

# New WAH ICOP & How to Protect Yourself When Working at Low Heights

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Fall Protection Specialist

THE FUTURE OF WORK



# RINGKASAN KEMALANGAN MAUT

## JATUH DARI MENARA TELCO

**2 Tarikh & Masa**  
5 September 2023  
lebih kurang 2.58 petang

**3 Lokasi**  
Di sebuah menara komunikasi yang terletak di Klang, Selangor

**4 Perihal Kejadian**

- Melibatkan seorang pekerja lelaki tempatan, berumur 21 tahun.
- Merupakan pekerja subkontraktor yang ditugaskan untuk kerja pelarasan boom antena di menara telekomunikasi tersebut.
- Semasa hendak turun dari menara tersebut mangsa telah terjatuh dari ketinggian 12 meter.
- Mangsa meninggal dunia di tempat kejadian.

**5 Tindakan Jabatan**

JKKP Selangor telah mengeluarkan arahan kepada majikan termasuk arahan larangan kacau ganggu di kawasan kemalangan. Siasatan lanjut sedang dijalankan bagi mengenalpasti punca-punca kemalangan dan pihak yang bertanggungjawab atas kemalangan tersebut.



\*Gambar sekadar ilustrasi sahaja dan bukan keadaan sebenar

Sumber dan diterbitkan:  
Seksyen Promosi & Sumber JKKP Selangor  
Seksyen Siasatan & Pendakwaan pada 13 Sept 2023

www.dosh.gov.my | jkkpsl@desh.gov.my

# RINGKASAN KEMALANGAN MAUT

## PEKERJA MAUT JATUH DARI TEMPAT TINGGI

**TARIXH & MASA** 12 September 2023 lebih kurang jam 5.00 petang

**LOKASI** Di kawasan dewan sebuah Institut Kemahiran, Seberang Perai Utara, Pulau Pinang

**PERIHAL KEJADIAN**

- Perancah jenis A-Frame telah didirikan oleh pekerja sub-kontraktor sebagai pelantar kerja.
- Semasa menjalankan kerja-kerja memasang siling, mangsa telah terjatuh dari pelantar kerja yang patah dari ketinggian 4.59 meter (15 kaki) ke lantai.
- Mangsa yang tidak sedarkan diri kemudiannya dibawa oleh penyelia ke hospital untuk mendapatkan rawatan.
- Mangsa disahkan meninggal dunia pada 20 September 2023 lebih kurang jam 1.00 pagi.

**TINDAKAN JABATAN**

- Satu Notis Larangan (NOP) bagi aktiviti bekerja di tempat tinggi.
- Arahan larangan kacau ganggu juga telah dikeluarkan.



\*Gambar sekadar ilustrasi sahaja

Sumber & diterbitkan :  
Seksyen Siasatan dan Pendakwaan pada 20 September 2023  
Seksyen Promosi dan Sumber JKKP Pulau Pinang

Jabatan Keselamatan dan Kesihatan Pekerjaan Pulau Pinang | jkkpp@mohr.gov.my | www.dosh.gov.my

## DARI KAMAR MAHKAMAH MINGGU INI

# JATUH DARI MOBILE CRANE, SYARIKAT PEMBINAAN DIHUKUM!



Pada 20 Oktober 2023, Solid Horizon Sdn. Bhd. telah didakwa sebagai majikan :

- Gagal memastikan penggunaan ladder atau working platform untuk kerja pemasangan fly jib bagi tujuan mengangkat roof truss menggunakan kren bergerak sehingga menyebabkan kemalangan kepada pekerjaanya.
- Kesalahan dilakukan pada 1 Disember 2021 di antara 9.18 dan 9.20 pagi di tapak pembinaan yang terletak di Eco Santuari, Tanjung Dua Belas, Kuala Langat, Selangor Darul Ehsan.
- Dalam kejadian tersebut, seorang pekerja telah mengalami kecederaan parah di bahagian kepala dan meninggal dunia pada 13 Disember 2021 akibat terjatuh ketika melakukan kerja pemasangan jib forestay pendant di atas fly jib crane yang berketinggian lebih kurang 1.2 meter.

+Gambar sekadar ilustrasi sahaja dan tiada kaitan dengan kes

**PENDAKWAAN DI BAWAH**  
Seksyen 15(1), Akta Keselamatan dan Kesihatan Pekerjaan 1994, (Akta 514).

**PENGHAKIMAN**  
Hakim Mahkamah Sesyen Sepang, Tuan Ahmad Fuad Bin Othman hari ini telah menjatuhkan hukuman denda berjumlah Dua Puluh Ribu (RM20,000)

**HUKUMAN KESELURUHAN**

**TAULADAN**  
Kes ini diharap menjadi pengajaran pada semua majikan agar mengambil serius tentang keselamatan semua pekerja dan kontraktor di bawah kawalannya khususnya bagi aktiviti bekerja di tempat tinggi yang merupakan salah satu pekerjaan berbahaya dan sangat tinggi risiko untuk berlaku kemalangan.

