MADACO SAFETY PRODUCTS™

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Shock-Absorbing Lanyards Instruction Manual

Max. Capacity: 310 lbs.
Max. Allowable Free-Fall: 6 feet
Max. Arrest Force: 900 lbs.
Max. Deceleration Distance: 40 inches
Ultimate Strength: 5,000 lbs.
Connector Gate Strength: 220 lbs/350 lbs
Shock Absorber Material: Polyester
Lanyard Leg Material: Polyester – 7,500 lbs
Connector Material: SAE 4130 Alloy Steel
Complies with Standards: A10.32 (04), 1926.502

Introduction

Thank you for purchasing a Shock-Absorbing Lanyard from Madaco Safety Products. This manual will explain how to use your equipment correctly. This Manual must be read and understood in its entirety.
This and any other included instructions must be made available to the user of equipment. The user must understand how to safely and effectively use Madaco Safety Products and all Madaco fall safety equipment used in combination with the Full Body Harness.

Madaco Safety Products Shock Absorbing Lanyards meet or exceed standards required by ANSI Z359.13-2013, Personal Energy Absorbers and Energy Absorbing Lanyards, and OSHA. This manual should be used as part of an employee training program as required by OSHA. This manual assumes the user has been trained in the use of this

⚠ WARNING!

Please read, understand and follow all safety information contained in these instructions, prior to use of this Madaco Safety Product. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.
These instructions must be provided to the user of the equipment. Retain these instructions for future reference.

1 WARNING!

1.1 This product is to be used as a part of a personal fall arrest system, and should be used only with compatible components. Failure to use compatible components can result in failure of the system to perform as intended, which may result in serious injury or death.

1.2 Always be aware of employers fall protection plan and rescue plan.

1.3 Inspect device before each use and after any fall event. Inspect in accordance with the User Instructions.

1.4 Any device that has been subject to fall arrest or impact force must be immediately removed from service.

1.5 Ensure all connecting subsystems are kept free from all hazards including, but not limited to, entanglement with other workers, yourself, moving machinery or other surrounding objects.

1.6 Ensure proper edge protection when the device may come into contact with sharp edges or corners.

1.7 If applicable, attach unused leg(s) of the lanyard to the parking attachment on the harness.

1.8 Do not tie or knot lanyard.

1.9 Do not Attach multiple connections to an anchorage.

1.10 Never exceed maximum free fall distance of your fall protection equipment.

1.11 Minimize swing fall by working below the anchorage point.

1.12 Do not alter equipment. Do not misuse equipment. NEVER use fall protection equipment of any kind to hang, lift, support, or hoist tools or equipment.

1.13 The analysis of the workplace must anticipate potential and existing fall hazards they may be exposed to. Fall protection equipment must be chosen by a Competent person.

1.14 Fall protection equipment must be selected and installed under the supervision of a Competent Person, and used in a compliant manner. Fall protection systems must be designed in a manner compliant with all federal, state, and safety regulations.

1.15 Training of authorized persons to correctly erect, disassemble, inspect, maintain, store, and use equipment must be provided by a Competent Person. Training must include the ability to recognize fall hazards, minimize the likelihood of fall hazards, and the correct use of person fall arrest systems.

2 APPLICATION

2.1 Application

Energy absorbing lanyards are to be used as components in Personal Fall Protection Systems designed to safely arrest a fall.

	Fall Arrest: Fall arrest systems safely stop the user in a free fall from a height. The user can then self-rescue or be rescued. Personal fall arrest systems typically include a full body harness and an energy absorbing lanyard. Maximum arresting force must not exceed 1,800 lbs (8 kN).
	Restraint: Restraint systems prevent the user from reaching a fall hazard (example: leading edge roof work).
	Rescue: The energy absorbing lanyard is used as a component of a back-up fall protection system during rescue or as part of the primary rescue system.

2.2 Limitation and Requirements

Capacity:
Always use in accordance of ANSI capacity limit range of 130-310 lb. including all tools, equipment and gear.

