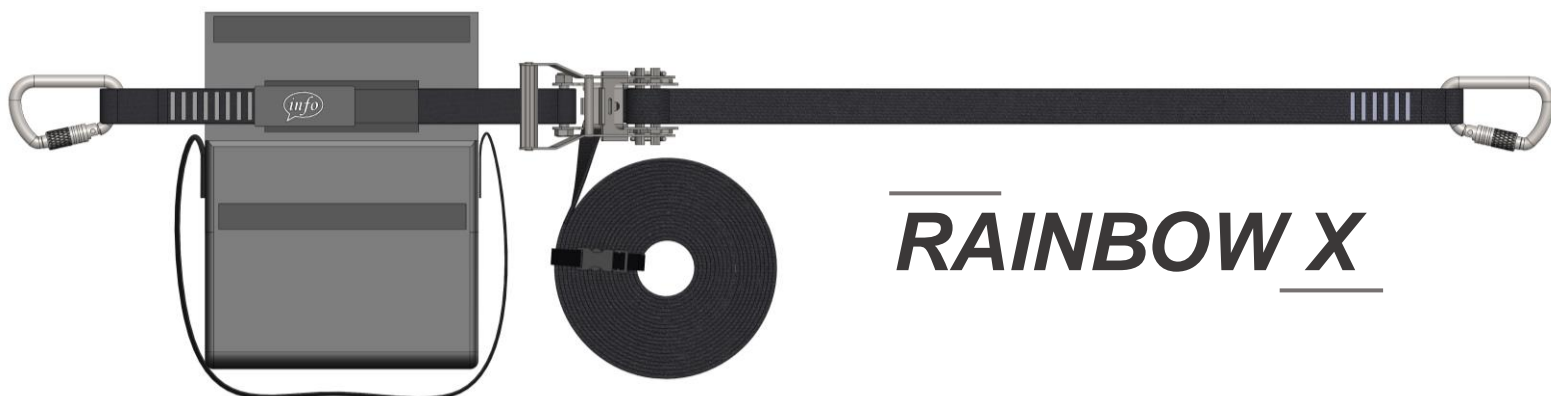


# Instruction manual for horizontal lifeline RAINBOW X certified according to EN 795



Thank you for choosing VERTIQUAL®! You have purchased a high quality product that will reliably protect you and will be your companion for a long time when working at heights and depths. This manual must be read and understood before using the product! This product will be used with other equipment (components) thus forming a system for working at heights. Please refer to the instruction manual of each component in your system for compatibility and correct use! Following these instructions accordingly is essential for your safety. Failure to do so can result in serious or even fatal accidents! Keep these instructions together with the product, accessible to all users, so they can consult them whenever is needed!

**WARNING!** These instructions are a basic comprehensive guide to the safe use of the purchased equipment. They contain general information about the product, intended to help the user, but cannot cover all the situations that may occur in the daily activities and cannot in any case replace the specialized training courses for safety at heights. This PPE against falls from heights can only be used by well-trained users, who are familiar with the relevant legislation and who have successfully completed a special safety training course for working at heights.

**WARNING!** For works with risk of falling from heights or in depths, a risk assessment must be carried out in advance in accordance with current regulations and legal provisions (EN standards or specific national rules) that will provide adequate measures for safety and rescue!

**WARNING!** Instructions for use are updated when technical or legislative changes occur. The latest version of the instructions overwrites previous versions and is the only valid version. Please make sure you follow the instructions of the most recent version. You can download the most recent instructions from our website [www.vertiqualsafety.com](http://www.vertiqualsafety.com) by accessing the section of each product. For help or additional questions, please contact us at [office@vertiqualsafety.com](mailto:office@vertiqualsafety.com) or Tel. (+40) 0365/882143.

**WARNING!** The user must be medically fit and capable to ensure his own safety and act accordingly in possible emergency situations! Seek medical approval according to the national legislation in force!

**WARNING!** If the product is re-sold outside the original country of destination, the reseller must provide these instructions manual in the language of the country where the product will be used.

## FIELD OF USE

The “RAINBOW X” will be used as a **temporary and transportable flexible anchor line** installed horizontally. RAINBOW X was tested and certified as an anchor device according to the standard EN 795:2012 Type C (for 1 pers.) and additionally according to TS 16415:2013 Type C (for 3 persons). Along with other tested and certified components the **flexible anchor line** will be used **as a temporary anchor device in fall arrest systems**. The purpose of these systems is to stop the free fall of the user, absorbing most of the shock and distributing the remaining force evenly, while holding the users body in a proper position until he or she is rescued.

