

# EN Forcer

Rope Access Back-Up Device  
ANSI/ASSE Z359.1-2007 - CE 0120 EN 12841 Type A

## WARNING

All users must read and understand this manual before use. This product must only be used by persons who are trained and competent in its use as part of a double rope access system. Users accept all risks and responsibilities for all damage, injury or death during all rope access activities involving the use of this product. If users are not able to accept full responsibility or all risks involved they should not use this product. All users must be competent in emergency procedures and rescue methods associated with the use of this device. These are detailed in the 'Deployment' section of these instructions. Users should take great care that hair, fingers, clothing or other items do not become entangled with the **EN Forcer**. DO NOT allow anything to affect the proper function of the device.

Do not use the device for any other purpose.

## INDIVIDUALLY TESTED



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## 6 - STAGES OF INSTALLATION

1. Push the cam through the device body to the opposite side. Temporary attachment of the lanyard karabiner helps to prevent dropping the device.

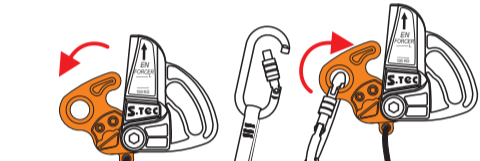


FIG 01

2. Attach the device on to the rope with the Orientation Arrow pointing in the direction of the rope's anchor.  
3. Remove the lanyard karabiner and allow the cam to return through the device body.  
4. Attach the lanyard karabiner to the connection point, check that the karabiner gate is fully closed and locked.

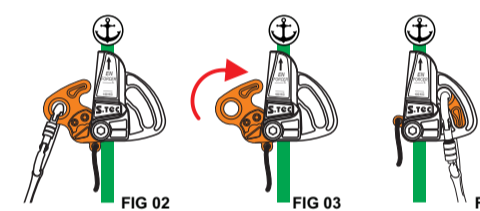
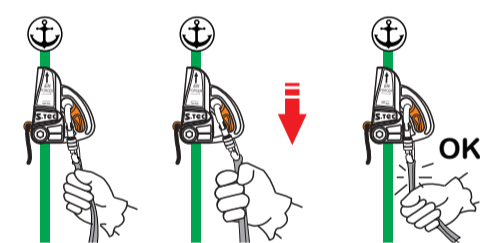


FIG 02

FIG 03

FIG 04

## 7 - OPERATIONAL CHECK - FUNCTION TEST



Move the device along the rope and check that it stays in position, then pull down vigorously using the lanyard or cows-tail to verify that the device locks on to the rope.

To maintain good spring action ensure that cam spring is lubricated regularly. See section 16.

## 13 - CLEARANCE DISTANCE

### ROPE STRETCH



## 14 - EXAMPLE BASED ON 10% ELONGATION

Additionally uncontrolled downward movement will occur due to the elongation of the Back-Up Rope during loading. This should be assessed for the particular rope being used but a minimum of 10% elongation should be expected.

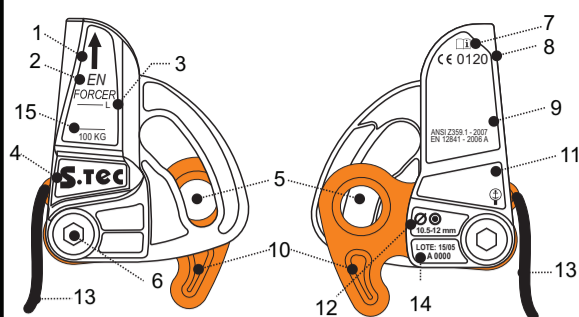
The amount of elongation will depend on several factors including:  
I. Elongation Properties of the particular rope used;  
II. Length of rope between the **EN Forcer** and the rope anchorage;  
III. Knot tightening;  
IV. Weight of user;  
V. Amount of slack in cows-tails/lanyards;  
VI. All other factors that must be determined by the user;

On long ropes the elongation will be many meters.

**Clearance** - The clearance distance must be carefully assessed for all situations. At work positions when the device is positioned high and there is less than 10cm slack in the Lanyard or Cows-tail there will be very little slippage (e.g. a 100kg user less than 20cm). Additional slackness in the connecting lanyard increase slippage.