Free Fall:
All fall arrest systems used in combination with this equipment must be rigged to limit the free fall to six feet or less.

Fall Clearance:
There must be sufficient clearance below user to arrest a fall before the user strikes the ground or other obstructions. See the fall clearance calculation for an energy absorbing lanyard.

Swing falls:
Minimize swing falls by working as close to and directly below the anchorage point as possible.
Environmental Hazards: Environmental Hazards may require additional precautions.

Figure 2 - Fall Clearance

RD = LL + DD + HH + C	
RD	Required Fall Clearance Distance
LL	Length of Lanyard (Specified on labeling)
DD	Deployment Distance = 4 ft (1.2 m) except: • for ANSI/OSHA Lanyards with Free Fall greater than 6 ft (1.8 m) up to 12 ft (3.7 m), or user weights greater than 310 lbs (141 kg) up to 420 lbs (191 kg), add 1 ft (0.3 m): DD ~ 5 ft (1.5 m)
HH	Height of Suspended Worker
C	Safety Factor 1.5 ft (0.5 m) (Factors in D-Ring Slide and Harness Stretch.)

Example: Assuming a 6 ft (1.8 m) tall user with a typical 6 ft (1.8 m) lanyard with 6 ft (1.8 m) Free Fall, Fall Clearance calculation would be as follows:
RD = LL + DD + HH + C
RD 6 ft + 4 ft + 6 ft + 1.5 ft • 17.5 ft
RD 1.8 m + 1.2 m + 1.8 m + 0.5 m = 5.3 m

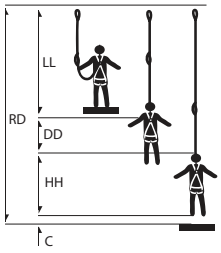
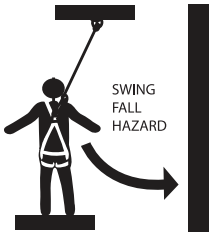


Figure 3 — Swing Falls



2.3 Connectors: In 2007, ANSI revised and published the Z359.1 standard for fall protection in general industry and suggested that the gate strength on all connectors be increased to 3,600 lbs. Madaco Safety Products currently offers both the "old" and "new" style connectors to accommodate all users. There are several important issues for users and employers to consider with regard to how these standards have an effect on the jobsite:

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1. The ANSI Z359 standards apply to general industry. ANSI also publishes standards for the Construction and Demolition industry under the A10.32 designation – A10 does not presently require 3,600 lb. gates on connectors.

2. Title 29 CFR 1910.66 App. C and 1926 Subpart M also do not require 3,600 lb. gates on connectors.

3. ANSI Z359 and A10 do not bear the force of law in most states – Some states do, however, incorporate these standards by reference within their own standards language. It is the responsibility of the employer to know which standards may be enforced in their work location(s).

4. Many government jobsites are required to use products meeting the ANSI Z359 standards, particularly those that are managed by the Army Corps of Engineers. Be aware of the requirements on your jobsite if you are a government contractor or sub-contractor.

5. Regardless of the standard, all fall arrest products that are made to comply with any of these standards is safe when used properly – there is no substitute for doing the right thing regardless of which product or products you select.

29 CFR 1926 (Subpart M)
1926.500: Scope, Application and Definitions
1926.501: Duty to Have Fall Protection
1926.502: Fall Protection Systems Criteria & Practices
1926.503: Training Requirements

ANSI standards are voluntary consensus standards, and are generally regarded among the best practices within the fall protection community. Some states have incorporated one or more of the ANSI standards by reference, meaning that they may be enforced by some state or local agencies. Check with your State Department of Labor for further details. ANSI standards are available for purchase through the e-standards store at www.ansi.org.

