



SUBJECT	DATE ISSUED	REVISION NUMBER
Glossary of Terms	22 nd September 2011	Rev 2

The purpose of this Technical Briefing Note is to provide a glossary of terms commonly used in fall injury prevention systems.

Active Fall Protection – A work operation where individuals must take action to use equipment either to prevent them entering a fall hazard area, or to arrest their fall. (for example, a fall-arrest or fall restraint system).

Anchorage Point – A secure point of attachment to a structure to which a fall-arrest device or anchorage line may be connected.

Anchorage Line – A rigid rail or flexible line secured to an anchorage point along which a type 1 fall-arrest device travels, or a flexible line which unreels from a fall-arrest device.

Anchorage Sling – A sling designed to be placed around a structural element to form an anchorage. (AS/NZS 1891.4 Clause 1.4.1).

Arrest 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)

Attachment Hardware – Any ring, hook, karabiner or other connecting device located in such a position that it must sustain by itself the full loading of a fall-arrest. (AS/NZS 1891.1 Clause 1.4.1)

Competent Person – A person who has, through a combination of training, education and experience, acquired knowledge and skills enabling that person to correctly perform a specified task. (AS / NZS 1891.4 Clause 1.4.2).

Connection Point – A secure point on a fall-arrest device to which a lanyard may be attached.

Descender – A device for attachment to a line to enable a person to descend the line in a controlled manner and at a controlled rate.

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.

Droplines – Vertical lifelines

End Anchorage – The anchorage at each end of each horizontal lifeline system which is designed to resist both the lateral tensile forces developed in the line and the directly applied forces at right angles to the line resulting from an arrested fall. (AS/NZS 1891.2 Clause 1.3.3)

Energy Absorber – An attachment which, by design, reduces the deceleration force imposed by a suddenly arrested fall. (see also Personal Energy Absorber)

Engineer – A person who is eligible for Corporate Membership of the Institute of Engineers Australia or the Institution of Professional Engineers, New Zealand and who has appropriate experience and competence to assess the integrity of a building or structure and anchorage points. (AS / NZS 1891.4 Clause 1.4.3).

Fall-arrest Device – A self-locking device meeting the requirements of AS/NZS 1891.3, whose function is to arrest a fall. (AS / NZS 1891.4 Clause 1.4.4).
There are three types: Type 1 fall-arrester device, Type 2 and Type 3 fall-arrest devices (see definitions on following page).

Fall-arrest Harness – An assembly of interconnected shoulder and leg straps, with or without a body belt, designed for attachment to a lanyard, pole strap or fall-arrest device as specified in AS 1891.3, and used where there is the likelihood of free or restrained fall.

Fall-arrest System – An assembly of interconnected components comprising a full body harness connected to an anchorage point or anchorage system either directly or by means of a lanyard or pole strap, and whose purpose is to arrest a fall in accordance with the principles and requirements of AS/NZS 1891.4. (AS / NZS 1891.4 Clause 1.4.5).

Fall Factor - The term given when calculating the length of the fall divided by the length of the lanyard, e.g. a 2m fall with a 2m lanyard would result in a FF 1, or 2m fall, which is the maximum allowable in industry.

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

Fall Injury Prevention System – The equipment or material or a combination of both that is designed for the purpose of preventing, or reducing the severity of injury to a person in the event of a fall. Examples include industrial safety nets, catch platforms, and safety harness systems (other than a travel restraint system).

Flexible Line – A line comprising steel wire rope, fibre rope or webbing.

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/s²). A Kilogram (kg) is a unit of mass (i.e. the weight of a static object).

$$\text{Force} = \text{Mass} \times \text{Acceleration}$$

For rough calculation purposes:

$$1000\text{N} = 1\text{kN}$$

$$1\text{kN} = 100\text{kg}$$

$$10\text{kN} = 1000\text{kg}$$

Free Fall – Any fall or part of a fall where the person suffering the fall is under the unrestrained influence of gravity over any fall distance either vertically or on a slope on which it is not possible to walk without the assistance of a handrail or hand line.

Free Fall / Free Fall-arrest – 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. (AS/NZS 1891.1 Clause 1.4.4) / (AS / NZS 1891.4 Clause 1.4.6).

(See also Limited Free Fall / Limited Free Fall Arrest)

Full Body Harness- An assembly of interconnected shoulder and leg straps, with or without a body belt, designed for attachment to a lanyard, pole strap or fall arrest device for fall arrest work or positioning purposes. (AS/NZS 1891.1 Clause 1.4.5)

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. (AS / NZS 1891.4 Clause 1.4.8).

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. (AS / NZS 1891.4 Clause 1.4.9).