**DENDA RM20,000**

# | Agenda

1. Why talk about low heights?
2. ABCs of fall protection
3. Hierarchy of fall protection
4. Basic fall dynamics
5. Arrest force
6. Anchoring principles
7. Fall clearance
  - a. Connecting devices comparison
  - b. Calculating fall clearance – lanyards
8. General SRL specifications
9. Summary



# Why talk about low heights?

## USA — OSHA’s TOP 10 Serious Violations (2021)

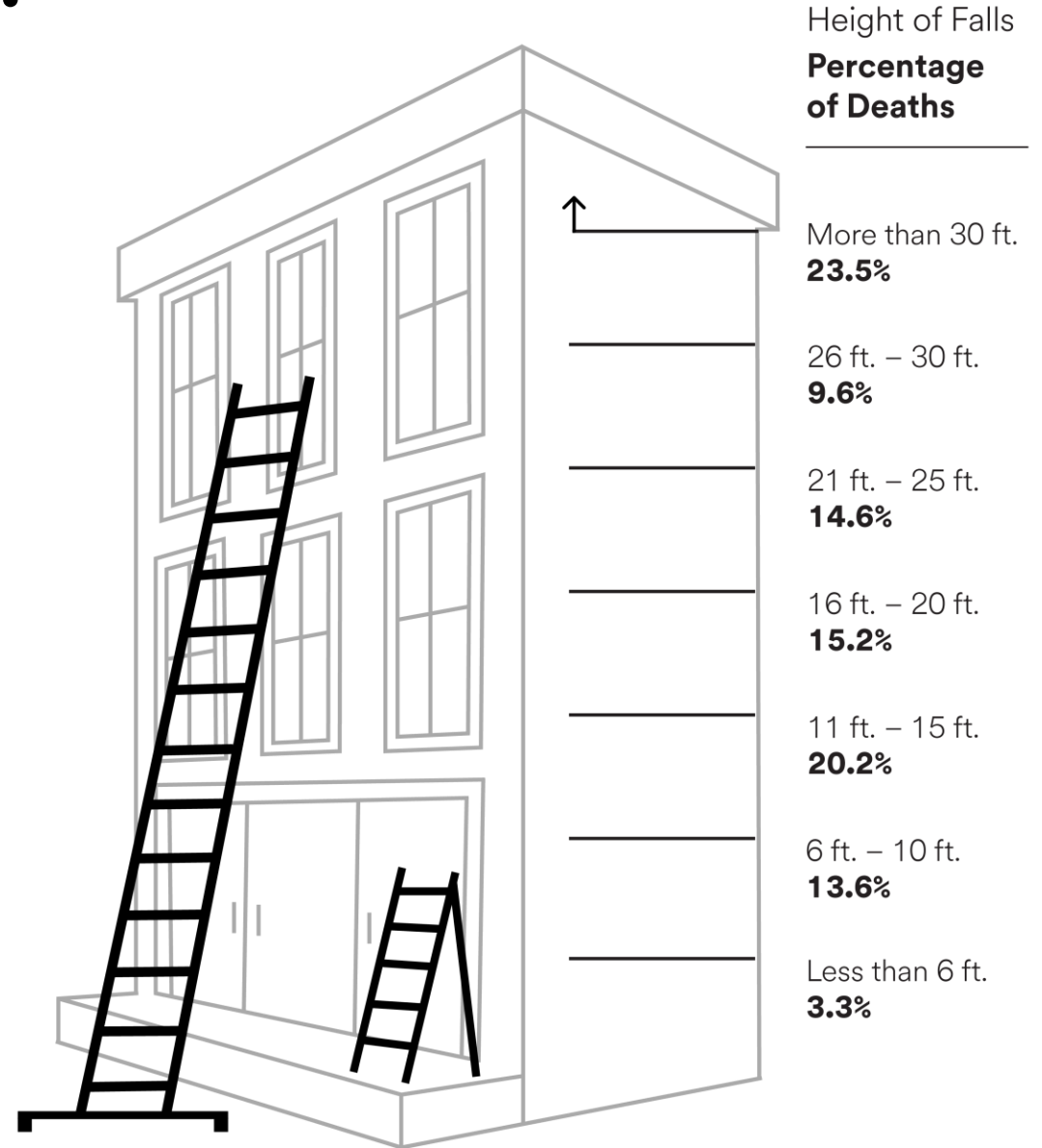
- ▶▶▶ 1. Fall protection (4,251 violations)
- 2. Respiratory protection (2,057 violations)
- 3. Ladders (1,830 violations)
- 4. Scaffolding (1,785 violations)
- 8. Fall protection – Training requirements (1,091 violations)\*

**77%**

of fatalities from falls occur at “low heights” — Where a lanyard may not be an effective solution\*\*

\* Table is based on OSHA Information System data from Oct. 1, 2020, to Sept. 30, 2021. Data is current as of Nov 8.

