

## INTRODUCTION

This book addresses itself to those of you who are going to become forklift truck operators and it deals with those subjects which you as an operator should know about. The aim of the manual is to help you to become a safe and efficient truck operator.

Perhaps you already have some relevant experience and feel that you know all there is to know about forklift trucks. However, it is our contention that every body, irrespective of their experience, has something to learn from this book.

A good truck operator must be thoroughly familiar with the rules for safe truck operation.



## INCREASING NUMBERS OF ACCIDENTS

The number of accidents in which forklift trucks are involved is far too high. Lack of training, or lack of proper training, has been identified as the major cause of these accidents. In the past, far too many people have been allowed to use these powerful machines with little or no training and the result has been far too many accidents to people, product and premises. Most accidents involving lift trucks are serious, often fatal.

Accidents must not occur due to lack of knowledge of how the truck works or of current legislation, or safe working rules!

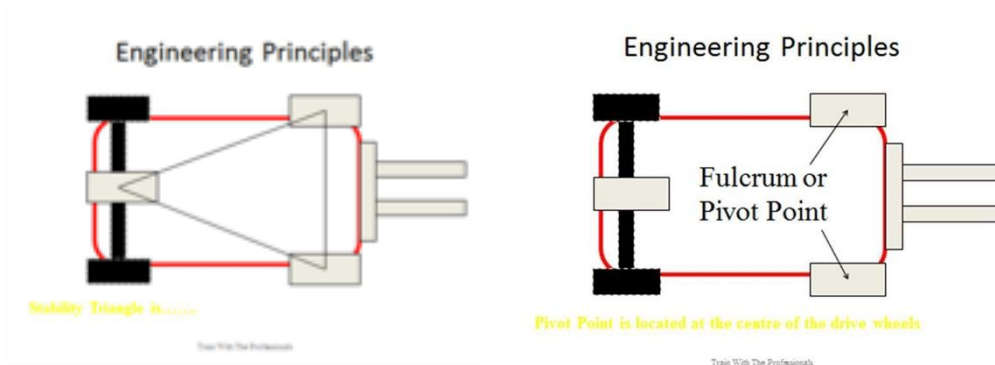
Links to more information

<https://ribblevalleytrainingcentre.com/fork-lift/>

## Stability

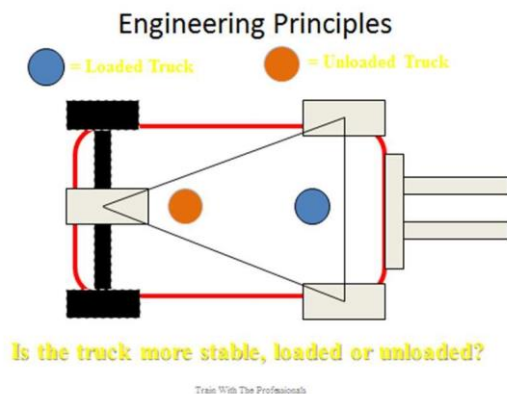
### Lift Truck Stability Overview

- Engineering Principles.
- Rated Capacity and capacity plate.
- Stability Factors.



The stability triangle is between the front drive wheels and rear wheel on a three wheel truck or middle of the rear axle on a 4 wheel truck

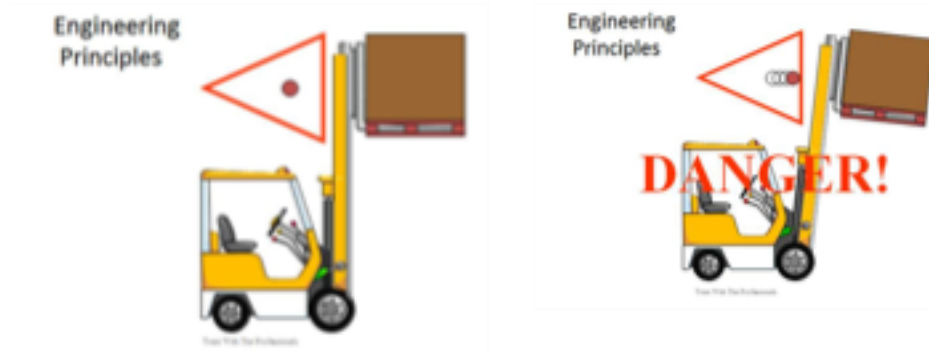
The fulcrum or pivot point is the middle of the drive wheels (front wheels)