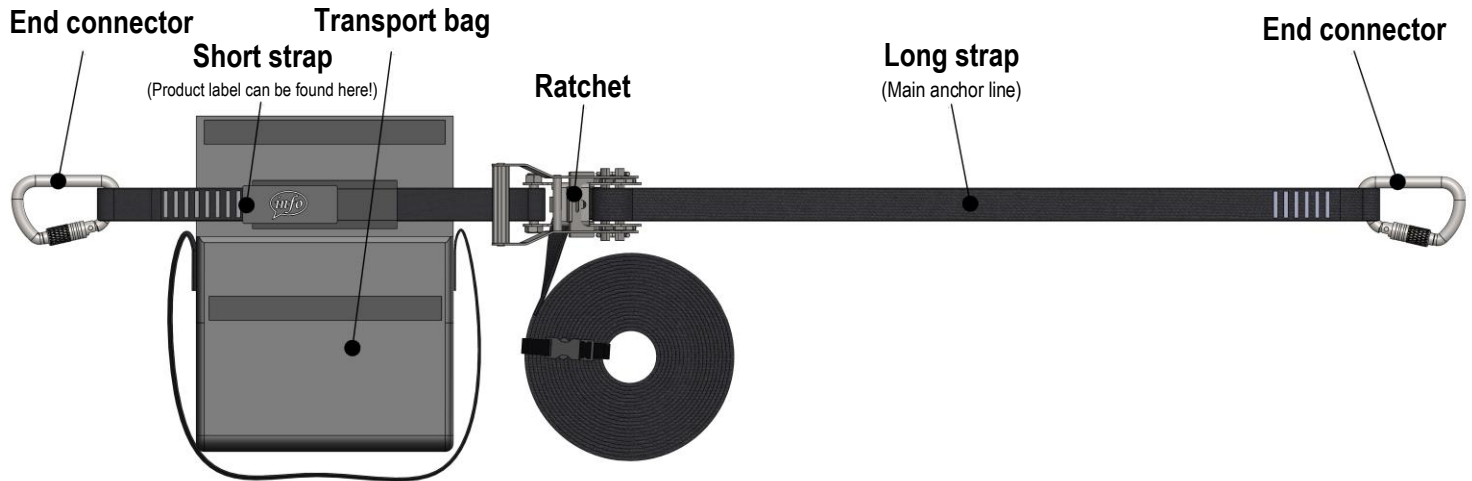
RAINBOW X will be installed between two fixed anchor points of suitable strength which are located at the same height so the anchor line is positioned horizontally. A deflection of maximum 15° to the horizontal plane is allowed for installation! The minimum free space below the user (fall clearance) must be ensured to prevent hitting the ground or any obstacles while the fall is arrested.

The product must be used exclusively as a PPEaF (Personal Protective Equipment against Fall), in usual environments with temperatures between -30°C and +50°C, without potentially explosive atmospheres, far away from flames, sparks, hot metal splash, dust, cement or any other fine powders. Avoid contact with sharp edges, abrasive surfaces, electricity, chemicals, corrosive solutions and substances, excessive heat, oils, paints or any other contaminants.

## DESCRIPTION

RAINBOW X uses a high tensile PES webbing of 34mm as the main anchor line. The line has two sewn end loops that will be equipped with EN 362 certified connectors for attachment to the fixed anchor points. The anchor line is equipped with a ratchet mechanism of zinc plated steel, which will be used to set the length and pre-tension the line before use. RAINBOW X has a static strength of minimum 38 kN.

## MAIN COMPONENTS



## CHOOSING THE ANCHOR POINTS!

The two anchor points must be capable to provide the minimum strength in all directions, according to the configured length and the number of users that are connected to the line! Check the table below!

### MINIMUM STRENGTH OF THE END ANCHORS (MBS) & DEFLECTION (D)

Number of users	Length 3 – 5 m		Length 5 – 10 m		Length 10 – 20 m	
	MBS [kN]	D [m]	MBS [kN]	D [m]	MBS [kN]	D [m]
1	16 kN	0,6 m	16 kN	1,2 m	16 kN	1,95 m
2 - 3	22 kN	0,8 m	22 kN	1,3 m	22 kN	2,3 m

### Typical installation / types of end anchors:

- EN 795 type A certified anchor points (Fig.1) that are capable to provide the minimum breaking strength required!
- Certified anchor sling (EN 795 type B) wrapped around a suitable anchor structure (Fig.2). Make sure that the anchor structure can provide the required minimum strength, the shape and dimensions will provide a safe a reliable connection and there are NO sharp edges!

