

# User Instruction Manual

## Practices & Procedures

PART NUMBER A006 ISSUE 'Y' MARCH 2015



DEATH OR SERIOUS INJURY MAY  
RESULT IF THESE INSTRUCTIONS  
ARE NOT FOLLOWED



capital  
SAFETY

CAPITAL SAFETY BRANDS

# CONTENTS

IT IS IMPORTANT THAT YOU READ AND UNDERSTAND,  
OR HAVE THE FOLLOWING INFORMATION EXPLAINED TO YOU,  
BEFORE USING THE EQUIPMENT.

<b>SECTION</b>	<b>SUBJECT</b>	<b>PAGE</b>
<b>1.0</b>	<b>Introduction</b>	<b>4</b>
1.1	Quality Systems Accreditation and Product Certification	4
1.2	Practices	4
1.3	Terminology	5
1.4	Product Covered by These Instructions	7
<b>2.0</b>	<b>Recommended Reading</b>	<b>8</b>
<b>3.0</b>	<b>Conditions of Use</b>	<b>9</b>
<b>4.0</b>	<b>Inspection of Safety Equipment</b>	<b>9</b>
4.1	Inspection Criteria	10
4.2	Inspection and the i-Safe™ RFID System	10
4.3	Inspection for Latch Protection Devices (LPD) on Lanyards and Pole Strap Assemblies	10
4.4	Removal Criteria	11
4.5	Safe Care and Use of Ropes	11
4.6	Cleaning	12
4.7	Storage	13
4.8	Inspection Record Sheet	13
<b>5.0</b>	<b>Anchors</b>	<b>13</b>
5.1	Structure Strength	13
5.2	Structures not Suitable for Fall arrest	13
5.3	Structure Condition & Location	13
5.4	Connecting to A Structure Using Webbing Or Rope	14
5.4.A	Methods of use for Tie Off Adaptors	14
5.4.B	Improper use of Tie Off Adaptors	14
5.5	Anchorage for Personal Use	14
5.6	Special Anchorages	14
<b>6.0</b>	<b>Body Harnesses and Belts</b>	<b>15</b>
6.1	Harnesses & Belts Sizing	15
6.2	Harness Donning	15
6.2.1	Fitting Instructions For Full Body Harnesses - Vest & Crossover Styles	16

# CONTENTS

IT IS IMPORTANT THAT YOU READ AND UNDERSTAND,  
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<b>SECTION</b>	<b>SUBJECT</b>	<b>PAGE</b>
6.2.2	Fitting Instructions for Full Body Harnesses - Suspension & Sit	18
6.2.3	Fitting The Optional Suspension Seat (XP/NEX Climbing, Wind Energy & Derrickmans)	20
6.2.4	Bandicoot Chest Harness Donning	22
6.3	Harness Inspection	22
6.3.1	Harness with Integral Life Preserver Unit	23
6.3.2	Harness made from Repel® Webbing	23
6.4	Specific Use of Attachment Points	23
6.5	Harness Connection	24
6.6	Spreader Bar	24
6.7	Belts	24
<b>7.0</b>	<b>Connectors</b>	<b>24</b>
7.1	Compatibility of Connectors	24
7.2	Safe Care and Use of Attachment Hardware	24
7.3	Pole Straps	25
7.4	Single Tail Personal Shock Absorbing Devices	26
7.5	Double Tail Personal Shock Absorbing Lanyards	26
7.6	Personal Shock Absorbing Pack	27
7.7	Integral Lanyard Use	27
7.8	Lanyard Stowage Points	28
<b>8.0</b>	<b>Serviceable Devices</b>	<b>28</b>
<b>9.0</b>	<b>Emergency Recovery</b>	<b>28</b>
<b>10.0</b>	<b>Suspension Trauma Straps</b>	<b>29</b>
<b>11.0</b>	<b>Pre-assembled Kits</b>	<b>30</b>
<b>12.0</b>	<b>Passive Protection Systems - Nets</b>	<b>30</b>
<b>13.0</b>	<b>Warranty Statement - Capital Safety (AUST) Pty Ltd</b>	<b>30</b>
<b>14.0</b>	<b>Glossary Of Fall Protection Terminology</b>	<b>31</b>
<b>15.0</b>	<b>Notes</b>	<b>34</b>
<b>16.0</b>	<b>Inspection Record Card</b>	<b>36</b>

## 1.0 INTRODUCTION

Congratulations on your purchase of safety equipment from Capital Safety under the DBI-SALA™ or PROTECTA brands. You have made an investment in your safety. Capital Safety are the world leaders in fall protection systems. We believe this should give you peace of mind that you are dealing with a reputable and financially secure organisation. You are more to us than just another sale.

Your safety when working at heights should never be taken for granted. Without adequate protection

people can die or suffer permanent injury when they slip (restrained fall) or free fall even short distances of 600mm.

The correct combination and use of Capital Safety equipment is designed to offer you maximum height safety protection.

It is important for your safety that you fully read and understand these instructions. Alternatively, you must have a competent person explain these instructions to you before using this equipment.

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## 1.1 QUALITY SYSTEMS ACCREDITATION AND PRODUCT CERTIFICATION

Capital Safety is a global manufacturer with manufacturing facilities in Australia, the United States, Canada, and Europe. Each facility specialises in a field of expertise. All facilities have ISO 9001 quality systems accreditation.

Products manufactured to comply with Australian Standards (AS/NZS 1891.1) and European Standard (EN358) bear the mark of an independent certification body to ensure compliance.

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## 1.2 PRACTICES

Plan your fall arrest, restraint, work positioning, suspension and rescue systems before you start working. Section 1.3 Figure 1.3a gives examples of these systems. Take into consideration factors affecting your safety at any time during use.

When determining the best equipment to use and the best practice to follow, a competent person must conduct a risk assessment of potential hazards. The assessment must take into consideration:

- Keeping the fall arrest forces to below 6kN (600kg)
- Weight of worker including tools. Capital Safety lanyards have been designed, tested and certified for a combined worker weight and tools between 50kg & 160kg. Weight combinations above this must use a rated SRL Self Retracting Lifeline (Type 2 device).
- Comfort, especially during extended suspension
- Never exceeding the equipment's rated capacity
- Following written equipment instructions
- Using suitable anchorages, anchorage connectors and attachment hardware. Refer to Section 5
- The clearance to the closest obstacle below you. Refer to Figure 1.3b
- Rescue/retrieval, back-up systems and suspension intolerance
- Environmental concerns, such as pendulum

effects, abrasion, electricity and chemical warnings, confined spaces, toxic fumes and flammability.

Consult your doctor if there is any reason to doubt your fitness to safely absorb the shock from a fall arrest. Age and fitness seriously affect a workers ability to withstand falls.

The information in this booklet is a guide only. Australian & International Standards require users of fall arrest equipment to be competently trained.

***WARNING: This user instruction manual does not replace the requirements for competency based training.***

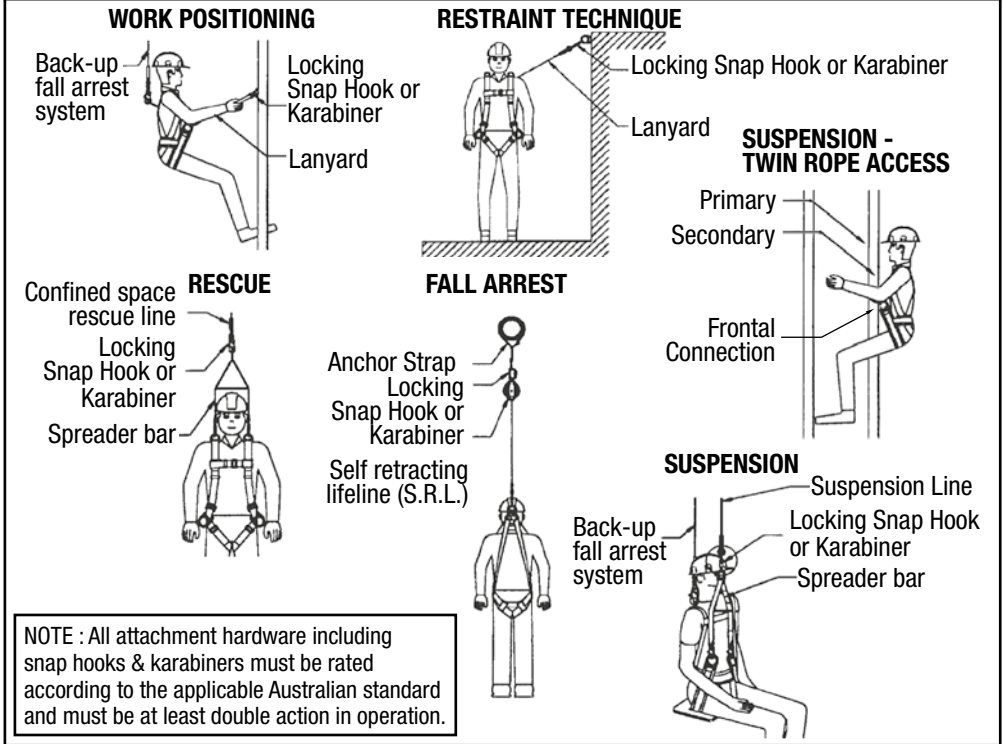
This booklet should be read in conjunction with a formal training program, documented safe working procedures and directions from your Safety Officer or a Safety Consultant.

Capital Safety is a Registered Training Organisation (RTO) accredited by ASQA (license number 91363 NSW) to deliver safe work at heights courses incorporating nationally recognised competencies. A sample of courses include:

- Height Safety Awareness
- Height Safety Systems
- Height Safety Equipment
- Height Safety Competent Person

Please contact Capital Safety for further information and a list of training course licensees able to deliver this training.

**FIGURE 1.3a - TYPICAL HEIGHT SAFETY APPLICATIONS**



**1.3 TERMINOLOGY**

**Free Fall Arrest(FFA):**

A Fall Arrest System is one that is designed to stop the free fall of a user and limit the maximum arresting forces imposed on the user to 6kN or less. A Free Fall is described by the Standard AS/NZS1891.1 as; a fall or the arrest of a fall where the fall distance before the fall-arrest system begins to take any loading, is in excess of 600mm either vertically or on a slope which it is not possible to walk without the assistance of a handrail or hand line.

**Work Positioning:**

A Work Positioning System is one that is designed to hold and sustain the user at a work location and limit the free fall to 600mm. Work Positioning is described by the Standard EN358 as; the use of a system that enables a person to work supported in a belt in tension in such a way that a fall is prevented.

**Restraint Technique:**

Control on a person's movement by use of a fall-arrest system, which entails connection to an

anchorage using an adjustable lanyard or other component that can be adjusted for length as necessary to physically prevent the person from reaching a position at which there is a risk of a free or limited free fall.

**Restrained Fall:**

A Restrained Fall is described by the Standard AS/NZS 1891.4 as; the use of equipment such as a harness and adjustable lanyard which can be adjusted by the user to maintain a restraint condition in different situations as the distance from anchorage to a potential fall zone varies. It assumes that the level of user training and competence is adequate to counter the additional risk factor.

**Limited Free Fall:**

A combination of anchorage placement and lanyard length which will permit only a limited free fall (<600mm).

**Suspension:**

A Suspension System is designed to suspend and support the user while being transported (raised up

or down) vertically and does not allow free fall.

### **Rescue:**

A Rescue system is designed to raise or lower a user to safety in the event of an emergency. No free fall should be possible.

### **Competent Person:**

A 'Competent Person' is defined under AS/NZS1891.4 as "A person who has, through a combination of training, qualification and experience, acquired knowledge and skills enabling that person to perform a specified task".

### **Height safety operator:**

A person who is able to perform harness based work at heights under the direct supervision of a height safety supervisor.

### **Height safety equipment inspector:**

A person who is competent in the skills needed to detect faults in height safety equipment and to determine remedial action.

