

# OPERATE FORKLIFT (without license)



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## WORKPLACE SAFETY & HEALTH ACT

### Guide to WSH ACT

#### Major workplace accidents in 2004

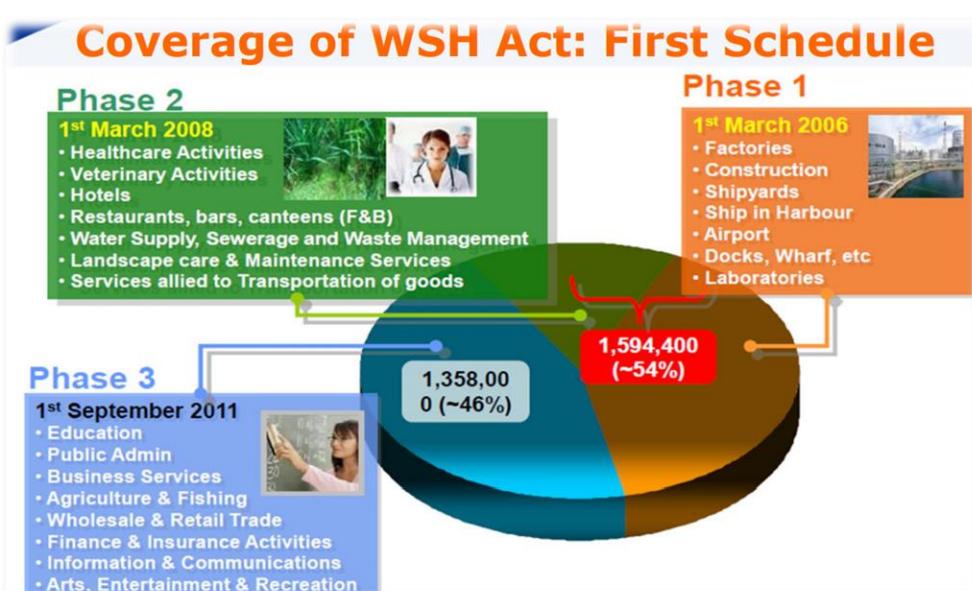
- 29 April 2004: Fusionpolis - 2 deaths; 29 injured
- 17 May 2004: One Raffles Quay - 2 deaths
- 29 May 2004: Keppel Shipyard - 7 deaths

On 1 March 2006, the Workplace Safety and Health (WSH) Act replaced the 33 year old Factories Act.

#### 1st March 2006

It covers all industries such as factories, shipyards and construction worksites.

From 1st Mar 2008, the WSH Act will extend its coverage to the Transportation Allied Services sector (Logistics, Freight Forwarding, Cargo Surveying Services).



On 1st March 2006 the Workplace Safety and Health Act was introduced, replacing the Factories Act.





	3 Key Principles	Desired Mindset Change	
		From	To
A	Reduced risk at source by requiring all stakeholders to eliminate or minimise the risks they create	Managing risks	Identifying and eliminating risks before they are created
	Greater industry ownership of WSH outcomes	Compliance with "letter of the law"	Proactive planning to achieve a safe & healthy workplace
	Prevent accidents through higher penalties for poor safety and health management	Accidents are costly	Poor safety & health management is costlier

Healthy Workforce in Safe Workplaces; A Country Renowned for



Best Practices in Workplace Safety & Health.

Total WSH programme is an initiative by  
the Workplace Safety and Health Council.

# CE:01 PREPARE TO CARRY OUT FORKLIFT OPERATIONS



## UNDERPINNING KNOWLEDGE

UK 1.1 Types of forklifts and their load capacities

UK 1.2 Parts of forklift and their functions

UK 1.3 Workplace Safety and Health code of practice relating to forklift operations

UK 1.4 Protecting loads from damage during transportation

UK 1.5 Reporting procedures if work preparation is not completed

### UK 1.1 TYPES OF FORKLIFTS AND THEIR LOAD CAPACITIES



## WHAT IS FORKLIFT?

Forklift is a machine used to transport heavy materials from one place to another place (Short distance only) to stack, unstacked, to load & unload material.

## SAFETY PRACTICES FOR THE OPERATOR

- ❖ Only Trained authorized personnel are permitted to operate a forklift.
- ❖ Badges or other visual indications shall be displayed on the body of the operators at all time during operation.
- ❖ The operator should not drive the truck up to a person standing in front of a bench or other object.
- ❖ The operator should not carry loads heavier than those for which the truck rated.
- ❖ Forklift controls operated only from driver's seat
- ❖ Never block exits or emergency equipment
- ❖ No person should stand under elevated portion of lift truck

## SELECT THE APPROPRIATE FORKLIFT

Different types of forklifts are available, mainly for different environments: Electric (indoor), Diesel (outdoor)

## TYPES OF FORKLIFTS

1. Electric Forklift
2. LPG Forklift
3. Petrol Forklift
4. Diesel Forklift
5. Telehandlers

## ELECTRIC FORKLIFT



PETROL FORKLIFT

## OPERATE FORKLIFT

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### LPG FORKLIFT



### TELEHANDLERS



### DIESEL FORKLIFT



### SELECT THE SUITABLE FORKLIFT BASED ON:

- ❖ Nature of work
- ❖ Environment

### POWER SOURCES:

The best or most appropriate power supply for your forklift trucks will be determined by your application and budget. Importantly, whichever power source you choose will have health and safety ramifications, which must also be considered. The major points are discussed below.

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**ELECTRIC FORKLIFT****ADVANTAGES**

- ❖ Environmentally friendly – no fumes when operating
- ❖ Quiet
- ❖ Highly manoeuvrable
- ❖ Relatively cheap to run
- ❖ Cheapest to service and maintain
- ❖ Easiest to operate

**DISADVANTAGES**

- ❖ High purchase and set up cost
- ❖ Space required for charging area
- ❖ Possibility of power cuts needs to be considered
- ❖ Time and space for battery changing
- ❖ Need a good smooth floor surface
- ❖ Limited outdoor application

**DIESEL FORKLIFT****ADVANTAGES**

- ❖ Flexibility
- ❖ Good for outdoor use – can be used indoors (with caution)
- ❖ Fuel efficient
- ❖ Good if attachments are to be used
- ❖ Good on gradients
- ❖ Cheaper to buy than electric
- ❖ Relatively easy and cheap to maintain
- ❖ Quick and easy to refuel
- ❖ Long life with a good residual value

**DISADVANTAGES**

- ❖ Exhaust fumes
- ❖ Not ideal for indoor use
- ❖ Can be noisy
- ❖ Tend to be bulkier than other types
- ❖ Require greater operator skill than electric

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**LPG FORKLIFT****ADVANTAGES**

- ❖ Flexibility
- ❖ Suitable for outdoors and some indoors use
- ❖ Can be more manoeuvrable than diesel trucks
- ❖ Good overall performance
- ❖ Much reduced air particulates compared to diesel
- ❖ When fitted with three-way catalyst contains virtually zero carbon, monoxide and hydrocarbons
- ❖ Quieter than diesel
- ❖ Cheapest to buy

**DISADVANTAGES**

- ❖ Relatively Can be fume issues
- ❖ high fuel cost
- ❖ Relatively high maintenance costs
- ❖ Can be more difficult to refuel
- ❖ Lack of fuel gauge can be a problem
- ❖ Lowest residual value
- ❖ Requires greater operator skill than electric

**ELECTRIC COUNTERBALANCE FORKLIFT**

Industrial counterbalance forklifts are the most common trucks used in indoor warehouses and stores, although they can be used outdoors, on stable, even surfaces. They offer straightforward operation and have dual forks at the front of the truck that lift and transport the loads.

The counterbalance means that the forklift remains stable when carrying heavy loads. They significantly reduce the risk of toppling over, making it safer for forklift drivers. High-quality counterbalance forklifts have a long lifespan and won't require frequent maintenance to keep in safe, working condition. A counterbalance forklift truck operates with a counterbalance weight design at the rear of the forklift, thus off-setting or balancing the load that is to be lifted at the front.

**INDOOR****OPERATE FORKLIFT****LEANER'S GUIDE**

**ROUGH TERRAIN FORKLIFT**

- ❖ Rough terrain forklifts are specifically built to move material over rocky, hilly, or unstable ground. These machines are meant to be used outdoors and construction sites. The tires on a rough terrain forklift differ from ones on an indoor lift.
- ❖ Rough terrain forklifts have heavy-duty pneumatic tires that provide extra stability on uneven or rocky terrain. They also offer a better grip in wet or slippery conditions. Slope-climbing capability: Standard forklifts can only function safely on flat surfaces such as warehouse or factory floors.

**3 WHEEL ELECTRIC FORKLIFT**

- ❖ A 3-wheel forklift typically is designed with two wheels in the front and one in the back in order to give it extra power on the end that will be conducting the lifting. If you're operating in an indoor confine space with tight spaces, it becomes a sleek alternative.

**TELEHANDLERS**

- ❖ A primary use for telehandlers is carrying heavy loads from one place to another. The compact frame and impressive manoeuvrability make it possible to access tight areas large forklifts are not able to. Telehandlers are used on farms, warehouses, distribution centres, container yards and various job sites.
- ❖ Telehandlers can lift several tons worth of materials. They're far stronger than similar-sized cranes and forklifts. Because of their design, telehandlers can lift heavy loads to great heights. Other machines with similar power have a much lower height load.



**HEAVY-DUTY FORKLIFT**

- ❖ Heavy-Duty Forklift Truck can not only handle large-tonnage cargo, but also support maintenance, discharge and installation of important equipment. When equipped with special accessories, it can also handle steel, stone, concrete, wood, 20' container, etc...
- ❖ This self-developed Heavy-duty Forklift Truck is reliable and highly efficient with different series of products with hoisting capacity from 10 to 46 tons. Various attachments and masts are provided to meet customers' different requirements.
- ❖ Heavy Duty Forklifts can be used in a wide variety of industries, including manufacturing, lumber-yards, container handling, freight, and marinas.

**SIDE LOADERS**

heights of 8 meters.

- ❖ Side loaders are specialized forklifts used for handling long and heavy loads. They can lift loads from the side, making them suitable for narrow aisles and tight spaces.
- ❖ The forks reach out with the carriage to collect the load which is then drawn back to rest on the bed of the truck to travel around the yard
- ❖ This concept is ideal for long or protruding loads such as timber, steel rods, pipes, etc.. Trucks can be powered by battery, LPG or diesel and may have 3 or 4 wheels depending on the requirement. Commonly, loads of about 5,000kg can be lifted to



## REACH TRUCK

- ❖ Reach Trucks are forklifts used in narrow aisle applications, such as warehouses. They are designed to have two outer legs that help distribute the load and a single set of wheels in the back. The wheels are located below the operator, which helps create a tighter turn radius.
- ❖ With a reach truck, the operator stays in the cab of the machine at ground level and moves the load up mechanically.
- ❖ Reach Trucks can be assets to any warehouse fleet – allowing operators to easily navigate in and out of narrow aisles and reach significant heights, all while maintaining lifting capacity. Reach Trucks allow for unmatched confidence in the most challenging warehouse environments.

## WALKIE STACKER



- ❖ A walkie stacker is also known as a pedestrian walk-behind stacker. It is a walk behind pallet truck with an attached mast for lifting pallets to heights
- ❖ Walkie Stackers can be either powered or manual. They are most used for transporting & lifting pallets where a forklift is not necessary and ideal use storerooms, small warehouses, light duty manufacturing and dock to dock applications and specialized warehousing or as a backup for more expensive forklifts.
- ❖ Walkie stacker truck enables operators to maneuver multiple-sized pallets quickly and easily in tight quarters. The stacker allows one to better utilize in vertical storage, off-load pallets from the end or sides of trailers and navigate in tight spaces with smooth, precise control.

## THE TYPES OF FORKLIFT TYRES

There are various types of forklift tyres but the most common are solid or pneumatic. Each tyre has a different tread, compound and ply rating which help to ensure the tyre used will best suit the application.

**Air pneumatic tyres** – Similar to truck tyres, filled with air, thick, deep tread, strong wear-resistant rubber. They extend the running life of a forklift by providing a cushion effect between the forklift and the ground. For use on uneven and rough surfaces.

**Solid Pneumatic** – Today the most common tyre. They are the same as pneumatic, however not filled with air therefore they don't provide a cushioning effect. They do not puncture or go flat and are long lasting. Excellent for indoor use or light outdoor use, but not for rough outdoor or uneven surfaces.



**Flat press on Cushion** – A press on tyre that is made with a metal band and a rubber attached to it.

Used only on smooth pavements and warehouses with concrete flooring where space may be an issue as cushion tyres have a turning radius that is smaller than pneumatic tyres



**FLAT  
PRESS-ON  
CUSHION**



**TREAD  
PRESS-ON  
CUSHION**



**FLAT  
PRESS-ON  
CUSHION**



**TREAD  
PRESS-ON  
CUSHION**

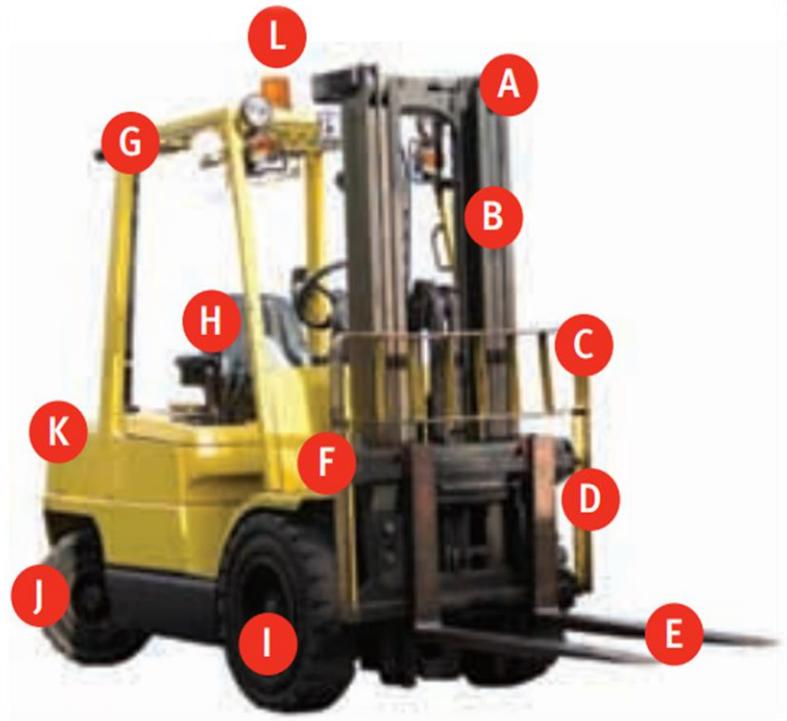
## UK 1.2 PARTS OF FORKLIFT AND THEIR FUNCTIONS



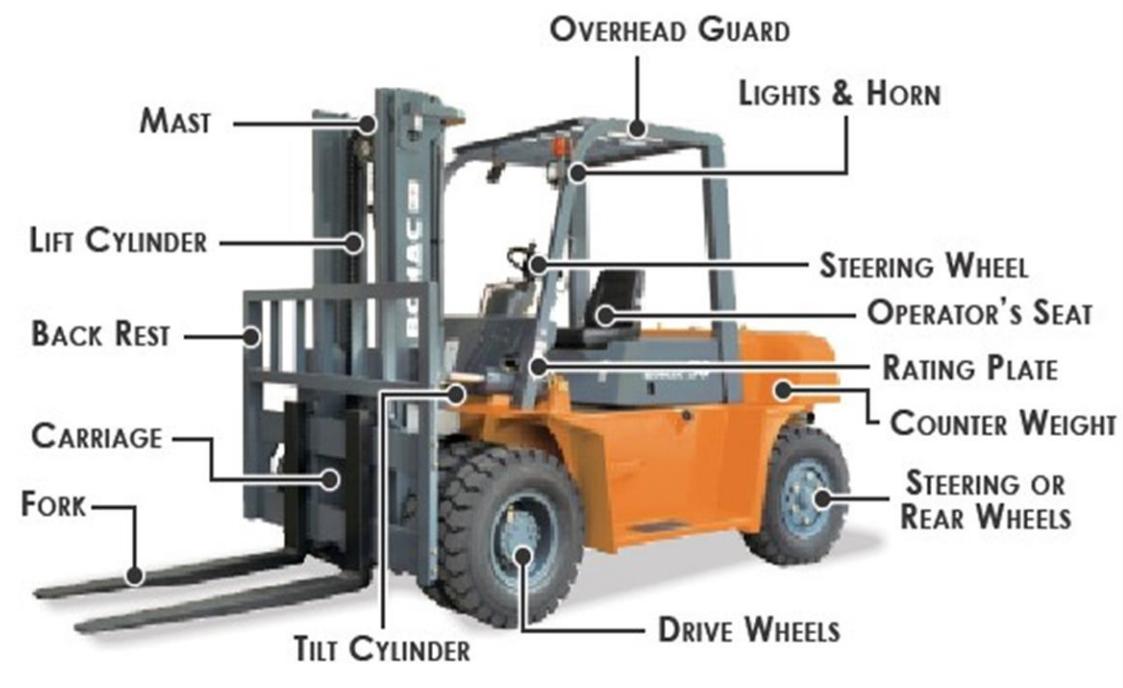
### **UK :1.2 PARTS OF FORKLIFT AND THEIR FUNCTIONS**

These are the key components of a forklift that you will need to know:

- A** Mast
- B** lift cylinder
- C** load backrest
- D** fork carriage
- E** Forks
- F** tilt cylinder
- G** overhead cage
- H** driver seat
- I** drive wheels and axle
- J** steering axle and wheels
- K** counter balance
- L** warning light.



Make sure you know where these are located on the type of forklift you will be operating and how to operate them.



## PARTS THAT POWER THE FORKLIFT

These components are essential for the forklift's operation, powering its movements, and lifting mechanisms.



## MAST

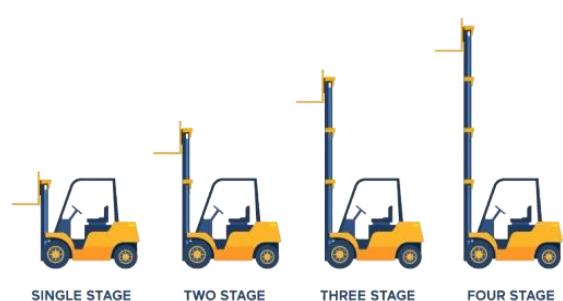


- ❖ The forklift's mast, or upright, is the portion of the forklift that lifts, lowers, and positions the loads manipulated by the forks. Each type of mast presents its own set of advantages for different applications depending on their height and stacking requirements.

**There are four types of Forklift Mast:**

- Single Stage (simplex mast)
- 2-Stage (duplex mast)
- 3-Stage (triplex mast)
- 4-Stage (Quad Upright)

## TYPES OF FORKLIFT MASTS



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## BEACON LIGHTS



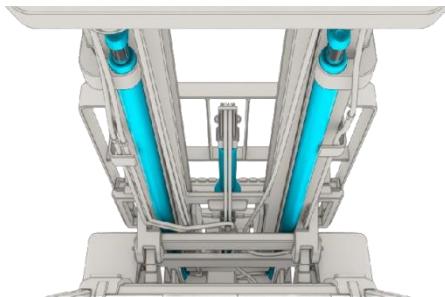
❖ One of the most modern solutions for forklift and worker safety are strobe beacon lights. Safety strobe beacon lights are mounted on top of the vehicle and emit a bright ray of light that warns foot traffic of possible danger. Beacon lights provide a visual indication of a hazardous situation.

## BACK REST



❖ Backrests are designed to prevent the load from falling toward the equipment driver. This allows product to rest against a square, flat surface that makes loading/unloading safe.

## CYLINDER



❖ Mast cylinder is an essential part of the forklift, controlling the vertical assembly on the front that allows the truck to fulfil its main function: raising and lowering the load in question. As such, these cylinders are subjected to the largest volume of fluid flow.

## TIILT CYLINDER



❖ The tilt cylinder is a double-acting hydraulic cylinder, meaning it can both push and pull its load. Generally, there are two tilt cylinders on the forklift, connecting the left and right stationary rails of the upright assembly to the frame.

## FORK

## OPERATE FORKLIFT

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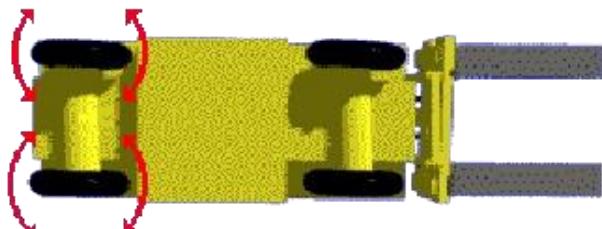
- ❖ The forks on a forklift are used to make direct contact with a load for transport. They are attached to the forklift carriage and are designed to carry a load from the bottom

### DRIVE WHEELS



- ❖ The drive wheels provide the necessary power for the forklift to travel and are often larger than the steering wheels as they are responsible for bearing a large amount of mass during operation.

### REAR WHEEL



- ❖ Rear-wheel steering allows forklifts to make very sharp turns and maneuver with high precision in the narrow and tight spaces they are frequently used in.

### COUNTERWEIGHT

- ❖ The forklift counterweight is a mass attached to the rear of the forklift truck frame. The purpose of the counterweight is to counterbalance the load being lifted. In an electric forklift, the large lead-acid battery itself may serve as part of the counterweight. The purpose of the counterweight is to stabilize the forklift during lifting of loads and movements.



### OPERATE FORKLIFT

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**LIFTING CHAIN**

- ❖ Forklifts use hydraulic pressure to raise the mast up using lift cylinders. These cylinders lift the inner mast rail, but the mast chains are what lift the carriage and forks. Like any part, mast chains wear out. They should be regularly inspected and part of your planned maintenance program.

**STEERING WHEEL**

- ❖ Most forklifts have rear-wheel steering. If you turn the steering wheel left, your back tires pivot around the front tires, giving you a much tighter turn

**REAR WHEEL**

- ❖ The main reasons for the rear wheel steering to enable precision steering which allows forklifts to make very sharp turns and maneuver with high precision in the narrow and tight spaces they are frequently used in.

**❖ FORK LOCKING PINS**

- ❖ Raise the fork locking pins to a vertical height. Hold the pin in an upright position. Shift the fork slightly until it drops into the notch nearest the desired distance. Repeat the process for the second fork. The fork needs to be adjusted based on the size of the pallet to enable the load to be balanced during travel



## TYPES OF ATTACHMENTS

Forklift attachments – different equipment types to use

- ❖ Side Shifter. Side Shifters are one of the most common attachments used today.
- ❖ Fork Positioner. The demands on material handling tasks are increasingly more complex
- ❖ Paper Clamps
- ❖ Push-Pull Attachments
- ❖ Multiple Pallet Handler
- ❖ Fork Extensions
- ❖ Fork Rotators



Attachments allow your forklift to become more efficient and versatile with handling unique material handling products.



EFG TRAINING SERVICES PRIVATE LTD

## UK 1.3 WORKPLACE SAFETY AND HEALTH CODE OF PRACTICE RELATING TO FORKLIFT OPERATIONS



SS 573 : 2012  
(ICS 53.060)

SINGAPORE STANDARD  
**Code of practice for the safe use of powered counterbalanced forklifts**

(Formerly CP 101)

Incorporating Corrigendum No.1



Published by  
**Enterprise Singapore**



## UK 1.3 WORKPLACE SAFETY AND HEALTH CODE OF PRACTICE RELATING TO FORKLIFT PRACTICE



SS 673 : 2012  
(ICS 53.060)

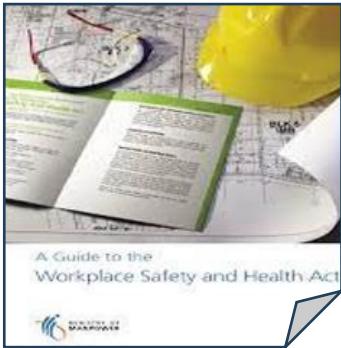
SINGAPORE STANDARD  
Code of practice for the safe use of  
powered counterbalanced forklifts  
(Formerly CP 101)  
Incorporating Corrigendum No. 1



- ❖ This code specifies the safety requirements for the manufacture, application, operation and maintenance of powered counterbalanced forklifts. It lays down the responsibilities of the various parties involved.