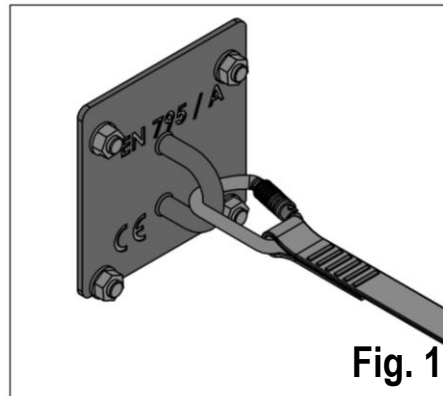


Fig. 1

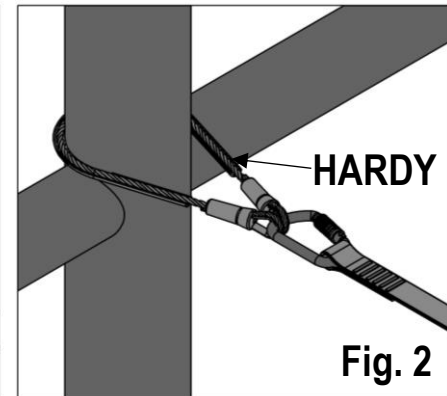


Fig. 2

### Maximum inclination!

Make sure that the anchor points are located at the same height so the lifeline will be installed **horizontally!** A deflection of maximum 15° to horizontal is allowed!

