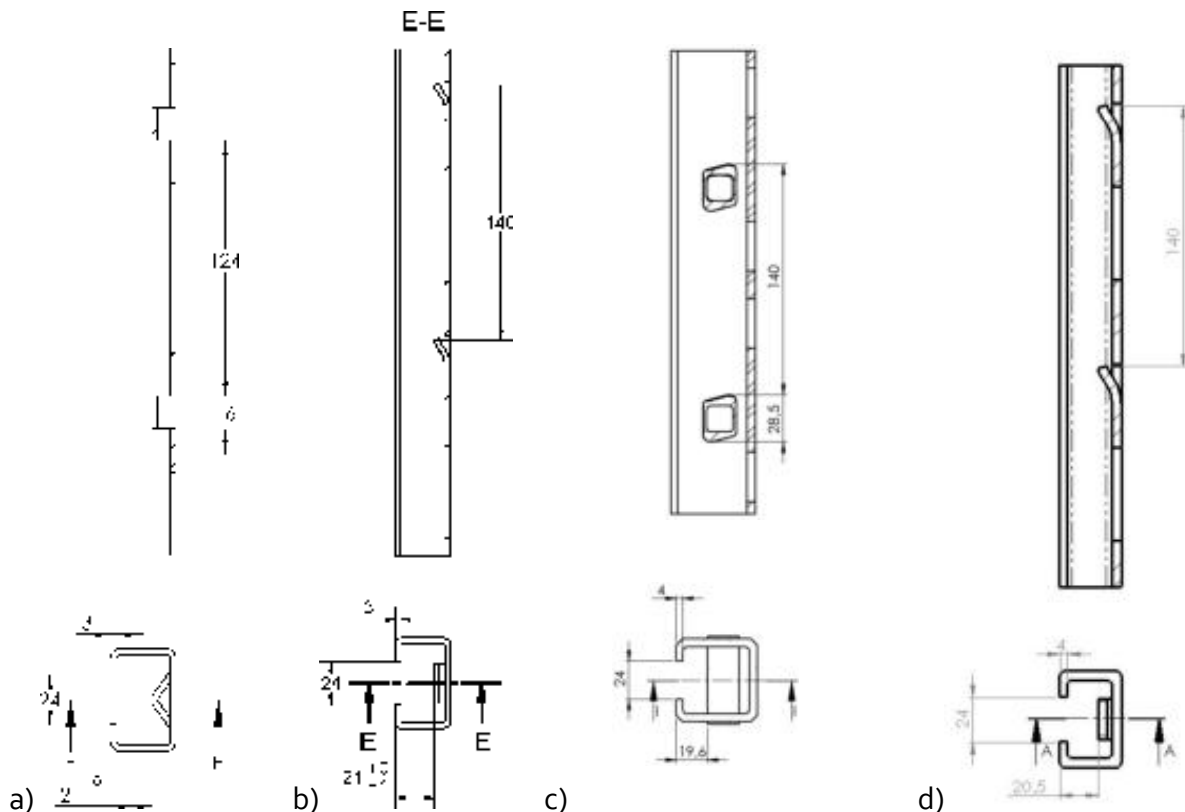
Checklist for vertical anchor line (guide rail / ladder) for guided type fall arrester Twinstop®

10. Profile Parameters

The following profile cross sections are available:

<input type="checkbox"/> Steel rails (hot-dip galvanized) with C shape profile With tunnel catches 140mm, as a ladder or guide rail	50x31,5 mm Illustration "a"
<input type="checkbox"/> Steel rails (hot-dip galvanized) with C shape profile With catches 140mm, as a ladder	50x30 mm Illustration "b"
<input type="checkbox"/> Stainless Steel rails (pickled) with C shape profile With tunnel catches 140mm, as a ladder or guide rail	50x31,5 mm Illustration "a"
<input type="checkbox"/> Aluminum rails with C shape profile With catches 140mm, as a ladder	52x51 mm Illustration „c“
<input type="checkbox"/> Aluminum rails with C shape profile With catches 140mm, as a guide rail	52x33 mm Illustration „d“

Following profile cross sections:



Checklist for vertical anchor line (guide rail / ladder) for guided type fall arrester Twinstop®

