

Forklift Operation

By

DV TRAINING SERVICES PTE. LTD.

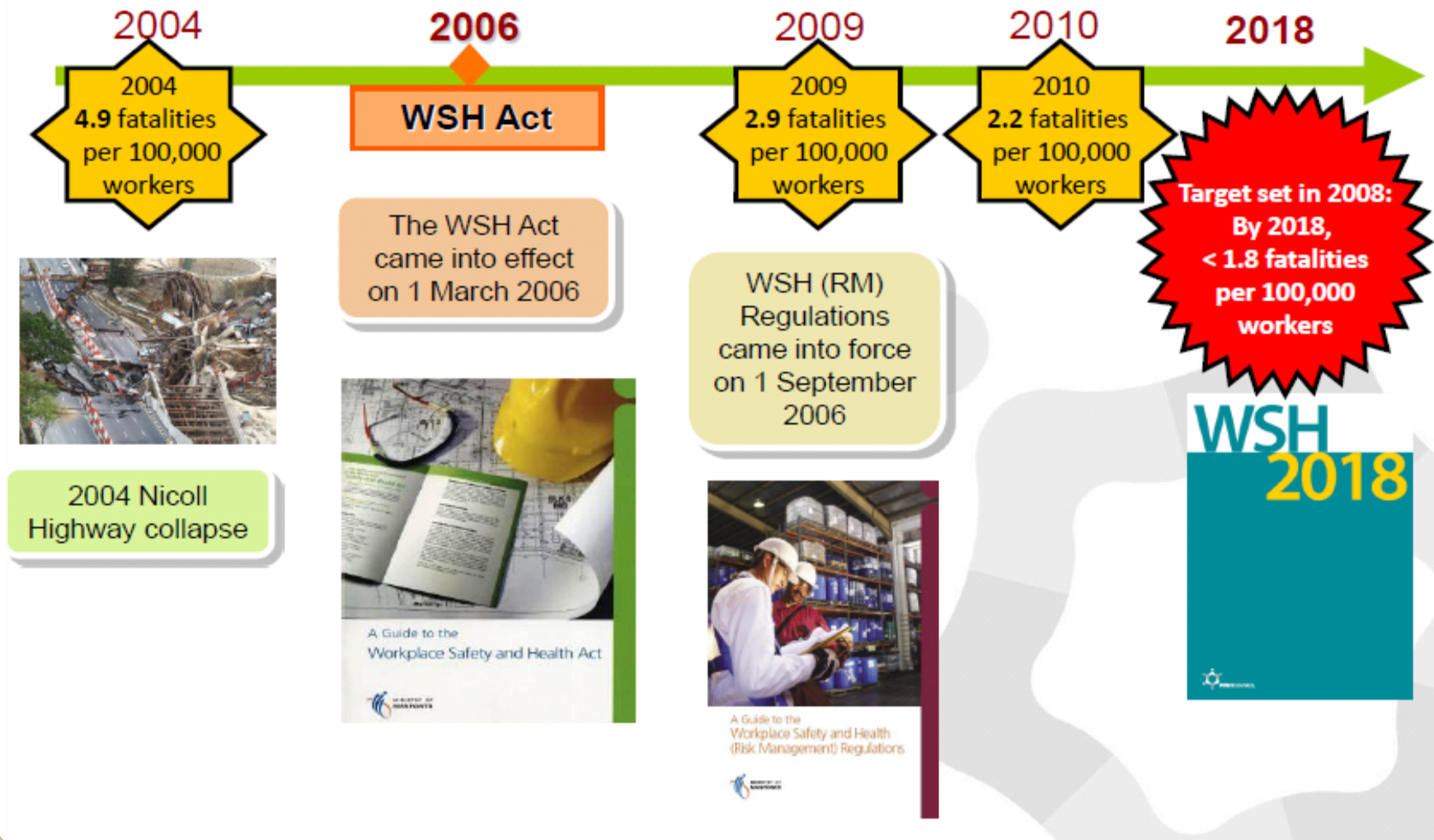
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**Relevant Workplace Safety & Health (WSH)
Legislations / Singapore Standards
SS573, applicable to forklift operation**

Workplace Safety and Health (WSH) Act



WSH ACT came into effect in 1st Mar 2006



Workplace Safety and Health (WSH) Act

The Workplace Safety and Health Act is a part of a new framework to –

- Cultivate **good safety habits** in all individuals.
- Produce a **strong safety culture** at workplace.
- **Stakeholders** to take **reasonably practicable measures** to ensure the safety and health of workers



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Workplace Safety and Health (WSH) Act

Coverage of WSH Act

Phase 2

1st March 2008

- Healthcare Activities
- Veterinary Activities
- Hotels
- Restaurants, bars, canteens
- Water Supply, Sewerage and Waste Management
- Landscape care & Maintenance Services
- Services allied to Transportation of goods



Phase 1

1st March 2006

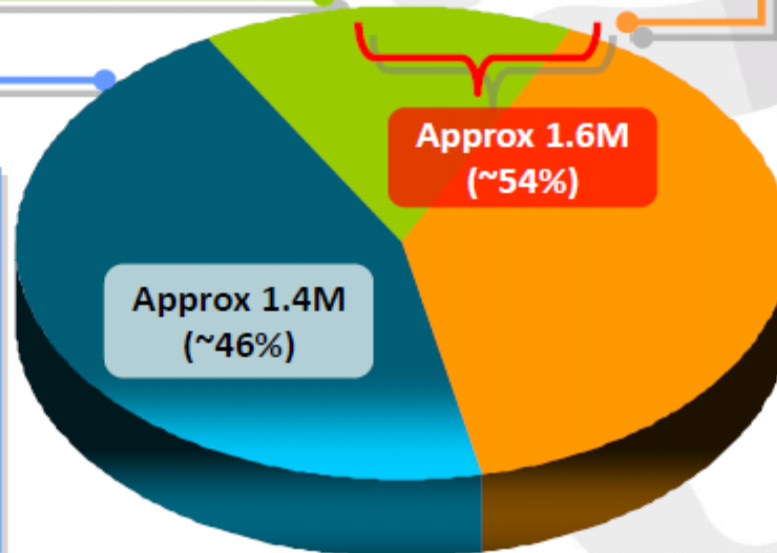
- Factories
- Construction
- Shipyards
- Ship in Harbour
- Airport
- Docks, Wharf, etc
- Laboratories



Phase 3

2011

- Education
- Public Admin
- Business Services
- Agriculture & Fishing
- Wholesale & Retail Trade
- Finance & Insurance Activities
- Information & Communications
- Arts, Entertainment & Recreation



Workplace Safety and Health (WSH) Act

Employer

Any person who employs another person to do any work under a contract of service.

Principle

Any person who engages another person or organization to supply labour or perform work under some arrangement other than a contract of service.

Occupier

In workplaces registered as a factory, the occupier is the person who is the holder of the certificate of registration of factory. In other words who has control over the workplace regardless he is the owner of the workplace .



Workplace Safety and Health (WSH) Act

Contractor

Any person engaged by another person or organization under a contract for service

Manufacturer or Supplier

Who manufacturer or Supply machinery

Erector or Installer

Who erect or install machinery

Worker

Any person at work, including an employee, i.e, volunteer, attachment

Self-employed person

Any person who work but not under a contact of service.



Workplace Safety and Health (WSH) Act

Duty of Occupier of Workplace(S11)

Occupier of any workplace to ensure that —

- the workplace;
- all means of access to or egress from the workplace; and
- any machinery, equipment, plant, article or substance kept on the workplace,

are safe and without risks to health to every person within those premises,



Workplace Safety and Health (WSH) Act

Duties of Employers (S12)

- Providing and maintaining a safe work environment
- Ensuring adequate safety measures are taken at work;
- Ensuring persons are not exposed to hazards arising from the workplace or areas under the employer's control;
- Developing and implementing emergency procedures;
- Providing adequate instructions, information, training and supervision to employees;



Workplace Safety and Health (WSH) Act

Duties of Principals (S14)

- Providing and maintaining a safe work environment
- Ensuring adequate safety measures are taken at work;
- Ensuring persons are not exposed to hazards arising from the workplace or areas under the employer's control;
- Developing and implementing emergency procedures;
- Providing adequate instructions, information, training and supervision to employees;



Workplace Safety and Health (WSH) Act

Duties of Principals (S14A)

- Ensure the contractor have sufficient experience and training to carryout the work
- Ensuring the contractor have obtained necessary licence, permit, certificate to carry out the work.
- Ascertain the contractor has conducted risk assessment
- Ascertain the contractor has informed any person may be affected by the work and any measures or safe work procedure is implemented



Workplace Safety and Health (WSH) Act

Duties of Persons at Work (S15)

Persons at work (Employees) to co-operate with employers and not endanger the safety and health of others.