- ❖ Singapore Standards are nationally recognized documents, established by consensus. They are functional or technical requirements in the form of specifications for materials, product system or process, codes of practice, methods of test, terminologies and guides

❖



- ❖ The Workplace Safety and Health Act is a legislation relating to the safety, health and welfare of persons at work in a workplace.



- ❖ This operator's manual provides maintenance and periodical this manual carefully for safe

for the proper operation, easy inspection. Prior to operation, read and efficient operation.

**Table 3a: Number of workplace fatal injuries by industry, 2021 - 2022**

Industry	2021	2022
<b>All Industries</b>	<b>37</b>	<b>46</b>
Construction	13	14
Transportation & Storage	9	9
<i>Logistics &amp; Transport</i>	4	1
Manufacturing	4	7
<i>Metalworking</i>	0	3
<i>Manufacture of Petrochemical Products</i>	0	2
<i>Manufacture of Other Non-metallic Mineral Products</i>	1	1
<i>Manufacture of Paper / Rubber / Plastic Products &amp; Printing</i>	0	1
<i>Other Manufacturing</i>	3	0

**Table 3b: Rate of workplace fatal injuries by industry, 2021 – 2022**

Per 100,000 workers

Industry	2021	2022
<b>All Industries</b>	<b>1.1</b>	<b>1.3</b>
Construction	3.3	2.9
Transportation & Storage	3.6	3.4
<i>Logistics &amp; Transport</i>	3.8	0.8
Manufacturing	1.0	1.7
<i>Metalworking</i>	0	2.9

## SS 573: CODE OF PRACTICE FOR THE SAFE USE OF POWERED COUNTERBALANCED FORKLIFTS

### 3.2 AUTHORISED PERSON

Person approved by his company to carry out the defined task.

### 3.5 Competent person

A person who, through formal training and work experience, possesses the practical and theoretical knowledge of forklifts to enable the safe operation of counterbalanced forklifts.

### 3.13 Medically fit

Persons who are medically fit are in general good health and not subject to deafness, defective sight or any other infirmity which would render the person unfit to perform the duties of a forklift operator safely.

### 3.16 Operator

A person who:

- (a) is trained on the operation of the forklift and authorised by the user to operate it; and
- (b) has attended refresher training on the operation of the forklift within 3 years.

## 4 Operating safety rules and practices for the user and the operator

### 4.1 For the user

#### 4.1.1 Operators' qualifications

Users of forklift shall ensure that only competent operators are authorised to operate forklifts and prevent unauthorised operation of forklifts.

#### 4.1.2 Operation in hazardous, flammable and explosive environments

Users of forklifts shall ensure the following during operation in hazardous, flammable and explosive environments:

- (a) Only suitably protected forklifts shall be selected for safe presence and operation in such environment.
- (b) Forklift operator shall be adequately informed of the hazards present in such environment and safety precautions to be taken.
- (c) Such forklifts and the area of operation shall be clearly marked with appropriate signage.

#### 4.1.3 Passengers

Passengers shall not ride on forklifts or forks. Forklifts shall not be used for lifting any person by any means at all times. No man cage or such shall be used on forklifts.

#### 4.1.4 Forklift operation area

User to define and designate area for the forklift to operate. Designated area is to be indicated by signage.

#### 4.1.5 Risk management

Risk assessment is to be carried out for all forklift related activities. Control measures using the hierarchy of controls shall be implemented to bring risk levels to acceptable Levels

#### DUTIES & RESPONSIBILITIES OF A FORKLIFT DRIVER

- ❖ Only trained, qualified & authorized operators to drive forklift





- ❖ Check that forklift is in good working condition
- ❖ Check work environment for hazards, obstructions and dangers
- ❖ Load is within forklift lifting capabilities
- ❖ Observe proper safe load handling practices & safe work procedures
- ❖ Follow safe operating procedures and equipment manufacturers instructions
- ❖ Observe and apply safety in house rules in accordance with organizational procedures in compliance with WSH Act



## BEST PRACTICES FOR FORKLIFT DRIVERS / PEDESTRIANS

### DON'T

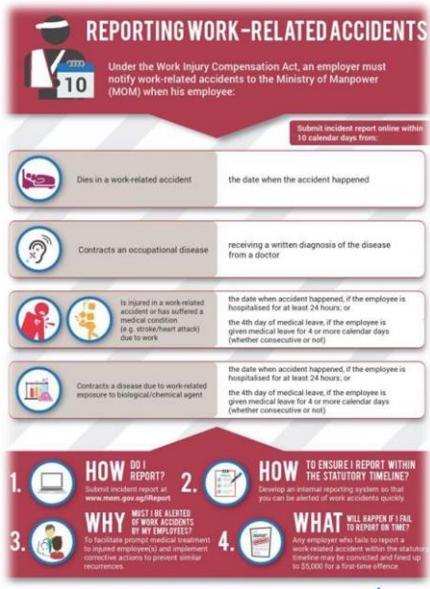


- ❖ The following best practices are a significant first step toward creating a safer workplace:
- ❖ Don't operate a forklift unless you are trained, qualified and authorized.
- ❖ Do not engage in horseplay.
- ❖ Do not distract forklift operators.
- ❖ Do not smoke at refuelling areas.
- ❖ Be alert at forklift operations areas. Always practice “STOP”, “WAIT”, “GO” before you proceed .
- ❖ Consider wearing highly visible protective equipment to make it easier for forklift operators to see you.
- ❖ Traffic rules apply to pedestrians as well as forklifts. Make sure you only walk at pedestrian lanes.
- ❖ Communicate with operators. Inform them that you'll be entering the forklift area
- ❖ Before entering the forklift lane, stop, look both ways, and make eye contact with the operator Proceed through the area only when the operator signals that he has seen you



## THE WORKPLACE SAFETY & HEALTH ACT

### Report accident or notify MOM



- ❖ You must report a work-related accident to MOM. If it results in the death of an employee. The employee was given leave (MC or hospitalisation leave) or light duty.
- ❖ Work-related accidents, workplace accidents, Dangerous Occurrences and Occupational Diseases must be reported to MOM . The reporting requirements differ depending on the type of accident. If there is doubt after you have completed investigations, please report.

### Penalties for Failing To Comply With The WSH Act:

#### General penalties for offences for which no penalty is prescribed under the Act

Category of Offender	Maximum Fine		Maximum Imprisonment	Conditions	
	1 <sup>st</sup> conviction	2 <sup>nd</sup> and subsequent convictions			
Individual Persons	\$200,000	\$400,000	2 years	Either or both	
Corporate Body	\$500,000	\$1 million			
Persons at work who misused or failed to use protective equipment provided	\$1,000	\$2,000			
1 <sup>st</sup> conviction for an offence that causes the death of another person					
2 <sup>nd</sup> & subsequent convictions of the same offence that causes the death of another person					

### LEGISLATION AND OTHER ORGANIZATIONAL REQUIREMENTS

As an employee, you must: Follow the workplace safety and health system, safe work procedures or safety rules implemented at the workplace. Not engage in any unsafe or negligent act that may endanger yourself or others working around you

### Watch out for these hazards in your workplace!



- ❖ Ensure workers are provided with sufficient instruction, training and supervision so that they can work safely.
- ❖ You should not tamper with any safety device or undertake any wilful or reckless acts.
- ❖ You should also always use any personal protective equipment provided at work.
- ❖ Shall not wilfully or recklessly interfere with or misuse any appliances, protective clothing, equipment provided to secure the safety, health or the welfare of the persons at work.

## RISK ASSESSMENT FOR FORKLIFT OPERATION

### STEP 1: IDENTIFICATION OF HAZARDS

Check for any possible hazards before any forklift operations

**POTHOLE**



**SPEED LIMIT**



**DONT NOT TRAVEL**



**WATCH OUT FOR BLIND SPOTS**



**OIL SPILLS**

**OPERATE FORKLIFT**



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## STEP 2: RISK EVALUATION

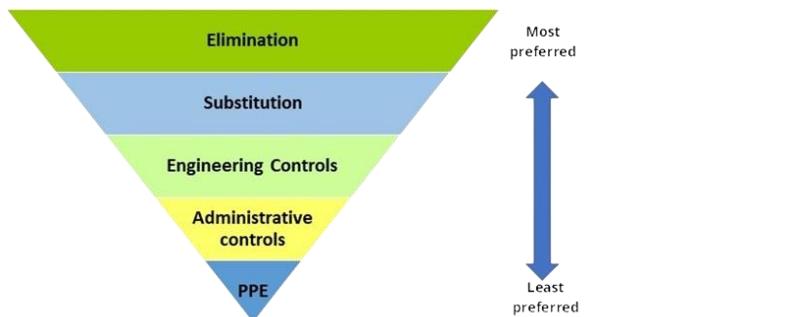
Determine the level of risk based on the severity and likelihood of each hazard

- ✓ Evaluate the risks & decide on the precautions
- ✓ Decide what to do with the hazards which have been identified
- ✓ What is 'reasonably practical'
- ✓ Compare with good industrial practices
- ✓ Try to get rid of the hazard
- ✓ If not, how can you control the risk to reduce to reduce the risk of harm



RISK ASSESSMENT MATRIX					
PROBABILITY \ SEVERITY	Catastrophic (1)	Critical (2)	Marginal (3)	Negligible (4)	
Frequent (A)	High	High	Serious	Medium	
Probable (B)	High	High	Serious	Medium	
Occasional (C)	High	Serious	Medium	Low	
Remote (D)	Serious	Medium	Medium	Low	
Improbable (E)	Medium	Medium	Medium	Low	
Eliminated (F)	Eliminated				

### STEP 3: RISK ASSESSMENT CONTROL MEASURES



#### Examples of Elimination

- ✓ Use expendable tools to eliminate work at height
- ✓ Materials delivered cut to size to remove the use of blades

#### Examples of Engineering controls:

- ✓ Extraction machines to remove hazardous dust or fumes from the air
- ✓ Enclosing dangerous items of machinery or moving parts (machine guards)
- ✓ Installing guard rails for fall hazards
- ✓ Cordless equipment to get rid of trailing cables

#### Examples of Substitution:

- ✓ Replacing ladders with tower scaffolds / MEWP
- ✓ Substituting a hazardous chemicals with a safer alternative chemicals base to water base
- ✓ Changing high-level vibrating equipment with newer equipment with less vibration exposure

#### Examples of Administrative controls:

- ✓ Rules and systems you put in place to carry out the work safely. (SWP,SOP)
- ✓ Risk Assessments, PTW, Equipment check-list
- ✓ Inspection validity certificate

#### Examples of PPE:

- ✓ Use of ear defenders when using noisy equipment
- ✓ Harnesses and lanyards where you can't eliminate the risk of falls completely
- ✓ Hard hats where there may be falls of tools or materials overhead

## WORKPLACE SAFETY AND HEALTH REQUIREMENT

Controlling exposures in the workplace is the fundamental method of protecting workers, but too often workers and managers resort to using personal protective equipment (PPE) as a first line of defense from a serious safety hazard.

The industrial best practices should be the last type of safety measures or controls implemented.

Evaluating the specific safety hazards in the workplace and finding ways to eliminate the situation, using an engineering control, or changing the way the task is handled and re-examined before using the personal protective equipment.

**PPE (Personal Protective Equipment) is your last line of defence against injury and must ALWAYS be worn, kept up-to-date and in good condition.**

Using PPE is often essential, but it is generally the last line of defence, after engineering controls, work practices and administrative controls.



## DETAILS TO TAKE NOTE BEFORE SELECTING AN APPROPRIATE FORKLIFT

### 1. CHECK FOR CARGO DETAILS

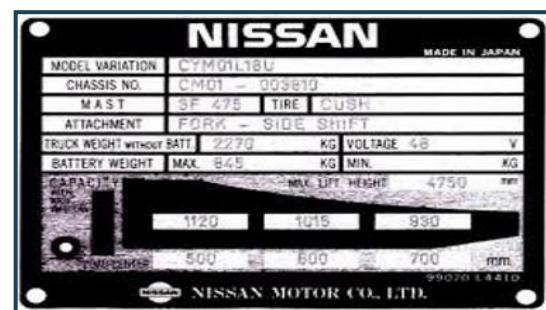
- ✓ Types of cargoes
- ✓ Weight of cargoes
- ✓ Types of stacking arrangement

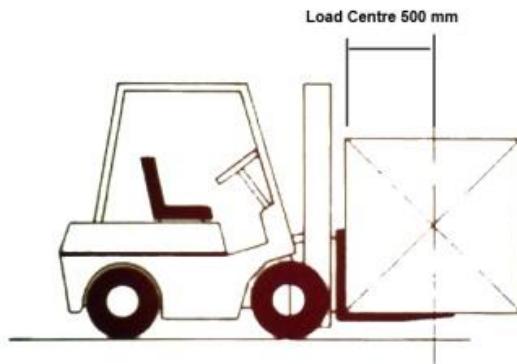
### TYPES OF CARGO



### 2. PLAN YOUR WORK

- ✓ Select the correct type of forklift
- ✓ Choose the right type of forklift attachments
- ✓ Identify safe route to transport cargoes
- ✓ Report any abnormalities in accordance with organizational procedures
- ✓ Types of Forklift
- ✓ Type of Attachment / Lifting Capacity (SWL)
- ✓ Load Centre
- ✓ Forklift Weight
- ✓ Lifting Height
- ✓ Work Environment (indoor/ outdoor)
- ✓ Type of Load ( weight, size, shape etc.)





## COMMON FORKLIFT HAZARDS

### Ground conditions

(potholes , uneven ground, oil spills, slippery floors etc)



### Traffic conditions

(pedestrians, Movements, crossing at intersections, blind spots)



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**Weather conditions**

- ❖ (rain, humid, strong winds, dusty etc)

**Overhead Obstructions**

- ❖ metal structures , beams, overhead power cables)

**Poor lighting**

- ❖ (lack of lighting , eye strains , low level,bad lighting position,

productivity

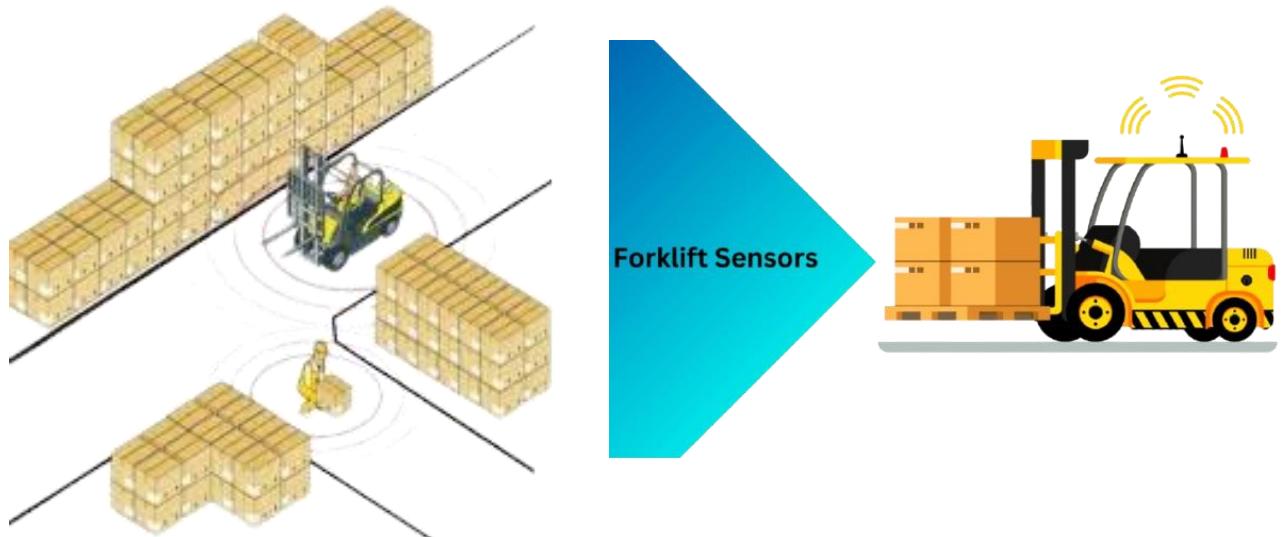
**SAFETY SENSORS USED ON FORKLIFTS –TO OVERCOME COMMON FORKLIFT HAZARDS**

PRESS RELEASE  
**SIT DOWN FORKLIFT SAFETY**



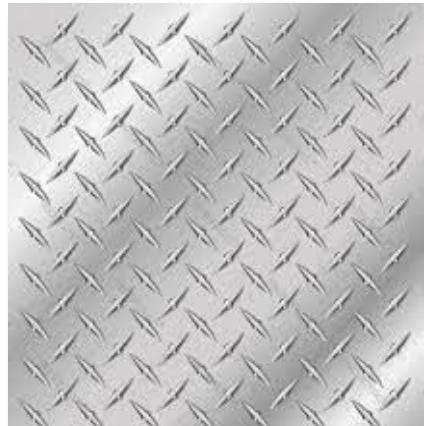
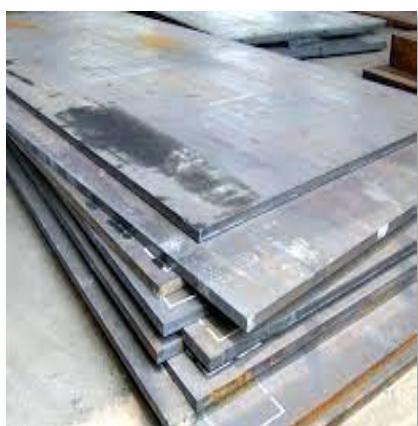
**FORKLIFT PROXIMITY ALERT SYSTEM**

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#### CHECK GROUND CONDITIONS BEFORE FORKLIFT OPERATIONS

Use corrugated plates / steel plates to support the ground when travelling with or without loads



Always comply with the in-house rules & requirements on speed limits while operating the forklift



INDOOR



OUTDOOR

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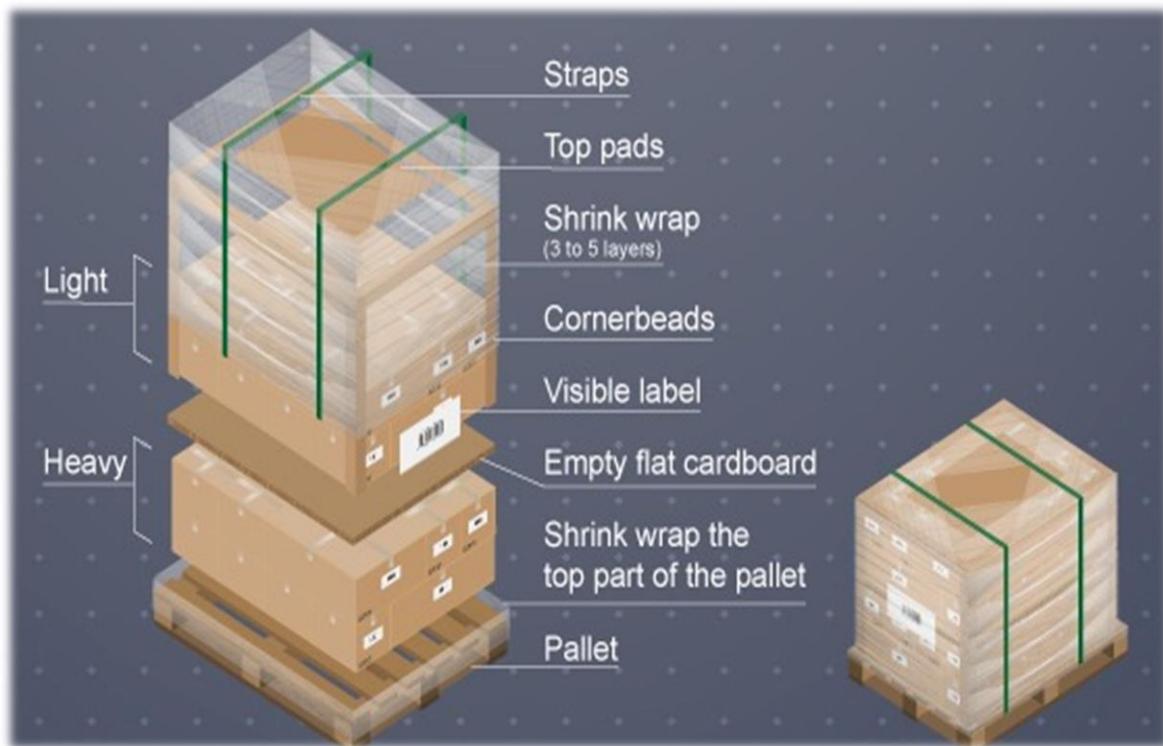
## UK 1.4 PROTECTING LOADS DAMAGE DURING MOVEMENT



## UK 1.4 PROTECTING LOADS DAMAGE DURING MOVEMENT

### LOADS ON PALLETS SHOULD BE STACKED & SECURED DURING MOVEMENTS

- ❖ Do not use damaged pallets
- ❖ Loose loads can be packed into boxes and placed on pallets, stacked and secured using stretch film during movements
- ❖ Flexible plastic straps ensure that the products that need to be transported are safely packaged and shipped in a practical way. It facilitates space saving.



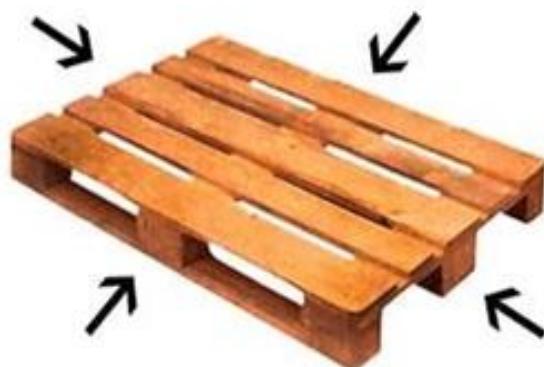
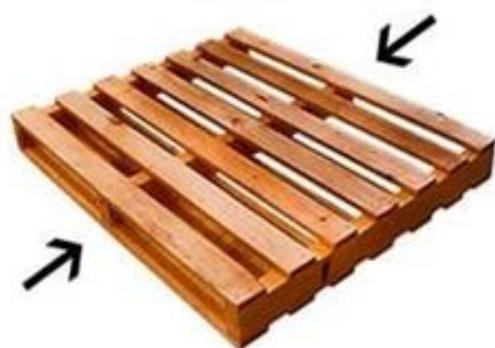
Tertiary packaging	Examples
Box	Wooden crate, plastic box, cardboard carton
Strap	Plastic strap, steel strap
Pallet	Wooden pallet, plastic pallet
Film	Stretch film, shrink film
Sheet	Anti-slip sheet, corrugated board, hardboard
Dunnage	Air bag, wooden blocks, folded cardboard, foam



**TYPES OF PALLETS**

There are many different pallet types, most of which are made from wood, though some types of pallets are constructed from metal, plastic, or a combination of materials. With so many different types of pallets out there, it can be tough to choose the right option for your logistic needs.

A pallet is a support or platform for boards to stack the load. They are rigid frames on which the goods are placed, distributed in a homogeneous way at height and on the pallet surface.