### **Height safety supervisor:**

A person who is competent in the skills needed to perform harness based work at heights, to supervise other operators including those at entry level and to participate in first response rescue.

### **Height safety manager:**

A person who is competent in the selection, design, manufacture or installation of height safety systems or equipment, or the development of control measures or work practices.

### **Fall distance and Working Slack:**

There is no such thing as a safe fall distance. This is regardless of the situation you are in or the equipment you are using. The further you fall, the faster you accelerate and the higher the total force required to be absorbed when you suddenly stop.

### **Limited free fall:**

For any potential free fall situation you must use a full body harness in conjunction with a personal shock absorbing lanyard assembly or other Capital Safety fall arrest device to ensure the loads applied to the body do not exceed 6kN during a fall. Workers with a combined weight (including tools) of 136kg up to 160kg must allow for additional fall clearance (see figure 1.3b). Alternatively, a (SRL) Type 2 device with a 160kg load rating or higher may also be used. See [www.capitalsafety.com.au](http://www.capitalsafety.com.au) for more details.

Capital Safety promotes the use of primary and secondary "back-up" fall arrest systems. Consider your specific requirements when reviewing equipment needs and safety working procedures.

When using a personal shock absorbing lanyard

assembly in conjunction with a full body harness, the maximum allowable free fall distance is 2 metres. If the harness has a permanent or retrofitted dorsal extension (maximum length 300mm) then the lanyard must be reduced in length to 1.7 metres to conform to the 2 metre maximum free fall distance.

For a potential free fall situation, never put yourself in a situation where you can fall more than the maximum free fall distance of 2 metres. You can help avoid such a situation by using anchorages described in Section 5.0 to remove working slack.

The working slack is the lifeline distance from your harness attachment to the anchorage point. It is strongly recommended that you use the shortest lanyard practical, or an adjustable lanyard, preferably a Capital Safety Self Retracting Lifeline (fall arrest block) so that you keep the working slack of the complete lanyard assembly to much less than 2 metres.

### **Twin Rope Access:**

The practice of twin rope access requires that free fall should be eliminated through the implementation of specific work procedures, defined in competency based training. Twin rope access does not normally require the use of a shock absorbing lanyard, as the worker must ensure that all working slack is removed from rope lines whilst in suspension, ascending and descending, to avoid the possibility of a free-fall. This systems does however promote the use of cows tails and other devices such as dynamic rope to achieve a reduction in force during a fall.

### **Secondary System:**

Capital Safety promotes the use of primary and secondary "back-up" systems in both fall arrest and twin rope access situations. Consider your specific requirements when reviewing equipment needs and safety working procedures.

### **Calculating Fall Clearance:**

When using a personal lanyard assembly with shock absorber, you can calculate the required distance below your working surface to the nearest obstruction (fall clearance) by adding the following together:

- Free fall distance (FFD = 2 metres maximum)
- Deceleration Distance (DD)
- 0.25 metre for D-ring slide and harness stretch
- 1.75 metres for users up to 136kg
- 1.95 metres for users from 136kg to 160kg
- Clearance to obstruction (C = 1 metre)

You may need to include additional fall clearance height if there will be elongation of the system during a fall, for example when attached to a

horizontal life line. Refer to AS/NZS 1891.4

(Also See Figure 1.3b)

You should ensure your lanyard assembly is

secured to an anchorage point which is at a level that will result in a minimum free fall distance and the least total fall distance consistent with your ability to perform your allocated task.

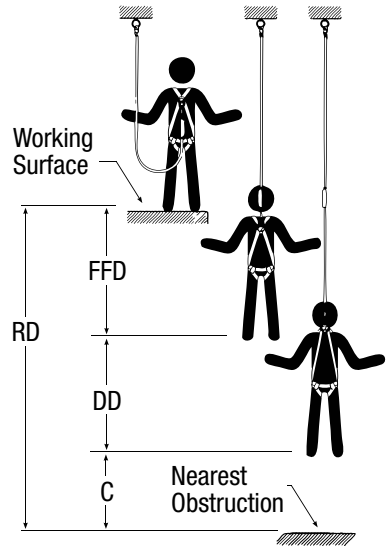
**FIGURE 1.3b - ESTIMATING FALL CLEARANCE**

**Shock Absorbing Lanyard**

- RD = Required Distance Below Working Surface to Nearest Obstruction
- FFD = Free Fall Distance (2.0m maximum allowed)
- DD = Energy Absorber Deceleration Distance  
When using a DBI-SALA lanyard or Protecta lanyard (1.75m for users up to 136kg) (1.95m for users from 136kg to 160kg) + D-ring Slide and Harness Stretch (0.25m)
- C = Clearance to Obstruction During Fall Arrest (1.0m minimum safety factor required)

$$\frac{FFD + DD + C}{RD}$$
 As per AS/NZS 1891.4, DD can be estimated based upon FFD in order to reduce RD.

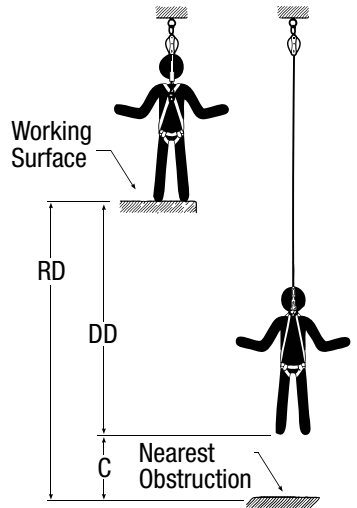
FFD	Extension
600 mm	300 mm
1000 mm	500 mm
1500 mm	600 mm
2000 mm	900 mm



**Self Retracting Lifeline**

- RD = Required Distance Below Working Surface to Nearest Obstruction
- DD = Free Fall, Lock Off and Deceleration (1.4m Max.) + D-ring Slide and Harness Stretch (0.25m)
- C = Clearance to Obstruction During Fall Arrest (1.0m minimum safety factor required)

$$\frac{DD + C}{RD}$$
 As per AS/NZS 1891.4, DD can be estimated at 700mm. 250mm must be added for D-Ring slide.



**1.4 PRODUCT COVERED BY THESE INSTRUCTIONS**

Capital Safety makes the following groups of products:-

- a) Full Body Harnesses commence with the part numbers 100 Series (EziFit), 113 Series (Rollgless),

300 Series (Delta), 400 Series (ExoFit™ & ExoFit™ XP), 500 Series (Delta Repel), 600 Series (ExoFit NEX™) or AB1XXXX under the Protecta brand. For information on all harness models, refer to [www.capitalsafety.com.au](http://www.capitalsafety.com.au)

This group of products has been designed to hold you in an upright position if you have been involved in a fall. All of these harnesses have a fall arrest rated D ring or connecting loops at the back of the neck or at the sternum. When using this group of products and there is a risk of a fall, you must either use an item from category (d) below, Type 2 device (SRL) or a system that will absorb most of the forces that could be generated during an incident. The maximum force permitted to be transferred to a person during an incident is 6kN.

b) *DBI-SALA™ belts part numbers start with E100, E101, E105, E112, E116, E117, E120, E201 & E400 Series and Protecta belts start include models AB001AU and AB002AU and AB003AU. Belts are to be used for restraint purposes only. There should be no possibility of free fall when using these products. If there is any risk of a free-fall then you must use a full body harness.*

**Belts are to be used for restraint purposes only.** There should be no possibility of free fall when using these products. If there is any risk of a free-fall then you must use a full body harness.

c) *Pole Straps are defined by the part numbers E60X series, E61X series and E85X series and AF725.*

This group of products have been made with different types of adjusters to allow a choice for the operator. The Pole Strap is to be used in such a way that only a restrained fall can occur. Care should be taken at all times when using this group of products to ensure that the hook is correctly locked onto the work positioning D-rings.

(Refer to 6.4.)

d) *Personal Shock Absorbing Lanyards all commence with the letter Z for the DBI-SALA™ brand and AE521XX or AE529XX for the PROTECTA brand.*

This group of products are designed for freedom of movement and protection in case of a fall. Standard personal shock absorbing lanyards are designed to tear apart to a maximum 1.75 metres while keeping the forces on the body below 6kN. When in use by workers weighing 136kg to 160kg (including tools) the tear out may increase to a maximum of 1.95 metres. All personal shock absorbing lanyards are 2 metres or shorter in length and working slack must

not be greater than 2 metres. If the anchor point is at your feet it is therefore possible to end up 5.75 metres below the anchor point after a fall and for a heavier worker (from 136kg to 160kg) this distance can be as much as 5.95 metres. It is important that reference is made to section 7.0 on the correct use of lanyards.

e) *Restraint Lines are defined by the E70X and E711 series.*

This group of products can only be used where the equipment ensures that there is no risk of free-fall – see section 1.4b on fall restraint. They have been developed for restraint purposes. If there is risk of a fall then you must use fall protection products from the groups above.

f) *Fall Protection Kits are defined by the 1900-XXXX series in the DBI-SALA™ brand or AAXXXX series in the PROTECTA brand.*

These kits represent a collection of fall arrest devices which, when used together, provide a system of fall protection for specific applications. A person proposing to use fall protection equipment must be deemed competent in the use of such equipment before working at height. This is a requirement of Australian and New Zealand Standards AS/NZS1891.4.

g) *Personal Anchorage Connectors are defined by the E829-size, E849-size, E87-size and E88-size under the DBI-SALA™ brand and the AM450-size / AM500-size series in the PROTECTA brand.*

There is no AS/NZS1891.1 testing requirements for these products and they cannot carry a standards mark, however Capital Safety has tested these products and they are rated to a minimum of 15kN to 21kN depending on their design. Personal anchorage connectors **are not lifting slings** and therefore should **NOT** be used for lifting goods.

For additional information on correct product use, refer to section 5.0.

h) *Rope Adjuster and Anchor Line.*

This product is intended to be used as part of a personal fall arrest or restraint system when coupled with an appropriate anchor line. The rope adjuster may move up and down the lifeline when manually activated by the user. When used in a fall arrest system, in the event of a fall, the device remains locked on the lifeline to arrest the falling worker.

## 2.0 RECOMMENDED READING

<b>AS/NZS 1891.1-3</b>	Industrial fall arrest systems and devices
<b>AS/NZS 1891.4</b>	Care, Use and Maintenance
<b>AS/NZS 4488</b>	Industrial rope access systems
<b>AS 4142 Series</b>	Fibre ropes
<b>AS 1353 Series</b>	Flat synthetic-webbing slings
<b>AS 1666 Series</b>	Wire - rope slings

<b>AS 4497 Series</b>	Round Slings-synthetic fibre
<b>AS 2865 Series</b>	Safe working in a confined space
<b>EN 358</b>	Belts for work positioning and restraint/ work positioning lanyards

When reviewing Australian Standards it is important to know that they represent the



minimum acceptable performance and are not necessarily best practice. Where a local standard exists in Australia and New Zealand, all Capital

Safety product manufactured in Australia is designed, tested and certified to that standard.

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### 3.0 CONDITIONS OF USE

**WARNING:** If Capital Safety equipment is not used or stored correctly, or additions or alterations are made to any part of them, the effectiveness of these life-saving devices may be considerably reduced.

**WARNING:** Additions, alterations or repairs not performed by Capital Safety, or an authorised service agent may negate any warranty.

**WARNING:** Capital Safety's product range has been developed for compatibility between components and therefore Capital Safety cannot guarantee compatibility or be held responsible for connections made between Capital Safety products and other manufacturer's sub-system assemblies or components.

**WARNING:** Capital Safety can never be aware of all the necessary factors for every height-related working procedure. The suitability of Capital Safety equipment for a particular user, application or environmental condition is the responsibility of the user. Selection of equipment should be made following a risk analysis of the operations and the environment in which they are to be undertaken.

**WARNING:** If Capital Safety equipment has been damaged, exposed to chemicals, or has been involved in a fall, it must be destroyed or returned to Capital Safety for inspection and report. This report will include a determination whether the product is suitable for continued use. Damage may result from

excessive exposure to heat or daylight, mechanical means or chemicals including acids, caustic or cleaning solutions or hazardous atmospheres. Refer to section 4.0.

