

Quikstak 'smart-stacker'



HAZARD AND RISK ASSESMENT



KEEP THIS BOOKLET WITH THE MACHINE FOR READY REFERENCE

OWNER'S RESPONSIBILITIES

OPERATOR'S QUALIFICATIONS

Only trained and authorised operators shall be permitted to operate powered industrial trucks.

RATED CAPACITY

The manufacturer's rated capacity of the truck shall not be exceeded.

Any design modifications and additions liable to influence capacity and operating safety shall be effected only after approval of the manufacturer.

Modifications arising from application of ancillary attachments shall be performed in such a manner that safety is not reduced and in accordance with the provisions of this safety code. Capacity, operation and maintenance instruction plate, tags, or decals shall be changed accordingly.

The user shall ensure that all name-plates and markings are in place and are maintained in a legible condition.

DEFECTIVE OR DAMAGED TRUCKS

If a powered industrial truck is found to be in any way unsafe or to contribute to an unsafe condition, it shall be removed from service until restored to a safe operating condition.

BATTERY CHARGING AND CHANGING

It is recommended that battery charging installations be located in areas designated for that purpose. Facilities should be provided for flushing and neutralising spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries.

Smoking shall be prohibited in charging areas: this shall be indicated by signs.

Only trained and authorised personnel shall change or charge batteries. Personnel maintaining batteries shall wear protective clothing.

All battery changing shall be carried out in accordance with manufacturer's instructions. Tools and other metallic objects shall be kept away from the top of uncovered batteries.

The battery of an electric truck shall not be replaced by another battery having different voltage, weight or size, without specific authorisation (by the original manufacturer of the truck, if possible).

Only batteries meeting the truck manufacturer's specifications shall be used.

OPERATING CONDITIONS

Operating surfaces shall have sufficient load-carrying capacity and shall be maintained in such a manner as not to affect adversely the safe operation of the truck.

Transport aisles for trucks shall be arranged to provide good visibility and ease of truck cornering and shall avoid inclines, steep ramps, narrow passages and low ceilings. Aisles shall be clearly outlined or defined.

In aisles where pedestrian traffic is likely to be encountered, aisle width shall be adjusted accordingly.

ACCIDENTS

The operator shall be required to report any accident involving injury, damage to building structures or equipment to be appropriate person at once.

LIGHTING

Lighting of adequate intensity shall be provided in operating areas.

When lighting in the operating area is less than 32 lux, auxiliary lighting shall be provided on the truck.

SLINGING OF TRUCKS

Slings shall be attached only at the points indicated by the truck manufacturer.

SIMULTANEOUS USE OF TRUCKS

The simultaneous use of two trucks for handling heavy or cumbersome loads is a dangerous operation requiring special precautions. It shall be done only in exceptional circumstances, under the supervision of the person responsible for handling operations.

LIFTS (ELEVATORS)

It shall be ensured that lifts (elevators) used in transport powered industrial trucks will support the total weight of the truck, load and operator. Such lifts, (elevators) shall be designated and operators instructed to use only designated lifts (elevators).

RULES FOR THE OPERATOR

The safe operation of powered industrial trucks is dependant to a large extent on the manner in which the personnel operate the truck. The rules for the operator are laid down in the following major categories:

- General rules
- Handling the load (lifting and stacking)
- Travelling (driving)
- Operator care of the truck

Failure to observe these rules may result in:

- A serious risk of injury to the operator or others;
- Material damage.

GENERAL

Only trained and authorised personnel shall operate a powered industrial truck.

Operators shall pay particular attention to the operating environment, including other persons and fixed or movable objects in the vicinity, and shall safeguard pedestrians at all times.

No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or unloaded

Any accidents involving personnel, buildings, structures or equipment shall be reported at once to the appropriate person.

The operator shall not modify, add or remove parts from the truck in a manner that will affect its functioning, without authorisation.

Operators shall use trucks only for those purposes for which they are equipped.

LOADS

Only loads shall be handled which are within the rated capacity of the industrial truck or, when attachments are used, the combination of the truck and attachment. The capacity of the truck and the attachment may be less than the capacity shown on the identification plate of the attachment.

No means shall be used to increase the capacity of the truck, for example additional personnel or counter weighting.

At all times, and particularly when attachments are being used, care shall be taken in securing, manipulating, positioning and transporting the load. Trucks equipped with attachments should be operated as though partially loaded, when not carrying a load.

Only stable or safely arranged loads shall be handled. Particular care shall be taken when handling extra long or high loads. When handling loads which cannot be centred, the truck shall be operated with special caution.

TRAVELLING (DRIVING)

When manoeuvring with the load in elevated position, the steering and braking controls shall be operated in a moderate and smooth manner.

The operator shall avoid running over loose objects which might cause damage or injury.

Arms, legs or head shall not be put between the uprights for the mast or other working parts of the truck.