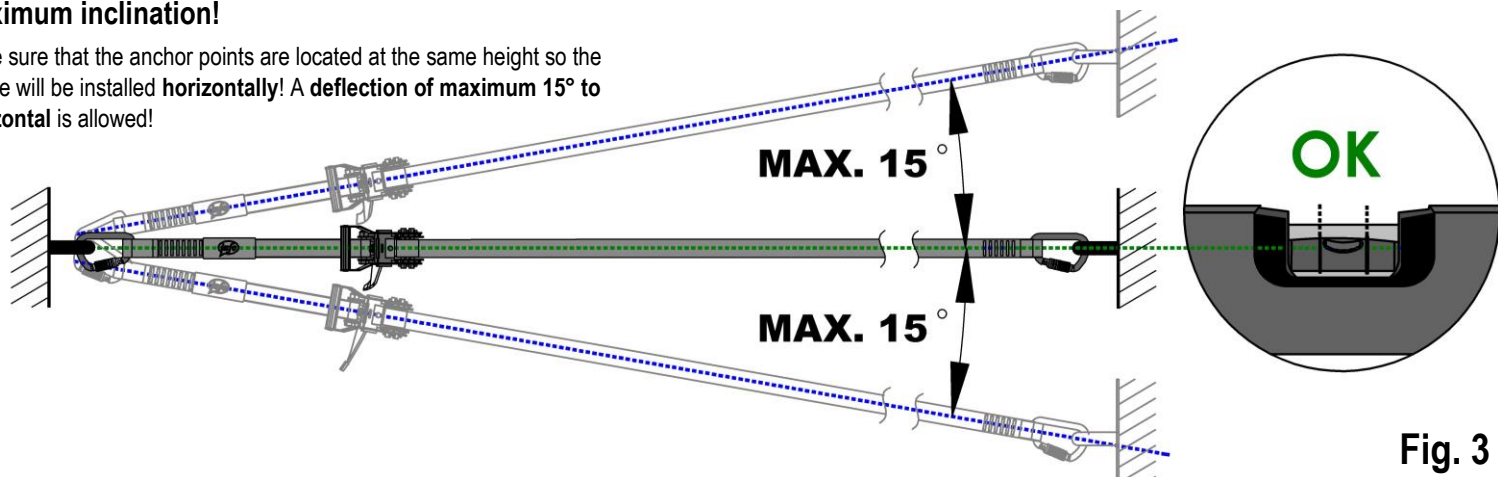


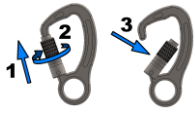
Fig. 3

## CONNECTORS

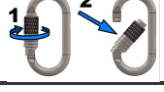
Auto-Lock



Tri-Lock



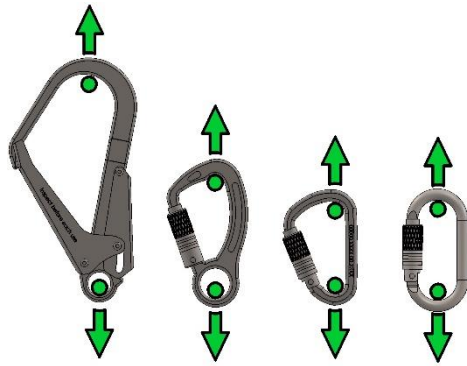
Twist-Lock



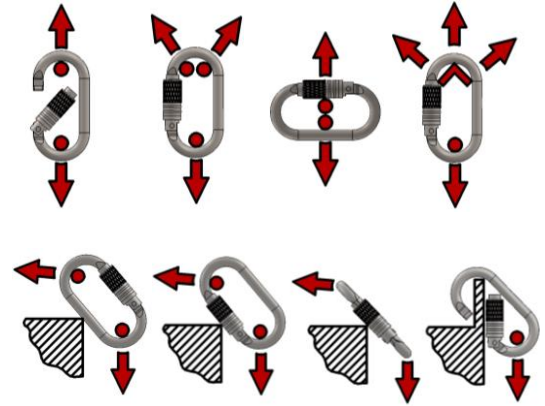
Screw



OPEN / CLOSE



CORRECT USE



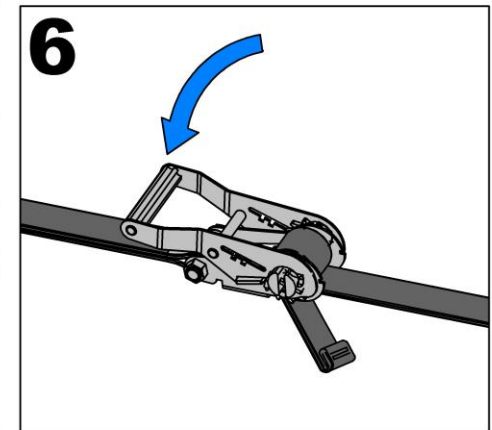
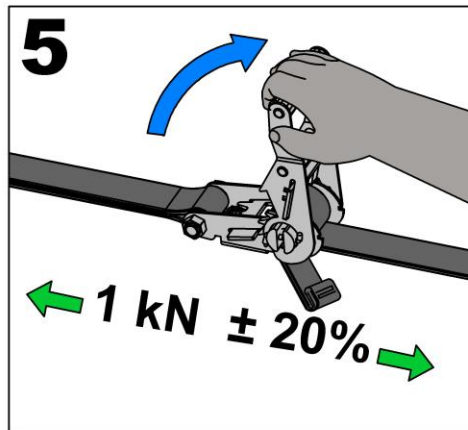
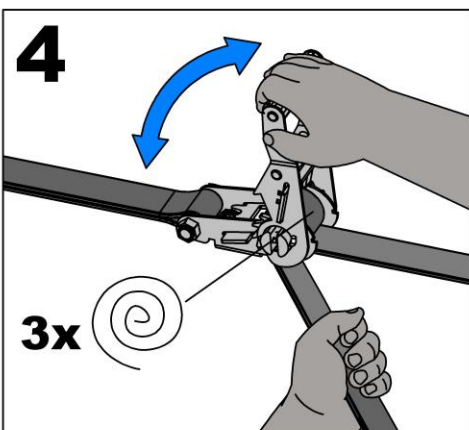
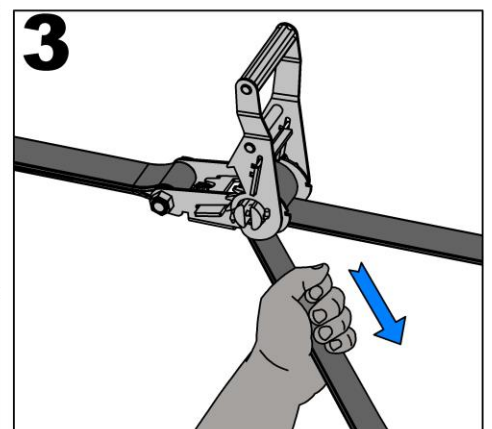
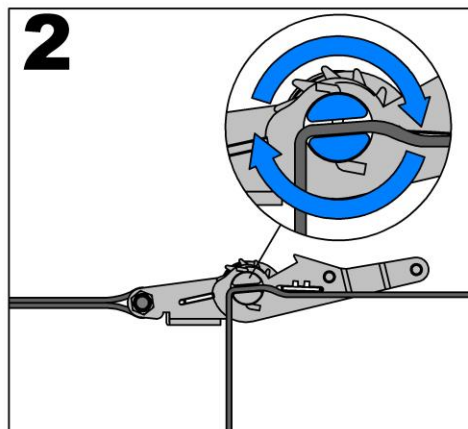
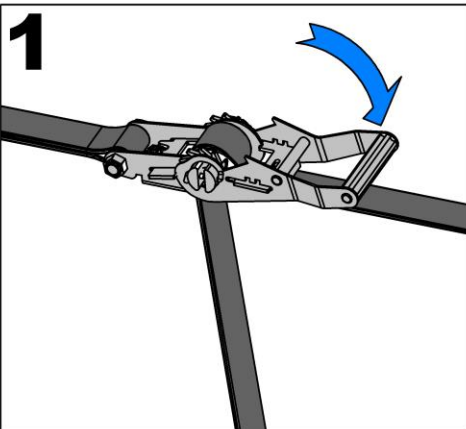
INCORRECT AND DANGEROUS USE

**WARNING!** Before use, the integrity, correct function and compatibility of the equipment must be checked! If damage is identified, the equipment must be immediately withdrawn from use! If the lanyard is equipped with SCREW locking carabiners, please make sure that the gate is fully closed and tightened correctly, before using it! Note: **SCREW locking** carabiners shall NOT be used at workplaces where the user must connect/disconnect frequently! If the lanyard is equipped with AUTO-LOCK, TRI-LOCK or TWIST-LOCK carabiners, make sure that the gate is fully closed and secured before use.