**WARNING:** For special (customised) versions of any product, follow the instructions herein and, if enclosed, any attached supplements. Customised versions are manufactured on the understanding that the changes requested by the customer have been made by the customer's competent Safety Consultant who is aware of all safety and liability issues relating to changes they have made in the product.

**WARNING:** Wet rope and webbing products should not be used whilst frozen or during thaw. Use in cold environments is okay provided products are not damp/wet prior to use.

Freezing can considerably reduce the performance of the product.

**WARNING:** Exercise extreme care when working in the vicinity of live power lines.

**WARNING:** Rope burn will damage webbing. It is recommended to have a safety belay when using this equipment in addition to always using at least two separate anchor points to provide a secondary system of fall protection.

**WARNING:** Gear loops are not intended for use as a connection point for ascending and descending.

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### 4.0 INSPECTION OF SAFETY EQUIPMENT

Load bearing height safety equipment made from rope, webbing and thread uses man-made fibres only. It is not permitted to use natural fibres for load bearing applications in height safety equipment.

For all load bearing webbing, Capital Safety uses high tenacity polyester and Nomex®/Kevlar® fibre in 45mm width that incorporates a lock stitch. All stitching uses Kevlar® or compatible thread sewn with a lock stitch machine and finished by over stitching. Rope lanyards and safety lines are manufactured from Nylon (Polyamide) and/or polyester and have a diameter of not less than 11mm.

For speciality applications, other fibres may be used.

#### **Inspection Frequency:**

Safety equipment must have a maintenance interval and maintenance procedure that takes into

account the environment and duration of use. This maintenance interval and procedure must comply with Australian Standard AS/NZS 1891.4. For webbing and rope products, inspection is required by the user before and after each use and every six months by a Height safety inspector.

Inspect safety equipment regularly as required by AS/NZS 1891.4. The equipment must be systematically inspected to documented procedures.

Webbing products, including belts, harnesses, pole straps and personal shock absorbing lanyards must be destroyed no later than 10 years from date of manufacture (D.O.M.) on the label.

This is irrespective of the fact that the equipment may appear to be in good condition.

## 4.1 INSPECTION CRITERIA

Inspection shall be made by the user immediately before and after each use. Also, a Height safety equipment inspector is required to perform inspections at a time ranging from 6 monthly to annually - depending upon the equipment. Refer to AS/NZS1891.4 Table 9.1. Reference should also be taken from the manufacturer's supplementary instruction manuals and/or any other material or recommendations supplied.

Written inspection records must be kept.

AS/NZS1891.4, Section 9.10, lists information to be recorded for each item of equipment.

An inspection record sheet is attached to the back of this manual in section 16.0.

Additional inspection criteria for products can be obtained by contacting Capital Safety on 1800 245 002 or by visiting [www.capitalsafety.com.au](http://www.capitalsafety.com.au)

If the Competent Person believes that the product is not deemed suitable for use because it does not conform fully with the requirements of the appropriate Standard or the manufacturers recommendations then it should be withdrawn from service and returned to the manufacturer for assessment and/or be destroyed.

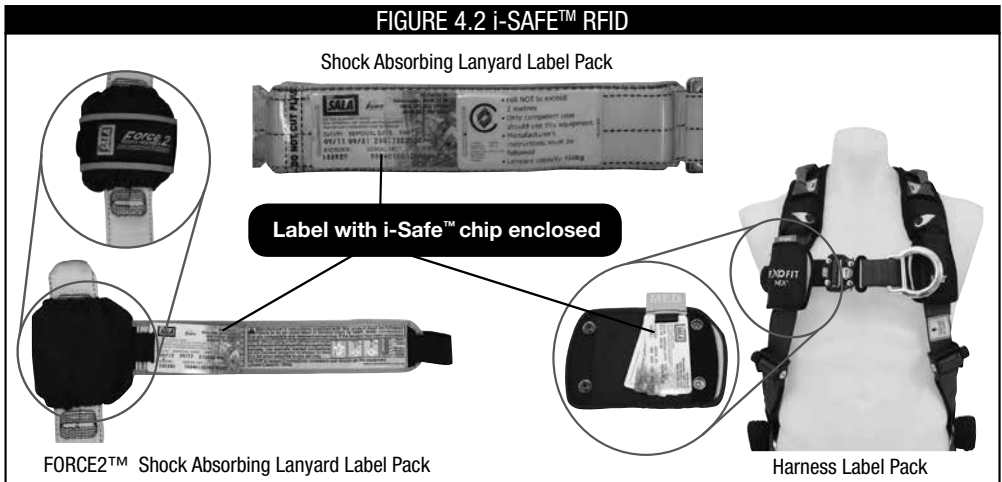
## 4.2 INSPECTION AND THE I-SAFE™ RFID SYSTEM

The i-Safe™ RFID tag, when fitted to DBI-SALA™ fall arrest equipment, can be used in conjunction with the i-Safe™ handheld reading device and the web based portal to simplify inspection and inventory control. When incorporated into a height safety program, the i-Safe™ system can help organize fall protection equipment records including equipment history and inspection requirements. The i-Safe™ inspection web portal provides electronic access

to logistic and safety management information by electronically tracking inspection and inventory control data.

For details on use, follow the instructions provided with the i-Safe™ handheld reader or on the web portal to transfer data to the web log.

For further technical information contact Capital Safety or visit the web site [www.capitalsafety.com.au](http://www.capitalsafety.com.au)



## 4.3 INSPECTION FOR LATCH PROTECTION DEVICES (LPD) ON LANYARDS AND POLE STRAP ASSEMBLIES

When used on lanyards and pole-straps, Latch Protection Devices (LPDs) are an essential safety component of the product. These prevent the webbing or rope at the hook ends from sliding around and interfering with the rear gate latch of a snap hook. If these devices are missing, they

may reduce the safety of the device. If the LPDs are removed to perform equipment inspection, they **MUST** be replaced prior to use to limit the potential for gate interference.

Latch protection devices are fitted to selected lanyards and Pole Straps.

The latch protection device (LPD) when fitted, may be removed from the hook and web assembly using a Phillips head screw driver, enabling visual inspection between the webbing or rope and the hook body. The device should be refitted after inspection taking care to ensure webbing or rope is clear of device when clamping together.

Alternatively, external visual inspection may be carried out by inspecting through the clear plastic material.



#### 4.4 REMOVAL CRITERIA

Remove the equipment from service when inspection shows:

1. It has been involved in a fall;
2. If the Rip Stitch Indicator has been deployed (see Figure 4.4)
3. Labels have been removed, are missing, illegible or obliterated;
4. Exposed to high temperatures, ie. when left in a hot closed environment, or evidence of melting, stiffness or charring;
5. Damaged caused by exposure to extreme low temperatures or frozen.
6. Acid, caustic or organic solvent burns;
7. Excessive abrasive (eg. furry or frayed surface) wear;
8. Excessive general corrosion, any pitting corrosion, cracked, distorted, burred, worn or broken hardware;
9. Knots or kinks in any parts of the equipment;
10. Broken fibres, tears, cuts, contusions, snags, splinters or slivers;
11. Deterioration or stretching of any kind;
12. Sunlight degradation;
13. Weld burns;
14. Loss of resilience, discolouration or other visible damage that cause doubt as to the strength of the equipment or potential overloading;
15. Part mechanisms not moving freely;
16. Reduction in cross-sectional area of rope or webbing;
17. Loose or unravelling of fibres, strands or stitching;

18. Excessive contamination unable to be removed by approved cleaning methods;
19. If a harness with or without a tear indicator dorsal extension or lanyard has been involved in a fall.
20. If the personal shock absorbing lanyard that absorbs energy by permanent deformation or destructive action shows signs that it has commenced to tear or has been activated in any manner.
21. If it displays felt tip pen markings (eg. permanent marker) on load bearing webbing.
22. It is more than 10 years old.
23. For all Nomex<sup>®</sup>/Kevlar<sup>®</sup> harnesses - Charring of the Nomex<sup>®</sup> outer weave may cause the material to open, exposing the yellow inner Kevlar<sup>®</sup> fibre of the webbing, if this occurs then the harness should be removed from service. **Note:** weld spatter may adhere and char the Nomex<sup>®</sup> outer weave, this does not compromise the strength of the webbing. Hardware needs to be inspected for damage to the PVC coating; if the metal is exposed then the harness should be removed from service.



#### 4.5 SAFE CARE AND USE OF ROPES

Observe the following directions when using rope products in addition to the other requirements in this booklet.

1. Coil right-hand laid rope clockwise, left-hand laid rope anticlockwise.
2. Do not knot a rope to form an eye. Capital Safety will splice the rope in the normal manner, with a thimble. Knots can reduce a

rope's strength by up to 50%.

3. Never set different types of rope against or in parallel, unless they have the same stretching and strength characteristics. The rope with the least stretch will part first.
4. Synthetic fibre ropes do not give an audible indication of stress, even when about to fracture.

## 4.6 CLEANING

Safety equipment should be cleaned regularly. The frequency of cleaning depends on the environmental conditions in which they are used. Cleaning intervals however should not exceed 3 months. The cleaning process should remove contaminants, including dirt, salt, mud, dust, paint, grease and oil. If contaminated by salt water the item (Excluding the energy absorbing pack) should be immersed in clear potable water and agitated to remove the contaminant. Cleaning should be carried out in the following manner.

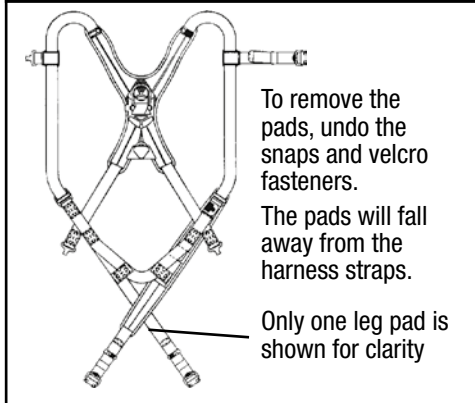
- Wipe off surface contaminants with a cloth
- Use sponge and mild detergent and cold/lukewarm water solution
- Thoroughly lather
- Rinse with clean tap water
- Wipe as dry as possible with a clean sponge and cloth
- Metal components should be wiped clean using a lint free cloth

Following cleaning, safety equipment should be left to dry. Thoroughly hand wipe the equipment so that all parts dry. Do not expose to excessive heat, steam or sunlight.

To launder the ExoFit™ XP harness range, remove the pads as indicated in Figure 4.6a. Place the harness in the supplied laundry bag. The bag is designed to prevent entanglement of harness and protect the washing machine from damage.

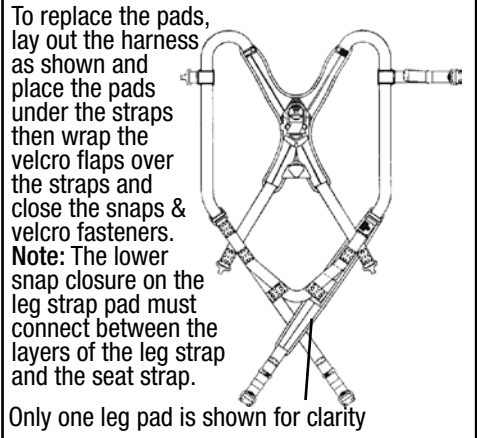
Use of the laundry bag to wash pads is optional.