= Loaded

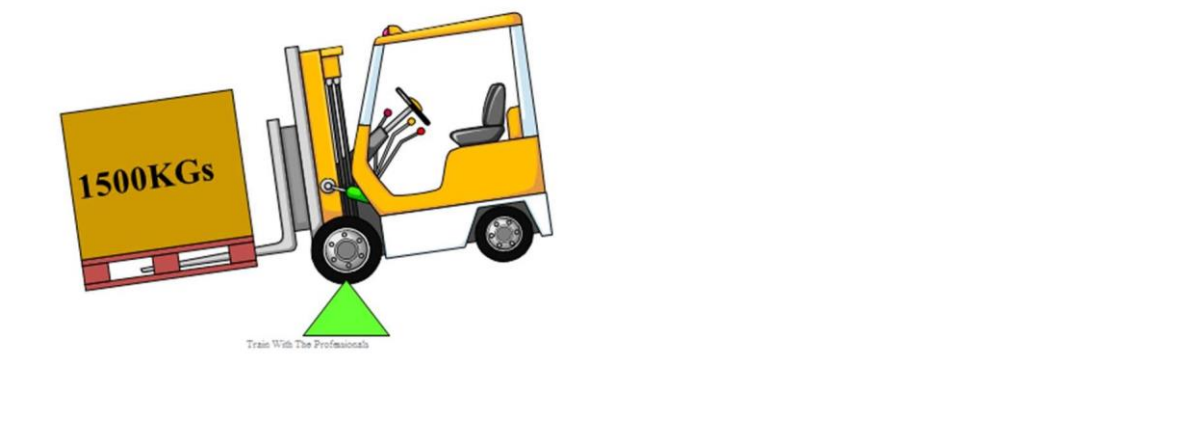
= Unloaded

When is the truck more stable? Loaded or Unloaded



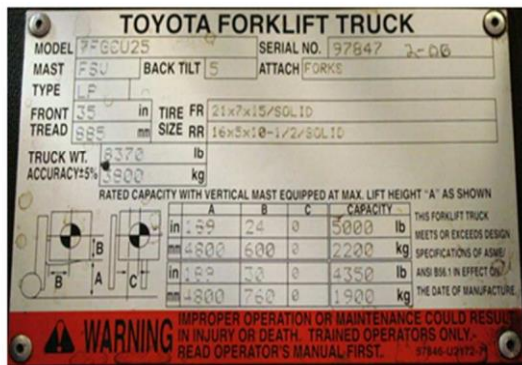
DO NOT tilt the mast forward at height! Tilting the load forward at height will move the “Combined centre of gravity forward, and could cause the truck to tip”

Engineering Principles



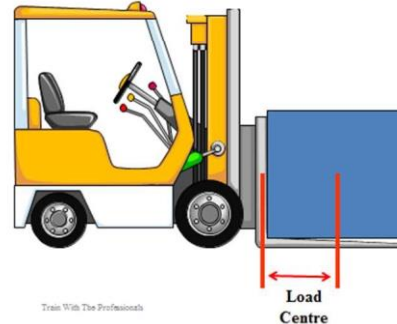
DO NOT leave a gap between the heel of the forks and the front side of the load, this will increase the load centre, and could cause the truck to tip forward.

## Rated Capacity & Capacity Plate



Train With The Professionals

## Rated Capacity & Capacity Plate



Train With The Professionals

The lift trucks "rated capacity" applies with the mast in the vertical position, this also applies with the manufacturers stated lifting capacity.

When the load centre increases the truck carrying capacity will reduce.

The rated capacity of a forklift should not exceed four fifths of the balance weight. The balance weight of a forklift truck is established by a machine test carried out during manufacture.

Therefore the rated capacity (or safe working load) of a truck with a balance load of 5000kgs will not exceed 4000kgs.

A capacity plate will give information on what the truck can lift, to a desired height. It will also tell you your load centre, which is the distance from the heel of the forks, to the centre of gravity of the load. Every truck should have a capacity plate in view of the operator. Always ensure you know the capacity of the truck you are using.