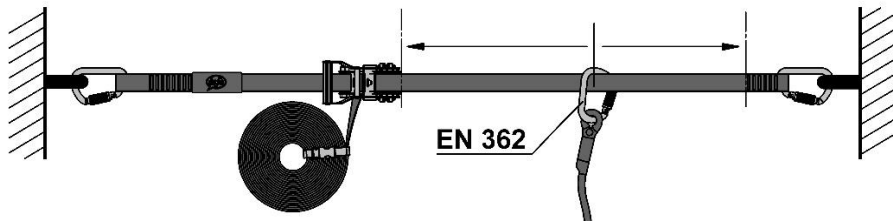
## INSTALLATION OF THE TEMPORARY LIFELINE:

- Unpack the lifeline and lay it between two suitable anchor points! (Make sure the webbing is not twisted)
- Attach the two end connectors accordingly! (Check Fig .1 , Fig 2 and CONNECTORS section)
- Set the ratchet to "OPEN" position (1) and rotate the main shaft (2) so the webbing can slide freely. Make sure that the webbing is not twisted and apply slight tension by hand (3). Pull the handle up and down (4) to apply tension to the line while holding the free end taut. Make sure the tensioning has resulted in about 3 windings over the main shaft and the line is firmly tensioned to  $1\text{ kN} \pm 20\%$  (5). Set the handle in the "CLOSED" position (6).

NOTE! Tension using only your hand and the ratchet! Do NOT use extenders or other means to apply more tension than needed!

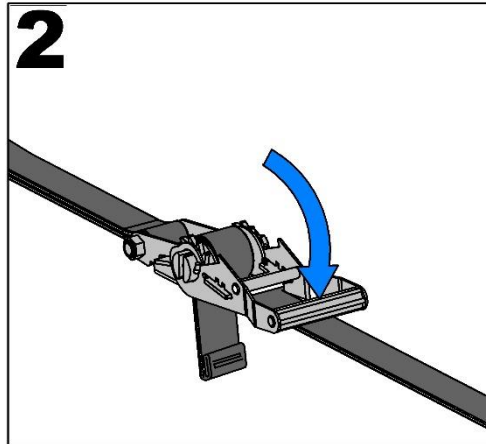
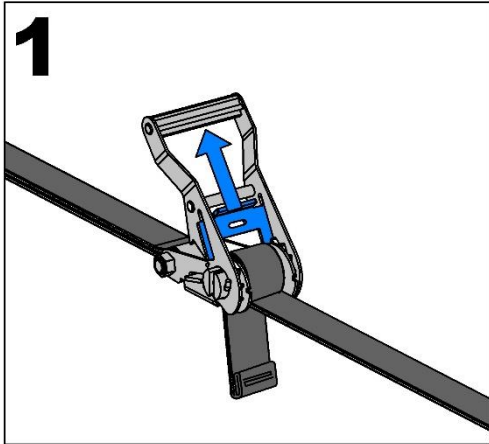


d) Make sure that there is enough free space below and connect your lanyard to the anchor line using a certified connector (EN 362)!

