

ACX

POWER ASCENDER

User manual

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**HAND-BUILT
IN SWEDEN**

DISCLAIMER

WARNING

Training and experience are required to lower the risk of serious bodily injury or death.

This user's manual provides general information about safe operation and risks associated with the use of the ActSafe ACX Power Ascender. It also gives details of maintenance procedures.

Never use the equipment unless you have read and understood this manual and completed an ActSafe approved training in the use of the power ascender system. ActSafe Systems AB, our partners and subsidiaries, disclaim any liability for damages, injuries or death resulting from the use of the equipment which is not in compliance with this manual.

This manual may be updated without notice.

For more information about updates and safety warnings, visit **www.actsafe.se**



Failure to read and follow the instructions within this manual may result in fire, damage to property, personal injury or death.

FOREWORD

Thank you for choosing the ActSafe ACX Ascender from ActSafe Systems.

This Ascender has been designed as an ultra-portable and versatile lifting tool for lifting people or equipment in a safe and effective way. It revolutionises working in a vertical environment.

BE AWARE:
A Power Ascender is a hi-tech tool
and should be treated with care.

A

INTRODUCTION

About ActSafe	A.01
About this manual	A.02
Definitions	A.03

A

We are completely committed to our customers and do our utmost to deliver top quality products and service.



A.01 ABOUT ACTSAFE

ActSafe is a pioneer in developing powered rope ascenders and has been delivering high-performance equipment since 1997.

ActSafe has a worldwide distribution network of dedicated experts selling our innovative products to a wide variety of users. Our Power Ascenders have been successfully used for installing fireworks at the top of the Eiffel Tower, hostage rescue from pirates at sea and providing essential logistical support in offshore wind turbines.

ActSafe products are redefining the possibilities for work in vertical environments.

A.02 ABOUT THIS MANUAL

This manual gives detailed information on features and safety. However, this manual cannot replace the need for training and experience. The Ascender must only be used by operators who have undergone the ActSafe-approved training.

Safety messages of extra importance are highlighted throughout this manual using the signals 'danger', 'caution', 'recommendation' and 'note':



DANGER

Not following instructions or training methods may result in **SERIOUS BODILY INJURY** or **DEATH**.



CAUTION

Not following instructions or training methods may result in **BODILY INJURY**, or **DAMAGE TO PROPERTY**.



RECOMMENDATION

Instructions and tips on how best to use the Ascender.



Note

Important information on the use of the equipment used with the Ascender.

A.03 DEFINITIONS

Active/loaded rope

Loaded end of the work-positioning rope system.

Anchor

Attachment point for rope or Ascender.

Ascending

Moving up the rope.

Backup system

A rope system which captures the load in case of primary rope failure. Approved according to backup system requirements.

Competent Person

Operator with adequate training, experience and certification.

Descending

Moving down the rope.

Passive/dead rope

Unloaded end of the work-positioning rope system.

Primary rope

Work rope system used with Ascender. Rope must be 11 mm and approved according to *EN1891 A* or be an ActSafe Equipment Lifting Rope depending on the application.

User/operator

Operator of the Ascender, either by the Throttle or by the Remote Control.

Safety Factor

The Safety Factor of equipment is the ratio between the breaking strength and the Safe Working Load (SWL).

Secondary rope

See 'Backup system'.

SWL

Safe Working Load. The maximum load (as certified by a competent person) that an item of lifting equipment may raise, lower or suspend under particular service conditions.

WLL

Working Load Limit. The maximum load that an item of lifting equipment is designed to raise, lower or suspend.

B

PRODUCT SAFETY & SYSTEM DESCRIPTION

Product safety	B.01
Usage exclusions	B.02
System description	B.03
Rope mechanism	B.04

B

B.01 PRODUCT SAFETY



ActSafe Ascender operators must, before first use, have undergone training in the safe use of the Ascender by either ActSafe Systems AB or by an ActSafe-approved training partner or ActSafe distributor.

The ActSafe Ascender must be checked before and after every use by a Competent Person and must undergo a minimum of one inspection per year by ActSafe Systems AB or an ActSafe-authorized person. More frequent inspections may be required by your national regulations.

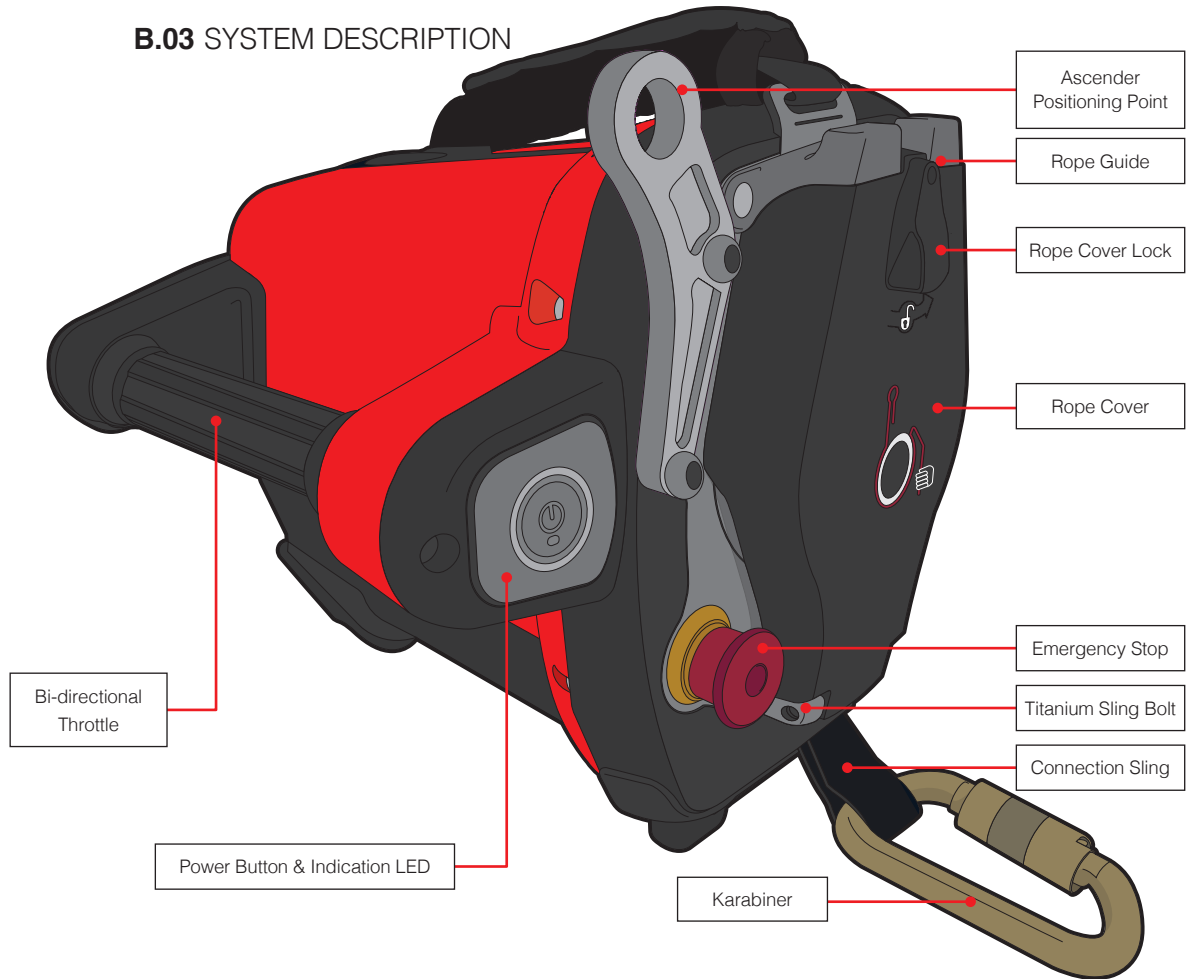
B.02 THE ASCENDER **MUST NOT BE USED:**

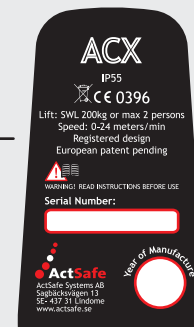
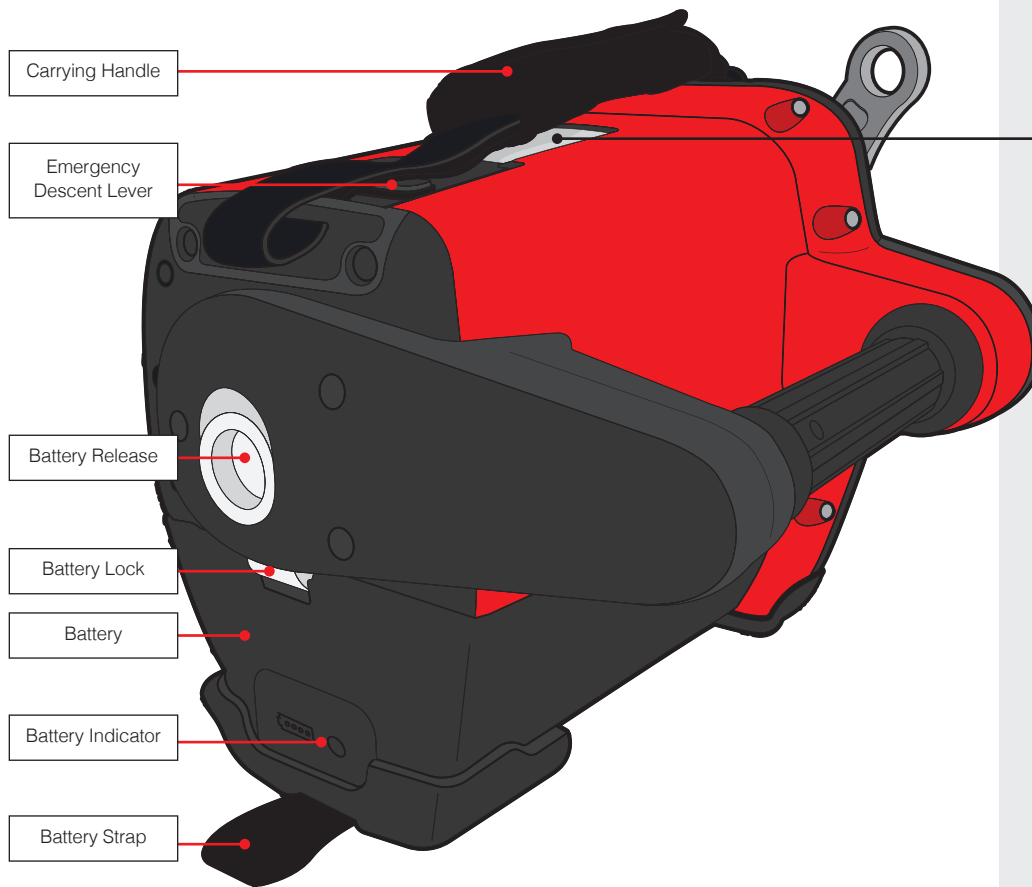