Duties include:

- Use in such manner so as to provide the protection intended, any suitable appliances, protective equipment, etc;
- To co-operate with employer or principal and any other person to comply with the provisions of the Act;



Workplace Safety and Health (WSH) Act

Duties of Persons at Work (S15)

- Use suitable appliance, protective clothing, convenience, equipment to provide the protection for securing safety, health and welfare while at work
- Co-operate with employer or principal to enable employer, principal to comply with the provisions of this Act.
- Not willfully or recklessly interfere with or misuse any appliances, protective equipment
- The offender shall be liable on conviction to a fine not exceeding \$1,000 and, in the case of a second or subsequent conviction, to a fine not exceeding \$2,000.



Workplace Safety and Health (WSH) Act

Duties of Persons at Work (S15)

- Any person at work who, without reasonable cause, willfully or recklessly does any act which endangers the safety or health of himself or others shall be guilty of an offence.
- Any person at work who, without reasonable cause, does any negligent act which endangers the safety or health of himself or others shall be guilty of an offence shall be liable on conviction to a fine not exceeding \$30,000 or to imprisonment for a term not exceeding 2 years or to both.



Workplace Safety and Health (WSH) Act

Other duties of Occupier & Employers (S18)

- Not deduct from employee's pay in respect of anything to be done or provided by him to ensure safety, health and welfare of the employees at work.

- Not dismiss or threaten to dismiss an employee because
 - Has assisted inspector, authority
 - Has in good faith “whistle-blow”
 - Perform his duties in good faith as a member of the WSH Committee
 - Complied with Stop Work Order or Remedial Order

- Keeping of relevant records
 - 5 years or other periods as prescribed



Workplace Safety and Health (WSH) Act

Safety and health training courses(S31)

Factories(Safety Training Courses) Order

Description of Persons	Safety Training Course
Construction Workers	Construction Safety Orientation Course
Manhole Workers	Safety Orientation Course(Manhole)
Manhole Supervisors	Safety Instruction Course(Manhole)
Formwork Supervisors	Formwork Safety Course for Supervisors
Project Manager	Construction Safety Course for PM



Workplace Safety and Health (WSH) Act

Safety and health training courses(S31)

Factories(Safety Training Courses) Order

Description of Persons	Safety Training Course
Oil & Petrochemical Industry Worker	Oil & Petrochemical Safety Orientation Course for Workers
Oil & Petrochemical Industry Supervisors	Oil & Petrochemical Industry Supervisors Safety Course
Forklift Operator	Forklift Driver Training Course
Metalworking Industry Workers	Safety Orientation Course for Workers (Metalworking)
Metalworking Industry Supervisors	Basic Industry Safety & Health Course for Supervisors



Workplace Safety and Health (WSH) Act

Requirement for approval from Commissioner to act(S32)

An authorised examiner get approval from Commissioner for carrying out any prescribed examination or test of any:

- hoist and lift
- lifting gear
- lifting appliance or machine
- steam boiler
- steam receiver
- air receiver
- refrigerating plant pressure receiver
- pressure vessel or
- any other machinery required by this Act



Workplace Safety and Health (WSH) Act

Requirement for approval from Commissioner to act(S32)

The following persons shall get approval from commissioner to act :

- as a workplace safety and health officer
- as a workplace safety and health coordinator
- as a workplace safety and health auditor
- as an accredited training provider



Offences, Penalties & Proceedings

General Penalties For Offences For Which No Penalty Is Prescribed Under The Act

Category of offender	Maximum fine	Maximum imprisonment	Conditions
Individual persons	\$200,000	2 years	Either or both
Corporate body	\$500,000		
Workers For failure to use personal protective equipment or misuse of any safety appliance.	a) 1 st conviction - \$1,000 b) 2 nd or subsequent conviction - \$2,000		
Repeat offenders For a 2 nd or subsequent conviction for the same offences that causes the death of another person. a. Individual b. Corporate body	\$400,000 \$1 million	2 years	Either or both



Forklift refresher training mandatory with effect from early 2027

Enhanced forklift operator refresher training course and new refresher training requirement

15 November 2024 Workplace safety and health

As part of our ongoing efforts to build a culture of workplace safety and health (WSH) excellence, the Ministry of Manpower (MOM) will introduce an enhanced Forklift Operator Refresher Training course in 2025 and make the completion of refresher training mandatory with effect from early 2027.

2 From 2022 to 2023, vehicular incidents were the leading cause of fatal injuries in the workplace. 1 in 4 of these vehicular fatalities involved forklifts. During the same period, MOM's inspections found that close to 8 in 10 forklift-related contraventions involved forklift operators who had not undergone forklift refresher training within three years. Under the WSH Guidelines on Safe Operation of Forklift Trucks, all forklift operators should attend a refresher training course once every three years after the completion of their first training course.

New Training Requirement under Workplace Safety and Health Act




3 As part of the new training requirement under the WSH Act Section 31(4), MOM will require all forklift operators to attend a refresher course at least once every three years. This will take effect from 2027 to allow forklift operators to have sufficient time to attend the refresher training. A WSH circular with more details will be issued to the industry at a later date.

New Training Requirement under Workplace Safety and Health Act

3 As part of the new training requirement under the WSH Act Section 31(4), MOM will require all forklift operators to attend a refresher course at least once every three years. This will take effect from 2027 to allow forklift operators to have sufficient time to attend the refresher training.



5 Forklift operators are advised to complete the training promptly to stay current with safe operating practices. ****Employers and principals are responsible for ensuring their operators complete the refresher course** within the specified timeframe before allowing them to operate forklifts.

Selection of Forklift

	Type	Usage	Power Source
	Counterbalance	Lifting, stacking, moving in warehouses, docks.	Electric, diesel, gas (LPG/CNG)
	Side Loader	Moving long items like timber in narrow aisles.	Electric, diesel.
	Telehandler	Lifting loads to high places on uneven surfaces.	Diesel.






Selection of Forklift

	Type	Usage	Power Source
	Heavy Duty Forklift	Moving very heavy loads in ports, factories.	Diesel, gas (LPG/CNG).
	Rough Terrain	Outdoor lifting on rough or uneven surfaces.	Diesel.
	Pallet Jacks	Moving pallets in tight warehouse spaces.	Manual, electric.



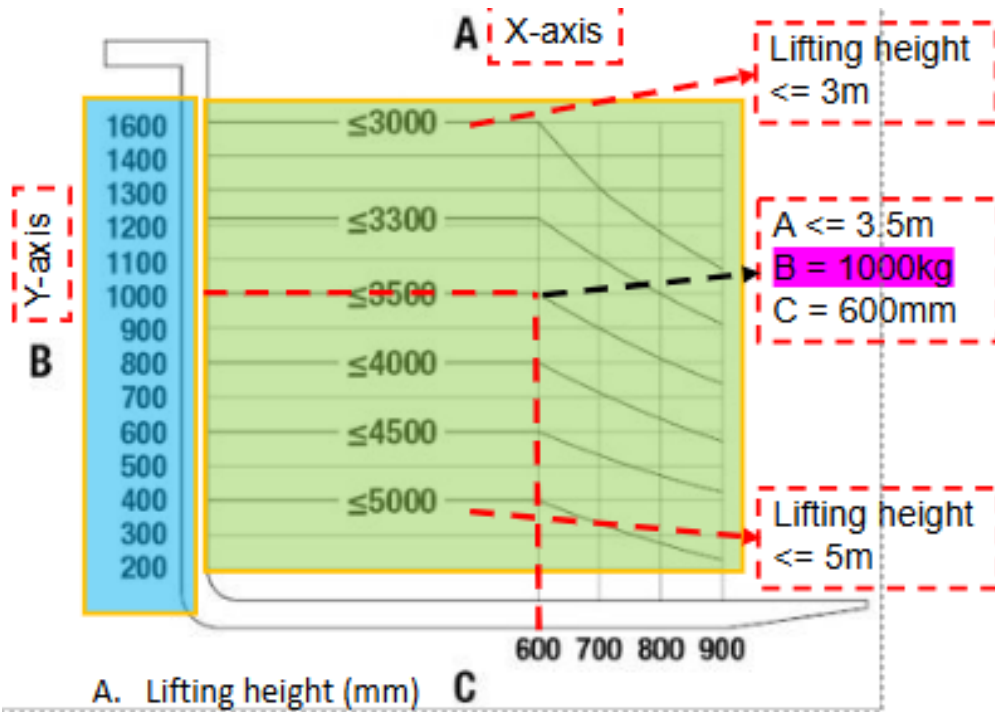
Selection of Forklift

	Type	Usage	Power Source
	Walkie Stacker	Stacking light loads in small warehouses.	Electric
	Order Picker	Picking items from high shelves in warehouses.	Electric
	Reach Fork Truck	Accessing high racks in narrow aisles.	Electric