\*\* Source: Fatal occupational injuries incurred by workers in the construction industry due to falls to a lower level, 2011-2015. Bureau of Labor Statistics Injuries, Illnesses, and Fatalities (IIF). Accessed April 2022.



# ABCs of Fall Protection


A typical personal fall protection system is made up of a few fundamental elements, often referred to as the ABCs of fall protection.

Anchorage connectors (A), Body supports (B) and Connecting devices (C) - if used correctly together, comprise a protective system that allows workers to safely perform work at heights.

**A**

### Anchorage connectors


Anchorage connectors ensure that the worker has a secure connection to a suitable structure (anchor) that is able to withstand the forces of a fall. Anchorage connectors vary according to industry, function and type of installation.



**B**

### Body supports


A full body harness provides a connection point to the worker's body and in the event of a fall, it distributes fall forces across the person's thighs, pelvis, chest and shoulders and supports the body during escape or rescue.



**C**

### Connecting devices

Energy-absorbing lanyards and self-retracting lifelines (SRLs) are connecting devices that form a secure link between the worker and the anchor and permit some freedom of movement for the worker while performing their tasks.

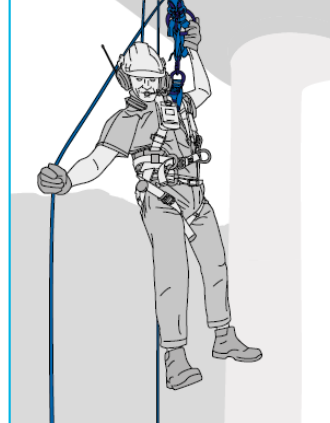


A complete fall protection program for the workplace gives equal consideration to the following three additional and essential elements: Descent and rescue (D), Education (E) and Fall protection for tools (F).

**D**

### Descent and rescue


Descent and rescue devices allow for safe and prompt escape or rescue of a worker who is left suspended after a fall. These devices can also help rescue an incapacitated worker from a confined space or otherwise provide for escape from a hazardous location.



**E**

### Education


In addition to locally legislated fall protection training requirements, workers (and their supervisors) need to be effectively educated in, and be continually familiar with, the specific fall protection equipment being used.