**FIGURE 4.6a REMOVING EXOFIT™ XP PADS**

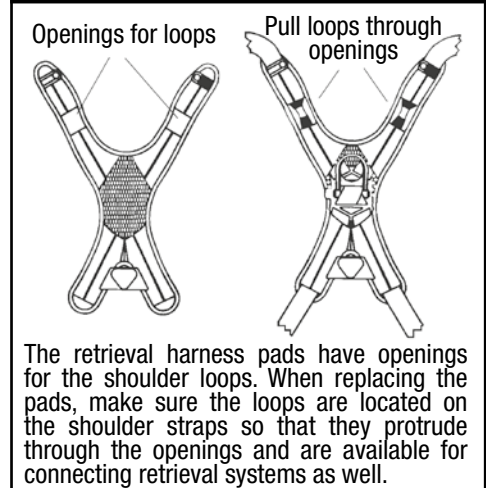


Use a bleach-free detergent when washing both the harness and the pads. Water temperature for wash and rinse must not exceed 70°C. Harness and pads may be air dried or tumble dry on low heat (not greater than 90°C). Replace the pads before using the harness. See fig. 4.6b and 4.6c

**FIGURE 4.6b REPLACING EXOFIT™ XP PADS**



**FIGURE 4.6c RETRIEVAL HARNESS LOOPS**



## 4.7 STORAGE

Safety equipment must be stored in a clean, cool, dry location free from direct sunlight, chemical fumes or corrosive materials. Capital

Safety recommends safety equipment is stored in a cabinet designed to permit ventilation. Avoid storing safety equipment on the ground.

## 4.8 INSPECTION RECORD SHEET

Complete the record sheet attached in section 16.0 of this manual, or other approved method for

recording such inspections once completed by a competent person.

## 5.0 ANCHORS

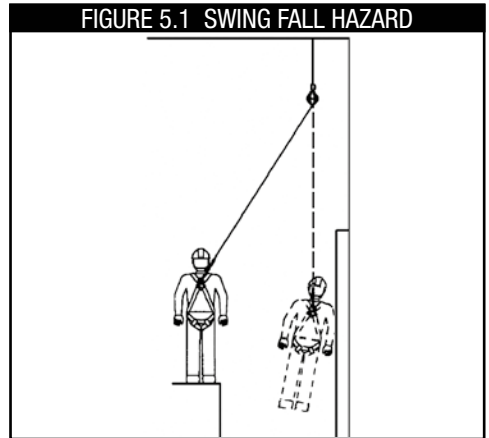
### 5.1 STRUCTURE STRENGTH

It does not matter how good your harness or lifeline is if you choose an unsuitable anchorage.

The structure must be capable of withstanding a force without distortion or fracture of 12kN for limited free fall work positioning and rope access, 15kN for a single person anchorage and 21kN for a two person anchorage.

For repetitive work practices, structures should be verified and identified as capable of withstanding the forces of fall arrest. You must be connected to a structure or structures at all times. Care should be taken to ensure the prevention of swing fall (pendulum) hazards. See figure 5.1.

Capital Safety offers a number of “first man up” devices that help reduce the risk of injury when initially connecting to a structure.



### 5.2 STRUCTURES NOT SUITABLE FOR FALL ARREST

The following structures are not suitable for fall arrest unless certified by a competent engineer:

- Scaffolding or handrails
- Roof battens, ceiling timbers and some roof trusses (ie soft timbers)

- Gutters, window frames, aerial masts, chimneys, downpipes or makeshift devices

This list is not exhaustive. If in doubt consult an engineer to confirm if the structure is suitable.

### 5.3 STRUCTURE CONDITION AND LOCATION

When connecting to a structure, it should be sound and free from sharp edges, burrs and other abrasive conditions. It should also be as high as possible, within reach and above the attachment point on your harness.

You should avoid connecting to a structure that is below the level of your harness attachment point. Connection to a structure below your harness attachment point shall only occur when there is no other suitable structure available.

By connecting to a structure below your harness attachment point, you risk falling up to twice the length of your lanyard assembly plus any energy absorption extension. This creates a fall factor of two.

Falling twice the length of your lanyard assembly increases the total fall arrest forces generated and the risk of injury as well as the possibility of hitting an obstacle below you.

## 5.4 CONNECTING TO A STRUCTURE USING WEBBING OR ROPE

Anchor straps and tie-off adaptors are used to form a temporary anchor on or around a structure for the connection of a safety line or lanyard.

These anchors have a use rating of 22.2kN or in the case of Anchor Strap AM450, 15kN in the following configurations:-

### A) Methods of use for Tie Off Adaptors.

#### 1) Choke.

The strap is passed around the structure and through the eye or through the endless wraps of the strap to which a connector may be attached.



#### 2) Basket.

The strap is passed around the structure forming a basket shape to which a connector is attached to both ends to form a loop.



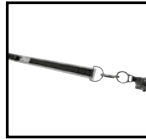
#### 3) Wrapped.

The strap is passed around the structure more than once and then threaded through the eye of the strap or through the endless wrap of the sling.



#### 4) Tension.

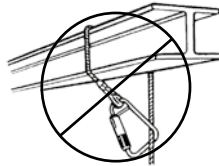
The strap is used to extend the reach of a fall arrest system with the connector being attached at each end.



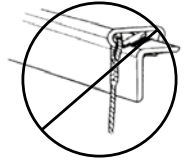
### B) Improper use of tie off adaptors.

Methods of attachment displayed in diagrams A, B, C, D, and E below, must not be employed to connect to a structure.

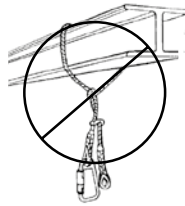
**Drawing A:**  
Do not tie off over sharp edges or snap back onto the strap



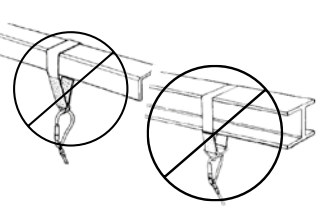
**Drawing B:**  
Do not tie off where latch will not fully close.



**Drawing C:**  
Do not knot the anchor in any manner. Avoid sharp edges.



**Drawing D & E:**  
Do not use an anchorage strap with connectors or D-rings of similar size.



## 5.5 ANCHORAGES FOR PERSONAL USE

Unless stated otherwise, each anchorage is for your personal use only. Multiple users of the same anchorage are not permitted unless the structure and connectors have been certified to withstand

the additional multiple fall arrest forces. Be aware that for horizontal lifelines the end load on anchorages may exceed 15kN even for a fall by a single person with energy absorption equipment.

## 5.6 SPECIAL ANCHORAGES

Capital Safety designs, manufactures and distributes customised anchorages, anchorage connectors and attachment hardware for special applications designed to offer you maximum protection. For a complete listing, contact Capital Safety on 1800 245 002 or refer to [www.capitalsafety.com.au](http://www.capitalsafety.com.au)

Capital Safety designs, manufactures and installs a range of engineered permanent and portable/temporary horizontal and vertical life line systems

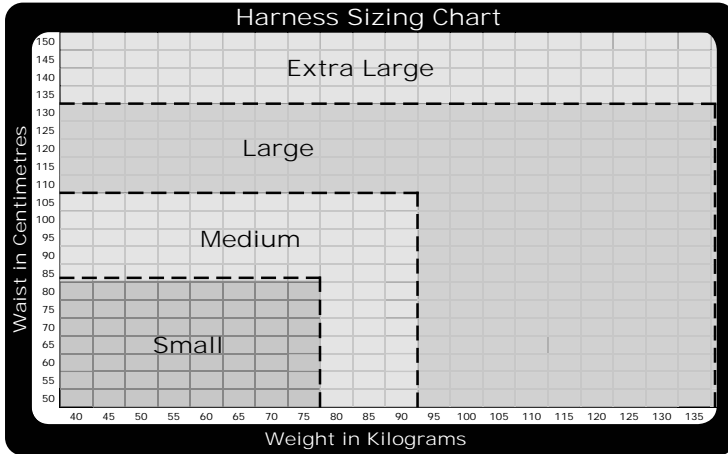
such as Evolution®, Sayglida®, Lad-Saf®, Railok®, Unirail®, Uniline®, SecuraSpan®, P-2000 series and anchor points.

Other special anchorages include I-beam trolleys, tripods and davit arms.

Capital Safety also offers Iron Wing™ and Glyder™ sliding beam trolleys, surface mounted roof posts, vacuum assisted connectors and proprietary roof anchors.

## 6.0 BODY HARNESSES AND BELTS

### 6.1 HARNESSES AND BELTS SIZING



Sizing chart is a guide only. When measuring the waist, wrap the measuring tape around the waist at the height of your navel, keeping a finger between the tape and your body.

WHEN A USER'S WEIGHT EXCEEDS 136KG (UP TO 160KG INCLUDING TOOLS) THE HARNESS MUST BE USED IN CONJUNCTION WITH A HEAVY DUTY ENERGY ABSORBING LANYARD OR A SELF RETRACTING LIFELINE RATED FOR THAT CAPACITY. REFER TO 1.2 PRACTICES. CAPITAL SAFETY OFFERS NO PERFORMANCE GUARANTEES BEYOND THESE PRESCRIBED LIMITS.

Capital Safety offers four sizes for belts and harnesses. The nominal waist sizes are *(view chart above)*:

#### **Belts**

Small Build - up to 82cm  
 Medium Build - 83cm to 104cm  
 Large Build - 105cm - 130cm  
 Extra Large Build - 130cm upwards

#### **Harnesses**

Small Build - up to 82cm  
 Medium Build - 83cm to 104cm  
 Large Build - 105cm - 130cm  
 Extra Large Build - 130cm upwards

## 6.2 HARNESS DONNING

There are three general types of harness designs across the Capital Safety range. For one style the user puts on the harness like a vest. In the other style the user slips on the front by passing webbing straps over their head. With the third style the user steps into the harness.

For specific instructions on 'Harness Donning' please see Section 6.2.1 for the vest style and

cross-over style harnesses and 6.2.2 for the step-into style harness.

To determine which instructions best suit you, please refer to donning label on your harness for your model.

## 6.2.1 FITTING INSTRUCTIONS FOR FULL BODY HARNESSSES - VEST AND CROSSOVER STYLES



### 1. INSPECT THE HARNESS BEFORE USE

All fall protection equipment should be inspected by the user prior to and after each use. A detailed inspection should also be performed by a Competent Person every six months as per AS/NZS 1891.4.

Harnesses should be inspected for felt pen markings on load bearing webbing, cuts, burns, discolouration, excess dirt or wear, knots or other damage (Fig. A).

All labels must be present. Hardware such as D-rings, snap hooks and buckles should be free of cracks, corrosion, deformation, burrs, missing parts, or other damage and/or wear (Fig. B & C).

If there is ever any sign of an unsafe condition or if the harness shows signs that it has been used to arrest a fall it should be immediately withdrawn from service & destroyed.



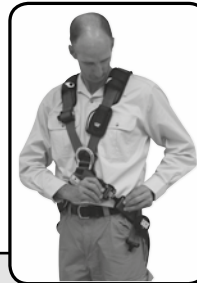
### 2. GETTING STARTED

#### *Vest –*

Hold harness by back D-ring, ensure all buckles are undone and ensure there are no tangles in the webbing. Holding the shoulder straps slip harness over arms and onto shoulders like a jacket. Check straps are not tangled and hang freely.



*Crossover –* Holding harness on your right ensure all buckles are undone and straps aren't twisted. Slip the harness over your head from right to left and attach the frontal attachment strap on your left side. Front D-ring should be positioned at the base of the rib cage (sternum) so that the shoulder straps will not slip off the shoulders.





### 3. SUB PELVIC STRAP

The positioning of the sub-pelvic strap is critical.

**Vest** - Adjust the shoulder straps to ensure the sub-pelvic strap is positioned directly below the buttocks. Ensure the straps are adjusted to the same length on each side.

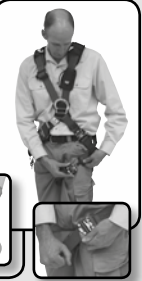


**Crossover** – Adjust sub pelvic strap to sit directly below the buttocks by tightening the upper right hand buckle (to raise both the sub-pelvic and front D-ring) and then the lower left side frontal adjustment strap.