Three pieces of information that need to be on the capacity plate are:

1. The Rated Capacity (what the truck can lift).
2. The Lift Height (in mm)
3. The Load Centre (in mm)

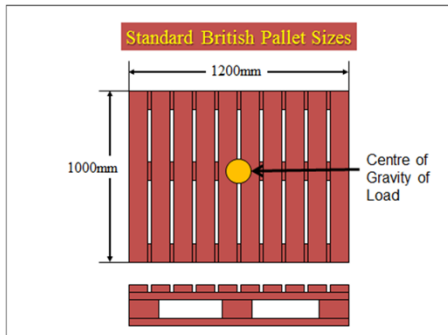
Every object has a centre of gravity.

It is the place where the load is balanced in all direction..... Try it for yourself!

Take the TV Remote control, and balance it on two fingers.....the point at where it is balanced is where the centre of gravity is.

If you collect this pallet width ways, then the load centre is 500mm

If you collect the pallet long ways, then the load centre is increased to 600mm



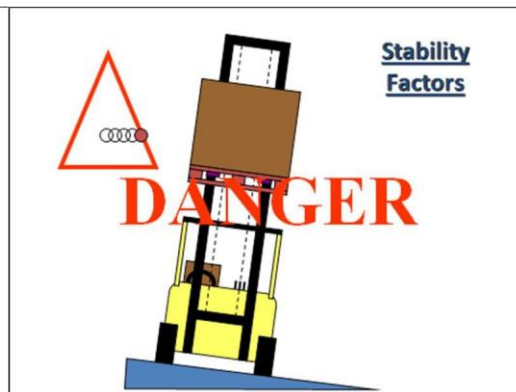
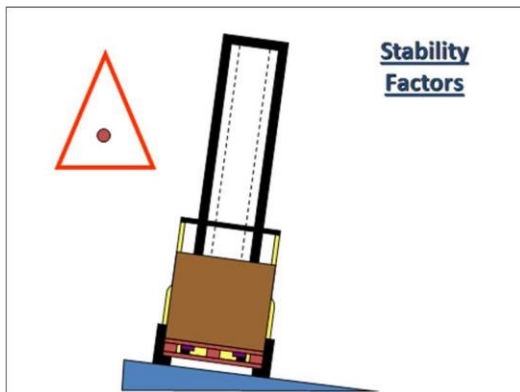
## Rated Capacity & Capacity Plate

- The rated capacity of the truck is not to be exceeded.



## Rated Capacity & Capacity Plate

- Never add counterweight on to a forklift truck to increase its load carrying capacity.



While this may look safe, it is a dangerous manoeuvre; as soon as you raise the load it also raises the combined centre of gravity of the truck and the load and moves it out of the stability triangle

## THERE IS TWO BASIC WAYS IN WHICH A TRUCK CAN OVERTURN. LONGITUDINAL (Lengthways).

Caused by:

- Overturning.
- Undercutting.
- Tilting a raised load forward.
- Lifting or raising the load while facing downhill on a slope.
- Travelling forward down a slope with a load.
- Excessive braking when loaded.
- Erratic use of the speed control.
- Harsh use of the hydraulic controls.

9. High winds (with a raised load).
10. A live Load

### **LATERAL (Sideways).**

Caused by:

1. Turning at excessive speed.
2. Turning on a ramp or incline.
3. Lifting or raising a load while sideways on a slope.
4. Driving over obstacles, e.g. pieces of wood.
5. Driving into potholes.
6. Operating the truck with incorrect tyre pressures.
7. Picking up a load off-centre to the forks.
8. Incorrect use of the sideshift.
9. High winds (with a raised load)
10. A live Load

### **EXTENDED LOAD CENTRE**

Extended load centre means when the centre of gravity is further away from the heel of the forks.

Pallet not heeled up.

Pallet larger than 1000mm By 1200mm. (Standard Pallet Size). Attachments i.e. extended forks to pick up large bulk loads.

All these will reduce the lifting capacity of the truck.

### **Operators Safety Code**

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1. Only operate equipment for which you are trained and authorized.
2. Always read the manufacturers handbook before operating the equipment.
3. Always carry out the pre-shift checks.
5. Wear spectacles if you need them to meet the official eyesight test.
6. Do not attempt to repair any equipment yourself, report all defects to a supervisor immediately.
7. Report all accidents immediately they occur.
8. Observe all speed limits, slow down for wet or slippery surfaces.
9. Don't EVER carry passengers. Unless an authorised passenger seat is fitted.