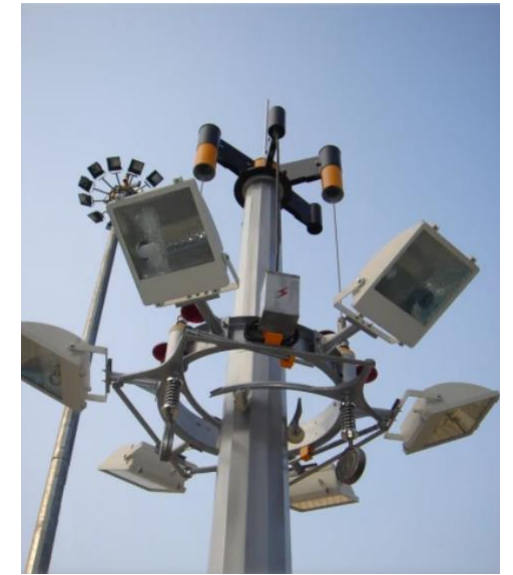
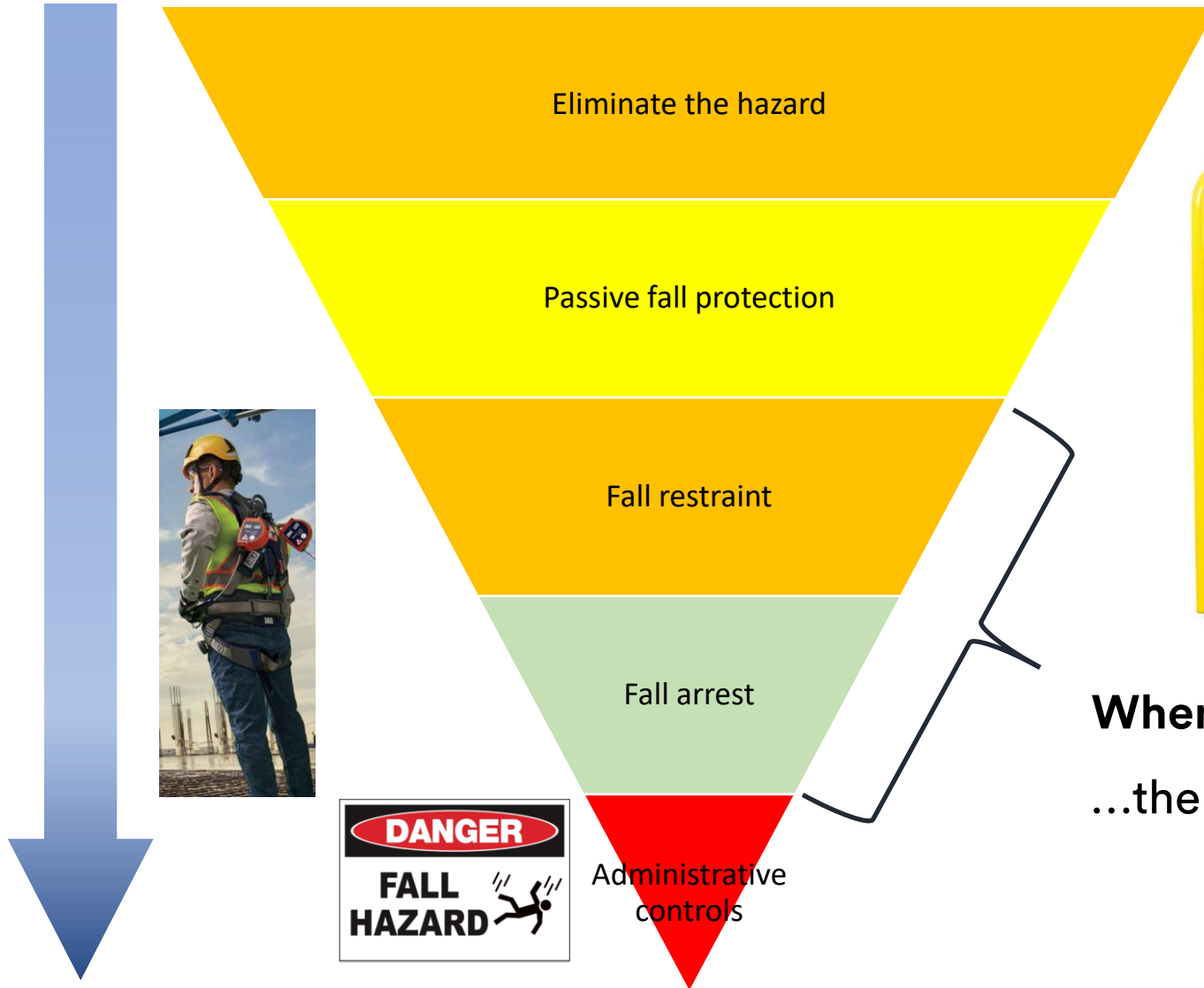
**F**

### Fall protection for tools

When overhead work is taking place, these devices can help make the work environment safer and more productive, by reducing falling object incidents that can result in personal injury, equipment damage, and tool loss.



