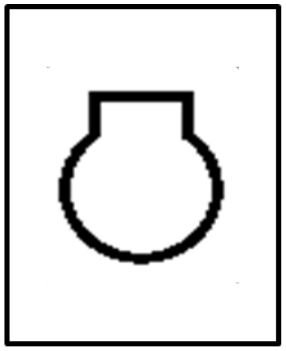
# SAFE FORKLIFT OPERATOR'S COURSE

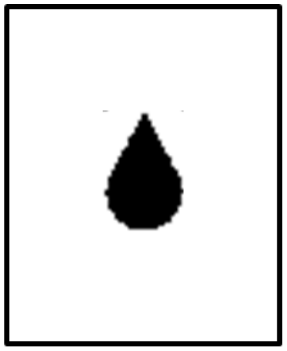
# Objectives

- Understand how forklifts work
- Operate a forklift safely and skillfully
- Identify operating hazards
- Apply general principles of safe operation
- Properly inspect and maintain a forklift

Top 10 Forklift Accidents

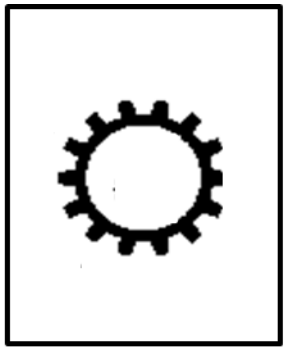


Engine

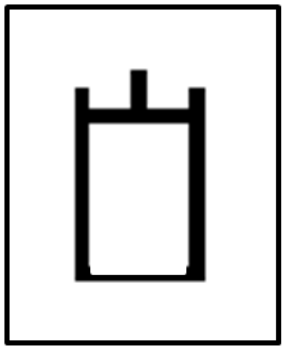


Oil

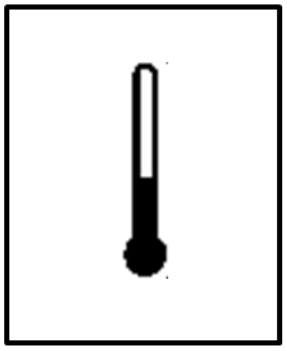
Coolant



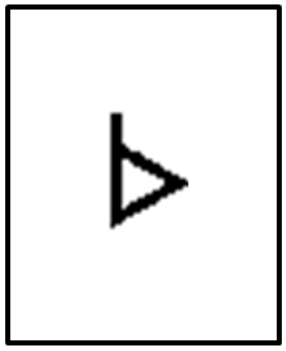
Transmission



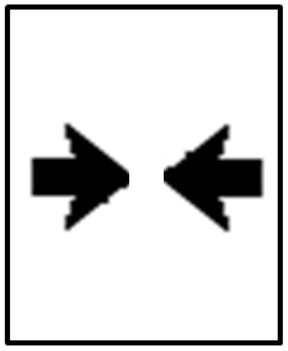
Hydraulic



Temperature



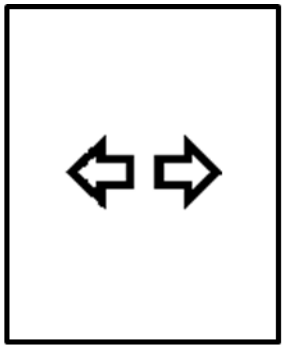
Level



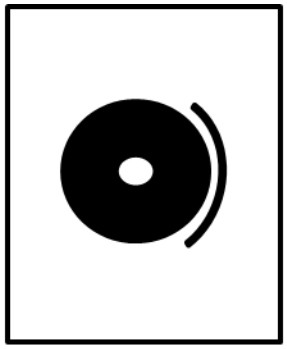
Pressure

Filter

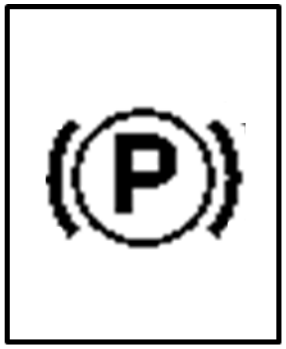
Air



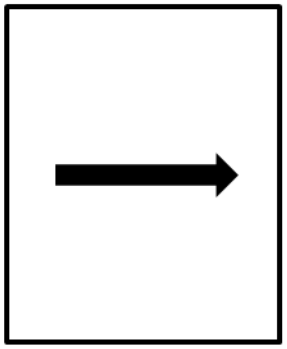
Hazard



Brake




Parking Brake

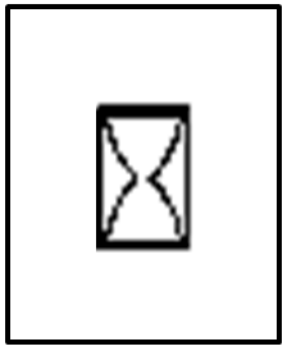


Flow

Fuel

Alternator

Steering



Hour Meter

Engine Coolant

Engine Oil

Hydraulic Oil

Brake Oil/Fluid

Engine Coolant Level

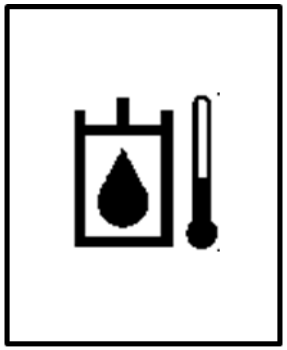
Engine Oil Temperature

Hydraulic Oil Filter

Transmission Oil

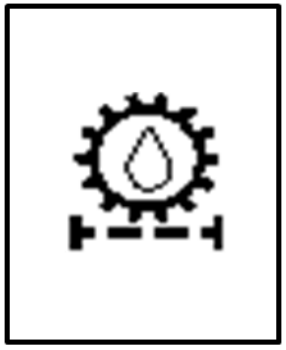
Engine Oil Pressure

Transmission Oil Temperature

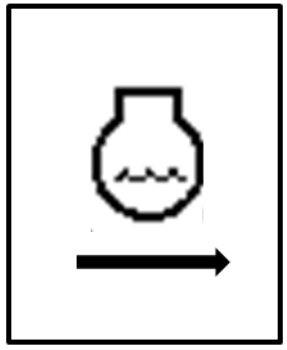


Hydraulic Oil Temperature

Engine Coolant Temperature



Transmission Oil Filter



Engine Coolant Flow

Grease
Lubrication
Point


Engine Start
and
Engine Stop

Read
Operator's
Manual

Service
Indicator/Read
Technical Manual

No Step

Stay Safe Distance From Machine

Crushing

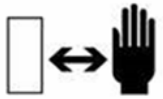
Shield Eyes

Shock Hazard

High Voltage

Safety Alert

Hot Surface – Burns to Fingers or Hands



Keep Hands Away

No Hands – Keep Hands Away

Flammable

Read Operator's Manual


- Who needs forklift training?
  - Anyone who operates a forklift
- Why is training necessary?
  - Forklifts pose many hazards
    - Approx. 100 deaths and 38,000 injuries/year
    - Most Common accidents:
      - Forklift overturns (22%)
      - Worker on foot struck by forklift (20%)
      - Victim crushed by forklift (16%)
      - Fall from forklift (9%)

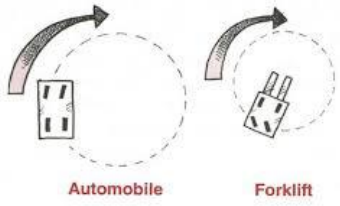
# Comparing a Forklift to an Automobile

Forklift

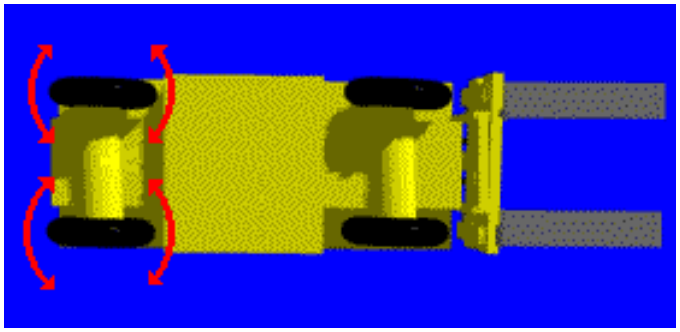
Automobile

- 4-40K pounds
- Rear wheel steering
- High center of gravity
- Low visibility

- 2-6K pounds
- Front wheel steering
- Low center of gravity
- Excellent visibility



# Rear Wheel Steering



Unlike a car or truck, lift trucks use the rear wheels for steering.

# Types of Forklifts

Different types of forklifts are available, mainly for different environments:

- Diesel powered
- Electric powered
- Gasoline powered
- LP-Gas powered

# Interesting Facts

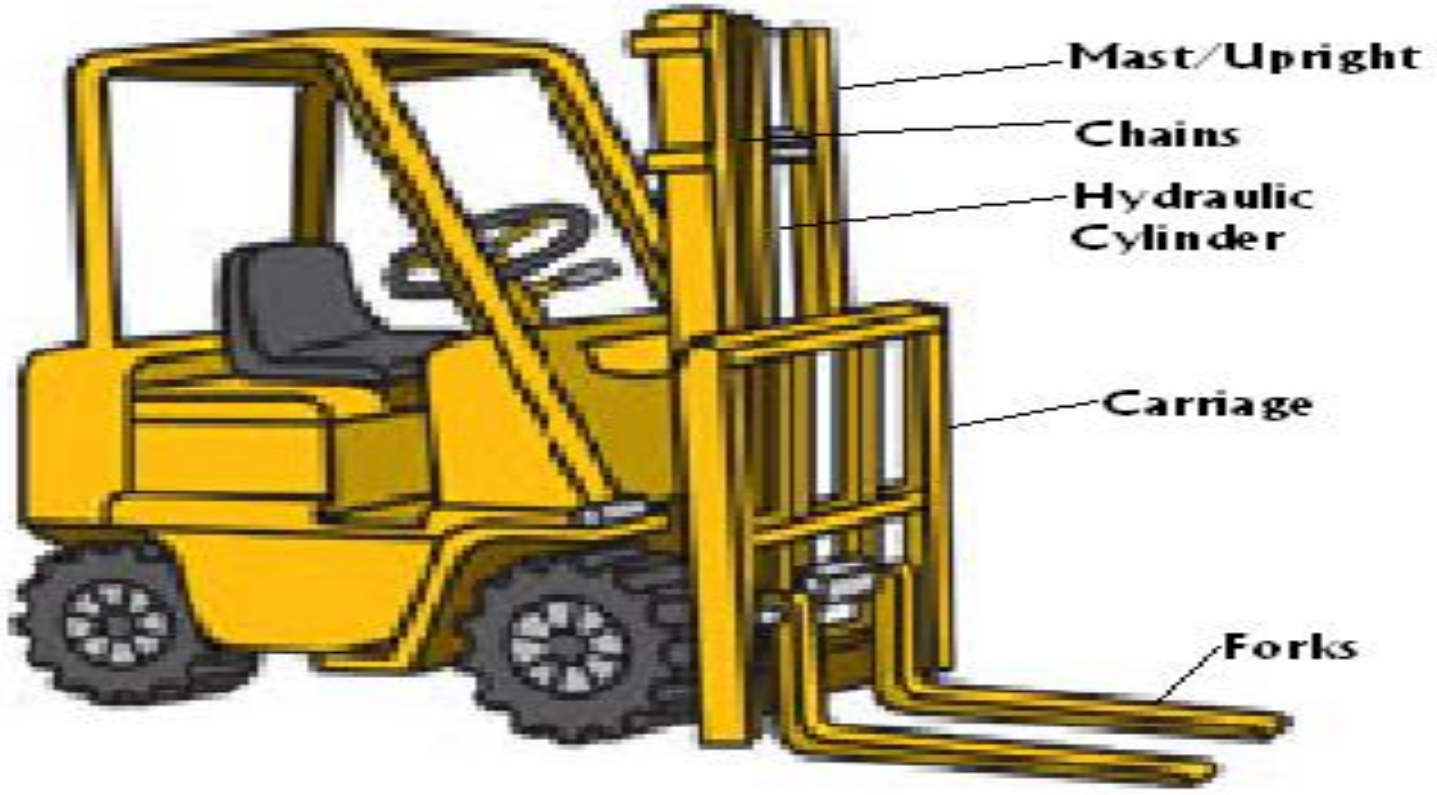
- Forklifts weigh thousands of pounds.
- Are extremely powerful.
- Use rear wheel steering.
- Can turn in a very tight circle.
- Are not very wide for use in aisles.