All signs and other instructions concerning floor loadings shall be complied with.

CLEARANCE

It shall be ensured that there is sufficient clearance under overhead installations, for example light fixtures, pipes and fire protection systems.

Before traversing passages or doorways, it shall be ensured that there is sufficient clearance for the truck, operator and load.

PARKING

When a powered industrial truck is left unattended, the forks shall be fully lowered, the power shut off, the parking brake applied, and the truck secured against unintentional or unauthorised movement.

Note: The definition of 'unattended' resides with the national governing body having jurisdiction.

When the truck is being parked, fire aisles, access to stairways and fire equipment shall be kept clear.

OPERATOR CARE OF THE TRUCK

Before operating the truck, its operating condition shall be checked.

If the truck is found to be in need of repair, or if it develops a defect during operation, the matter shall be reported immediately to the designated superior. Operators shall not make repairs or adjustments unless specifically authorised to do so.

BATTERY CHARGING AND CHANGING

All battery charging and changing shall be carried out by trained and designated personnel in accordance with the battery or truck manufacturer's instructions. This can usually be the authorised operator.

The truck shall be correctly positioned and the brake applied before attempting to change or charge batteries.

Precautions shall be taken to prevent naked flames, sparks or electric arcs in battery charging areas. Smoking is prohibited.

Tools and other metallic objects shall be kept away from the top of uncovered batteries.

It is important that the cell tops be kept dry and that battery terminals be kept clean, lightly covered with petroleum jelly and correctly tightened.

MAINTENANCE PRACTICES

GENERAL

The satisfactory operation of powered industrial trucks depends on careful maintenance. When maintenance is neglected, trucks can become a source of danger to personnel and property.

MAINTENANCE ITEMS

Preventative maintenance, lubrication and inspection of all powered industrial trucks shall be performed according to a scheduled system in conformity with the following items. Only qualified and authorised personnel shall be permitted to maintain, repair, adjust and inspect industrial trucks.

Brakes, steering mechanisms, control mechanisms, warning devices and lift overload devices shall be maintained in a safe operating condition.

All parts of lift mechanisms and frame members shall be carefully and regularly inspected and maintained in a safe operating condition.

Safety guards and safety devices shall be inspected regularly and shall be maintained on the truck in a safe operating condition.

All hydraulic systems shall be regularly inspected and maintained.

Cylinders, valves and other similar parts shall be checked to ensure that neither internal nor external leakage has developed to the extent that it would create a hazard.

Batteries, motors, controllers and contactors, limit switches, protective devices, electrical conductors and connections shall be inspected and maintained in accordance with general accepted good practice. Special attention shall be paid to the condition of electrical insulation.

All information and instruction plates and tags (decals) shall be maintained in a legible condition.

Any design modifications and additions liable to influence capacity and operating safety shall be effected only after approval of the manufacturer. Applicable identification plates and instructions shall be changed.

All replacement parts shall be original parts or be of a quality at least equal to that provided in the original equipment.

Industrial trucks shall be kept in a clean condition to prevent fire hazards and ensure the detection of loose or defective parts.

INSPECTION

If, during an inspection, any fault, wear or damage is observed that can cause a safety hazard, effective measures for correction shall be taken before the truck is placed into operation again.

A scheduled preventative maintenance, lubrication and inspection procedure should be followed. Those records determined to be necessary (or required by national authority) shall be maintained.

QUIKSTAK MAINTENANCE

Quikstak 'smart-stackers' have been designed to require a minimum of regular scheduled maintenance.

Every 3 – 4 months:

- Spray inside the masts with a silicon spray.
- Check operation of the brake, switches, Emergency Stop button, sensor function, top and bottom cut-out switches.
- Visually check for hydraulic oil leaks
- Clean the machine, including the sensor lenses.

HAZARD AND RISK ASSESSMENT FOR QUIKSTAK 'SMART-STACKERS'

SCOPE

- Manually propelled and self-propelled models
- With or without infra-red height-sensing
- Lift heights up to 2.4 metres

DESCRIPTION

A stacker truck using battery-power to lift loads, and, on self-propelled models, to provide forward and reverse traction. Most models also feature infra-red load-height sensing, which automatically maintains a pre-set working level when loading or unloading pallets.

CONSTRUCTION

A steel frame comprising main structure (chassis and masts), fork assembly which moves vertically in masts, outrigger load stabilisers, and rear steering wheel assembly. Electrical and hydraulic control mechanisms, batteries and motors, allow the operator to raise, lower, and move loads.

RISK RANKING METHOD

Based on AS/NZ 4360: 1995 Risk Management

Risk is the combination of the likelihood of a specific unwanted event and the potential consequences if it should occur.