Title 29 CFR, section 1926.500 – 503 requires that an employer have a written fall protection plan where fall hazards exist. The best way to address a fall hazard is to eliminate it entirely or to employ a passive system to restrict access to the hazard (i.e. guardrails, netting, covers, etc.) Fall arrest products are the last line of defense in the hierarchy of fall protection, and should be used as a last resort by employees who have been properly trained.

Section 5: Anchorage Considerations
OSHA 1910.66 and 1926.502 state that anchorages used for attachment of a PFAS must be independent of any anchorage being used to support or suspend platforms, and must support at least 5,000 lbs. per user attached, or be designed, installed and used as part of a complete PFAS which maintains a safety factor of at least two, and is supervised by a qualified person (architect, structural engineer, etc.).
The anchorage to which this SAL is attached must capable of sustaining static loads in directions applied by the personal fall arrest system of at least 3,600 lbs. (or at least twice the expected dynamic load) with certification of a qualified person (architect, structural engineer, etc.), or 5,000 lbs. in the absence of certification. If multiple personal fall arrest systems are being attached to the same anchorage, the minimum values stated above must be multiplied by the number of users.
Ensure that the anchorage connector that you are using is compatible with the anchor point to which you are attaching it. If you are using this SAL with a Horizontal Lifeline, tripod or davit, ensure that it is compatible with these systems by checking the manufacturer's instructions for these systems for the minimum performance requirements of deceleration devices.

Be sure that your anchorage is mounted overhead or above the level of the back d-ring of your full body harness. Be sure to calculate your clear-fall (as discussed in above) and to avoid swing fall hazards.

Ensure the fall path is clear of obstructions and impalement hazards Madaco Safety Products maintains the position that compliance with the Z359 family of standards on the jobsite are an industry best-practice and that connectors with 3,600 lb. gates do provide an additional measure of protection. However, 3,600 lb. gates are not impervious to destruction and connector compatibility is still an important issue for consideration. Making incompatible connections with Z359 products are a dangerous practice and can result in serious injury or death. Do not use Z359 connectors in any manner that you would not typically use "A10 or OSHA" connectors. If you have questions about connector compatibility, please consult a competent person immediately or contact Madaco Safety Products for further assistance.

3 SYSTEM REQUIREMENTS

3.1 Compatibility of Components: Always make compatible connections, approved by Madaco Safety Products or a competent person. Substitutions or replacements made with non-approved components or subsystems may jeopardize compatibility of equipment and may affect the safety and reliability of the complete system.

3.2 Compatibility of Connectors: Connections must be compatible in size, shape and strength. Incompatibility in these areas can result in gate mechanisms to inadvertently open. Connectors must meet ANSI and OSHA standards. OSHA mandated on a federal level that all connectors used for fall arrest must be of the locking type and that it must take two separate actions to open the gate. All Madaco Safety Products connectors meet this OSHA requirement.

• Snap hooks:
Snap hooks are one of the most common connectors and feature a gate and keeper which close and lock automatically. All Madaco SAL's feature a snap hook at the attachment end for attachment to the back D-ring of your Full Body Harness. Never attach an SAL to any other D-ring on your Full Body Harness and never use an SAL with a Body belt.

• Rebar hooks:
Rebar hooks should never be attached to any part of your Full Body Harness:
Rebar hooks are only to be used as an Anchorage-End Connector. Make only compatible connections – any connection which loads the gate or the side of the hook body has the potential to force an accidental disengagement in the event of a fall, regardless of gate strength.

It is important to ensure that and structural member selected as an anchor point is able to withstand a 5,000 lb static load, and that the rebar hook is unable to slide off or shift during a fall. Never connect to a vertical or diagonal structure or member.

• Carabiner:
Carabiners are connectors having gates which generally consist of an inner shaft and an outer barrel. The barrel is rotated to unlock the inner shaft so that it can be opened. Both the inner shaft and the outer barrel are spring-loaded so as to allow the gate to close and lock automatically when released. Carabiners come in many shapes and sizes and it is important to make only compatible connections. Any connection which loads the gate or side of the carabiner body has the potential to force an accidental disengagement in the event of a fall, regardless of gate strength.