**4 ENTRADAS · 4 WAY ENTRY****2 ENTRADAS · 2 WAY ENTRY****PLASTIC PALLET & WOODEN PALLET**

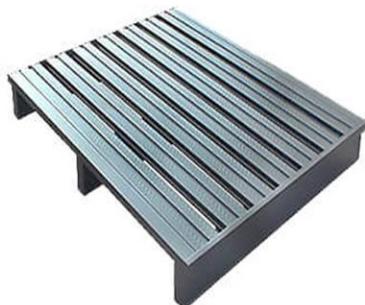
PALLET DE MADERA · WOODEN PALLET  
PALETTE DE BOIS · HOLZPALETTEN



PALLET DE CARTÓN · CARDBOARD PALLET  
PALETTE EN CARTON · KARTONPALETTEN



PALLET DE METAL · METAL PALLET  
PALETTE EN MÉTAL · METALLPALETTEN



PALLET DE PLÁSTICO · PLASTIC PALLET  
PALETTE DE PLASTIQUE · KUNSTSTOFFPALETTEN



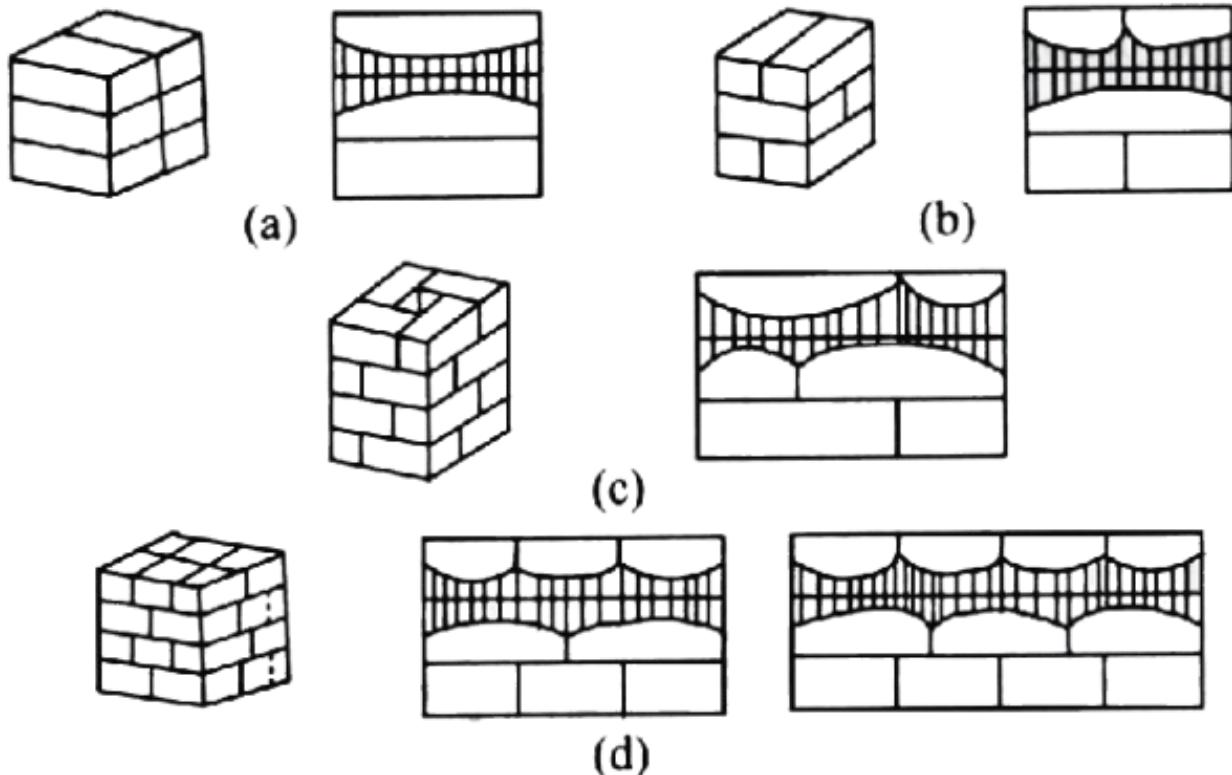
## STACKING LAYOUT

The common stacking methods for products include levelled stacking, well-type stacking, pin rotor stacking, and corrugated-type stacking. The stack data structure is a linear data structure that accompanies a principle known as LIFO (Last In First Out) or FILO (First In Last Out).

Column stacking is the preferred method for stacking boxes on a pallet. The weight is distributed evenly at the strongest point (corners) of each box, which allows it to maintain 100 percent of the engineered compression strength.

Having the heaviest boxes on the bottom creates the most stable base, prevents lighter packages from getting crushed, and creates a lower centre of gravity for a stronger structure. Practice placing the boxes with the bar-codes facing outwards so shippers and receivers can see what contents are in the boxes right away.



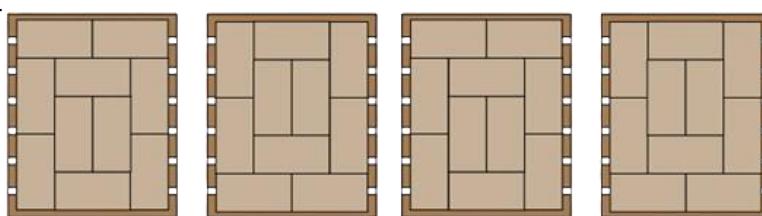


#### A common stacking way of corrugated box

- Flush stacking;
- Pit stacking;
- Qin rotary stacking;
- Tile stacking
- 

#### HOW TO STACK AND TIE THE GOODS ON PALLETS PROPERLY

- Heavy line ahead..
- Just stack the package just to the edge of the pallet, not left out.
- Put the box as you place the tiles
- Avoid the pyramids
- The Belt



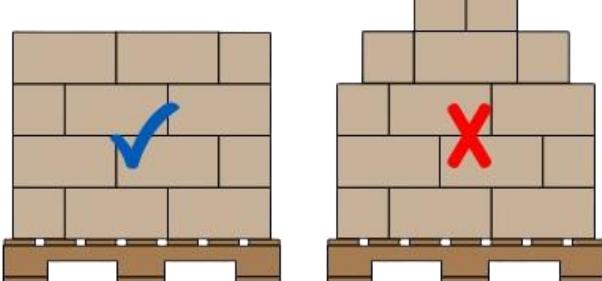
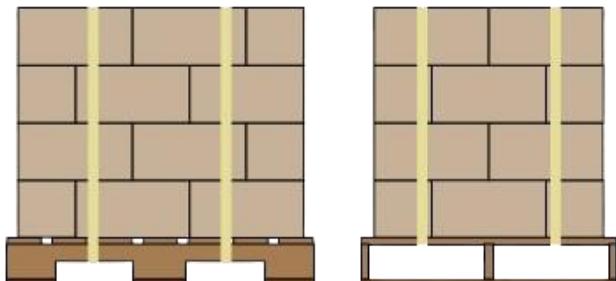
LAYER 1

LAYER 2

LAYER 3

LAYER 4

#### COLUMN STACKING

**Avoid the pyramids****The Belt****LOADS DAMAGE DURING TRANSPORTATION****Ways to Prevent Pallet Damage**

- ❖ Use the Right Pallet for the Right Product.
- ❖ Ensure Pallets are Properly Constructed.
- ❖ Keep Pallets Dry.
- ❖ Proper Forklift or Pallet Jack Training Can Prevent Pallet Damage.
- ❖ Use Good Material Handling Procedures.
- ❖ Make Sure Recycled Pallets Come From A Reputable Source
- ❖ Wrapping It All Up.

**Pallet Protection****PALLET COVERS**

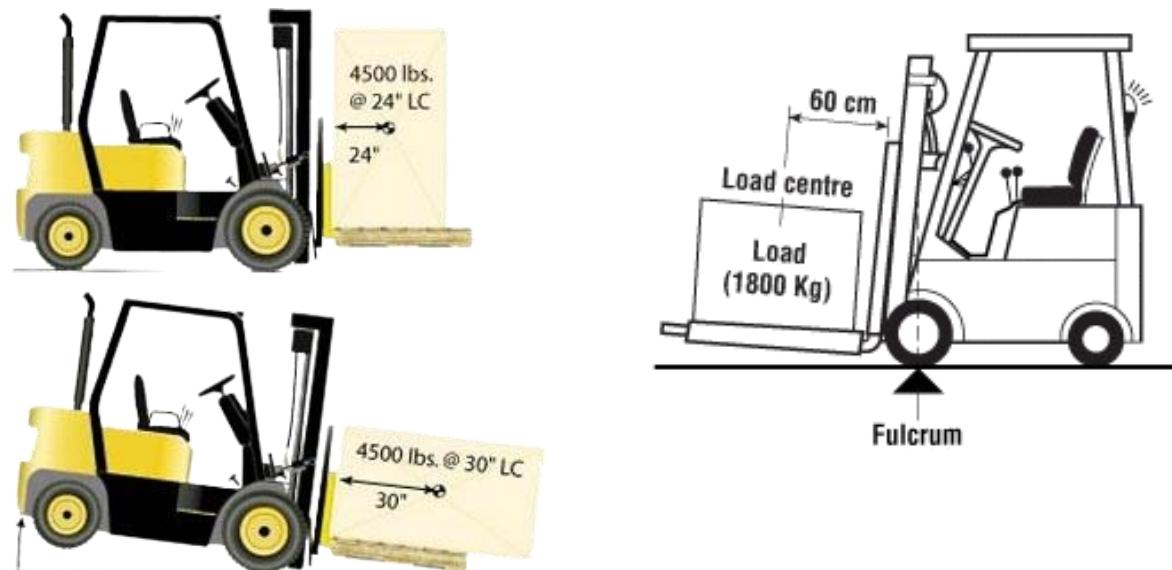
Pallet covers are a cost-effective way to keep products safe from environmental hazards like humidity, UV light, wind, and rain.

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Rearranging the load by placing the heaviest side of the load against the backrest before moving off and securing it with shrink wrap will prevent the load from falling.

When the heavier load is placed nearer the back rest of the forks, the load center becomes shorter giving more stability to the load. If the load centre is longer & away from the back rest the load becomes unstable and the load will fall off during movements or when stopping which will cause damage to the loads.

### **Load Centre (front-to-back)**



Making sure the product is securely packed and wrapped on the pallet, so they don't jostle or come loose is a great way to keep them safe. Product packaging is usually the smallest expenditure, and upgrading the packaging to protect the items can be tremendous when weighed against the cost of product loss.

When packing pallets, make sure the product stays within the dimensions of the pallet without overhanging. Stacking heavy boxes in an overlapping pattern, like bricks, which will distribute their weight more evenly and be less likely to topple.

Using effective void fillers will help you here. There are a range of options available depending on the size of your shipment. For those smaller items that are packaged in boxes, use things like kraft paper, packing peanuts, corrugated cardboard, or other foam padding.



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## UK1.5 REPORTING PROCEDURES IF WORK PREPARATION IS NOT COMPLETED



### UK1.5 REPORTING PROCEDURES IF WORK PREPARATION IS NOT COMPLETED

If your supervisor gives you an assignment that seems difficult, start by asking them for more resources to learn how to approach it instead of immediately if it's outside of your capabilities.

It's important to ask for assistance when you realize you're unable to keep up with your assignments. Informing your supervisor that you feel you can't keep up with your workload can allow you to find help

Creating a schedule: Use a planner or calendar to schedule specific times to work on tasks. Setting deadlines: Having deadlines for each task will help keep us on track and be motivated. Minimizing distractions: Eliminating distractions while working on tasks will help to stay focused. We can not do as many things as we want; our temporal limit forces us to restrict the number of activities or task that we do.



Cannot finish the job  
Report to your supervisor



## WORK ASSIGNED CANNOT BE COMPLETED ON TIME

### REASONS WORK NOT COMPLETED ON TIME

Equipment breakdown



No Training



Noticeable hazards

No SWP / SOP



Shortage of Manpower



Instructions not clear



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## CE 02: INSPECT FORKLIFT



### UNDERPINNING KNOWLEDGE

- UK 2.1 Main Parts of forklift to be inspected
- UK 2.2 Constituents of main part of forklift to be inspected
- UK 2.3 Safety precautions in inspecting the forklift

## UK 2.1 MAIN PARTS OF FORKLIFT TO BE INSPECTED



**UK 2.1 MAIN PARTS OF FORKLIFT TO BE INSPECTED**

- Perform the preoperative checks using a check-list. Perform (External, Internal & Functional Checks)
- Include details of damage parts, faults, missing parts, not in good working condition, e.g., dented, rusty etc onto the remark's column for follow up action.
- Place a sign to inform others not to use it.
- Inform the supervisor & arrange for certified mechanic to repair the forklift

**EXTERNAL**

- ✓ Tyres/Wheels/Nuts
- ✓ Lifting Chain
- ✓ Forks & Mast
- ✓ Backrest
- ✓ Overhead Guard
- ✓ Mirror (side / front/back)
- ✓ Seat/Seat belt
- ✓ Capacity/Data Plate
- ✓ Instrumentation Panel
- ✓ Step/Grab Handle
- ✓ No Leaks

**FUNCTIONAL**

- ✓ Lever (up/down)
- ✓ Gear (F/N/R)
- ✓ Ignition System
- ✓ Tilt Lever
- ✓ Side Shift Lever
- ✓ Brake System
- ✓ Transmission System
- ✓ Steering System
- ✓ Hand Brake
- ✓ Horn
- ✓ Reverse Buzzer
- ✓ Reverse Light
- ✓ Headlight/Signal

**INTERNAL**

- ✓ Hydraulic Fluid Level
- ✓ Brake Fluid Level
- ✓ Transmission Fluid Level

**EXTERNAL****TYRES**

A solid tyre or an airless tyre. It is not filled with air but is manufactured using layers of rubber that are constructed around a metal frame or a wheel structure that can be mounted to a specific vehicle. Pneumatic tire forklifts have greater ground clearance than cushion tire trucks, so you can move around a lot better over gravel and other rough surfaces.

A rough terrain forklift tyre, featuring high tensile creel bead wires to ensure ideal wheel fitments for maximum comfort and stability during operations

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## LIFTING CHAIN

The mast chains are responsible for lifting the carriage and forks. Each mast chain is attached to the carriage and then routed up and over a chain wheel that acts as a pulley

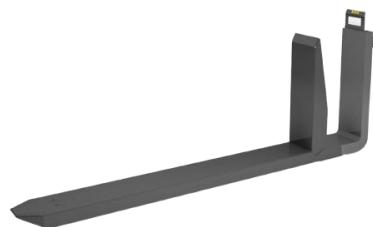


## FORK

The forks (also known as tines or blades) carry the load. They have a heel where they curve upward and an upright shank where they are attached to the carriage.



**MAST**



A forklift mast, also called upright, is the part of the forklift that lifts, positions, and lowers the loads that forklifts handle. The mast, or upright, is the portion of the forklift that positions the loads manipulated by the forks.

## BACKREST

Steel Load backrests are designed falling toward the equipment driver. This against a square, flat surface that makes



to prevent the load from allows product to rest loading/unloading safe.



## OVERHEAD GUARD

An overhead guard is designed to protect the operator from falling objects. Wear a hard hat when appropriate for additional protection. A falling object protective structure (FOPS) most called an Overhead Guard, is designed to deflect or absorb the impact of falling objects or debris.

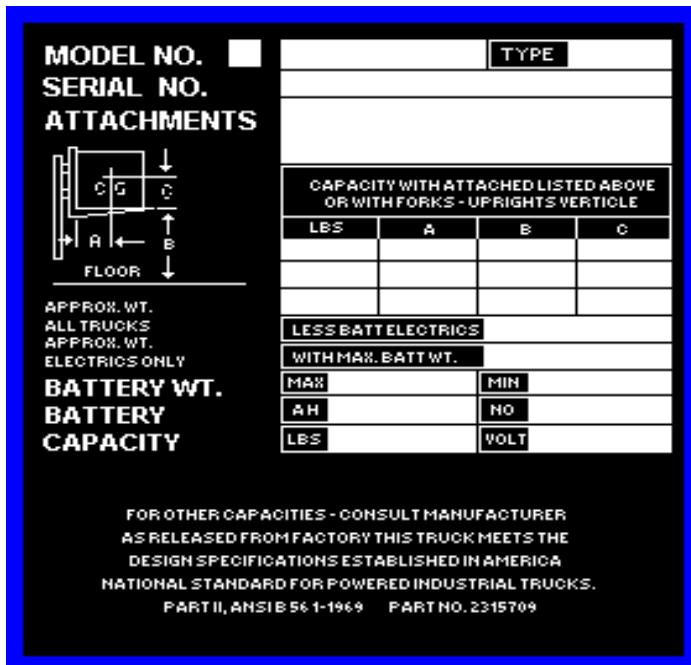
## DATA PLATE

Sometimes referred to as a capacity plate or a forklift nameplate, the forklift data plate includes important information such as weight, fuel type, and forklift load capacity. Associates need to read the data plate during training and before use to help build the culture of safety in your facility.

## OPERATE FORKLIFT

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## INSTRUMENTATION PANEL

The reliable special instrument gives a complete display of the vital information, like operation status, fault detection, etc.. It ensures the operator predominate the vehicle status more intuitive and convenient. Forklift have various warning lights on their front panels. They indicate to the driver that there is no malfunction in the truck. If the forklift dashboard warning lights indicate an unsafe malfunction, never operate the forklift. Never attempt to repair when you have not been given any repair authorization.



## OVERHEAD GUARD

An overhead guard is designed to protect the operator from falling objects. Wear a hard hat when appropriate for additional protection.



## OPERATE FORKLIFT

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## FORKLIFT SAFETY BELTS



Forklift safety belts are designed to prevent drivers from jumping out of the truck if it tips over. Many injuries and fatalities occur when they are not used

**SEAT**



Seat must be good condition so the operator will find it comfortable. The seat can be adjusted forward & backward to give the operator more leg room



**GRIP HANDLE**

Using grip handles & steps provided to mount & dismount from the forklift safely

## Head Lights



Used when working indoors & when visibility is affected due to lack of light



## INTERNAL

## HYDRAULIC FLUID LEVEL



Forklift hydraulic fluid must be regularly topped up for maximum effectiveness. Locate the dipstick: This dipstick is under the floor plate. Use the dipstick to check the fluid level. Locate the hydraulic reservoir on your lift. It should have a vented fill cap with a fill gauge or sight glass on the side to indicate fluid level.

Remove the cap and then pour in the oil into the reservoir.



## OPERATE FORKLIFT

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## BRAKE FLUID LEVEL

Top up brake fluid by opening the reservoir cap. Slowly, using a funnel, add the brake fluid to the reservoir until it meets the maximum marker. Close the reservoir cap, making sure it is tightly screwed on



## TRANSMISSION FLUID LEVEL



Transmission fluid is a slick, oily substance that keeps the transmission of your car lubricated. The type of transmission fluid you need depends on the make and model of your forklift. Insert long funnel into automatic transmission fluid dipstick hole. Carefully add automatic transmission fluid in small increments and recheck level each time until fluid level reaches "warm" line.



### CAUTION:

**DO NOT OVERFILL OR SPILL AUTOMATIC TRANSMISSION FLUID ON HOT ENGINE PARTS!**

## FUNCTIONAL

### OPERATE FORKLIFT

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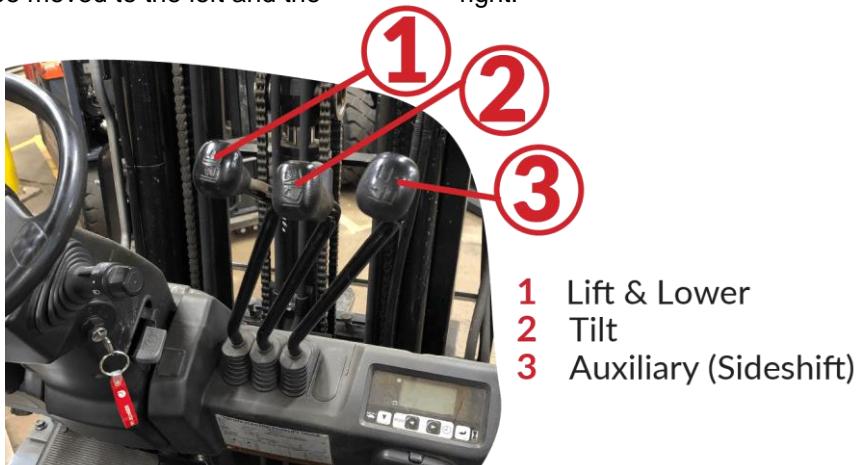
## GEAR SELECTOR

There are three forklift directional gear selector controls: drive, park, and reverse. Directional controls are mounted next to steering column.

**Hydraulic lift** controls is used to raise and lower the forks

**The tilt lever** is used to tilt the mast forward and backward. Push forward to tilt forward, pull backward to tilt backward.

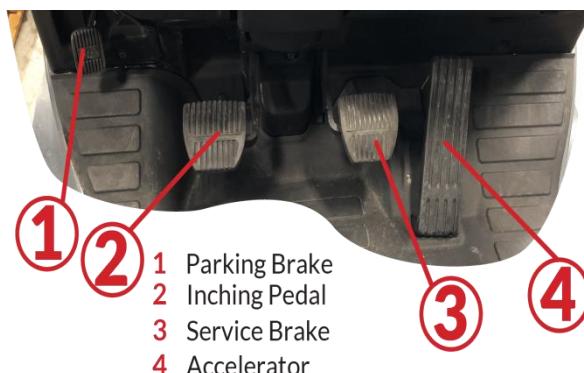
**The side shift** is a mechanism within a forklift truck, controlled by the driver, that allows the load carried to be moved to the left and the right.



## BREAK SYSTEM

- ❖ Parking brakes are completely mechanical and use only cables and levers to operate. When a parking brake lever is pulled (or when a parking brake pedal is pushed), these cables transmit the necessary force to keep your vehicle in place or to stop the vehicle

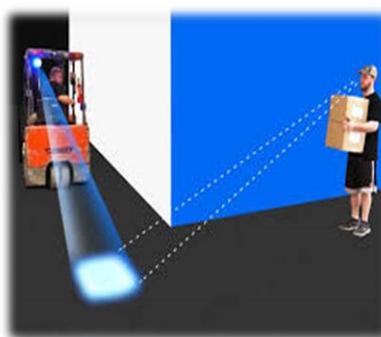
- ❖ The service brake pedal is the main brake pedal that, when pressed, will slow down and stop the forklift firmly and it lightens up the brake lamp to indicate that the forklift has stopped.
- ❖ The accelerator pedal is located on the floor on the far-right, for movement. When the pedal is depressed, it picks up speed and moves on. When it pedal is released the machine stops



#### REVERSE BUZZER



Blue safety lights will warn pedestrians or other operators when you may have a limited rear view. Blue Safety Lights Ensure Safety When You Are Moving Large Loads. It can be hard to see what is in front of you when you drive a forklift with a large load.



#### BLUE SAFETY LIGHTS

A backup alarm sounds off as the people there is forklift movements advance. Pairing this with horns and safety.

forklift is reversing. It alerts thus preventing a collision in good driving can increase

#### COMBINATION LIGHTS



Combination lights comes with a fusion of the reverse light, brake light & the signal light

**UK**

## 2.2 CONSTITUENTS OF EACH MAIN PART OF FORKLIFT TO BE INSPECTED



- ✓ Check wheels for damage, especially to the rims, and check that wheel nuts are tight. Seat and Seat Belt.
- ✓ Check that the seat belt or other restraint is properly
- ✓ Check that the seat is correctly fixed to the truck and not loose or damaged.

<p><b>Use this Free Hazard Register Template to record and follow up hazards in your workplace</b></p> 	<h2>Hazard Register</h2> <p>Use this register to record and follow up on hazards in your workplace</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Date Reported</th> <th style="width: 45%;">Brief Description of Hazard</th> <th style="width: 10%;">Hazard Status</th> <th style="width: 15%;">Complete By</th> <th style="width: 20%;">Person Responsible</th> </tr> </thead> <tbody> <tr> <td>22/08/2021</td> <td>(EXAMPLE) Fire extinguisher in office out of date</td> <td style="background-color: #ffcccc;">Follow Up</td> <td>23/08/2021</td> <td>Ryan Grant</td> </tr> <tr> <td>22/08/2021</td> <td>(EXAMPLE) Liquid spilled on kitchen floor</td> <td style="background-color: #90ee90;">Complete</td> <td>22/08/2021</td> <td>Sheridan Williams</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>				Date Reported	Brief Description of Hazard	Hazard Status	Complete By	Person Responsible	22/08/2021	(EXAMPLE) Fire extinguisher in office out of date	Follow Up	23/08/2021	Ryan Grant	22/08/2021	(EXAMPLE) Liquid spilled on kitchen floor	Complete	22/08/2021	Sheridan Williams																																								
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	OUR GOALS			Work Safety <a href="http://www.worksafeft.com">www.worksafeft.com</a>																																																							
				Our Email <a href="mailto:info@worksafef.com.au">info@worksafef.com.au</a>																																																							
				Our Phone 0432 6311																																																							
				Work Health & Safety <a href="#">www.worksafeft.com</a>																																																							

Conduct pre checks using a check-list following a logical sequential sequence movement to prevent items not checked





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**OPERATE FORKLIFT**

**LEANER'S GUIDE**



**SAMPLE CHECKLIST FOR PRE-OPERATION OF FORKLIFTS**

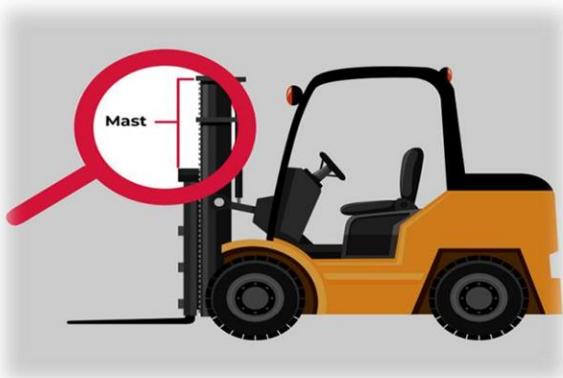
This checklist provides the basic requirements for pre-operation of forklifts. Should a "No" be recorded for any of the below checklist items, state the condition(s) and its respective corrective actions in the "Remarks" column. This checklist is non-exhaustive and users are recommended to make the necessary customisation to suit your work processes and conditions at the workplace.