# Hierarchy of fall protection



**When utilizing either Fall restraint or Fall arrest,  
...the ABCs of fall protection apply**

# | Basic fall dynamics

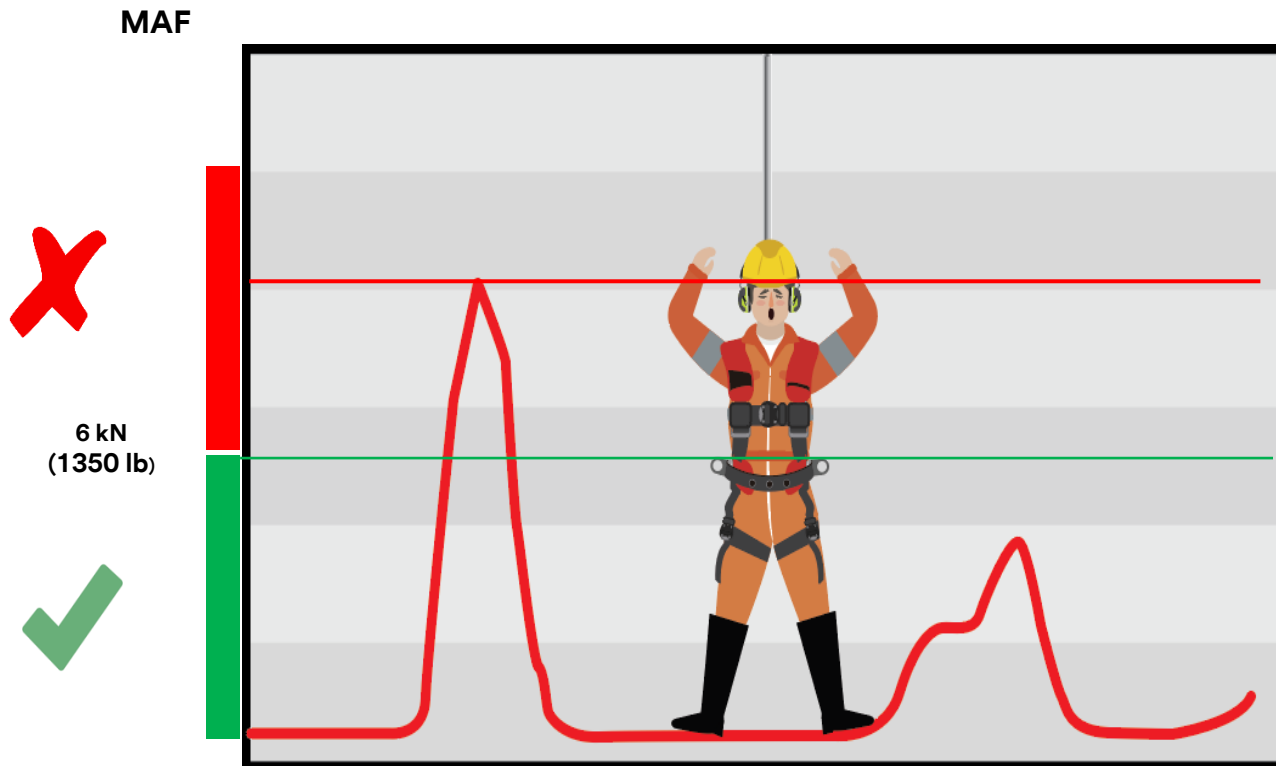
- Should the worker climbing the ladder on the left be any less concerned with their safety than the worker climbing the tower on the right?
- Many falls occur at relatively low heights
- Falls at low heights can also lead to fatality, paralysis, or other negative, potentially life-changing ramifications



Source: 3M Safety Training,  
Working At Heights, Ontario  
Construction Program, V2.0

# Arrest force

Now, if a worker is not utilizing personal fall protection equipment (the ABCs) correctly, should a fall occur, the fall forces generated can pose a serious risk of injury to the worker.

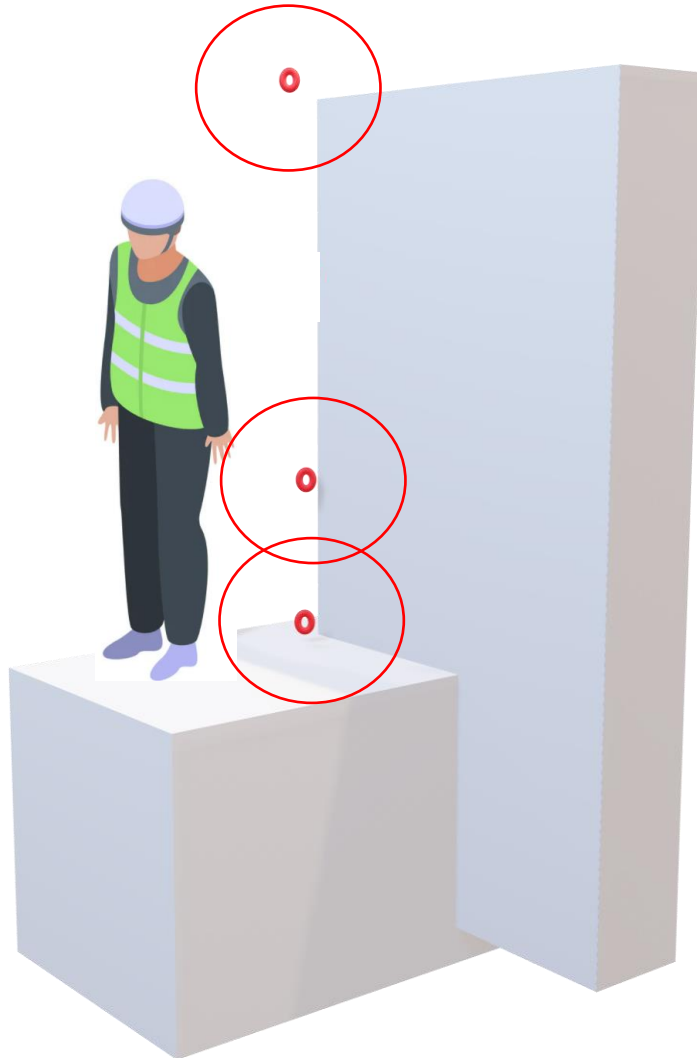


- Connecting elements such as lanyards or self-retracting lifelines (SRL), include energy absorption systems that can keep the forces transmitted to the worker below limits defined by local regulations and standards.
- Using lanyards without an energy absorber to arrest a fall is an unacceptable practice that can seriously harm a worker.
- To minimize the chances of being injured, an acceptable limit of force a worker can receive is 6 kN (1350 lb)