Note: This strap may need to be fed through the frontal D-ring.

### 4. LEG STRAPS

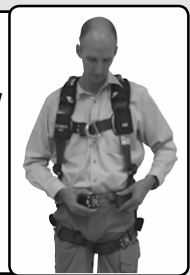
Pass left leg strap between legs ensuring it is not twisted and fasten with relevant buckle on left hand side. Repeat procedure with right side. Make sure webbing does not cross between legs. For ExoFit NEX™ to adjust the leg straps, unlock the webbing lock on the quick connect buckle and pull on the strap. Adjust the leg straps so that a flat hand (Not a Fist) can be placed between the leg and the leg strap. (Fig D).



### 5. CHEST STRAP & WAIST BELT

Note: Not all models have a chest strap or waist belt.

Position chest strap across the middle of the chest, approximately 3 finger widths above the base of the sternum. Shoulder straps should be vertical, not pulled into centre of body. Connect the waist buckle ensuring that the webbing straps are not twisted and kept loose so that the belt does not impact a worker during a fall. For ExoFit NEX™ when the strap is properly adjusted, rotate the webbing lock.



### 6. FINAL ADJUSTMENTS

The harness should be comfortable without undue pressure on the shoulders, thighs or pelvis. You should still have your full range of motion with the harness fitted correctly. The dorsal D-ring should be positioned centrally between the shoulder blades.

Keepers should be positioned properly to prevent webbing slippage and entanglement. If two keepers are present, one should be positioned tight against the buckle to keep it in adjustment and the second to store the extra webbing.



## 6.2.2 FITTING INSTRUCTIONS FOR FULL BODY HARNESSSES - SUSPENSION AND SIT

A



### 1. INSPECT THE HARNESS BEFORE USE

All fall protection equipment should be inspected by the user prior to and after each use. A detailed inspection should also be performed by a Height safety Equipment Inspector every six months as per AS/NZS 1891.4.

Harnesses should be inspected for felt pen markings on load bearing webbing, cuts, burns, discolouration, excess dirt or wear, knots or other damage (Fig. A).

All labels must be present. Hardware such as D-rings, snap hooks and buckles should be free of cracks, corrosion, deformation, burrs, missing parts, or other damage and/or wear (Fig. B, C, D & E).

If there is ever any sign of an unsafe condition or if the harness shows signs that it has

been used to arrest a fall it should be immediately withdrawn from service & destroyed.

B



C



D



E



### 2. GETTING STARTED

Hold harness by back D-ring, ensure that all buckles are loosened/backed off and ensure there are no tangles or twists in the webbing.

Placing the shoulder straps to your right hand side, hold the harness at either end of the waist belt, one foot at a time, step through both the waist belt and leg straps.

Pull the harness up to your waist positioning the waist belt on top of your hips.

Ensure it is sitting comfortably on top of your hip bones.

The harness model badge should be at the back of the operator, the right way up.



### 3. SHOULDER STRAPS

Holding the shoulder straps on your right, slip the harness shoulder straps over your right arm then manoeuvre the left shoulder strap over your head placing the shoulder straps over your shoulders.

ExoFit NEX Suspension Harness Range - Holding the shoulder straps on your right, slip the



harness shoulder straps over your right arm then manoeuvre the left shoulder strap around the back of your head. Connect using the Quick Connect Buckle to the lower body strap.

**NOTE: NOT APPLICABLE TO REGULAR SIT HARNESS MODELS**

#### 4. TIGHTENING WAIST BELT

Tighten the waist belt by pulling on both ends of the waist straps across your body at the same time. Make sure that waist belt feels secure and comfortable around your waist.

**Note:** The side D-rings should sit on your hips, and the front maillon rapide should be centred vertically on your body.

Ensure that a minimum tail of 75mm is retained when returned through the buckle. This is a good indication of a correctly sized/fitted harness.

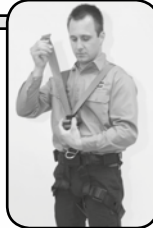
Tidy up any excess webbing by concealing it in the Velcro pouch (Funnelweb model) or by using the elastic keepers.



#### 5. ADJUSTING REAR LEG SUPPORT STRAPS

Adjust the rear leg support straps that run from the waist belt to the leg pads by pulling the webbing through the buckle. The padded leg straps should be positioned mid thigh.

**NOTE: NOT APPLICABLE TO EXOFIT NEX SUSPENSION RANGE**



#### 6. ADJUSTING SHOULDER STRAPS

Tighten the shoulder straps by pulling up on the end of the strap until both shoulder straps are even. Store the excess webbing by sliding the keeper along the strap.

**NOTE: NOT APPLICABLE TO SIT HARNESSSES**



#### 7. ADJUSTING LEG STRAPS

Tighten each leg strap by pulling on the free end of the webbing. Adjust the leg straps so that a flat hand (Not a Fist) can be placed between the leg and the leg strap.

#### 8. FINAL ADJUSTMENT

The harness should be comfortable without undue pressure on the shoulders, thighs or pelvis. You should still have your full range of motion with the harness fitted correctly. The dorsal D-ring should be positioned centrally between the shoulder blades and waist belt square on your hips.

**Note:** For ExoFit NEX Suspension Harness Range - If this is not the case, you must remove your harness and adjust the back torso adjuster. This will adjust the distance between the dorsal D-ring and the waist belt. After you have adjusted the back torso adjuster, repeat steps 1-7.

Keepers should be positioned properly to prevent webbing slippage and entanglement. If two keepers are present, one should be positioned tight against the buckle to keep it in adjustment and the second to store the extra webbing.



## 6.2.3 FITTING THE OPTIONAL SUSPENSION SEAT (EXOFIT™ XP/NEX CLIMBING, WIND ENERGY AND DERRICKMANS MODELS)

### FITTING THE OPTIONAL SUSPENSION SEAT TO THE CLIMBING HARNESS (480 SERIES):

When fitting the seat to the harness it is first necessary to orient the harness and seat. The seat attachment 3 bar slides are designed to fit into the open slot of the work positioning D-rings on the waist belt.

The seat is positioned so that the adjustable 3 bar slides located below the attachment D-rings are facing backwards.

Hold the side D-ring of the harness in one hand swivelling the D-ring away from the belt opening up the face of the D-ring ring slot.

Fold the 3 bar slide over and push through the D-ring ring slot.



When the 3 bar slide is through the slot pull back on the web assembly holding the 3 bar slide which will lay the slide flat on the outside of the D-ring.

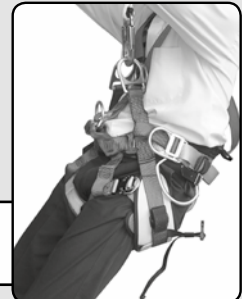
When this is done repeat the process on the other side, this will position the seat on the harnesses so that it lies below the buttocks.

The suspension seat D-rings can be velcroed to the seat when not in use. The seat has two 25mm straps on the bottom of the seat with a plastic clip attached. These straps are designed to be attached to the 2 plastic clips on the rear of the waist pad to position the seat away from the user when it is not required.



To use, take the 2 clips and attach to the mating clip on the rear of the waist pad and pull to adjust the seat into holding position to the rear of the harness.

Suspension seat lowered and in use.



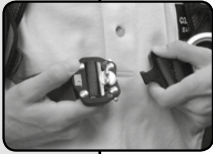
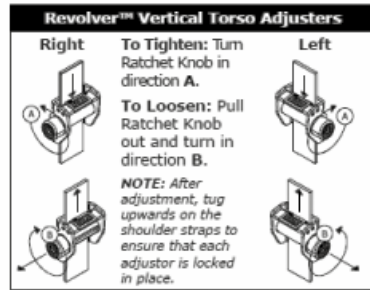
## EXOFIT™ NEX™ HARDWARE



### REVOLVER™ VERTICAL TORSO ADJUSTERS

Turn Ratchet Knob clockwise to tighten. To loosen, pull Ratchet Knob out and turn counterclockwise while pulling strap.

**Note:** After adjustment, ensure that the ramped teeth on the adjuster are engaged in the ratchet slots



### DUO-LOK™ QUICK CONNECT BUCKLE

Connect buckle ends by inserting the tab into the receptor until a click is heard. To adjust strap, rotate Webbing Lock to unlocked position. Pull strap to adjust. Rotate Webbing Lock to locked position.

### QUICK-CONNECT BUCKLE

Insert male portion into receptor until click is heard. Pull free end of web to tighten.



## OTHER HARNESS HARDWARE



### PASS-THRU BUCKLE

Pass male buckle through female buckle and pull free end of webbing to tighten.

### QUICK ADJUST BUCKLE

Hold the buckle in one hand and pull the free end of the webbing to tighten. To release the tension tilt the buckle at a 90 degree angle.



### DELTA MAILLON

The maillon should be completely closed to ensure a secure connection, no thread should be visible. It is important that the screw gate is facing down.



### PULL THROUGH BUCKLE

Pass the webbing up through the first slot of the buckle then down and through the second slot. Double back the webbing through the first slot to lock it into place and prevent slippage.

### STEPS FOR THREADING PULL THROUGH BUCKLE



Up through 1st slot



Down through 2nd slot



Back through 1st slot

## 6.2.4 BANDICOOT CHEST HARNESS DONNING

A chest harness is used when the operator wishes to combine this with basic sit harness to eliminate the possibility of falling out of a sit harness when they invert during a fall. A chest harness may also be used as an accessory to a lower body harness for the purpose of holding a chest ascender in the correct orientation. The Bandicoot harness must be fitted so that the chest strap is horizontal and aligned with the sternum or chest midpoint.

## 6.3 HARNESS INSPECTION

The Full Body Harness should be inspected by the user before and after each use. A detailed inspection of the harness should be performed by a Competent Person every six months with the results recorded on an inspection record card. See section 16.0.

Harnesses should be inspected for:-

- Felt pen markings on load bearing webbing
- Cut, frayed or broken fibres
- Tears, burns, abrasions, mould or discolouration
- Pulled, cut or broken stitches
- Excess dirt or wear
- Knots or any other damage.

All labels must be present and fully legible including

- Serial number
- Date of manufacture
- Date of withdrawal from service

Harness hardware such as D-rings, buckles, backpads, keepers and snap hooks should be free of:

- Cracks
- Corrosion
- Deformation
- Burrs and sharp edges
- Missing or wear
- Any other damage or worn parts

### ExoFit™ XP Harness

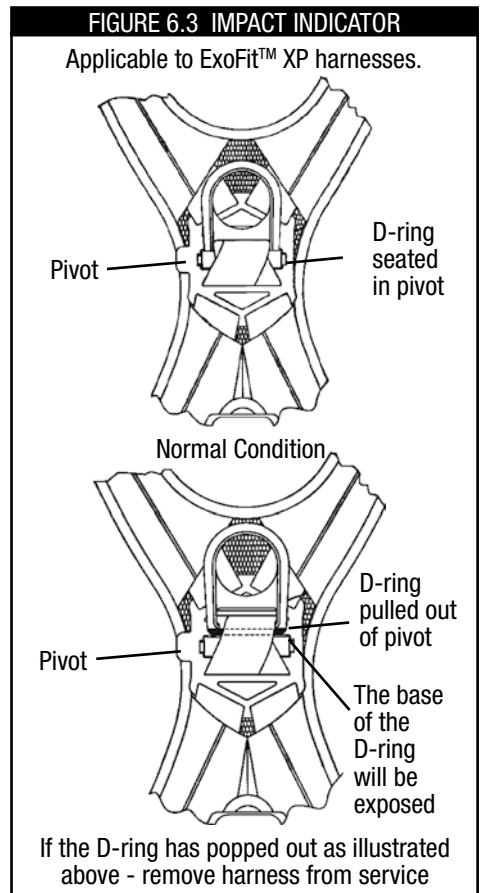
For all ExoFit™ XP harnesses with a spring loaded stand-up D-ring - Inspect the impact indicator: See Figure 6.3. If the dorsal D-ring of the harness has experienced an impact, the base of the D-ring will become visible and indicate that an impact has occurred. The impact indicator can not be reset and the harness must be removed from service and destroyed.