- » For any purpose other than that for which it has been designed
- » In an explosive environment
- » If modified in any way by anyone other than ActSafe Systems
- » After a free fall from a height of more than 0.5 m or any other severe impact onto a hard surface
- » If subjected to misuse in any way so that parts or components might have been damaged
- » The Ascender system should not be exposed to high impact forces caused by people or loads falling into the system
- » With any battery other than the designated ACX ActSafe battery
- » With any other battery charger than an ActSafe Battery Charger
- » With a damaged or modified ActSafe Battery Charger
- » If the operator is unsure of how to use the Ascender safely
- » If you are tired, ill, using prescription medication that prevents you from using machinery, or under the influence of alcohol and/or drugs.
- » Without having performed a pre-use check

B

B.03 SYSTEM DESCRIPTION



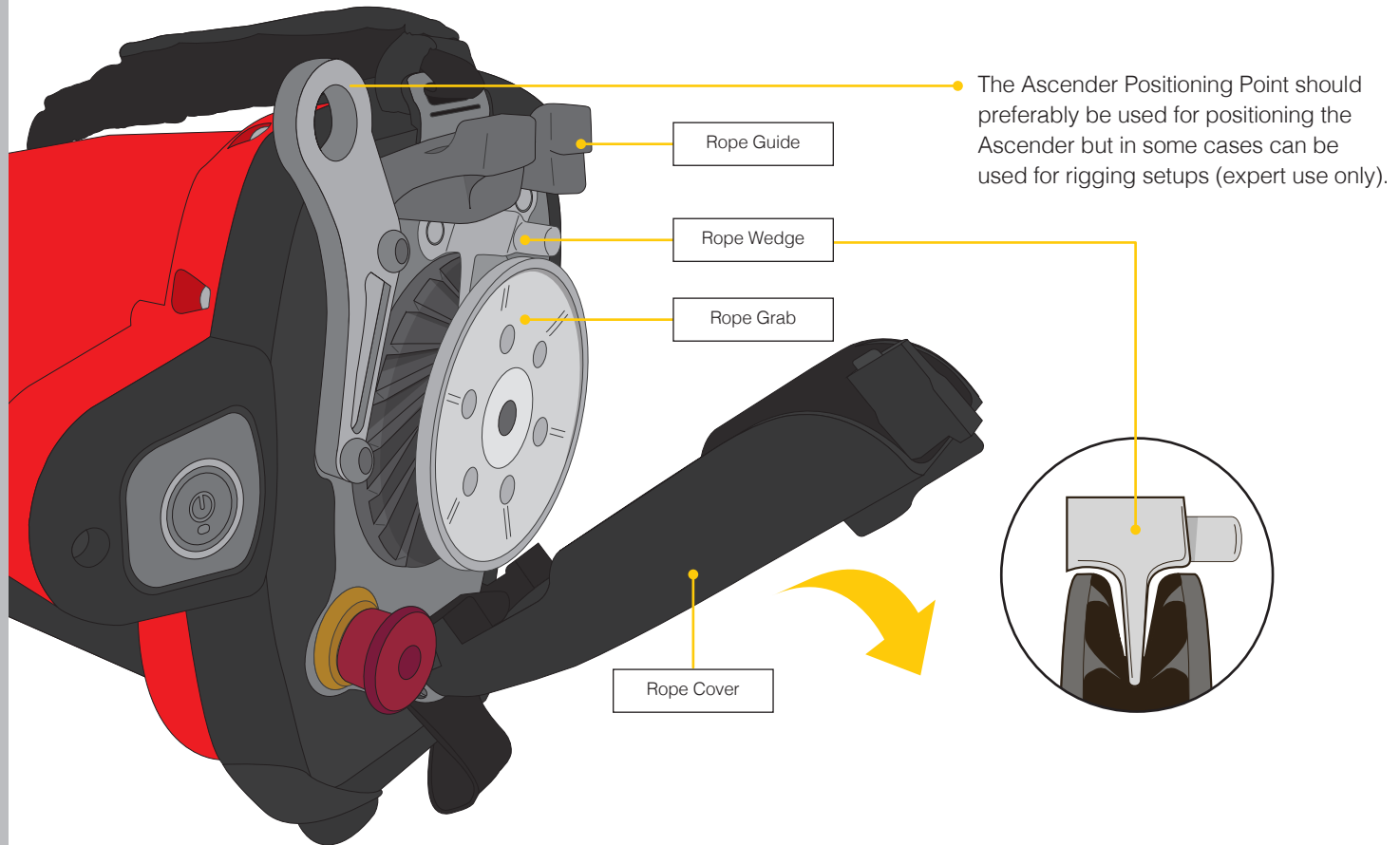


Machine Rating label

The Ascender is supplied with a machine label attached to the housing. This label must not be removed!

The ACX Ascender is approved under the machinery directive 2006/42/EC and for lifting both people and equipment with a Safe Working Load of 200 kg.

B.04 ROPE MECHANISM



C

ROPE

Rope type
and preparation

C.01

C

The correct choice of rope type depends on whether the Ascender is being used to lift or lower equipment or personnel.

Check with your ActSafe supplier to determine which rope is the most suitable to use.

C.01 ROPE TYPE AND PREPARATION

Rope recommendations

Rope recommendations for the ACX Ascender depend on the type of application, whether personnel or equipment lifting.

Equipment lifting

The ActSafe Equipment Lifting Rope (ELR) is the only approved rope to be used in the equipment lifting system and can be ordered at ActSafe or your ActSafe distributor.

Personnel lifting

EN1891 A 11 mm low stretch kernmantle rope of a solid construction. Soft ropes have the tendency to deform under load and should be avoided because of poor grip and the risk of getting jammed in the rope grab system.

Ask your local ActSafe distributor for rope recommendations and also perform a suitability test before first use. Load the intended rope in the Ascender and lift 200 kg. There should be no slipping of the rope.

Pre-Soaking

It is recommended that only pre-soaked ropes are used with ActSafe Ascenders. New ropes should be put in cold water (<40°C) for 24 hours and dried slowly afterwards.

This will make ropes more suitable for use in ActSafe Ascenders for two reasons:

1. Rope density

Pre-soaking makes ropes denser. The fibres will absorb the water and will shrink when drying.

The result is that all fibres become more densely aligned and the sheath sits tighter around the core of the rope. This will make the rope more solid and will consequently result in less mantle slippage and deformation and thereby lead to better grip in the Ascender.

2. Oil dissolution

During the production process some oil is added to the rope fibres in order to reduce the friction between the individual fibres. When soaking the rope in cold water some surface oil in the sheath of the rope will dissolve. This will contribute further to a better grip. Do not soak ropes in warm water, this will lead to greater dissolution of oil, which will have a negative impact on the rope properties.



CAUTION

Always make sure that the rope is in good condition.



RECOMMENDATION

A new rope will get an increased service life if it is soaked in cold water before the first use.

Avoid getting sand or dirt onto/into the ropes since it will wear the rope grab and rope guide. Use a rope mat, rope bag or similar.



