INSTALLATION AND INSPECTION INSTRUCTIONS

TURVATIKAS SAFETY LADDER

CLIMB HIGHER, SAFER
AND MORE EFFICIENTLY

CE

These installation and inspection instructions
must always be followed when installing and
inspecting Turvatikas Safety Ladder products.

The latest version of these instructions can be found at www.turvatikas.fi

SF Safety Systems –
Finnish fall arrest system
for masts and other high structures

Eltel Networks Corporation
Laturinkuja 8
02650 Espoo
FINLAND
Tel. +358 20 411 211
turvatikas@eltelnetworks.com

2021

v. 3.1 / PK

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1. PURPOSE OF USE

The **Turvatikas Safety Ladder** system (hereinafter referred to as “the safety ladder system”) is the combination of Vertical Profile B (also referred to as safety rail, vertical rail, safety profile and vertical profile) and Climbing Carriage No 932 (also referred to as safety carriage or climbing carriage), which is designed for use by persons to protect them from hazards posed to their health and safety while climbing.

The safety ladder system is intended for use either a) as part of an existing ladder, in which case Vertical Profile B is attached to the ladder with fasteners suitable for the installation site, or b) as a completely separate safety ladder system, in which case the ladder, with its steps and any handrails, is also part of the safety ladder system.

A person using the safety ladder system must wear a safety harness suitable for this purpose in accordance with the instructions provided on safety harnesses and attach the harness to the safety ladder system’s Climbing Carriage No 932, which in turn must be installed on the safety ladder system’s Vertical Profile B in accordance with the instructions provided on the use of Climbing Carriage No 932.

The safety ladder system is intended for use when climbing and descending; it is not intended for use as a safety device when working. The person must always use separate lanyards to fasten themselves to the fixed structures of the construction where the work is taking place.

The safety ladder system is tested in accordance with testing method CNB/P/11.073 of standard EN353-1:2014+A1:2017 and meets the requirements of Regulation (EU) 2016/425 on personal protective equipment.

The type-approval certificate is granted by SGS Fimko, Topeliuksenkatu 41b, 00250 Helsinki, notified body 0598. SGS Fimko also monitors the homogeneity of production.

2. WARNINGS AND CONSIDERATIONS

The safety ladder system may only be used by a person with sufficient training and experience to use the system safely.

The person using the safety ladder system must not be under the influence of alcohol or other narcotics.

There must always be a rescue plan in place for any emergencies when using the safety ladder system. The rescue plan must at least include a climber self-rescue plan, the address or coordinates of the workplace, and driving directions for rescue personnel.

No changes or additions may be made to the safety ladder system without written permission from Eltel Networks Corporation. Any repairs and servicing of the system must be carried out in accordance with Eltel Networks Corporation's instructions. No part of the system may be replaced with a part not designed and manufactured for the Turvatikas Safety Ladder system by Eltel Networks Corporation.

The safety ladder system may not be used for any purpose other than its actual purpose of use. All use contrary to the restrictions imposed on the system is absolutely forbidden.

The safety ladder system comprises several different parts, which must be installed and connected to each other carefully in accordance with the instructions provided. Any incorrectly installed or connected parts may pose a serious risk to safety and health.

The safety ladder system must always be inspected after installation, before being put into use, as well as regularly at least once (1) a year, or use of the system must be prohibited and the system must be inspected before next use.

The system must also always be inspected before next use if it has prevented a fall.

Inspections of the safety ladder system may only be conducted by an inspector authorised by Eltel Networks Corporation who holds a valid Turvatikas inspector certificate granted by Eltel Networks Corporation.

After installation, the safety ladder system may not be put into use until an inspector authorised by Eltel Networks Corporation has confirmed in writing that the system meets the requirements set for it and is safe to use.

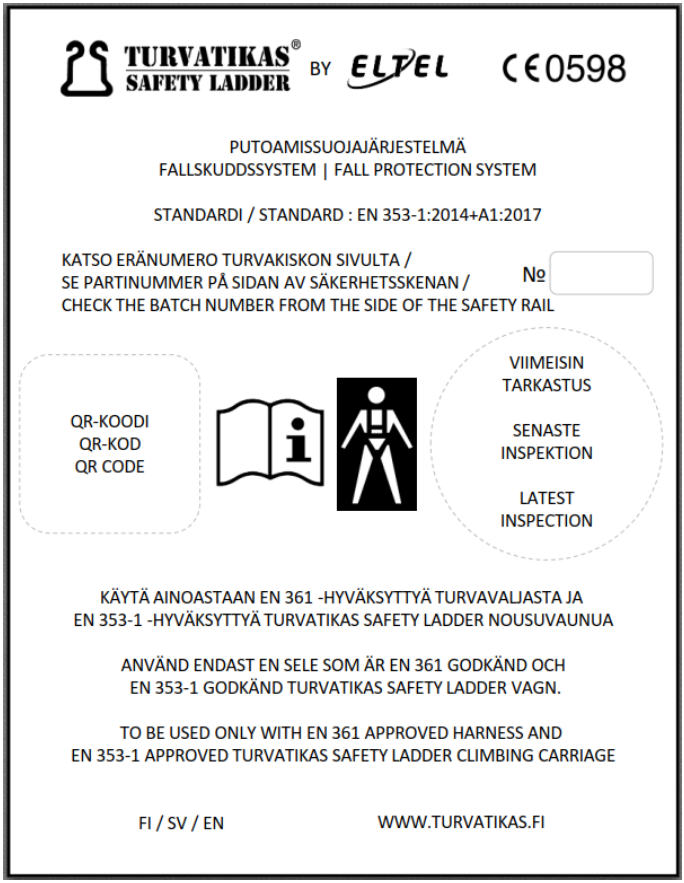
Use of the safety ladder system must be prohibited if a regular annual inspection has not been conducted, if there is reason to suspect that the system is unsafe to use for some other reason or if the system has arrested a fall.

If use of the system is prohibited, the system may not be put back into use until an inspector authorised by Eltel Networks Corporation has confirmed in writing that the system meets the requirements set for it and is safe to use.

3. SIGNAGE

The standard requires attention and instruction signage for the safety ladder system to be installed in all places where the safety ladder system can be used.

The safety ladder system must be equipped with an instruction sign, attached to a clearly visible place, that advises users to always use a Turvatikas Safety Ladder climbing carriage approved according to EN 353-1 and a full body harness approved according to EN 361 when climbing the ladder.



Pictured above, an attention sign in Finnish, Swedish and English.

4. MAINTENANCE INSTRUCTIONS

The safety ladder system's Vertical Profile B, ladder parts, fasteners and other accessories are maintenance-free, and no parts require oiling or cleaning.

5. SAFETY RAIL MARKINGS

The following markings are stamped on the side of the safety rail:

- TURVATIKAS SAFETY LADDER = brand name
- CE0598 = number of the body participating in the product's control phase
- SFS EN 353-1:2014+A1:2017 = the standard whose requirements the safety rail meets
- No 930 CE and/or No 931 CE and/or No 932 CE = the type number of the safety carriage compatible with the safety rail
- Three-digit batch ID (positioned in a different direction to the other markings).

PLEASE NOTE! Previously manufactured Vertical Profiles B are marked CE0403, which is the number of the body that previously participated in the product's monitoring (Finnish Institute of Occupational Health).

PLEASE NOTE! Only Climbing Carriage No 932 meets the requirements of the current standard.

6. SAFETY LADDERS

The steps of the safety ladders are welded to Vertical Profile B and can be divided into two main categories: ladders with and without handrails (a flange).

There are two ladder designs without handrails – asymmetrical and symmetrical – and they are always three metres long.

Cleat Ladder TBA-1, Cleat Ladder TBA-1 removable step and Cleat Ladder TBA-2.