Harnesses with any noted deficiency should be tagged out of service and destroyed or returned to the manufacturer for advice on continued use.

When performing the annual formal inspection on the ExoFit™ XP harness, remove the back pad

Any connection of a fall arrest or limited free fall system to the Bandicoot harness is prohibited at all times. To secure the chest harness, at the back, use the buckle provided on the waist belt. To secure at the front, use an ascender attached to the anchor points on the sit harness and tube nut connector on the chest harness. **WARNING** - A chest harness must NEVER be used for fall arrest or limited free fall.

and leg strap pads to facilitate inspection of the webbing, refer to figure 4.6a and 4.6b in section 4.6 on page 12.



### ExoFit™ Nex, Delta, Pro Harnesses

Refer to section 4.4 for harness removal criteria.

### 6.3.1 HARNESS WITH INTEGRAL LIFE PRESERVER UNIT

If you safety harness is fitted with a self inflating Baltic life preserver Types 275n or 275 SOLAS then this manual must be read in conjunction with the separate Baltic manual and maintenance instruction sheets supplied with the harness and life preserver combination.

**Note:** The zipper closure is designed to break free when the jacket is activated.

On the left and right side of the jacket are webbing tabs that support the closure these should not be

released as the zipper closure may open possible releasing the bladder and contents.

The harness and life preserver combination should be sent back to Capital Safety for any repairs and alterations and also after activation of the life preserver.

The Baltic life preserver has a CO<sub>2</sub>, 60 gram cylinder fitted to the life preserver and is classified for transport as Dangerous Goods Class 9 (Item UN2009).

### 6.3.2 HARNESS MADE FROM REPEL® WEBBING

Fall Arrest Product manufactured in Repel® Webbing is designed for use when the work area or environment is either wet or contaminated. The webbing will repel water and dirt and also has a high resistance to abrasion. The product may be rinsed clean in clear

potable water. Drying will normally take around 20 minutes and then it is ready for use again. Inspection and user instructions for this product range is the same as all product identified in this User Instruction Manual (A006).

### 6.4 SPECIFIC USE OF ATTACHMENT POINTS

Attachment points are secure points on a Full Body and Lower Body Harnesses that may include permanently fixed D-Rings or webbing loops (webbing loops must be brought together for attachment utilising an approved connector). See figure 6.4.

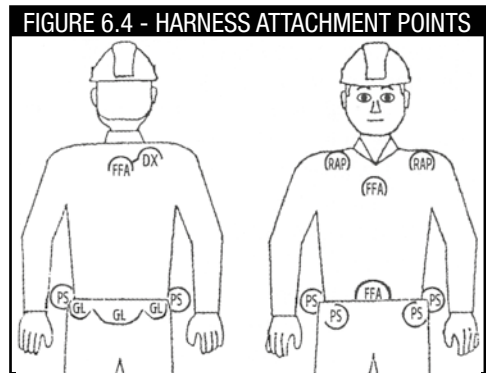
GL Gear Loops. Provided for the user to secure tools and other items required for work and access/egress. **They are NOT to be used as a connection point for anchorage lines for work in fall arrest or restraint.**

FFA Free-Fall-Arrest attachment point. Located either between the shoulders at the rear, or on the front chest region. Capital Safety ANZ has a preference for a rear Free-Fall-Arrest attachment point as is puts user in a vertical posture that is believed to reduce injury in a fall

DX Dorsal Extension FFA attachment point (connected to rear FFA attachment point). Designed to make access to rear FFA more accessible. Always include the length of DX in fall clearance calculations.

RAP Retrieval Attachment Point. Fitted to shoulder straps by permanently fixed D-Rings or webbing loops. The RAP is for connection to a spreader bar to retain the user in a head up position in a rescue situation. **Not for Free-fall-arrest.**

PS Pole Strap attachment point. Located on each side at waist level, to always be used in pairs with pole strap. **Not for Free-fall-arrest.**



**WARNING:** Users of Full Body Harnesses and Lower Body Harnesses should be trained in the use of attachment points prior to using the harness.

## 6.5 HARNESS CONNECTION

Make the lanyard connections only to the FFA attachment point, i.e. DX or FFA.

Always visually check your connection or have it checked by a work colleague.

---

## 6.6 SPREADER BAR

Fitting Instructions for the Spreader Bar: (including models E522-SB and ABSB0001AU series).

The spreader bar fits to Retrieval attachment point (RAP) webbing loops or D-rings on the retrieval points on the full body harness. The wrist straps shall be used to restrain the arms in the “over the head” position.

---

## 6.7 BELTS

Body belts shall not be used for fall arrest. These include integral waist belts to Protecta PRO, DBI-SALA™ Delta and ExoFit™ series harnesses as well as DBI-SALA™ E101, E105, E114, E151, E201 series and Protecta AB001AU, AB002AU and AB003AU miners belts.

These belts have been tested to the European Standard EN 358 and carry certification.

---

## 7.0 CONNECTORS

### 7.1 COMPATIBILITY OF CONNECTORS

Connectors are considered to be compatible with connecting elements when they have been designed to work together in such a way that

If you cannot see the connection with the harness fitted, make the connection before fitting.

Cross the arms and raise them over the user's head and restrain left arm with right wrist strap and right arm with left wrist strap if the person is unconscious.

In tight confined spaces securing only one arm to the wrist strap may be required to allow the person to fit through an opening.

---

### *Fitting and Adjustment Instructions:*

- Slip on the belt.
- Locate the waist belt and connect to waist buckle.
- Make sure that webbing straps are not twisted.
- Adjust the waist belt.

There is ample evidence to show that even for a relatively short unrestrained fall, the wearing of a belt only can lead to injuries such as broken ribs, or damage to the kidneys, spleen or lungs.

---

## 7.0 CONNECTORS

### 7.1 COMPATIBILITY OF CONNECTORS

Connectors are considered to be compatible with connecting elements when they have been designed to work together in such a way that

their sizes and shapes do not cause their gate mechanisms to inadvertently open regardless of how they become oriented.

---

## 7.2 SAFE CARE AND USE OF ATTACHMENT HARDWARE

Capital Safety offers a variety of karabiners, eyebolts, links, snap hooks, swivelling hardware and D rings of various sizes, shapes, strengths and gate openings. Most attachment hardware is made of alloy steel and of a robust design. Gates and latches, however, can distort if mistreated.

Improper connection combinations can cause accidental disengagement. Disengagement may occur due to obstruction of the gate or “roll-out”. (See Figure 7.2a & 7.2b)

Obstruction of the gate can be caused by such items as webbing, rope or clothing getting caught in the gate of the attachment hardware.

Obstruction causing disengagement during

a fall can be avoided by visually checking all connections, even if this means connecting the lanyard assembly to the harness before putting the harness on.

Capital Safety supply hooks and karabiners that comply with AS/NZS1891.1. These require either two or three or more consecutive, deliberate actions to open the latch. Care should be taken to reduce the possible incidence of rollout during a fall by ensuring that the locking latch faces away from the user and ensuring that the hook or karabiner will not interface with any obstructions during use.

The accidental opening of the gate during roll-out releases the connection allowing the user to free



fall unprotected and you may fall to your death.

Double and triple action self-locking snap hooks and karabiners can dramatically reduce, but not completely eliminate, the possibility of roll-out.

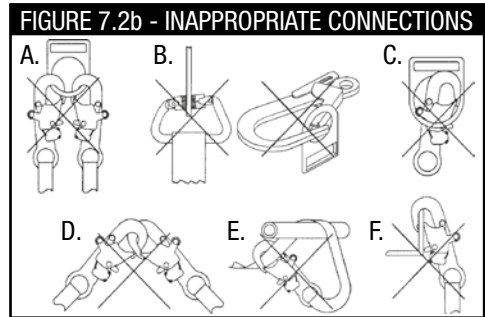
Improper loading, which is not in the direction of the long axis of the hardware can cause the hook or karabiner to fail or open the gate, releasing the load. Capital Safety recommend the use of the 16kN gate rated 'trigger action' snap hook to help eliminate accidental rollout.

**Do Not Connect:**

- A. To a free fall arrest attachment point to which another connector is attached.
- B. In a manner that would result in a load on the gate of the hook.
- C. In a false engagement, where features that protrude from the snap hook or karabiner catch on the anchor and without visual confirmation may seem to be fully engaged to the anchor point.
- D. Combinations of snap hooks or karabiners to one another.

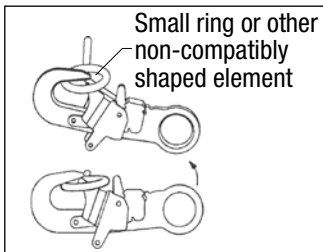
E. The connector directly around the webbing or rope on a lanyard assembly in choke configuration (Unless the manufacturer's instructions for both the lanyard and connector specifically allows such a connection). Refer drawing A in section 5.4

F. To any object which is shaped or dimensioned such that the snap hook or karabiners will not close and lock, or that roll-out could occur.

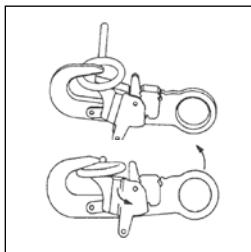


**FIGURE 7.2a - UNINTENTIONAL DISENGAGEMENT (ROLL-OUT)**

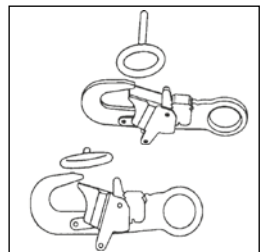
If the connecting element that a snap hook (shown) or karabiner attaches to is undersized or irregular in shape, a situation could occur where the connecting element applies a force to the gate of the snap hook or karabiner. This force may cause the gate (of either a self-locking or a non-locking snap hook) to open, allowing the snap hook or karabiner to disengage from the connecting point.



1. Force is applied to the snap hook.



2. The gate presses against the connecting ring



3. The gate opens allowing the snap hook to slip off.

**7.3 POLE STRAPS**

(Including 121 series, E600 series such as E601, E611, E612, E613, E614, E616, E621 series, E850 series and KF series)

**Fitting and Adjustment Instructions:**

- Attach the shorter end next to the adjuster on the pole strap to the right attachment point on the harness.

- Place pole strap around pole and above chest level.
- Connect the other end of the pole strap to opposite side "D" ring on the harness.
- To lengthen, pull on the short tab or depress trigger.
- To shorten, pull on the longer webbing rope length by lifting the adjuster mechanism.

## 7.4 SINGLE TAIL PERSONAL SHOCK ABSORBING LANYARDS

Capital Safety offers a range of fall arrest lanyard devices rated for use by people with a combined weight and tools between 50kg and 160kg (refer to additional fall clearance allowance in 1.3b).

When the correct combination of equipment is used according to the manufacturer's instructions, a fall arrest system will reduce the forces on the body to less than 6kN (600kg).

The reduction in fall arrest forces is achieved by two layers of webbing specially designed to tear away from each other. In doing so, these devices will extend in length because of permanent deformation.

Workers with a combined weight (including tools) of 50-136kgs need to allow for an Energy Absorber Deceleration distance of 1.75m (1.95m for users from 136-160kgs) for further reading consult figure 1.3(b) or AS/NZS1891.4 Section 7 Fall Clearance.

This means you need to minimise your lanyard assembly working slack if you are less than 6.0m above your nearest obstacle. In practice this is achieved by using a serviceable fall arrest device such as a SRL or inertia reel.

**WARNING:** Do not connect two single lanyards with separate shock absorbers to your full body

harness in fall arrest. Resultant loadings on the body could exceed 6kN in the event of a fall.