S/N	Items		Remarks
<b>A. Fluid Level</b>			
1	The following fluid level is within manufacturers' specifications:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(a) Battery water level;	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(b) Fuel level;	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(c) Engine oil level;	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(d) Radiator water level;	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(e) Transmission oil level;	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(f) Hydraulic fluid level; and	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(g) Brake fluid level.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>B. Lights</b>			
2	The following lights are in good working condition:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(a) Headlights (high beam)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(b) Reverse indicator	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(c) Brake indicator	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(d) Hazard lights	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>C. Adjustments to suit operator's view</b>			
3	The following adjustments are made to suit the operator's view:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(a) Driver seat	<input type="checkbox"/> Yes <input type="checkbox"/> No	
	(b) Rear view mirror	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>E. Brakes</b>			
4	Foot brake is able to hold and stop the forklift smoothly.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
5	Parking brake is able to hold the forklift when parked.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>D. Tyres</b>			
6	Tyres are inflated and free of excessive wear or damage.	<input type="checkbox"/> Yes <input type="checkbox"/> No	

7	Tyre nuts are tight.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
8	Tyres have adequate thread.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>B. Lift or lower system</b>			
9	Controls of the lift or lower system are able to move freely.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
10	Lift or lower system is able to return to neutral when released.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
<b>F. Others</b>			
11	The battery connecting terminals are tight and free of exterior defects.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
12	Battery covers and guarding over other hazardous parts are in place and secured.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
13	There are no visible signs of leakage (e.g., oil, water).	<input type="checkbox"/> Yes <input type="checkbox"/> No	
14	Operator's seat is free of visible defects.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
15	Ensure the following is in good working condition:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(a)	Rear view mirror	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(b)	Seat belt	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(c)	Mast or forks	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(d)	Fan belt	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(e)	Lifting chain	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(f)	Lifting hose	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(g)	Limit switches	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(h)	Hour meter gauge and other gauges on the instrument panel	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(i)	Battery charge or discharge indicator	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(j)	Horn	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(k)	Hydraulic control lever	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(l)	Reverse warning buzzer	<input type="checkbox"/> Yes <input type="checkbox"/> No	
(m)	Backup alarm	<input type="checkbox"/> Yes <input type="checkbox"/> No	

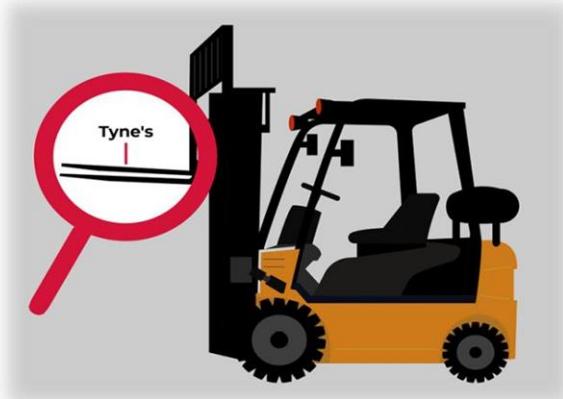
A forklift inspection check-list may sound complicated, but all you need to do is examine these eight key elements, and then the forklift should be ready to use.

## 1. THE MAST



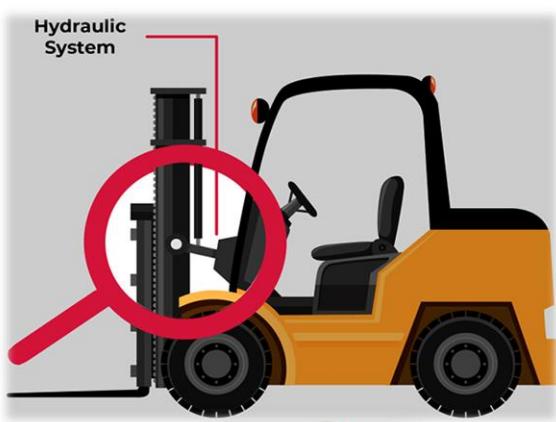
- ❖ Look over any hoses, chains, and other moving parts for signs of wear or cracks. Every moving part should be lubricated, but this shouldn't be excessive to the point of solidification. A nice light sheen of lubrication is ideal, and there should be no corrosion anywhere on the mast.

## 2. FORKLIFT TYNE'S



- ❖ Forklift tynes must be straight and in good general condition. There shouldn't be bends, cracks, or signs of excess wear and tear. Check that the upper limit stops are in good condition, the tynes pins must be present, and they must be straight.

## 3. THE HYDRAULIC SYSTEM



- ❖ Check the hydraulic cylinders; there should be no signs of damage or evidence of leaking. All the fittings and hoses need to be secure, there should be no signs of damage, and again you need to be aware of leaks

## 4. THE



## LIGHTS



- ❖ Probe that all the lights are working correctly, and if turn signals are on the forklift, they should be smooth and regular. Giving the lights a regular weekly cleaning is a good habit to develop

## 5. THE BATTERY



- ❖ Inspect the forklift battery for any signs of surface damage or leaking. All terminals should have an appropriate cover, and the connections need to be tight.

## 6. THE ENGINE



- ❖ The exact checks you need to make during the inspection will vary greatly depending on your specific forklift model. However, every forklift should have fluid reservoirs filled, which should be free from leaks. Start up the engine, ensure it's running smoothly and check that there is no evidence of overheating.

## 7. THE CARRIAGE



- ❖ Fix the rear load rest extension firmly in place; it needs to be straight and free from cracks

## 8. THE LABELLING



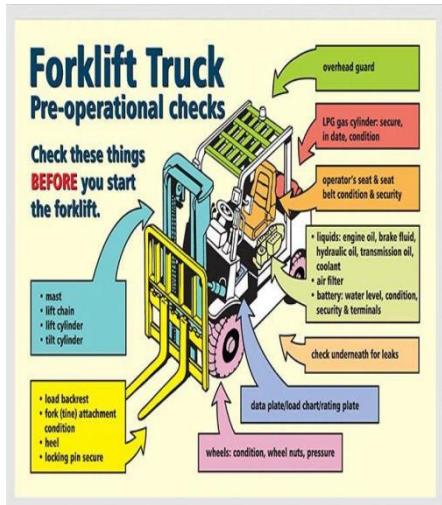
- ❖ All warning decals, load rating plates, operator manuals, and LPG compliance plates (if applicable) must be present, and they must be readable.

## PRE-OPERATIONAL CHECKS - VISUAL CHECKS

**LEAKS** Fuel, oil, radiator, hydraulics. Tyres & wheels – Drive wheels, steer wheels, load wheels, casters, etc.... **FORKS** – Secure, not bent, cracked or badly worn. **CHAINS, CABLES & HOSES** – In place.

- ✓ Daily safety checks keep forklift in good working condition. It helps identify defects before the time, ensuring no more excessive wear and tear of a component of a forklift. Also, a routine inspection makes it easy to maintain a forklift and enhances its longevity.
- ✓ It is the duty of the user to perform daily checks prior to the use of the forklift. Supervisor are to ensure that the routine checks are carried out regularly in an orderly and safe manner and report any discrepancies if any.





### OPERATIONAL CHECKLIST:

Operational check-list items should include:

#### Power:

Check the power to make sure all the indicator lights and alarms are working properly. Then, check the power disconnect to make sure it cuts off all power.

#### Electrical Safety Devices:

Check the horn, entry bar, audible signals, flashing, and indicator lights to ensure they work properly.

Steering: Check to make sure the steering moves smoothly and that there's no binding.

#### Brakes and travel controls:

Check to make sure the foot brake pedal works. Check the braking and plugging distances as well, first at a slower speed, then as you gradually accelerate. Check the parking brake.

### ALWAYS BE ATTENTIVE - CARE FOR YOUR FORKLIFT ALWAYS

- ✓ Checking the engine for any unusual sounds and leaks.
- ✓ Look out for smoke (black smoke normal, white smoke engine burn)
- ✓ Making sure that the seat belt is not damaged.
- ✓ Lights, horns and brakes, are functional
- ✓ Forward and reverse are functioning smoothly and properly.





- ✓ Up, down, left, right mast cylinders are functioning smoothly and properly.
- ✓ Loud grinding sounds might be in relation to worn-out gears or other components.
- ✓ Check for squeaking tires which may be a bad wheel bearing or a worn-out tire tread.
- ✓ Cracking or balding of the tires are both visible signs that it's time to get those wheels replaced as soon as possible.
- ✓ Check for squeaking tires which may be a bad wheel bearing or a worn-out tire tread





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## UK 2.3 SAFETY PRECAUTIONS IN INSPECTING THE FORKLIFT

# FORKLIFT REPAIR SINGAPORE



**UK 2.3 SAFETY PRECAUTIONS IN INSPECTING THE FORKLIFT****SAFETY PRECAUTIONS**

- Perform forklift safety inspections prior to carrying out daily task
- Always engage professionals to carry out inspections & repairs
- Avoid contact with hot surfaces from the engine compartment while inspecting the forklift
- Use proper PPE while performing the inspection

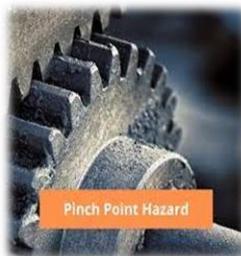
## FORKLIFT REPAIR SINGAPORE



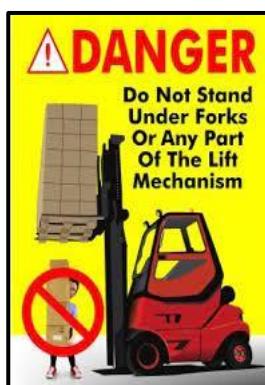
**NOTICE**  
PRIOR TO USING FORKLIFT  
**PERFORM FORKLIFT SAFETY  
INSPECTION**  
AT THE START OF EACH SHIFT



- Beware of rotating parts / Pinch points during inspection



- Do not stand below the forklift mast while conducting the inspection



- No naked flame at forklift charging area



- Maintain 3 point contact when mounting / dismounting the forklift



**Maintain 3-Point Contact**  
When getting on and off a forklift



# CE 03 : CARRY OUT FORKLIFT OPERATIONS



## UNDERPINNING KNOWLEDGE

- UK 3.1 Cargo handling symbols
- UK 3.2 Forklift stability
- UK 3.3 Operating procedures for different types of Loads
- UK 3.4 Safety precautions in lifting potentially hazardous loads
- UK 3.5 Operating procedures for different types of terrains and confined spaces
- UK 3.6 Workplace and Health code of practice relating to forklift operations
- UK 3.7 Procedures of reporting unsafe / unauthorized forklift operation

## UK 3.1 CARGO HANDLING SYMBOLS



## UK 3.1 CARGO HANDLING SYMBOLS

The International Organization for Standardizations (ISO) R/780 contains the internationally recognized symbols for package handling instructions. Since the symbols are self-explanatory, they must never be deleted in order to solve linguistic barriers in international transportation operations.



### HANDLING INSTRUCTIONS

**"Cargo handling Labels "** help to ensure that greater care is taken with cargo handling. It must be possible to tell

- whether the package is sensitive to heat or moisture
- whether it is at risk of breakage
- where the top and bottom area is and where the centre of gravity is located
- where lifting gears may be attached for hoisting

Packaging symbols represent various storage, delivery, and handling instructions for exporters. They also provide product safety and recycling information for end customers

### ADVANTAGES

#### ZERO TAILPIPE EMISSIONS

Diesel and LPG forklifts emit toxic exhaust emissions, but electric forklifts do not. For interior applications like food processing, warehouses, and other fume-sensitive sectors, this makes them perfect. Additionally, because they emit no pollutants, they are better for the health of the earth and your staff.

#### LOWER OVERALL MAINTENANCE

Electric forklifts require less maintenance due to their lack of an engine and transmission. Maintenance includes battery, drive motors, and other moving components like the mast, resulting in fewer parts to replace and potentially less downtime for your company.

#### TIGHTER TURNING RADIUS

#### OPERATE FORKLIFT

#### LEANER'S GUIDE





Electric forklifts are frequently more manoeuvrable and have tighter turning radius's than standard LPG forklifts. They respond better to operator commands and can help decrease damage to the workplace and products as a result. This increased flexibility can also lead to a more efficient warehouse and enhanced corporate success.

## IMPROVED VISIBILITY

Electric forklifts often have narrower turning radius's and are easier to maneuver than conventional LPG forklifts. As a result of their improved ability to react to operator orders, they can lessen workplace and product damage. Along with improved business success, this greater flexibility may result in a more effective warehouse.

## DISADVANTAGES

### HIGHER INITIAL INVESTMENT

Compared to LPG, gas, or diesel equipment, electric forklifts are more expensive up front. When contrasted with anticipated future fossil fuel prices, their anticipated operating costs do, however, decline with time.

### ENVIRONMENTAL CHALLENGES

Compared with conventional material handling equipment, electric forklifts are more vulnerable to temperature fluctuations. Additionally, they may sustain harm in very damp conditions; however, sealed battery solutions can mitigate this risk. Although a rising number of manufacturers are producing heavy-duty electric forklifts for outside use, many electric forklifts are not made to be used in outdoor environments.



## UK 3.2 FORKLIFT STABILITY

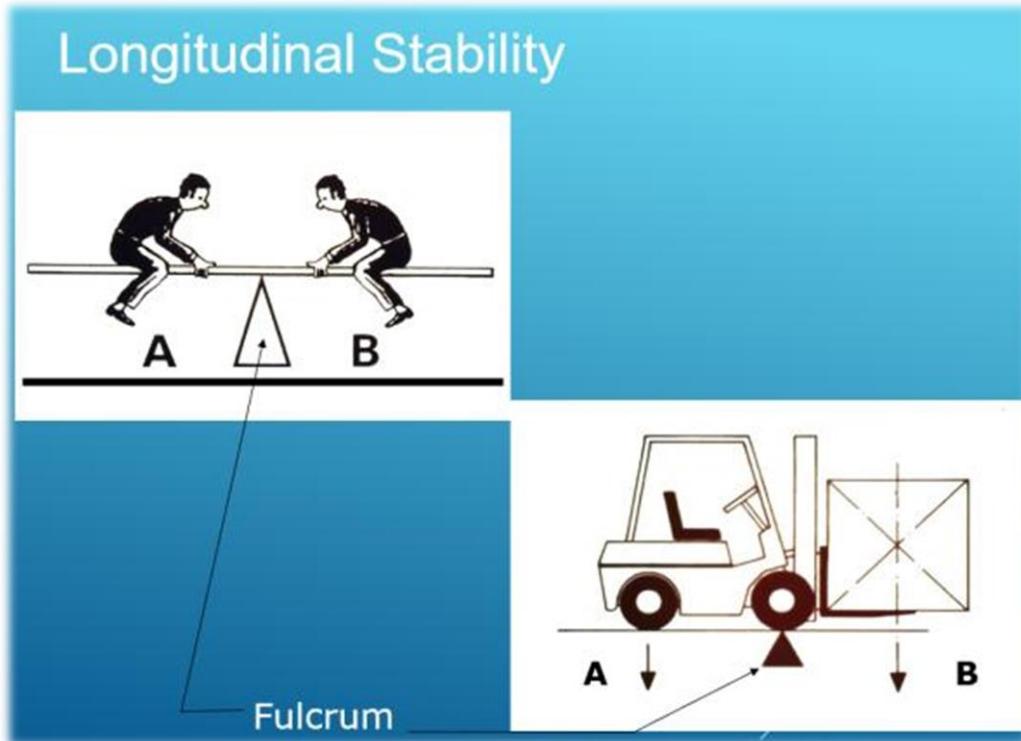


## UK 3.2 FORKLIFT STABILITY

### THE FULCRUM POINT ON FORKLIFT | FORKLIFTS FULCRUM PRINCIPLE

**THE FULCRUM PRINCIPLE** is fundamental to the functioning of a forklift. Like how a playground see-saw works, a forklift has two weights, namely the load and the counterweight, balanced on a beam with a fulcrum in between. The load is located on the forks, while the counterweight is at the opposite end of the machine.

When the forklift moves forward, the forks apply pressure against the load, creating a rotational force around the fulcrum. This rotational force, or torque, lifts the load off the ground. Essentially, the forklift's front wheels' axle serves as the fulcrum point, supporting the forks and allowing this rotation to occur. The fulcrum point on a forklift is the central pivot point around which it balances its load and counterweight. The forklift's front axle serves as this fulcrum point.

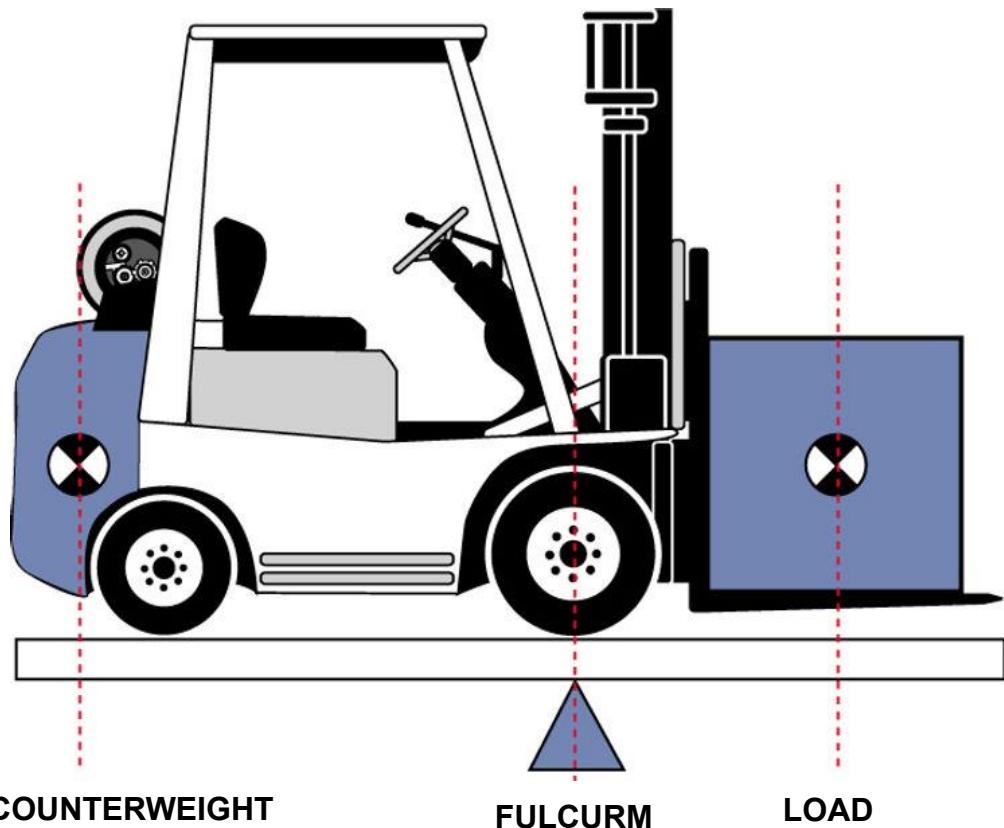


The forklift's stability relies heavily on this point as it is the dividing line between the machine's weight and the load's weight.

When the forklift is in operation, the counterweight should exert more force than the load to prevent the forklift from tipping forward. The fulcrum point is crucial in maintaining this balance.



## FORKLIFT STABILITY



## THE BASICS OF STABILITY

### UNDERSTAND LIFT TRUCK STABILITY

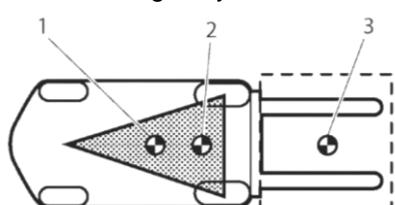
Counterbalanced lift truck design is based on the balance of two weights on opposite sides of a fulcrum (the front axle).

The load on the forks must be balanced by the weight of the lift truck. The location of the centre of gravity of both the lift truck and the load is also a factor.

This basic principle is used for picking up a load. The ability of the lift truck to handle a load is discussed in terms of centre of gravity and both forward and sideways stabilities.

### DETERMINING STABILITY AND THE CENTER OF GRAVITY

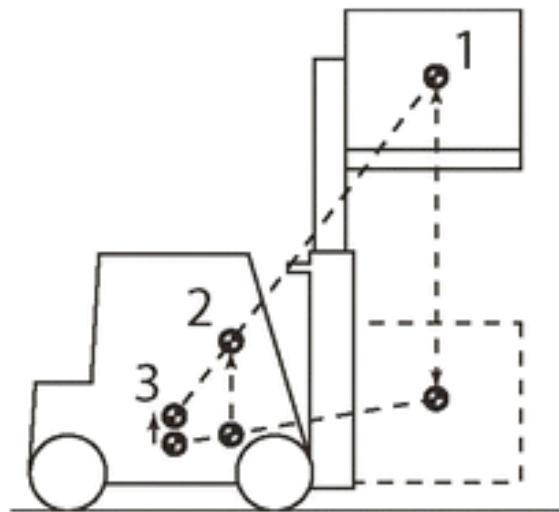
The stability of the lift truck is determined by the location of its Centre of gravity, or if the lift truck is loaded, the combined gravity.



1. CENTER OF GRAVITY - LIFT TRUCK
2. COMBINED CENTER OF GRAVITY
3. CENTER OF GRAVITY - LOAD

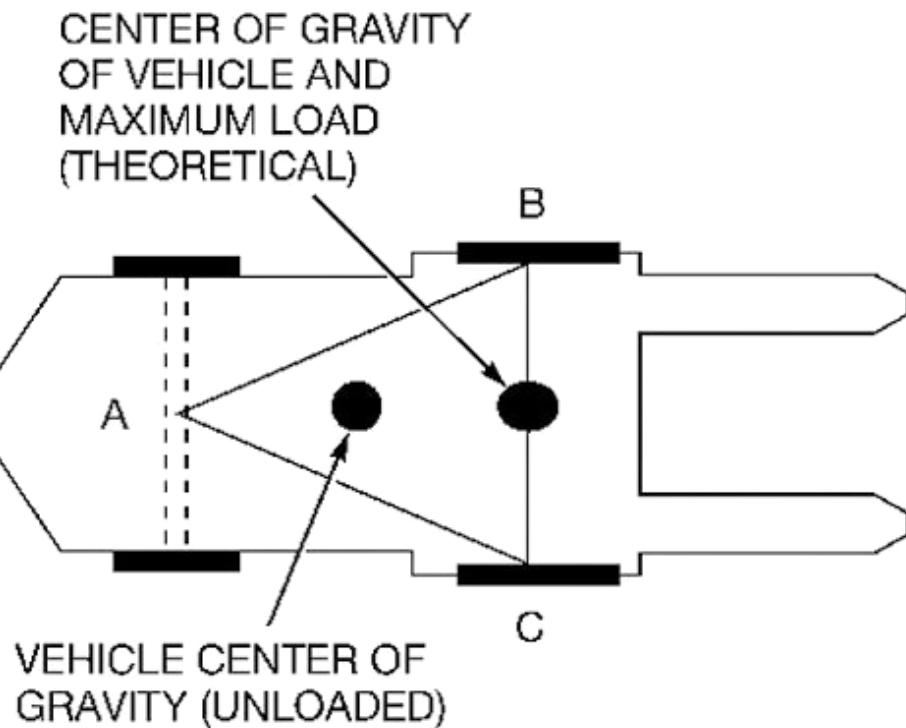
**FACTORS IMPACTING STABILITY AND CENTER OF GRAVITY**

Because an empty lift truck has the ability to tip-over sideways more easily than a lift truck carrying a load in the lowered position, these factors should be considered when the lift truck is unloaded



1. CENTER OF GRAVITY - LOAD
2. COMBINED CENTER OF GRAVITY
3. CENTER OF GRAVITY - LIFT TRUCK

Most forklifts have a three-point suspension system. The three points are the two front wheels and the pivot point of the rear axle. Connect the three points, and you have what's called the stability triangle. One major difference between a forklift and a car is stability.