Refresh on the correct interpretation of the Load Chart



Interpretation of load chart



- A. Lifting height (mm) **C**
- B. Load Capacity (kg)
- C. Load center distance (mm)

The load capacity:

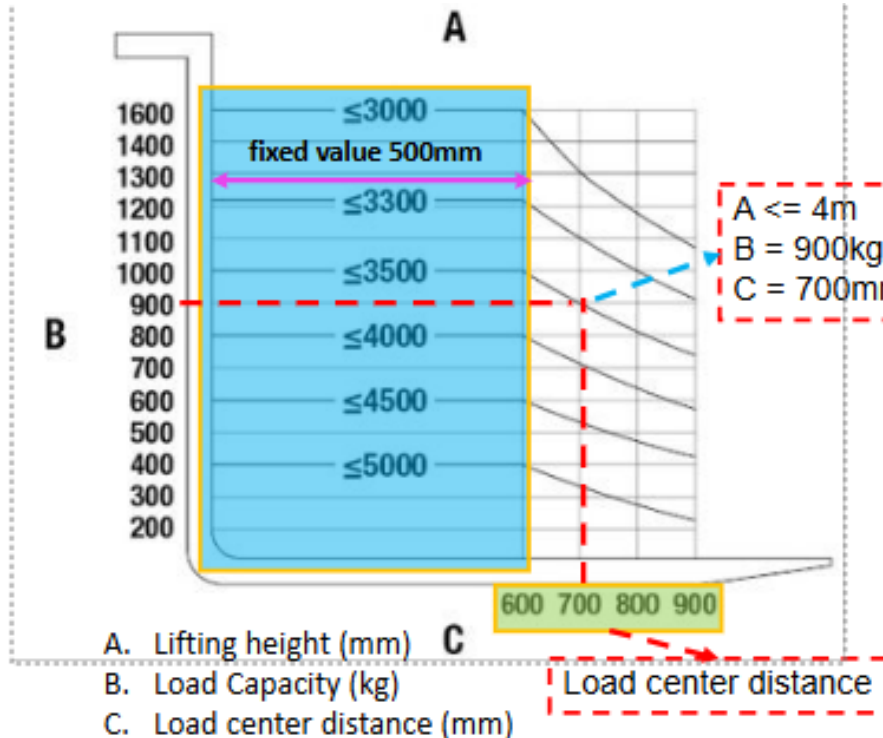
The load capacity chart shows how much weight the truck can safely lift at different lift heights and load center distances.

The X-axis and Y-axis:

The x-axis shows the lift height, i.e. the height up to which a forklift can lift the load.

The y-axis shows the load capacity, i.e. the weight that a forklift truck can lift at the respective lifting height.

Interpretation of load chart



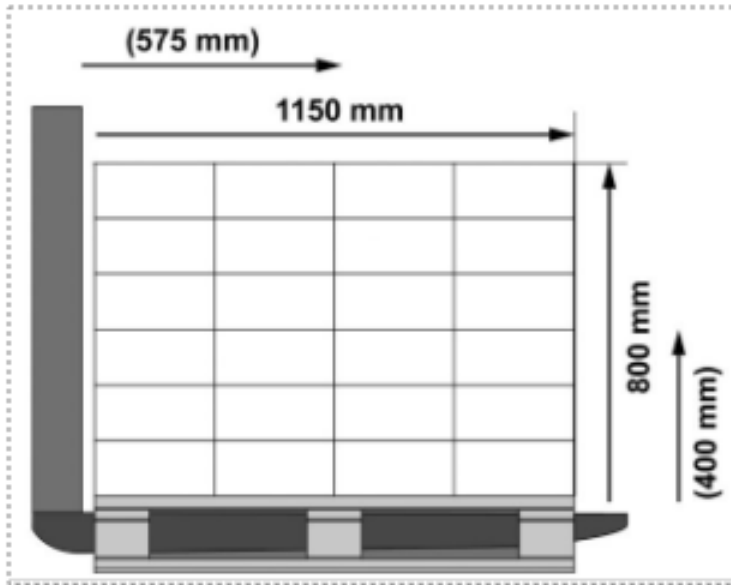
The limit curves:

The curves in the diagram represent the maximum loads at different lifting heights. The safe operating range of the forklift truck is located within the curve. Outside the curve there is a risk of tipping or other stability problems.

The load center distance:

The diagram also takes into account the load center of gravity distance, which is usually assumed to be a fixed value (e.g. 500 mm) and evenly distributed, i.e. centered on the fork. The further away the load center of gravity is from the fork carriage / fork carriage, the lower the load capacity.

Load capacity diagram for forklift

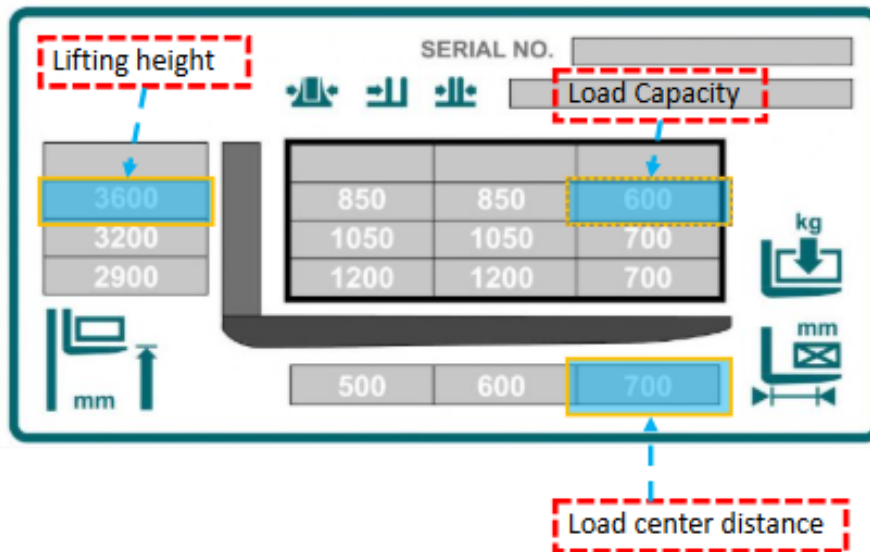


The following example will show you how to use the load diagram in practice.

For this purpose, palletized cartons of the same size and weight are assumed as an example load:

- Height of the load: 800 mm
- Length of the load: 1150 mm
- Distances between load centre and load handling attachment:
 - 400 mm vertical
 - 575 mm horizontally

Load capacity diagram for forklift



The following example will show you how to use the load chart in practice.

For this purpose, palletized cartons of the same size and weight are assumed as an example load:

- A. Lifting height: 3600mm
- B. Load Capacity: 600kg
- C. Load center distance: 700mm

Load chart video



https://youtu.be/jLoupEtof58?si=t_dgth8jMzKxsx
CA



Load chart exercise video

MODEL NUMBER

TOYOTA FORKLIFT TRUCK

MODEL: **BFGCU25** SERIAL NO. **C7525**

MAST: **FSV** BACK TILT: **5** ATTACH: **SIDE SHIFTER**

TYPE: **LP**

FRONT TREAD: **35** in TIRE FR: **21X7X15/SOLID**

TREAD: **890** mm SIZE RR: **16X5X10-1/2/SOLID**

TRUCK HEIGHT: **8530** mm

ACCURACY: **3870** mm

FORK CAPACITY: **2000** kg

FORK CENTER: **1000** mm

FORK SPACING: **1000** mm

FORK HEIGHT: **1000** mm

		WIDTH				CAPACITY	
		A	B	C	D	kg	lb
in	24	24	218	0	3400	kg	
	600	600	6540	0	1550	kg	
in	30	30	218	0	2950	kg	
	760	760	6540	0	1300	kg	

WARNING IMPROPER OPERATION OR IMBALANCE COULD RESULT IN INJURY OR DEATH. TRAINED OPERATORS ONLY. READ OPERATOR'S MANUAL FIRST.