PROBABILITIES

- A common or repeating occurrence
- B known to occur or 'it has happened'
- C could occur, or 'I've heard of it happening'
- D unlikely to occur
- E practically impossible

CONSEQUENCES FOR PEOPLE

- 1 fatality or permanent disability
- 2 serious lost time, injury or illness
- 3 moderate lost time, injury or illness
- 4 minor lost time, injury or illness
- 5 no lost time

RISK RANKING METHOD

For each event the appropriate probability (a letter A to E) and consequence (a number 1 to 5) is selected.

			PROBABILITY OF EVENT OCCURING				
			Common ←		→ Unlikely		
			A	B	C	D	E
CONSEQUENCES IF EVENT DOES OCCUR	Serious	1	1	2	4	7	11
		2	3	5	8	12	16
		3	6	9	13	17	20
	Minor	4	10	14	18	21	23
		5	15	19	22	24	25

The consequences (loss outcomes) are combined with the probability of those outcomes in the risk ranking table to identify the risk rank of each loss event, (e.g. a consequence of 3 with a probability of B yields a risk rank from of 9. A rank of 1 is the highest magnitude of risk for a highly likely, very serious event. A rank of 25 represents the lowest magnitude of risk, an almost impossible, very low consequence event.

1 – 3	Extreme	13 – 16	Moderate
4 – 6	Serious	17 – 19	Low
7 – 9	High	20 – 22	Very Low
10 – 12	Significant	23 – 25	Insignificant

Potential Hazards Risk Ranking

1. Use by unauthorised or untrained personnel. **C4 = 18 (LOW)**

Control Method: Never allow anyone except a trained operator to use the stacker. Operators must read the booklet supplied with the machine. Press in the 'Power Isolation Switch' when not in use.

2. Colliding with other persons or products. **C3 = 13 (MODERATE)**

Control Method: Have separate designated lanes for lift trucks and pedestrians. Install end-of-aisle mirrors. Do not allow laden trucks to go down ramps (if manually propelled).

Potential Hazards

Risk Ranking

3. Stacker being tipped over.

C2 = 8 (HIGH)

Control Method: Travel with the load just above floor level whenever possible. Avoid travel on inclined surfaces, and never turn on a gradient. Slow down before turning. Watch for low doorways or other structures that the top of the machine could collide with.

4. Objects falling off pallet, injuring operator or other personnel.

C3 = 13 (MODERATE)

Control Method: Ensure the load is stable before lifting. Never attempt to lift more than the rated load, nor exceed the rated load centre. Move the vehicle with the load raised just off the ground, whenever possible. Slow down before turning.

5. Load being put down on operators or other person's feet.

C2 = 8 (HIGH)

Control Method: Ensure that all other people are well clear before lowering load. Operators must stand behind the machine to operate the controls, not reach around from the side.

6. Operator's feet being nipped by the rear wheels, while reversing. **D3 = 17 (LOW)**

Control Method: The tiller handle should be pulled down while reversing, to increase the distance between the operator and the machine.

7. Flammable gases generated during charging of the batteries.

D4 = 21 (VERY LOW)

Control Method: Charge machines only in well-ventilated areas, preferably a designated area displaying signs stipulating 'No Smoking' and 'No Sources of Ignition'.

8. Acid burns sustained while maintaining the batteries (not applicable if the machine is fitted with sealed gel batteries) **D3 = 17 (LOW)**

Control Method: PVC gauntlets and face shield must be worn while checking fluid levels in batteries.

9. Electrocution

D1 = 17 (LOW)

Control Method: Ensure the charging lead is in good condition. Replace the lead if the insulation is damaged. Keep dry, and charge in dry areas. Fit an RCD to the supply socket.

Potential Hazards

Risk Ranking

10. Load coming down if the sensor is unintentionally activated

C5 = 22 (VERY LOW)

Control Method: Reduce the sensor range to just beyond the fork backplate, or to the minimum required to operate effectively (see page 5 for more details). Engage the safety catch before reaching underneath the load (to retrieve a dropped object, for example).
Consider having a 'Time Delay' option fitted.

11. Load being tipped off the pallet if the 'Automatic Raise' switch is left on, a full pallet put down on the floor, and the stacker withdrawn from the pallet. When the forks are nearly right out, the sensor may signal the forks to raise, lifting one side of the pallet.

C3 = 13 (MODERATE)

Control Method: Always turn off the Automatic switch when not in use. Reduce the sensor range to the minimum required to operate effectively. Use the Emergency Stop button to instantly stop all functions, if necessary.

Conclusion

Quikstak 'smart-stackers' are manufactured to meet the design and safety standards of AS 2359 (Powered Industrial Trucks) and ANSI B56.1.

Safety Features Include:

- A battery isolation switch.
- An Emergency Stop button.
- A Booklet detailing full instructions for safe operation and maintenance procedures is provided with each machine.
- A Safety screen preventing operator access to most moving parts.
- A positive-action park brake which locks both rear wheels. (Manually propelled models).

Self-propelled models also feature:

- A Park-brake which is automatically applied when the control handle is released.
- A Key switch for restricting use to authorised operators.