### **Non-reusable devices include:**

- AE and Z series personal shock absorbers, with integral lanyard, maximum 2.0 metres or less in length. When using these lanyards, the shock absorber end of the lanyard must be connected to the fall arrest free fall arrest attachment point on the harness at all times with the other end connected to a suitable anchor point (see Section 5)
- R-1050/Z/3465 Railok® Trolley c/w Shock Pack. Energy dissipating unit for Railok® trolley.
- 6116507 Lad-Saf® c/w Shock Pack. Lad-Saf® sleeve and personal energy absorber.

These devices shall not be used in conjunction with a pole strap or body belt. They must be used in conjunction with a full body harness and when using a lanyard assembly, the energy absorber must be connected to a fall arrest attachment point on the harness.

These devices must be destroyed if activation has commenced or if they have been involved in a fall or do not pass the inspection/removal criteria. See section 4.0 to 4.4

## 7.5 DOUBLE TAIL PERSONAL SHOCK ABSORBING LANYARDS

**A. WARNING:** Death or serious injury may result if these directions are NOT followed.

**B. WARNING:** Do NOT use twin tail lanyards unless you have been trained by a competent person.

**C. WARNING:** The personal shock absorbing end of the lanyard MUST be attached to a fall arrest free fall attachment point at all times. See Figure 7.5a & b

The unanchored lanyard tail may interfere with the safe working operation of the personal shock absorber if it is connected to the harness during climbing. Refer to 7.8 Lanyard Stowage Points.

**D. WARNING :** Do NOT attach the unanchored lanyard tail to any part of the harness webbing or hardware. See Figure 7.5a & b. Use only the identified lanyard stowage point attached to the harness. See 7.8

**E. WARNING :** It is best to use both lanyards at all times. See Figure 7.5a & b

**F. WARNING :** Either or both lanyard tails MUST be attached to an anchorage at all times. (See

Figure 7.5a & b for lanyard tail not connected to an anchorage.)

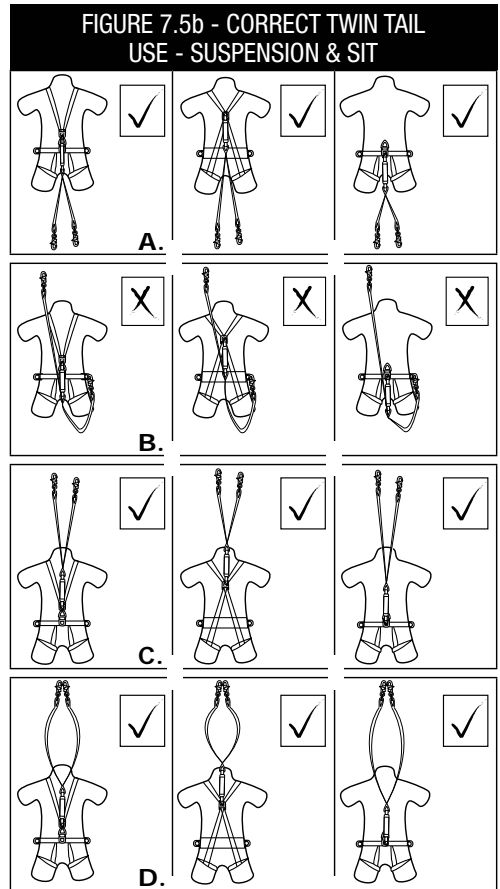
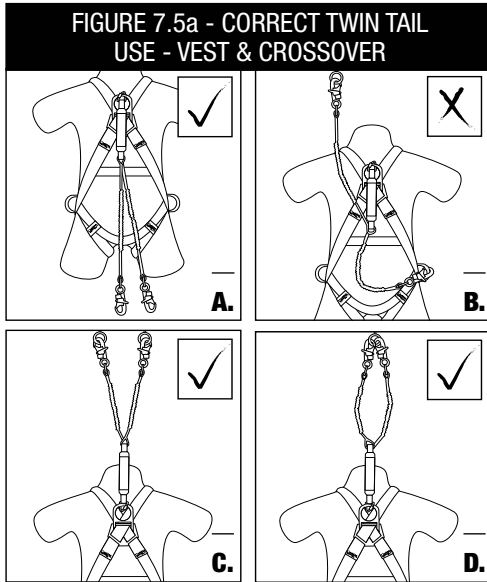
**G. WARNING:** Do not attach the unanchored lanyard tail other than to a point specifically provided by the manufacturer.

The personal shock absorber reduces the fall arrest forces by allowing two layers of webbing to "tear" away from each other. As the two webbing layers separate, the personal shock absorber will extend in length.

If you do not allow the lanyard length plus an additional 1.75 metres for the personal shock absorber to tear out (1.95m for user from 136-160kgs), you may not completely reduce the dangerous jolting fall arrest forces to less than 6kN (600kg) as required by Australian and International Standards. Refer to 1.3b

Lanyards MUST be inspected for wear or any damage prior to and following each use and by a Competent Person every 6 months. "If in doubt - Tag it Out". Refer to section 4.1 Inspection Criteria.

The user MUST read and understand the User Instruction Manual and all drawings and written instructions displayed on the twin tail lanyard before use. If there is any doubt contact Capital Safety.



## 7.6 PERSONAL SHOCK ABSORBING PACK

Capital Safety supplies single personal shock absorbing packs with attachment hardware for direct connection between vertical rope climbing systems, horizontal systems and other select applications where free fall distance must be limited.

In this configuration, a personal shock absorber supplied without lanyard tails SHALL NOT be retro-fitted with wire, rope or webbing tails. The shock absorber is supplied with a mark

of approval having been tested to confirm that it conforms to the requirements of AS/NZS1891.1 as a stand alone unit. The addition of non-approved extensions to this product will void all product warranty, as the product performance may be compromised without testing.

If a shock absorber is required with lanyard tails, a complete unit MUST be supplied by Capital Safety to certify product performance.

## 7.7 INTEGRAL LANYARD USE

When working in an elevated work platform (EWP) e.g. Cherry Picker, it is highly recommended that the user uses restraint technique as best practice. The user shall

ensure they are not working in fall arrest mode if at all possible, to minimise the risk of injury and avoid a complex rescue.

To work in restraint, users must exercise caution to ensure that the lanyard length does not enable them to move outside of the confines of the bucket, or to be inadvertently thrown while the EWP is in motion. If this product does allow you to move outside of the bucket confines, we recommend the user utilise a harness with a

shorter lanyard combination, or an adjustable lanyard to remove working slack.

Note: Caution should also be taken to ensure that the EWP anchor point is rated to 15kN as specified within AS/NZS 1891.1 and AS/NZS 1891.4.

## 7.8 LANYARD STOWAGE POINTS

Harness fitted with lanyard stowage points (see figures 7.8a & 7.8b) is the only place on the harness that the unanchored lanyard tail(s) shall be used to store them when not in use. Do NOT under any circumstance attach the lanyard tails to any other part of the harness other than the identified lanyard stowage points. Refer to figure 7.5a & b for further important information.

FIGURE 7.8a - RETRO FIT LANYARD STOWAGE POINTS



FIGURE 7.8b - INTEGRAL LANYARD STOWAGE POINT (EXOFIT NEX™)



## 8.0 SERVICEABLE DEVICES

Please note that Type 2 and 3 fall arrest devices require servicing by the manufacturer's authorized service agents as indicated in AS/NZS1891.4. Capital Safety recommends that each piece of equipment be inspected before and after each use by the product user and 6 monthly by the Height safety equipment inspector. In addition to this, if the Inertia Reel Block is an unsealed type 2 and 3 devices then it should be returned to a Capital Safety authorized service agent for it to be dismantled and serviced on at least an annual basis. If the unit is a sealed unit then it is recommended that it be sent back to the Service agent every second year.

Harsh environmental conditions and daily product use may call for more frequent inspection following

a risk assessment.

Serviceable devices include inertia reel blocks and self-retracting lifelines (some with emergency retrieval modes), rope positioning devices, winches, and various rope, cable and trolley grabbing devices.

These energy-absorbing devices are for personal use only. They must not be used for material handling purposes.

It is a policy of Capital Safety to promote the use of primary and secondary fall arrest systems. The type of backup system to use will depend on the primary system employed. However, for most fall arrest situations a secondary rope, Winch, personal shock absorber, or inertia reel block should be used.

## 9.0 EMERGENCY RECOVERY

It is unfortunate that rescue and retrieval is often overlooked until somebody has fallen. In many cases the exact injuries of an unconscious person are unknown. Rescue and retrieval therefore must be considered in your safe-working practices.

Capital Safety promotes the use of personal electronic alarms and a co-worker in the vicinity to assist in the rescue or to summon the necessary help. Ensure personnel are trained in

the correct rescue equipment prior to use and seek immediate medical attention.

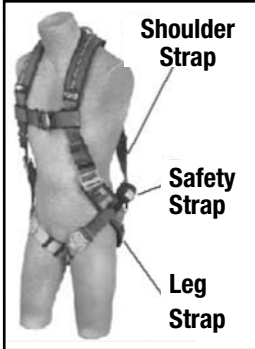
Capital Safety offers a range of rescue and retrieval devices, including Rescumatic controlled descenders, retrieval blocks and winches, and Rollgliss rescue devices.

## 10.0 SUSPENSION TRAUMA ORTHOSTATIC (INTOLERANCE) STRAPS

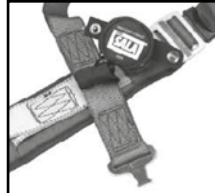
### FIGURE 10.0 - INSTALLATION & USE OF SUSPENSION TRAUMA STRAPS

#### INSTALLATION OF SUSPENSION TRAUMA STRAPS

The suspension straps should be installed where the shoulder strap and the leg strap intersect.



**Step 1:** Slip the case strap through the harness loop that contains the leg strap.



**Step 2:** Pass the case through the case strap and choke it down on the harness loop.



**Step 3:** Wrap the tabs around one of the harness straps and connect the snaps to hold the case in place.

**Step 4:** Repeat the procedure on the opposite shoulder strap to install the other strap case. Make sure that one case is marked "hook" and the other is marked "loop".

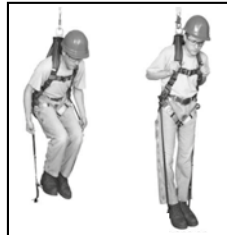
#### USE OF SUSPENSION TRAUMA STRAPS



**Step 1:** Locate and open each case and deploy the suspension straps.



**Step 2:** Raise the ends of the straps to locate the hook and loops. Insert the hook into an appropriate loop and lower the strap.



**Step 3:** Step onto the strap to alleviate the pressure of the leg straps on the legs. Adjust the hook/loop combination to obtain the most comfortable strap length. **WARNING:** Do not disconnect harness buckles while suspended.

Suspension Trauma Straps are also available to enable a person who is conscious to reduce the potential harmful effects of suspension trauma or orthostatic intolerance.

#### **Application:**

The Suspension Trauma Safety Strap when used in conjunction with a full body harness is designed to make suspension time more comfortable for a person who has experienced a fall from a height and reduce the risk of suspension trauma commencing. It may only be used in a situation where a fall has occurred or for training. Refer to Figure 10.0 for Installation & Use of Suspension Trauma Straps.

**WARNING:** Suspension trauma is a potentially fatal condition. Consult medical professionals to discuss the risks and precautions in dealing with the condition, or refer to Capital Safety Technical Bulletin MISC006AU for more information.

#### **Rescue:**

The Suspension Trauma Strap is not a replacement for a rescue plan. The employer must have a post fall rescue plan and the means available to implement the plan.

#### **Training:**

It is the responsibility of the purchaser and user of this equipment to ensure that they are trained in the correct care and use of this equipment. They must also be aware of the

operating characteristics, application limits, and consequences of improper use of this equipment.

**IMPORTANT:** Training must be conducted without exposing the user to a fall, or suspension trauma hazard.

**Inspection:**

During harness inspections check the suspension strap assembly. Check the cover for damage and the connection to harness for wear. Inspect webbing and cover: material must be free of frayed, cut, or broken fibers. Look for tears, abrasions, burns, discoloration, or knots.