# Truck Body

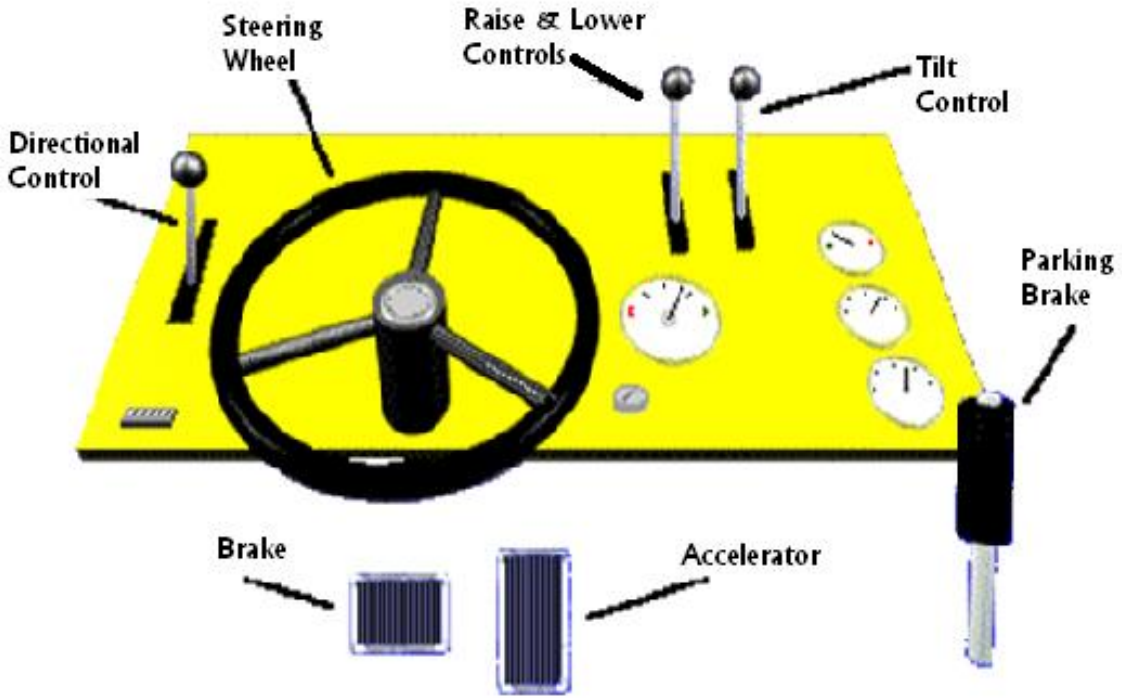

Seat/
Safety
Belt
Data
Plate
Counter
Weight
Steering
Wheels/Axle
Drive
Wheels/Axle

# Overhead Guard

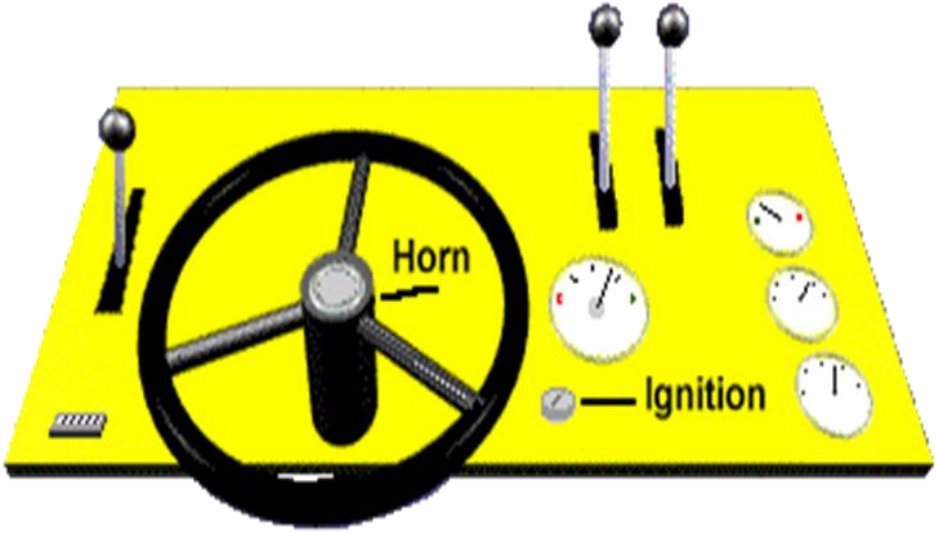
# Hydraulic Lift



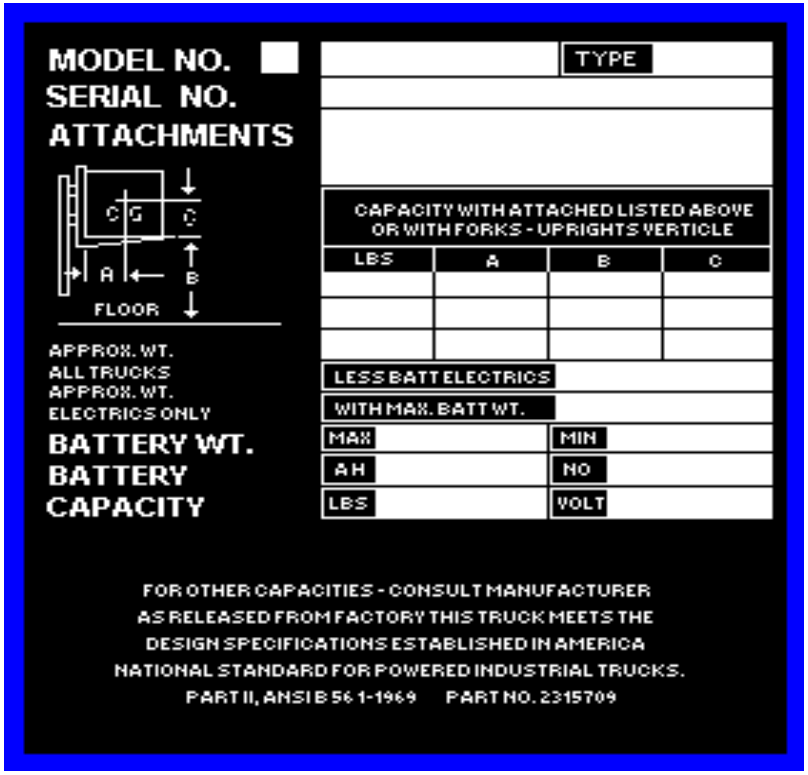
# Truck Controls



# Switches

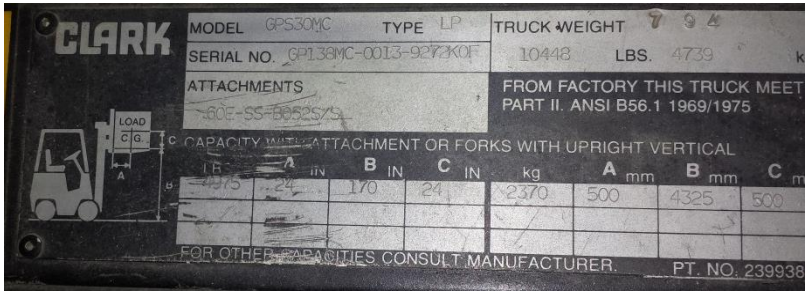


# Data Plates


MODEL NO.
SERIAL NO.
ATTACHMENTS
TYPE
CAPACITY WITH ATTACHED LISTED ABOVE OR WITH FORKS - UPRIGHTS VERTICLE
LBS
A
B
C
CG
FLOOR
APPROX. WT. ALL TRUCKS
APPROX. WT. ELECTRICS ONLY
LESS BATT ELECTRICS
WITH MAX. BATT WT.
BATTERY WT.
BATTERY CAPACITY
MAX
MIN
AH
NO
LBS
VOLT
FOR OTHER CAPACITIES - CONSULT MANUFACTURER
AS RELEASED FROM FACTORY THIS TRUCK MEETS THE
DESIGN SPECIFICATIONS ESTABLISHED IN AMERICA
NATIONAL STANDARD FOR POWERED INDUSTRIAL TRUCKS.
PART II, ANSI B 56 1-1969 PART NO. 2315709

# Capacity Plate

- **Must be on all forklifts/ legible**
- **Information found on capacity plate**
  - ✓ Model #
  - ✓ Max load weight
  - ✓ Max lift height
  - ✓ Serial #
  - ✓ Manufacturer information
  - ✓ All attachments used with lift



# Tire Types

Solid or Pneumatic

# Safe Forklift Operation


# Pre-Use (daily) Inspections

- Inspect forklift before each use
- Don't know condition left in by last user
- Not inspecting the forklift prior to use could lead to a hazardous situation or cause serious damage to the forklift and/or the load

# Pre-Use (daily) Inspections

The safety equipment you must inspect daily is:

- Steering
- Brakes
- Carriage, chains, forks
- Hydraulic hoses
- Hydraulic lift/tilt controls
- Tires
- Leaks
- Fuel level
- Oil pressure

# General Practices

- No passengers allowed
- Keep arms/hands inside cab area
- Wear your seatbelt at all times

# Pedestrians

- Pedestrians have the right of way
  - Slow down at intersections
  - Look before backing
  - Use horn when coming around blind corners and at blind intersections
  - Check mirrors at intersections if they are present in workplace
  - Never let anyone travel under the forks