<https://youtu.be/tZdM78c7HTw?si=dGYfXHEejgu-8Ec9>



Forklift Stability



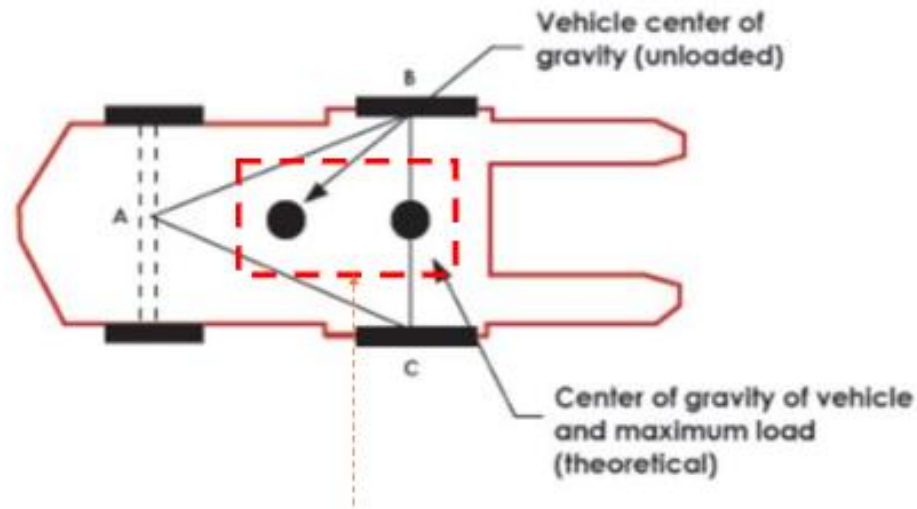
Load balance and attachment effects

Forklift Stability — Load Balance and Attachment Effects on Stability

- **Check Load Weight and Balance:** Ensure the load weight is within the forklift's capacity and properly balanced.
- **Understand the Center of Gravity:** Always consider the forklift's center of gravity and load placement.
- **Refer to the Load Chart:** Use the forklift's load chart (see Figure 1, 2, and 3) to confirm safe lifting capacities.
- **Account for Attachments:** Forklifts with attachments act as partially loaded forklifts even without a load, reducing stability.



Load balance and attachment effects

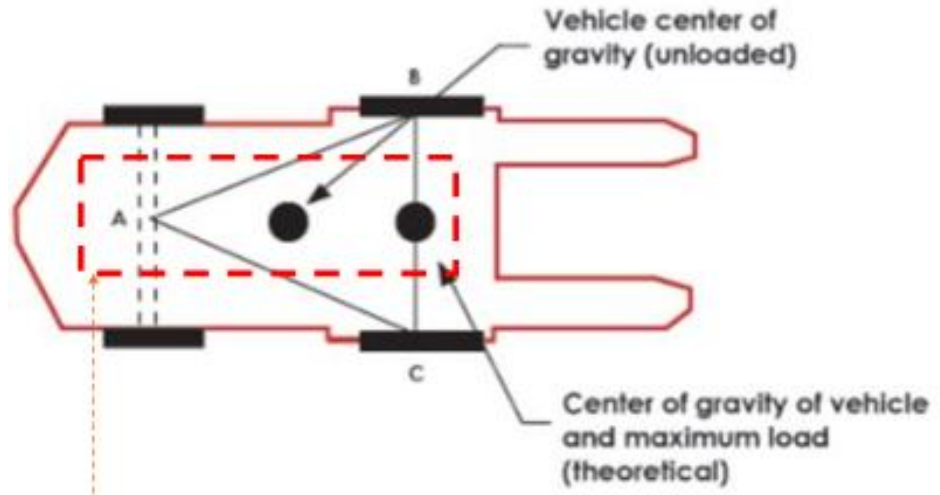


Key points:

- Forklift's combined center of gravity (CG) shifts towards B–C when loaded.
- Maximum load can result in CG at the line B–C.
- In practice, combined CG should not be at line B–C to maintain stability.

Load balance and attachment effects

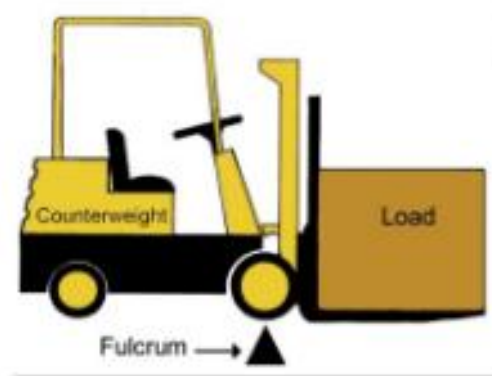
A counterweight is a counterbalancing weight that stabilizes the forklift when lifting loads, making the process more efficient.



Key points:

- Adding counterweight to forklift causes CG to shift towards point A.
- More counterweight leads to a forklift that is less stable laterally.
- Careful consideration of counterweight and proper distribution is important to maintain stability

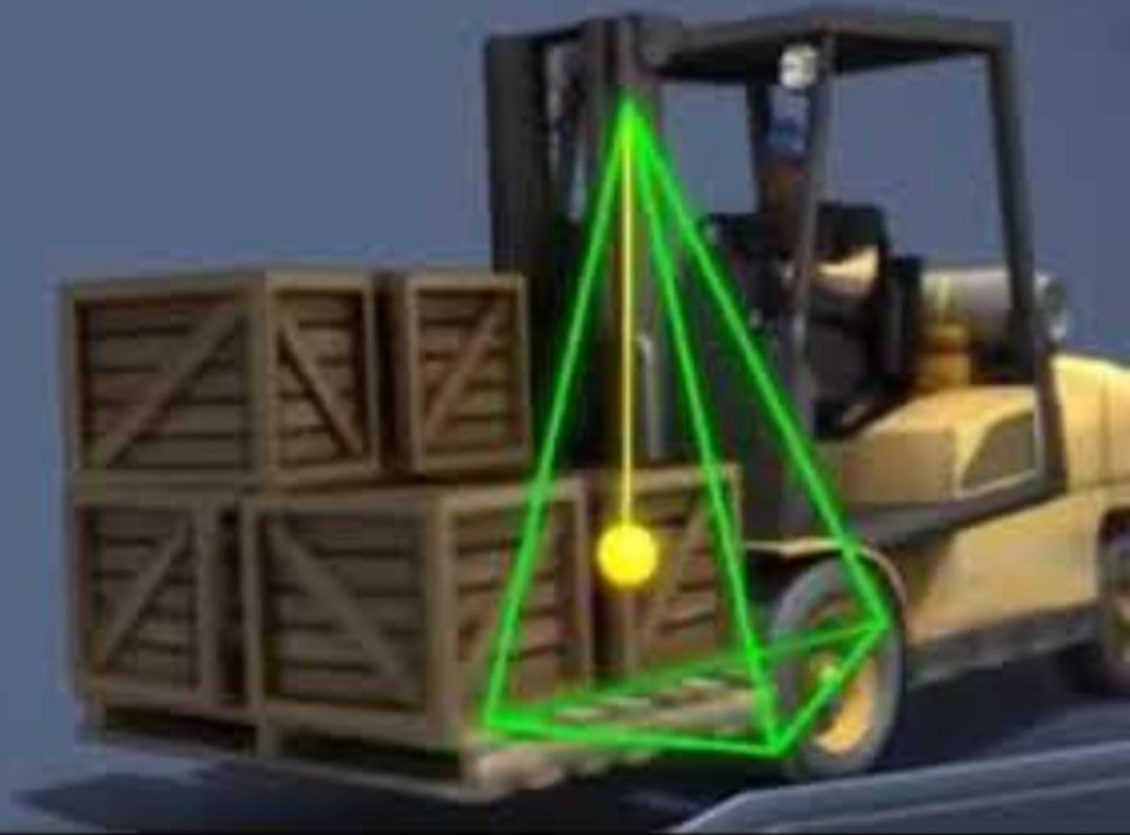
- Whether a forklift can safely carry a load or not can be determined by comparing the moments.
- The moment is calculated by multiplying the weight by the distance between the fulcrum and the center of gravity.
- If the moment of the load on the forks is greater than the moment of the forklift body and counterweight, the forklift will tip forward.