Height Safety Operator – A person who is able to perform harness based work at height under the direct supervision of a height safety supervisor. (AS / NZS 1891.4 Clause 1.4.10).

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. (AS / NZS 1891.4 Clause 1.4.11).

Horizontal Life Line System – A flexible line supported by two or more anchorages such that the slope of a straight line joining any two adjacent anchorages does not exceed the manufacturer’s recommended slope or, in the absence of such recommendation, 5 degrees. (AS/NZS 1891.2 Clause 1.3.5)

Horizontal Life Rail System – A structurally rigid rail for the attachment of a lanyard or personal fall arrest device via a mobile attachment device and having a slope not exceeding the system manufacturer’s recommendation or, in the absence of such recommendations, three degrees. (AS/NZS 1891.2 Clause 1.3.6)

Horizontal Traveller – A travelling anchorage. It is a device that connects the user to a static line system allowing the user to travel the entire length of the line without having to unclip and re-clip when passing the line supports.

Individual Fall-arrest System – A system designed to arrest an accidental fall and consists of some or all of the following:

- anchorage
- lifeline
- inertia reel
- lanyard
- retractable lanyard
- rope grabs
- wire grabs
- rail system
- shock absorbers – both personal and industrial
- harness (full body).

Inertia Reel (also known as a self-retracting lanyard or fall arrest block) – A mechanical device that arrests a fall, is self locking and at the same time allows freedom of movement.

Intermediate Anchorage – An anchorage supporting a horizontal lifeline other than at its ends. (AS/NZS 1891.2 Clause 1.3.7)

Job Safety Analysis (JSA) – A means of setting out the ways that hazards associated with a task will be managed on a site and the work methods that will be used.

Karabiners – A connector having a spring loaded gate with a secondary locking mechanism designed to connect to other connectors or attachment points. (AS/NZS 1891.1 Clause 1.4.71). These are metal types of connectors that can be used as a connection point between user equipment and attached to anchorage points. They come in a variety of sizes, shapes and locking mechanisms to suit various applications and provide the most convenient type of connector as they can be easily attached and detached. They shall be self-closing and self or manual-locking and be capable of being opened only by at least two consecutive deliberate manual actions.

Lanyard – An assembly of a line and components which will enable a connection between a harness and an anchorage and which will absorb energy in the event of a fall (AS/NZS 1891.1 Clause 1.4.8)

A line usually used as part of a lanyard assembly to connect a fall-arrest harness to an anchorage point or static line in situations where there is risk of a free fall.

Lanyard Assembly – An assembly of a lanyard and a personal energy absorber.

Limited Free Fall / Limited Free Fall-Arrest – A fall or the arrest of a fall occurring under the conditions of free fall / free fall arrest (defined above) except that under reasonably foreseeable circumstances the fall distance will not exceed 600mm. (AS/NZS 1891.1 Clause 1.4.9) / (AS / NZS 1891.4 Clause 1.4.12).

Line Energy Absorber – A device placed in series with a horizontal lifeline to absorb energy and reduce the longitudinal forces in the line resulting from fall-arrest. (AS/NZS 1891.2 Clause 1.3.83)

Locking Traveller (incline) – A device designed to arrests a fall on surfaces up to an angle of 30 degrees.

Mobile Attachment Device – A device, either purpose designed and built or adapted for the purpose, for the connection of personal fall-arrest equipment to a horizontal lifeline or rail, and which can slide along the line or rail. (AS/NZS 1891.2 Clause 1.3.9)

Passive Fall Protection – A system where the equipment provides fall protection, such as the installation of edge protection, scaffolding, safety nets, safety mesh, elevating work platforms, catch platforms, etc and individuals using the system do not have to take the action to use equipment specifically designed to prevent falls.

Personal Energy Absorber (Deceleration Device) – A device or component used in conjunction with a harness which, by design, reduces the deceleration force imposed by a suddenly arrested fall. (AS/NZS 1891.1 Clause 1.4.11)

An energy absorber designed to be used in series with a fall-arrest harness and lanyard to reduce the deceleration force imposed by a suddenly arrested fall. The maximum force allowed to be transmitted is 6kN.

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 body belt, or a fall-arrest harness while the wearer is working on the pole. (AS/NZS 1891.1 Clause 1.4.12)

Restraint Belt – A body belt designed for attachment to a restraint line and not designed for either free or restrained fall.

Restrained Fall – Any fall where the person suffering the fall is under less than the full influence of gravity due to the action of a restraining device such as a pole strap, or is sliding down a slope less steep than that described in free fall for the entire fall.