11. Checklist for final Inspection

Test Criteria	Test OK/Not OK	Remarks	Date
Element			
Each segment is fastened with min. one, the uppest with min. two Fixation Element	<input type="checkbox"/> <input type="checkbox"/>
recommended Fastening			
Distance	<input type="checkbox"/> <input type="checkbox"/>
Gap at the Joint Plates	<input type="checkbox"/> <input type="checkbox"/>
Bottom End-stop	<input type="checkbox"/> <input type="checkbox"/>
Top End-stop	<input type="checkbox"/> <input type="checkbox"/>
Access from top, rigid platform			
at lower end of the ladder	<input type="checkbox"/> <input type="checkbox"/>
Access from top, Bottom End-stop			
min. 2 m above platform	<input type="checkbox"/> <input type="checkbox"/>
Lowest rung max. 300 mm			
above ground	<input type="checkbox"/> <input type="checkbox"/>
Uppest rung max. 100 mm			
under exit edge	<input type="checkbox"/> <input type="checkbox"/>
Bottom End of Guide Rail			
max. 800 mm above ground	<input type="checkbox"/> <input type="checkbox"/>
Rail inclination	<input type="checkbox"/> <input type="checkbox"/>
Rail Stand Off	<input type="checkbox"/> <input type="checkbox"/>
Reinforced	<input type="checkbox"/> <input type="checkbox"/>
Footrests (number & distance)	<input type="checkbox"/> <input type="checkbox"/>
Only MKL Components	<input type="checkbox"/> <input type="checkbox"/>
Static certification of non			
Original parts	<input type="checkbox"/> <input type="checkbox"/>
Corrosion Protection	<input type="checkbox"/> <input type="checkbox"/>

Checklist for vertical anchor line (guide rail / ladder) for guided type fall arrester Twinstop®

	Test	Remarks	Date
Test Criteria	OK/Not OK		
Bolt Connection			
Rail - Rail	<input type="checkbox"/> <input type="checkbox"/>
Rail-Fixation Elements	<input type="checkbox"/> <input type="checkbox"/>
Fastening element-Structure	<input type="checkbox"/> <input type="checkbox"/>
Cover plate			
Operative	<input type="checkbox"/> <input type="checkbox"/>
Key handed over	<input type="checkbox"/> <input type="checkbox"/>
Using			
Steps- and Running Tread	<input type="checkbox"/> <input type="checkbox"/>
free of dirt			
Rail is not deformed	<input type="checkbox"/> <input type="checkbox"/>
Rescue Plan available	<input type="checkbox"/> <input type="checkbox"/>
Type-plate installed	<input type="checkbox"/> <input type="checkbox"/>
Fall Arrester can be inserted	<input type="checkbox"/> <input type="checkbox"/>
Fall Arrester is operating	<input type="checkbox"/> <input type="checkbox"/>
Test Climb has been examined	<input type="checkbox"/> <input type="checkbox"/>
Documentation			
User Manuals was handed over	<input type="checkbox"/> <input type="checkbox"/>
 Conclusion			
	yes / no		
Release granted	<input type="checkbox"/> <input type="checkbox"/>
 Date			
 Signature			

Please Cross the respective condition ☒ or express with words.

Checklist for vertical anchor line (guide rail / ladder) for guided type fall arrester Twinstop®

12. Repeating inspection

	1.Insp.		2.Insp.		3.Insp.		4.Insp.		5.Insp.	
Test Criteria	OK/n.OK	OK/n.OK	OK/n.OK	OK/n.OK	OK/n.OK	OK/n.OK	OK/n.OK	OK/n.OK	OK/n.OK	OK/n.OK
Guide Rail										
Deformation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Damages (e.g. Cracks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corrosion, Abrasion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharp Edge, Burr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rungs on Ladder										
Deformation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Damages (e.g. Cracks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corrosion, Abrasion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharp Edge, Burr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lateral guidance										
Deformation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Damages (e.g. Cracks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corrosion, Abrasion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharp Edge, Burr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Welds										
Cracks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corrosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fixation at Substructure										
Brackets fastened tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Solid substructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Footrests										
Fixation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Damages (e.g. Cracks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Corrosion, Abrasion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharp Edge, Burr	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Checklist for vertical anchor line (guide rail / ladder) for guided type fall arrester Twinstop®

	1.Insp.		2.Insp.		3.Insp.		4.Insp.		5.Insp.	
Test Criteria	OK/n.OK		OK/n.OK		OK/n.OK		OK/n.OK		OK/n.OK	
End-stops										
Deformation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Damages (e.g. Cracks)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General										
Visual Check	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Function Check	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type Plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
User manual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conclusion										
	yes / no		yes / no		yes / no		yes / no		yes / no	
Release granted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Date _____

Signature _____

Please cross the respective condition ☒ or express with words.