10. Comply with the Highway Code or Road Traffic Act where appropriate, give signals to help other road users, and use lights after dark.
11. Diesel and L.P.G. trucks should be re-fuelled outside of buildings, if applicable.
12. Electric equipment should be recharged only in authorized charging bays.
13. Keep a constant look out for danger spots, i.e. pedestrians, inspection covers, platform edges, ramps, protruding obstacles, crane areas etc.
14. Slow down and sound your horn (Several Short Blasts) at intersections and doorways, watch out for roller shutter doors and use extra care when going through plastic curtains.
15. Always face the direction of travel, if your view is obstructed travel in reverse.
16. Never allow anyone to walk under or over the forks, whether or not a load is being lifted.
17. When parking, ensure the machine is not going to cause an obstruction. DO NOT park in front of Fire Equipment, Electrical Boards, Fire Exits, On a slope, On gangways/pedestrian routes or where the forklift may cause an obstruction.
18. Damaged stock, pallets or loads should be reported to your Instructor Immediately.
19. Railway lines should always be crossed diagonally.
20. Before getting off the equipment's engine will be stopped the parking brake applied and forks lowered with forward tilt applied ignition key removed.
21. Sudden halts should be avoided.
22. Operators should keep a distance of at least three trucks length from the proceeding equipment when traveling in a line.
23. The forks must always rest on the floor with tilt on when being parked.
24. Always check the weight of the load prior to lifting.
25. Forks should always be spaced to take an equal weight.
26. Always insert the forks to the fullest extent before lifting a load.
27. Forks should not be raised or lowered whilst moving.
28. Watch for low overhead clearance. If in doubt do not guess get off and measure.
29. Lift lower and carry loads with the mast tilted back.
30. Always look behind before reversing.

31. Stacks should not be bumped or pushed into position.
32. When forward vision is obscured by a load you should travel in reverse unless negotiating an incline.
33. When loaded always drive forwards up ramps and inclines. If forward vision is obscured wait until somebody is available to guide you.
34. Never lift anyone on the forks unless an authorised safety cage is fitted.
35. Reverse down steep inclines with a load

**DON'T DAY DREAM .. KEEP YOUR MIND CONSTANTLY ON THE JOB..**

Never attempt to lift an improperly stacked or insecure load.

### **FREE LIFT**

Free lift is a term which is used to state how high the forks may be lifted without extending the mast. Full free lift means that the fork carriage can be lifted to the top of the outer mast before the inner mast starts to rise.

### **STACKING & DE-STACKING WITH SIDE LOADER TRUCKS**

Side Loader trucks should not be driven, whether loaded or not, with the reach mechanism extended except. The parking brake should be applied and the vehicle should be engaged in neutral before operating the hydraulic mechanism. No one should step over the forks or put any part of their body between the mast and power unit if the truck is capable of being operated. The reach movement should not be used for pushing or dragging loads and the load should be carried on the fork arms and resting on the body of the truck this is specifically designed for the purpose.







## **STACKING**

Approach with the load in the correct travel position, to within 6" to 12" so as to:

1. a) Prevent pedestrians from walking between the stack and the truck.
2. b) Increase accuracy of adjustments
3. c) Reduce risk of making contact with the stack

Slow down and stop at the face of the stack, apply the parking brake and reduce backward tilt to an amount just sufficient to maintain the load stability

Look up and check for obstructions, then raise the load to the desired stacking height.

When the load is clear of the top of the stack, reach out and if

- necessary, to bring the truck closer to the stack apply forward tilt slowly, ensuring that the truck is square onto the stack.
- Reach out smoothly, taking care not to dislodge loads in adjacent stacks.
- When the load is squarely over the stack, bring the mast to the vertical position and

lower the load onto the stack gently and smoothly. Note: Modern trucks have fixed masts. This means tilt is achieved by pivoting the carriage plate and the bed of the truck. We still need to ensure the load is level before we lower the load onto the stack.

- When the load is securely stacked, lower the fork arms until free of the pallet or dunnage strips and reach in. When freeing the fork arms, slight forward tilt may be of assistance; otherwise it should seldom be necessary to use a forward tilt.
- After ensuring the way is clear. Beware! Failure to ensure clearance of your forks within the load could result in you dislodging the load or even pull the stack over.