- A forklift operates based on the principle of a cantilever.
- The forks of the forklift form a beam that supports the load, while the front wheels act as the fulcrum.
- The weight of the forklift body and counterweight balances the load on the forks.
- Whether a forklift can safely carry a load or not can be determined by comparing the moment of each.
- The moment is calculated by multiplying the weight by the distance between the fulcrum and the center of gravity.
- If the moment of the load on the forks is greater than the moment of the forklift body and counterweight, the forklift will tip forward.

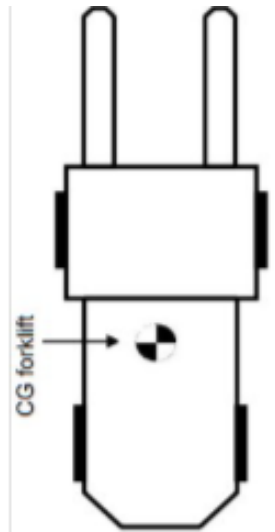
Forklift stability triangle and CG video

- Load weight
- Load balance
-

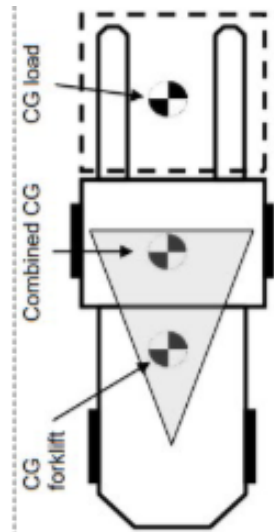


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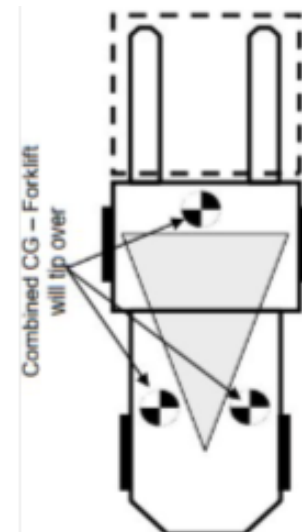
Forklift stability Triangle & CG



Position of the CG of the forklift when it is unloaded



Combined CG within the area of the stability triangle, formed by the drive wheels and steer axle pivot, prevents the forklift from tipping over.



Combined CG shifts outside the boundaries of the stability triangle – forklift will tip over

Forklift stability

Action	Center of gravity moves
Tilting the load forward	Toward the front axle
Raising the load while tilted forward	
Driving on an incline with the load downhill	
Stopping forward travel or accelerating backward	
Tilting the load back	Toward the rear axle
Raising the load while tilted back	
Driving on an incline with the load uphill	
Accelerating forward or stopping backward travel	
Driving across an inclined surface	Toward the downhill side of the triangle
Driving across a rough or uneven surface	Toward the rut or low side of the triangle
Turning	Toward the side now facing the original direction of travel



Forklift stability

Points to prevent forklift tipping over, falling sideways, or dropping its load:

- Ensure the load is stable and arranged securely on the forks.
- Only tilt the forks forward when picking up or depositing a load.
- Tilt the load backward only enough to stabilize it.
- Keep the load low and tilted back when traveling.
- Cross railroad tracks diagonally if possible.
- Enter elevators squarely.
- Keep the load uphill when going up or down an incline.
- Drive at a safe speed to stop within the stability triangle.
- Slow down on wet or slippery surfaces.
- Slow down to make turns.
- Avoid driving over loose objects, ruts, and hole



Pre-Ops & Post Ops Checks on a Forklift Machine



Forklift Checklist

SAMPLE CHECKLIST FOR PRE-OPERATION OF FORKLIFTS

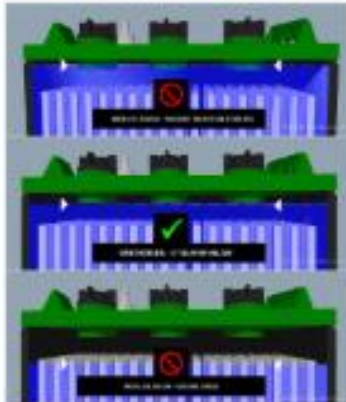
This checklist provides the basic requirements for pre-operation of forklifts. Should a "No" be recorded for any of the below checklist items, state the condition(s) and its respective corrective actions in the "Remarks" column. This checklist is non-exhaustive and users are recommended to make the necessary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

S/N	Items		Remarks
A. Fluid Level			
1	The following fluid level is within manufacturers' specifications:	Yes No	
	(a) Battery water level;	Yes No	
	(b) Fuel level;	Yes No	
	(c) Engine oil level;	Yes No	
	(d) Radiator water level;	Yes No	
	(e) Transmission oil level;	Yes No	
	(f) Hydraulic fluid level; and	Yes No	
	(g) Brake fluid level.	Yes No	



Main Part of Forklift to be Inspected

Fluid Level



Battery water level



Engine oil level



Radiator water level



Transmission oil level



Hydraulic fluid level



Brake fluid level

Main Part of Forklift to be Inspected



Headlights (high beam)



Brake indicator



Reverse indicator



Hazard lights

Main Part of Forklift to be Inspected



Driver Seat

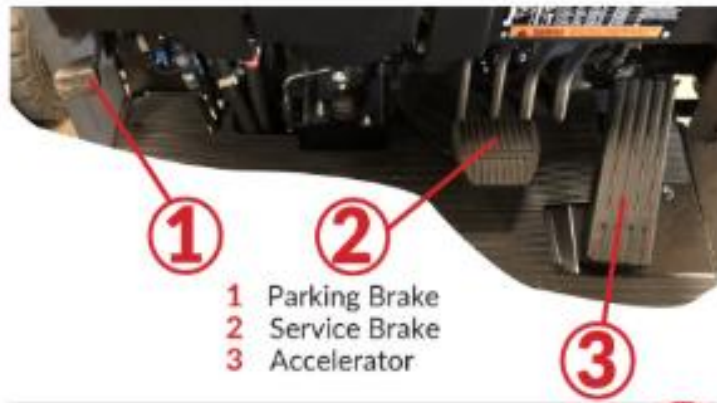


Rear View mirror



Main Part of Forklift to be Inspected

Brake



Main Part of Forklift to be Inspected

Tyres



Main Part of Forklift to be Inspected

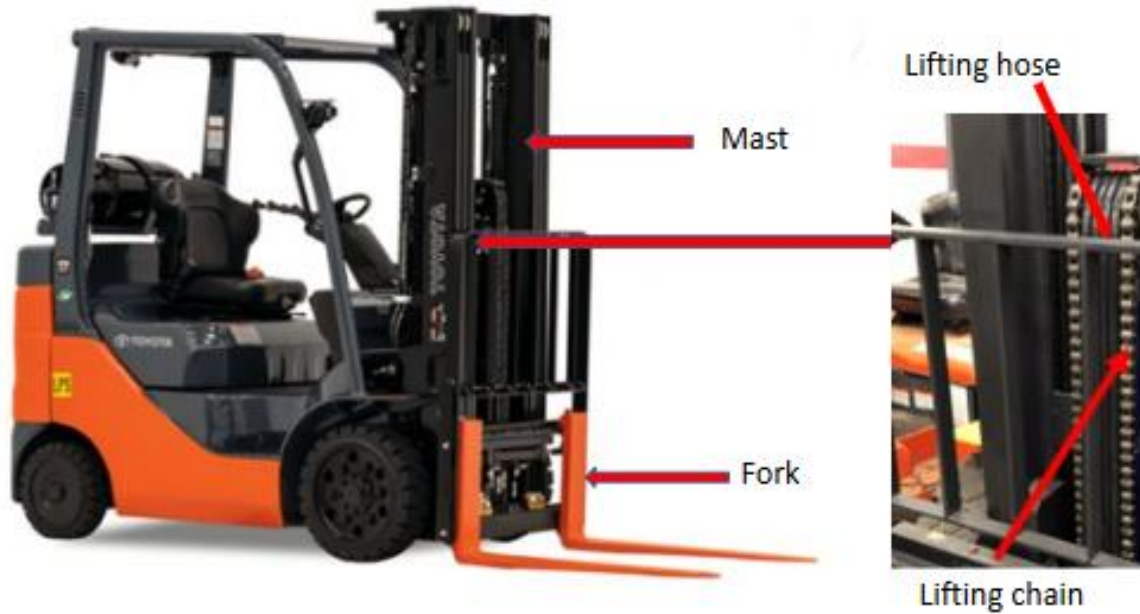
Lift or lower system



1. The lift and lower lever is used to raise or lower the forks/attachment.
2. The tilt lever moves the mast forward or backward.
3. The auxiliary function controls the attachment, which is commonly a side shifter.