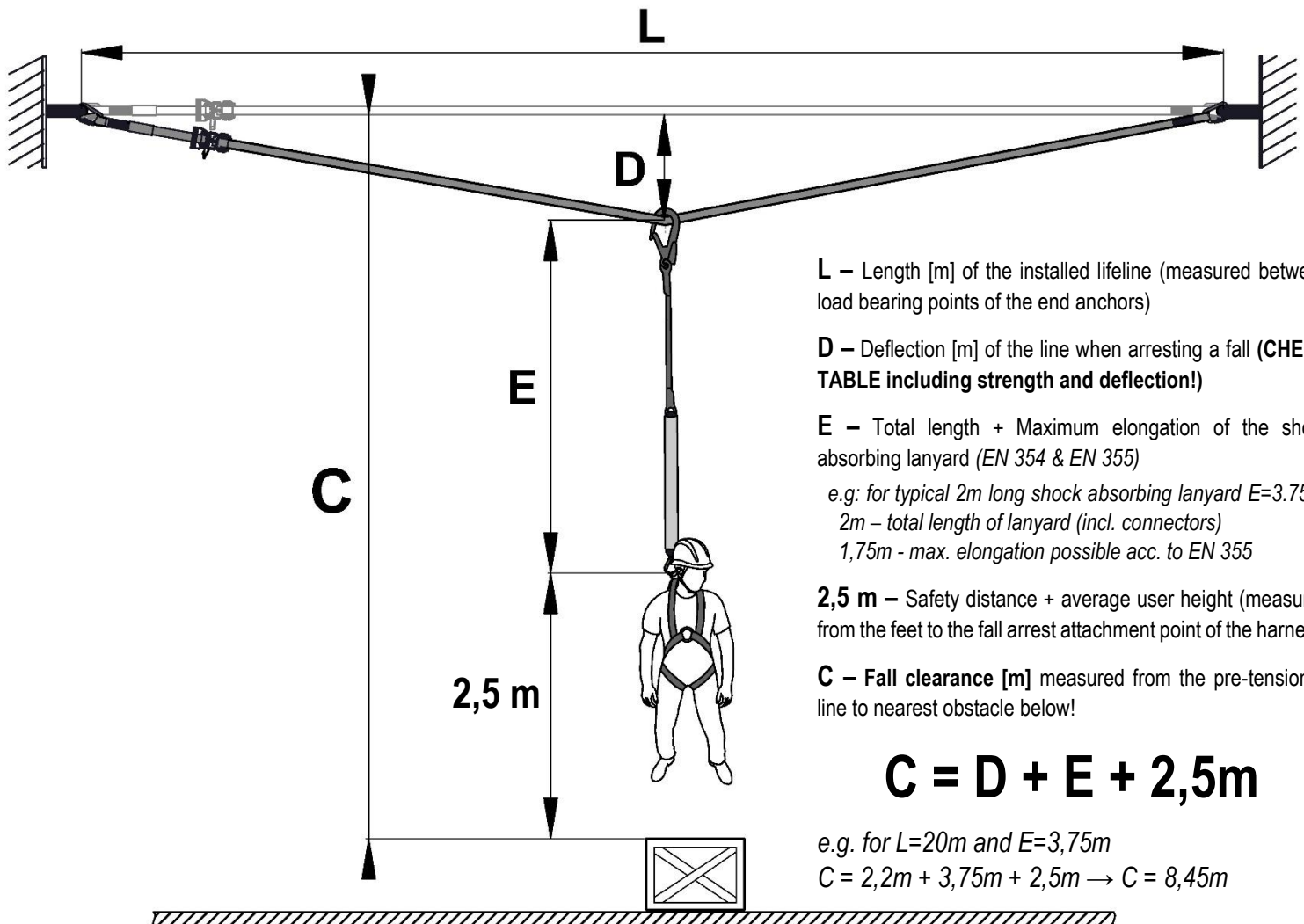


## REMOVING THE LIFELINE

To relieve the tension and remove the lifeline: slide the safety plate up and hold it (1) then set the ratchet to "OPEN" position, pushing down on the handle.



## FALL CLEARANCE!



**WARNING!** When using the flexible anchor line in a **fall arrest system**, it is very important for your safety to use a suitable **shock absorbing lanyard (EN 354 + EN 355)** which will keep the arising forces on the body **below 6 kN!** The shock absorbing lanyard will be connected accordingly, in between the flexible anchor line and the user's fall arrest harness (EN 361)!

**WARNING!** The anchor line is intended to deflect in the direction of loading! Pay special attention to this deformation and added length if in an emergency situation, it must be used as an anchor point in a **rescue system!** An additional (back-up) fall arrest system is required in this case, which will be attached to a separate fixed anchor point (eg: EN 795 type A)! Due to the deflection of the flexible anchor line it is **NOT** suitable for use in **rope access systems!**

**WARNING!** It is not allowed to use the flexible anchor line with a retractable fall arrester (EN 360) or with a guided type fall arrester (EN 353-2) due to potential dangers that may arise when the devices were not tested together!

**WARNING!** The maximum load that could be transmitted to the anchor structure is 19kN (for 2-3 persons working on a minimum allowed span of 3-5m). It is thus necessary to make sure that the structure has a proven load bearing capacity of at least 19 kN in all directions! It is recommended that at a **minimum of 22 kN** load bearing capacity is ensured in this case, for all possible directions of loading!

**WARNING!** **Considering the deflection of the line and the possibility to slide, pay special attention to the sharp edges that can come in contact with the flexible anchor line or with your connecting lanyard! Take all necessary precautions to avoid contact with sharp edges!**

**WARNING!** The user must make sure that all components of his fall arrest system are compatible and are used in a way which will not allow one component to interfere with the safe function of another!

Below some examples INCORRECT USES are presented. Note that these are the most encountered situations in use, but a full list of all possible incorrect uses cannot be covered by this manual!

!!! Do NOT EXTEND THE LENGTH of your flexible anchor line by using additional lanyards, slings or any other means or by connecting two flexible anchor lines together!

!!! Do NOT pass the main webbing over an anchor structure in order to create an anchor point (choke hitched connection)! Use a suitable anchor sling instead that is compatible and will provide the required strength!

**WARNING!** This product will be used only by trained and/or otherwise competent persons. Beginners will use it under direct supervision of such persons!

**WARNING!** The user must know the performances and also the limitations of his equipment before using it! In case of uncertainty regarding the equipment or its safe use, seek advice from the manufacturer or your qualified distributor.

**WARNING!** This equipment can be used only for its intended purpose! Do NOT assign other uses to your equipment and never push it beyond its limits!