$C = D \times 10\% + 2m$

## 1 - PARTS & MARKING



Requires a round section Locking Karabiner to connect to the harness. (Not supplied).  
Oval shaped karabiners with a 10mm are recommended.  
Users must check for the proper function of cam with selected Karabiner before use to verify suitability.  
Do not use if karabiners affected cam function.

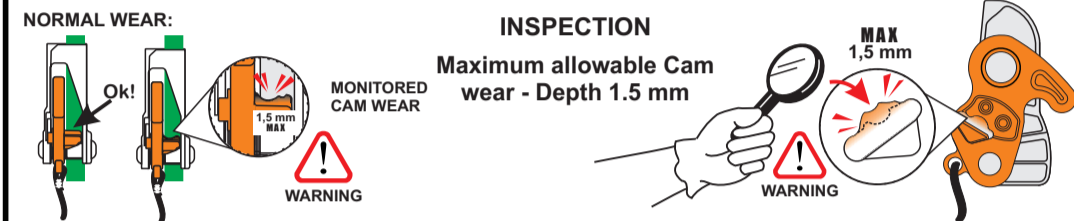
Rope Diameter: 10.5 - 12 mm  
Rope Type: EN1891:1998 Type A  
Serial Number: E.g. 15 05-A 0000  
15 - Year 2012  
05 - Month - May  
A 0000 - Unique Item Serial N°

305g / 13.8 oz

**Field of Application:** The EN Forcer has been tested in the UK by SGS to the requirements of EN 12841:2006 Type A - Rope Adjustment Device. Tests were carried out using EN1891 Type A Low Stretch Ropes: Mammut Performance Static 10.5 & 11mm and Beal Industrie 10.5mm & 11mm. Other ropes have provided excellent results - check all different ropes prior to use. To be used in conjunction with EN 12841 Type C or B device. Terms: 'Back-Up Rope' is used to describe the 'Safety Line' as termed in EN 12841 2006. 'User' refers to individuals or persons selecting this device for use. The device has also been tested to Brazilian Standard: NBR 14626:2010 by IFBQ (Falcão Bauer Quality Institute) accredited in Brazil by INMETRO with code OCP 0003.

## 2 - INSPECTION

This **EN Forcer** must be inspected prior to each use. This inspection should check for any corrosion, cracks, evidence of abrasion, deformation, loose bolt or missing components together with full function test and markings are clear and readable. In addition to pre-use checks a regular detailed examination should be carried out by and recorded by an authorized competent person at suitable periods, these should be at no more than six months intervals. Following any emergency loading, incident or droppage **EN Forcer** must be removed from service for examination. If users or inspectors are not 100% confident that the **EN Forcer** is fit for use, it must be removed from service. Devices passing inspection should only be re-used once written records are completed.

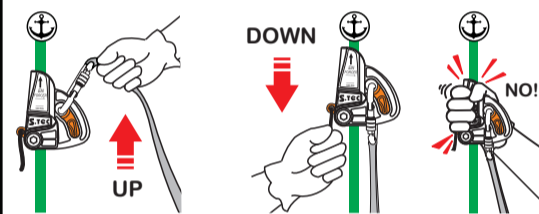


## 8 - POSITIONING

At all times that the user is stationary the **EN Forcer** should be positioned as high as possible. The **EN Forcer** must always be above the descender or chest ascender and never below its lanyard/cows-tail attachment point (FF1)

### Ascent

To move the **EN Forcer** up the rope by holding the lanyard or karabiner - do not hold the device.



### Descent:

The **EN Forcer** backup device is fitted with a Positioning cord. Users must always perform full function checks of both their descent device and **EN Forcer** before each descent.  
To move the **EN Forcer** down, pull the Positioning cord down using the index finger and thumb. Users should only hold the positioning cord for as short a period as necessary and ensure that they are prepared to let go of the Positioning cord immediately at all times.

In many applications the **EN Forcer** should be controlled independently of the descent device, in others it may be necessary to control both **EN Forcer** and descent device simultaneously. It is the responsibility of the user to carry out a risk assessment and determine which method is best for their operational activity and environment.

### WARNING

If users keep hold of Positioning Cord the device will not function. Users must release their hold of the Cord immediately if anything unexpected occurs. At all times users must check that the lanyard is not caught on obstacles and that it will not come in to contact with sharp edges, heat, tools or any other source of damage.