# Handling and Moving Loads

- Check the capacity to be sure the forklift can handle the load
- Check the load for weight and stability
  - If load is not marked
    - Contact supervisor
    - Lift the load 1-2 inches to test the stability of the rear wheels and the forklift
    - If the forklift struggles, set the load down and if possible break load into smaller, more manageable loads
    - Strap load to pallet if loose materials

# Handling, Stacking and Moving Loads

- Picking up load
  - Approach the load straight on with the forks in the travel position
  - Stop when the fork tips are approx. 1 foot away from the load
  - Level forks and drive slowly forward until load is against backrest
  - Lift the load high enough to clear what is under it

# Handling and Moving Loads

- Picking up load (cont.)
  - Look over both shoulders to make sure you are clear and slowly back out one foot
    - Sound horn before backing if can't clearly see behind you
  - Slowly tilt mast back to stabilize the load

# Handling and Moving Loads

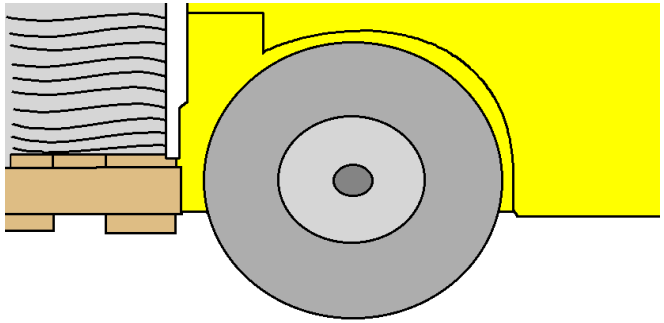
- Setting down the load
  - Drive to location, square up to load area and stop about one foot away
  - Level the forks and slowly drive forward
  - Lower the load
  - Tilt the forks slightly forward
  - Look over your shoulders  and back straight out until the forks clear the load

# Handling and Moving Loads

- Additional tips
  - Never lift a load while moving
    - Stop completely before raising the mast
  - Make sure the top load is squarely stacked on bottom load
  - Always approach and leave the load area slowly
  - Always look over shoulders before backing up

# Driving with a Load

- Travel with load tilted slightly back for stability
- Travel with the load at the proper height
    - 4-6 Inches at fork tips
    - 2-4 Inches at heels
- Drive in control (slow)
- Drive in reverse if you cannot see over the load
- Never approach personnel in front of fixed objects

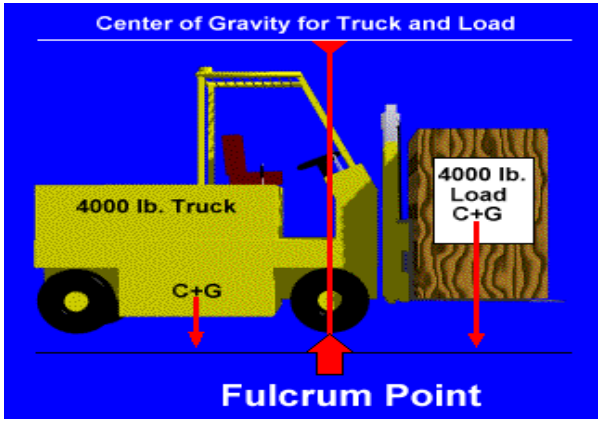


# Driving on Inclines - Ramp/Slope

- Always drive with the heavier or less stable end of the forklift pointing up the incline
  - If the forklift is loaded (heavier/less stable in front)
    - Drive forward up the incline with the load
    - Drive in reverse coming down the incline with the load pointed up the incline
  - If the forklift is not loaded (heavier in rear)
    - Drive forward down the ramp
    - Drive in reverse going up the ramp

# Fulcrum or Pivot Point

- The front wheels of the forklift are the fulcrum point
  - The rear of the forklift has counter weights to help off set the weight of the load
    - Unloaded forklift is less stable - all the weight is in the rear
  - When the forks are loaded the weight of the forklift and load are more evenly balanced
    - Loaded forklift is more stable
  - When the load out weighs the counter weight the forklift can tip forward when the load is raised

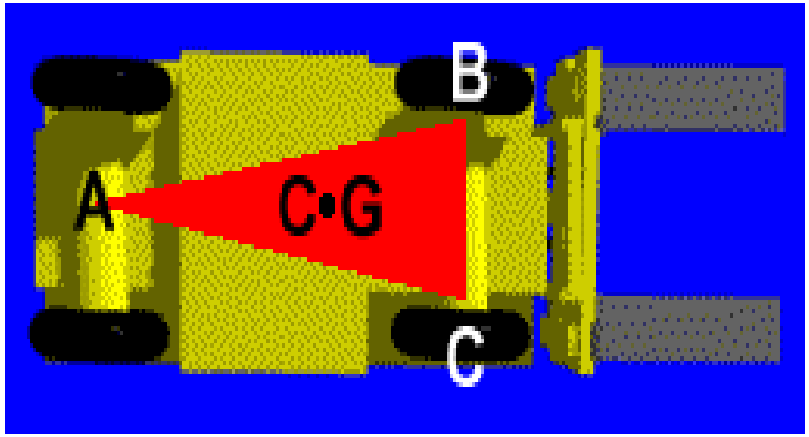


# Tipping Forklift

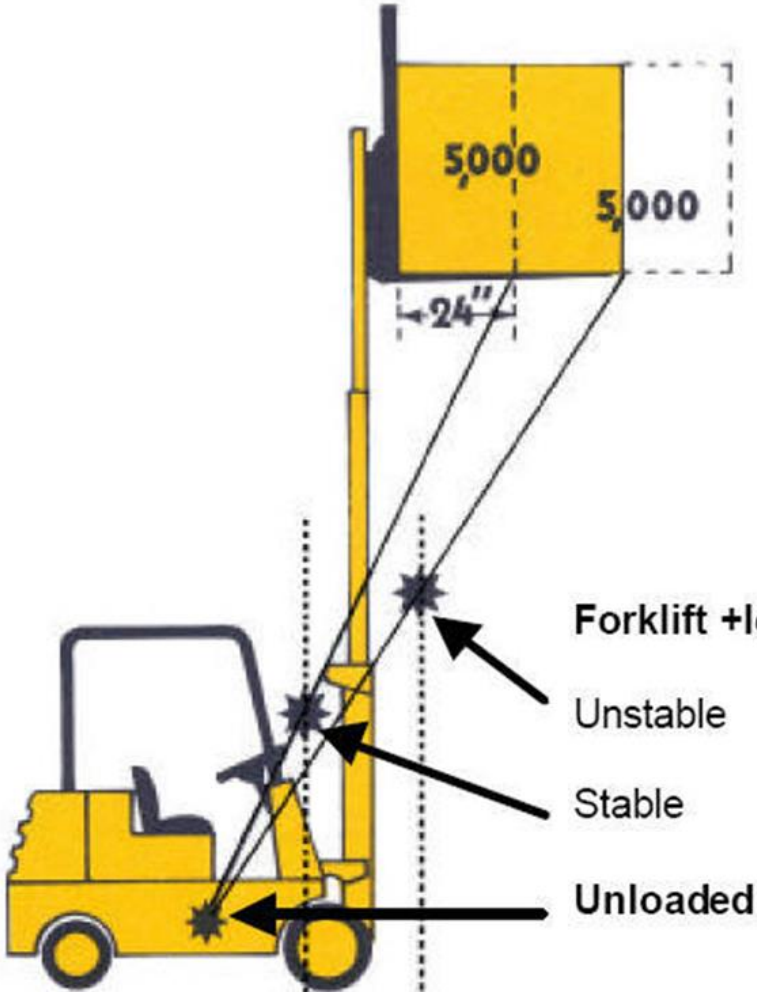
- What should you do?
  - Must be wearing seatbelt
    - Will keep you from falling out of caged area
  - Hold tightly to steering wheel with both hands
    - Keep hands and arms inside caged area
  - Plant feet flat on floor and press down
    - Keeps body stable and keeps legs in caged area
  - Lean in opposite direction

# Stability Triangle

- The closer the center of gravity (CG) is to line BC the more stable the forklift is
- The closer the CG is to lines AB or AC the more unstable the forklift becomes
- If the CG ever goes outside the stability triangle, the forklift will tip
  - Loads too heavy or offset
  - Taking corner too fast
  - Traveling surface is not level