Restrained Fall / Restrained Fall-arrest – A fall or the arrest of a fall where the person suffering the fall is partially restrained by a restraining device such as a pole strap under tension (AS/NZS 1891.1 Clause 1.4.1), or is sliding down a slope on which it is normally possible to walk without the assistance of a handrail or hand line.

Restraint Line – A line used to restrict the horizontal movement of the wearer and not designed for either free or restrained fall.

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 the risk of a free or limited free fall. (AS / NZS 1891.4 Clause 1.4.14).

Retrieval Strap – An upper torso harness designed for the attachment of a line in a rescue situation and not designed for either free or restrained fall.

Risk Assessment - The evaluation of hazards within the worksite which have the most potential to cause frequent serious injury or illness to occur.

Safety Factor – This factor accounts for complex and variable dynamic forces and unknowns, such as rope ageing, metal fatigue, abrasion, bending and structure contact. It can, for example, be used to work out:

- the ratio of the ultimate strength of the material to the permissible stress;
- the ratio between the weakest link in the system compared to the maximum expected load; or
- the minimum breaking load and the safe working load.

$$\text{Formulas} \quad SF = \frac{BF}{SWL} \quad SWL = \frac{BF}{SF} \quad BF = SF \times SWL$$

(SF is Safety Factor, BF is Breaking Force and SWL is Safe Working Load)

Safe Work Method Statement – See Job Safety Analysis.

Sit Harness – A lower body harness designed to suspend the wearer in a sitting position. (AS/NZS 1891.1 Clause 1.4.16)

Snaphook – A connector attached to a line or a lanyard comprising a hook shaped body with a self closing, self locking gate designed to receive a compatible attachment point. (AS/NZS 1891.1 Clause 1.4.17)

Static Line – A horizontal or near horizontal or vertical line to which a user may be attached and which is designed to arrest a fall. The line is connected to a fixed anchorage point at each end and can be made of metal tube or rod, steel wire rope, synthetic webbing or synthetic rope.

Strengths and Loads

- **Minimum Breaking Load / Strength (MBS/MBL)**
Minimum Breaking Strength is the load above which an item may fail.
- **Safe Working Load (SWL)**
The maximum load (as certified by a competent person) that an item of equipment should be subjected to under particular service conditions.
The SWL can be lower than the Working Load Limit (WLL) and takes account of the particular circumstances of use.
- **Working Load Limit (WLL)**
The maximum load that an item of lifting equipment is designed to raise, lower or suspend, not accounting for particular service conditions that may affect final rating of the equipment. This is the maximum load as specified by the manufacturer.
- **Safety Factor / Safety Co-efficient (SF)**
The ratio between the Working Load Limit and the Minimum Breaking Strength.
The more an item is loaded beyond its SWL, the sooner it is likely to fail. This is accelerated by abrasive conditions.

Total Fall Distance – The total distance a person is likely to fall during both the free and restrained parts of a fall, and includes the maximum dynamic extension of all supporting components.

Total Restraint – A control on a person's movement by means of a combination of a belt or harness, a line and a line anchorage which will physically prevent the person from reaching a position at which there is a risk of free or limited free fall.

Tube Nut Connector – A connector having a gate comprising a pair of aligned screw threads bridged by a tubular nut. (AS/NZS 1891.1 Clause 1.4.18)

Type 1 Fall-Arrest Device (includes rope and 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 and 3 Fall-Arrest Device

(also known as an inertia reel or self-retracting lifeline) – A fall arrest device from which a spring loaded anchorage line pays out, and which locks when loaded and releases when the load is removed. When incorporating a retrieval winch, it becomes a Type 3 fall-arrest device

Static Line – A horizontal, or substantially horizontal, line to which a lanyard may be attached and which is designed to arrest a free fall.

Work Positioning – Use of a system that enables a person to work supported in a harness in tension in such a way that a fall is prevented. (AS/NZS 1891.1 Clause 1.4.19)

Work Positioning Harness – An assembly of body belt and buttock straps for use as a work positioning device and for use where there is the likelihood of restrained fall only.

Tube Nut Connector – A connector comprising an open loop, the sides of the opening terminating in a pair of aligned screw threads arranged so that a single tubular nut can close the loop by simultaneously engaging in both threads.

Work Positioning Systems – Any equipment other than a temporary work platform, which enables a person to be positioned and safely supported at a work location for the duration of the task being undertaken at height. Work positioning systems include the use of adjustable lanyards and pole straps along with a full body harness.

Work Restraint Systems – A system designed to prevent the user from moving into a fall hazard area and include fixed length rope and lanyard systems such as restraint lines.

Additional Information

For any additional information, please refer to other Technical Briefing Notes on this website.

Please use the links on this website to contact your member of choice at:-

Working at Height Association Limited.

www.waha.org.au