D

GENERAL SAFETY GUIDELINES AND LIFTING SYSTEMS

General safety guidelines	D.01
Personnel lifting	D.02
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Equipment, material and tool lifting	D.04
Basic lifting safety rules	D.05
Lifting setup	D.06
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D

D.01 GENERAL SAFETY GUIDELINES

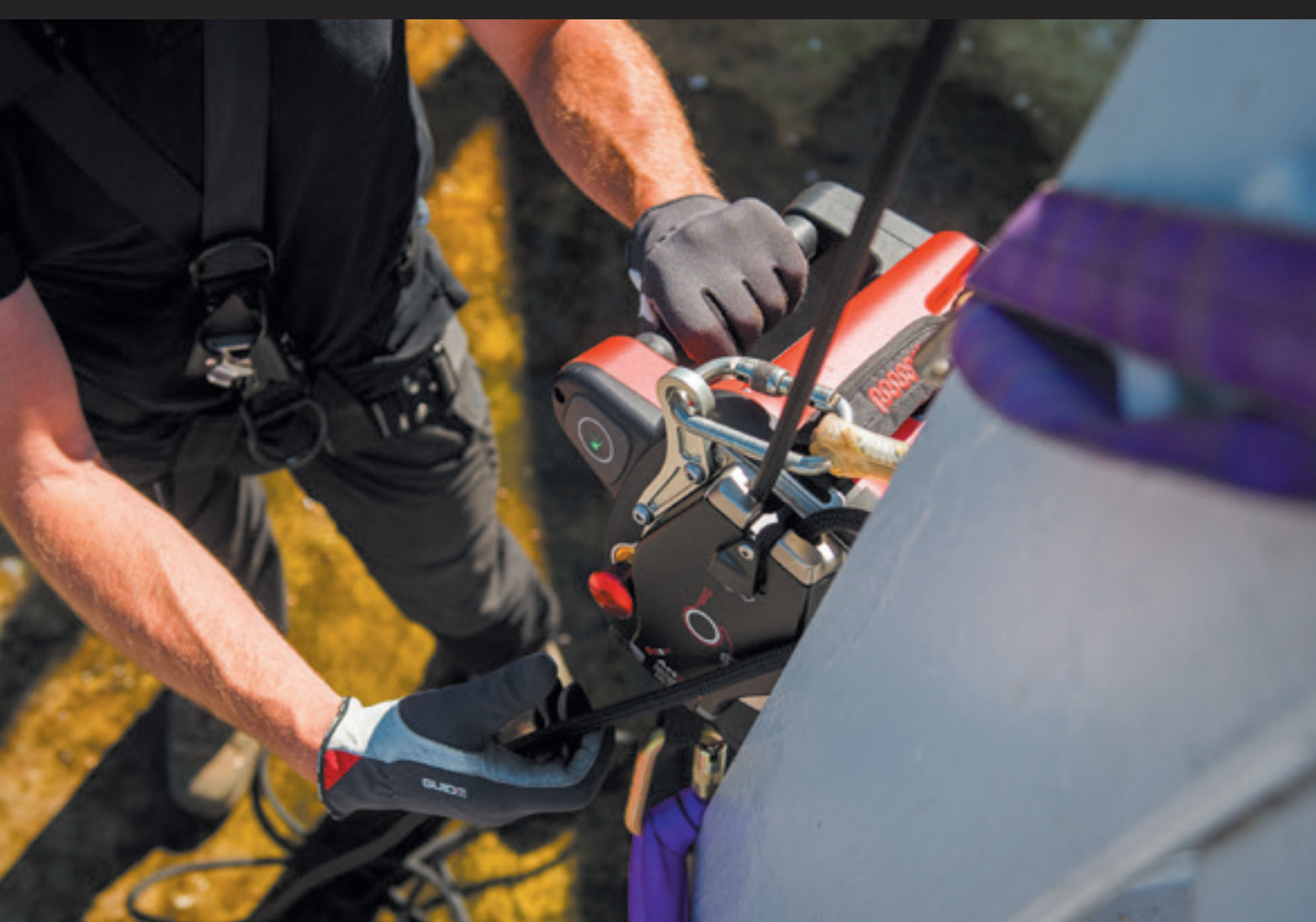
The ACX Ascender is designed for both personnel and equipment lifting. These applications have different system requirements that are described in the following pages.



DANGER

DO NOT USE the Ascender if you are tired, ill, using prescription medication that prevents you from using machinery, or under the influence of alcohol, drugs.

- » Operate the Ascender according to the advice contained within this user manual and pre-planned work instructions (lift plan, access plan)
- » Only trained and competent operators should operate the ACX Ascender and its ancillary equipment
- » Plan and evaluate your work carefully. A rescue plan should be in place
- » Plan for appropriate supervision of work
- » Perform a toolbox talk before starting the work
- » Use only approved and inspected equipment. This goes for the Ascender, PPE and/or lifting equipment
- » Inspection of equipment must be carried out in accordance with local regulations. The Ascender should undergo a documented inspection at least once every year
- » Pre-use check of the Ascender should be carried out in accordance with the inspection guidance provided
- » Use PPE (Personal Protective Equipment) such as helmet, gloves and protective eye wear when required
- » Keep your hands, hair and clothing away from moving parts
- » Do not hold the loaded rope when ascending as there is a risk of pinching
- » Keep a constant eye on the rope guide to ensure that the rope is running smoothly through the rope mechanism



D.02 PERSONNEL LIFTING

The ACX Ascender, when used to lift people, must be used with personal protective equipment approved for work at height, rope access and/or rope rescue.

Basic requirements:

The rope system must consist of a primary work rope system and a secondary backup rope system.

For personnel lifting the primary rope used in the ascender must be approved to *EN1891 A* and have a diameter of 11 mm and the backup system must fulfill the respective requirements.

Each rope system must be connected to at least one anchor that can hold a minimum of 15 kN or must fulfil appropriate anchor requirements. A competent person shall judge if the anchor points are sufficient and safe to use.

DANGER

DO NOT USE the Ascender without a backup system.

D.03 PERSONNEL SAFETY CHECKLIST

Before use make sure that you:

- ✓ Check all equipment and components
- ✓ Wear appropriate clothing and tie back any loose clothing or hair
- ✓ Do not swing excessively while descending/ascending
- ✓ Only use the Ascender if you have successfully completed approved ActSafe training
- ✓ Have an emergency plan in place



CAUTION

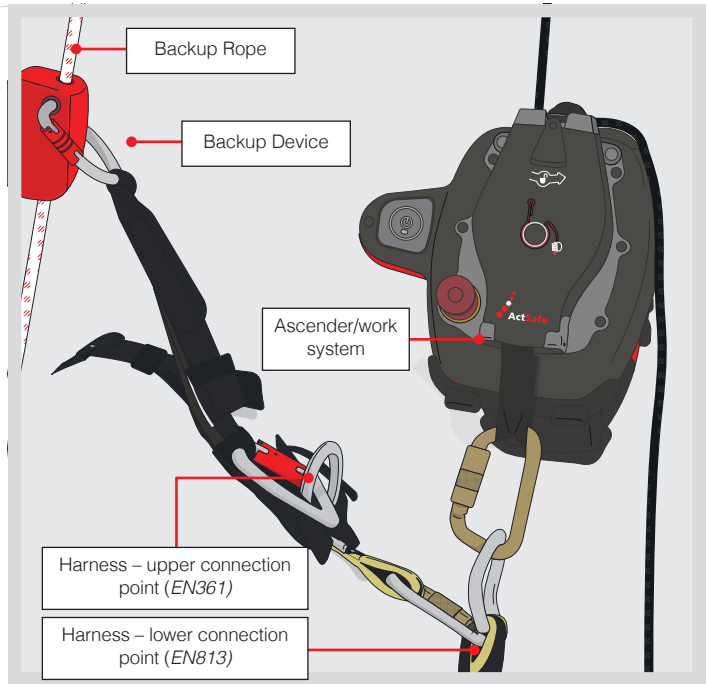
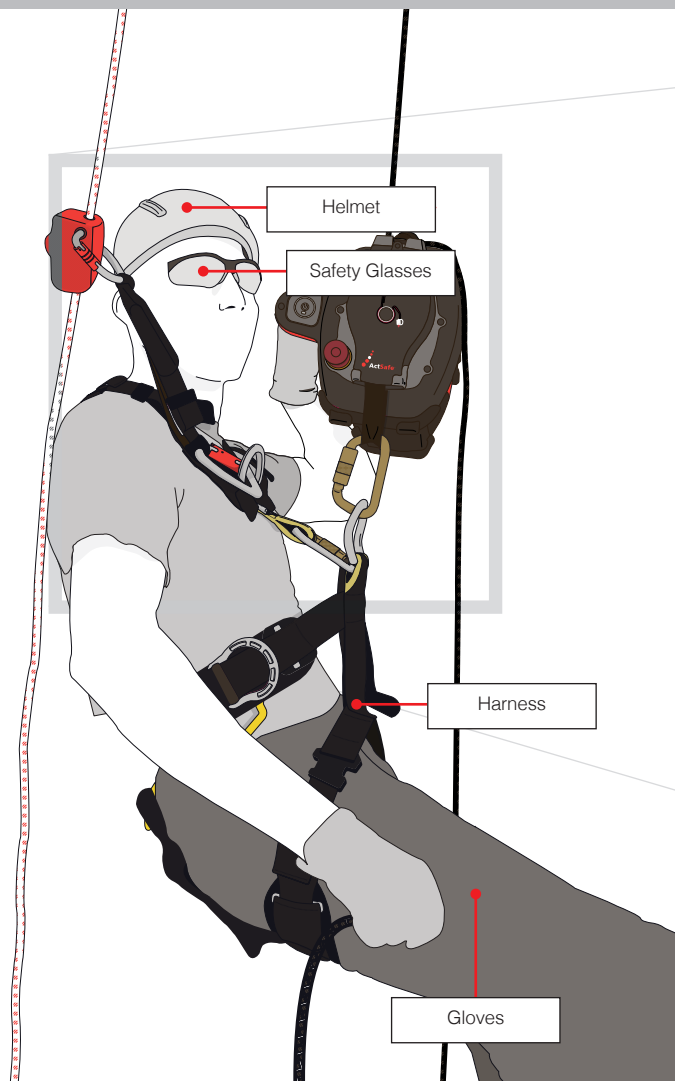
Always hold the unloaded rope when using a passive setup



RECOMMENDATION

The supplied ActSafe karabiner may be replaced with any other *EN362* connector. All other parts of the Ascender should only be replaced with original ActSafe parts by an ActSafe-approved service engineer.

2-Rope system



i RECOMMENDATION

A work seat is recommended for comfort and safety.

✓ Note

When driving the Ascender the operator must wear a fall arrest harness that is also suitable for work-positioning/rope access.