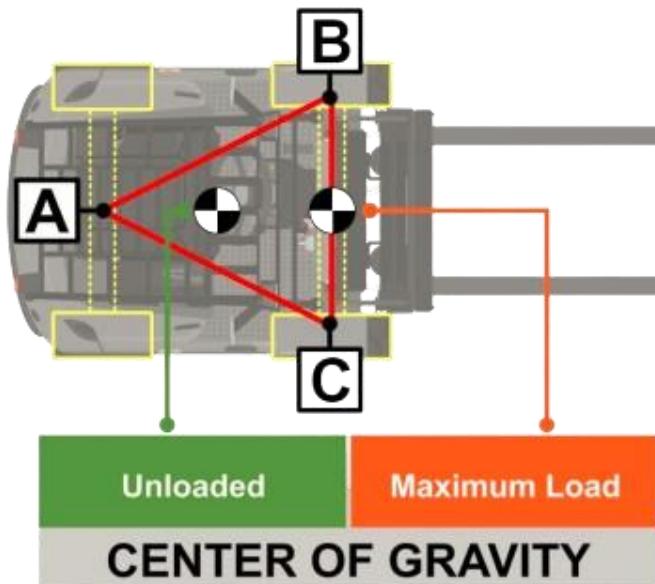


## FORKLIFT STABILITY TRIANGLE

### What is the forklift stability triangle?

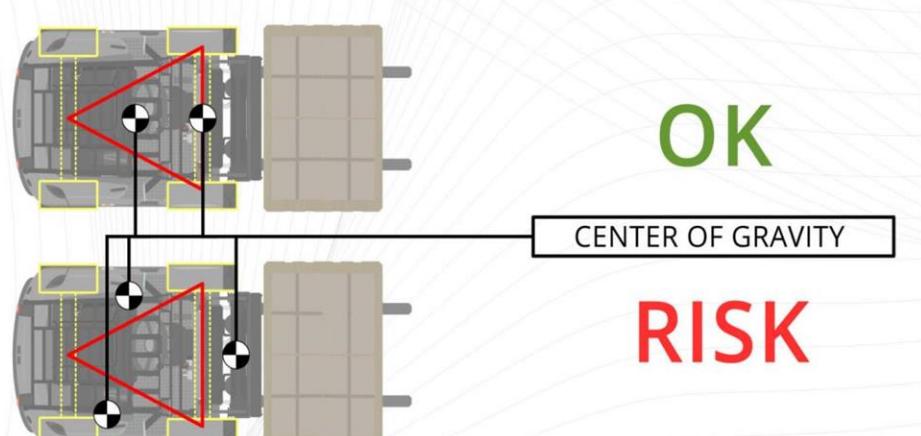
The stability triangle is an imaginary 3D pyramid between the center of the forklift's rear axle and both wheels of the front axle. The front wheels of a lift truck serve as the fulcrum. Put another way, the pivot point on a counterbalance truck is the axle of the front wheels.

## FORKLIFT STABILITY TRIANGLE



The forklift stability triangle is an invisible triangle formed by the pivot point on the rear axle and the two front wheels joined by the front axle.

If the combined center of gravity of the load & forklift is within this stability triangle, the forklift truck will not tip over



## Forklift Stability Triangle

You should understand these helpful terms related to the stability triangle:

**Lateral stability:** A lift truck's resistance to overturning sideways

**Longitudinal stability:** A lift truck's resistance to overturning forward or rearward

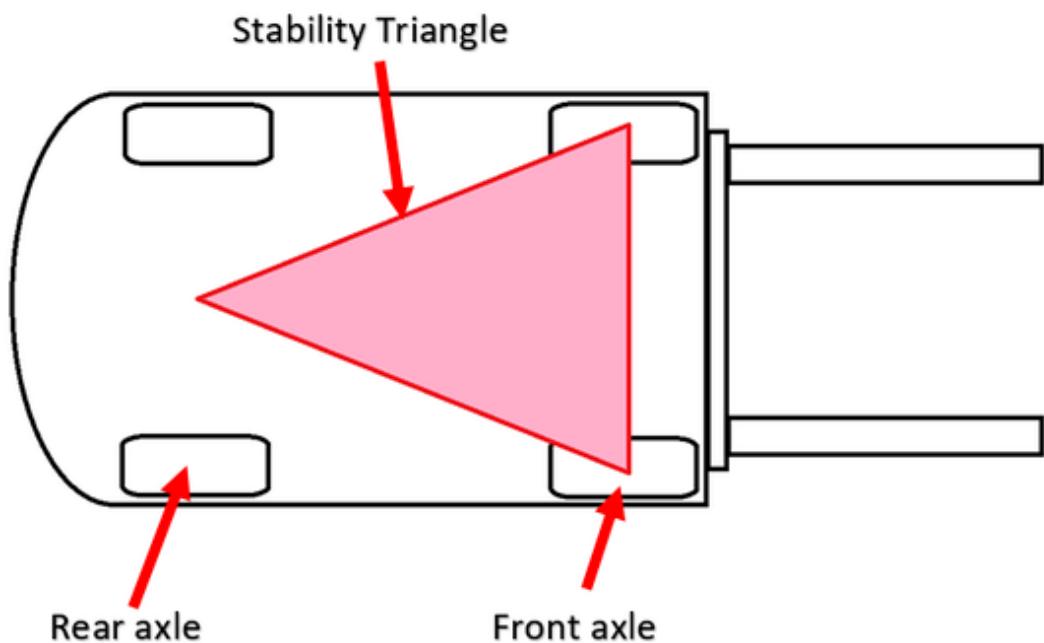
**Dynamic stability:** The idea that an unloaded or loaded forklift can shift due to sudden stops, starts, turns or tilts

**Line of action:** An imaginary vertical line through an object's center of gravity

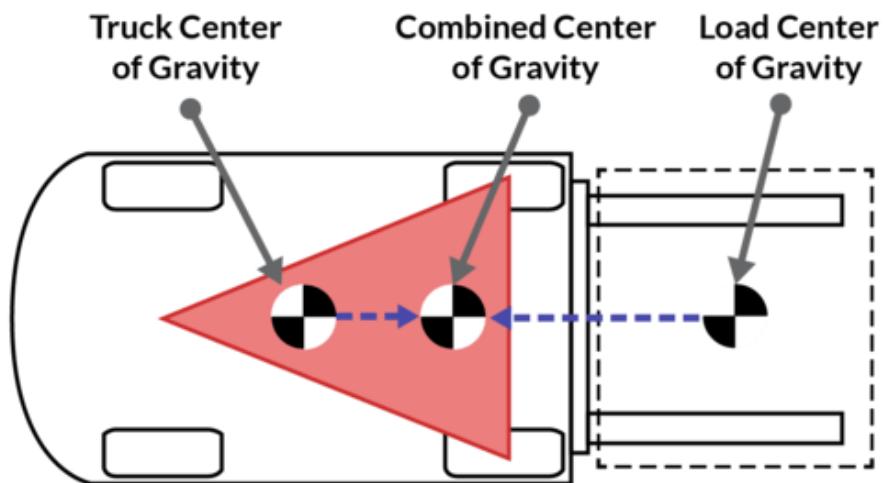
**Load center:** The horizontal distance from the forklift's line of action through the load's center of gravity

The “**stability triangle**” refers to an imaginary zone in a forklift between the front and rear axles and where the combined center of gravity must remain to keep the forklift stable

When unloaded, the center of gravity of the forklift is within the confines of the stability triangle

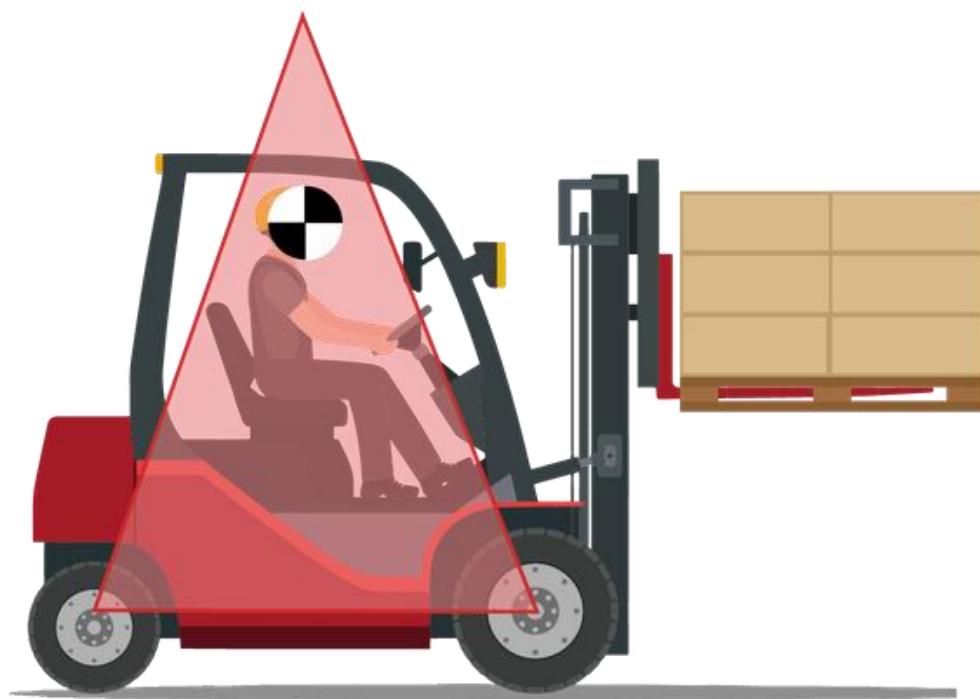


If it moves completely outside the triangle, the forklift will be unstable and liable to tip. Likewise, when lifting a load, the center of gravity also shifts upward.



**The center of gravity on a loaded forklift shifts toward the front axle**

The higher you lift the load, the less room the center of gravity has to stay within the stability zone. And since a pyramid narrows as you move vertically, the center of gravity loses room to stay within the stability zone. Therefore, it's more likely to tip over.

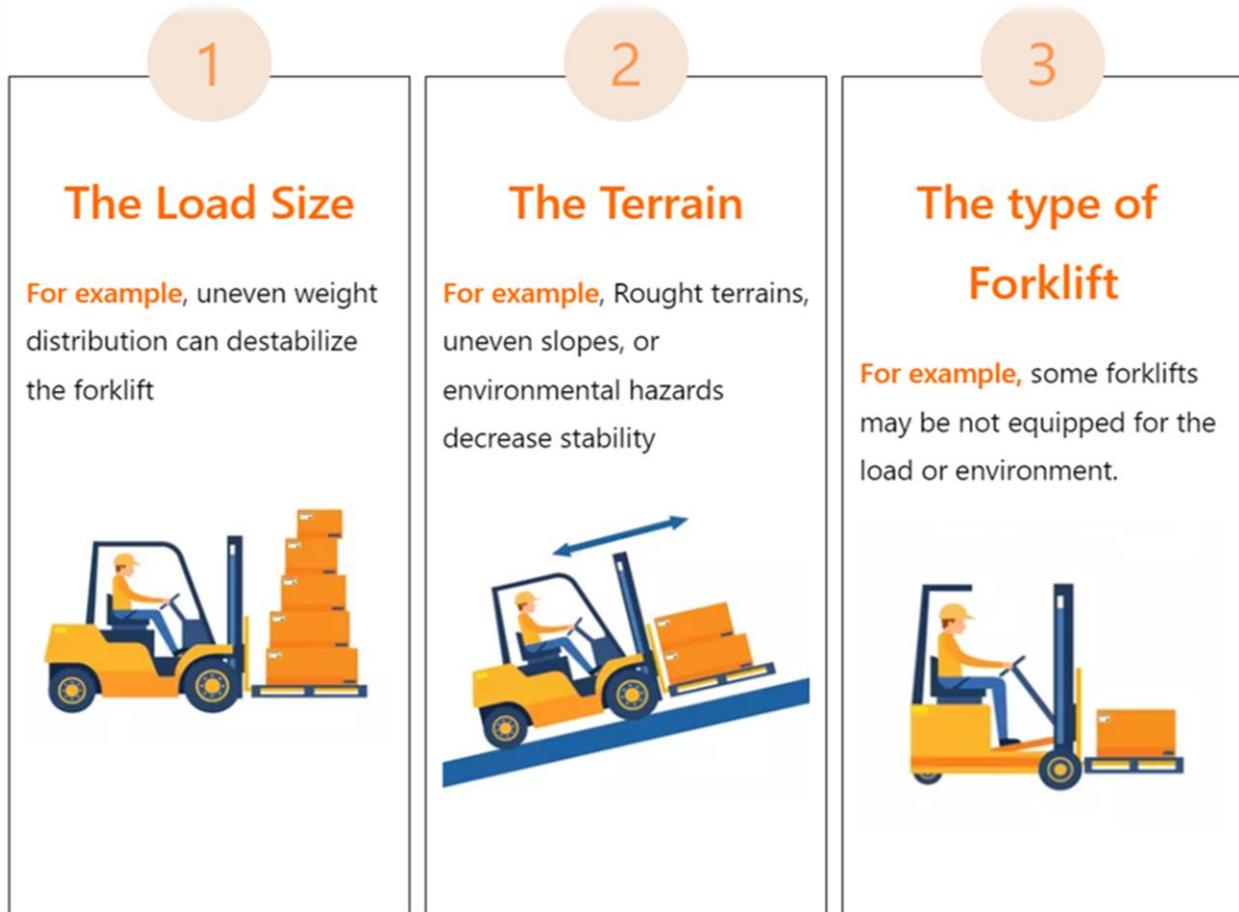


**The higher you lift the load, the less room the center of gravity has to stay within the stability zone**

**WHAT DETERMINES THE STABILITY OF A FORKLIFT?**

Three main factors govern the stability of a forklift: the size of the load, the terrain on which it is operating, and what type of forklift you are using

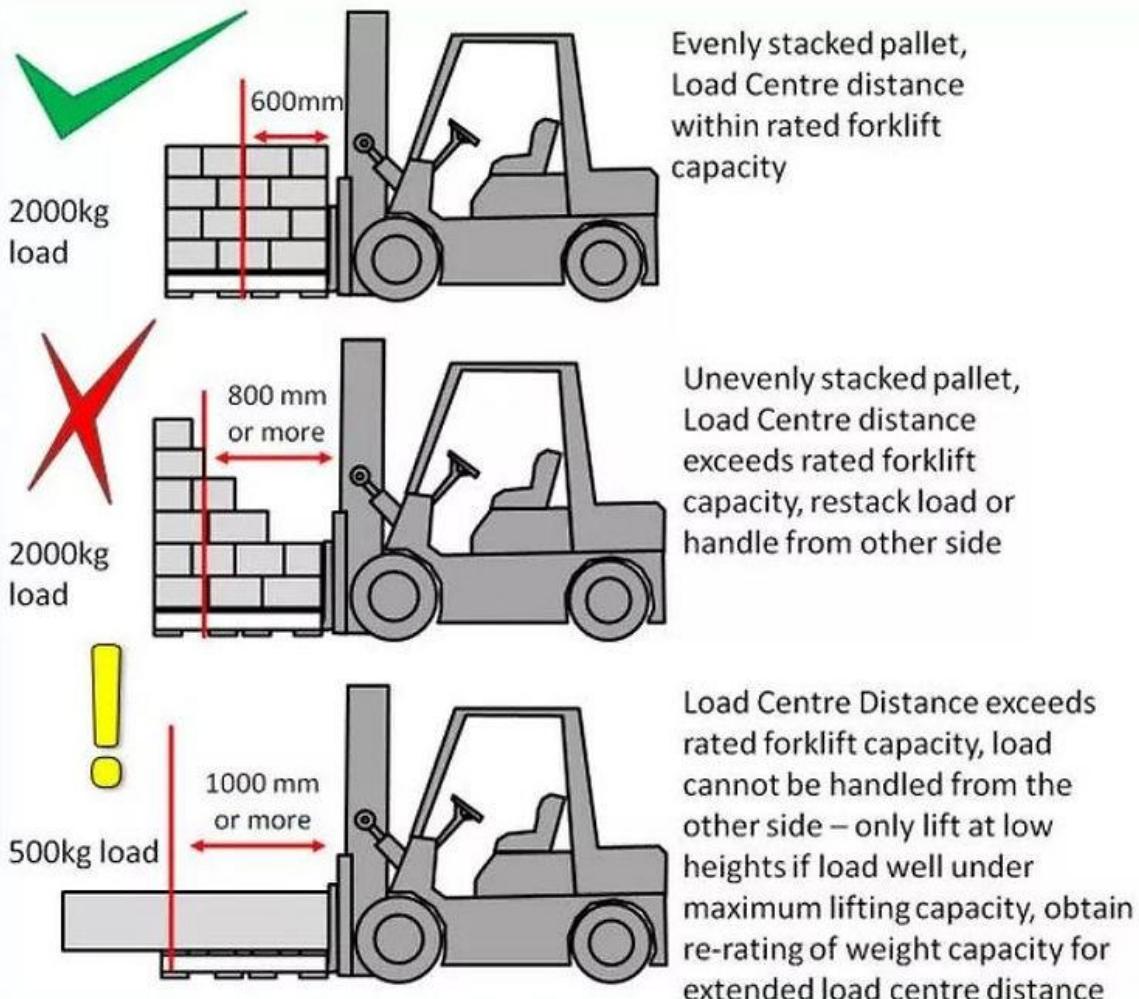
- 1.The Load Size
- 2.The Terrain
- 3.The Type of Forklift

**FORKLIFT STABILITY -LOAD CENTER**

The load center is the distance point from the centre of the load where it will be evenly balanced till the face of the backrest when the fork is tilted.

- ❖ When a forklift is loaded properly, it becomes more stable. However, improper loading, such as loading the forklift beyond its capacity, or loading an oversize or wide load without adjusting the weight, will cause the forklift to tip over
- ❖ Load weight, weight distribution, size, shape, and position are key factors affecting the stability of the forklift . Forklifts are designed to carry a capacity load at a standard load center.



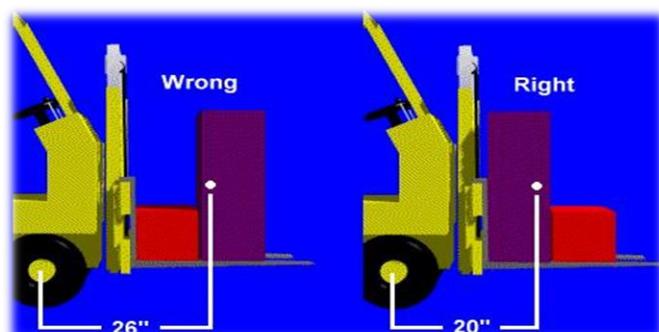


Notice that in diagram, the load center (70cm) is longer and farther away from the front wheels due to the wrong arrangement of the load. Thus, during transportation, it will fall off or even tip forward .

Rearrange the load while lifting loads before moving. Place the heaviest load against the back of the forks as in diagram

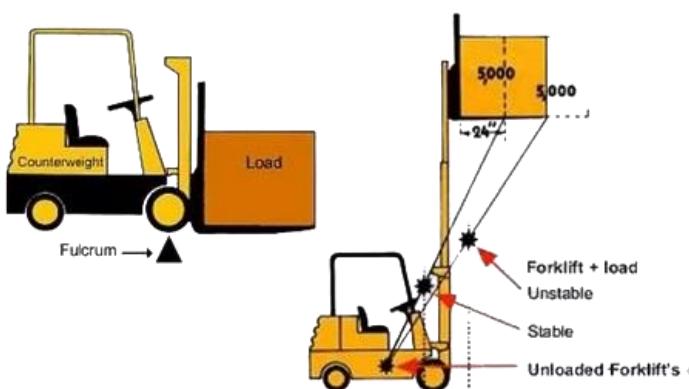
Placing the heaviest loads near the back of the forks will make the load center smaller / closer (40cm) to the front wheels and that will make the load more stable during transportation.

#### FORKLIFT STABILITY -LOAD CENTER



- ✓ The higher you raise the load, the more the center of gravity shifts. And once it moves outside what's called the "stability triangle," you risk tipping the truck over. Keeping the load lower helps keep the center of gravity within the zone of stability.
- ✓ Use the proper lift fixture or attachment for special loads (such as drum grappler).
- ✓ Position the load according to the recommended load centre. The load limit of the lift truck decreases as the load centre is raised.
- ✓ Do not add extra weight to counterbalance an overload.
- ✓ Keep loads close to the front wheels to keep lift truck stable
- ✓ If the load is unbalanced (by its characteristics), keep the heavier end closer to the front wheels. Tilt the mast back.
- ✓

### **HOW LOAD AFFECT FORKLIFT**

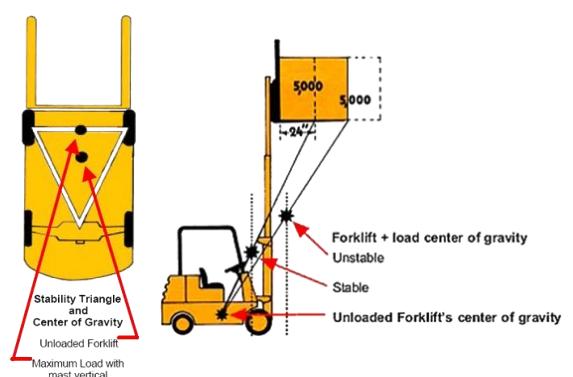


A forklift balances a load with a counterweight at the back. The front wheels act as a pivot or balance point. The center of gravity moves upward when the forks are raised.

### **MAINTAINING FORKLIFT STABILITY**

The center of gravity of the forklift-load combination can move outside the stability triangle if.

- the load is picked up on the tip of the forks,
- the load is tilted forward,
- the load is tilted too far back when raised
- the load is wide, or
- forklift movement causes the center of gravity to shift



## FORKLIFT DATA PLATE

A forklift data plate contains essential information about the forklift, such as its operating weight, rated maximum capacity, model and serial numbers, any present attachments, and it load capacity chart. Some manufacturers include the load capacity chart as a table giving the maximum weight lifted at different mast stages for different load centers. Others provide this information as a chart to highlight the differences between the different factors. Being able to locate the maximum capacity, load center dimensions, and load height are essential for safe operation of the forklift.

### HOW TO READ A FORKLIFT DATA PLATE?

- ❖ You can find your forklift identification and specifications on the Data plates.
- ❖ There are two locations where you can find these nameplates.
- ❖ Depending on the forklift brand, there may be variations in where the data-plates are located, or what information is displayed.

#### 1. Front of forklift

Data plate is behind the mast .