Pictured on the left in the image above is the asymmetrical **Cleat Ladder TBA-1**, in which the steps are positioned at a particular level on only one side of Vertical Profile B in such a way that the distance between steps on different sides is 300 mm, whereas the distance between steps on the same side is 600 mm.

Asymmetrical ladders are also available with removable steps. Pictured in the middle in the image above is **Cleat Ladder TBA-1 removable step**, which is used to prevent unauthorised persons from accessing the safety ladder, among other things.

On the right in the image above is the symmetrical **Cleat Ladder TBA-2**, in which the steps are at the same level on each side of the safety rail in such a way that the distance between steps is 300 mm.

Flange Ladder PTBK, End Bow PTBK 59 + handrails, Anti-Climb Device No 25 and Flange Ladder PTBR.

Pictured in the image above are ladders with handrails that are always symmetrical, i.e. the steps are always positioned at the same level on each side of Vertical Profile B. There are three models of ladders with handrails available. Their properties are explained below:

Flange Ladder PTBK, on the far left in the image above, is a three (3)-metre-long safety ladder. The diameter of its handrails is 12 mm, and it can also be secured to a structure by its handrails. The ladder's steps are not at the same level as the back edge of Vertical Profile B, which is positioned roughly 20 mm further back than the back edge of a step. An end bow that curves forwards and is equipped with handrails is available for this ladder type. **End Bow PTBK 59 + handrails** is pictured on the left side in the middle of the image above.

Flange Ladder PTBJ, on the far left in the image above (same image as PTBK), is a three (3)-metre-long safety ladder. The diameter of its handrails is 12 mm, and it can also be secured to a structure by its handrails. The back edge of the ladder's steps is at the same level as the back edge of Vertical Profile B. An anti-climb device is available for this ladder type to prevent unauthorised persons from accessing the safety ladder. **Anti-Climb Device No 25** is pictured on the right side in the middle of the image above.

Flange Ladder PTBR is a 5.7-metre-long safety ladder that is pictured on the far right in the image above. The dimensions of the handrails of Flange Ladder PTBR are 50 x 30 mm. The advantage of this ladder type is its sturdy handrails, which allow the ladder to be secured by the handrails with the mounting points being more than 2.5 metres apart. This ladder type is also available with removable steps to prevent unauthorised persons from accessing the safety ladder (**Flange Ladder PTBR removable step**).

7. INSTALLATION INSTUCTIONS FOR VERTICAL PROFILE B

Vertical Profile B is intended for installation on existing vertical ladders to prevent the user from falling from the ladder.

Vertical Profile B must always be used together with Climbing Carriage No 932 and an appropriate safety harness, without which climbing a ladder equipped with Vertical Profile B is not allowed.

Correct installation of Vertical Profile B requires fasteners suitable for each installation situation as well as the vertical carriage stoppers and carriage guides needed for each installation site.

Vertical Profile B is installed in the middle of the ladder.

The installation of Vertical Profile B starts from the top and proceeds downwards.

The installation of Vertical Profile B can also be carried out in a horizontal position, e.g. on a ladder installed on a mast or chimney, before the mast is erected.

Vertical Profile B is symmetrical, so it cannot be installed the wrong way around.

If the intention is for the ladder to lead onto a roof or other level surface, an end bow must also be installed on the ladder.

7.1 Requirements for the ladder at the installation site

Vertical Profile B is always installed on an existing ladder.

Before Vertical Profile B is installed, it must be ascertained that the ladder on which the safety rail will be installed is both safe and sufficiently usable for installing Vertical Profile B.

- The ladder must be at least 35 cm wide in order for there to be sufficient space for feet between Vertical Profile B and the ladder's handrails (flange).
- The ladder must be reliably secured to a wall or similar surface or structure.
- The ladder may not be rusty, damaged or have otherwise lost its usability.

7.2 Mounting distances for Vertical Profile B

Vertical Profile B is secured with fasteners that are chosen according to each installation site and method.

Regardless of the type of fastener, the maximum allowable installation distances between fasteners are as follows when installed on an existing ladder:

- The maximum allowable mounting distance between the two topmost fasteners is 1 metre.
- The maximum allowable mounting distance between other fasteners is 2.5 metres.

The maximum allowable overhang for Vertical Profile B is 1 metre when measured from the last fastener to the outermost end of Vertical Profile B.

7.3 Installing the top section of the ladder system

The top section of a safety ladder system installed on a ladder is either an end bow or Vertical Profile B.

If the intention is for the ladder to lead onto a roof or other level surface, curving either directly ahead or to the side, an end bow must be installed as the top section of the safety ladder system. An end bow curves forwards or to the side, ensuring that the user can step onto the top landing before detaching themselves from Vertical Profile B.

An end bow is not required if the ladder is not intended to lead onto a roof or other landing. In this case, the top section of the safety ladder system is Vertical Profile B, with Releasable Vertical Carriage Stopper No 85 and Carriage Guide No 84 or only Carriage Stopper No 89 installed at the end of Vertical Profile B.

7.3.1 Installation of an end bow

As the safety ladder system is installed from top to bottom, the end bow must be installed first.

The installation may be assisted with tools such as a sheave installed at the top and a rope, which allow the end bow to be lifted to the correct position before being secured to the ladder and roof with appropriate fasteners.

The curved top section of the end bow is installed at a suitable height from the roof, landing, or ladder structure allowing the user to move sideways, or a similar structure, while the vertical section of the end bow is positioned in the middle of the ladder. The vertical section of the end bow is secured to the ladder with at least two fasteners, with the top fastener secured to the top step and the next at a maximum distance of one metre from the top fastener. If desired, a third fastener can be mounted near the lower end of the end bow.

If the end bow curves to the left or right, it is recommended that a fastener also be installed in the horizontal section of the end bow.

Make sure that the end bow is positioned in the middle of the ladder across its entire length and that all bolts and nuts are tightened to the required tension before proceeding with the installation of the safety ladder system (see Section 13).

7.3.2 Installation of the topmost Vertical Profile B

As the safety ladder system is installed from top to bottom, the topmost Vertical Profile B must be installed first.

The installation may be assisted with tools such as a sheave installed at the top and a rope, which allow Vertical Profile B to be lifted to the correct position before being secured to the ladder with appropriate fasteners.

The recommended length of the topmost Vertical Profile B is 3 metres, and it must be fastened with three fasteners. If the topmost Vertical Profile B is less than 3 metres in length, it can be fastened with two fasteners.

Make sure that all bolts and nuts are tightened to the required tension before proceeding with the installation of the safety ladder system (see Section 13).

7.4 Installation of the lower Vertical Profiles B

Attach a sleeve joint to the holes located at the lower end of either the end bow or the lowest Vertical Profile B installed. Position the sleeve joints on each side of Vertical Profile B and push a bolt through the upper holes of the sleeve joint and the holes on the side of the previously installed end bow or Vertical Profile B. Rotate the nut into place but do not tighten it yet.

Lift Vertical Profile B up against the ladder and secure it to the sleeve joint by pushing the lower bolt through the holes at the upper end of Vertical Profile B and rotate the nut into place but do not tighten it yet.

Make sure that Vertical Profile B is in the middle of the ladder across its entire length and secure the safety rail to the ladder using suitable fasteners. Lift up the safety rail before tightening the fasteners' screws in such a way that the gap between the previously installed safety rail and the safety rail currently being installed is as small as possible. Note that the gap between the profiles may not exceed 8 mm.

Tighten the sleeve joint's bolts, but note that the groove of Vertical Profile B may become narrower if the sleeve joint's bolts are tightened too much. The groove width must be no less than 15 mm. The groove width can be checked by using a feeler gauge manufactured for this purpose by Eltel Networks Corporation, for example.