D.04 EQUIPMENT, MATERIAL AND TOOL LIFTING

The ACX Ascender is, in combination with the ActSafe Equipment Lifting Rope (ELR), approved under the Machinery Directive as an equipment lifting system provided that all other equipment used also meets lifting requirements.

i RECOMMENDATION

Lifting operations are ideally performed with a 3 person team. A lifting supervisor, a slinger for attaching loads and an ascender operator.

✓ Note

The supplied ActSafe karabiner may be replaced with any *EN13889* shackle with a minimum WLL of 0.5 t. All other parts of the Ascender should only be replaced with original ActSafe parts by an ActSafe-approved service engineer.



D.05 BASIC LIFTING SAFETY RULES



Always keep an eye on the load while lifting



Avoid excessive inching (i.e. short pulses of the motor)



Do not exceed the Safe Working Load (SWL) of the entire lifting system



Stay clear of the load whilst lifting



Do not try to lift fixed or obstructed loads



Do not stand under the suspended load



Do not side-pull loads



Use hand signal or radio communications during lifting operation

D.06 LIFTING SETUP

Displayed here are the four standard lifting setups that are suitable for use with the ACX Ascender. They are shown for illustration purposes only. For specific guidance, please contact ActSafe or an ActSafe distributor.

! CAUTION

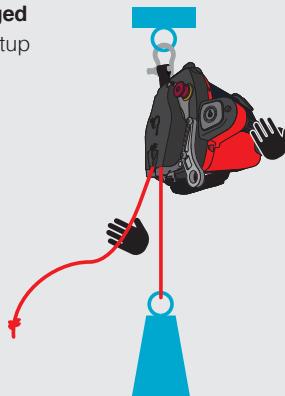
DO NOT let the rope become obstructed or blocked when being going into the Ascender.

Avoid excessive loading angles.

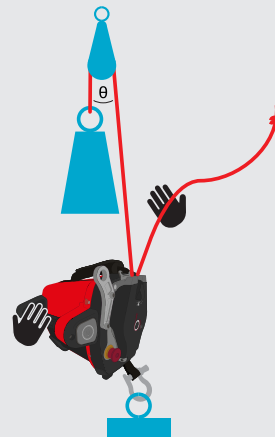
✓ Note

The ascender operator should, at all times, control the unloaded rope during lifting operations to avoid the rope from twisting when running into the Ascender.

Top-rigged
Basic setup



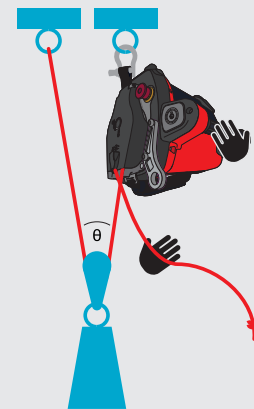
Bottom-rigged
Basic setup



Running Ascender
Expert use only



Pulley
Expert use only





D.07 ACTSAFE TRAINING NETWORK

The ActSafe Power Ascenders are extremely versatile high-tech lifting tools that are designed for use in demanding environments.

Working with these Ascenders requires experience, competence and a thorough understanding of its possibilities and limitations. Therefore, training is essential.

We offer the ActSafe training programme through our network of highly competent instructors, who are specialists in their respective field of operation and will help you get the most out of your ActSafe Ascender.

ActSafe training is available for different skill levels and fields of application and can be provided on site or in training centres all around the world. Get in touch with your local distributor or with ActSafe to learn more about training possibilities.

Operator lifting

ACTSAFE BASIC ASCENDER TRAINING

Experience: Working at height training required.

DURATION: 1 DAY

This training is designed for operatives who need good basic understanding for a specific application of the Ascender.

ACTSAFE ADVANCED ASCENDER ACCESS TRAINING

Experience: For rope access professionals.

DURATION: 2 DAYS

This training is designed for rope access operatives to provide an advanced understanding on how to use the Ascender in a rope access environment.

ACTSAFE ADVANCED ASCENDER RESCUE TRAINING

Experience: For rope rescue professionals.

DURATION: 2 DAYS

This training is designed for rope rescue professionals to learn about rescue capabilities of the Ascender.

Equipment lifting

ACTSAFE EQUIPMENT LIFTING OPERATOR TRAINING

Experience: Delegate must have completed training for personal safety.

DURATION: 4 HOURS

This training is intended for specialist workers who will use the Ascender as their everyday equipment-lifting tool.

E

BATTERY CARE

The Ascender Battery	E.01
Performance	E.02
Portable Power Supply	E.03
Battery charging	E.04
Battery Status Indicator	E.05
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Connecting and disconnecting the Battery from the Ascender	E.07
Storage and transportation	E.08
Battery lifetime and disposal	E.09

E

E.01 THE ASCENDER BATTERY

ActSafe Ascenders use specially designed lithium-based batteries with a very high energy density and are therefore very compact, lightweight and extremely powerful. Due to the high energy the batteries contain, it is of utmost importance that they are treated with care and that the user has read the following section with attention. This is for your own safety, but also for optimal battery life and performance.

ActSafe recommends users to follow the battery care guidelines below for optimal lifetime and performance:

- ✓ Disconnect batteries from the ascender when not in use for periods longer than a week
- ✓ Always charge batteries as soon as possible after use
- ✓ Disconnect batteries from the charger after charging
- ✓ Always store batteries fully charged

CAUTION

Failure to read and follow the instructions within this manual may result in fire, personal injury or damage to property.

Note – Battery lifetime

Under normal service conditions it is expected that the battery will last 3-5 years or around approximately 500 charging cycles. Lifetime is dependent on how much load is lifted and the temperatures the cells are working at.

See also section E.09

General guidelines and warnings

- » Battery charging must be conducted in a safe area away from combustible or other flammable materials
- » When hot, allow the Battery to cool down to room temperature before charging
- » Immediately remove the Battery or charger from service:
 - If there is visible damage to the housing, cables or the connector, including the Battery Connector on the Ascender
 - If the Battery has been dropped as there may be internal damage that isn't visible
 - If the Battery emits an unusual smell, feels hot, changes shape, or appears abnormal in any other way. Since a delayed reaction can occur, observe the Battery

for a minimum of 15 minutes in a safe area and away from any combustible material

- » Only use the original ActSafe Battery Charger
- » Do not disassemble or modify the Battery in any way. The Battery contains safety and protection devices, which, if damaged, may cause the Battery to generate heat, explode or ignite
- » Do not expose the Battery to water

Battery Management System (BMS)

The ACX Batteries have built-in safety electronics which constantly monitor and manage the charging levels, temperature and energy output of all the cells in these batteries. The BMS will shut down the Battery temporarily in case of overheating or overcharging to avoid battery damage and prevent

the Battery from becoming unstable or catching fire. In case of too low a charge (deep discharge) or worn out battery cells, the BMS will shut the Battery down permanently. This is to prevent the battery becoming unstable and dangerous to the user.

When used and charged correctly, the BMS will increase the safety and service life of the Battery substantially. The BMS cannot protect the Battery from severe misuse as mentioned earlier. Follow the ActSafe battery care instructions to enable a long battery life.



CAUTION

Do not use other battery chargers as they can damage the Battery and may create toxic gases which cause a fire

E.02 PERFORMANCE

Ascender Performance

When using the Battery, the Ascender has a lifting capacity of up to 200 kg or up to a distance of 200 m.

The distance is dependent on the lifted load and temperature of the environment. The optimal operating temperature range is between 5°C and 35°C. The maximum temperature range is from -20°C to +40°C; the Battery performance will be greatly affected by these extreme conditions. See chart opposite for detailed information.

Battery Capacity

Low temperatures:

The capacity of the Battery is affected at temperatures below 5°C which will result in an initial loss of lifting performance (speed) and will affect the lifting distance. The Battery will behave as if it wasn't fully charged but will warm itself during the first minutes of operation. Lifting performance is regained but there will be a loss in distance depending on the temperature of the environment.

High temperatures:

Battery performance will be affected by temperatures over 40°C which will result in high internal battery temperatures and therefore in a reduced lifting distance. In case of the Battery overheating the BMS will shut the battery off until the battery has cooled to operating temperature.

RECOMMENDATION

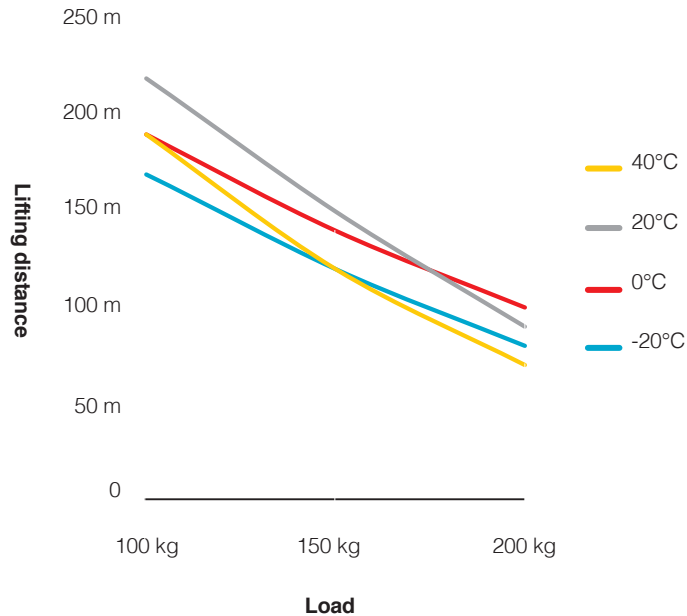
In cold environments, maintain optimal Battery temperature and performance by keeping the Battery in the transportation box as long as possible.