#### HOW TO READ A FORKLIFT DATA PLATE?

#### 2. Console near driver's seat

Nameplate is on the right hand side of the driver





1. Autowork number (serial number)

2. Brand

3. Model, version, and type.

- D means Diesel
- P means Power
- 30 means Size (3 ton)
- N means Series
- T means Torque or automatic transmission

4. Weight

5. Tire pressure (solid tire : no pressure indication)

6. Highest angle for upwards-facing fork

7. Warehouse location of forklift production

8. Width between two front wheels used for calculation of forklift operating space.

9. Front and rear tire sizes

10. Capacity to lift objects

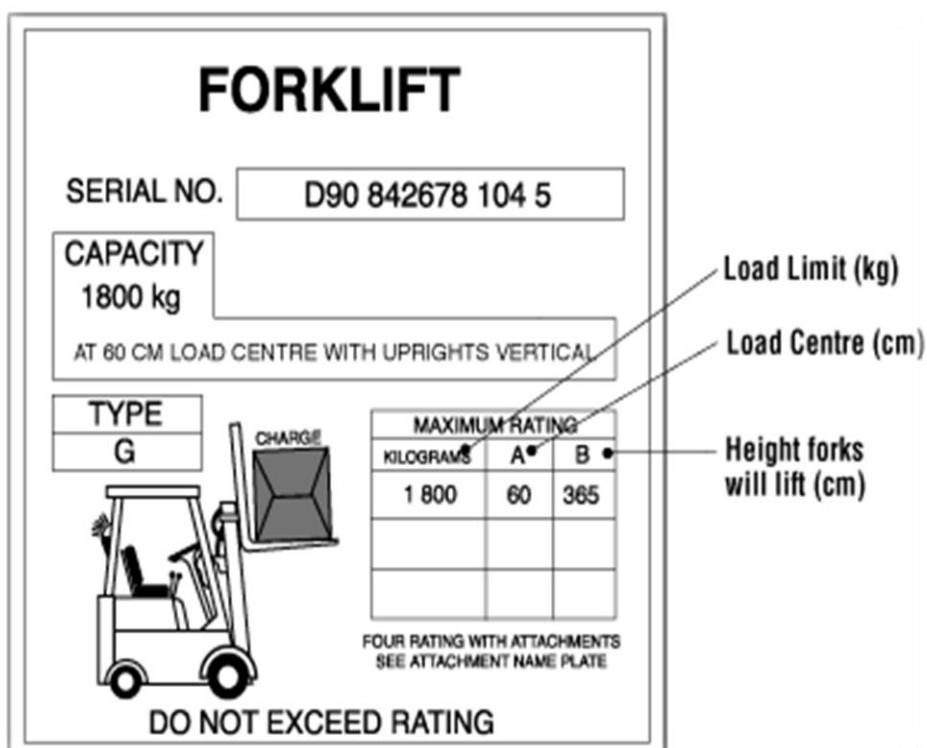
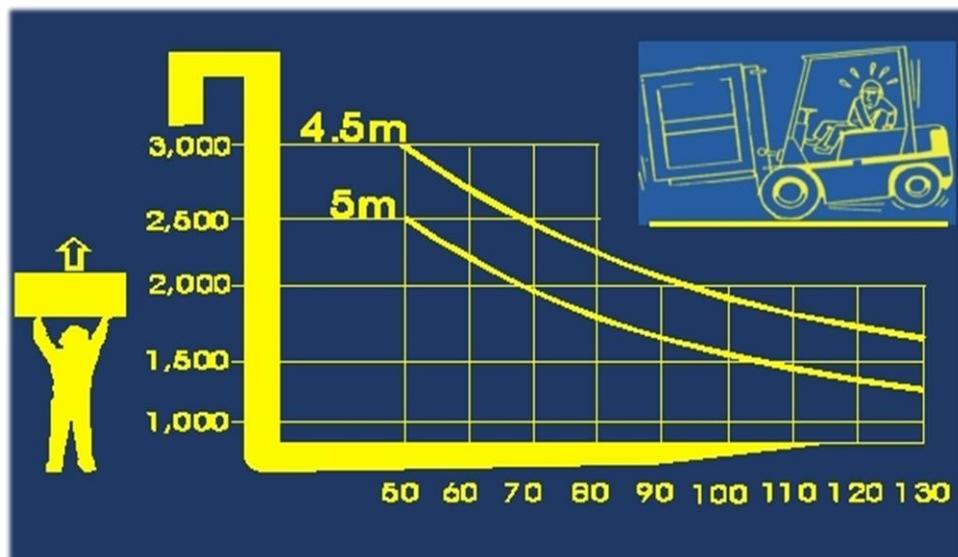
11. Production year

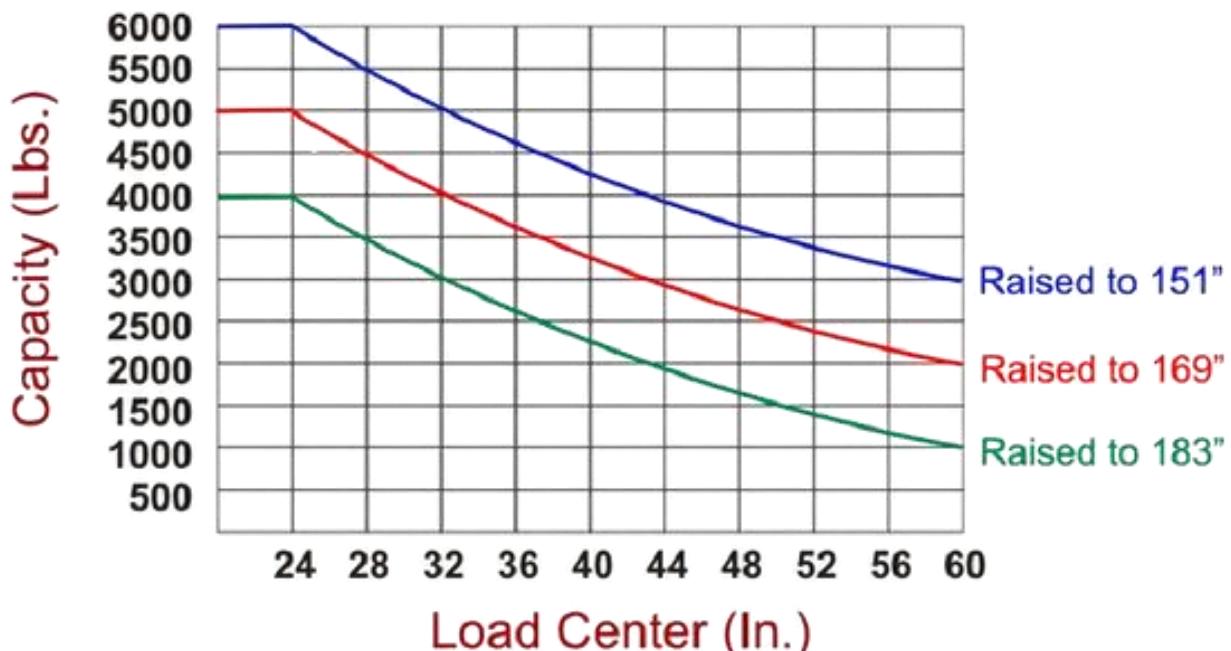
12. License number of production warehouse

## LOAD CAPACITY CHART

An operator exceed their forklift's rated maximum capacity, it can put their safety at risk. With the increasing complexity of modern material handling equipment, it is crucial for forklift operators to understand how to read a forklift load capacity chart and understand the influences that shift how much a forklift can lift at different heights

A forklift's load capacity is defined as a specific weight at a specific load center. While your forklift may be rated to lift 6,000 pounds, that maximum capacity can be reduced based on the shape of the load you are moving. Objects with longer load centers cannot be as heavy as shorter objects due to the physics involved with forklift counterweights. The maximum capacity of a forklift is negatively affected by larger load centers, higher lifting heights, and added attachments to the forklift, as well as other factors.

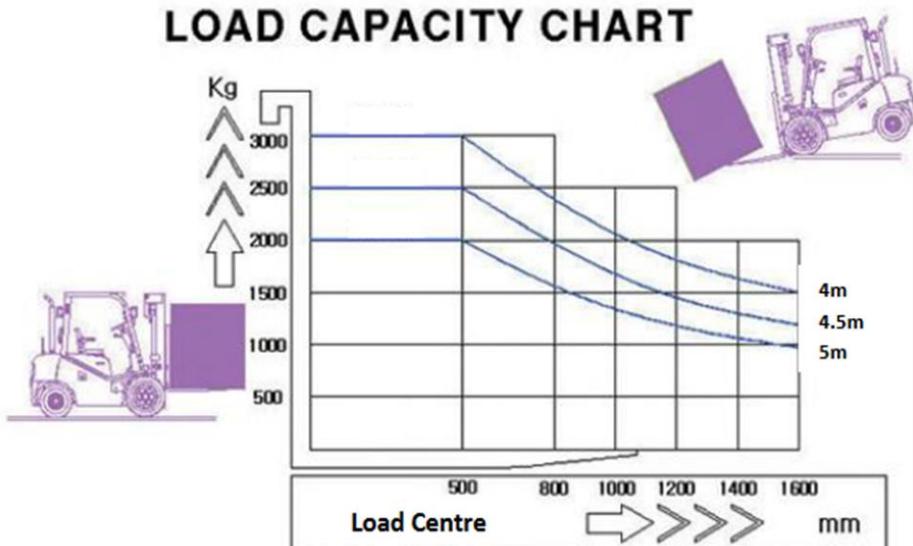




#### CARRY OUT FORKLIFT OPERATIONS -FORKLIFT STABILITY

- Far left side of chart: = Weight's in kilograms (Kg).
- Along the bottom of chart: = Load centres in millimetre's (mm).
- Far right side of chart: = Lift height in meters (m).

#### LOAD CAPACITY CHART



The load chart above tells us that this forklift can lift approximately:

\_\_\_\_\_ kg to a height of 4m at a standard load centre of 500mm

\_\_\_\_\_ kg to a height of 4.5m at a standard load centre of 500mm

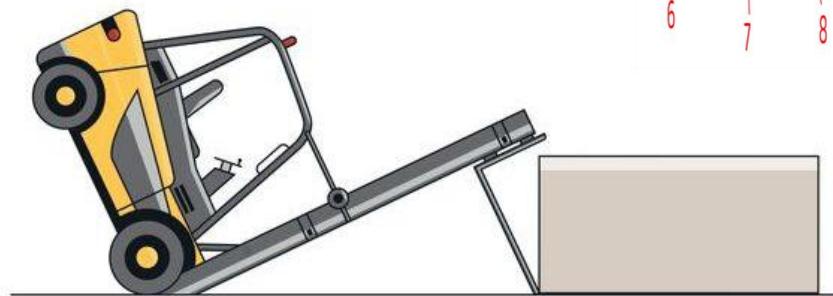
\_\_\_\_\_ kg to a height of 5m at a standard load centre of 500mm

## FORKLIFT TIP-OVER

Forklift tip-overs can occur in 2 ways:

- Longitudinal tip-overs
- Lateral tip-overs

### Longitudinal Forklift Tip-Overs



**A longitudinal forklift tip-over is when the lift truck tips forward or backward**

Longitudinal tip-overs occur when a forklift rolls forward or backward.

A longitudinal forklift tip-over is typically caused by:

- ❖ Overloading.
- ❖ Improper load positioning on slopes.
- ❖ Carrying a load with the mast tilted forward.
- ❖ Abrupt acceleration or braking, especially when carrying heavy loads.

Proper load distribution, smooth acceleration/deceleration, and maintaining a safe distance from obstacles are essential to prevent forklifts from tipping over forward or backward.

### Lateral Forklift Tip-Overs



**A lateral forklift tip-over is when the lift truck tips on its side**

Lateral tip-overs happen when a forklift rolls over sideways.

Often, lateral tip-over forklift occurs when under the following circumstances:

- ❖ Turning too abruptly.
- ❖ Turning at high speeds.
- ❖ Carrying an unbalanced load.
- ❖ Travelling on uneven surfaces.
- ❖ Encountering obstacles that cause the forklift to become unstable.

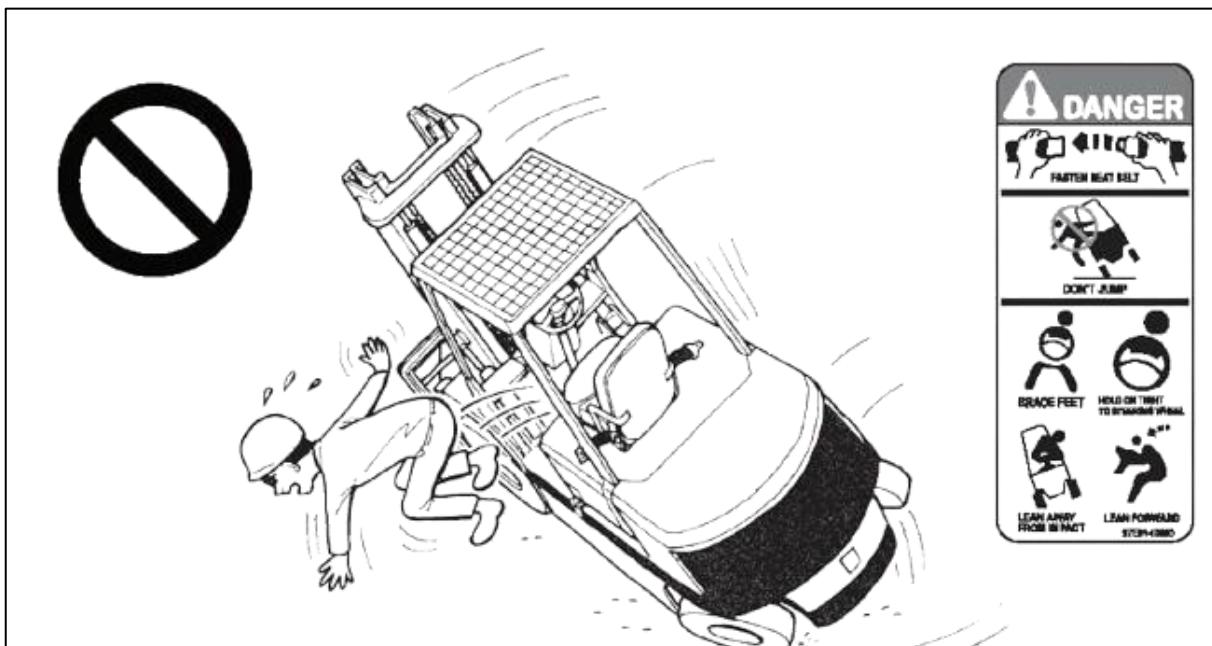
It is crucial to maintain proper load positioning and drive at controlled speeds to minimize the risk of lateral tip-overs.

**DO'S AND DON'TS TO AVOID FORKLIFT TIP-OVER****FASTEN THE SEAT BELT**

The seat belt will keep you from being thrown out of the lift truck in a tip-over. The seat belt is used to protect your head and torso from being trapped between the lift truck and the ground. While it may not protect the forklift operator against all possible injury, it can help and often eliminate or minimize the injury.



The forklift operator must stay in the operator seat, hold on firmly and lean away from the point of impact to reduce the risk of serious injury or death.

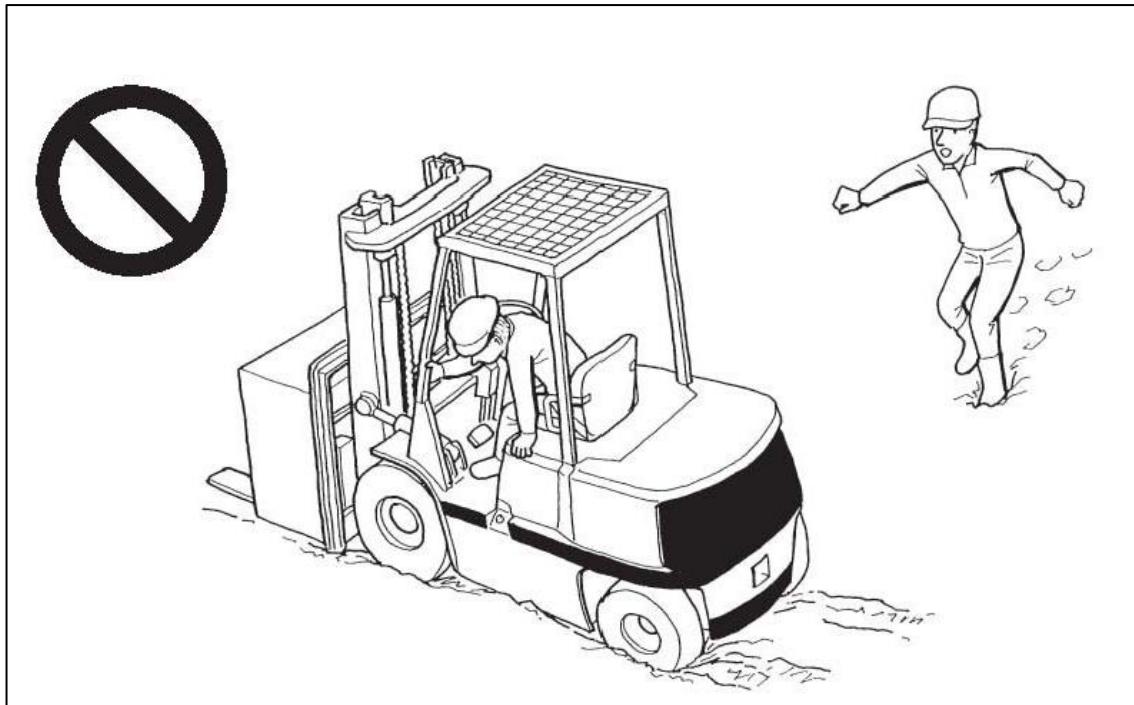


#### DO NOT OVERLOAD

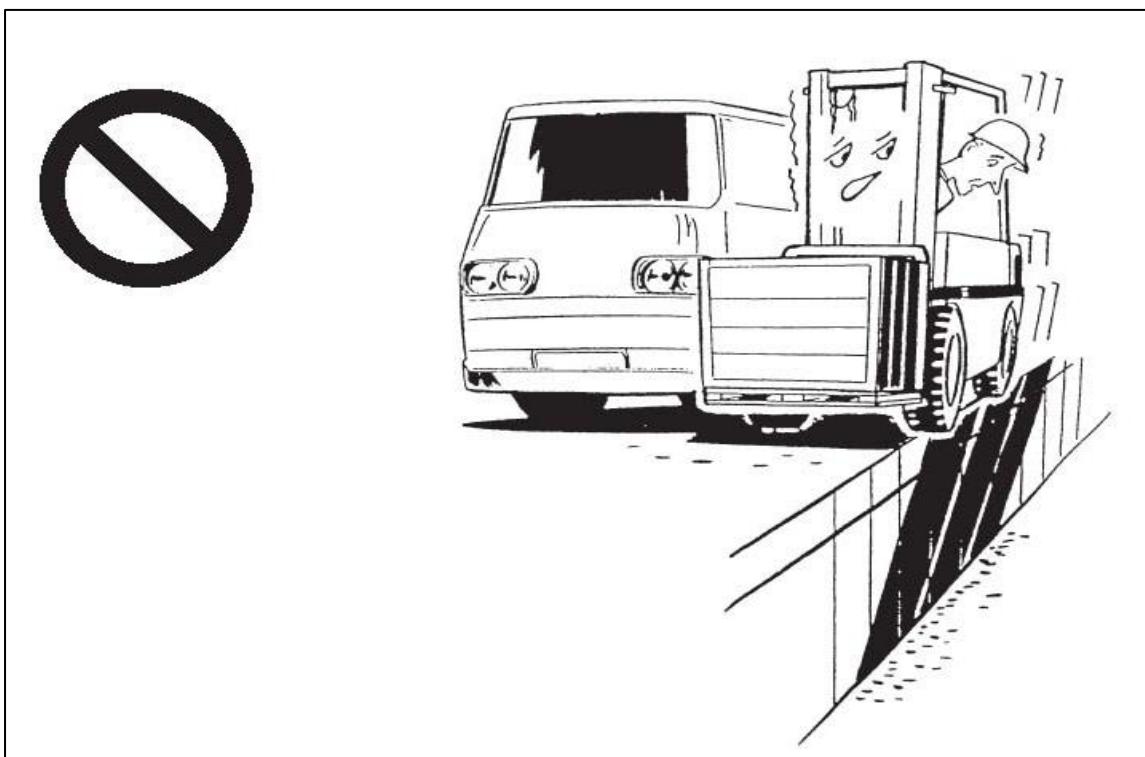


Handle loads only within the capacity shown on the capacity plate.



**CHECK SURFACE STRENGTHS!**

Stay away from soft ground to avoid tip-over.

**WATCH TAIL SWING**

Always maintain a safe distance from the edge of docks, ramps, and platforms. The lift truck could drop off the edge if you get too close to the edge.

### FORKLIFT STABILITY SAFETY REMINDERS

The load weight, weight distribution, size, shape, and position are key factors affecting the capacity and the stability of the forklift.

- ✓ Keep the load about 10 to 15cm above the ground when moving
- ✓ The higher the position of the mast the lesser you carry
- ✓ When the load centers increases, the lesser you can carry
- ✓ Always refer to the load chart for reference before you start to lift
- ✓ Inspect the forklift before commencement of work
- ✓ Ensure the forks are low to the ground
- ✓ Keep the forklift load stable through proper stacking & securing the load
- ✓ Do not carry extra people on a forklift
- ✓ Keep the forklift a safe distance from bystanders and other machinery
- ✓ Beware of forklift back swing during turning to avoid damage to property & injuries
- ✓ Avoid sudden braking



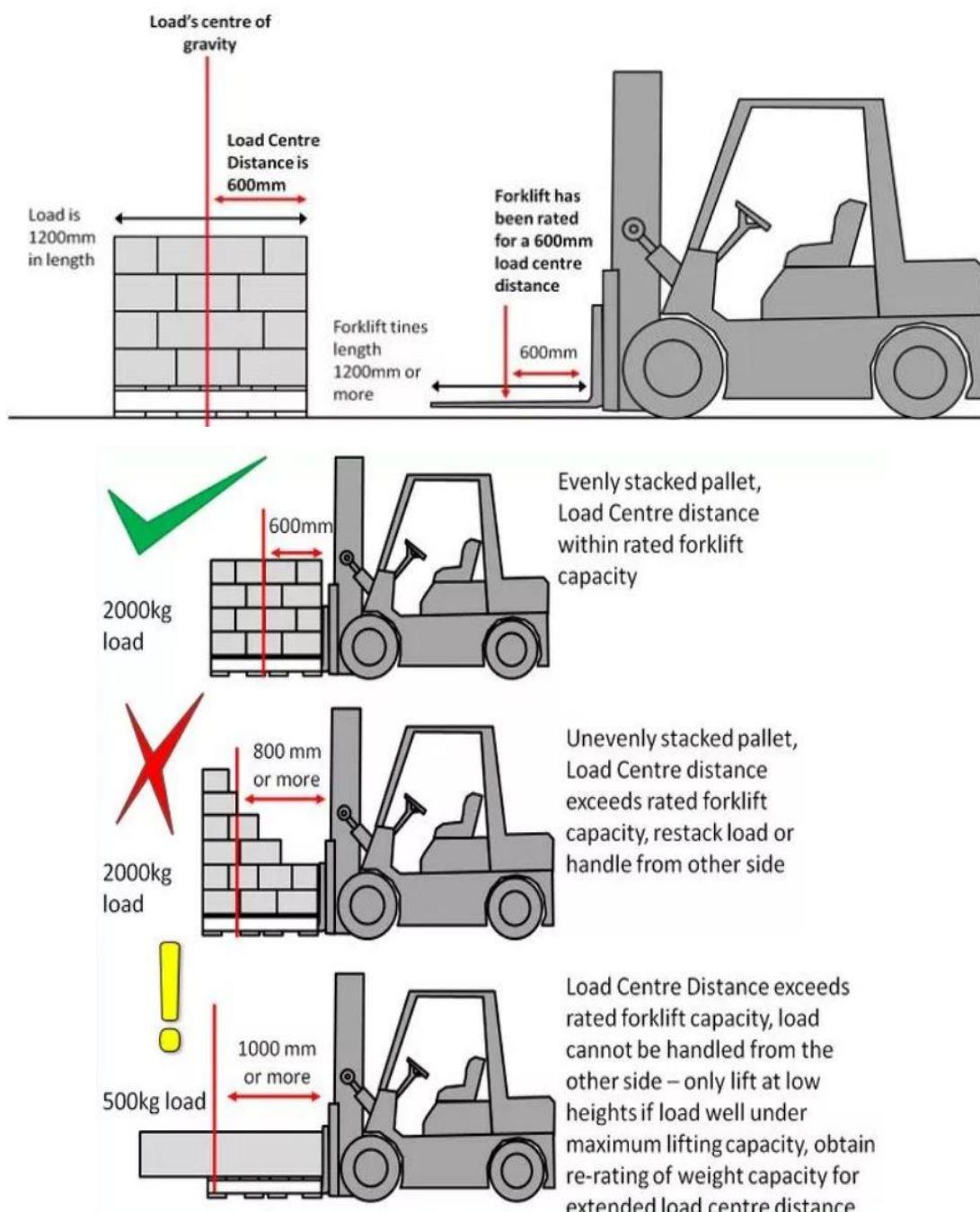
## UK 3.3 OPERATING PROCEDURES FOR DIFFERENT TYPES OF LOADS

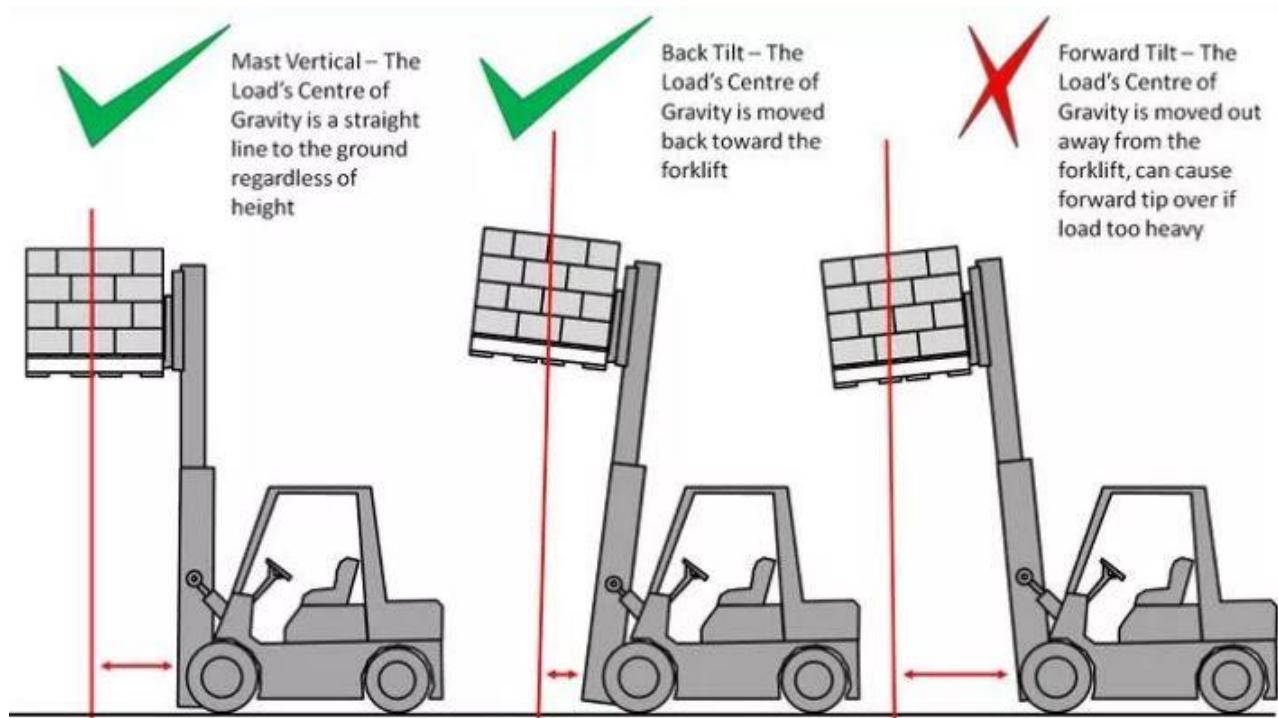


### UK 3.3 OPERATING PROCEDURES FOR DIFFERENT TYPES OF LOADS

#### TYPES OF LOADS

- ❖ Off-centre loads are dangerous and should be centred before loading if possible
- ❖ If the load is not centred at the specified position, the forklift's capacity will be reduced. Loads come in all shapes and sizes, not just symmetrical boxes. The load size, position, and weight distribution critically affect the forklift's capacity and the stability of the truck.