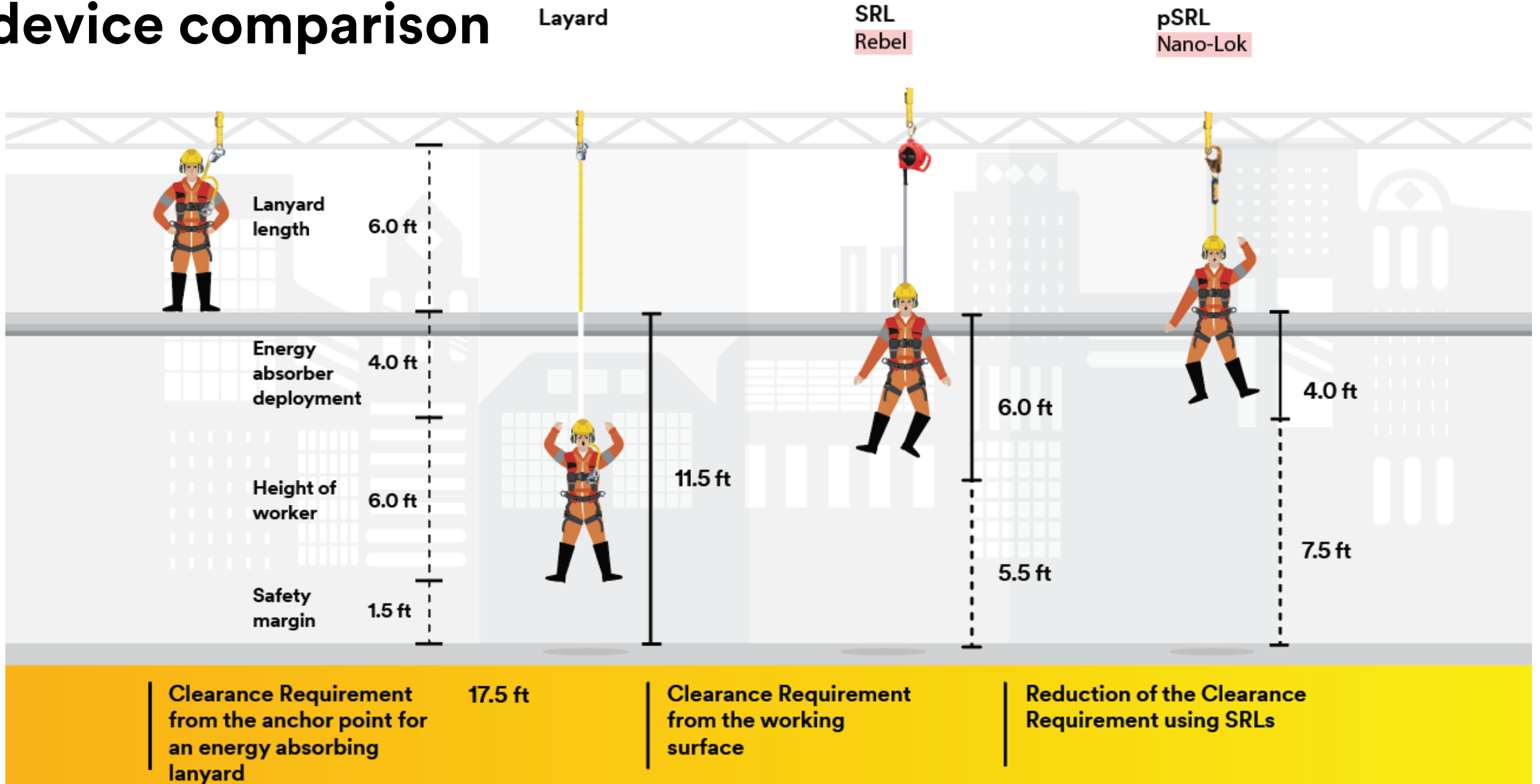


# Anchoring principles

*What should I use in each case?*



# Fall clearance – device comparison



# Fall clearance – lanyards

## Required Fall Clearance Distance

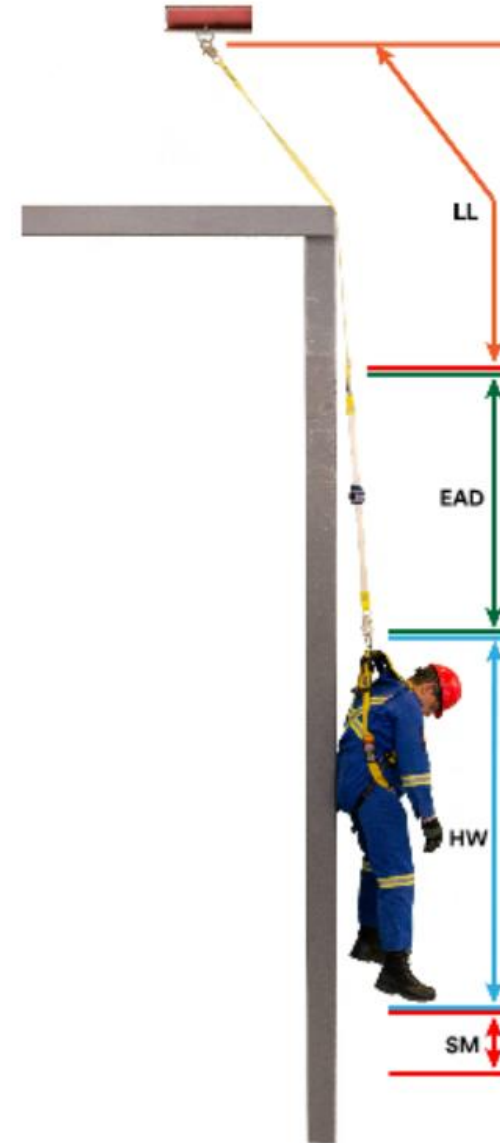
$$CR = LL + EAD + HW + SM$$

**LL:** Lanyard length



**EAD:** Energy absorber deployment




**HW:** Height of the worker

**SM:** An additional safety factor



Source: 3M Safety Training,  
Working At Heights, Ontario  
Construction Program, V2.0

Feature	<b>3M™ DBI-SALA® Nano-Lok™</b> 	<b>3M™ DBI-SALA® Nano-Lok™ Edge</b> 	<b>3M™ Protecta® Rebel</b> 
<b>Minimum anchorage height</b>	<b>Knee level*</b>	<b>Floor level</b>	<b>D-ring Level</b>
Lifeline material	Dyneema® and polyester web	Galvanized steel cable	Polyester web
Housing material	Thermoplastic	Thermoplastic	Thermoplastic
Energy absorber	Nitrile rubber shock pack	Backpack style fabric shock pack	PVC/polyester shock pack
Capacity	310 lbs (141 kg)*	310 lbs (141 kg)*	310 lbs (141 kg)
Quick connector	Yes	Yes	No
<b>Maximum arrest force</b>	<b>6 kN (1350 lbs.)</b>	<b>6 kN (1350 lbs.)</b>	<b>4 kN (900 lbs)</b>
Average arrest force	4 kN (900 lbs.)	4 kN (900 lbs.)	4 kN (900 lbs.)
<b>Lowest Fall clearance</b> <b>*Connected above dorsal D-ring</b> <b>*User standing</b>	<b>4 ft (310 lb user max.)</b>	<b>6 ft (220 lb user max.)</b>	<b>5 ft (310 user max.)</b>
Special features	*Intelligent brake activation system (Up to 89% less nuisance lock-ups)	*Leading edge/sharp edge capable	N/A