The groove width of both the upper and lower Vertical Profile B should be the same at the joint, and there should be no projection, lateral displacement or torsion between the vertical profiles.

If the width of the groove of Vertical Profile B is less than 15 mm, it can be widened by loosening the sleeve joint's screws and hammering the groove of Vertical Profile B with a heavy rubber mallet, for example.

Make sure that all bolts and nuts are tightened to the required tension before proceeding with the installation of the safety ladder system (see Section 13).

7.5 Installation of the lowest Vertical Profile B

Vertical Profile B is available in lengths of three (3), five (5) and six (6) metres, but the lowest Vertical Profile B can also be delivered cut to a suitable length for each installation site.

The lowest Vertical Profile B can be cut to a suitable length at the worksite. Please note that a cut Vertical Profile B must be installed so that the holes for sleeve joints are at the upper end of Vertical Profile B.

A space of at least 150 mm must be left between the lower end of Vertical Profile B and the ground or the level from which the user steps onto the ladder to allow Climbing Carriage No 932 to be inserted into Vertical Profile B.

8. INSTALLATION INSTRUCTIONS FOR SAFETY LADDERS

In safety ladders, Vertical Profile B is a fixed part of the ladder structure.

Safety ladders must always be used together with Climbing Carriage No 932, approved in accordance with EN 353-1, and a full body harness approved in accordance with EN 361. Safety ladders may not be used without them.

Correct installation of a safety ladder requires fasteners suitable for each installation situation as well as the vertical carriage stoppers and carriage guides needed for each installation site.

The installation of a safety ladder starts from the top and proceeds downwards. However, a safety ladder can be installed on a structure such as a chimney as the bricklaying progresses. In this case, the installation is naturally carried out from bottom to top. The topmost safety ladder must always be temporarily secured with at least two fasteners positioned no more than 1 metre apart from each other.

If the intention is for the safety ladder to lead onto a roof or other level surface, an end bow must also be installed on the ladder.

In lattice masts or similar structures, the installation can often be carried out from the lattice with the assistance of a sheave placed at the top and a rope, which allow the safety ladder elements to be pulled up.

Installation on structures such as columns or walls usually requires the use of scaffolding, a truck-mounted aerial platform or other similar equipment.

Safety ladders can also be installed in a horizontal position on a structure such as a chimney or mast before the structure is lifted up.

If the safety ladder is installed to lean forwards (at a positive angle), a ladder type equipped with handrails should be selected for safety reasons. Use of safety ladders not equipped with handrails is not recommended for structures other than ones installed directly upwards.

8.1 Requirements for the installation site

Before a safety ladder is installed, it must be ascertained that the structures on which the safety ladder will be installed are safe and sufficiently durable for installing the safety ladder.

8.2 Safety ladder mounting distances

The safety ladder is mounted with fasteners chosen in accordance with each installation method.

If the mounting points are installed in the structure in advance, their distance from each other must be a multiple of 300 mm (300, 600, 900, 1,200, 1,500, 2,100 mm) to ensure that none of the fasteners are positioned at the same level as a step.

8.2.1 Type TBA-1 and TBA-2 safety ladders

Regardless of the type of fastener, the maximum allowable installation distances between fasteners are as follows:

- The maximum allowable mounting distance between the two topmost fasteners is 1 metre.

- The recommended mounting distance for other fasteners is 1.5 metres, with the maximum allowable mounting distance being 2.1 metres.

The maximum allowable overhang is 1 metre when measured from the last fastener to the outermost end of the safety rail.

8.2.2 Type PTBJ and PTBK safety ladders

Type PTBJ and PTBK safety ladders can also be secured by each handrail of the ladder with fasteners such as V- or U-bolts or chord fasteners, with the fasteners located as near each other as possible vertically.

Regardless of the mounting method or type of fastener, the maximum allowable installation distances between fasteners are as follows:

- The maximum allowable mounting distance between the two topmost fasteners is 1 metre.
- The recommended mounting distance for other fasteners is 1.5 metres, with the maximum allowable mounting distance being 2.1 metres.
- The maximum allowable overhang is 1 metre when measured from the last fastener to the outermost end of the safety rail.

8.2.3 Type PTBR safety ladders

Type PTBR safety ladders can also be secured by each handrail of the ladder with fasteners such as V- or U-bolts or chord fasteners, with the fasteners located as near each other as possible vertically.

If a type PTBR safety ladder is mounted using fasteners installed in the profile, their maximum allowable mounting distances are as follows:

- The maximum allowable mounting distance between the two topmost fasteners is 1 metre.
- The maximum allowable mounting distance between other fasteners is 3 metres.
- The maximum allowable overhang is 1 metre when measured from the last fastener to the outermost end of the safety rail.

If a type PTBR safety ladder is mounted using V- or U-bolts or chord fasteners installed on the handrails, their maximum allowable mounting distances are as follows:

- The maximum allowable mounting distance between the two topmost fasteners is 1 metre.
- The maximum allowable mounting distance between other fasteners is 5.5 metres, i.e. it is sufficient for the safety ladder to be secured by its upper and lower ends.
- The maximum recommended length of an unsupported section of a type PTBR safety ladder at the lower end is 1.5 metres.

8.3 Installation of the top section of a safety ladder

The top section of a safety ladder is either End Bow PTBK 59 with handrails (only for type PTBK ladders) or a safety ladder.

If the intention is for the ladder to lead straight forwards onto a roof or other level surface, PTBK must be chosen as the ladder type, with an end bow equipped with handrails installed as the top section. The end bow curves onto the top landing, ensuring that the user can step onto the landing before detaching themselves from the safety ladder.

An end bow is not required if the safety ladder is not intended to lead onto a roof or other landing. In this case, the top section of the safety ladder system is a safety ladder.

8.3.1 Installation of an end bow

As the safety ladder system is installed from top to bottom, the end bow must be installed first. The end bow is a 2,315-mm-tall PTBK ladder that curves forwards at the upper end.

The installation may be assisted with tools such as a sheave installed at the top and a rope, which allow the end bow to be lifted to the correct position.

The end bow is installed in such a way that the top step is at the same level as the roof or landing onto which the ladder leads.

The end bow is mounted to the wall structure, mounting brackets or other structure with fasteners suitable for this purpose in such a way that the top fastener is installed as high as possible and the next no more than a metre lower. The handrails are first secured to the landing and then to the handrails of the ladder's vertical section with clamps.

Make sure that all bolts and nuts are tightened to the required tension before proceeding with the installation of the safety ladder system (see Section 13).

8.3.2 Installation of the topmost safety ladder

As the safety ladder system is installed from top to bottom, the topmost safety ladder must be installed first.

The installation may be assisted with tools such as a sheave installed at the top and a rope, which allow the safety ladder to be lifted to the correct position before being secured to the wall structure, mounting brackets or other structure with appropriate fasteners.

The installation of a safety ladder can also be carried out in a horizontal position, e.g. on a mast structure or fasteners installed on a chimney, before the mast or chimney is erected.

The recommended length of the topmost ladder section of a safety ladder system is 3 metres. In this case, the ladder must be secured with three fasteners. If the top ladder is less than 3 metres long, two fasteners are sufficient to secure it.

Make sure that all bolts and nuts are tightened to the required tension before proceeding with the installation of the safety ladder system (see Section 13).

8.4 Installation of the lower safety ladders

Attach a sleeve joint to the holes located at the lower end of either the end bow or Vertical Profile B of the lowest safety ladder installed. Position the sleeve joints on each side of Vertical Profile B and push a bolt through the upper holes of the sleeve joint and the holes on the previously installed end bow or Vertical Profile B of the ladder section. Rotate the nut into place but do not tighten it yet.