Forklifts are equipment's used for moving and storing materials in many industries. All materials and loads are not similar and handling them incorrectly can lead to accidents, injuries, or damage to property.

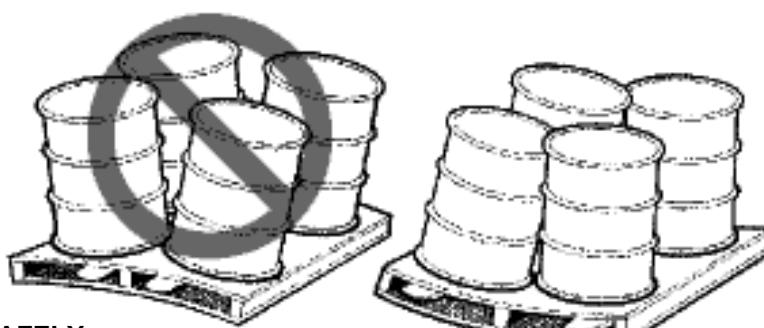
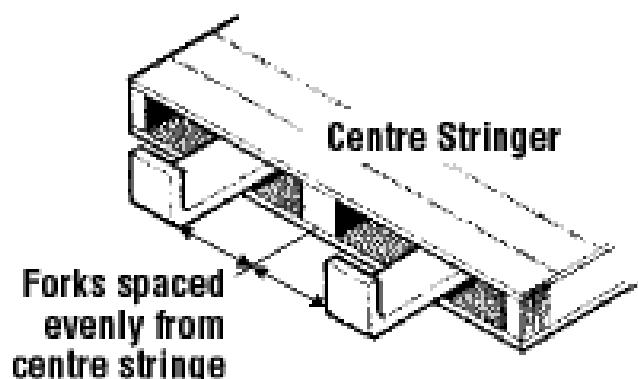
#### **Precautions to take when handling different types of loads – Know your Load**

Before you lift or transport any material, you need to know its weight, dimensions, shape, and stability. Selection of the forklift will enable you to use the correct attachments and apply the proper lifting techniques. The load capacity and load center of forklift must be ascertained and ensure that its not exceeded. Overloading or unbalancing your forklift can cause it to tip over or lose control.

#### **SECURE YOUR LOAD**

Once you have selected your load, you need to secure it properly on the forks or the attachment. Straps, ropes, shrink wrap, or other means to prevent the load from shifting, sliding, or falling. Align the load evenly on both forks, and keep it as low as possible to the ground. If you are carrying a tall or wide load, you may need to use a spotter to guide you and warn you of any obstacles.



**DRIVE SAFELY**

You should always drive at a safe speed, and slow down when turning, stopping, or changing direction. Avoid sudden movements and keep a safe distance from other equipment's. Always keep the load tilted slightly back and raise it only when necessary. When driving on ramps, slopes, or uneven surfaces, you should drive with extra caution and stability.

**STACK AND STORE PROPERLY**

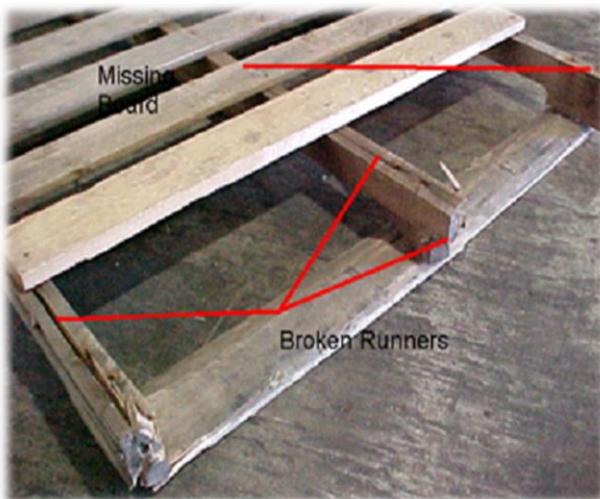
Choose a suitable location that is clear, level, and stable. Follow the stacking height and weight limits and avoid placing heavy loads on top of lighter or unstable ones.

**INSPECT AND MAINTAIN YOUR FORKLIFT****OPERATE FORKLIFT****LEANER'S GUIDE**

Inspect and maintain your forklift regularly to ensure its optimal performance and safety. Perform a pre operational check before commencement of work and report any defects and malfunctions to your superior.

**BEFORE HANDLING LOADS, BE AWARE OF THE FOLLOWING:**

- Off-centre loads which may cause tip over or falling loads.
- Overloading which may cause tip over or falling loads.
- Damaged or loose loads may fall during transportation.

**REQUIREMENTS AND RECOMMENDED PRACTICES**

- Secure the load so it is safely arranged and stable.
- Do not carry damaged merchandise unless it has been secured by wrapping.
- Center the load as nearer as possible.
- Use caution when handling off-center loads that cannot be centered.
- Distribute the heaviest part of the load nearest the front wheels of the forklift.
- Do not overload. Know the stated capacity of your forklift and do not exceed it.
- Only by keeping within the weight limit can you operate the forklift safely.
- A forklift's capacity is rated for a specified load center. If the load is off-center, improperly distributed, or oversized, it may exceed capacity and unbalance the forklift.

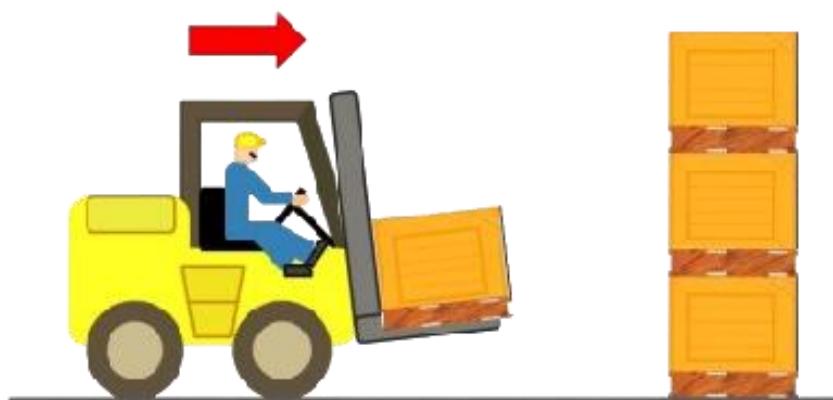
**HANDLING DIFFERENT TYPES OF LOADS & ITS PROCEDURES****HANDLING – STACKING A LOAD**

1. The fork should be spread wide to pallets entry point to balance the load
2. Approach stack squarely with load low and tilted backwards and stop in front of the stack

3. Raise the fork with the load to the required stacking height.
4. After reaching the required height, move forward slowly
5. When the load is over the stack try to level the load and lower the load over the stack
6. After stacking the load, adjust the fork to be contact free from the pallet
7. Before reversing take a look behind before reversing and withdraw the fork out
8. When forks are clear of the stack, lower the fork just above the ground
9. Lower the forks to just above the ground.

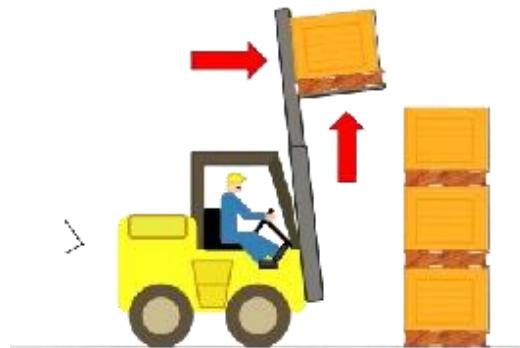


A) approach stack squarely with load low and tilted backwards



(b) Slow down, stop at the face of stack. Raise the load to the desired stacking height

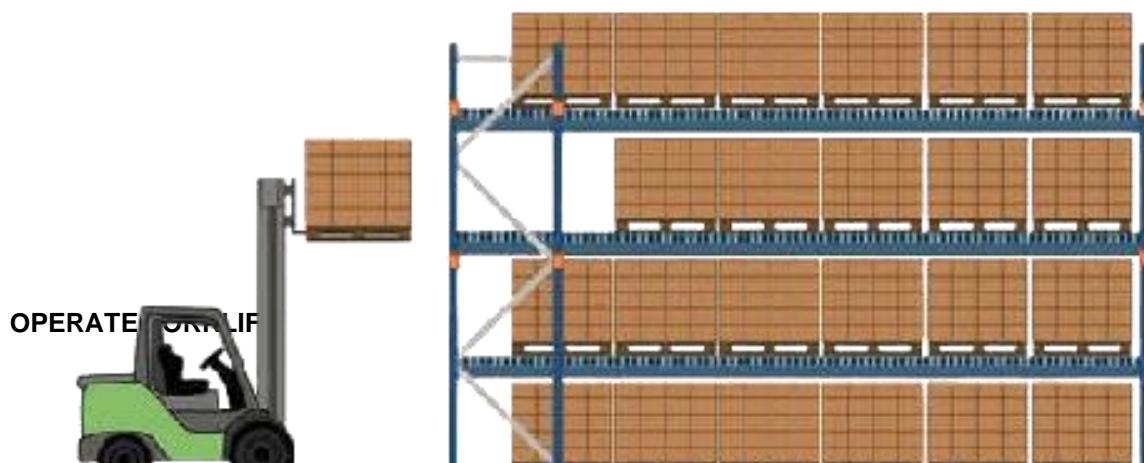


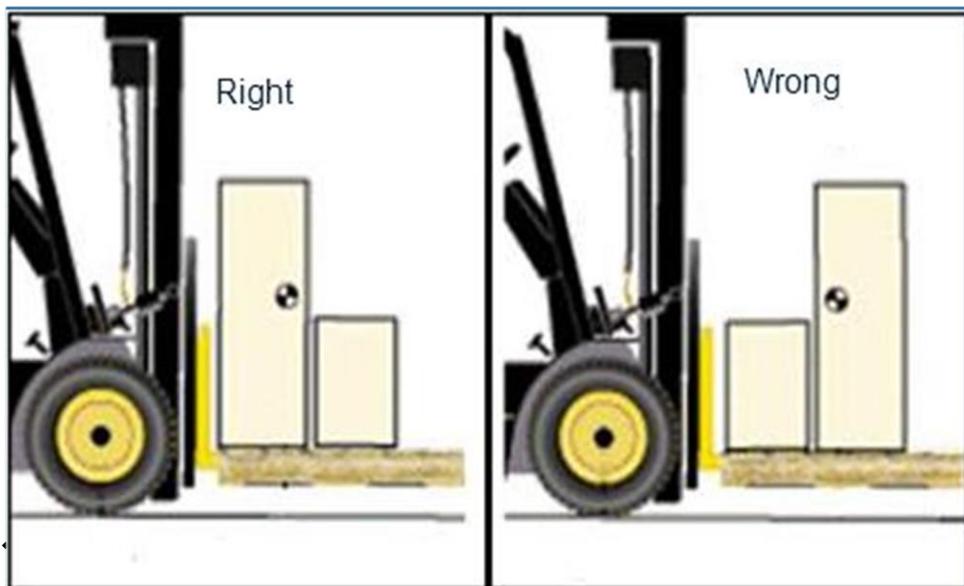


(c) When the load is over the stack, level the load and lower the load onto the stack



1. Stop at the face of the rack and level the forks
2. Raise forks to a position permitting clear entry into pallet
3. Insert forks fully by inching forward slowly and adjust level & height of forks so they don't bind with pallet pockets
4. Stop the forklift when desired location reached and raise the load until clear of rack
5. After load clears top of the rack and move slowly backwards to clear the face of the rack
6. Stop the forklift when the load clear the face of the rack, tilt the load backwards (avoid jerking when tilting a load especially when the load is raised high) and lower the load
7. Lower load to travelling height: and check to ensure that the reverse path is clear



**HANDLING – UNSTABLE LOAD**

the load is unbalanced,

keep the heavier end closer to you. Tilt the mast back. Lift the load and tilt it back a little more before travelling.

- ❖ The operator must always ensure the load is balanced out by the forklift's counterbalance or risk a forward tip over. A mast tilted forward too far can cause the forklift to become unstable and result in a forward tip over.
- ❖ Excessive speed is one of the commonest causes of forklift truck overturns. The risk is even higher when combined with surface hazards, slopes or a raised load. Jerky motion or sudden heavy braking may affect the forklift stability and throw the load off your forks.
- ❖ When the forklift is in motion without a load, the center of gravity is near the rear of the vehicle and very close to the side of the stability triangle, so a quick turn or unstable driving surface could cause the forklift to tip over.

**OPERATE I**



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**OPERATE FORKLIFT**

**LEANER'S GUIDE**



# UK 3.4 SAFETY PRECAUTIONS IN LIFTING POTENTIALLY HAZARDOUS LOADS



UK 3.4 SAFETY PRECAUTIONS IN LIFTING POTENTIALLY HAZARDOUS LOADS

- ❖ Store all hazardous materials properly, separate incompatibles, and store in ventilated, dry, cool areas. Employees must keep themselves and the work area clean. After handling any hazardous material, wash thoroughly with soap and water. Clean work surfaces at least once per shift, so contamination risks are minimized.
- ❖ Use proper PPE when handling hazardous materials.
- ❖ Always carry chemicals in approved containers
- ❖ Always wash your hands after using any unsafe material
- ❖ Store materials properly, as directed on their labels.
- ❖ Flammable chemicals should be stored in a cool, dry place away from heat and sunlight.

Hazardous Materials Safety Guide			
CLASS	STORAGE	HAZARD	PPEs
Flammable	Separate Storage	Ignite Easily and Burn Rapidly	
Corrosive	Store Away From Flammables, Acetones and Health Hazards	Causes Severe Damage on Contact	
Reactive	Store Away From Flammables, Health Hazards and Explosives/Hazardous	React Violently With Air, Water and Other Substances	
Health Hazard	Separate Storage In Well-Ventilated Environment	Toxic or Irritating, Irritated or Absorbed Through Skin	
Non-Hazardous	Storage Storage In Well-Ventilated Storage	Present To More Than A Moderate Hazard	Supervisor's Discretion
Particularly Hazardous Substances	Carcinogen, Highly Toxic Chemical, And Reproductive Toxins Require Special Procedures: • Establish Specific Handling, Storing and Disposal Procedures. • Establish a Designated Work Area. • Use PPE and Future Tools to Control Exposure. • Establish Decontamination and Emergency Response Procedures.		



## PHYSICAL / HEALTH / CHEMICAL HAZARDS



## Physical Hazards

### OPERATE FORKLIFT

### LEANER'S GUIDE



If exposure occurs day after day, we may develop a disease and possibly a disability. Physical hazards include exposure to slips, trips, falls, electricity, noise, vibration, radiation, heat, cold and fire

### Health Hazards

Mold and pests — such as cockroaches, rodents, and dust mites — can cause and contribute to asthma, allergies, and other respiratory illnesses. Since housing conditions can play a significant role in respiratory health, these hazards can greatly increase and intensify susceptibility to respiratory illnesses.

### Chemical Hazards

Hazardous to the environment - for example, pesticides and mercury. explosive – for example, fireworks. acute toxicity - such as lead or sodium cyanide. health hazard - such as chemical irritants like adhesives.

## 9 CLASSES OF DANGEROUS GOODS CLASSIFICATION

### TYPES OF DANGEROUS GOODS

- ❖ Here are 9 main classes of dangerous goods.
- ❖ Dangerous goods can present 1 or more of the hazards represented by Class 1 to 9 with some classes split into divisions.



Class 1- Explosives



Class 5.2- Organic peroxides



Class 2- Flammable gases



Class 6- Toxic & infectious substances



Class 3- Flammable liquids



Class 7- Radioactive material



Class 4- Flammable solids



Class 8- Corrosives



Class 5- Oxidizing substances



Class 9- Miscellaneous goods



- Explosive substance
- Pyrotechnic devices
- Ammunition
- Fireworks
- Detonators



## **CLASS 2 GASES**

This can be transported as:

- Compressed
- Liquefied
- Refrigerated liquefied
- Gas in solution



This includes Aerosols. Class 2 has 3 divisions:

### **Division 2.1 – Flammable gases such as:**

- Butane
- Propane

### **Division 2.2 – Non-Flammable, non-toxic gases such as:**

- Oxygen
- Liquid nitrogen
- Compressed air

### **Division 2.3 – Toxic gases such as:**

- Chlorine
- Hydrogen Sulphide

## **CLASS 3 FLAMMABLE LIQUIDS**

This includes liquids with a boiling point of 35°C or less, or a flash point of 60°C or less such as:

- Petrol
- Alcohol
- Perfumes
- Essential oils
- Hand Sanitizer
- Paints



## **CLASS 4 FLAMMABLE SOLID**

Class 4 has 3 divisions:

### **Division 4.1 – Flammable solids such as:**



- Hex-amine solid fuel tablets for camping stoves
- Self-reactive substances
- Desensitised explosives

**Division 4.2** – Substances that can spontaneously combustion under normal air transport condition

include:

- Camphor
- Sulphur
- matches

**Division 4.3** – Substances that emit flammable gases when they come into contact with water include:

- Sodium
- Zinc particles
- Activated carbon

## CLASS 5 OXIDISING SUBSTANCES & ORGANIC PEROXIDES

This substances are not necessarily combustible on the their own but can react dangerously with other substances.



**Class 5 has 2 divisions:**

**Division 5.1** – Oxidising substances that may not be necessarily combustible, but they may readily yield oxygen and cause other materials to combust, such as:

- Hydrogen peroxide
- Ammonium nitrate
- Potassium chlorate
- Sodium nitrate

**Division 5.2** – Organic peroxides are thermally unstable and can emit heat and give off harmful or flammable vapours. They can also be liable to explosive decomposition and react dangerously with other substance. Examples are:

- Acetyl acetone peroxide
- Benzoyl peroxide
- Peracetic acid

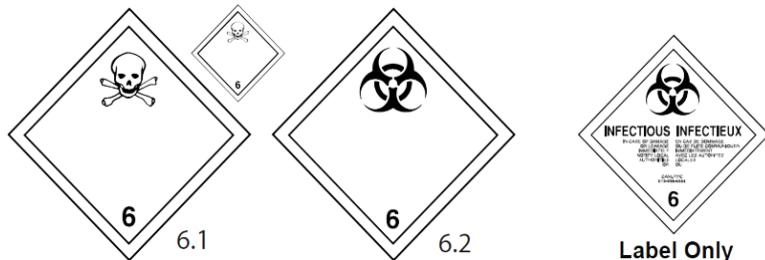
## CLASS 6 TOXIC AND INFECTIOUS SUBSTANCES

This substances can cause sickness, injury or death if consumed.

**Class 6 has 2 divisions:**

**Division 6.1** – Toxic substance that can cause death, injury or to harm human health if swallowed, inhaled or by skin contact, such as:

- Chloroform
- Arsenics
- Cyanides
- Cytotoxic waste
- Barium compounds
- Pesticides



**Division 6.2** – Infectious substances that contain or are expected to contain pathogens that can cause disease in humans or animals, including:

- Medical or clinical waste
- Patient specimens
- Genetically modified organism
- Infectious substance
- Infected animals

**CLASS 7 RADIOACTIVE MATERIALS**

This substances that emit invisible ionizing radiation that can be harmful to humans and animals. It can cause objects such as aircraft and equipment to become contaminated if not package and handles correctly, such as:

- Uranium
- Radioactive ores
- Isotopes
- Radium
- Cesium
- X-ray equipment
- Medical equipment or parts

**CLASS 8 CORROSIVES**

This substances can cause irreversible damage if they come into contact with skin and could destroy other freight or materially damage containers or aircraft.

This includes:

- Acids
- Corrosive cleaners
- Battery fluid
- Formaldehyde
- Hydrofluoric acid



## CLASS 9 MISCELLANEOUS

These are substances and articles which, during air transport, present a danger not covered by other classes. There are 2 types of handling labels – 1 for lithium battery shipments and another for all other miscellaneous dangerous goods.

This class includes:

- Lithium batteries
- Battery powered vehicles
- Battery powered equipment
- First aid kits
- Environmentally hazardous substance
- Dry ice
- Magnetised materials
- Asbestos



## HANDLING LABELS

In addition to hazard labels, trained staff must attach handling labels where needed.. Staff must use these 4 handling labels with the appropriate hazard labels:

### 01. CARGO AIRCRAFT ONLY

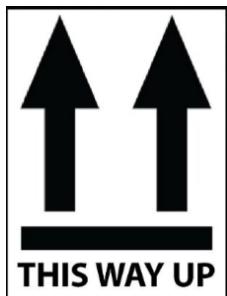


- This label is used to show that the load cannot be carried on a passenger aircraft

### 02. CYROHENICS



- This is used on liquefied gases, such as the ones in Class

**03. THIS WAY UP**

- This label ensures a load is placed the correct way up and can be used for non-dangerous goods.

**04. MAGNETISED MATERIAL**

- This label ensures that the load is kept away from the aircraft compass detector unit while being loaded and unloaded.