Standards	ANSI Z359.14 Class A/B, OSHA 1926.502	ANSI A10.32, ANSI Z359.14, OSHA 1910.66, OSHA 1926.502	ANSI Z359.14 Class B ANSI A10.32, OSHA 1926.502

Features	<b>3M™ Protecta® Rebel</b> 	<b>3M™ DBI-SALA® Smart Lock</b> 	<b>3M™ DBI-SALA® Sealed-Blok™</b> 
Housing material	*Thermoplastic *Aluminum	*Nylon	*Aluminum
Lifeline material	*Galvanized steel cable *Stainless steel cable	*Galvanized steel cable *Stainless steel cable *Vectran rope *Technora/polyester/kevlar rope	*Galvanized steel cable *Stainless steel cable
Capacity	310 lbs (141 kg)	310 lbs (141 kg)	310 lbs (141 kg)
<b>Maximum arrest force</b>	<b>6 kN (1350 lbs.)</b>	<b>6 kN (1350 lbs.)</b>	<b>6 kN (1350 lbs.)</b>
Average arrest force	4 kN (900 lbs.)	4 kN (900 lbs.)	4 kN (900 lbs.)
<b>Lowest Fall clearance</b> <b>*Connected above dorsal D-ring</b> <b>*User standing</b>	<b>6 ft (310 lb user max.) ANSI</b>	<b>4 ft (310 lb user max.) ANSI</b>	<b>6 ft (310 lb user max.) ANSI</b>
Special features	*Carrying handle *Carabiner included *Swivel hook with impact indicator	*Nuisance lock-up reduction *Carrying handle *Swivel hook with impact indicator	*Sealed design *Carrying handle *Fast-Line™ system: simple cable replacement
Standards	ANSI Z359.14 Class B, OSHA, ANSI A10.32	ANSI A10.32, ANSI Z359.1, ANSI Z359.14, OSHA 1910.66, OSHA 1926.502	ANSI A10.32, ANSI Z359.1, ANSI Z359.14, OSHA 1910.66, OSHA 1926.502