**WARNING!** If the equipment was involved in a fall arrest incident or if there is any doubt regarding its condition DO NOT USE IT! Instead send it to the manufacturer or to an authorized representative of the manufacturer for a professional evaluation!

**WARNING!** Do not use the product for lifting or handling materials! Personal Protective Equipment against Falls should never be used as lifting equipment!

**WARNING!** It is strictly forbidden to expose your PPE to flames or extreme heat! Keep clear from hot and incandescent objects!

## RESCUE

A rescue plan must be made before starting the work at heights or depths! It is mandatory to set up and know the specific rescue plan for every situation and to have designated personnel and appropriate means of intervention! Perform a complete risk assessments for your sites and determine the safest and most efficient form of rescue!

**Repairs** or any other modifications can be performed only by the manufacturer! Any repairs, modifications or additions (even minor ones) performed by anyone else are strictly forbidden, lead to the loss of the manufacturers guarantee and any responsibility related to this product!

## PERIODIC INSPECTIONS AND CHECKS

The user must perform a visual and functional inspection of his equipment before and after each use! During use, it is important to monitor your equipment in order to identify possible damages inflicted in use, without being aware of it.

The equipment must be inspected periodically, **at least once every 12 months** or more often if required, depending on the working conditions and compulsory after every incident it has been involved in. The safety of users depends on the durability and continued efficiency of the equipment! Inspections can be carried out only by the manufacturer or by an authorized inspections center. **If the periodic inspections were not performed at least once every 12 months, were carried out by unqualified persons, or without strictly respecting the manufacturer's instructions, the warranty is lost and the manufacturer declines any responsibility related to the equipment!**

**NOTE: The label must be always present and readable!**

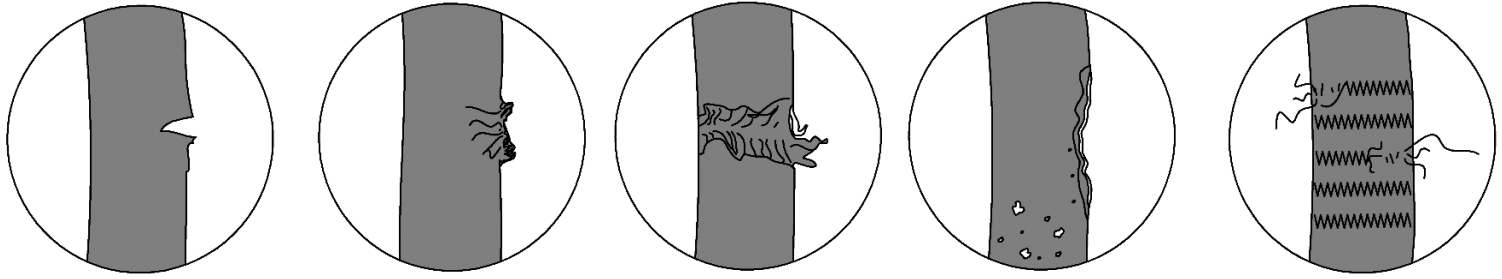
**NOTE: It is recommended to mark the anchor line with the date of the next inspection!**

**The equipment must be immediately removed from service if:**

1. The marking/label is missing or is unreadable.
2. **DAMAGE has been identified (incisions, cuts, tearing, abrasions, worn or broken seams, discoloration, hardened or thinned areas, burns, melted areas, rust, cracks, damaged rivets, bends, distortions and other deformations of the metal components) if any other abnormalities of the parts or structure have been found or if the product had suffered any changes compared to its original condition!**



Below some examples of damaged webbing and damaged seams are illustrated:



**3. FUNCTION TEST WAS FAILED! Manually test the ratchet mechanism to make sure that it works and locks properly! (e.g: when pulling the handle the locking plates of the ratchet are sliding and locking correctly, there are no missing springs or any other parts etc.)**

**In addition, check all connectors to make sure they are closing and locking properly!**

4. Contact with paints or unknown chemicals had occurred (irreversible contaminations).
5. The equipment was involved in a fall arrest or had been subjected to heavy loading.
6. The integrity of the equipment is questionable and the inspection log is incomplete or missing.
7. The equipment was in service longer than **10 years**.

## MARKING

The product is fitted with a label which located near the ratchet mechanism. The label contains the following elements and essential information: PPE type (**transportable flexible anchor line**), Name of the model (**RAINBOW X**), Maximum number of persons allowed for simultaneous use (**3 pers.**), Maximum length of the anchor line (**Length: ... m**), Product's serial number (**Serial No. 000000**), Manufacturing date (**Manufactured: mm/yyyy**), Standards/norms the product complies to (**EN 795:2012 and TS 16415:2013**), European CE marking with notified body number performing production control (**CE 2756**), International symbol for reading the instructions before use, Warning regarding the need to ensure suitable anchor points and sufficient free space below the work area, name of the manufacturer (**Manufacturer: VERTIQUAL ENGINEERING**), Address of manufacturer (**RO-547367 Corunca, Str. Calea Sighişoarei, Nr. 110**).