Note

Initial lift speed capacity will be limited with a cold battery. It is only possible to ascend at lower speeds until the Battery warms up and normal performance can be expected.

There is a difference in performance between old and new batteries, all figures are based on new batteries.

Lifting distances with battery powered ACX with 100, 150 and 200 kg at different temperatures.



E.03 PORTABLE POWER SUPPLY

ActSafe Portable Power Supply

The ActSafe Portable Power Supply is a good alternative to batteries, especially for ascender operations with a lot of lifting distance or in extreme temperatures. The following lifting distances can be achieved at 20°C:

100 kg → 500 m

200 kg → 200 m

The limiting factor is the Ascender temperature. The Ascender motor runs hot when lifting heavy loads over longer distances, especially in hot environments where the heat can not be dissipated easily. In case of overheating the Ascender will be shut off temporarily to protect the motor from any damage.

E.04 BATTERY CHARGING

The ACX Battery can be charged at any charging level, no 'memory effect' will occur. It is important that the batteries are charged with an original ActSafe Charger.

The charging time is dependent on the charging level of the Battery. The maximum charging time is 80 minutes. During charging the current charging level is displayed on the Battery LEDs and the Battery is fully charged when all LEDs are lit continuously.

Balancing:

After the Battery has been fully charged, the BMS will start to balance the Battery for another 10 minutes. Balancing is a process where the Battery Management System will equalise the charging levels of all the cells in the battery pack in order to optimize the lifetime and performance of the Battery. The Battery LEDs will slowly pulsate after the balancing is complete.

1. Connect the Charger to mains supply.
2. Connect Battery to charger.
3. Constant charging controlled by BMS. The Battery is full when all Battery LEDs are continuously lit.
4. 10 minutes balancing and all LEDs are lit continuously. The LEDs slowly pulsate when balancing is completed.
5. Disconnect Battery from charger.
6. Disconnect Charger from main supply.

CAUTION

Before charging the Battery, check the charger cables and the insulation on the socket to avoid risk of electric shock.

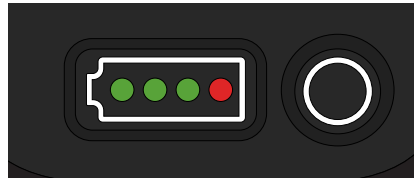
Note

Charging must be carried out in a dry area.

E.05 BATTERY STATUS INDICATOR

The Battery Status Indicator is positioned at the back of the battery and can be activated by pushing the button next to the LEDs. The battery indicator has 4 LEDs each representing 25% charge.

LEDs	Capacity
1 red, 3 green	75-100%
1 red, 2 green	50-75%
1 red, 1 green	25-50%
1 red	0-25%



E.06 DESCENDING ON A FULL BATTERY

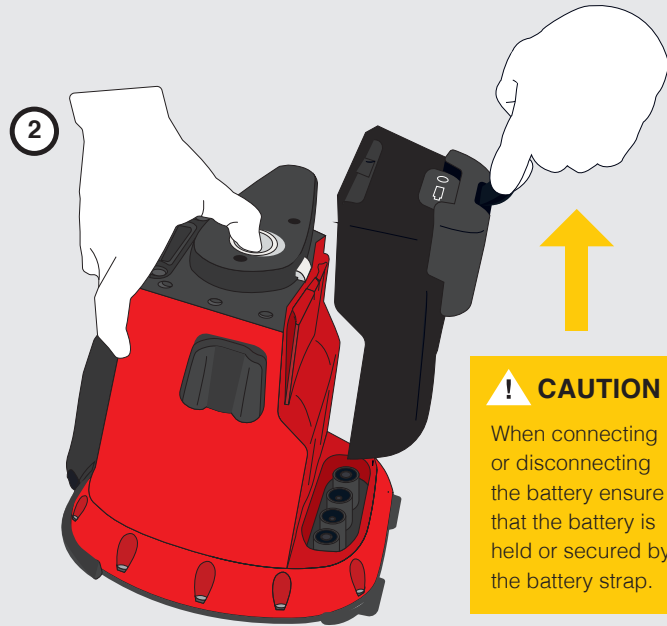
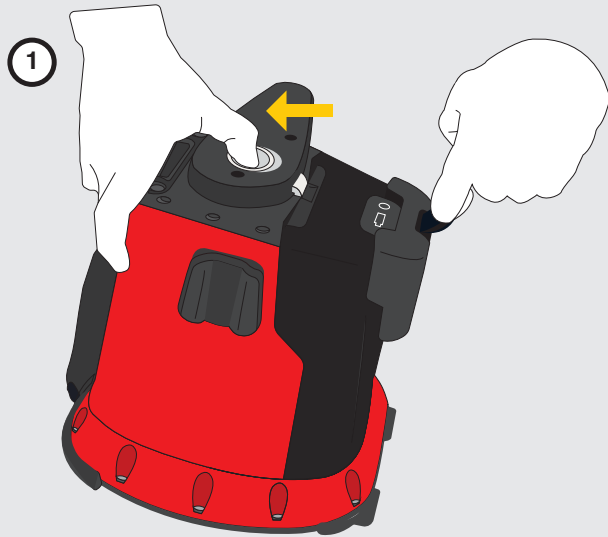
Whilst not recommended as a standard procedure, the ACX Ascender electronics and the BMS of the ACX Battery allow descent with a fully-charged Battery without the risk of overcharging and eventual damage.

While descending, the Ascender generates energy that is stored in the battery as long as there is storage capacity. The Ascender electronics will, in case of a fully charged battery, regulate the speed automatically to prevent overcharging. On long descents with heavy loads it is likely that the speed will be reduced substantially and the Ascender might eventually shut itself down temporarily.

✓ Note

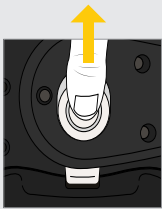
Do not descend on a fully charged battery as a standard procedure.

E.07 CONNECTING AND DISCONNECTING THE BATTERY FROM THE ASCENDER



! CAUTION

When connecting or disconnecting the battery ensure that the battery is held or secured by the battery strap.



Disconnecting the Battery

- ① Hold the battery and slide the release catch upwards
- ② Release the battery by pulling the battery-strap with your finger or a karabiner.

Connecting the Battery:

Slide the Battery onto the Ascender and ensure that the Battery is locked. **The Battery Lock must snap into its position (click).**

E.08 STORAGE AND TRANSPORTATION

- » All lithium-ion batteries degenerate over time, even if they are properly stored. Disconnect the battery when stored for longer periods with 100% charge
- » If storing a Battery for a long time, recharge the Battery every third month
- » Ideally store the Battery at room temperature of 5 to 25°C (40 to 80°F). Storing at higher temperatures will result in a loss of performance and a shortened service life.
- » Do not store the batteries at temperatures higher than 60°C (140°F) for extended periods, as this will cause damage to the Battery and possibly result in fire
- » The operator assumes total responsibility for all risks associated with lithium-based battery technology

- » Product warranty is limited to original defects in material and workmanship. The Warranty does not cover collateral damage

CAUTION

Storing an empty Battery or a Battery with low charge level will drain the Battery and damage it irreversibly

NOTE

Batteries are fully regulated as Dangerous Goods (Class 9 UN3480 Lithium Ion Batteries) and must be handled and shipped accordingly. A defective battery must not be shipped.

E.09 BATTERY LIFETIME AND DISPOSAL

The Battery lifetime is dependent on a lot of different factors such as: intensity of use, charging cycles, storage temperature etc. For this reason is it very difficult to give a general indication on the service life of a Battery. The Battery Management System or BMS constantly monitors the condition of all the cells in the Battery and will shut the Battery down automatically if the cells become too worn out. In this instance the Battery can no longer be used.

Do not incinerate or dispose of the Battery in your normal waste system. Dispose of the Battery at a recycling centre as per the appropriate regulations.





F

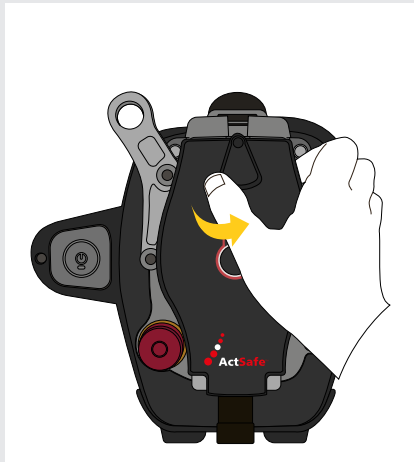
HOW TO USE THE ASCENDER

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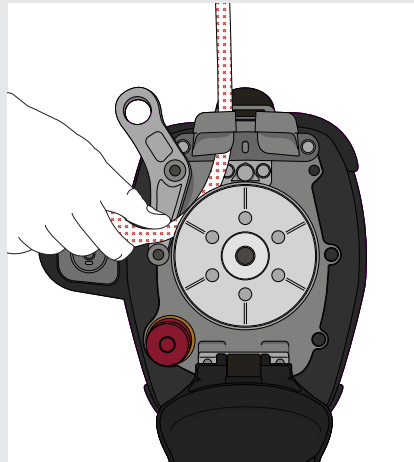
F.01 CONNECTING THE ROPE

The Ascender must be switched off while loading the rope.