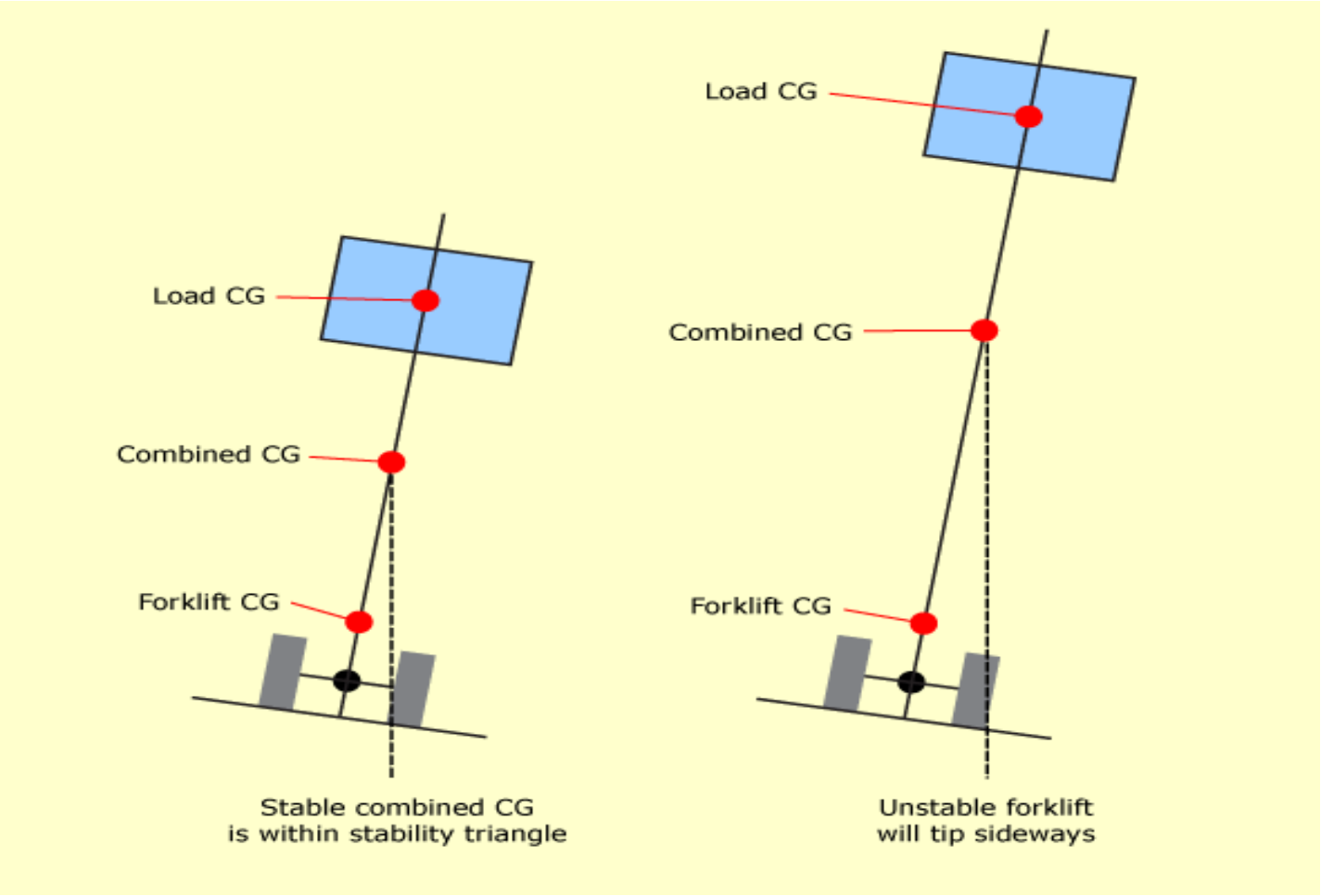
# Stability Triangle



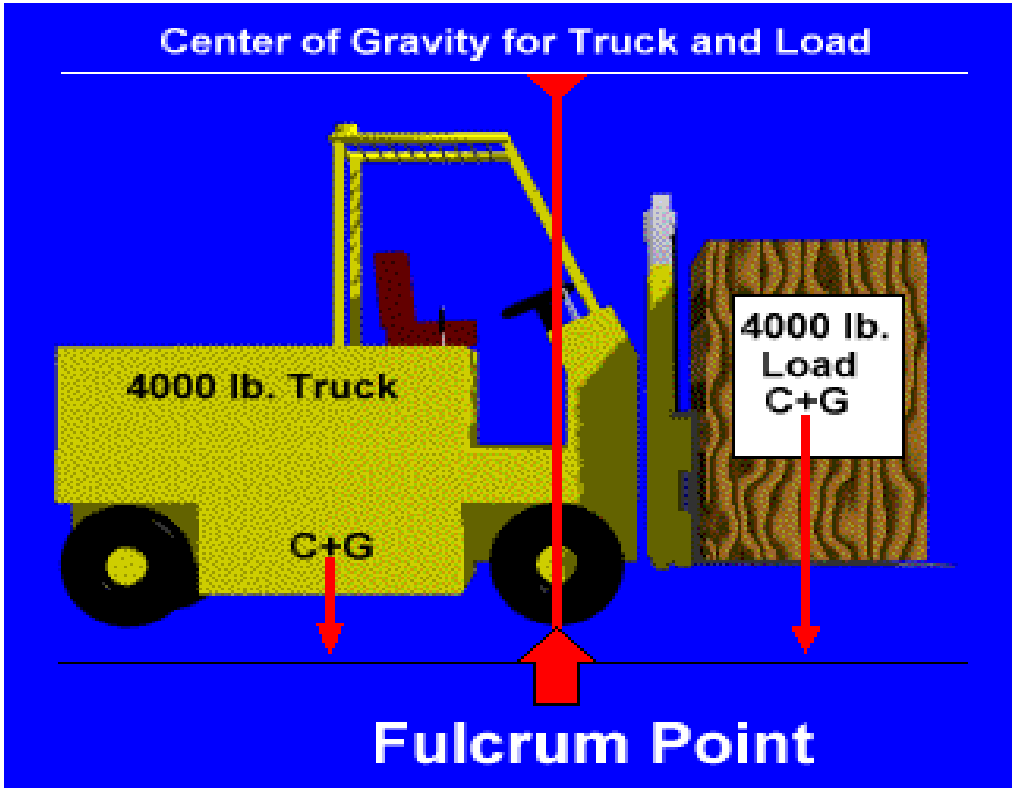

The center of gravity of the forklift-load combination can move outside the stability triangle if:

- 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

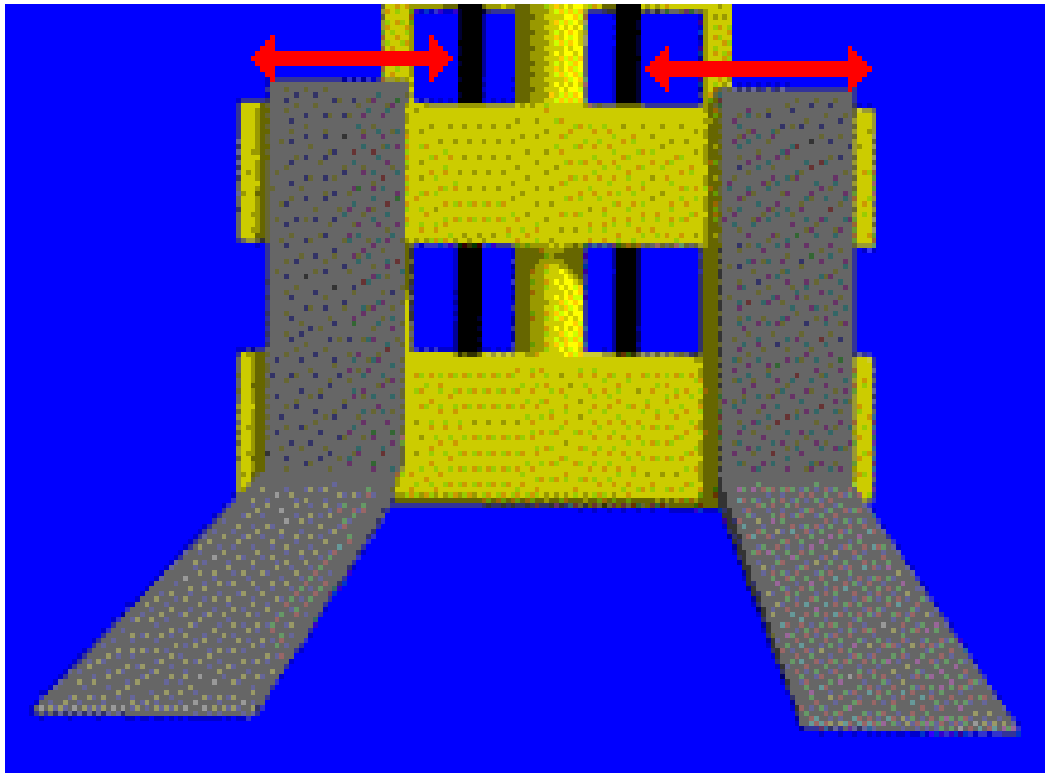
# Stability Triangle



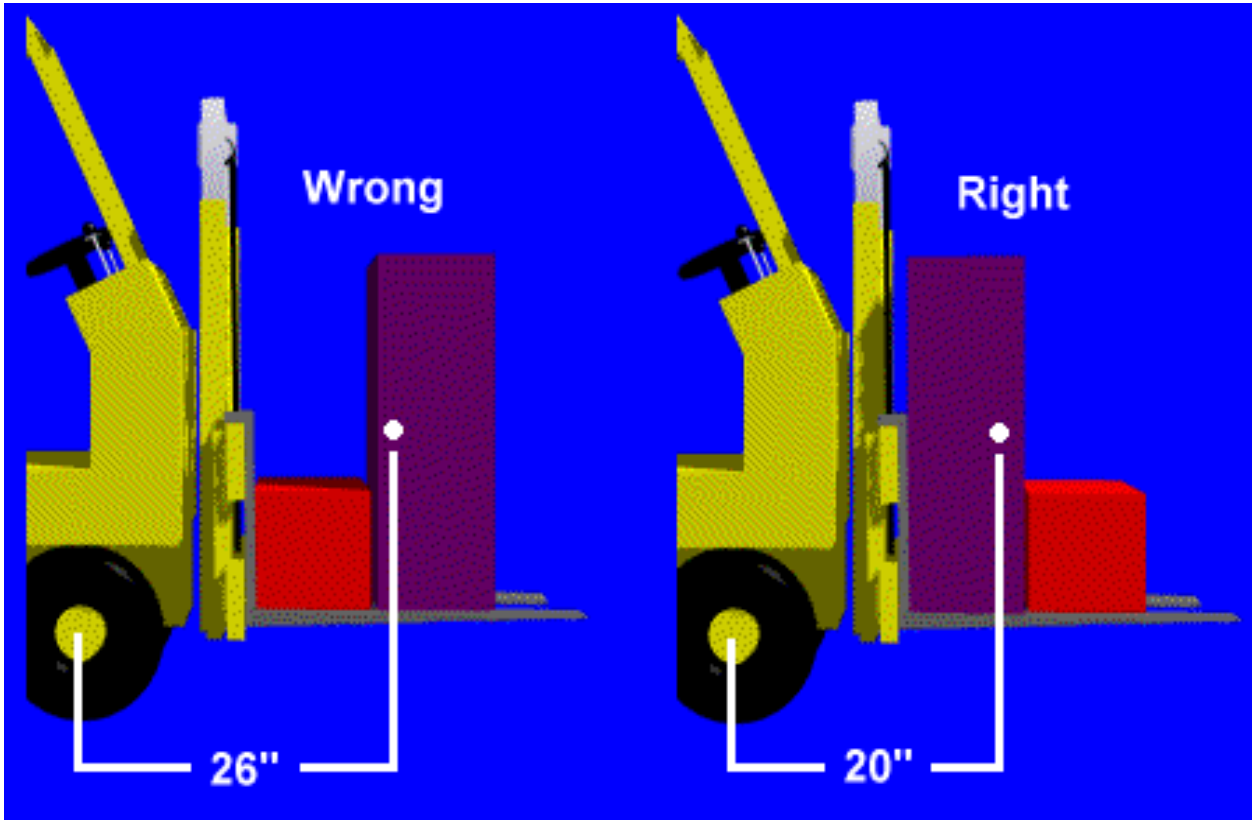
# Load Capacity



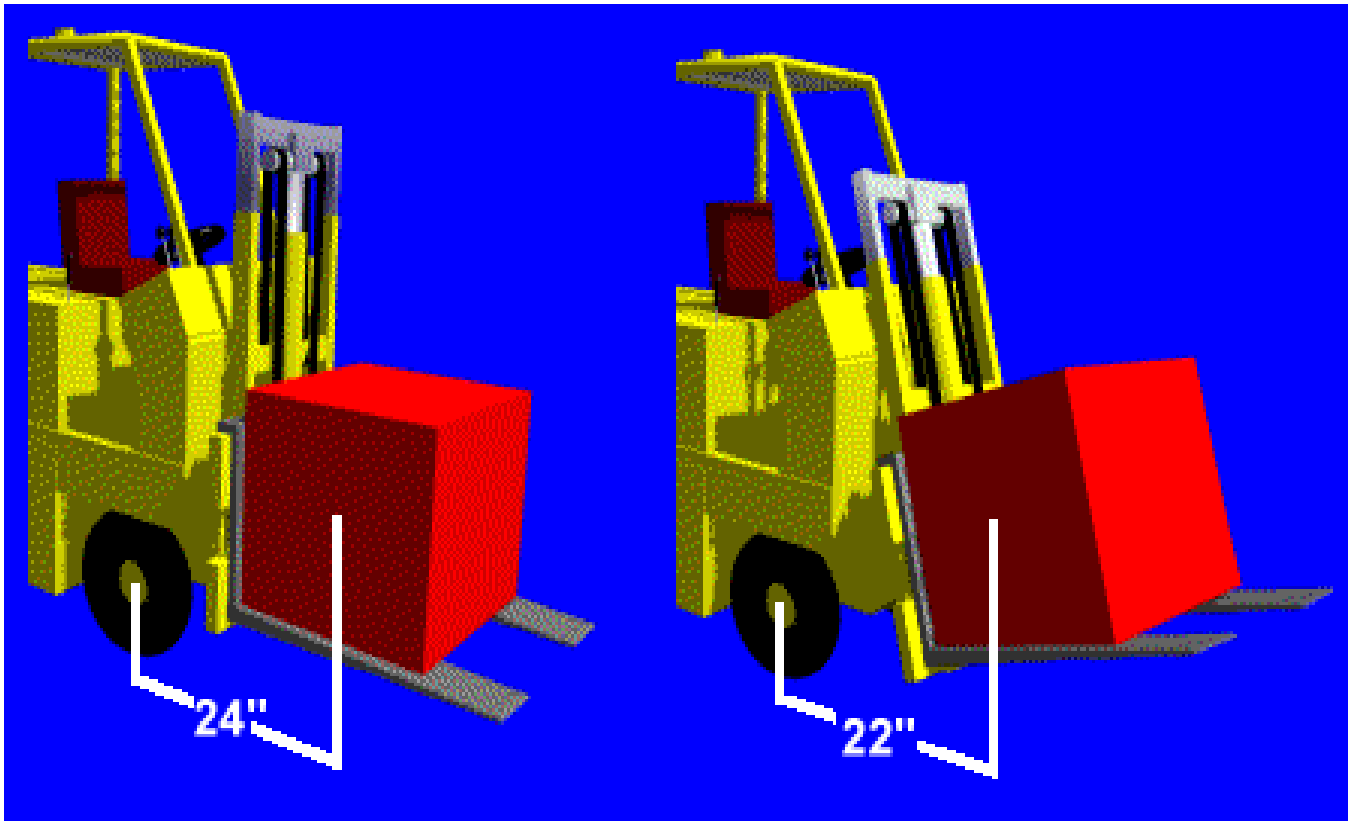
# Center Your Loads



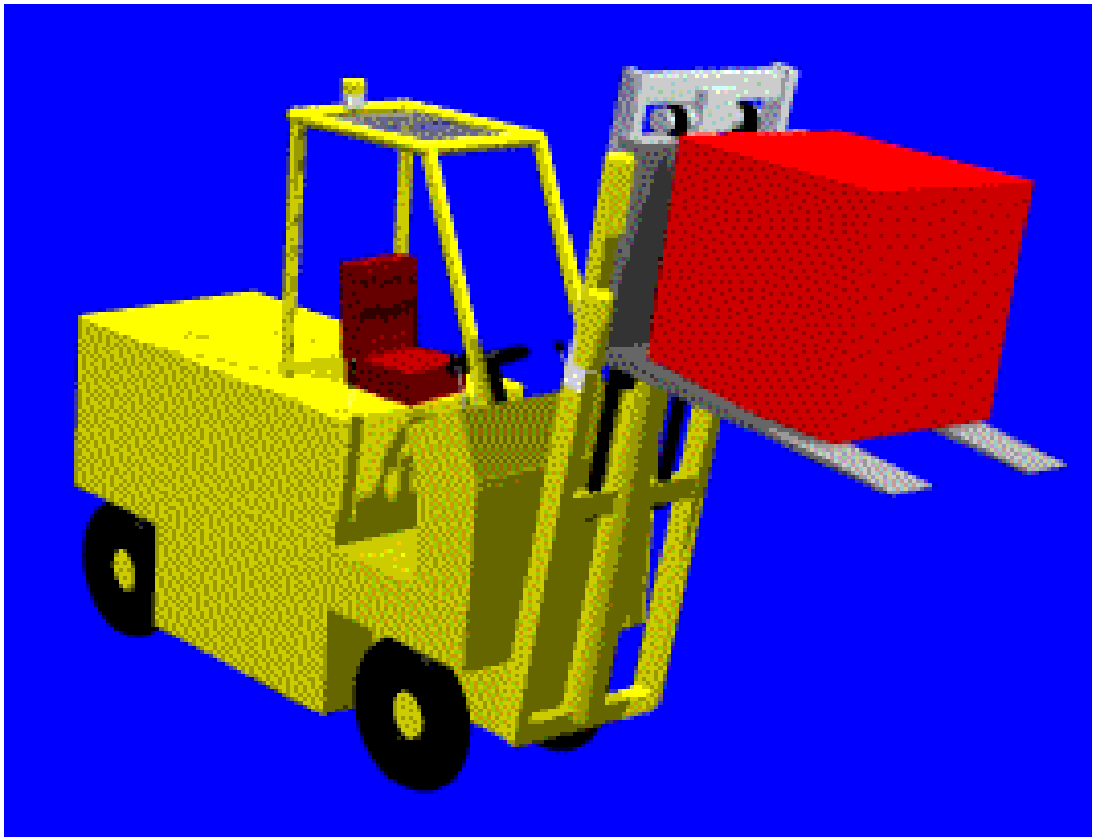
# Load Centering



# Load Centering

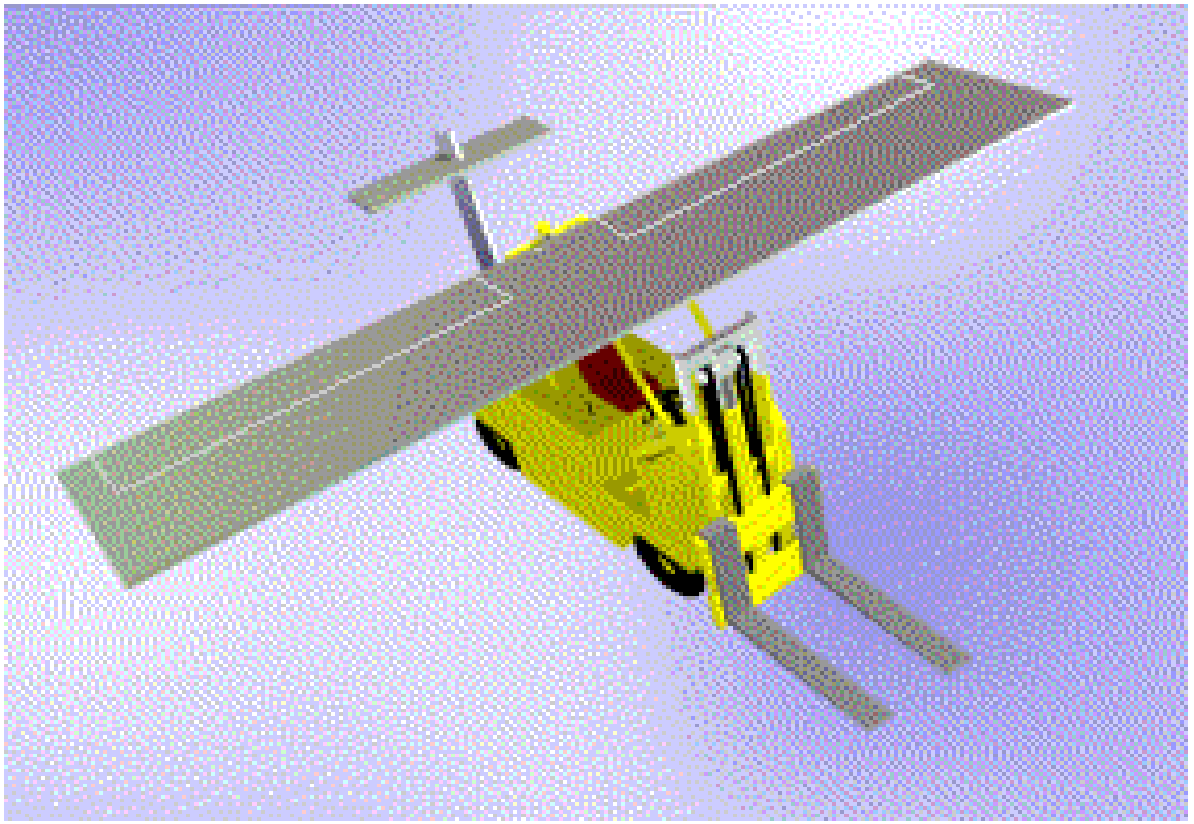