# EQUIPMENT INSPECTION

*Just follow the LAWS*

- Label
- Attachments
- Webbing
- Stitches



Fall Protection

New and improved

**3M™ DBI-SALA®**

**Nano-Lok™ Personal  
Self-Retracting Lifeline**

**Donning of pSRL**





3M™ DBI-SALA® Nano-Lok™  
Personal Self-Retracting Lifeline

# Light on weight. Heavy on features.

**The lightest ANSI certified personal SRL designed for knee level tie-off.**

Trusted for its reliability and durability, Nano-Lok™ has long been the workhorse personal SRL of the industry. Our latest version doesn't just match the performance of the outgoing model—it surpasses it and then some. It's sleeker with a more compact design. It's tougher with a longer lasting cover. It's easier and faster to connect.\* All while complying with OSHA's 1910.140 General Industry 4 ft. fall protection rule and ANSI Z359.14 Class A & B standards.

*\*Compared to previous generation.*



# Lighter and mightier.\*

Designed for the way you work today.

Compact housing →

Smart-activating brake system →

Built-in RFID tag →

Sleek, durable nitrile  
rubber energy absorber →

Simple, lightweight, fast  
connection system  
(backward compatible)



*\*Compared to previous generation.*



**Save time.**  
**60%** Faster installs  
Easy and quick to inspect\*

*\*Compared to previous generation.*

## New Energy Absorber system

**Less is more.**  
**30%** smaller  
**Built to last.**  
**4X more durable\***

nitrile rubber cover.  
Worksite-proven and  
weather and abrasion-tested.

*\*Compared to previous generation energy absorber.*

New  
generation



Previous  
generation



# Tie-off versatility.

Shoulder-level or higher: 420 lb. capacity

Knee-level or higher: 310 lb. capacity

# Do's and Don'ts

## Modification of PPE – Dorsal D ring is removed



## The position of SRL lanyard is too low



## Correct donning of SRL lanyard



[https://youtu.be/xYQ50zAkv74?list=PLb-TP2uLs5Eqbk18gVg1I8ymYMT\\_P5MoZ](https://youtu.be/xYQ50zAkv74?list=PLb-TP2uLs5Eqbk18gVg1I8ymYMT_P5MoZ)



**COSH**

2024

24<sup>th</sup>

CONFERENCE AND  
EXHIBITION ON  
OCCUPATIONAL  
SAFETY AND HEALTH

**SCICOSH**

6<sup>th</sup> SCIENTIFIC CONFERENCE ON OCCUPATIONAL SAFETY AND HEALTH

**THANK YOU**

# **SPEAKER GUIDELINE**

## **NOTICE TO THE PRESENTER OF THE COSH & SciCOSH**

With all due respect, we are pleased to inform you some important points that need to be given attention by the presenters as follows:

### **i) ATTIRE**

- Presenters are required to dress neatly and wear **coats/blazers** during the presentation.

### **ii) SLIDE PRESENTATION**

- Presenters need to ensure that the **presentation slides use a minimum of 20 font sizes** to ensure that the information in the presentation slides can be seen.
- The PowerPoint used is a **version of 2010 and above**.
- Presenters are **requested to submit final presentation slides** to the NIOSH Liaison Officers
- A presentation (especially conclusion part) should be associated with COSH/ SciCOSH theme
- Should avoid all sensitive issues (e.g. race, religion, politic etc.)
- Should avoid to promote own business excessively
- Presentation should be in English.

### **iii) DURING PRESENTATION (FOR 60 MIN & 30 MIN SESSION)**

- You are given **50 minutes** to present for **workshop session** (It is highly advisable not to exceed 15-- 20 slides)
- You are given **20 minutes** to present for **paper session** (It is highly advisable not to exceed 10-15 slides)
- The **question and answer session** will continue for **10 minutes** after the end of the presentation session.

### **iv) ATTENDANCE IN THE PRESENTATION HALL**

- Presenters are asked to be **ready 30 minutes early** in the presentation hall.

The cooperation and willingness of Prof/Dr/Sir/Madam to comply with this matter are greatly appreciated.

Thank You.