Lift the safety ladder up against the structure on which it is being installed and secure it to the sleeve joint by pushing the lower bolt through the holes at the upper end of Vertical Profile B of the safety ladder being installed and rotate the nut into place but do not tighten it yet.

Secure the safety ladder to the wall structure, mounting brackets or other structure with fasteners appropriate for this purpose. Lift up the safety ladder before tightening the fasteners' screws in such a way that the gap between the previously installed Vertical Profile B and the Vertical Profile B currently being installed is as small as possible. Note that the gap between the vertical profiles may not exceed 8 mm.

Tighten the sleeve joint's nuts, but note that the groove of Vertical Profile B may become narrower if the sleeve joint's bolts are tightened too much. The groove width must be no less than 15 mm. The groove width can be checked by using a feeler gauge manufactured for this purpose by Eltel Networks Corporation, for example.

When installing type PTBK and PTBJ ladders, make sure that the handrails are positioned correctly and that they enter the sleeves on the handrails.

In type PTBR ladders, the handrails are attached to each other with the screw-fastened sleeves delivered with the product.

The groove width of both the upper and lower Vertical Profile B should be the same at the joint, and there should be no projection, lateral displacement or torsion between the profiles.

If the width of the groove of Vertical Profile B is less than 15 mm, it can be widened by loosening the sleeve joint's screws and hammering the the safety rail's groove with a heavy rubber mallet, for example.

Make sure that all bolts and nuts are tightened to the required tension before proceeding with the installation of the safety ladder system (see Section 13).

8.5 Installation of the lowest safety ladder

Safety ladders are delivered with a length of 3 metres, with the exception of type PTBR ladders, which are delivered with a length of 5.7 metres. Safety ladders can also be delivered pre-cut to a suitable length for each site.

The lowest safety ladder can be cut to a suitable length at the worksite. Please note that the safety ladder must be cut at the lower end in such a way that the holes for sleeve joints at the upper end of Vertical Profile B are retained.

A space of at least 150 mm must be left between the lower end of the safety ladder and the ground or the level from which the user steps onto the ladder to allow a climbing carriage to be inserted into the safety rail.

9. INSTALLATION INSTRUCTIONS FOR FASTENERS

This section presents instructions for carrying out the installation of standard fasteners.

On order, we manufacture various made-to-order fasteners, which must be installed in accordance with these instructions as well as the installation instructions delivered with each fastener.

Vertical Profile B and the safety ladder are installed using a basic clamp. The basic clamp is always attached to Vertical Profile B, with the exception of ladders equipped with handrails, which can also be installed by their handrails. A basic clamp is included in all fasteners and does not need to be ordered separately unless Vertical Profile B or the safety ladder is secured by only using a basic clamp.

If the structure on which the safety ladder is being installed does not naturally have suitable mounting points, cantilever brackets can be attached to the structure. In the case of a metal structure, they can be attached by welding or with a screw connection, for example, whereas for brickwork or concrete structures they can be attached with 16 mm x 115 mm wedge anchors (G3) or similar anchoring, for example.

The part of the cantilever bracket to which the safety ladder is secured must be parallel to the safety rail's base and have a 13 mm hole for attaching the basic clamp.

The distance between cantilever brackets installed on the structure must be a multiple of 300 mm (300, 600, 900, 1,200, 1,500, 2,100 mm) to ensure that none of the fasteners are positioned at the same level as a step.

9.1 Basic clamp

9.1.1 Basic Clamp No 15

Basic Clamp No 15 is suitable for use on structures that are already equipped with 5–10-mm-thick cantilever brackets. The cantilever brackets must be L-shaped and positioned far enough from the wall or other structure that the distance between the front section of the ladder's steps and the wall or other structure is no less than 200 mm to ensure sufficient "toe room".

The bolt delivered with the basic clamp is 20 mm long. Choosing a longer mounting bolt allows the basic clamp to also be used with thicker structures. If the bolts are purchased from a manufacturer other than the manufacturer of Turvatikas Safety Ladder products, their strength class must be at least 8.8.

The length of a basic clamp's mounting bolts must be selected in such a way that the bolt extends through the basic clamp but does not protrude over the inner surface of the basic clamp by more than 3 mm. This way, the mounting bolt does not press too heavily on the base of Vertical Profile B. At least one washer must be placed under the mounting bolt. If the screw is too long and presses considerably against the base of Vertical Profile B when tightened, more than one washer can be placed between the screw and cantilever bracket.

The basic clamp's locking screw (M10) and mounting bolt (M12) are tightened to the required tension with a ring spanner (see Section 13).

As an exception, the basic clamp mounting bolts of the following fasteners are secured without a washer: Angle Iron Fasteners No 44/1/2/3/3A, No 56, No 57 and No 58.

9.2 Rung fastener

Rung fasteners are used for installing Vertical Profile B and safety ladders on round rungs no more than 25 mm in diameter.

9.2.1 Rung Fastener No 10

Rung Fastener No 10 is suitable for use in installing Vertical Profile B on a ladder in which the diameter of a step, i.e. rung, is 16–25 mm and the safety rail must be as near as possible to the ladder. Rung Fastener No 10 can be installed either above or below a rung, and its suitability for rungs of different sizes depends on the length of the bolt used in the fastener. When ordering a rung fastener, the customer must mention in the order what size of rung the fastener will be installed on.

The rung fastener's mounting screw (M12) and the basic clamp's locking screw (M10) are tightened to the required tension (see Section 13).

9.2.2 Rung Fastener No 41

Rung Fastener No 41 is suitable for use in installing Vertical Profile B on rungs when the desired distance between the back section of the basic clamp and the middle of the rung is 95 mm. A straight mounting plate and a 30-mm-long bolt are used for rungs with a diameter of 11–15 mm. A slotted mounting plate and a 45-mm-long bolt are used for rungs with a diameter of 16–35 mm. The order must mention the size of the rung on which the fastener will be installed.

The basic clamp of the rung fastener is secured to the safety rail, and the locking screw (M10) is tightened to the required tension. The rung is placed in the groove intended for it in the fastener. The bolts are placed through the fastener's holes with their washers, and washers and nuts are placed on the opposite side. The bolts and nuts are tightened to the required tension (see Section 13).

9.2.3 Rung Fastener No 42

Rung Fastener No 42 is suitable for use in installing Vertical Profile B on rungs when the desired distance between the back section of the basic clamp and the middle of the rung is 130–180 mm. A straight mounting plate and a 30-mm-long bolt are used for rungs with a diameter of 11–15 mm. A slotted mounting plate and a 45-mm-long bolt are used for rungs with a diameter of 16–35 mm. The order must mention the size of the rung on which the fastener will be installed.

The basic clamp of the rung fastener is secured to Vertical Profile B, and the locking screw (M10) is tightened to the required tension. The length of the fastener is adjusted in such a way that the rung can be installed in the groove made for it in the fastener. The bolts are placed through the fastener's holes with their washers, and washers and nuts are placed on the opposite side. The bolts and nuts in the rung's mounting part are tightened to the required tension.

The fastener is adjusted to the desired length, and the tightening bolt of the part controlling the length is tightened to the required tension (see Section 13).

9.3 Universal fasteners

A universal fastener is suitable for use in square, I-profile- and L-profile-shaped structures as well as structures in which the mounting point is not in a horizontal position, such as the diagonals of masts and columns.

9.3.1 Universal Fastener No 20, No 21 and No 22

Universal Fastener No 20 is suitable for structures in which the diameter or horizontal thickness of the mounting point is 22–52 mm, with the measured vertical thickness of the mounting point being no more than 80 mm.

