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Due to building code requirements for drainage, in some applications, it may become necessary to operate a hand pallet truck on an incline of up to 5 percent. The site should have a safe system of work in place for these applications and these should be addressed in the Traffic Management Plan (TMP) and your manual handling procedures.

For additional guidance on TMP guidance refer to AS2359.2. For additional guidance on hand pallet truck operation refer to the operator manual supplied with the hand pallet truck. For guidance on hazardous manual tasks see “Hazardous Manual Tasks” Codes of Practice published by Safe Work Australia 2011.

## CAUTION

Extra care is required when operating a hand pallet truck on an incline with or without a load. Pushing loads is preferable to pulling because it involves less work by the muscles of the lower back, allows maximum use of body weight, less awkward postures and generally allows workers to adopt a forward facing posture, providing better vision in the direction of travel.


- ❖ Do not walk backward with a hand pallet truck unless going up inclines.
- ❖ When going down an incline, keep the pallet jack in front of you so it can be controlled at all times.
- ❖ Use a hand pallet truck fitted with brakes if regular use on a incline is required.
- ❖ Secure the load on a pallet so that it will not slip, shift or fall.
- ❖ Keep the starting forces within manageable range, ref table 1 & 2.
- ❖ Ensure the rolling & steering forces are within manageable range, ref table 1 & 2.
- ❖ Wear appropriate foot wear, (steel cap safety boots with good grip).

Whilst no state and or territory place a limit on what an individual can push & pull, in Australia we prefer the risk management approach for the following reasons:

- No two people are the same (height, weight, strength etc).
- No two workplaces are the same (each presenting different hazards).
- Frequency of tasks must be considered.
- Manual handling tasks may require pushing/pulling movements, using manual handling aids on even or uneven surfaces.
- Each workplace needs to identify those hazards that exist and assess the risk and implement controls.

The use of a hand pallet truck can save a lot of hard work and help reduce the risk of a musculoskeletal injury arising from lifting and carrying items. If used incorrectly there is a manual handling risk associated with pushing and pulling activities.

There will be an increased risk of a musculoskeletal injury if the hand pallet truck is used on steep gradients, particularly if the load is heavy.

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The international standard applicable to hand pallet trucks is **ISO 3691-5** Industrial trucks – Safety requirements and verifications – Part 5. Pedestrian-propelled trucks.

Within the scope of ISO 3691-5, it states that it is applicable to trucks provided with either manual or electrical battery-powered lifting, operating on smooth, level, hard surfaces.

It does not establish the additional requirements for operation on gradients or on surfaces other than smooth, level, hard surfaces. It does however give details on maximum design forces (table 1) and details the methods to be used for measurement of these forces. These figures are a good guide as to the maximum forces that should be expected on new hand pallet trucks (built to ISO 3691-5 standards) when used on a smooth hard level surface.

## MANOUEVERING A HAND PALLET TRUCK

**There are four phases in this task** (see table 1. for typical forces that can be expected with a new unit with varying loads, table 2. has calculated expected rolling values when used on a 5% incline):

- Starting or initial force
- Propelling/Rolling or sustained force
- Steering/Turning force
- Stopping or positioning force

Load	Starting	Rolling	Steering		Load	Calculated Rolling
kg	kgf	kgf	kgf		kg	kgf
250	15	7.6	15		250	28
500	20	10	20		500	45
750	25	15	25		750	63
1000	30	20	30		1000	80
1500	40	30	30		1500	115
2000	50	40	30		2000	150
2300	50	45	30		2300	165
(New truck on a smooth, dry, level, concrete floor in good condition)					(New truck on a smooth, dry, 5% incline, concrete floor in good condition)	
Table 1					Table 2	

### Note

1. the following will have adverse effect on forces required to start, propel and steer a hand pallet truck;
  - a. Wheel condition e.g. flat spots, embedded foreign objects, string/plastic wrapped around wheel/axel, worn and or corroded bearings.
  - b. Poor floor condition
  - c. Housekeeping i.e. debris on the floor
2. Tyre and wheel compound selection will also affect forces required to manoeuvre a hand pallet truck, softer compounds tyres like rubber will require higher forces.

To help minimise the forces required to operate a hand pallet trucks, regular maintenance is required in accordance with manufacturer's recommendations, in the absence of any manufacturers recommendations they should as a minimum be serviced annually.

Depending on forces & frequency of use, switching over to a powered pallet truck should also be considered.