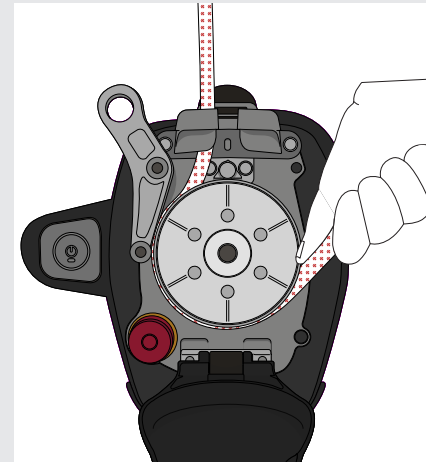
Push the Emergency Stop to ensure that the Ascender is switched off.



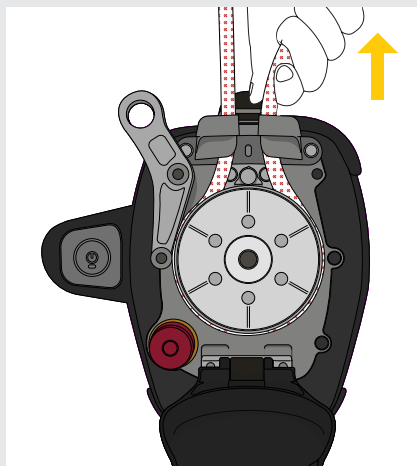
1. Open the Rope Cover by pulling on the Rope Cover and pushing the Rope Cover Lock to the right.



2. Feed the rope counter-clockwise through the slot in the Rope Guide and around the Rope Grab.

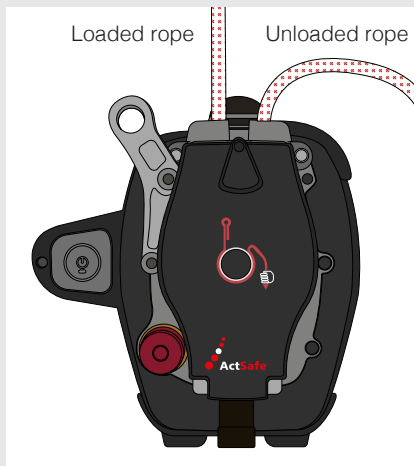


3. Continue feeding the rope in a counter-clockwise direction.



4. Feed the rope through the slot in the Rope Guide.

Tighten the rope a little. The rope will be pulled into the Rope Grab and the rope cover can be locked more easily.



5. Close the Rope Cover and ensure it is locked. The Rope Cover lock should snap into its position. A distinct 'click' should be heard. Never attempt to force the Rope Cover.

! DANGER

Always check that the rope is attached correctly and has a stop-knot on the other end of the rope. Failure to attach the rope correctly could result in **SERIOUS INJURY OR DEATH.**

! CAUTION

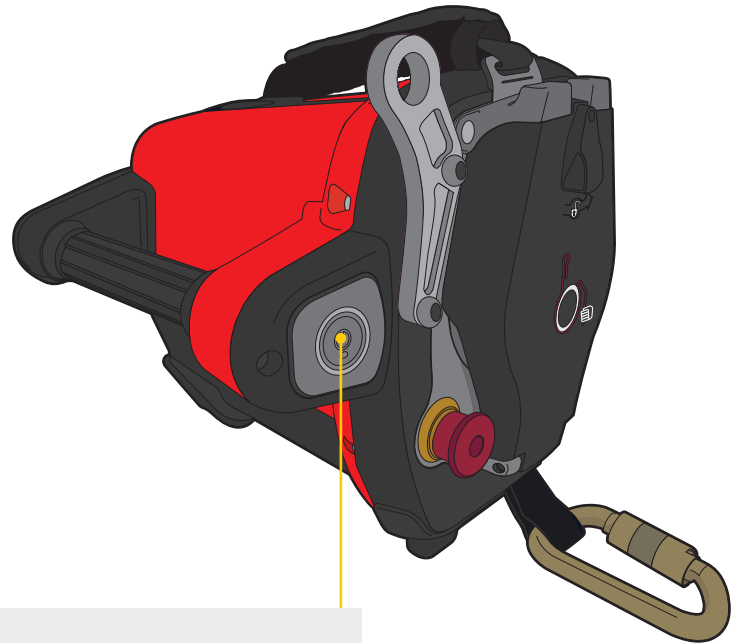
Load the rope when the Emergency Stop of the Ascender is activated to avoid accidental activation by the Remote Control.

Ensure that the Rope Cover is locked into position and that the rope is running the correct way.

F.02 ASCENDER ACTIVATION

To activate the Ascender check that the Emergency Stop button is pulled out. Switch the Ascender on by pushing the Power Button for 2 seconds. The green indicator LED starts blinking and the Ascender performs a self-test, which will take a few seconds.

The Ascender is ready to use after you hear a distinct clicking within the Ascender (brake test) and the green LED indicator is lit continuously. The Ascender will remain on for 4 hours after its last operation.



BLINKING GREEN The Ascender is starting up and performing self-test



GREEN The Ascender is on and ready to use



BLUE The Ascender is being operated by the Remote Control



RED A fault has been detected and the Ascender will not operate. Restart the Ascender. If the red light remains lit on restart, check the troubleshooting guide.



NOTE

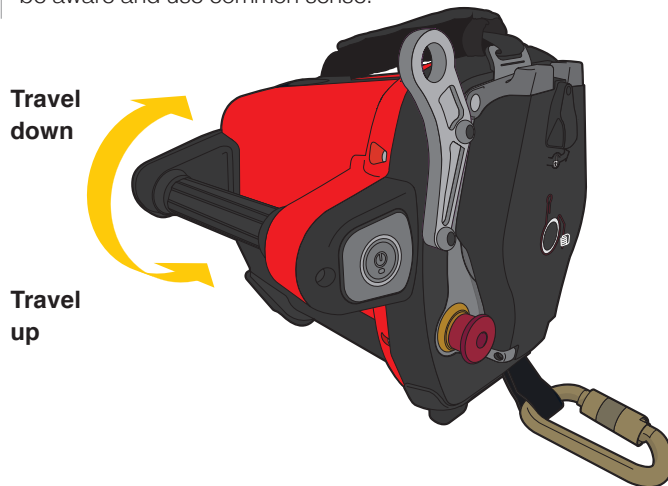
The Ascender has no standby function, the Ascender can only be switched on by pushing the Power Button.

F.03 ASCENT & DESCENT

To move the Ascender up the rope, pull back on the Throttle. When released the throttle will return to the neutral position and the Ascender will stop moving.

To move down the rope, push the Throttle in the opposite direction.

Adjust the speed according to the circumstances, be aware and use common sense.



CAUTION

Do not hold on to the loaded rope just above the Ascender, as there is a risk of injury.

RECOMMENDATION

Stand straight beneath the anchor point in order to avoid a pendulum movement when starting off the ground.

NOTE

Make sure that the unloaded rope runs in a controlled manner out of the Ascender. Take special care feeding the loose rope into the Ascender when descending.

The in-built ACX electronic monitoring system will prevent lifting loads over 250 KG.

F.04 EMERGENCY DESCENT

The emergency descent is ONLY to be used to get down in a safe and controlled manner in case of an Ascender failure.

The Emergency Descent Lever enables a mechanical release of the Ascender brake, and it should NEVER be used during normal operation because emergency descent can, in rare cases, damage the Ascender.

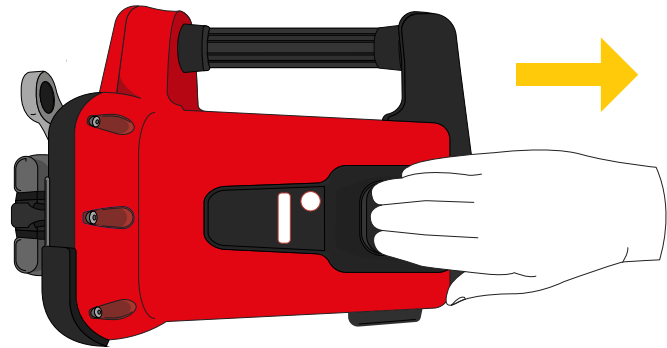
Emergency descent procedure:

1. Hold the dead rope in one hand.
2. Descend by gently pulling the lever backwards as shown.
3. Stop the descent by letting go of the descent handle.

CAUTION

An emergency descent can result in serious damage to the Ascender. Only use the emergency descent in case of an emergency.

If you do need to descend manually, control your speed and hold the dead rope in one hand while descending.



RECOMMENDATION

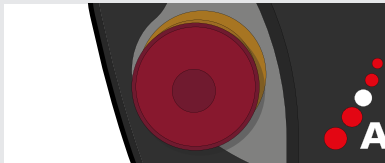
Always try to restart the Ascender first before using the emergency descent method.

NOTE

In case of the Ascender stopping because of an empty battery, it is still possible to descend whilst using the throttle.

F.05 EMERGENCY STOP

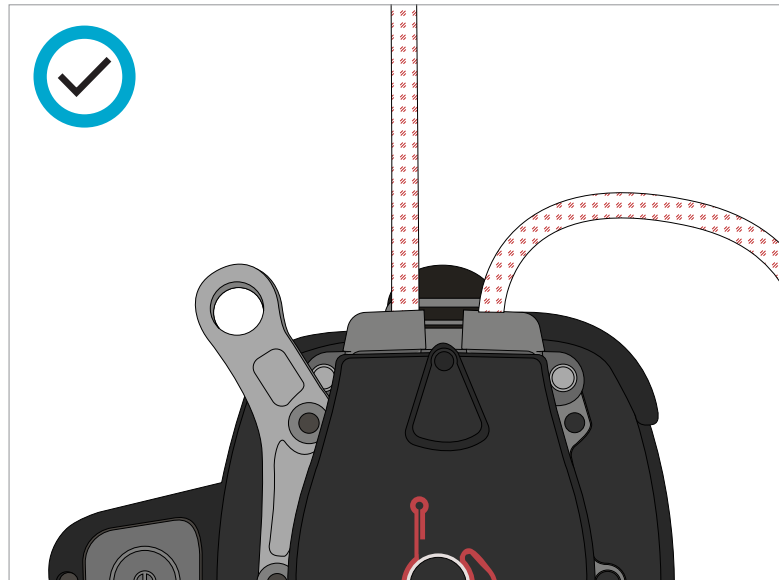
1. Press the Emergency Stop to immediately turn the Ascender off.
2. Reset the Emergency Stop by pulling out the button.