## 15 - DEPLOYMENT

### WARNING

The body of the **EN Forcer** must NOT be squeezed or the Cord be pulled with more than the index finger and thumb to de-weight a loaded or partially loaded **EN Forcer**.

### Accidental Deployment

It is essential that all users are competent in the techniques required to overcome accidental loading. If accidental loading occurs during ascent, first check the ascent equipment, then continue ascending until the **EN Forcer** is no longer under any loading. If loading occurs during descent, first check the descent equipment, then use techniques to complete a short ascent of the Working Rope until the **EN Forcer** is no longer under any loading. Any other accidental loading should be assessed and appropriate methods used to overcome the loading. At all times two safety systems must be in place.

### Emergency Deployment

If failure of the Working system e.g. Working Rope failure or user detachment from the Working Rope, occurs and the user becomes suspended on the Back-up Rope, the user and work colleagues must consider the planned procedural options available with regard to all factors of the actual event.

These options may include amongst others:

- The deployment and use of a new Working Rope.
- The rescue by a colleague using new ropes.
- The use of the Back-up Rope to attach escape equipment (descender or ascenders) for the user to evacuate on the single Back-up Rope.
- Other techniques undertaken by competent persons.

All emergency actions should only be carried out following a risk assessment of the situation. During emergency deployment of the Back-up system any downward movement of the user will be determined by several factors: back-up rope stretch, cows-tail stretch, knot tightening and device slippage. With the exception of very minor glazing a properly used **EN Forcer** will lock on to the Back-Up Rope without causing any damage to itself, lanyard, karabiners or the Back-Up Rope. Following any Emergency Deployment all equipment must be removed from service for inspection by a competent person.

## PARTS

- Body with Orientation Arrow pointing to Rope anchor.
- Model Name
- Model L - Aluminum Cam / H - Steel Cam
- Manufacturer's Logo
- Connection Point
- Bolt
- Read User manual instructions
- CE marking
- Standards
- Cam
- Only use the correct line
- Rope Type Ø 11 mm (Shell+Core)
- Positioning Cord
- Serial Number
- Max Load

Rope: 10.5 - 12mm  
EN 1891:1998 Type A

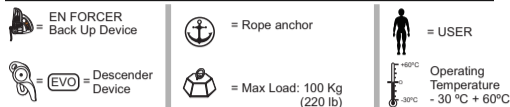
## MATERIALS

The Safetec **EN FORCER** is available with either Aluminium Cam or Stainless Cam. The Cam colour identifies the model: Aluminium Cam Model has a Orange anodised Cam, the Stainless Steel Cam Model has a Silver Cam.

### Materials

Body - Stainless Steel Silver / Cam Orange - Aluminium / Cam Silver  
Stainless Steel / Spring - Stainless Steel / Cord - Nylon / Axis - Stainless Steel / Bolts - Stainless Steel.

## LEGENDS



## 3 - TERMS

'Back-Up Rope' is used to describe the 'Safety Line' as termed in EN 12841 2006. 'Device' is used in place of the product name. 'User' refers to individuals or persons selecting this device for use.

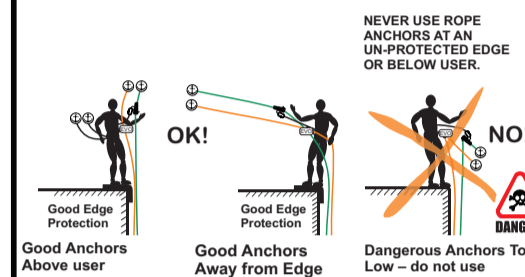
## 4 - COMPATIBILITY

**Lanyard:** It is recommended that an EN354 lanyards up to 60cm long.  
**Cows-tail:** Connection may be made using a dynamic climbing rope with suitable terminations, attached to either ventral (waist) or sternal (chest) points. Recommended length: waist <80cm, chest <50cm. Further information provided in section 22.  
**Harness:** Front attachment point of an EN361 2002 or EN813 2008 harness.  
**Connectors:** EN 362 2004 Connector - Locking Karabiner.  
**Ropes:** The type of rope and its condition will greatly affect the dynamic designed slippage of the device. Factors include: manufacturer's coatings, weave pattern and tightness, wear from use, contaminants\* Safetec recommend that 11mm ropes are used for most applications and that users assess performance prior to use. Rock Engineering (Geo) and other 'dirty' operation will often cause 10.5mm due to working conditions increasing friction on devices. \*Abrasive contaminants - grit and dirt will provide more rapid braking whilst grease may increase slippage beyond acceptable.  
The **EN Forcer** is a non-aggressive device and during correct operational use it will not damage ropes. In emergency deployment (see 'Deployment' section) with the exception of very minor glazing a properly used **EN Forcer** will lock on to the Back-Up rope without causing serious damage to itself, its lanyard, karabiners or to the rope. The user is responsible for ensuring the combination of all components in the rope access system do not adversely affect the performance of any item with due regard to all user instruction.  
**Gloves:** the use of suitable work gloves is recommended.