Main Part of Forklift to be Inspected

Other Parts



Constituents of each main parts to be inspected



Dashboard Checks on a Forklift

1. Inspect the Gauges:

- 1) Engine Oil Pressure: Ensure the gauge is within the normal range.
- 2) Battery Charge Warning Signal: Confirm the battery is charging properly.
- 3) Fuel Level: Check that the gauge indicates sufficient fuel for operation.
- 4) Engine Temperature: Verify the gauge stays within safe limits.
- 5) Transmission Temperature: Ensure the transmission temperature does not exceed the recommended level.



Check Warning Lights:

- 1) Look for warning signals on the dashboard.
- 2) Ensure there are no more than two red lights indicating issues; if there are more, the forklift may need immediate inspection.

Respond to Specific Warnings:

- 1) If the engine oil warning light comes on during operation: Action: Switch off the forklift immediately and check the engine oil level.
- 2) Sign that the engine is not working normally: Abnormal smoke emission and usual sound. (Note: this appears to be intended as “unusual sound,” but the slide text reads “usual sound.”)

Constituents of each main parts to be inspected



Battery Charge and Discharge indicator

**FORKLIFT
BACKUP
ALARM**



Limit switch & sensor



Horns



Hydraulic control lever















Reverse Warning Buzzer

Safety Precaution in inspecting Forklift

- Only trained, qualified staff may inspect forklifts.
- Lock out controls and secure the forklift before inspection.
- Know the risks and wear the right PPE.
- No smoking or open flames near forklifts.
- If working underneath, support the forklift with safety blocks.
- Work within your limits—don't overstrain.
- For diesel forklifts, ensure good ventilation to prevent carbon monoxide exposure.
- Always do a pre-op check, even when in a hurry.
- Do not use a faulty forklift until repaired.
- Loose or missing wheel nuts: send to workshop to tighten or replace.



Safety Precaution in inspecting Forklift

General Safety Practices	Inspection & Operational Safety
 Qualified Professionals: Only trained individuals should inspect forklifts.	 Elevated Forklifts: Support securely with blocks when working underneath.
 Lockout/Tagout: Secure control devices before inspection.	 Ventilation: Ensure sufficient airflow for diesel forklifts.
 Wear PPE: Be aware of hazards and wear proper safety gear.	 Pre-Operational Checks: <u>Always inspect, even during urgent tasks.</u>
 No Smoking: Avoid fire hazards near forklifts.	 Repairs: <u>Do not operate forklifts in poor condition. Ensure mechanic identifies defects and repairs them before use</u>
 Physical Limits: Avoid overexertion during inspection.	 Loose/Missing Nuts: <u>Send forklifts to the workshop for tightening or replacement.</u>
 Report Defects: <u>If abnormalities or defects are noticed, inform supervisor and arrange immediate repairs.</u>	 Safety Features: Ensure the horn, lights, and brakes are functioning properly before use.

Parking of Forklift Instruction

Park in Designated Areas

- Always park in areas marked for forklifts, suitable for their size and weight.

Avoid Busy Routes

- Choose parking spots away from busy paths to prevent accidents.

Shutdown Procedures

- Before leaving, stop the forklift, switch off the engine, and set the parking brakes.

Remove and Secure the Key

- Take the key with you to avoid unauthorized use.

Stay Away from Hazards

- Do not park near open flames, chemicals, or ignition sources.

On Inclines or Slopes

- Stop and switch off the engine, Set parking brakes, Chock wheels to prevent movement.



Refueling of Diesel Forklift

Turn Off and Park

- Turn off the engine and park the forklift before refueling.

Qualified Personnel Only

- Only trained personnel should refuel the forklift.

Handle Fuel Spills Safely

- Avoid spilling fuel on the exhaust or engine system, and clean up any spills before restarting.

Ensure Ventilation

- Refuel in a well-ventilated area to avoid fume buildup.

Fire Safety

- Keep the area free of flames or sparks.
- Ensure a fire extinguisher is nearby, and train operators to use it.

Charging Electrical Forklift

Provide Adequate Training

- Ensure all personnel handling or charging batteries receive proper training.

Charge in Well-Ventilated Areas & Avoid Overcharging

- Charge batteries in well-ventilated areas to prevent explosive gas buildup. Avoid overcharging, as it can cause overheating and damage.

Check Battery Water Levels

- Before charging, check the battery water levels and top up as needed.

Inspect and Properly Dispose of Damaged Batteries

- Do not use damaged or leaking batteries. Dispose of old batteries according to local regulations.

Conduct Inspections & Follow Manufacturer Guidelines

- Inspect batteries and charging equipment. Follow manufacturer's instructions for handling batteries.

Know Emergency Procedures

- Be aware of the nearest fire extinguisher location and how to use it in case of an emergency.



Handover

Secure the Keys

- Hand over the forklift keys to authorized personnel or store them in a secure location.

Maintain a Logbook

- Keep a logbook for recording the keys used by authorized forklift drivers.

Record Sign-In & Sign-Out

- Record the sign-in and sign-out of keys in the logbook for accountability.

Supervisor Review

- The supervisor should review and sign the logbook to verify compliance.

Report Defects or Faults

- Any defects or faults observed during handover must be reported to the appropriate person to ensure the forklift is repaired.

Inform Supervisor if Task is Incomplete

- If the assigned job task is not completed, inform your immediate supervisor.



Techniques and requirements for safe operations



Stacking load on pallets during movement

- Secure Loose Loads on Pallets: Ensure all loose loads are consistently secured on pallets to maintain safety and stability during transportation.
- Stack and Tie Loads: Properly stack and tie uneven or loose loads to prevent shifting or falling during driving.



Pick up Pallets with forklift



<https://youtu.be/m3CFe-s-UxA?si=cq-l1FMtHihuG590>

Protecting load from damage during transportation

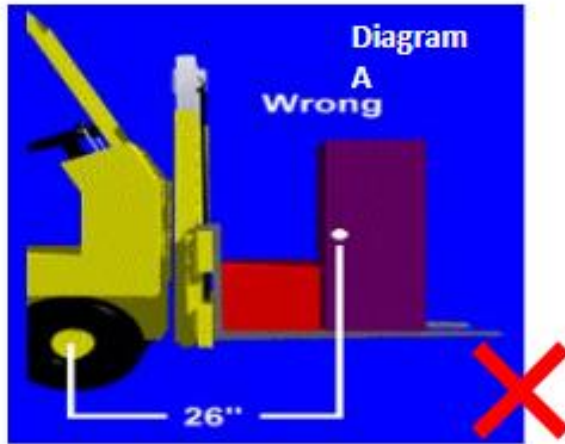


Diagram A — Wrong (26"):
When handling an unbalanced load, position the heavier end closer to the backrest of the forks to shorten the load center, improving stability and preventing the load from slipping during movement or stopping, as shown in Diagram A.

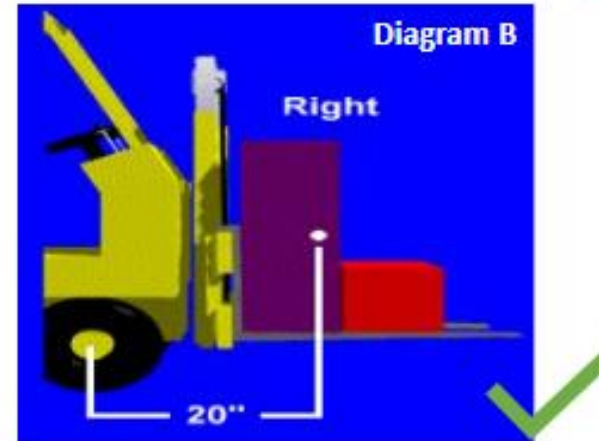


Diagram B — Right (20"):
Be sure to rearrange your load as in Diagram B before moving off; shrink wrap the loads to prevent falling thus damaging the load. Always place the heaviest load against the back rest of the fork.