When the fork arms are clear of the stack, Lower the forks into the travel setting and check the way is clear before moving off.





**DE-STACKING**

Approach the stack, square, in the correct travel position.

Halt at the face of the stack, approximately 6" to 12" and apply the parking brake. Bring the mast to a vertical position with the forks level, if necessary adjust the fork spread to suit the width of the load and ensure that the weight of the load is within the capacity of the fork lift truck.

Look upwards to check for clearance, raise the fork arms to a position permitting clear entry into the pallet. The forks should be nearer to the top of the entry point in order to compensate for the taper of the forks.

**TIPS:**

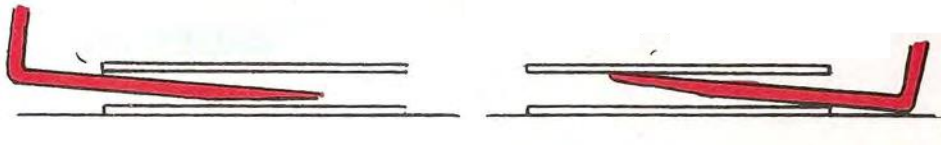
At height your forks will look to be higher than they actually are

By ensuring that your forks are level before entering your load, the task will be made safer and easier.

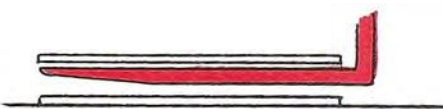
- Fully insert forks and ensure that the heel of the forks lightly touches the load (kisses the load!)
- Raise the load clear of the stack.
- Once the load is cleared of the stack, carefully apply backward tilt, just sufficient to stabilise the load.
- When the load is clear of the top of the stack, check that the way is clear.
- Then slowly bring the forks and load back in, until the load and fork arms is clear of the face of the stack, taking care not to dislodge loads in adjacent stacks.
- When the load is clear of the top of the stack.
- Lower the load carefully and smoothly to the correct travelling position applying further backward tilt.
- Check to see the way is clear before moving off.
- Check all around before releasing parking brake and moving off.



It is important that the forks are horizontal when they are run in under the pallet. They must not be forced in, but must run freely. Carrying the pallet, after an incorrect insertion results in the entire weight of load being borne by a single board, which might then break.



**BOTH WAYS ARE WRONG**

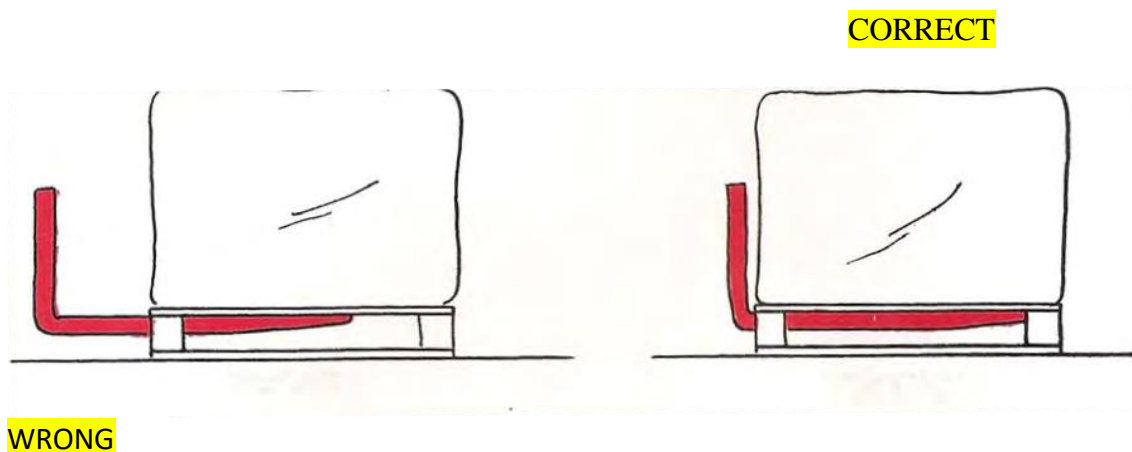


**CORRECT WAY**

**USE THE FULL LENGTH OF THE FORKS**

When you pick up a load you must, when the fork length permits, run the forks completely under the pallet. If the pallet is unevenly loaded you must have the heaviest

part nearest the mast. During travel the pallet must always bear against the fork heels; this reduces stress on the forks and improves truck stability. Furthermore, there is less risk of shedding the load. During travel you should tilt the mast backwards to cradle the load and increase its stability.