# Load Centering

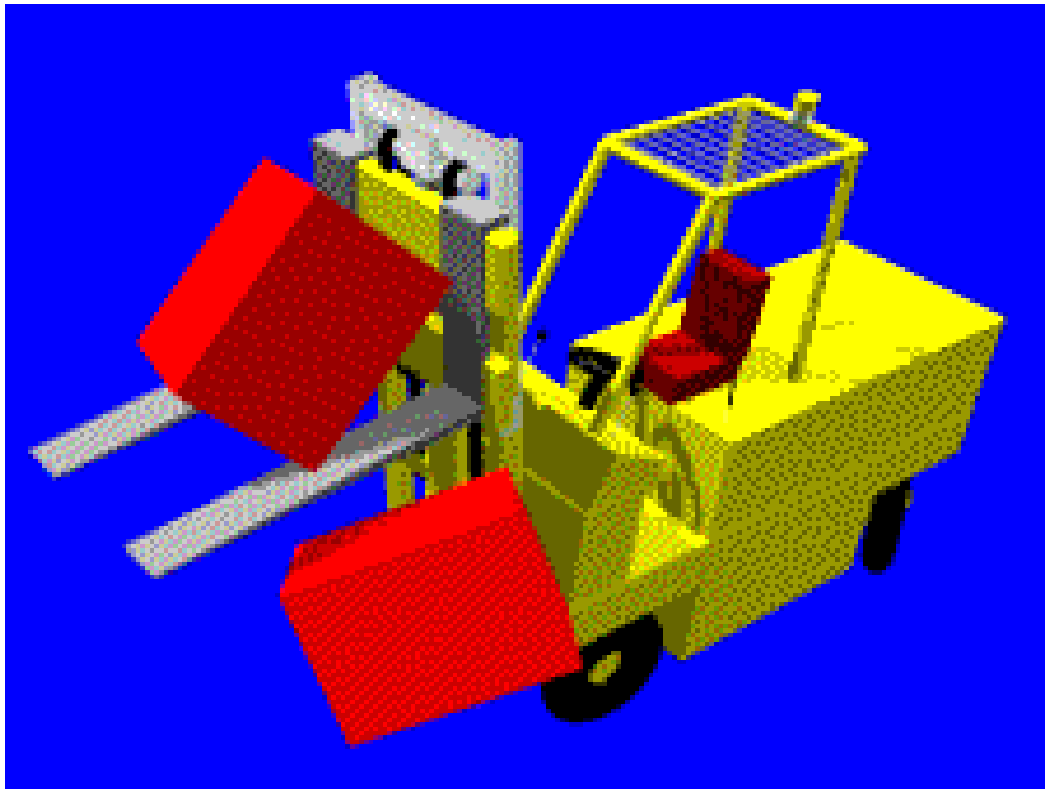


# Speed

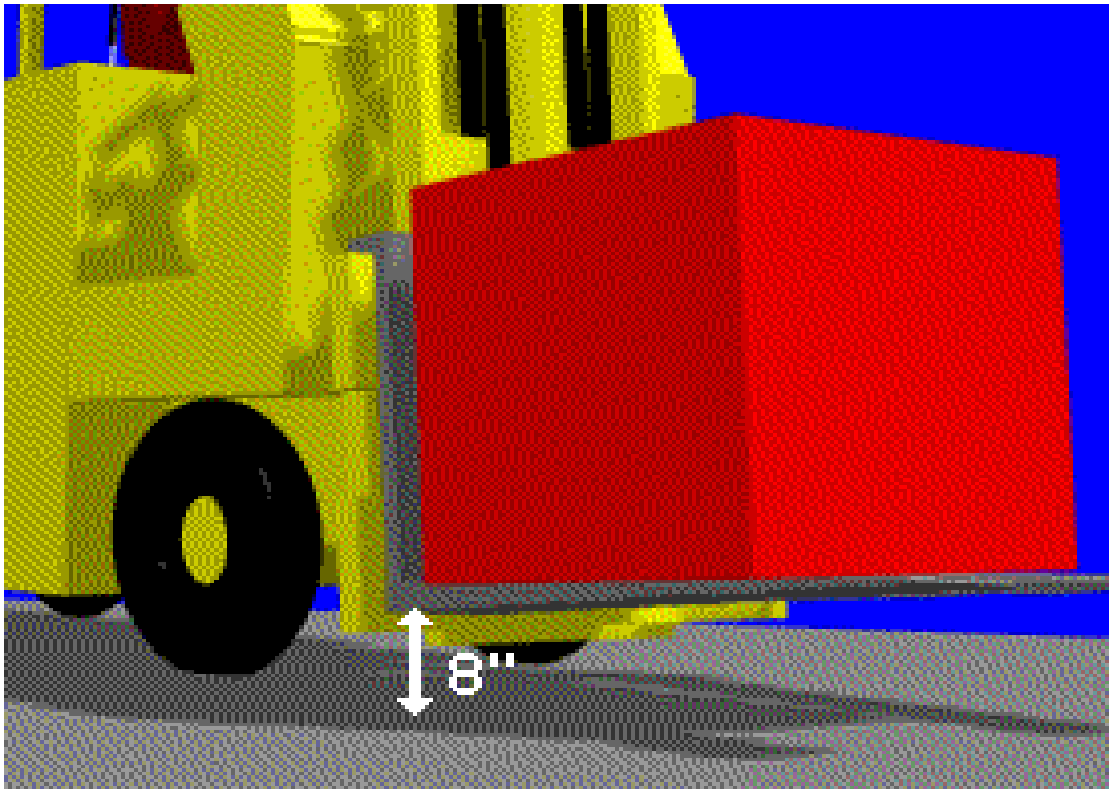
**KEEP YOUR SPEED DOWN!**



# Quick Turns

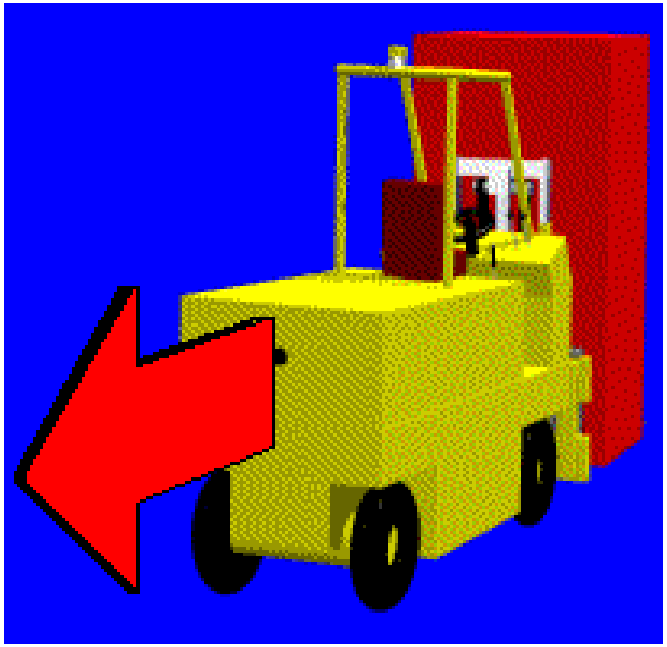


# The 8 Inch Rule

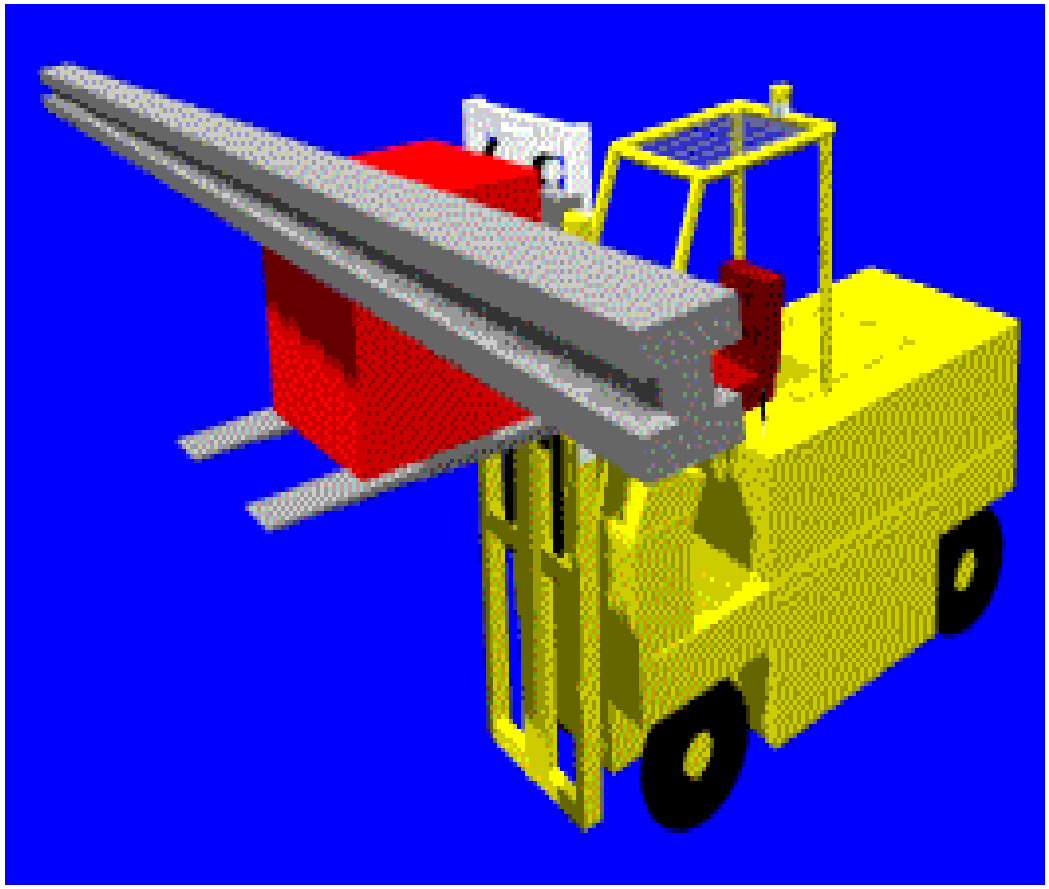


# If Your View is Blocked

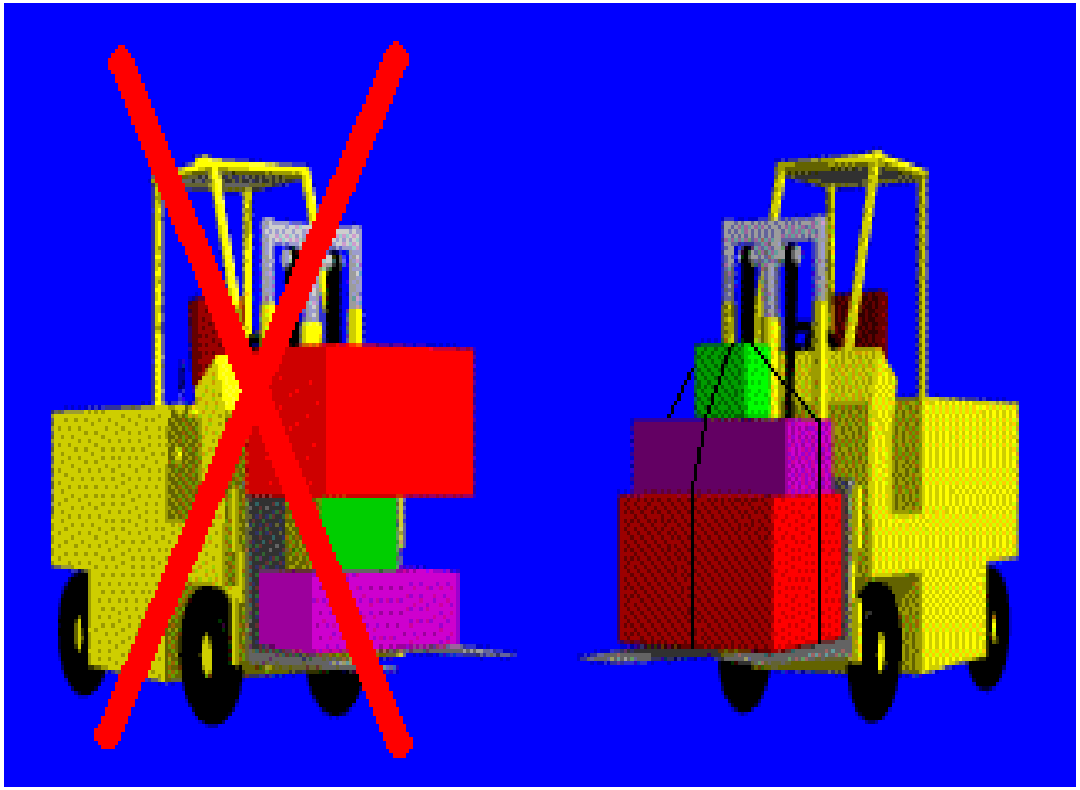
If a load blocks your view, travel in reverse.