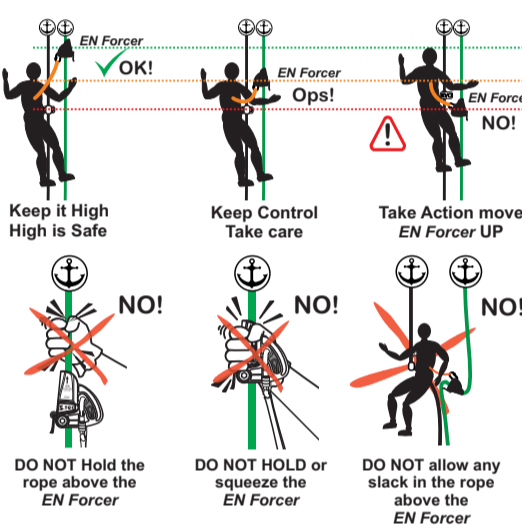
## 5 - INSTALLATION

Always install the **EN Forcer** from a position safety or when two additional safety systems are in place.

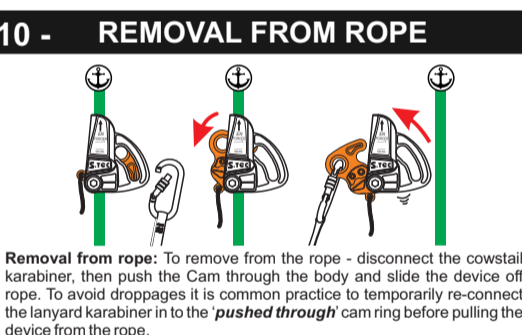
Working Rope Anchor Min 15 Kn Back-Up Rope Anchor Min 15 Kn



## 9 - OPTIMUM POSITION



## 10 - REMOVAL FROM ROPE

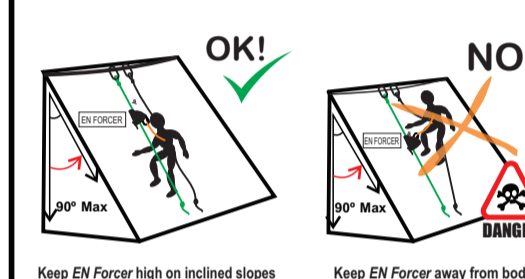


**Removal from rope:** To remove from the rope - disconnect the cowstail karabiner, then push the Cam through the body and slide the device off rope. To avoid droppages it is common practice to temporarily re-connect the lanyard karabiner in to the 'pushed through' cam ring before pulling the device from the rope.

### WARNING

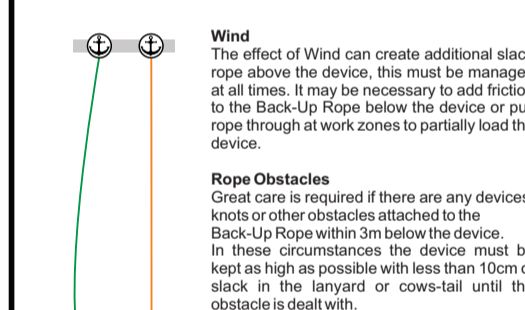
Never leave the **EN Forcer** on a rope with the karabiner attached to the Cam when it is pushed through the body.

## 11 - SLOPING SURFACES



Ensure that nothing will affect the function of the **EN Forcer**. Keep the device high and to one side. Devices trapped between sloping surfaces and the user (or anything else) may not function properly.