**NOTE: The label must be always present and readable!**

**The SERVICE LIFE** \* of PPE against falls, made of textile materials is 6-8 years under normal conditions, but a **maximum of 10 years** \* from the date of first use. The date of the first use must be noted in the logbook, otherwise the date of manufacture is considered as the date of the first use. **The storage** of new, unused products under optimal conditions (darkness, dryness, original packaging, constant temperature, without chemical vapors, etc.) should not exceed **2 years**. \* PPE that belongs to a single user, has not been used excessively and not often, has been subjected to regular checks by experts, has been found to be "safe" and recorded in the test book, has a complete product history, has not been involved in a fall, is carefully treated and cared for, have been stored in accordance with regulations, have not come into contact with oils, fats or aggressive chemicals, (attention - incomplete list) can remain in use for up to 10 years. Intensive use, heavy and demanding working conditions, incorrect application, incorrect maintenance and care can greatly reduce the service life of the equipment. Certain events, such as falls, high exposure to heat, exposure to corrosive chemicals, can limit the use of your equipment to a single time. A generally valid, binding statement about the duration of use of textile PPE cannot be made, as this depends on a large number of factors such as UV light exposure, working conditions, contact with various substances, etc. The service life of the equipment ends when one of the cases mentioned in the previous chapter occurs or when the inspector / certified expert decides this on the basis of other facts. The theoretical total service life of textile PPE against falls (Storage time + Service life) is limited to a maximum of 12 years from the date of manufacture.

## STORAGE, MAINTENANCE, TRANSPORT

The equipment should be stored in a dry, cool and well-ventilated room, if possible, in its original packaging. While in storage, this PPEaF must be protected from UV radiation, solar radiation, heat, sparks, incandescent metal splash, electricity, chemicals, sharp objects, heat sources, dust, cement, oils and greases or any kind of contaminants. If necessary, the textile parts can be cleaned using warm water (30°C) then rinsed. Drying the wet equipment will be made by hanging it in well-ventilated room away from any heat source. When fully dried, the equipment can be stored accordingly in its packaging (bag or box). Transport of the equipment must be made in its protective bag or box, away from any factor that could contaminate or inflict damage.

**Inspection Log:** Every PPEaF is delivered with an Inspection Log. This must be kept safely and sent along with the product for every inspection. The Log (table) contains important data regarding your equipment. The date, signature of the inspector and the results are also recorded. **The date of first use must be written in the Inspection Log by the user!**

## WARRANTY AND LIABILITY

The manufacturer offers a **24 month** warranty for this PPEaF from the date of first use. The user has the obligation to write the date of first use in the Inspection Log. If the date of first use was not filled in, the warranty period will be calculated from the manufacturing date. The warranty is applicable only for material or manufacturing defects! Damage resulting from normal wear and tear, corrosion, poor maintenance (or no maintenance at all), those resulted from carelessness, accidents, fall arrest, unauthorized repairs or modifications, wrong use of this PPEaF or any other reasons are NOT covered by the warranty! The warranty does NOT cover the springs of the carabiners as these can be damaged due to inadequate storage or improper use. Warranty claims only apply to the product. All claims by the user or any other party for the direct, indirect or any consequential damages resulting from the use of this PPEaF are excluded from guarantee and liability assumptions. Any claims in this regard are hereby expressly rejected. The user must be informed regarding the dangers of work at heights and depths. He should be aware of the risks and he has to be aware that he is the only responsible for eventual damage, accidents or even death which may result from the use of this equipment. If the user is unable to do so or if he does not have the competence to do so, he cannot use this PPEaF. VERTIQUAL Engineering SRL herewith rejects any liability claims for direct, indirect, accidental or consequential damages resulting from the use of this PPEaF (Personal Protective Equipment against Fall).

This products comply with the health and safety requirements and provisions of **European PPE Regulation (2016/425)** and the harmonized standard **EN 795:2012** requirements equivalent to **Type C anchor device for 1 user**.

Additionally, the product was tested and approved according to the provisions of **TS 16415:2013 Type C** as anchor device for use by **3 persons** simultaneously.

The **EU type examination** was carried out by NB 2927 (QUINTIN CERTIFICATIONS. Address: 825 route de Romans, 38160 Saint-Antoine-l'Abbaye, France). The **production control** is carried out by NB 2756 (INCDPM - The National Research and Development Institute for Occupational Safety-Bucharest) in relation with the harmonized standard **EN 795:2012**.

The **EU Declaration of Conformity** can be downloaded from our website [www.vertiqualsafety.com](http://www.vertiqualsafety.com) by accessing the product's dedicated section.