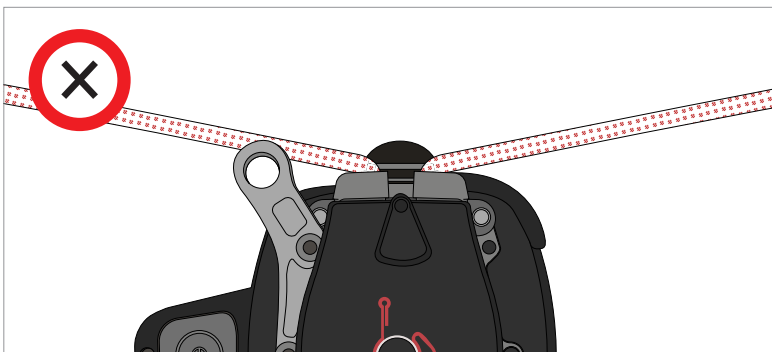
✓ NOTE

The Indication LED will blink green and then turn red momentarily when the power button is pushed while the Emergency Stop is activated. The Ascender cannot be activated as long as the Emergency Stop is pushed in.

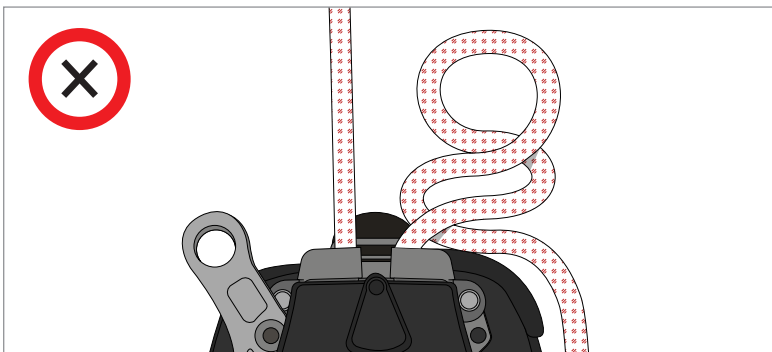
F.06 TWISTED ROPE AND ROTATION



Ensure, especially when descending, that the rope runs untwisted into the Ascender. Twisted ropes caught into the Rope Guide can cause a rope jam and can, in rare cases, result in rope damage.



The dead rope must never be loaded. Do not build tramways using the primary rope as shown in the picture.



Stop immediately when a rope twist is observed, untwist and organise the rope before continuing.

! CAUTION

When descending, make sure the rope is fed neatly into the rope grab so that there are no kinks or twists in the rope. Take special care when using long ropes to prevent twists or kinks. Good rope management is ESSENTIAL.

i RECOMMENDATION

When descending, hold the rope entering the Ascender to prevent it from running twisted into the Ascender.

F.07 REMOTE CONTROL

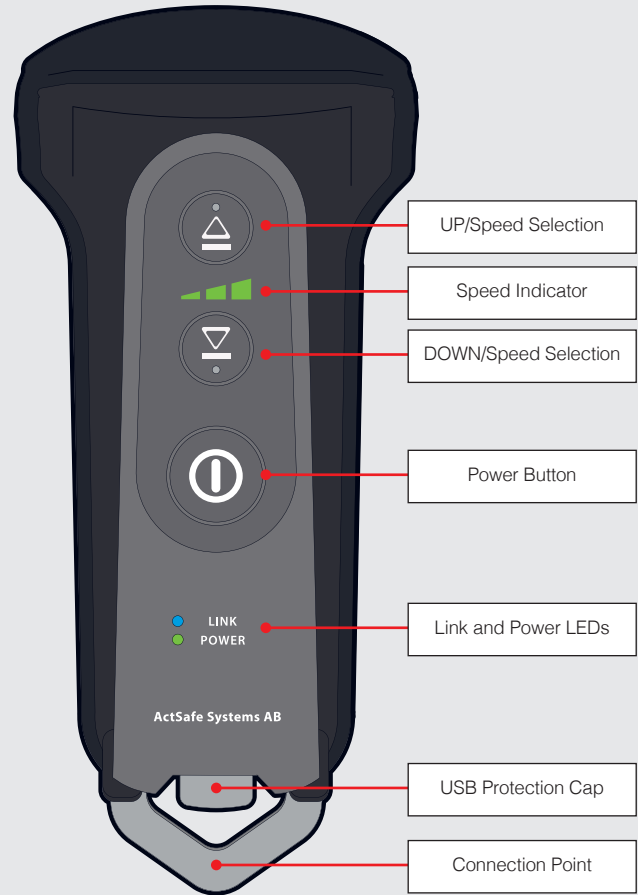
The Remote Control can be used for a multitude of applications for both personnel and equipment lifting.



The ACX Ascender can be operated by a Remote Control to a distance of up to 150 metres in direct line of sight.



The Remote Control will override the controls on the Ascender. Once it is in use, it will not be possible to use the Ascender by its own controls. If the Remote Control is not used for 10 seconds, control is automatically returned to the Ascender. Control is instantly returned to the Ascender when the remote is turned off with the ON/OFF button.



F.08 REMOTE CONTROL OPERATION

1. Activation and connection



Activate the Remote Control by pushing the Power button.



The green 'POWER' LED will show and the blue 'LINK' LED will start to blink for a few seconds whilst a connection is established with the Ascender.



Once connected, the blue 'LINK' LED on the Remote Control will be lit continuously.

2. Take control of the Ascender



By pushing either the 'UP' or 'DOWN' button the Remote Control will take over the control of the Ascender and the Ascender will stop immediately.

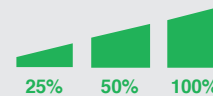


—
Short
press



The green LED on the Ascender will turn blue to indicate control has passed to the Remote Control.

3. Set the Ascender speed



25%

50%

100%

Select between 3 speeds in both ascent and descent – 20%, 50% and 100%.



The speeds can be set by a short push of the 'UP' or 'DOWN' button and the LED bar will indicate the selected speed.



—
Short
press

4. Operate the Ascender



Once the speed is selected, holding down either the 'UP' or 'DOWN' button will then activate the Ascender at that speed.



Hold
down

5. De-activation



The Remote Control will turn itself off after 10 minutes of inactivity, alternatively switch the Ascender off to disconnect the Remote Control.



CAUTION

The Remote Control hand unit will only work with the Ascender it has been delivered with. If you are in possession of more than one Ascender, mark your Remote Controls to avoid any confusion.



Note

Remote Control does not work if Emergency Stop is pressed or if the Ascender is switched off. Once the Ascender is switched back on again the Ascender can be used manually. The remote connection needs to be re-established by turning the Remote Control off and on again.

Remote Control Battery



The Remote Control unit is equipped with an internal battery which is charged via the supplied USB cable. Complete charging will take up to 150 minutes via a computer, or 75 minutes with the supplied adaptor. The USB Connection Point can be found on the bottom of the Remote Control under the protection cap that can be unscrewed.



The power LED on the Remote Control will turn red at 20% charge. The power LED will flash during charging and will be fixed green once charging is completed.



CAUTION

Make sure that the Remote Control has visual contact with the Ascender to ensure safety and maximum range.

When using the Remote Control, unloaded rope should be held by an operator to ensure that the rope can run unhindered into the ascender while lowering. Uncontrolled rope running into the ascender can cause a rope jam and eventually rope damage.



RECOMMENDATION

Always use the Remote Control in combination with a stop knot at the end of the rope.

F.09 TRANSPORTATION

Carry the Ascender by the lifting handle for short walking distances.

When carrying the Ascender any further stow it in the transportation box as this will protect the Ascender from any damage. Make sure the Ascender is secured when travelling in any vehicle.

F.10 STORAGE

Always clean and dry the Ascender and the transportation box before storage. See section G for cleaning instructions.

Always store the Ascender and the Remote Control in a cool, dry place.



Note

The Ascender Batteries holds over 100 Wh of power and are therefore fully regulated as Dangerous Goods (*Class 9 UN3480* Lithium Ion Batteries) and must be handled and shipped accordingly. Contact your ActSafe distributor or ActSafe directly for further details.



CAUTION

Always store with the Battery fully charged.

Disconnect the Battery from the ascender while being stored.

During long storage periods, charge the Battery every 3 months.

F.11 CHECKLIST BEFORE AND AFTER USE

Always check the Ascender before and after every use. Check the Ascender thoroughly and in accordance with your training and this manual.

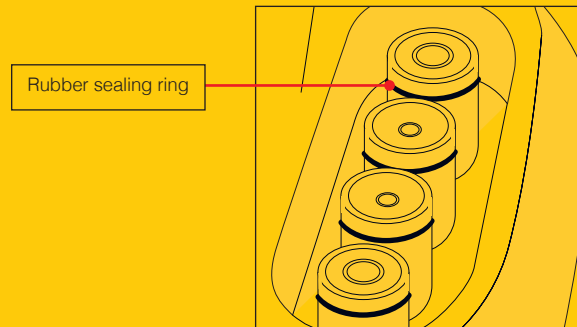
If you are in any doubt about the condition of the Ascender, do not use it and contact your ActSafe supplier or ActSafe directly.