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# UK 3.5 OPERATING PROCEDURES FOR DIFFERENT TYPES OF TERRAIN AND CONFINED SPACES



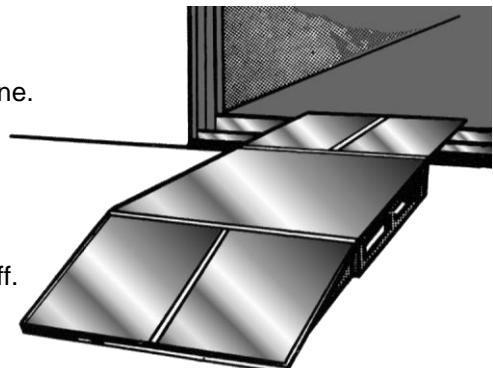
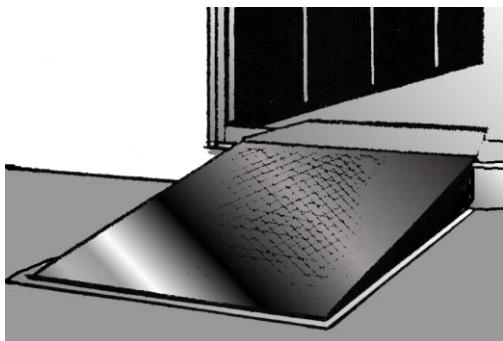
**UK 3.5 OPERATING PROCEDURES FOR DIFFERENT TYPES OF TERRAIN AND CONFINED SPACES****TRAVELLING OVER A RAMP BRIDGE & INCLINES**

- ❖ The lifting controls use one lever for moving the load up and down and another for tilting the load back and forth.
- ❖ Pushing the lifting lever forward moves the load up while moving it backwards moves it down. If heavy loads will be handled, slope should be no more than 3-5%.
- ❖ If the space does not permit, you may increase the slope to an absolute maximum of 10%, and this will work only for light loads.
- ❖ Steep slopes force dock workers to load on an incline inside the truck and may cause loads to topple.



**TRAVELLING OVER A RAMP BRIDGE & INCLINES**

- ❖ Loaded forklifts must be driven with the load pointed up the ramp (good standard practice is to ALWAYS drive with the load pointed up the ramp or slope).
- ❖ Raise levels should be limited to the minimum height necessary for ground clearance.
- ❖ Forklift ramps allow operators to travel both up and down.
- ❖ If you're carrying a load, make sure the forks are pointed uphill as you reverse down the ramp slowly.
- ❖ When driving down a ramp with an empty forklift, travel in reverse and keep the lift's forks pointed downward.
- ❖ When travelling with a load, the load should point up the incline.
- ❖ Going up the incline drive forward forks pointed uphill.
- ❖ Avoid steep slopes, make sure the load always points uphill.
- ❖ When going down a slope, be careful about the load falling off.

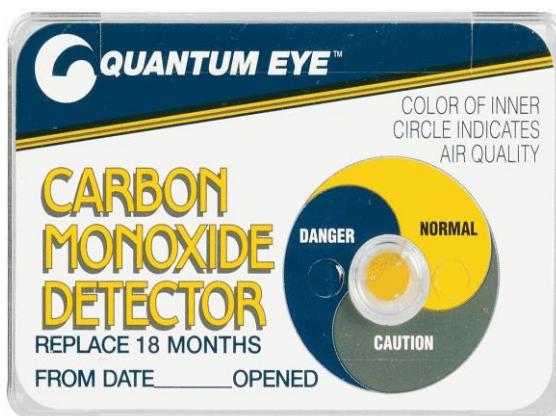
**BRIDGE PLATES****DOCK LEVELERS**

**OPERATING IN CONFINED SPACES**

- ❖ Confined spaces are often found in industrial workplaces and can pose serious safety hazards.
- ❖ Three-wheel counterbalance forklifts are perfect for narrow aisles: These have three-wheels while the counterbalance forerunners come with four. These have more manoeuvrability and are best for confined spaces and narrow site aisles.
- ❖ Diesel forklift discharge carbon monoxide which is poisonous, during forklift operations
- ❖ Electric forklifts fitted with a catalyst converter helps oxidized carbon monoxide into a less toxic gas

**3 Wheel Electric Forklift**

- ❖ Monitor & record carbon monoxide levels with monitoring devices or a carbon monoxide detector
- ❖ Provide proper installation of ventilation or induction fans to circulate & purge out any toxic gases
- ❖ A forklift maintenance regime is carried out & maintained
- ❖ Proper PPE peripherals are use when working in this environment
- ❖ All in house rules & WSHA requirements are strictly complied & adhered.

**OPERATE FORKLIFT****LEANER'S GUIDE**



## UK 3.6 WORKPLACE SAFETY AND HEALTH CODE OF PRACTICE RELATING TO FORKLIFT OPERATIONS

### CODE OF PRACTICE

Singapore Standards are nationally recognised documents established by consensus. Standards are published documents setting out specifications and procedures for the design, use or performance of materials, products, processes, services and systems.

This code specifies the safety requirements for the manufacture, application, operation and maintenance of powered counterbalanced forklifts. It lays down the responsibilities of the various parties involved.

**This code is not applicable to industrial forklifts that do not apply lifting with forks and the use of counterweights for balance. To this code, the term forklift refers to powered counterbalanced forklift.**



### PROPER PPE FOR FORKLIFT OPERATIONS

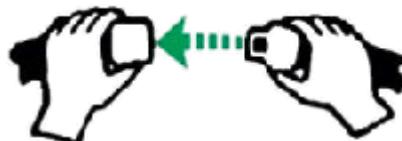
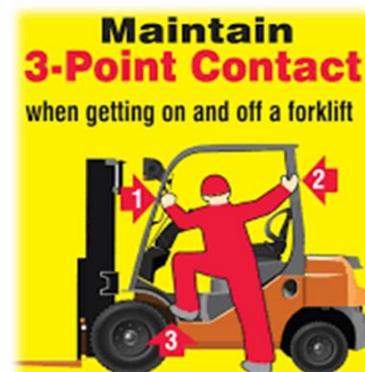
- ❖ Analyse the hazards in the working environment, and provide protection whenever appropriate and necessary (e.g., wear respirators in chemically hazardous environments).
- ❖ The forklift operators must be appropriately dressed for their job.



- ❖ Personal Protective Equipment (PPE) such as hard-hats and safety shoes should be worn throughout operation.

**SAFETY CLOTHING****TRAINING**

- ❖ Additionally, your clothes must be tight fitting, to ensure the clothing does not get caught on the forklift controls.
- ❖ Avoid operating a forklift with wet and greasy hands or shoes can cause accidents when your hands slip on the forklift controls, or when you slip and fall.
- ❖ Use the steps and hand-grips securely for entering the forklift (3 pt contact)
- ❖ Adjust the seating position to a comfortable level
- ❖ All controls are within comfortable reach
- ❖ Seat belt fastened before use
- ❖ Always look around and keep a sharp eye out for obstacles and warning signs. Follow work site rules and do not venture off from forklift roadways.

**FASTEN SEAT BELT**

## BASIC WORKPLACE SAFETY AND HEALTH (WSH) RULES FOR SAFE FORKLIFT OPERATION

Forklifts are useful when heavy loads need to be handled and transported easily and quickly. Mishandling or inappropriate use-of forklifts, however, can result in property damage, serious injuries or even fatalities. Do your part at the workplace by operating forklifts properly and safely.

**01. Operate a forklift only if you are trained and authorised.**



**02. Never use a forklift to carry or transport a person.**



**03. Check blind spots before reversing**



04. Report to your supervisor if you feel unwell.



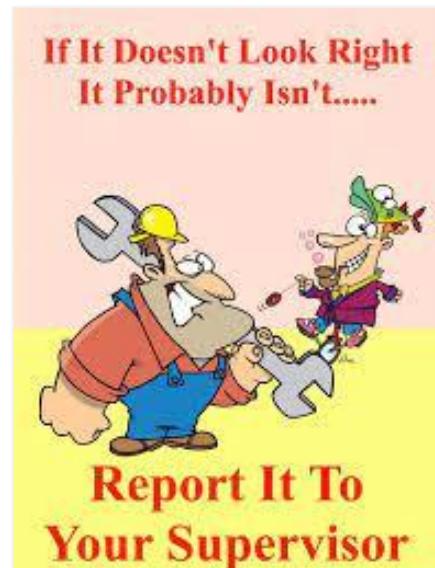
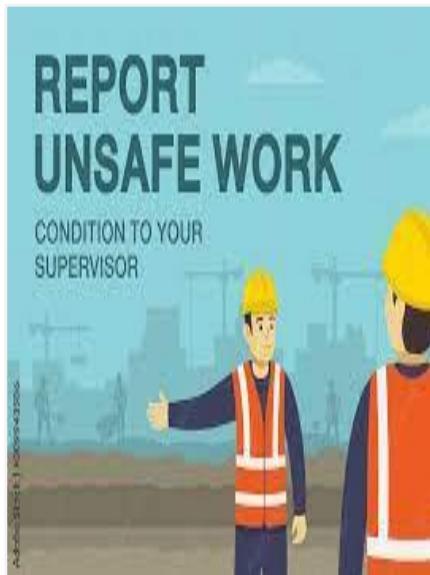
05. Do not overload forklift.



06. Do not speed.



Unable to complete assigned Job Task /Unsafe Act / Unsafe Conditions / Equipment Breakdown / Short of Manpower / Instructions not Clear



#### Do's and Don'ts of Forklift Operation

OPERATE FORKLIFT

LEANER'S GUIDE





Ensure operators are trained and licensed to use the forklift



- ❖ Forklift operators are required to attend safety training courses conducted by **MOM Accredited Training Providers.**



Ensure operators are trained and licensed to use the forklift



- ❖ Forklift operators do routine equipment checks. Checked brakes, steering, controls, warning devices, seat belts, tires, and diesel for leaks, among other things.



Wear appropriate personal protective equipment when inspecting and operating



- ❖ Forklift operators must wear the necessary PPE, including safety shoes, helmets, ear plugs, and reflective jackets.
- ❖ Seat belts should be secured at all times in order to allow the operator to stay within the forklift cage during operations.



### Pre-Operation Check Before starting the forklift



- ❖ Before starting the forklift, check the controls for all signal identification equipment, including mirrors, reverse indicator, horn, and other check points.



### Drive within the posted speed limit and in approved areas



- ❖ Never cross the speed limit.
- ❖ Corners and turns "GO" slowly.



### Load Stability and Safety Checks Before Lifting



- ❖ Before shifting loads, ensure they are stable and avoid lifting any damaged objects.



### Safe Navigation on Uneven and Slippery Surfaces



- ❖ Bumps / speed brakes, uneven surfaces and slippery surface ride slowly.
- ❖ Reducing speed decreases the likelihood of accidents, giving the operator more time to react to hazards.



### Safe Practices for Driving Down Ramps



Face your load uphill.

- ❖ When driving down ramps, move in a backward direction.
- ❖ The load is more stable when moving backward, as it helps to keep the center of gravity low and the load secure.
- ❖ It's easier to control the forklift's descent when moving in reverse, reducing the risk of tipping or losing control.



### Safe Practices for Driving Down Ramps



mps, move in a backward direction.

re when moving backward, as it helps to keep the center of gravity low

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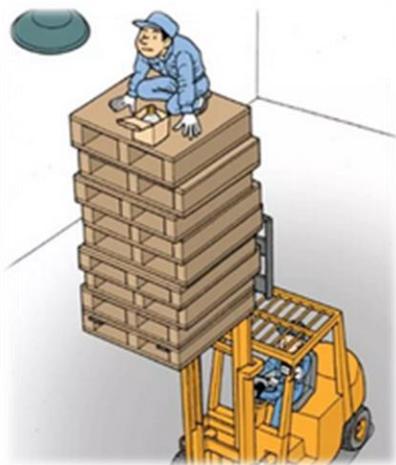
- ❖ Forklift is parked in a designated area.
- ❖ Fully lower the forks to the floor and apply the park brake.
- ❖ Do not park the forklift near a source of ignition, for example, near a doorway or a pit.



### Don't leave your forklift unattended:



- ❖ **Unauthorized Use:** Unattended forklifts may be used by untrained personnel, leading to accidents or improper operation.
- ❖ **Obstruction:** An unattended forklift can block pathways or emergency exits, creating hazards for other workers

**Don't travel with raised load:**

- ❖ Travelling with a raised load on a forklift poses significant safety risks.
- ❖ **Stability Risks:** A raised load raises the centre of gravity, increasing the likelihood of tipping over, especially when turning or navigating uneven surfaces.

**Don't Over Speed the Forklift**

- ❖ **Increased Accident Risk:** Excessive speed heightens the likelihood of collisions with people or obstacles, potentially causing serious injuries

**Don't Pick Up Other Rider**

- ❖ Almost all forklifts are designed for driver riders only, unless the forklift has been specifically designed to accommodate an additional rider. Never allow additional riders to board the forklift as it can cause an unstable balance and also block the driver's line of view.





**Don't Drive with the Forks Raised**



- ❖ Always drive with the forks lowered, and while parking, drop the forks to the ground

**UK 3.7 Procedures of reporting unsafe / unauthorized forklift practices**

- ❖ Follow reporting procedures
- ❖ Do forks to push loads with fork
- ❖ Using the forklift to push or tow another forklift
- ❖ Using the forklift to transport personnel
- ❖ Using the forklift to lift personnel without using a proper lifting platform
- ❖ Do not use I fork to lift the load
- ❖ Always adjust the fork according to pallet size
- ❖ Ensure that the fork is not cracked, deflected or worn out
- ❖ Report all incidents to immediate superior in accordance with organizational procedures

**Don't Load Broken Pallets into Flow Lanes****Cracks**

Check for cracks, paying special attention to the fork heels.

**Deflection**

Check for alignment, horizontally and vertically.

**Wear**

Check for blade-wear at position (A).

# CE:04 REINSTATE AND HAND OVER FORKLIFT



## UNDERPINNING KNOWLEDGE

- UK 4.1 Procedures relating to parking of forklift
- UK 4.2 Hand over procedures of forklift

## UK.4.1.PROCEDURES RELATING TO PARKING OF FORKLIFT

### FORKLIFT PARKING PROCEDURE

1. Park the forklift at a safe and designated area
2. Stop the forklift and apply the handbrake
3. Place the gear to neutral position
4. Lower the fork to the ground
5. Use the tilt lever to tilt towards the ground
6. Check the tyres are straight
7. Turn the keys to off the engine
8. Unfasten the seat belt, and come down using the 3-point contact
9. Look around for any visual damage or defects
10. Handover keys to supervisor to prevent unauthorized use and accidents



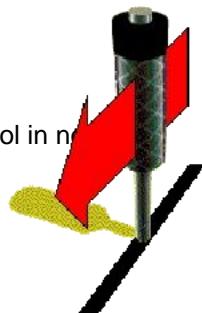
### FORKLIFT PARKING



- ❖ Always park your truck away from traffic and on a level surface
- ❖ Lower forks flat on the floor.



- ❖ Set directional control in n



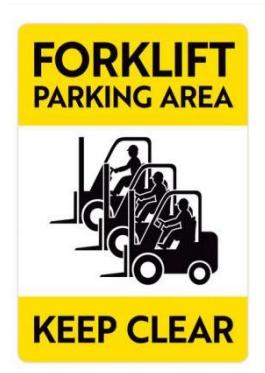


- ❖ Turn engine off and remove key.
- ❖ Set parking brake.

#### SAFETY PRECAUTIONS

##### 1. Never park the forklift nearby any ignition source

To ensure safety, always park forklifts in designated areas, away from potential hazards such as fuel tanks, electrical panels, or high-traffic zones with combustible materials. Additionally, ensure the forklift is properly turned off and that any fuel systems are securely shut down before parking.



##### 2. Chock the wheels, to prevent the from moving

When you chock the wheels, you're using a wedge-shaped block (the wheel chock) to secure the vehicle in place and prevent it from rolling. This helps reduce the risk of accidents such as the forklift rolling away, potentially causing damage to property, injuring workers, or leading to equipment malfunctions.



##### Always make sure to:

- ❖ Use appropriate wheel chocks designed for the forklift's size and weight.
- ❖ Position the chocks securely against the wheels, particularly on the downhill side if parked on an incline.
- ❖ Ensure the forklift is turned off, and the parking brake is engaged before applying the chocks.

Wheel chocking is part of a broader approach to vehicle safety and should be part of regular workplace safety protocols.

##### 3. Report any defects to your superior for further action



Defective forklifts can be hazardous to operators, pedestrians, and others in the vicinity. Issues like faulty brakes, damaged steering, or leaking fluids can lead to serious accidents if not addressed promptly.

**When reporting defects, be clear and detailed about the issue, including:**

- ❖ A description of the problem (e.g., unusual noise, fluid leaks, non-functional lights).
- ❖ The potential risks the defect may pose.
- ❖ Any observations that might help diagnose the issue.

This helps ensure the forklift is properly inspected and repaired in a timely manner, maintaining a safe working environment for everyone.

## UK 4.2 HANOVER PROCEDURE OF FORKLIFT



### FOLLOW CORRECT REFUELING PROCEDURES DIESEL / PETROL

1. Park the forklift in the designated refueling area.
2. Place the transmission in Neutral.
3. Lower the forks to the ground.
4. Engage the parking brake.
5. Shut off the engine.
6. Open the filler cap.
7. Fill the tank slowly (if spillage occurs, wipe off fuel and wash down the area with water).
8. Ensure adequate ventilation at the refueling station
9. Avoid open flames or any form of ignition sources
10. Place a fire extinguisher with serviceability in case of fire



#### Refueling Hazards

- Flammable fuel
- Toxic fumes
- Poor ventilation

#### LEANER'S GUIDE



**FOLLOW CORRECT CHARGING PROCEDURES ( BATTERY)**

During initial charging, check to see if the electrolyte level has fallen and if so, fill the battery with acid to the **UPPER LEVEL**. After adding acid, charge for another hour at the same rate as above to mix the water and acid together.

Note: This is the last time electrolyte should be added to the battery.

**Step 1:** Ensure forklift truck is parked, with parking brake applied and key switch in OFF position.

**Step 2:** Select a charger that displays “Connect Battery” on screen.

**Step 3:** Raise seat, disconnect the battery from the forklift and connect the charger to the battery.

**SAFETY PRECAUTIONS**

Keep metal tools and other metal objects away from the tops of batteries to prevent sparks or an electric arc. Verify that the nearest shower or eyewash station is in working order with an unobstructed path. Do not smoke in the area and extinguish all open flames, sparks, electric arcs or other sources of ignition.

**FORKLIFT BATTERY CHARGING AREA**

A Class B fire extinguisher would be the most appropriate type of fire extinguisher to use in the event of a fire.



#### CHARGING PROCEDURE

THREE STEPS TO CHARGE YOUR FORKLIFT

- ❖ Park in a designated place and turn off the forklift.
- ❖ The forklift must not be carrying a load, and the operator must not be on the forklift.
- ❖ Wear the right PPE.
- ❖ Make sure the charger is turned off.
- ❖ Plug the charger into the forklift then turn it on.
- ❖ Always plug in when not in use
- ❖ There is no risk of overcharging the battery by continuing to charge when not in operation. A lithium-ion battery can be opportunity charged. This means short periods of charging at times chosen by the forklift driver or determined by the shift schedule.
- ❖ Lithium-ion battery fires are Class B fires, indicating the presence of flammable liquids, so a standard dry chemical or ABC extinguisher can put them out



#### FORKLIFT HANDOVER AFTER COMPLETION OF WORK

- ❖ When you have finished working always park the forklift in a safe place, on level ground and never on a slope

- ❖ Leave the forklift with the mast tilted forwards and the forks fully lowered, with the tips touching the floor
- ❖ Apply the parking brake, select neutral, switch off the engine and remove the key
- ❖ Remove the key and tag out unsafe forklifts to prevent unauthorized use.
- ❖ Return keys to your supervisor or place it in the key press for safe-keeping, to prevent unauthorized & prevent accidents
- ❖ Report any malfunctions or defects immediately to a supervisor
- ❖ After its repaired, a pre check should be carried out before operating the forklift once again



## ❖ **FORKLIFT LOCKOUT/TAGOUT**

- ❖ After consultation, performs maintenance and preventative procedures to machine and inspects forklift truck fleet to ensure trucks are working properly and safely.
- ❖ Design a plan of action for all maintenance tasks and upgrades.
- ❖ Perform vehicle assessments and alert clients on issues that will prohibit their vehicles from passing inspection.
- ❖ Identifies any forklift trucks that need repairs. Removes unsafe equipment from facility operating area and notifies supervisor.
- ❖ Repairs and maintains various types of forklift trucks including electric, gas-powered, and propane-powered.
- ❖ A mechanic is responsible for inspecting and repairing vehicles, machinery, and light trucks.
- ❖ Also known as service technicians, these professionals oversee maintenance inspections, monitor inventory, assemble mechanical components, and perform repairs.



## ACCIDENT CASE STUDIES

1. UNSAFE USE OF FORKLIFT: WORKER STRUCK BY TOPPLED MACHINE
2. WORKER RUN OVER BY FORKLIFT



## UNSAFE USE OF FORKLIFT: WORKER STRUCK BY TOPPLED MACHINE

On 27 December 2022, a worker was guiding a forklift to position its forks under a machine. However, the machine toppled onto the worker. He was sent to the hospital where he passed away.

Preliminary investigation revealed that the forks of the forklift were raised before they were fully inserted under the machine. The lifting of the partially-inserted forks caused the machine to topple.

In 2022, there were six cases of forklift-related fatal workplace accidents. Two cases involved workers being crushed under forklifts that toppled from unbalanced loads, another two cases involved workers being run over or crushed by moving forklifts, and the remaining two, including this case, involved forklift forks toppling objects onto workers.

As forklift accidents can lead to serious injuries and death, the WSH Council calls on all companies using forklifts to undertake an urgent assessment of their safety measures in the use of forklift



**Video capture of the accident.**

### What companies should do

Companies should urgently assess and ensure that their WSH management system includes the following measures or checks:

#### Competent forklift operator:

Allow only competent and authorised persons to operate forklifts.



Ensure all forklift operators have completed the necessary certifications such as the Singapore Workforce Skills Qualifications (WSQ) Operate Forklift Course. Require forklift operators to attend refresher training at least once every three years.

## **Safe Work Procedure (SWP):**

Implement a SWP for moving heavy equipment/machines. Consult the manufacturer for advice on how specific equipment/machines can be moved safely.

### **Safe forking operation:**

Instruct forklift operators to carry out the following when using forks to pick up a load, and ensure that the operator has a clear view of the lifting operation:

- Check that the spread of the forks is suitable for the width of the load.
- Insert the forks under the load fully or as far as possible.
- Raise the forks slightly to check that the load is stable on the forks.
- Tilt back the forks slightly to prevent slippage before moving off with the load.

Wherever possible, loads ought to be placed on pallets as pallets enable safer load handling. Loads that may topple or fall and endanger a worker must be properly secured onto the pallet before being moved

### **Safe work zone:**

Require forklift operators to confirm all workers are in a safe position before starting operations. When picking up a load, the operator must only raise the forks when there is no one in the danger zone# should the load topple. Authorise operators to stop forklift operations once anyone comes into an unsafe position

**# “danger zone”: refers to an area where one can get injured**

### **Hazard communication and work supervision:**

Communicate to workers the possible on-site hazards and risk controls in place before allowing forklift operations to begin. Deploy a supervisor to oversee operations and ensure that the work is carried out as per SWP

## **WORKER RUN OVER BY FORKLIFT**



On 25 August 2022, a worker reversed a forklift up onto an inclined low-bed trailer. The worker then got out of the forklift and moved to its front when it suddenly rolled forward and ran over him. The worker was sent to the hospital where he passed away.

Preliminary investigations revealed that the forklift's handbrake was not engaged at the time of accident.



## **Recommendations:**

This case shows the danger of parking heavy machines or vehicles on slopes. To prevent similar accidents, consider the following measures

### **Safe work method:**

A safer method would be to load the vehicle onto the low-bed trailer using the trailer's winch mechanism.

### **Secure the vehicle:**

Engage the vehicle's parking brake once it is in place. Level the trailer bed, apply wheel chocks and secure the vehicle with lashing or chain slings to prevent movement.

### **Safe work position:**

Instruct workers never to stand down slope of a vehicle unless it has been properly secured (e.g. with parking brake), as the vehicle could roll downwards.

### **Use of technology:**



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Consider equipping the trailer bed with a remote-operated winch so that the loading can be carried out from a safe work position

**Authorised forklift operator:**

Ensure only trained and authorised persons are allowed to move forklifts. Prevent unauthorised forklift use through the implementation of a strict key management system.