You, as a forklift truck operator, must always follow the instructions given by the lorry driver whose lorry you are loading. However, you should be aware of the following rules.

Loading should commence at the front of the lorry platform and goods must be in delivery order - First on - Last off.

It might be necessary to disregard the rule of even load distribution in order to achieve the correct axle weight!

Load from both sides (never slide or push the load to the other side)!

Always follow the instructions given by the driver of the vehicle you are loading (the driver is responsible for his load)!

### **NO PASSENGERS**

Passengers must not be carried on forklift trucks unless a proper seat, approved by the manufacturer, has been fitted.



We have now gone through quite a number of safety regulations which you as a lift truck operator must know. Your company may have many more.

It is impossible to draw up rules and regulations to cover all conceivable situations that you might find yourself in. Therefore, you must have good judgement and must keep an eye out for every situation that could constitute a safety risk. By doing this, you should be able to avoid dangerous situations.

**When you are driving your truck, safety depends on you!**

## **CENTRIFUGAL FORCE**

If you fasten a piece of string to an object and swing it around in the air, the string will be fully extended. Centrifugal force causes the object to try to fly outwards. If you release the piece of

string the object will fly off. If you use a rubber band instead of a piece of string, the rubber band will be stretched more and more the faster the object swings around because the centrifugal force is greater at increased speed. If you double the speed the centrifugal force increases fourfold.

Even your truck experiences centrifugal forces when you drive around a corner. However, you have no piece of string to keep the truck from flying off, you depend on the frictional forces of the tyres to do this for you. If the centrifugal force becomes too great, which happens when you drive too fast in a corner, the tyres lose their grip (the string breaks) and the truck skids and overturns.



## **WHO SAYS THAT ACCIDENTS DO NOT HAPPEN ??**

The following reports highlight some of the typical accidents that occur in industry each year. For obvious reasons the names of individuals have been removed.

### **DRIVER CRUSHED TO DEATH**



A man was crushed to death between a fork lift and the wall of a west midlands coal yard.

The man who was not named died whilst working at .....

It is believed he was using the truck to remove a barrel of rubbish next to the wall but stopped and climbed on to the forks to make an adjustment. Police said it appeared that the man's foot knocked a lever which moved the forks trapping his HEAD against the wall. They added that there were no suspicious circumstances.

## **WORKER INJURED COLLEAGUE**

Magistrates in CARMARTHEN fined a fork lift operator £50,000 and Jailed him for 4 years for seriously injuring a fellow worker whilst operating a fork lift at work.

..... was operating a fork lift truck at a company in Johnston when he ran over the feet of his work mate, as a result of which one foot had to be amputated.

## **TRAGEDY AS MAN SEE'S HIS SON KILLED BY A FORK LIFT TRUCK**

A tragic accident occurred at a warehouse in STRATFORD UPON AVON When a young lad was killed as his farther drove a fork lift truck at work. 12 year old ..... was being given a ride on the machine by his farther on a Saturday morning. It appears that he leaned outside the body of the truck and struck a support column causing massive head injuries and killing him instantly. THE HSE ARE STILL INVESTIGATING THIS ACCIDENT

## **HEAVY FINED AFTER MAN LOSES LEG**

A Sheffield engineering company has been fined £96,000 after a works fork lift driver lost his leg when his faulty truck toppled on him.

..... aged 26 tried to leap clear of the falling truck but was pinned to the floor by his ankle by the 4 tonne weight.

Sheffield magistrates heard that the boss at ..... knew the truck had faulty brakes. The company admitted three charges of failing to train .... Properly, failing to maintain the truck, failing to report a previous accident. Despite engineers advice to stop using the truck. The truck was kept in service. ... needed 3 operations on his crushed foot and now has a false left leg from his knee down.