Universal Fastener No 21 is suitable for structures in which the diameter or horizontal thickness of the mounting point is 53–82 mm, with the measured vertical thickness of the mounting point being no more than 110 mm.

Universal Fastener No 22 is suitable for structures in which the diameter or horizontal thickness of the mounting point is 83–140 mm, with the measured vertical thickness of the mounting point being no more than 170 mm.

The other ends of the universal fastener's threaded rods are rotated into basic clamps in such a way that the ends of the rods go through the basic clamps by a few millimetres.

The basic clamps are placed above and below the selected mounting point on Vertical Profile B, at a distance from each other that corresponds to the distance between the back support's holes. The basic clamps' locking screws (M10) are tightened to the required tension.

A nut is rotated on the lower threaded rod, settling it roughly in a place corresponding to the mounting point's strength. A washer, the fastener's back support and a second washer are placed on the threaded rod. A second nut is rotated a short distance down the threaded rod in such a way that the back support is unable to detach from the threaded rod.

The back support is turned to a vertical position in such a way that the upper threaded rod penetrates the second installation hole in the back support. The upper threaded rod is fitted with a washer and nut, and all nuts (M12) are tightened to the required tension in such a way that the back support remains vertical.

9.4 Level fasteners

Level fasteners are suitable for use in securing Vertical Profile B to level surfaces and columns with a diameter of over 800 mm.

It is recommended that the level fasteners be installed alternately horizontally and vertically.

The distance between fasteners must be a multiple of 300 mm (300, 600, 900, 1,200, 1,500, 2,100 mm) to ensure that none of the fasteners are positioned at the same level as a step.

9.4.1 Level Fastener No 31, No 32, No 33 and No 35

Level Fastener No 31 is suitable for use in structures in which the ladder steps may be at a distance of 120 mm from the mounting points. Examples of such structures include beamed halls in which the beams are visible and the actual wall surface is behind the beams.

Please note that the recommended minimum distance between a ladder step and the wall or a similar structure is 200 mm when measured from the front of the steps, as this leaves sufficient “toe room”. Because of this, Level Fastener No 31 is not recommended as a fastener for level wall surfaces.

It is recommended that the level fasteners be installed alternately horizontally and vertically.

The diameter of a level fastener’s installation holes is 13 mm, and the distance between them is 200 mm.

A level fastener can first be secured to the structure, after which the safety ladder is lifted to the correct height and its Vertical Profile B is placed in the basic clamp. The basic clamp’s locking screw must be tightened to prevent the safety ladder from detaching from the basic clamp. If the safety ladder section being installed is not the topmost section of the ladder structure, the safety ladder must be secured to the previously installed safety ladder with a sleeve joint.

The level fastener can also first be secured to the safety ladder’s Vertical Profile B before the safety ladder is lifted into place and the level fastener is secured to the wall. In this case, it must be ensured that the safety ladder is positioned directly downwards when installed to prevent the ladder from slanting.

Level Fastener No 32 is suitable for use in structures in which the ladder steps may be fixed to the installation surface. Examples of such sites may include beamed halls in which the beams are visible and the actual wall surface is behind the beams. This level fastener is often used for purposes such as securing horizontal profiles at installation sites in which it is not possible to only secure a basic clamp to the structures.

The recommended minimum distance between a ladder step and the wall or a similar structure is 200 mm when measured from the front of the steps, as this leaves sufficient “toe room”.

It is recommended that the level fasteners be installed alternately horizontally and vertically.

The diameter of a level fastener’s installation holes is 13 mm, and the distance between them is 85 mm.

The level fastener is first secured to the structure, after which the safety ladder is lifted to the correct height and installed in place in the basic clamp. The basic clamp’s locking screw must be tightened to prevent the safety ladder from detaching from the basic clamp. If the safety ladder being installed is not the topmost section of the ladder structure, the safety ladder must be secured to the previously installed safety ladder with a sleeve joint.

Level Fastener No 33 is suitable for use in structures in which the ladder steps may be at a distance of 120 mm from the mounting points. Examples of such sites may include beamed halls in which the beams are visible and the actual wall surface is behind the beams.

Please note that the recommended minimum distance between a ladder step and the wall or a similar structure is 200 mm when measured from the front of the steps, as this leaves sufficient “toe room”. Because of this, Level Fastener No 33 is not recommended as a fastener for level wall surfaces.

It is recommended that the level fasteners be installed alternately horizontally and vertically.

The level fastener only has one installation hole with a diameter of 13 mm in the middle of the fastener.

The level fastener can first be secured to the structure, after which the safety ladder is lifted to the correct height and installed in place in the basic clamp. The basic clamp's locking screw must be tightened to prevent the safety ladder from detaching from the basic clamp. If the safety ladder being installed is not the topmost section of the ladder structure, the safety ladder must be secured to the previously installed safety ladder with a sleeve joint.

The level fastener can also first be secured to the safety ladder's safety rail before the safety ladder is lifted into place and the level fastener is secured to the wall. In this case, it must be ensured that the safety ladder element is positioned directly downwards when installed to prevent the safety ladder from slanting.

Level Fastener No 35 is suitable for structures with a level wall surface, as the distance between a ladder step and the wall is 200 mm, which is the recommended minimum distance between a ladder step and the wall surface.

It is recommended that the level fasteners be installed alternately horizontally and vertically.

The diameter of a level fastener's installation holes is 13 mm, and the distance between them is 200 mm.

The level fastener can be installed by first securing it to the structure and then lifting the safety ladder element to the correct height and installing it in place in the basic clamp. The basic clamp's locking screw must be tightened to prevent the safety ladder from detaching from the basic clamp. If the safety ladder being installed is not the topmost section of the ladder structure, the safety ladder must be secured to the previously installed safety ladder with a sleeve joint.

The level fastener can also first be secured to the safety ladder element's safety rail before the safety ladder element is lifted into place and the level fastener is secured to the wall. In this case, it must be ensured that the safety ladder is positioned directly downwards when installed to prevent the safety ladder from slanting.

9.5 Wall mounts

Wall Mounts No 114, No 115, No 116, No 117, No 118 and No 119 are suitable for use in securing type PTBJ and PTBK safety ladders to level surfaces when the distance between the ladder and the wall must be 400–900 mm. The wall mounts are available in increments of 10 cm. The ladders of buildings should be located at a distance of at least 20 cm from the outermost part of the building, usually the eaves.

The wall mounts are secured to wall structures reliably with screws with a minimum diameter of 10 mm. Wall mounts are secured to brickwork and concrete surfaces with wedge anchors and to wooden structures with through screws.

Wall mounts are secured to the ladder's handrails with clamps.

The maximum allowable mounting distance between the two topmost fasteners is 1 metre.

The recommended mounting distance for other fasteners is 1.5 metres, with the maximum allowable mounting distance being 2.1 metres.

The maximum allowable overhang is 1 metre when measured from the last fastener to the outermost end of the safety rail.

The distance between fasteners must be a multiple of 300 mm (300, 600, 900, 1,200, 1,500, 2,100 mm) to ensure that none of the wall mounts are positioned at the same level as a step.

9.6 Angle iron fasteners

Angle iron fasteners are suitable for use in L-profiles, such as the vertical profiles of masts and columns.

The angle iron fastener is placed at the desired height and its jaws are tightened against the profile's edges. The safety ladder element is placed in the fastener and tightened in place with the basic clamp's tightening screw.

9.6.1 Angle Iron Fastener No 34/200 and No 34/300

Angle Iron Fastener No 34 is suitable for use in structures in which the L-profile's dimensions are 50–200 mm or 150–300 mm and in which the intention is for the safety ladder to be positioned at a 45 degree angle in relation to the L-profile's sides.