# Overhead Clearance

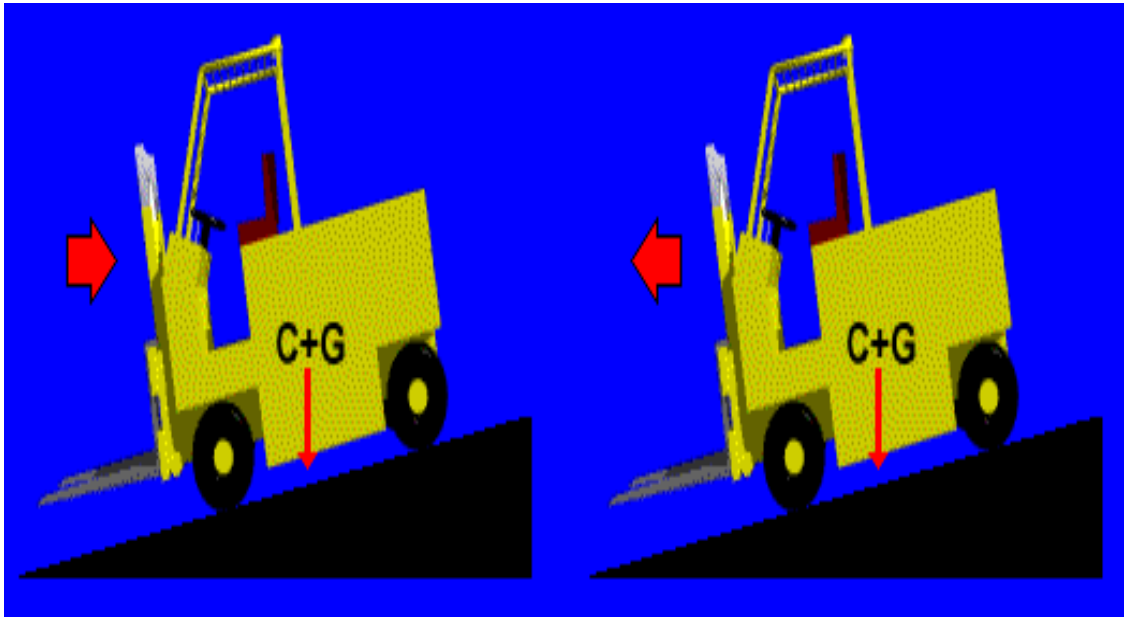


# Loose Loads



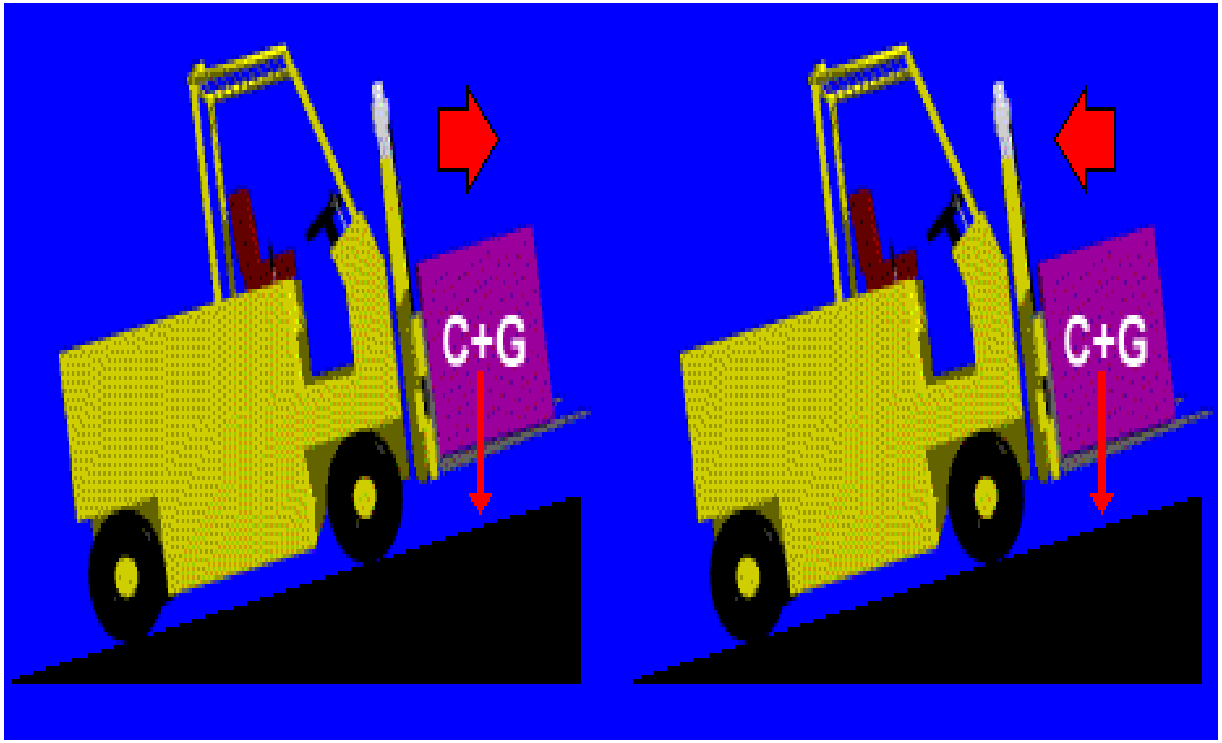
# Driving on Ramps

Unloaded

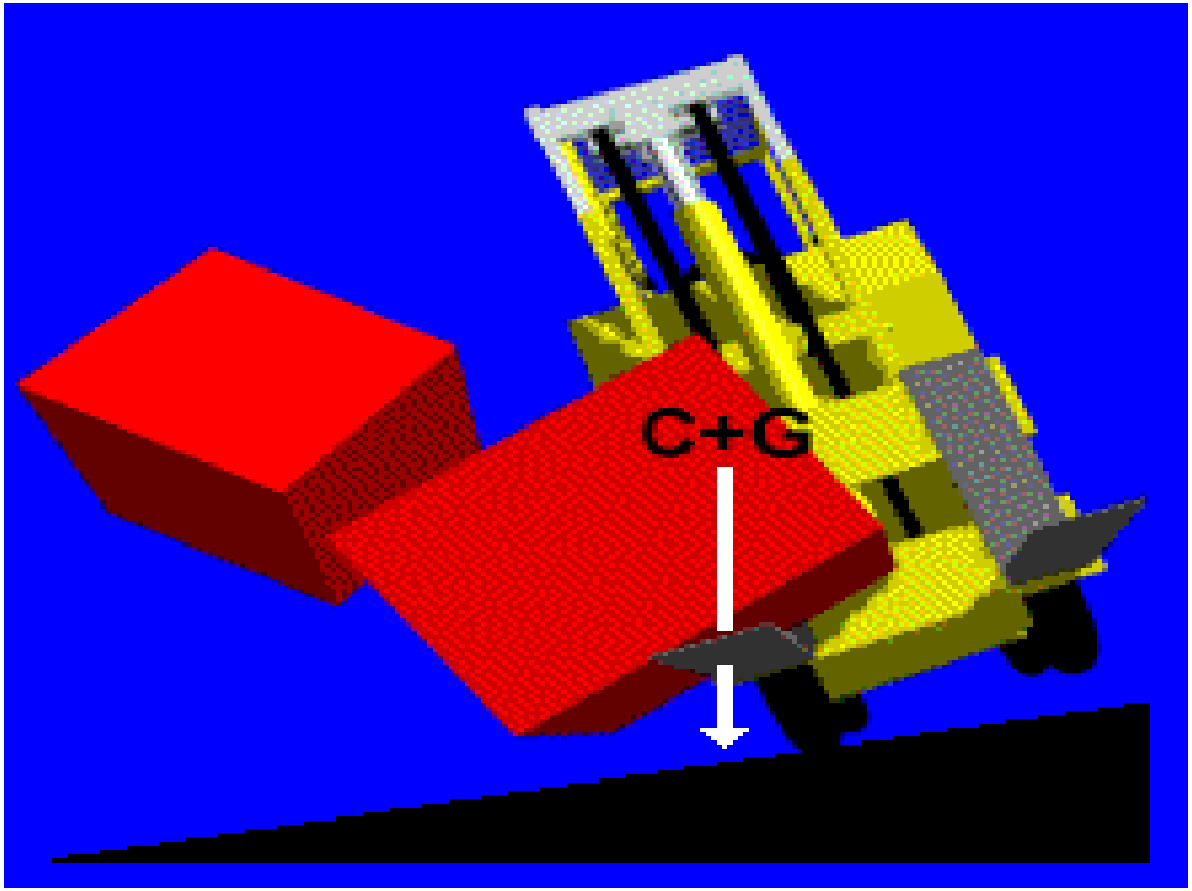


# Driving on Ramps

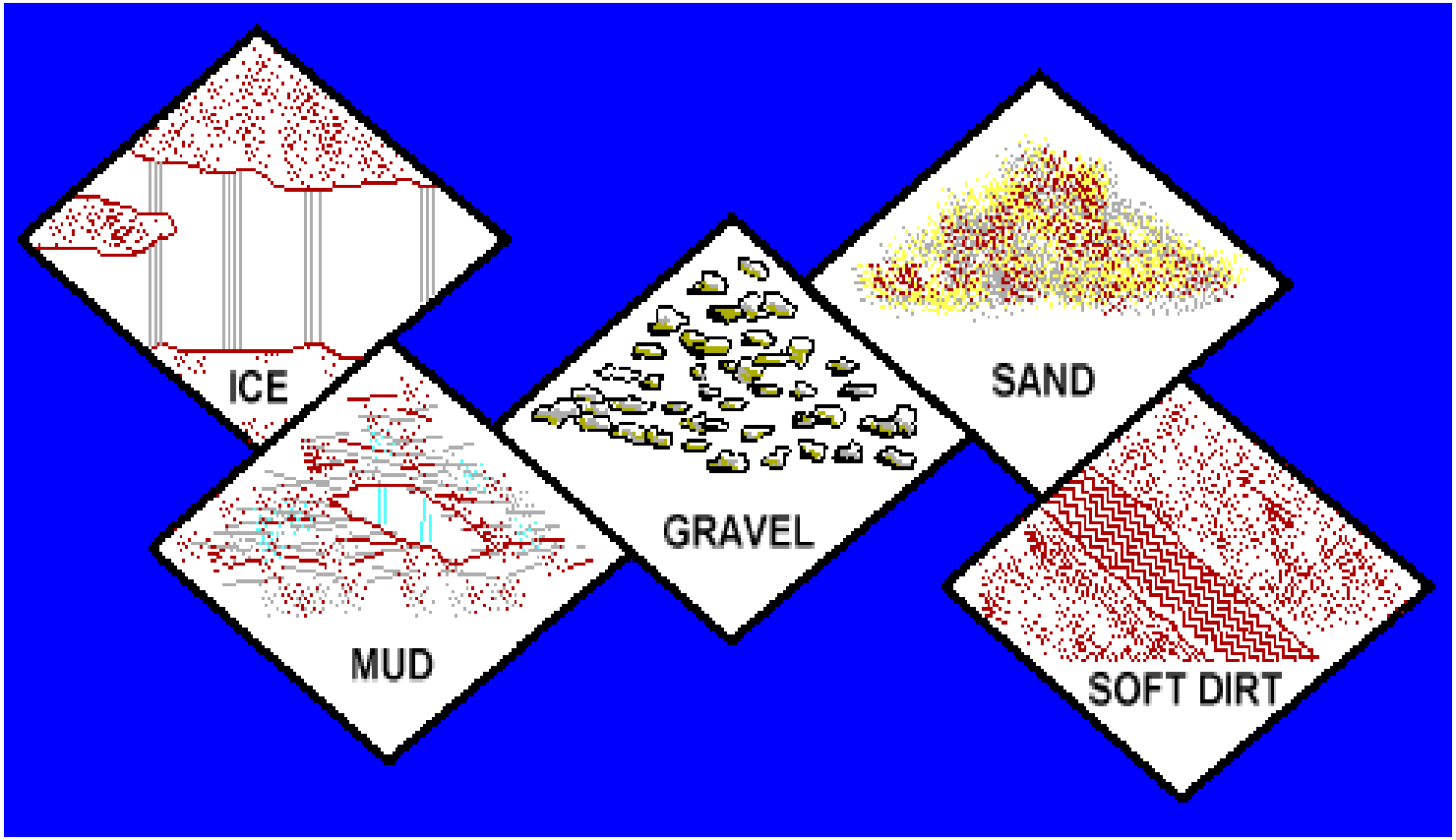
Loaded



# Driving Across Ramps



# Driving on Various Surfaces



# What's Wrong Here?

Forks not fully lowered

Forklift parked on sloped surface

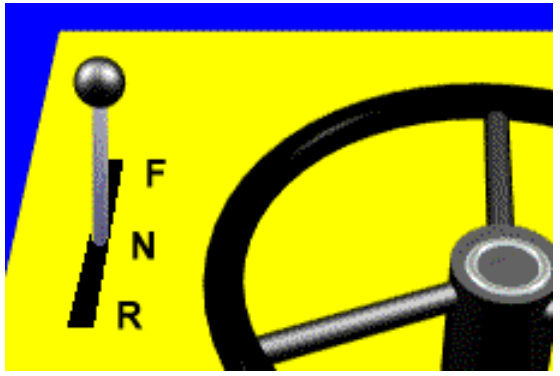
# Parking

Always park your truck away from traffic and on a level surface.

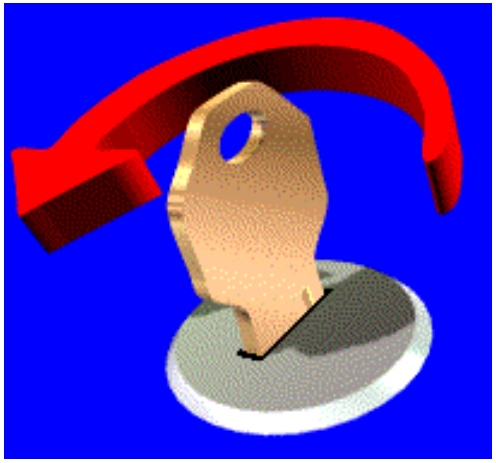
# Parking

Set directional control in neutral.

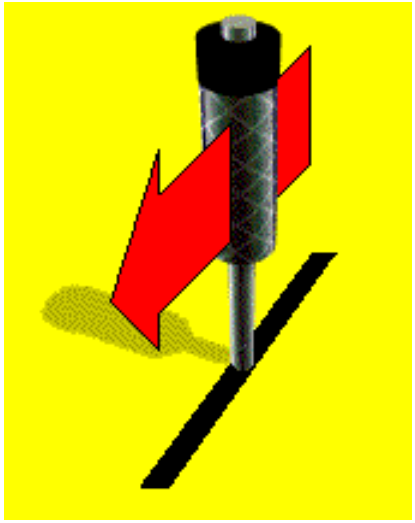
Lower forks flat on the floor.



# Parking



Turn engine off and remove key.



Set parking brake.

# Stopped Forklift

- When parked or unattended
  - Forks flat on ground
  - Turn off engine
  - Set parking brake
  - Do not block:
    - Exits
    - Emergency equipment
    - Signs or postings

# Refueling and Recharging

- Park in designated refueling or recharging area.
- Do not block emergency equipment.
- Make sure area is well ventilated.
- Have extinguisher nearby.

# Refueling and Recharging

- Turn off engine and lights.
- Do not smoke.
- Do not spill fuel.
- Use only approved cans.
- For LP, shut off valves.
- When charging, remember gases.

# What Should You Do

- Follow the safety practices presented in this training
- Always wear your seatbelt
- Inspect the lift before each day, document and do not operate if any issues are noted
- Remember **"Low and Slow"**

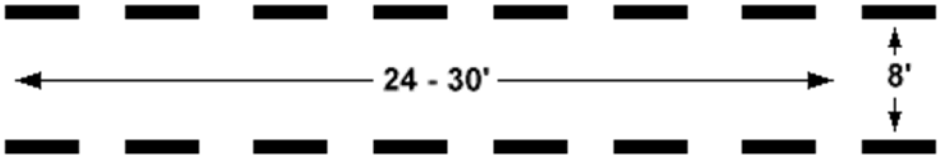
# Conclusion

- Forklifts are more hazardous than most people usually perceive them to be
- Pre-use inspections must be performed before each day or shift
- It is important to understand how the load will affect the stability of the forklift
- The operator must always be on the look out for hazards and pedestrians

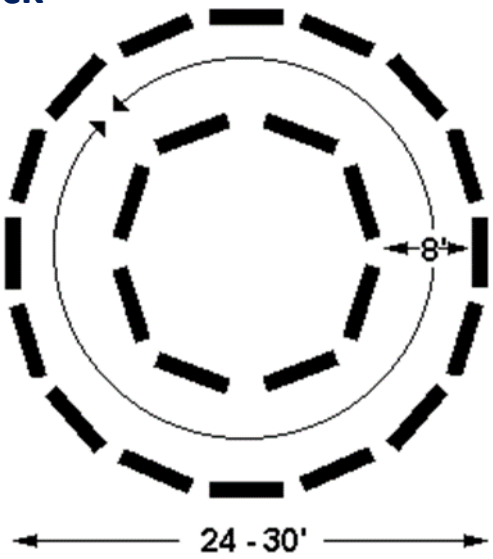
## SUMMARY

- Carry out a risk assessment before you begin
- Be properly trained, qualified and physically fit
- Carry out all the necessary safety checks in accordance with standard operating procedures
- Conduct regular inspections of your forklift truck
- Take into account the working environment and people's safety
- Think ahead
- Drive slowly
- Never take passengers
- Always keep your whole body inside the truck when driving
