

Technical Bulletin







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Subject: Design and Use of Height Safety Anchorage Devices Vs Lifting Slings for Fall Arrest

The selection of the correct tie-off adaptors for attaching fall arrest equipment is as important as ensuring that the selected attachment structure will sustain the load that could be applied in a fall. The type and location of anchorages depends on the nature and location of the task, number of users and type of structure selected to support the worker(s).

Tie-off adaptors used in height safety applications have been specifically designed to interact with fall arrest equipment. All DBI-SALA and Protecta tie-off adaptors and anchor straps are constructed of polyester webbing components that are designed to fold around structural members of varying size.

Tie-off adaptors and Anchor Straps used in fall arrest

Tie-off Adaptor / Anchor strap	Length	Description	Ultimate Strength	Image
DBI-SALA E849 series	0.5 to 2.0 metres	Interlocking anchor strap with sewn in flat wear pad, fitted with pass through "D" rings	22kN	
DBI-SALA E829 series	0.5 to 2.0 metres	Interlocking anchor strap with sliding wear pad and pass through "D"s	22kN	
DBI-SALA E87 series	0.5 to 2.0 metres	Round /Endless anchor strap	22kN	
DBI-SALA E88 series	0.5 to 1.5 metres	Flat anchor strap with soft eye at each end	15kN	
Protecta AM500 series	0.5 to 2.0 metres	Interlocking anchor strap with sliding wear pad and pass through "D"s	22kN	
Protecta AM450 series	0.5 to 1.5 metres	Round /Endless anchor strap	22kN	

Standards – Safe Application

AS/NZS1891.4 Section 3 Anchorages (Part 3.2.4 safe use of anchorage slings) requires the product to meet the strength requirements of clause 3.1.2a which refers to table 3.1. An extract of this is shown below.

TABLE 3.1
STRENGTH REQUIREMENT FOR ANCHORAGES

Purpose of anchorage	Kilonewtons
	Ultimate strength in direction of loading (minimum) (see Note 1)
(a) <i>Single point anchorages</i>	
Free fall-arrest – one person	15
Free fall-arrest – two person attached to same anchor	21
Limited free fall-arrest (including rope access anchorages)	12
Total restraint or restraint technique	12 or 15 (see Note 3)

Standards – Manufacturing

Whilst there is no specific manufacturing standard for tie-off adaptors or anchor straps, AS/NZS1891.4 requires that when the tie-off adaptor or anchor strap is loaded in the direction of design assembly, it must sustain a minimum load of 15kN for fall arrest. This requirement is increased by 6kN to 21kN if the sling is required to support 2 people. This is particularly relevant if the anchorage device is required to hold in place a temporary horizontal lifeline.

The tie-off adaptor or anchor strap must be compatible with the attachment components. This includes ensuring the attachment hardware (i.e. hooks or karabiners) are designed to reduce the risk of possible wear of the tie off adaptor as well as the possibility of forced roll-out on the gate as a result of unintended loadings that may be applied during use.

Lifting Slings and Use in Fall Arrest applications

Lifting slings are manufactured specifically for materials handling applications. Typically, a safety factor of 8:1 or even 10:1 is applied in the design specification of such items. Therefore in theory, a lifting sling will provide the necessary anchorage strength required for use in personal fall arrest. However, Capital Safety **DOES NOT RECOMMEND** the use of lifting slings for fall arrest applications for a number of reasons:

- (1) **Manufacturing standards are different** – Lifting slings are manufactured to comply with AS1353.1 & AS4497.1 and not the fall arrest standard AS/NZS1891.1. The labelling of slings refers to their Working Load Limit (WLL) and its designation includes its eye type which does not have any reference to Fall Arrest;
- (2) **Testing** - Lifting slings are not tested for light degradation and may therefore be made from materials other than polyester. Materials such as nylon have the potential to deteriorate over time under light exposure, substantially reducing strength and therefore the level of deterioration cannot be determined by the user unless the device is tested;
- (3) **Lack of Previous Loadings Applied are Unknown** - Used lifting slings should never be used as tie-off adaptors as the user cannot be certain of the loads (both static and dynamic) that may have been applied to the sling when lifting goods previously;
- (4) **Compatibility** - The Australian Standard AS1353.2 Care & Use (section 6 Use, Part 6.3 (k)) requires adequate protection of the lifting slings when applied to corners or edges of goods without adequate protection. Corners with a radius of less than three times the thickness of the sling are deemed to be sharp. Attachment hardware as may be found on fall arrest equipment may not have a radius greater than the sling thickness and therefore could be deemed as incompatible.



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When selecting tie-off adaptors or anchor straps, care should be taken to ensure that the adaptor is compatible with the equipment being used. Check to ensure that the anchor strap or tie-off adaptor is labelled and clearly states its performance rating prior to use. Also ensure that the device has been thoroughly inspected and is deemed suitable for use by a competent person. Details of inspections should be recorded in accordance with manufacturer's instructions and in line with the requirements of AS/NZS1891.4.

Refer to Capital Safety User Instruction Manual (A006) or contact Customer Service on 1800 245 002 (AUS), 0800 212 505 (NZ) if there is any uncertainty over the compatibility of fall arrest equipment.