## 12 - WIND & OBSTACLES



**Wind**  
The effect of Wind can create additional slack rope above the device, this must be managed at all times. It may be necessary to add friction to the Back-Up Rope below the device or pull rope through at work zones to partially load the device.  
**Rope Obstacles**  
Great care is required if there are any devices, knots or other obstacles attached to the Back-Up Rope within 3m below the device. In these circumstances the device must be kept as high as possible with less than 10cm of slack in the lanyard or cows-tail until the obstacle is dealt with.

PAY ATTENTION TO WIND SPEED.

## 16 - GENERAL INFORMATION

**Rope Condition:** wear, wetness and contaminants will affect the performance of the **EN Forcer**. Some rope conditions will make positioning of the **EN Forcer** more difficult. Others e.g. oil & grease will affect the device's ability to perform - Back-Up may not be provided. The effective operation of the **EN Forcer** should be monitored and checked in all conditions. Where any performance doubt exists, the **EN Forcer** should not be used.  
**Sea Water:** it is essential that this **EN Forcer** is cleaned as soon as practicable after each exposure to sea water or saline environment.

**Chemical reagent:** avoid contact with any substance or material that may cause corrosion or other damage to the device. If contact occurs consult expert advice as to damage and cleaning requirements. Inspect prior to any re-use.

**Maintenance:** the **EN Forcer** is not user maintainable with the exception of disinfection, cleaning and lubrication as detailed below.

**Disinfection:** following any contamination the source of the contamination should be determined and advice obtained as to suitable disinfecting procedure. After disinfection the device should be re-cleaned. Sterilisation may be required.

**Cleaning:** If soiled rinse in clean warm water of domestic supply quality (maximum temperature 40°C) with mild detergent at appropriate dilution (pH range 5.5 - 8.5). Dry naturally away from direct heat sources. To remove grease use a detergent that has properties that do not affect the metal spring, body, cam or nylon cord.

**Lubrication:** It is essential to maintain lubrication of the Cam spring. Lubricate regularly and after cleaning with light machine oil or teflon or silicone lubricant to ensure free movement of the cam. Wipe off the excess to avoid contamination of ropes and textile equip.

**Lifespan:** it is very difficult to define the safe lifespan due to varying use and storage conditions and may be as little as one use, or even earlier if damaged (e.g. in transit or storage) prior to first use. For the product to remain in service it must pass a visual and tactile examination. Maximum lifespan: 10 years from 1st use. Maximum Cam wear 1.5mm.

**Obsolescence:** this device may become obsolete before the end of its lifespan. Reasons for this may include changes in applicable standards, regulations, legislation, development of new techniques, incompatibility with other equipment etc.

**Transportation & Storage:** after cleaning store unpacked in a cool, dry, dark place in a chemically neutral environment away from excessive heat or heat sources, high humidity, sharp edges, corrosives or other possible causes of damage.

Do not store wet.



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### 17 - POSITIONING CORD

X = max length of cord

**WARNING!**

A positioning cord is factory fitted. If this becomes damaged or worn it can be replaced using cord. If 4mm cord is used it must be no longer than 40mm, 3mm cord must be no longer than 50mm. The only knot used must be to secure it tightly to the attachment point.

### 19- FURTHER INFORMATION ON MARKING

Read Manual

- CE - Notified body ANSI Z359.1-2007
- EN 12841 - 2006 A Standard - Personal fall protection equipment rope access adjustment device
- Rope type - EN1891:1998 Type A
- Rope diameter 10.5mm - 11 mm

15/05 - A 0000

Individual Nº

Month

Year

**ATTENTION:** If marking with users identification care must be taken to ensure that full function is maintained and the device is not damaged.

### 18- FURTHER INFORMATION ON MARKING

EC Type-examination for Directive 89/686/EEC by Notified body number 0120: SGS United Kingdom Ltd, Weston-Super-Mare, BS226WA, United Kingdom. Each *EN Forcer* is individually numbered and inspected. SAFE TEC INDUSTRIA do not recommend any user marking that affects the surface material or operational function. For engraving information contact Safe Tec.

Orientation of device pointing to rope anchor.