9.6.2 Angle Iron Fastener No 44/1, No 44/2 and No 44/3

Angle Iron Fastener No 44 is suitable for use in structures in which the L-profile's dimensions are 65–100 mm, 110–150 mm and 150–220 mm and in which the intention is for the safety ladder to be parallel to the profile's side.

9.7 Pole fasteners

Pole fasteners are suitable for use on tubular masts and other round column structures.

9.7.1 Pole Fastener No 45

Pole Fastener No 45 is suitable for structures in which the pole diameter is 90–220 mm, and the ladder is positioned in the middle of the pole in line with the pole's axis. The distance between the ladder and the mast surface can be adjusted between 120 and 170 mm.

The order must mention the diameter of the structure on which the ladder will be installed, as, by default, the delivery contains mounting brackets and bolts suitable for a pole with a diameter of 130–180 mm. For other diameters, the mounting brackets and bolts or threaded rods are delivered by request, depending on the diameter.

Fasten the first bolt or threaded rod to two mounting brackets by placing the washer and rotating the nut enough to keep it in place. Fasten the next bolt or threaded rod in the same way. Lift the fastener to the desired height and fasten the third bolt or threaded rod in the manner presented above, and tighten the nuts evenly in such a way that the fastener looks symmetrical from every angle.

Adjust the basic clamp's distance as desired and tighten the screws controlling the distance adjustment.

9.7.2 Pole Fastener No 50, No 51 and No 52

Pole Fasteners No 50, No 51 and No 52 are suitable for use in structures in which the pole diameter is roughly 220 mm, 270 mm or 325 mm. The ladder is positioned parallel to the column's axis, roughly 29 mm to the side from the column's centreline.

Lift the fastener up to the desired height, place the U-bar around the column and secure it to the mounting bracket by placing washers onto the U-bar's threaded parts. Tighten the nuts evenly in such a way that the U-bar's threaded parts stay perpendicular to the mounting bracket.

9.8 Chord fasteners

Chord fasteners are suitable for use in installing safety ladders equipped with handrails by their handrails.

Lift the ladder element up to the desired height and place the chord fastener at the ladder mounting point from the front in such a way that it encloses the ladder's handrail and the part of the installation surface to which the safety ladder is intended to be secured. If possible, the chord fastener should also enclose a step of the safety ladder.

The back support, washers and nuts are put in place and tightened to the required tension.

PLEASE NOTE! The chord fastener must always be installed with its back support behind the safety ladder in such a way that neither it nor its threaded bars or nuts disturb the use of the ladder.

9.8.1 Chord Fasteners No 461, No 462 and No 463

Chord fasteners are suitable for beams with a diameter of 35–70 mm, 80–120 mm or 130–150 mm or similar mounting points.

10. INSTALLATION INSTRUCTIONS FOR OTHER PARTS OF THE SAFETY LADDER SYSTEM

It is very important for every part of the safety ladder system to be installed in place in accordance with the installation instructions and for their functionality and safety to be inspected by an authorised inspector before the system is put into use.

10.1 Sleeve Joint No 70

A sleeve joint is used to fasten Vertical Profile B and the safety ladder to each other.

Sleeve Joint No 70 comprises two sleeves, two bolts, two nuts and four washers.

The sleeve joint is installed in the holes located at both ends of Vertical Profile B in such a way that the sleeve joint's bolts penetrate the holes on each sleeve as well as the holes on Vertical Profile B between them. A washer must be placed between the bolt and the sleeve as well as between the nut and the sleeve.

The nut is tightened until it is tight but does not yet contract the groove of Vertical Profile B. The width of the groove of Vertical Profile B must be 15–22 mm. If it is wider than 22 mm under the sleeve joint, it can be shrunk by tightening the sleeve joint's bolts. If it is narrower than 15 mm, the sleeve joint's bolts must be loosened. If the bolts are too loose but the groove remains too narrow, the bolts must be loosened further and the groove must then be widened with a rubber mallet, for example. Once the groove is sufficiently wide, the sleeve joint's bolt must be tightened again.

10.2 Sleeve Joint No 71

Sleeve Joint No 71 is a new model of Sleeve Joint No 70. The new sleeve joint is longer and lower in shape and has four holes. Sleeve Joint No 71 comprises two sleeves, two bolts, two nuts and four washers. The recommendation is for the sleeve to be installed with two bolts by the holes in the middle in accordance with Section 10.1.

10.3 Carriage Guide No 84

The carriage guide prevents the climbing carriage from being inserted into Vertical Profile B the wrong way around.

A carriage guide must always be installed at the lower end of Vertical Profile B or a safety rail as well as at the upper end when the climbing carriage can be taken out of Vertical Profile B through the upper end of the ladder.

In an end bow, a carriage guide is welded as a fixed part of the end bow's structure.

The carriage guide is installed at the lower end of the safety rail, roughly 10–20 cm from the lower end of the profile, in such a way that the part of the carriage pointing outwards is on the right side of the safety rail.

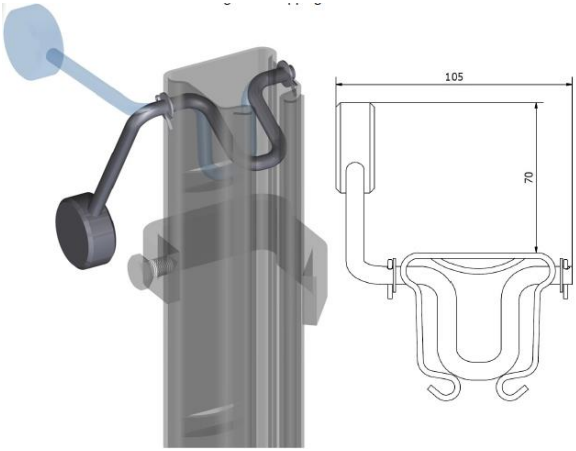
The carriage guide is inserted into place behind Vertical Profile B and tightened in place with the tightening screw located on the left side of the guide.

10.4 Vertical carriage stoppers

A vertical carriage stopper is a fixed or releasable stopper that prevents the climbing carriage from going up or down or in both directions, depending on the type of vertical carriage stopper.

10.4.1 Vertical Carriage Stopper No 85

Vertical Carriage Stopper No 85 is a releasable vertical carriage stopper that, when closed, prevents the climbing carriage from going up past the stopper.

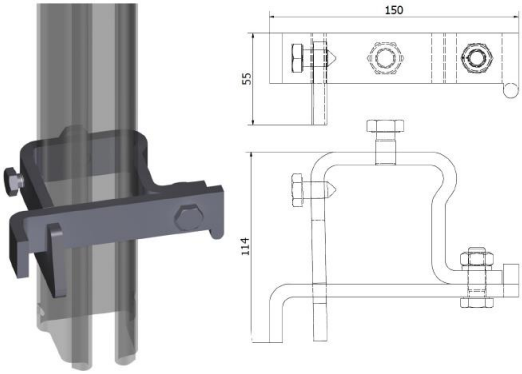


Vertical Carriage Stopper No 85 is installed by inserting it through the holes at the upper end of Vertical Profile B, from the left side, placing a washer on the right side and locking it in place with a cotter pin.

Correct installation of the carriage stopper must be ascertained, ensuring that it is not rubbing against Vertical Profile B and that it moves easily and is closed when not in use, preventing the climbing carriage from going up.

10.4.2 Vertical Carriage Stopper No 851

Vertical Carriage Stopper No 851 is a releasable vertical carriage stopper weighing 1.2 kg that, when closed, prevents the climbing carriage from going down past the stopper.