Travelling on the ramp

- Drive forward with the load pointed up the slope when going up a slope on a forklift

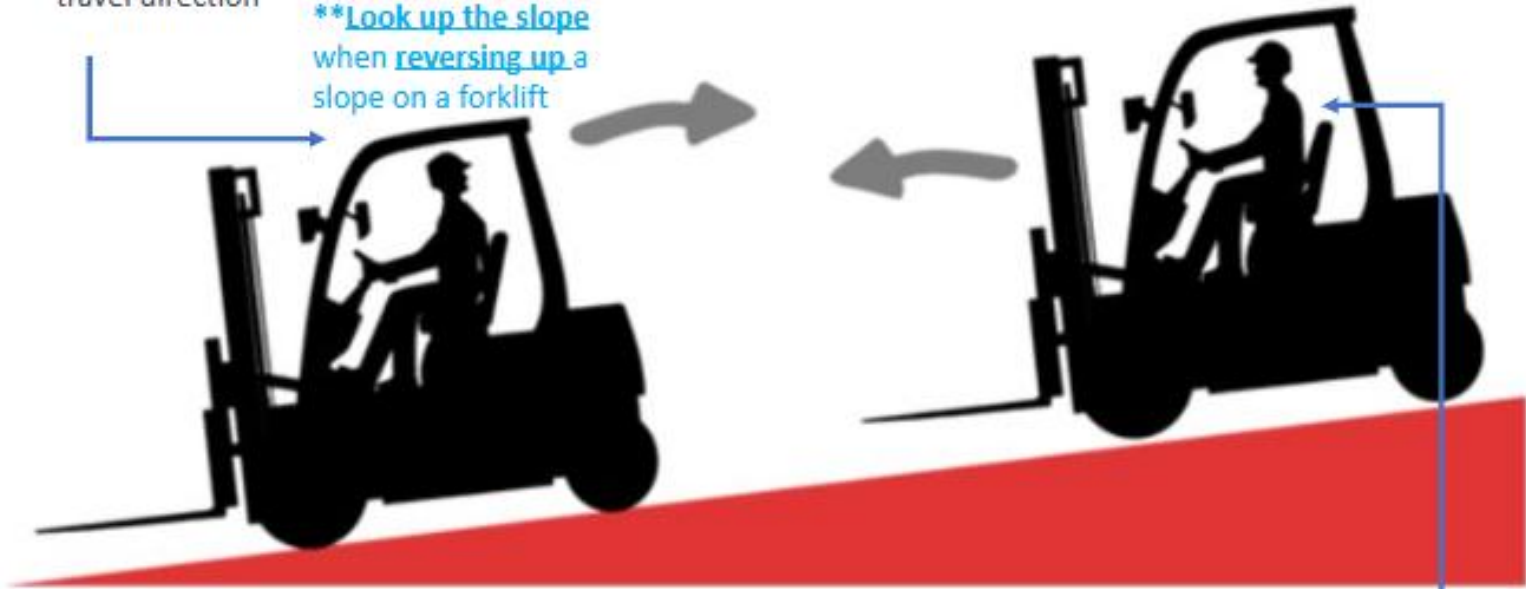


Drive backward with the load pointed up the slope when travelling down a ramp or incline on a forklift

Travelling on the ramp

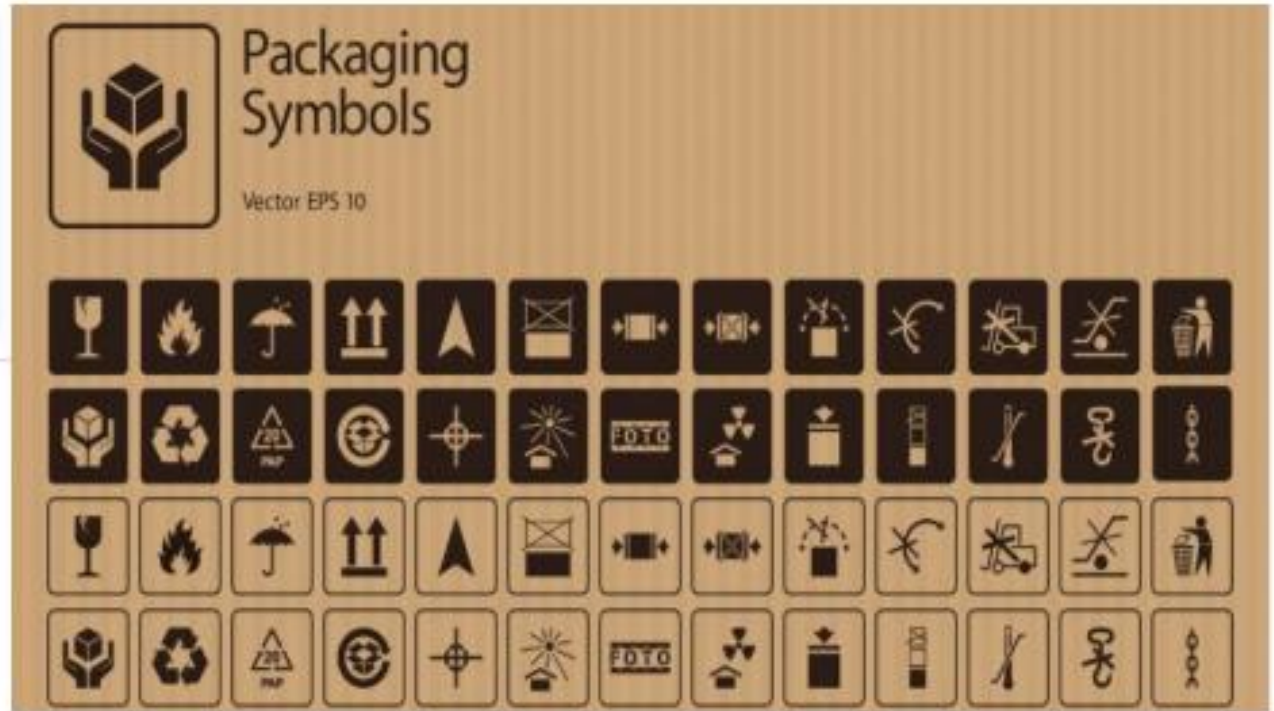
- Traveling up a ramp without a load: Drive backward with the forks pointed down the slope and look in the travel direction

****Look up the slope
when reversing up a
slope on a forklift**



- Going down a slope without a load: Drive forward with the forks pointed down the slope

Understanding Packaging Symble



Load Handling

Techniques and requirements for safe operations

Load handling

Forklift Capacity and Safe Handling

- Use forklifts within rated capacity: Ensure the forklift is used according to its designated weight limit.
- Combined weight of load and attachment: The weight of both the load and any attachments should not exceed the forklift's lifting capacity.
- Do not use additional counterweights: Avoid using personnel or material to increase the forklift's lifting capacity.
- Unauthorised forklift usage should be reported: Reporting unauthorized use helps prevent accidents and ensures safe operations.

Load Stability and Handling Procedures

- Ensure load stability: Handle loads that are stable and secure, particularly when dealing with long or high loads.
- Use suitable methods for long/high loads: Consider specialized techniques or equipment to move long or high loads safely.
- Avoid off-center loads: Do not attempt to handle loads that can't be centered on the forks.



Load Handling

Techniques and requirements for safe operations

Load handling

Forklift Operation Techniques

- Fork spread suitability: Ensure the spread of the forks is appropriate for the load width.
- Insert forks under the load: Place the forks under the load as far as possible but avoid pushing the load beyond the fork tips.
- Raise forks to engage the load: Lift the forks to fully secure the load.
- Tilt back to stabilize the load: Tilt the forks back slightly to ensure the load is stable, especially for high or segmented loads.
- Carefully lower the load: When depositing the load, lower cautiously to prevent accidents.

Fork Positioning for Placement

- Use slight forward tilt when available: A slight forward tilt helps with the placement and with withdrawal of the forks when the load is deposited.


Hazard Reporting

- During forklift operations, report promptly to the immediate supervisor if hazards are noticed: Ensure any hazards are reported to the immediate supervisor for quick action and safety management.