- Never stand too close to a working forklift truck
- Never put yourself between a solid object and a manoeuvring forklift truck
- **STAY AWARE, STAY ALERT, STAY ALIVE!**

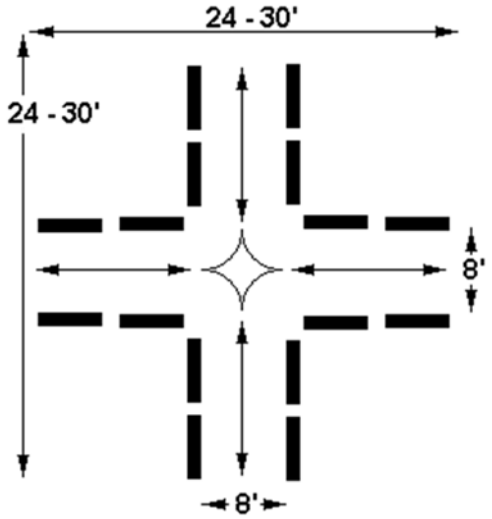
## A. Straight - forward and back



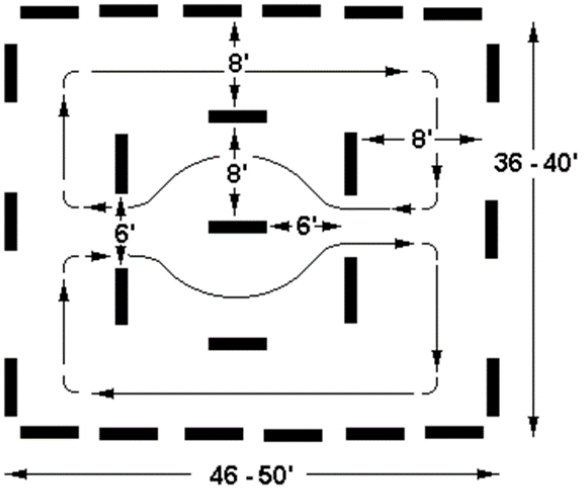

## B. Circle - forward and back



## C. Cross - forward and back




## D. Tight Spots - forward and back



# Quiz !

1) Who is allowed to operate a Forklift:

a. Anyone with a valid drivers license

b. Only those who have read the operators manual and operated a lift in the past

c. Only trained and authorized certified personnel

2) The center of gravity on an unloaded forklift is located:

a. In the counterbalance

b. Over the forks

c. Under the operators seat

d. At the steering wheel

3) Operators using a forklift must wear the seatbelt:

a. True
b. False

4) If the forklift tips over the operator should do which of the following:

a. Hold on firmly to the steering wheel
b. Brace feet against floorboard
c. Lean away from the point of impact
d. Stay within the operator cab
e. All of the above

5) The forklift inspections should be completed when:

a. Beginning of each shift
b. Before use
c. Every 40 hours
d. When the forklift begins to behave strangely

6) When the forklift is left unattended the forks must be placed:

a. Above eye level
b. 4" to 6" above the ground
c. On the floor

7) If the load is too big to see around, you should:

a. Lean you head out the side to see
b. Lift the load high enough to see under
c. Drive in reverse
d. Have a spotter direct you path

8) When picking a load, the mast should be :

a. Tilted as far forward as possible
b. Tilted as far back as possible
c. Tilted back enough to stabilize the load
d. Left where it is, since tilting has no effect on stabilizing the load

9) When operating a loaded forklift on a ramp, the operator must :

a. Drive in reverse going down the ramp and forward up
b. Drive in reverse going up the ramp and reverse down
c. Drive forward going up the ramp and forward down
d. Drive in reverse going up the ramp and reverse down

10) When replacing the propane cylinder, you should wear gloves and eye protection because:

a. The engine may backfire
b. Residual pressure in the line may release liquid propane
c. Sparks may be released when the tank is uncoupled