3.3 Making Connections: Only use connectors as specified by instruction manual. Eliminate all possibility of roll-out.
DO NOT connect:
• To a D-ring to which another connector is attached
• In a manner that could result in a load on the gate.
• To each other
• Directly to webbing or rope lanyard or tie-back,
• To any object which is shaped in such a manner that the snap hook or carabiner will not close and lock, or that roll-out could occur.

3.4 Body Support: A Full Body Harness must be used with the Energy Absorbing Lanyard. The harness connection point must be above the users' center of gravity.

3.5 Inspection Frequency: Lanyards shall be inspected by user before each use. Additionally, inspections shall be conducted by a competent person. Extreme working conditions may necessitate more frequent competent person inspections. Results of the Competent Person inspection should be recorded in the Inspection and Maintenance Log.

4 INSTALLATION AND USE

Prior to using this product, users should be trained in the use of fall arrest products and should have completed a minimum course of instruction (4-8 hours) for Authorized Person Training as outlined in ANSI Z359.2-2007. The user must also read and be familiar with all of the material contained in this instruction manual as well as all labels and warnings affixed to the Madaco label. If you have any questions regarding the use or operation of this product, please contact a company authorized competent person, or your immediate supervisor before using.
If additional help is needed, please contact your local or Fed OSHA department will be able to assist you for resources if needed. www.osha.gov

4.1 Prior to use:
1. Inspect the Shock Absorbing Lanyard and all equipment to be used in combination with the Lanyard.

2. Ensure to eliminate or minimize swing fall hazards.

3. Ensure all connectors and other components are selected by a Competent Person.

4. Ensure structure to which the anchorage connector is attached is capable of withstanding a MINIMUM load relative to the application in which the External Shock Lanyard is to be used.

4.2 Attachment: Always locate the shock absorber end of the lanyard. The shock absorber must NEVER be located at the anchorage connector. Only attach the central snap hook or carabiner to the applicable harness D-ring. Ensure all connectors are self-closing and self-locking, meeting ASNI standards to ensure that there is no risk of roll-out.

5 MAINTENANCE, CLEANING AND STORAGE

5.1 Cleaning: Remove all dirt, corrosives, and contaminants from Shock Absorbing Lanyard before and after each use. If Shock Absorbing Lanyard cannot be cleaned with plain water, use mild soap and water, then rinse and wipe dry. NEVER clean Shock Absorbing Lanyard with corrosive substances.

5.2 Storage: When not in use, store equipment where it will not be affected by light, heat, excessive moisture, chemicals or other degrading elements.

5.3 Maintenance: Equipment which is in need of or scheduled for maintenance shall be tagged as "unusable" and removed from service.

5.4 Repairs to this equipment are to be made only by Madaco Safety Products, or persons or entities authorized in writing by Madaco Safety Products.

6 INSPECTION

6.1 Prior to Each Use: Inspect the Shock Absorbing Lanyard for deficiencies, including, but not limited to, corrosion, deformation, pits, burrs, rough edges, sharp edges, cracking, rust, paint buildup, excessive heating, alteration, broken stitching, fraying, bird-caging, excessive soiling, excessive lubrication, excessive elongating, aging, and missing or illegible labels. IMMEDIATELY remove from service if defects or damages are found, or if exposure to forces of fall arrest.

6.2 Annually: A Competent person must inspect the Shock Pack Lanyard at least every 6 months. This inspection must be recorded in the inspection log.

6.3 Work Area: Ensure that work area is free of all damage, including, but not limited to, debris, rot, rust, decay, cracking, and hazardous materials. Ensure work area will support the application-specific minimum loads set forth in this instruction manual. Work are must be stable.

6.4 Immediately remove Shock Absorbing Lanyards in the absence or illegibility of markings; absence of any elements affecting the equipment form, fit or function.