---

## 11.0 PRE-ASSEMBLED KITS

Pre-assembled kits typically contain an anchorage device, body harness, connector and deceleration device required to complete a work task. This

Verify that one cover is marked “hook” and the other “loop.” If inspection reveals a defective condition, remove the unit from service immediately and destroy it.

**WARNING:** This product is part of a personal fall arrest system. The user must follow manufacturer’s instructions for each component of the system. These instructions must be provided to the user of this equipment. Alterations or misuse of this product or failure to follow instructions may result in serious injury or death.

manual should be read in conjunction with any specific kit usage instructions.

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## 12.0 PASSIVE PROTECTION SYSTEMS – NETS

Capital Safety manufactures passive protective systems, such as personnel nets and debris nets.

Contact Capital Safety if a passive protection system is required to complete work safely.

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## 13.0 WARRANTY STATEMENT - CAPITAL SAFETY (AUST) PTY LTD

### LIMITED LIFETIME WARRANTY - AUSTRALIA

Warranty to End User: Capital Safety Group (Australia) Pty Ltd (“Capital Safety”) warrants to the original end user (“End User”) that its products are free from defects in materials and workmanship under normal use and service. This warranty extends for the lifetime of the product from the date the product is purchased by the End User, in new and unused condition, from a Capital Safety authorized distributor. This warranty is provided in addition to other rights and remedies available to the End User under law. No oral or written information or advice given by Capital Safety, its distributors, directors, officers, agents or employees shall create any different or additional warranties or in any way increase the scope of this warranty. This warranty will not apply to and Capital Safety will not accept liability for defects that result from product abuse, misuse, alteration or modification, or for defects that are due to a failure to install, maintain or use the product according to the manufacturer’s instructions.

Capital Safety’s warranty applies only to the End User. To obtain the benefit of this warranty, the End User must register the purchased product at [capitalsafety.com.au](http://capitalsafety.com.au) under “Warranty Registration” tab, or retain their original receipt as proof of purchase.

To claim under this warranty, the End User should return the product with an explanation of the product issue, along with the original proof of purchase, to:

### CAPITAL SAFETY AUSTRALIA

95 Derby Street, Silverwater, NSW 2128

Phone: 02 8753 7600

Toll free: 1800 245 002

Email: [quality@capitalsafety.com.au](mailto:quality@capitalsafety.com.au)

The End User must pay the cost of packaging and returning the product to Capital Safety.

**Limitation of Warranty:** The warranties stated in this document are exclusive and are made in place of any and all conditions, warranties or representations as to the merchantability, performance, quality or fitness for a particular purpose of the product that may be implied by

law, and in place of any industry practice or custom or trade usage.

The product comes with guarantees that cannot be excluded under Australian Consumer Law. The End User is entitled to a replacement or refund for a major failure and to compensation for any other reasonably foreseeable loss or damage. The End User is also entitled to have the product repaired or replaced if the product fails to be of acceptable quality and the failure does not amount to a major failure.

**Limitation of Liability:** To the extent permitted by law:

(a) Capital Safety's maximum liability to the End User for failure to comply with a consumer guarantee in respect of the supply of the product not of a kind ordinarily acquired for personal, domestic or household use or consumption is limited, at Capital Safety's sole discretion, to repair or replacement of the product; and

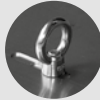
(b) Capital Safety will not be liable for any direct, indirect, special, or consequential damages of any kind, including loss of profits, revenue or business, death, personal injury or damage to property resulting from or in any way related to Capital Safety's products.

## 14.0 GLOSSARY OF FALL PROTECTION TERMINOLOGY

Listed below is a collection of frequently used fall protection terms - for a more complete summary refer to AS/NZS 1891 (parts 1 & 4).

### **Anchorage**

A secure point of attachment for lifelines or deceleration devices, e.g. lanyards & self retracting lifelines.



### **Anchorage Connector**

Provides a connection point onto an anchorage or building structure in order to attach the rest of the fall arrest system.



### **Arresting Force**

The force imposed upon the worker and the anchorage point the moment the fall arrest system stops the fall. It is measured in kilo newtons (kN), a maximum of 6kN is allowable.

### **Connector**

A device used to join together components of a personal fall arrest system or parts of a component within the system.



### **Compatibility**

Equipment is deemed compatible when they have been designed to work together in such a way that their size and shape do not cause them to separate inadvertently during use.

### **Competent Person**

AS/NZS 1891.4 defines a Competent Person as: A person who has, through a combination of training, qualification and experience, acquired knowledge and skills enabling that person to correctly perform a specified task.

### **Competent Person Classifications:**

**Height Safety Operator** - A person who is able to perform harness based work at heights under the direct supervision of a height safety supervisor

**Height Safety Equipment Inspector** - A person who is competent in the skills needed to detect faults in height safety equipment and to determine remedial action.

**Height Safety Manager** - A person who is competent in the selection, design, manufacture or installation of height safety systems or equipment, or the development of control measures or work practices.

### **Deceleration Device**

Any device which utilises an energy absorption component to minimise the impact of the force created during a fall on the body, such as a lanyard or self retracting lifeline.



### **Dorsal Extension**

A device that connects to the rear D-ring of your harness that enables easier connections to lanyards and other devices by extending the reach from the rear D-ring

### **Double or Triple Action Device**

A self-closing hook or karabiner with a keeper latch which will automatically close and remain closed until manually operated. These units have a minimum of two (double) or three (triple) distinct and deliberate consecutive actions to manually open them.

### **Fall Arrest Systems**

Systems that protect the worker after a fall from hitting the ground and/or obstructions below the work platform. Passive systems require little

or no personal involvement from the worker. **Active systems** require the worker to actively use the system in order for it to be effective. It is not always practical, cost effective or possible to employ passive systems. In these cases, a Personal Fall Arrest System is required.

### **Fall Indicator**

A visual indicator that shows the fall arrest system or device has been used to arrest a fall.

### **Fall Prevention**

Refers to the systems and techniques that eliminate the possibility of a fall to a lower level. The most desirable method of fall prevention is to engineer out or modify the work plan to eliminate the hazard.

### **Fall Protection**

Refers to the overall industry and process of protecting workers at height.

### **Force**

Measured in technical terms in Newtons (N). The weight of something in Newtons (N) is calculated by multiplying its mass in Kilograms (kg) by the value of Gravity, which is 9.81 (m/s<sup>2</sup>). A Kilogram (kg) is a unit of mass (i.e. the weight of a static object).

Force = Mass x Acceleration.

For rough calculation purposes: 1000N = 1kN, 1kN = 100kg, 10kN = 1000kg.

### **D-ring Attachment Point**

An attachment point on the rear or front of the harness which allows for the connection of other components of a fall protection/positioning system such as a lifeline or deceleration device.



### **Harness (Full Body Harness)**

A webbing assembly that is worn by the user to distribute the arresting forces throughout the body in the event of a fall. The unit is equipped with attachment points to connect it to other components of a personal fall arrest system.



### **Hierarchy of Control**

The hierarchy of control is a sequence of options which allow you to control a hazard from the highest level of control to the least preferred option. These measures, in order, are: identification, elimination, substitution and isolation. If these are not practical, fall protection equipment must be used.

### **Horizontal Lifeline (HLL) / Rail System**

A flexible line supported by two or more anchorages, to which workers can connect a lanyard or SRL and travel safely along the line length. HLL's can be designed for total restraint or fall arrest.



### **Karabiner**

A connector with a self-closing gate that can be manually locked or that automatically locks, and is used to attach to a fall protection component. Can be double action or triple action.



### **Lanyard Assembly/ Shock-Absorbing Lanyard**

A line of rope, webbing or cable incorporating a shock absorber and connectors at each end to connect the harness to the anchor device. Can be in adjustable style to reduce working slack.



### **Latch Protection Device (LPD)**

A device that attaches to the eye of a snap hook that reduces the risks that can become present in various work methods/techniques that causes webbing or shock absorber to wrap around the back of the locking gate of the hook and unintentionally 'trip' the gate

### **Personal Fall Arrest Systems (PFAS)**

A combination of components that when used together will arrest a person in a fall from a working level. A PFAS typically consist of an anchorage, full body harness, connectors and a deceleration device such as a lanyard or SRL.



### **Pole Strap**

A work positioning strap designed to be placed around a pole and attached at two points on each side of a line worker's fall arrest harness while the wearer is working on the pole. Must only be used for Restraint Technique in work positioning.



### **Rescue**

The ability to retrieve or rescue an individual from confined spaces or heights. Rescue must always be a component of any fall protection program.





## **RFID**

Radio-frequency identification technology is incorporated into a product through RFID tags for identification and tracking purposes using radio waves

## **Restraint Technique**

Control on a person's movement by use of a fall-arrest system, which entails connection to an anchorage using an adjustable lanyard or other adjustable component that can be adjusted for length as necessary to physically prevent the person from reaching a position at which there is a risk of a free or limited free fall.

## **Risk Assessment**

The evaluation of hazards within the work site which have the potential to cause frequent serious injury or illness to occur.

## **Shock Absorber/Energy Absorber**

A webbing device that is designed to tear or extend, to reduce the forces on the worker in the event of a fall to less than 6kN.



## **Snap Hook**

A connector with a hook shaped body that has an opening for attachment to a fall protection component and a self closing gate to retain the component within the opening. Hooks must be double-acting to be compliant.



## **Sub-Pelvic Strap**

A strap incorporated into a full body harness which passes under the buttocks connecting the two leg loops. It is designed to distribute the forces from the inside of the legs to the outside to lessen the effect of injury following a fall.



## **Suspension Trauma / Intolerance**

(Also known as Orthostatic Intolerance). A term used to describe the potential after-effects of immobile suspension within a full-body safety harness following a fall from height. It presents with the development of a range of symptoms which may result in unconsciousness or death, and is thought

to occur as a result of low blood pressure secondary to blood pooling in the legs, pelvis and abdomen of victims who are suspended and motionless.

## **Total Restraint**

Control on a person's movement by means of connection to an anchorage using non-adjustable equipment in such a way that it will physically prevent the person from reaching any position at which there is risk of a fall, either over an edge, through a surface or due to a failed moveable platform.

## **Type 1 Fall Arrest Device**

Includes rope & rail grabs - A fall arrest device that travels along an anchorage line and, when loaded, locks to the line. The user is connected to the activating lever, which locks the device in the event of a fall. A typical use of a Type 1 device is as a ladder fall-arrest system, using a rigid rail or flexible line attached to the ladder.



## **Type 2 & 3 Fall Arrest Device - Self Retracting Lifeline (SRL)**

A deceleration device containing a drum-wound line which may be extracted and retracted under slight tension when the user moves vertically away from and towards the device. In the event of a fall, the device will quickly lock the drum and prevent the lifeline from paying out, thus arresting the user's fall and limiting the force to 6kN. When incorporating a retrieval winch, it becomes a type 3 fall arrest device.



## **Vertical Lifeline System**

A flexible line rigged from one or more anchors to which a worker can secure the components of their fall protection system in a vertical orientation. These systems provide freedom of movement whilst maintaining user protection from a fall from height.

## **Work Positioning**

Use of fall protection components in a way that allows a worker to be supported in a harness under tension, so that a fall is prevented, e.g. the use of a pole strap.



# 16.0 INSPECTION RECORD CARD

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Email: sales@capitalsafety.com.au  
www.capitalsafety.com.au



- a) Part Number.....
- b) i-Safe™ Tag Number.....
- c) Serial/ID Number.....
- d) Batch Number.....
- e) Date of Manufacture.....
- f) Date of Purchase.....
- g) First Date put into service.....

Date Examined	Signature	Comments	Pass or Fail

**For any enquiries please call:**

**1800 245 002 (AUS)**

**0800 212 505 (NZ)**



Quality  
ISO 9001



Environment  
ISO 14001



Health & Safety  
AS 4801



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