Load Handling


1. Approach the Stack Slowly

 **Approach slowly:** Tilt the mast slightly backward to keep the load stable (Figure a).





(a) Approach stack squarely with load low and tilted backwards

2. Adjust the Mast

 **Set mast upright:** Make sure the mast is nearly vertical when you're close to the stack.

3. Lift and Move the Load


 **Raise the load:** Lift the load slightly above the stacking height.

 **Move forward:** Slowly move the forklift forward to place the load (Figures b and c).




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

4. Brake Smoothly

 **Use the brakes gently:** Slow down or stop the forklift smoothly when carrying a load.


5. Stack the Load Securely

 **Ensure the load is stable:** Check that the load is safely stacked.



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

6. Withdraw Forks and Move Away

 **Withdraw the forks:** Lower the forks and move the forklift away while checking the way is clear.

Load Handling

Techniques and requirements for safe operations Remove from stack

1. Approach and Prepare for Loading

- Approach the stack slowly: Stop the forklift with the fork tips about 0.3 m away from the stack.
- Adjust fork spread and check load weight: Set the fork spread according to the load width and ensure the load weight is within the forklift's capacity.

2. Smooth Braking and Inserting Forks

- Brake smoothly: When operating with the load handling means elevated, use the brakes gently to slow down or stop.
- Insert forks under the load: Push the forks under the load far apart without disturbing other items.

3. Lift and Stabilize the Load

- Raise the forks: Lift the forks until the load is engaged and clear of the stack.
- Tilt forks backward: Tilt the forks to stabilize the load.

4. Withdraw and Move the Load

- Withdraw the load: After ensuring the area is clear, carefully pull the load back from the stack.
- Lower the load: Lower the load to the travelling position with the forks tilted fully backward.
- Move the forklift safely: Ensure the surrounding area is clear and move the forklift away steadily.



Load Handling

Techniques and requirements for safe operations Handling of Hazardous Materials

- **Wear PPE & Follow Safety Procedures:** Always wear required PPE and follow established safety policies.
- **Label & Use Materials Properly:** Properly label materials, place them in the correct container, and store them appropriately; use materials only for their intended purpose.
- **Review & Understand Risks:** Check Safety Data Sheets (SDS) to understand risks before using any material; read labels to determine how to properly handle, store, and clean up materials.
- **Know Emergency Procedures:** Learn emergency protocols in case of spills, leaks, and accidents; ensure eyewash stations are functional and accessible.
- **Handle Hazardous Loads with Care:**
 - **Secure Loads:** Ensure hazardous materials are properly secured and declared safe for transportation by the forklift.
 - **Use Appropriate Attachments:** Utilize additional forklift attachments for safe handling of hazardous materials.
 - **Barricade Work Areas:** Ensure the work area is properly barricaded with clear warning signs.



Highlight the common safety lapses by forklift operators and the consequences.



Fall from Forklift

Never carry or transport people on forklifts



Do not use a forklift (or similar equipment)

<https://youtu.be/D6sGYbPCZMg?si=aKmV95Vdu9BEx0-6>

Fall from Forklift

Fall from Forklift

1. Which of the following are proper working platforms for safely lifting a person to height?

- A) Elevated work platforms and platforms on forklifts
- B) Scissor lifts and mobile scaffolds
- C) Hoists and cranes
- D) Fixed platforms and elevated scaffolds

2. What is the proper action if you see another person riding on the forklift improperly?

- A) Ignore it, as it is their responsibility
- B) Report the unsafe practice to a supervisor
- C) Tell the person to ride faster
- D) Help the person get off the forklift



Worker threw off overturned forklift



Worker thrown off overturned forklift

Worker thrown off overturned forklift

1. What could the operator have done to prevent the forklift from overturning?
 - A) Drive slower and secure the load
 - B) Avoided using the forklift on uneven ground
 - C) Both A and B












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Safety Rules (Do's and Don'ts) .



Operators Responsibilities

Do's 	Don'ts 
 Always fasten the seat belt.	 Overload the forklift.
 Drive within the speed limit.	 Carry or transport people.
 Keep loads close to the ground when the forklift is moving.	 Allow unauthorized or untrained personnel to operate the forklift.
 Always give way to pedestrians.	
 Slow down at corners and blind spots.	
 Check before reversing.	



6 Basic Safety Rules [WSHC]

Report to your supervisor if you feel unwell.



Do not speed.



Never use a forklift to carry or transport a person.



Do not overload forklift.



Operate a forklift only if you are trained and authorised.



Check blind spots before reversing.



Safety Rules (Do's and Don'ts)

Safety Rules (Do's and Don'ts) Responsibilities of Forklift Operators

1. Securing and handling goods safely (i.e., no overloading).
2. Using only approved and appropriate PPE.
3. Driving safely (adhere strictly to the in-house speed limit).
4. Always wearing a seatbelt when operating a forklift.
5. Parking only at allocated locations.
6. Inspecting the forklift prior to use for damage and wear, and ensuring that safety devices on the machine are not tampered with.
7. Starting and stopping the forklift slowly to keep the load stable and under control.
8. Ensuring that the forklift's travel path and its surrounding area is firm, level, and free from obstructions during its operation, and strictly adhering to all safe working and operating procedures established at the workplace.



Safety Rules (Do's and Don'ts)

Responsibilities of Forklift Operators

9. Report defects immediately to the supervisor and record them in maintenance log records. (icon: clipboard)
10. Stop operations immediately if unsafe conditions or operations occur (e.g., cargo exceeds the forklift's lifting capacity) and report to the supervisor immediately. (icon: prohibited sign)
11. Sound the horn to alert pedestrians when approaching corners or bends, or when reversing. (icon: horn)
12. Do not allow passengers on the forklift. (icon: no passengers)
13. Do not transport or lift anyone with the forklift. (icon: people)
14. Do not engage in dangerous operations; ensure forklift operations do not endanger others working nearby. (icon: warning triangle)
15. Do not operate the forklift if feeling unwell. (icon: sick face)
16. Handle loads only within the stipulated capacity of the forklift. (icon: scales)
17. The driver is responsible for watching for pedestrians in the travel path. (icon: pedestrian)



Safety Rules (Do's and Don'ts)

Section 1: Slips and Falls When Getting In or Out of the Cabina)

“While climbing into or down from the cabin, they may slip and fall when they miss a step or when ground conditions are poor.

Consequences: Injury: Operators can hurt themselves, like breaking a bone or hitting their head. Delays: If operators are hurt, work will stop and cause delays. Costs: The company may have to pay for medical bills or compensation.

Section 2: Using the Forklift to Lift Peoplea)

“Under no circumstances should the forklift be used for ferrying or elevating personnel.

Consequences: Serious Injury or Death: People may fall from the forklift and get seriously hurt or killed. Legal Problems: The company could get fined or face legal trouble. Damage to the Forklift: Using the forklift incorrectly could break it, costing money to fix. Bad Reputation: The company may lose trust from others because of safety violations.



Safety Rules (Do's and Don'ts)



Example of an overloaded forklift

Falling Objects or Cargo

a) Text Reference:

“Objects or cargoes handled by forklifts can range from palletised load to odd-shaped loads like cylindrical pipes, I-beams, and so on.”

“As the shape of cargo becomes more irregular, the potential of loads falling during the transportation process increases.”

b) Consequences:

- Injury or Death: Forklift operators and nearby workers can be struck by falling objects, leading to serious injuries or even death.
- Damage to Property: Falling cargo can damage equipment, inventory, or other property in the workplace.
- Workplace Disruption: Accidents involving falling loads can halt operations and cause delays.

Safety Rules (Do's and Don'ts)

Highlight consequences for failing to observe the safety rules.

Factors Leading to Falling Cargo

a) Text Reference:

“Several factors contribute to falling cargo; overloading, unsafe stacking, uneven and unsecured load during transportation, and abrupt turning.”

b) Consequences:

- Overloading:

- Damage to the Forklift: Exceeding the forklift's lifting capacity can damage the machine.
- Load Falling: Overloaded forklifts are more likely to cause loads to fall, leading to potential injuries.

- Unsafe Stacking:

- Falling Cargo: If the load is stacked too high or not secured properly, it can fall off, causing harm to workers.

- Uneven Load:

- Increased Risk of Accidents: If the load is not properly balanced, it may tip over during movement, leading to falls or injury.

- Abrupt Turning:

- Instability: Quick or sharp turns can cause the load to shift and fall, creating danger for the operator and nearby workers.