Model name

MODEL REFERENCE (L - Aluminum Cam) (H - Steel Cam)

Max Load

Manufacturer's Branding S.Tec

### 20 - RESPONSIBILITIES

This product is guaranteed for 3 years against manufacturing faults. This excludes normal wear during use, corrosion due to incorrect storage, lack of maintenance or incorrect use. Uses outside those outlined in these instructions together with negligence or miss-use are also excluded. Safe Tec Industria accepts no responsibility for the selection of this device for user applications or any consequences resulting from the use of this device. No alterations or additions are to be undertaken without the prior written consent of Safe Tec Industria. For more informations of our latest version go to:

[www.safetecbr.com.br](http://www.safetecbr.com.br)

### 21 - RECORD OF USE

**EN Forcer**

Device	Stec - EN Forcer
Supplier	
Serial Number	
1 <sup>st</sup> Use	Expiry
Acquisition date	
User Traceability	

Record of Use and Periodic Examinations  
Users should record details of use.  
Maximum period between Periodic Examinations is 6 months

Date	User or Examiner	Details of Use-or Result of examination

Duplicate this sheet for continued recording. Contact Safe Tec for further information.

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### 22 - FURTHER INFORMATION

Lanyard and Cows-tail Lengths (information additional to section 4).

Safe Tec acknowledge that the *EN Forcer* has successfully passed the EN12841A Fall Factor 2 (FF2) test with a 1m dynamic rope cows-tail, but do not advise or recommend its use in FF2 situations. SafeTec do not recommend 1m cows-tails. SafeTec recommend use in situations with no more than FF1. See sections 8 & 9.

FF1 tests with 1m cows-tails produce lower impact forces and considerably less slippage than the maximum allowed by EN12841A. If users choose to use a 1m cowstail, a risk assessment should be completed and control measures must include the requirement for users to keep Fall Factors below FF1.

SafeTec do not recommend 1m costails in normal use. If users choose to use a cowstail of a different length to that recommended in this user manual; a full risk assesment shall be required and the user accept responsibility for the back-up provided.

The use of Lanyards/Cows-tails of lengths or material different to those recommended should be assessed for compatability and allow proper function of the *EN Forcer* following a risk assessment sopecific for the intended use.

All users must be aware of, and pay attention to all factors associated with slack in cows-tails or lanyards: rope elongation/stretch, clearance, entanglement and any other factor/s affecting the safety of users and the performance of the EN FORCER.

All users should ensure optimal positioning of the *EN Forcer* during all use as detailed in section 9.

## EN FORCER

### Additional Applications and Information

**Other Users:** The *EN Forcer* has been used for applications that are outside the scope of EN 12841A and the CE mark attached to each device. Some uses are illustrated here, these and any other uses must be undertaken by persons who understand the dangers and limitations of rope systems. The design of systems, planning and verification of system suitability for the specific intended applications is the responsibility of the user, all anchorages must be suitable for any load. Competence is required for all applications, additional safety measures must be implemented during training exercises, this must include the close supervision by competent instructor. Users must consider all sections of the user manual with special attention to the **Positioning Warning** and the information detailing **Clearance Distance** and **Rope Stretch** considerations and limitations. All installed devices should be independently function checked with suitable back-up in place prior to any rope operations.

### ON-ROPE RESCUE:

Rescues should be planned and generally designed to limit the exposure of rescue team members.

On-Rope Rescue should only be undertaken if the casualty is in urgent need of medical attention that requires evacuation. Additional training and competence is required for all persons performing rescues.

During all On-Rope Rescues the *EN Forcer* must be kept above the shoulder height of both the rescuer and casualty.

Where practicable Safe Tec recommend that one *EN Forcer* be used for each person, each on its own rope and each controlled independently of the descent device.

Users must consider all factors affecting *EN Forcer* performance including obstacles, additional rope elongation and increase clearance requirements as well as all other sections in the user manual.

**LOADS OVER 200 Kgf**

Loads over 200 kg use 2 X descending devices. Safe Tec recommnd the use of 1 X *EN Forcer* during these rescues and where possible this should be on a third rope system. Always follow the user instructions for descent devices.

Weight	Fall Factor (FF)	Slippage	Force
100 kg	FF ZERO	Less than 3 cm	less than 2.5 kN
	FF 0.5	Less than 37 cm	less than 4 kN
200 kg	FF ZERO	Less than 7 cm	less than 3.5 kN
	FF 0.5	Less than 80 cm	less than 5 kN
100 kg	FF 1	Less than 50 cm	less than 5 kN
	FF 2	Less than 130 cm	less than 5 kN
200 kg	FF 1	Less than 130 m	less than 5 kN
	FF 2	Less than 650 cm	less than 5 kN

FF ZERO: No slack in cows-tail or lanyard

FF 0.5: EN FORCER positioned half its maximum distance above connection point - 50% slack in cow-tail or lanyard

FF 1: EN FORCER level with cow-tail connection point

FF 2: EN FORCER below connection point by the full length of its connecting cows-tail/ lanyard.