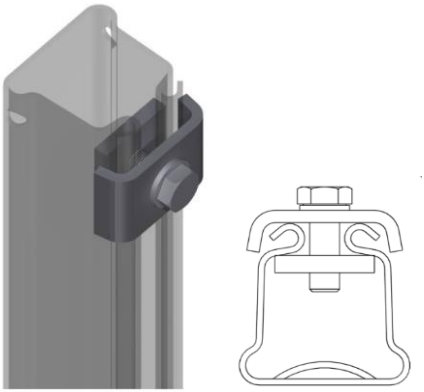
Installation of Vertical Carriage Stopper No 851 is always recommended when the lower end of Vertical Profile B is at a height of more than 60 cm from the ground or other level from which the user steps onto the ladder.

The vertical carriage stopper is installed at the lower end of Vertical Profile B, at a height of roughly 60–130 cm from the level from which the user steps onto the ladder. The vertical carriage stopper is inserted behind Vertical Profile B in such a way that the stopper's joint is on the right side of the safety rail. The vertical carriage stopper is tightened in place with the screw located behind the stopper and it is finally locked in place with the screw located on the left side of the stopper.

Check that the vertical carriage stopper's latch moves freely and settles into the groove on the opposite side. Also check that the climbing carriage is able to pass by the vertical carriage stopper when it is opened.

10.4.3 Carriage Stopper No 89

Carriage Stopper No 89 cannot be opened, and it always prevents the climbing carriage from moving both up and down.



Carriage Stopper No 89 is installed on the safety rail by inserting its back plate inside the groove of Vertical Profile B, at a minimum distance of 50 mm from the end of the profile, and locking the stopper in place with the screw (M10) located in front of the stopper.

PLEASE NOTE! The carriage stopper is not a safety device that prevents falls; it only prevents a climbing carriage from being inserted into or removed from the safety rail.

10.5 Movable landings

Movable landings allow the user to rest while climbing.

Installation of movable landings is recommended at intervals of roughly 10–15 metres for tall ladders.

10.5.1 Landing No 104

Landing No 104 allows the user to rest on an even platform while climbing, without releasing the climbing carriage.

Landing No 104 is installed between the safety rail's ladder steps on Vertical Profile B, directly under a step. The landing does not prevent climbing, and the user can stand on it without releasing the climbing carriage.

The landing is placed on the safety rail's front side and locked in place by tightening the locking screws.

10.5.2 Landing No 105

Landing No 105 allows the user to rest in a seated position while climbing, without releasing the climbing carriage.

Landing No 105 is installed between the safety rail's ladder steps on Vertical Profile B, directly under a step. The landing does not prevent climbing, and the user can sit on it without releasing the climbing carriage.

The landing is placed on the front side of Vertical Profile B and locked in place by tightening both locking screws.

11. BENDING THE SAFETY RAIL AND SAFETY LADDER

Vertical Profile B and the safety ladder may not be bent at an angle of more than 15 degrees, which allows all permitted climbing and safety carriages to go past the bends. The distance between bent sections must be at least 150 mm.

- Vertical Profile B can be bent forwards, backwards and to the side.
- A safety ladder may only be bent forwards or backwards.

The bending of the safety ladder forwards and backwards can be carried out at the worksite by sawing cuts into the safety rail's sides. Sawing the base of Vertical Profile B is forbidden. It is recommended that the sawed section of the ladder be painted with zinc paint to prevent corrosion.

Any bending to the side is always carried out by the manufacturer. The manufacturer can also carry out bending forwards and backwards by request.

The recommended gap between joined vertical profiles is less than 5 mm. If all the fasteners and connections are secured appropriately, however, even a gap of 8 mm in one place does not yet pose a risk of the safety carriage slipping out.

12. INSTALLATION INSTRUCTIONS FOR HORIZONTAL SYSTEMS

Horizontal systems are not considered to belong to the group of fall arrest systems, and therefore they are controlled with different standards compared to actual fall arrest systems.

12.1 Horizontal Rail, i.e. Horizontal Profile VB

A horizontal rail is similar to a safety rail in structure, but it lacks the projections along the profile base. A horizontal rail must never be used in vertical installations.

A horizontal carriage is usually used with a horizontal rail, but a climbing carriage also works with a horizontal rail.

The horizontal rail is installed horizontally in such a way that the profile groove is positioned in the direction subjected to tensile stress in the event of a fall.

The maximum allowable distance between a horizontal rail's fasteners is 2.5 m but with one fastener always placed on both sides of the horizontal rail's extension. In practice, a three (3)-metre-long horizontal rail is secured with a minimum of two fasteners, one at each end of the horizontal rail. A six (6)-metre-long horizontal rail is secured with three fasteners, one at each end and one in the middle of the horizontal rail.

Particular attention must be paid to ensuring that a carriage stopper is placed at each end of the horizontal rail to prevent a carriage from slipping out from the ends of the horizontal rail unintentionally.

The lanyard used with a horizontal rail must be a lanyard that allows length adjustment in accordance with EN 359. The length must be adjusted in such a way that the free fall is as short as possible in all situations.

The safety carriage is fastened to the belt of the harness with a lanyard, and it follows the person freely along the horizontal rail without locking.

Please note! Horizontal Carriage No 950/951 must not be used for climbing under any circumstance.

12.2 Carriage stoppers

When closed, horizontal carriage stoppers prevent the safety carriage from going past them.

12.2.1 Carriage Stopper No 89

Carriage Stopper No 89 cannot be opened, and it prevents the safety carriage from going in either direction, regardless of the direction of the horizontal rail's direction.

Carriage Stopper No 89 is installed on the horizontal rail by inserting its back plate inside the horizontal rail's groove, at a minimum distance of 50 mm from the end of the profile, and locking the stopper in place with the screw (M10) located in front of the stopper.

PLEASE NOTE! The carriage stopper is not a safety device that prevents falls; it only prevents a climbing carriage from being inserted into or removed from the safety rail.

12.2.2 Horizontal Carriage Stopper No 86

Horizontal Carriage Stopper No 86 only functions when the horizontal rail's groove is sideways.

Horizontal Carriage Stopper No 86 is installed in place by tightening the tightening screw. Ensure free movement of the locking handle and that it is not left in the open position. When free, the locking handle prevents the safety carriage from passing through.

12.2.3 Horizontal Carriage Stopper No 81

Horizontal Carriage Stopper No 81 only functions when the horizontal rail's groove is downwards.

Horizontal Carriage Stopper No 81 is installed by inserting it through the holes at the upper end of the horizontal rail, from the left side, placing a washer on the right side and locking it in place with a cotter pin.

Correct installation of the horizontal carriage stopper must be ascertained, ensuring that it is not rubbing against the safety rail and that it moves easily and is closed when not in use, preventing the climbing carriage from slipping out of the horizontal rail.

13. COMMISSIONING INSPECTION

A commissioning inspection must be conducted on Vertical Profile B and safety ladders by an inspector authorised by Eltel Networks Corporation after installation, before commissioning.

The purpose of the commissioning inspection is to check that the installation has been carried out in accordance with the instructions, that the system's parts are fastened to each other correctly in accordance with the instructions and that the mounting screws are tightened to the required tension.

The maximum allowable tightening torque for M12 bolts is 85 Nm.

For M12 threaded rods and other similar M12 threads, the maximum allowable tightening torque is 50 Nm.

The maximum allowable tightening torque for M10 screws with a pointed end is 50 Nm. Pointed screws are only used in the basic clamp, and, in practice, narrowing of the groove of Vertical Profile B is a factor that limits the tightening force used. The pointed screws used in the basic clamps usually located in the middle of Vertical Profile B can be tightened to a torque of 20 Nm, and to a torque of 10 Nm at the end of the safety rail, before the no 851

groove of Vertical Profile B becomes narrower than the permitted 15 mm.

The functioning of the system is checked by carrying out a test climb using a safety carriage.

