

WSH INSIGHTS

Prevent Falls with Travel Restraints

In January, the WSH Council released our first WSH Insights on [electrocution safety](#) during solar panel installations. In addition to electrocution hazards, solar panel installers and maintenance personnel also face fall from height risks, and we had shared a subsequent WSH Insights on [preventing falls from open sides](#).

In the upcoming months, the Ministry of Manpower will be conducting inspections targeting work-at-height hazards, including at solar panel installation sites.

To help the industry, the WSH Council has compiled a list of good practices commonly adopted by companies when deploying a travel-restraint system to mitigate work-at-height risks. The WSH Council urges companies who have yet to adopt these good practices to do so, to be well prepared for MOM's upcoming inspections.

Travel-Restraint System vs Personal Fall-Arrest System

Travel-restraint systems can be effective in preventing falls from height. Companies should always consider implementing travel-restraint systems before personal fall-arrest systems. Personal fall-arrest systems should only be used when other control measures cannot be implemented. See Table 1 for the differences between a travel-restraint system and a personal fall-arrest system.

	Travel-Restraint System	Personal Fall-Arrest System
Purpose	<ul style="list-style-type: none"> Prevents workers from falling from height 	<ul style="list-style-type: none"> Protects workers from injury after falling from height
Components	<ul style="list-style-type: none"> Secure anchor point Correct-length connector without energy absorber Restraint belt or full-body harness 	<ul style="list-style-type: none"> Secure anchor point Connector with energy absorber designed to arrest a fall Full-body harness

Table 1: Differences between a travel-restraint system and a personal fall-arrest system.

Good Practices when Deploying a Travel-Restraint System

When deployed properly, a travel-restraint system restricts the travel distance of a worker preventing him/her from getting into a position where he/she could fall. In particular, travel-restraint systems are often used during the installation and removal of guardrails at open sides, or when the fall distance is insufficient to deploy a shock absorber.



Figure 1: Use of travel-restraints for work at height.

- Site Inspection:** Identify the possible fall-from-height locations in the designated work area (e.g. open sides, floor openings, fragile surfaces) where workers are at risk of falling over or falling through.
- Secure anchor points:** Identify or install secure anchor points to deploy the travel-restraint system. Suitable anchor points include fixed anchors, a horizontal/vertical lifeline, and the use of anchor slings placed around structural elements. Check to ensure anchor points are of adequate strength and good construction.
- Restricted travel distance:** Determine the distance (X) between the anchor point and the fall-from-height location (see Figure 2). In general, the restricted travel distance should be less than 90% of X.

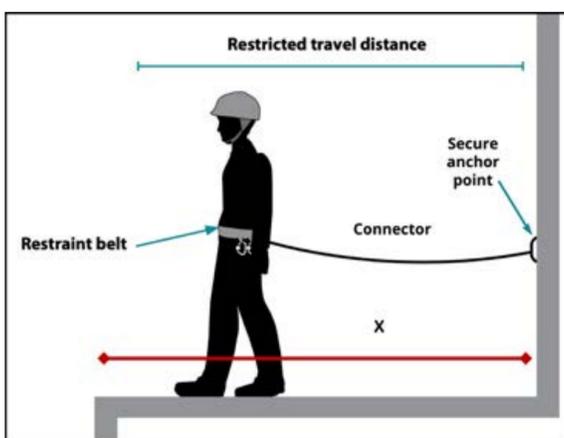


Figure 2: The restricted travel distance for a travel-restraint system.

- Correct-length connector:** Select a connector shorter than the restricted travel distance, accounting for the length of a worker's stride, and factoring in an additional safety distance. Fixed-length lanyards or a self-retracting lifeline (SRL) may be used as long as its maximum length is shorter than the restricted travel distance. Do not use a lanyard or SRL with an extendable energy absorber as travel-restraint systems are not designed to arrest a fall.
- Body Support:** Equip each worker with correctly-sized body support which can be adjusted to fit the user's body. Either a full-body harness or a restraint belt may be used for travel-restraint.

For more information:

WSH Legislation

WSH (Work at Heights) Regulations 2013

Singapore Standard

SS 541: 2008 Belts

SS 570: 2022 Personal Protective Equipment for Protection Against Falls from a Height

Workplace Safety and Health Council

[Code of Practice for Working Safely at Heights](#)

[WSH Guidelines on Anchorage, Lifelines and Temporary Edge Protective Systems](#)

[WSH Guidelines on Personal Protective Equipment for Work at Heights](#)

[6 Basic WSH Rules for Working on Roofs](#)

[WSH Insights: Prevent Falls from Open Sides](#)

[WSH Insights: Protecting Solar Panel Installers from Electrocution](#)

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