The *EN Forcer* has successfully been tested by the manufacture to with loads of 200 kg. This testing is designed to replicate rescue techniques and requirements with limited lanyard lengths and limited Fall Factors. The testing produced provided consistent performance.

**Green**  
Safe Tec recommend that all users aim for FF0 during all work positioning and as near to FF0 during ascent and descent and other repositioning techniques. Al ways have the minimum salack in the connecting cowstail.

**Orange**  
Take extra care-up - reposition the *EN Forcer* as soon as possible. In this Zone the devices wold only give protection if there is sufficient clearance to avoid contact with any obstacles or surfaces having allowed for both elongation and slippage.

**RED is Dangerous**  
Safe Tec do not suggest, condone or accept the use of the *EN Forcer* in FF2.

Indicative results above, using 11 mm EN 1891A Semi-Static Rope.  
Rope stretch (elongation) must always be allowed for.  
See sections 13 & 14 in this User Manual.

### TENSION SYSTEM

The use of the *EN Forcer* to anchor one end of a tensioned rope will provide an absorbing system, this will allow the rope to slip in the event of any overloading. Competent and trained persons who choose the *EN Forcer* as part of a planned tension system must ensure that the loadings are within the capabilities of all components of the tension system - tensioned ropes greatly increase the load on anchorages, Safe Tec recommend a minimum of 30kN for the combined strength of all anchorages used for tensioned systems. Users must consider all other sections of this manual with special attention to the **Positioning Warning** and the information detailing **Clearance Distance** and **Rope Stretch** considerations and limitations. Safe Tec recommend that two simultaneously loaded tensioned ropes are the preferred choice in all Tension Systems.

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### ON-ROPE RESCUE:

Nothing should affect the proper function of the *EN Forcer* in the event of any emergency loading. During use as a Back-up for a Hauling or Lowering System the Back-up rope must be attended to constantly and no more than 20 cm of slack be allowed in the back-up rope, before repositioning the *EN Forcer*. Safe Tec recommend tha the *EN Forcer* is controlled by its own attendant so that optimum positioning can be maintained at all times.

Safe Tec recommend that two tensioned (equally loaded) ropes are the preferred choice in all **Hauling and Lowering Systems** - both ropes being hauled or lowered simultaneously and sharing the load. More than one person maybe required to operate Hauling or Lowering Systems

**LOWERING EXAMPLE**

**HAULING EXAMPLE**

### ADJUSTABLE RESTRAINT

The *EN Forcer* can be used as part of a planned restraint system of sufficient strength for any potential loading. The length of available rope including *EN Forcer* Lanyard must be shorter than the distance from its anchorage to any exposed edge or potential fall danger zone. Where users are required to partially or fully load the system in any danger zone (e.g. to provide support or partial support) a second system must be in place prior to any loading.

Use on Vertical ropes. The *EN Forcer* can be used as part of a safety system attached to a fixed rope. The top anchorage for the rope must be a minimum of 15 kN. The system must be verified prior to use and the user must follow the positioning methods especified in section 8 of this document.

### FIXED ROPE

Use on fixed ropes. The *EN Forcer* can be used as part of a safety system attached to a fixed rope. The top anchorage for the rope must be a minimum of 15kN. The bottom of the rope must be either secured (not highly tensioned) or be weighted to allow the *EN Forcer* to move freely. Recommended attachment is to the Harness Sternal (chest) point using a 50 cm lanyard . The system must be verified prior to use and the user must follow the positionning methods specified in the positioning section of this manual.

**WARNING**

Use on a loaded or pre-tensioned rope:  
The *EN Forcer* is designed to be used on an unloaded untensioned ropes as required in EN12841. The performance on a rope that has been deliberately tensioned must be verified prior to use. If during a rescue (or rescue training) a casualties ropes are to be used for access to the casualty; the performance of both the rescuers and the casualties back-up and main working systems must be assessed and performance verified prior to starting rescue access. Additional safety measures will normally be required, including additional training and equipment. For rescue training additional ropes and/or safety attachments is best practice.