A report is prepared of the commissioning inspection, and it is kept by the owner of the system. An inspection sticker indicating the date of inspection is glued onto Vertical Profile B or in its immediate vicinity.

14. PERIODIC INSPECTION

A periodic inspection must be conducted on Vertical Profile B and safety ladders by an inspector authorised by Eltel Networks Corporation at least once a year.

A periodic inspection includes checking that the safety ladder system continues to meet the requirements set for it, preparing a report and keeping it in an appropriate place as well as gluing an inspection sticker indicating the date of inspection onto the safety ladder system or in its immediate vicinity.

If the safety ladder system does not meet the requirements set for it, use of the system must be prohibited until the deficiencies have been rectified. After the deficiencies have been rectified, the safety ladder system must be inspected again, the report must be filled in and kept appropriately, and an inspection sticker indicating the date of inspection must be glued onto the safety ladder system or in its immediate vicinity.

If an inspection is not carried out within a maximum of 12 months from the previous inspection, use of the system must be prohibited. If use of the system is prohibited, the system may not be put back into use until an inspector authorised by Eltel Networks Corporation has confirmed in writing that the system meets the requirements set for it and is safe to use.

15. INSPECTION BEFORE USE

The person using the safety ladder system must always check before using the system that a periodic inspection has been carried out on the safety ladder system within the last 12 months by checking either the inspection report or the date on the inspection sticker. Notwithstanding the validity of the periodic inspection, the condition of the safety ladder system must at least be checked visually before use.

The safety ladder system may not be used and its use must be prohibited if the most recent inspection was conducted more than 12 months ago, if the system has prevented a fall or if the user notices or suspects that the safety ladder system is not structurally safe to use. If use of the system is prohibited, the system may not be put back into use until an inspector authorised by Eltel Networks Corporation has confirmed in writing that the system meets the requirements set for it and is safe to use.

16. INSPECTION INSTRUCTIONS FOR VERTICAL PROFILE B AND SAFETY LADDERS

Inspections of Vertical Profile B and safety ladders may only be carried out by an inspector authorised by Eltel Networks Corporation.

When inspecting the safety ladder system, particular attention must be paid to the following details:

- The previous inspection report is available.
- The markings on the safety ladder system are readable.
    - Check the side of the vertical profile for the system's three-digit batch number and write it down in the inspection report and attention sign.
- An inspection sticker can be found on Vertical Profile B or in its immediate vicinity.
- The width of the groove of Vertical Profile B is within the permitted range.
    - The width of the groove of Vertical Profile B is tested with a feeler gauge, which is provided for inspectors by Eltel Networks Corporation free of charge upon request.
    - The 15-mm-wide tip of the feeler gauge must fit into the groove of Vertical Profile B, but the gauge's 22.5-mm-wide part must not fit into the groove.
- The safety ladder system as well as the structures to which the system is fastened are intact; the screws and bolts are tightened to the required tension; the welded seams are unbroken; and there is no significant corrosion damage.
- All the fasteners, extensions, carriage guides, carriage stoppers, landings and other parts are installed, intact and in place, and their bolts are tightened to the required tension.
- There is no projection, torsion or gap of over 8 mm between Vertical Profiles B at joints.
- A test climb must always be carried out across the entire length of Vertical Profile B to ensure the safety carriage's unobstructed passage across Vertical Profile B.

Any deficiencies noted must be reported in writing to the owner of the safety ladder system or the occupational health and safety organisation of the body or company in question, and use of the safety ladder system must be prohibited. The faults and deficiencies noted must be rectified, after which a new inspection must be carried out on the safety ladder system.

A report is prepared on the inspection, and it is kept by the owner of the system. An inspection sticker indicating the date of inspection is glued onto the safety ladder system or in its immediate vicinity.

17. INSPECTION REPORTS

Inspections of the safety ladder system may only be conducted by an inspector authorised by Eltel Networks Corporation who holds a valid Turvatikas inspector certificate granted by Eltel Networks Corporation.

17.1 Inspection checklist for safety ladder systems

Safety ladder systems must be inspected in conjunction with commissioning, at least once a year, before each use (at least visually) and after every fall.

An inspection must also always be carried out immediately after a user has reported a deficiency or fault.

Inspections are carried out by a person authorised by Eltel Networks Corporation in accordance with the inspection checklist below:

SUBJECT OF INSPECTION	ELEMENTS INSPECTED
Vertical Profile B	The width of the groove of Vertical Profile B is within the specified range. The sleeve joints are in place and correctly tightened. The distance between profiles at joints does not exceed the maximum distance specified.
Product labelling	Visible and readable.
Signage	Visible and readable.
Fasteners	Intact and in good condition.
Other structures	Intact and in good condition. The welded seams are in good condition and there is no significant corrosion damage visible.
Bolts and nuts	Tightened to the specified torque.
Accessories to the safety ladder system (carriage stoppers, carriage guides, etc.)	Correctly installed in place, intact and functioning correctly and reliably.
Test climb	The safety rail is secure, and it does not wobble or clatter. The safety carriage moves across the entire length of the rail, including through joints, openings, releasable carriage stoppers, carriage guides and bends. When the climbing carriage is moved downwards without a force pulling in the outward direction, the carriage's locking tongue grabs onto the projection on the base of the profile and stops.

If deficiencies are noted during the inspection, use of the system in question is prohibited until the deficiencies are rectified. A report must be prepared on the inspection. Inspections must be recorded in the product register.

17.2 Inspection report on safety rails and safety ladders

INFORMATION ON THE SAFETY RAIL OR SAFETY LADDER INSPECTED

MODEL	TYPE	PRODUCT BATCH NUMBER
YEAR OF MANUFACTURE	**DATE OF PURCHASE**	**COMMISSIONING DATE**
MANUFACTURER	**ADDRESS**	**E-MAIL/WEBSITE**
Eltel Networks Corporation Fax: +35820411211	Laturinkuja 8 02650 Espoo FINLAND	turvatikas@eltelnetworks.com safetyladder@eltelnetworks.com www.turvatikas.fi

INSPECTION COMMENTS

DATE	COMMENTS	NAME AND SIGNATURE OF INSPECTOR	DATE OF NEXT INSPECTION

18. TECHNICAL DATA SHEET

PRODUCT INFORMATION	Product type	Guided type fall arrester including a rigid anchor line
	Brand name	Turvatikas Safety Ladder
	Provider	Eltel Networks Oy
	CE number	0598
	Material	Hot-dip galvanized steel or Acid proof steel - AISI 316
	Zink class	Minimum average thickness 55 µm
	Zink corrosivity category	C4 (EN 12944-2 and EN ISO 14713-1)
	Applications	High structures, horizontal levels and pre-existing ladders
	Compatible	With all Turvatikas Safety Ladder components
	Stopper tooth distance	150 mm
	Steel material	S355MC/JJA EN 10149-2:2013
	Delivery lenghts	3m (All products), 5m (Profile-B), 5.7m (PTBR, Profile-B) and 6m (Profile-B)
	Warranty period	36 months
	Country of origin	Finland
PRODUCT CERTIFICATES	EU	EN353-1:2014+A1:2017
	Germany	DIN 18799-2:2009-05 (TBA-2, PTBJ)
PRODUCTION CERTIFICATES	Quality	ISO9001
	Responsibility	ISO14001
	Quality	EN1090-1:2009+A1:2011
	Galvanization standard	EN ISO 1461

TURVATIKAS SAFETY LADDER

SF Safety System
Finnish fall arrest system for
masts and other high structures

Eltel Networks Corporation

Laturinkuja 8
02650 Espoo,
FINLAND

Tel. +358 20 411 211

turvatikas@eltelnetworks.com
safetyladder@eltelnetworks.com