✓ Inspection of ACX Battery Pack

- » No damage to battery housing
- » Connector pins clean and not damaged
- » Battery charged
- » Battery Strap present

✓ Inspection of ACX Ascender

- » Check the Ascender housing for cracks or severe damage
- » Check the Battery Connector pins on the Ascender:
 - Clean and no damage
 - Rubber sealing rings should be present (see below)
- » Slide the Battery on to the Ascender and check that the Battery is locked in its position





✓ **Visual inspection of load-bearing parts**

» **Rope Guide (A)**

Check Rope Guide for obvious damage or deformation. Rope guide should not be bent and must fit neatly with the Rope Cover. Check for excessive wear

» **Rope Cover**

Check the Rope Cover function by unlocking and locking into its position. The lock should snap into position. Check the Rope Cover further for deformation, excessive wear or any sharp edges

» **Rope Wedge (B)**

Check Rope Wedge for deformation or any visible damage. The rope wedge should be straight and centered and touch the lowermost part of the rope grab

» **Rope Grab (C)**

Check that rope grab is clean and not filled with dirt, sand, paint or any other foreign material. Check the inside for obvious damage, signs of wear or sharp edges

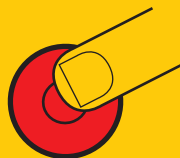
» **Connection Sling (D)**

Check Connection Sling for wear, discoloration or damage such as cuts, abrasion and contaminants (Paint, glues, chemicals). Take particular note of the condition of the titanium Sling Bolt and Karabiner Loop

✓ Controls check

- » Check that the Emergency Stop is pulled out and switch Ascender on. Wait for full activation of the Ascender (LED turns green)
- » Move the Throttle in both directions and ensure that Rope Grab turns smoothly in both directions
- » Check that the emergency descent is working correctly. The lever should return to neutral position when being pulled
- » Push the Emergency Stop and check that the Ascender is switched off and cannot be activated by Power button

For a full inspection checklist visit
www.actsafe.se



G

SERVICE & MAINTENANCE

Maintenance and cleaning
of the Ascender

G.01

Troubleshooting guide

G.02

G

Only use original spare parts and materials recommended and supplied by ActSafe Systems.

Basic Inspection Guidance for users and third party inspection:

To be used safely, each Ascender should meet following requirements at all times:

- » No obvious damage or excessive wear on Ascender and its components
- » Basic function test of ascender including Emergency Stop and emergency descent (see section F.10)
- » 1,25 x SWL dynamic load test; descending full speed and then stop with max 10 cm slippage
- » 1,5 x SWL static load test; no slippage allowed

i RECOMMENDATION

Go through 'Checklist before and after usage' at every maintenance.

G.01 MAINTENANCE & CLEANING OF THE ASCENDER

Your annual service and inspection should be carried out by an ActSafe-authorized service partner. More frequent inspection intervals may be required because of local regulations.

Cleaning the Ascender

- ✔ Wipe the Ascender with a wet cloth and let it dry. Do not clean the Ascender with a high-pressure cleaner
- ✔ Clean the karabiner thoroughly, lubricate with thin oil and wipe dry
- ✔ Spray the pins with an electronic connector cleaner/lubricator when needed

✔ Note

Do not use a high-pressure cleaner!

G.02 TROUBLESHOOTING GUIDE

If you need further assistance or are in any doubt please contact ActSafe Systems or your approved ActSafe distributor.

PROBLEM	PROBABLE CAUSE	REMEDY
Battery does not work	Battery is flat BMS shut battery off because of battery damage or worn out battery Battery is too cold (below -20°C) Battery is too hot (above 55°C)	Charge the Battery Exchange Battery Let the Battery warm up Let the Battery cool down
Battery does not charge	Charger not connected Charger broken Battery is too warm (red LED blinks on Battery) Battery is too cold (below -10°C) Battery is worn out	Connect Charger to socket Change charger Let the Battery cool down Let the Battery warm up Replace the Battery
Emergency Descent does not work	Descent Lever disconnected	Gently hold the descending rubber bulge at the centre and re-position the descender lever in its slot

PROBLEM	PROBABLE CAUSE	REMEDY
No power	<p>Battery is too warm (red LED blinks on Battery)</p> <p>Battery is too cold (below -20 C)</p> <p>Battery not charged</p> <p>Power Supply not switched on</p> <p>Too short a press on power button</p> <p>Emergency Stop engaged</p>	<p>Let the Battery cool down</p> <p>Let the Battery warm up</p> <p>Check battery, charge when empty</p> <p>Activate power supply</p> <p>Press for 2 seconds</p> <p>Disengage Emergency Stop</p>
Power LED turns red	<p>Emergency Stop engaged</p> <p>Problem with Battery or Power Supply</p> <p>Error detected in Ascender</p>	<p>Disengage Emergency Stop</p> <p>Try another Battery or Power Supply</p> <p>Restart: LED Green – OK LED Red – Contact ActSafe distributor or ActSafe)</p>
Remote control does not connect	<p>Ascender is not switched on</p> <p>Distance too far</p> <p>Signal interference</p> <p>Remote Control from another Ascender</p>	<p>Switch the Ascender on</p> <p>Get closer to Ascender</p> <p>Get closer to Ascender</p> <p>Find correct Remote Control</p>

PROBLEM	PROBABLE CAUSE	REMEDY
Remote control does not work	Remote Control battery is empty	Charge Remote Control
Rope Cover does not lock	Dirt in Rope Cover Dirt in locking mechanism Mechanical damage	Clean Rope Cover Clean and oil locking mechanism Contact ActSafe distributor or ActSafe
Rope slippage in Rope Grab	Rope is too soft Wrong rope diameter Rope is not pre-soaked Worn out rope grab	Use recommended rope/pre-test rope Use recommended rope/pre-test rope Soak rope Contact ActSafe distributor or ActSafe
No Response to Throttle	No power on ascender Remote control is operating Ascender (blue power LED) Too much load on the Ascender Battery not working	See 'no power' section of trouble-shooting guide Restart Ascender or wait for Remote to turn off Reduce the load to SWL or less See Battery section of troubleshooting guide





**POWER ASCENDERS
WARRANTY TERMS**

Warranty terms

H.01

H.01 WARRANTY TERMS

ActSafe Systems AB ("ActSafe") guarantees that the ACX Power Ascender ("Product") purchased has no defects due to the use of faulty parts or poor workmanship during its manufacture. This is subject to the terms of the limited warranty ("Warranty") given below.

- » Any claim will have to be made within the warranty period which is one year from delivery unless otherwise agreed.
- » ActSafe will repair or, if necessary in ActSafe's opinion, replace any defective parts and correct any problems resulting from poor workmanship, free of charge.
- » ActSafe reserves the right to use reconditioned parts with performance parameters equal to those of new parts in connection with any services performed under the Warranty.

Claim under ActSafe's warranty

Claims under ActSafe's Warranty may be made only by direct customers of ActSafe who, upon ActSafe's request, can present the original sales invoice from ActSafe. The Warranty is not transferable from one user or customer to another.

The Warranty does not apply if:

- » A damage or defect has occurred due to physical breakage, electrical faults external to the Product, water penetration of the Product, abuse or events of force majeure.
- » The Product is modified, maintained or repaired by a party not authorized by ActSafe.
- » The Product is maintained and operated in ways other than recommended by ActSafe.
- » The serial number stickers have been removed or tampered with.
- » A non-ActSafe certified product is added to the Product.

Warranty Limitations

The Warranty does not extend to parts or Products requiring replacement due to normal wear and tear, corrosion, rust, stain, etc.

Any service, repair or replacement outside the scope of the Warranty shall be subject to the rates and terms of the ActSafe approved service centre performing such service.

ActSafe disclaims all other warranties, express or implied or statutory, including, but not limited to the implied warranties of merchantability or fitness for a particular purpose. Any implied warranty that may be imposed by applicable law is limited to the duration of this Warranty.

Limited liability and applicable law

The customer agrees that repair or replacement, as applicable, under the warranty services described herein are the sole and exclusive remedies with respect to any breach of the Warranty.

In no case shall ActSafe be liable for any indirect, incidental, special or consequential loss or damage of whatsoever nature.

ActSafe's sales and delivery of Products, as well as this Warranty, shall be governed by Swedish law, unless otherwise agreed in writing.





TECHNICAL DATA

Technical data

1.01

PERFORMANCE/PART	VALUE	COMMENT
Rope	Personnel Lifting – <i>EN1891A</i> 11 mm, Equipment Lifting – ActSafe ELR	Rope must be soaked before first use. See section C.01
Safe Working Load (SWL)	200 kg	
Ascent speed	0-24 m/min	
Descent speed	0-25 m/min	
Emergency descent speed	0-25 m/min	
Battery range	200 m with 100 kg load	At 20°C, continuous ascending. See section E.05
Charging time	80 min	
Temperature range	-20°C to + 40°C	
Over heating protection	Yes	
Ascender weight	10.5 kg	Ascender weight with battery is 13 kg
Battery weight	2.5 kg	
Dimensions	33 x 28 x 27 cm	
Remote Control	Range – up to 150 m Radio frequency – 2.4 GHz	The remote must have visual contact with the Ascender to ensure maximal safety and range
Water/dust resistance	IP 55	Dependant on model. See machine rating sign
Noise level	76 dB	
Max windspeed	12 m/s	Weather conditions should be stable and favourable to not affect the safety of personnel and/or lifting operation