6.5 If inspection reveals an unsafe or defective condition, remove from service, mark "UNUSABLE" and send back to Madaco Safety Products or to an authorized service center for repair.

	1	2	3	4	5	6	7	8	9	10	11	12
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IF EQUIPMENT FAILS INSPECTION
IMMEDIATELY REMOVE FROM SERVICE

7 INSPECTION

Madaco Safety Products warrants to the buyer that all products are free from defect in material and workmanship at the time of shipment. Obligation under this warranty is limited to product replacement for the period of two (2) years from the date of installation or use by the owner, provided that this period shall not exceed two (2) years from the date of shipment. This warranty is not transferable. No other person or firm is authorized to assume or assign for Madaco any other warranty in connection with the sale or use of this product.

Furthermore, this warranty is void if any product is changed or altered in any way, or if the product is used in a manner other than for which it is intended. This warranty only covers defects in material and workmanship; it does not cover conditions resulting from normal wear and tear, neglect abuse or accident.

8 Mandatory Disclosures

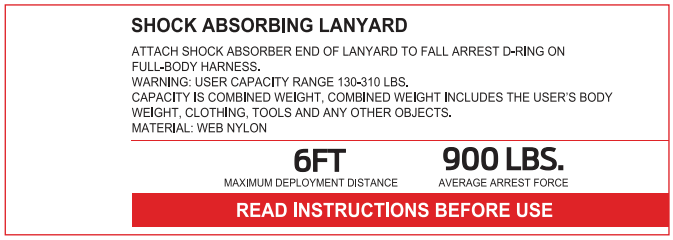
This instruction manual addresses foreseeable hazards, uses and applications. If you have questions about your application that are not addressed in this document, contact Madaco Safety Products for additional guidance.

It is the responsibility of the employer/issuer of this equipment to ensure that it is used in a manner consistent with these instructions. Failure to do so could result in series injury or death.

A : Steel Snap Hook
B : Warning label

Warning Label

P1



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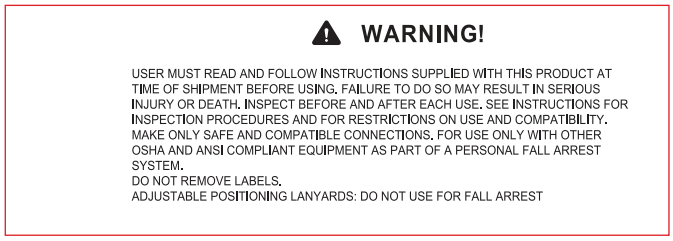

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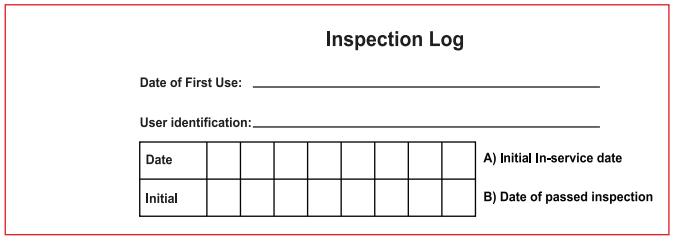

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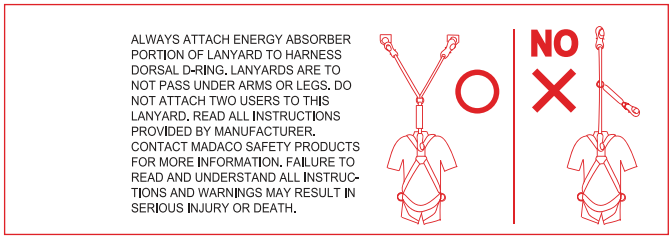

P5

INSPECTION AND MAINTENANCE LOG

SERIAL NUMBER:	
MODEL NUMBER:	

DATE PURCHASED:	MFG. DATE:	DATE OF FIRST USE:

INSPECTION DATE	INSPECTION ITEMS NOTED	CORRECTIVE ACTION	MAINTENANCE PERFORMED
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			

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