## **MANSLAUGHTER CHARGES DUE TO NEGLIGENCE AT WORK**

**Company director's contractors and management could face prosecution under the new manslaughter rules if employees or members of the public are killed at a work place or on a site.**

### **Jail sentences could be imposed under two new offences.**

**Directors managers contractor's employees who send others to carry out work activity knowing that there is serious danger to employee's and the employee is killed as a result could be JAILED for reckless killing.**

**There appears to be some confusion within certain companies regarding the need to train operators on various types of industrial trucks.**

**The fact is paragraph 7 of the ACOP code does clearly identify that it is a general duty of the employer to provide training UNDER SECTION 2 OF THE HSW ACT to all operators of all types of machines.**

**It is a legal requirement to train all operators on all types of machines they are required to use.**

## **LARGEST EVER LOCAL AUTHORITY SAFETY FINE FOR SAINSBURY'S**

In what is thought to be the largest ever penalty for a health and safety prosecution brought by a local authority – and the fourth biggest ever safety fine, the supermarket giant Sainsbury's was fined a massive £425,000.00. The fine was

levied after the food store admitted deliberately disconnecting safety mechanisms which directly resulted in the death of an employee. Winchester Crown Court heard that a worker died when he was crushed by a fork lift truck which had its safety cut off switch deliberately disconnected. Sentencing Sainsbury's Judge Kay said "The story is a picture of working procedures that date back to the dark ages.

**Are you and your staff operating industrial machines? Could you be the next to face the courts and jail?**

# **Top Tips for Safe Lift Truck Mounting and Dismounting**

Many musculoskeletal, and other, injuries occur when operators are getting on and off lift trucks. Although mounting and dismounting techniques may vary depending on the particular truck, the following steps should be considered to reduce the risk of incident or injury

## **Before you start**

Operators must be properly qualified before they even think about driving a truck, but has their training included a demonstration of correct mounting and dismounting? During training, trainees should get on and off a truck under supervision so that technique can be assessed and corrected.

Refer to the manufacturer's operator manual for specific advice on mounting and dismounting the truck. Operators should be trained suitably for the particular truck(s) that they will be using.

Conduct routine pre-use inspections before using a lift truck. This will include a visual inspection of key parts of the truck that must be done before the truck is mounted.

Ensure the required protective clothing is being worn. Hanging jewellery should not be worn and items should be removed from back pockets.

## **Mounting the truck**

Check the environment and the floor around the truck. Debris and uneven surfaces can cause slips and trips. Also, be aware of other vehicles, pedestrians and even existing loads on the forks.

Check the truck's state of repair and consider how this may affect mounting and dismounting. For example, do you need to take extra care due to erosion on non-slip surfaces?

Face the truck when getting on and off. If steps are available they should be used. Good secure hand and foot holds should be established. Always maintain three points of contact with the truck when mounting/dismounting for stability.

Be aware that loose or bulky clothing, such as overalls, can catch when getting on and off the truck.

## **Once you're in the cab**

Adopt the correct operating position by using all of the available adjustments. This is important for both safety and ergonomics. The seat, steering column and armrests should never be adjusted when travelling.

Sit down in the seat, lean forward and shift hips to the back of the seat to set the spine in correct alignment. Adjust the seat by sliding it forwards so your feet are resting comfortably and the pedals are within easy reach

Raise the seat to a comfortable height, checking for adequate head clearance and maximum vision – ensure that pedals are still within easy reach. Ensure the weight limit setting is correctly adjusted

Adjust the steering wheel so that the steering assistor is within easy reach of either hand at the furthest point away from the body – the aim is to eliminate the need to lean forward. Adjust the backrest to a position slightly tilted backwards to avoid excessive bending of the head and neck

If a safety belt is available it should be worn. Seatbelts are a legal requirement on most trucks since 2002 and for older trucks

with any risk of over turning, operator restraining systems should be installed.

Make sure mirrors are adjusted as required. Make sure all areas of the body are within the operator's cabin before the truck starts moving.

## **Dismounting**

Ideally find an even surface for dismount as landing awkwardly can result in injuries. Floor debris or spillages in the area of dismounting could also lead to slips and falls. Of course, check for other traffic before exiting the cab.

Never jump down from the truck. Three points of contact should be maintained during dismount for stability and to protect from musculoskeletal injury.

For more information on lift truck operator training to improve safety and efficiency during mounting and dismounting forklifts, visit [www.ribblevalleyhgv.com](http://www.ribblevalleyhgv.com)



