

Powered Industrial Truck Operator Training

- Engineering Principles
 - ◆ Fulcrum Principle - counterweight vs load.



Powered Industrial Truck Operator Training

■ Engineering Principles

◆ Maximum Capacity of the Forklift:

- 5000 lbs. @ 24 inches
- 4000 lbs. @ 36 inches
- 3000 lbs. @ 42 inches

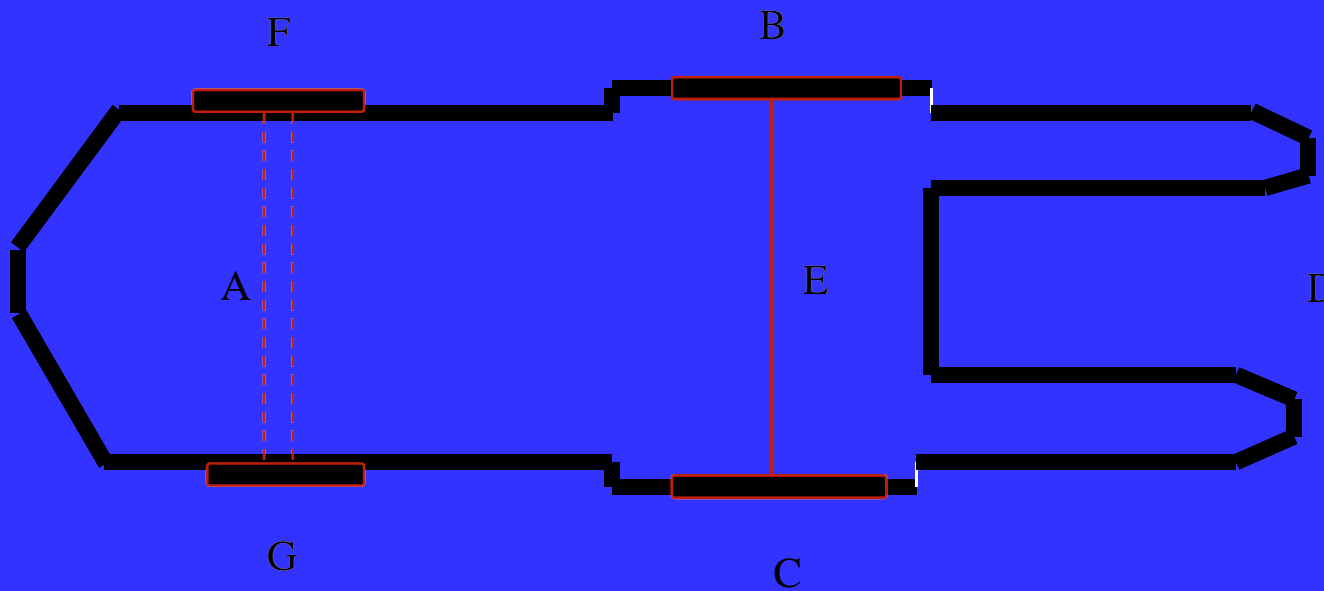
◆ **Note: For every inch farther away from the the carriage that you place the load center you will lose approximately 100 pounds of lifting capacity.**

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- Stability Triangle (pyramid):
 - ◆ 3-Point suspension (2 front tires and pivot pin on rear axle.
 - ◆ Variables that effect the stability triangle:
 - 1. Momentum
 - 2. Turning
 - 3. Hydraulics
 - 4. Terrain
 - 5. Stop/Start



Stability Triangle - Figure 1

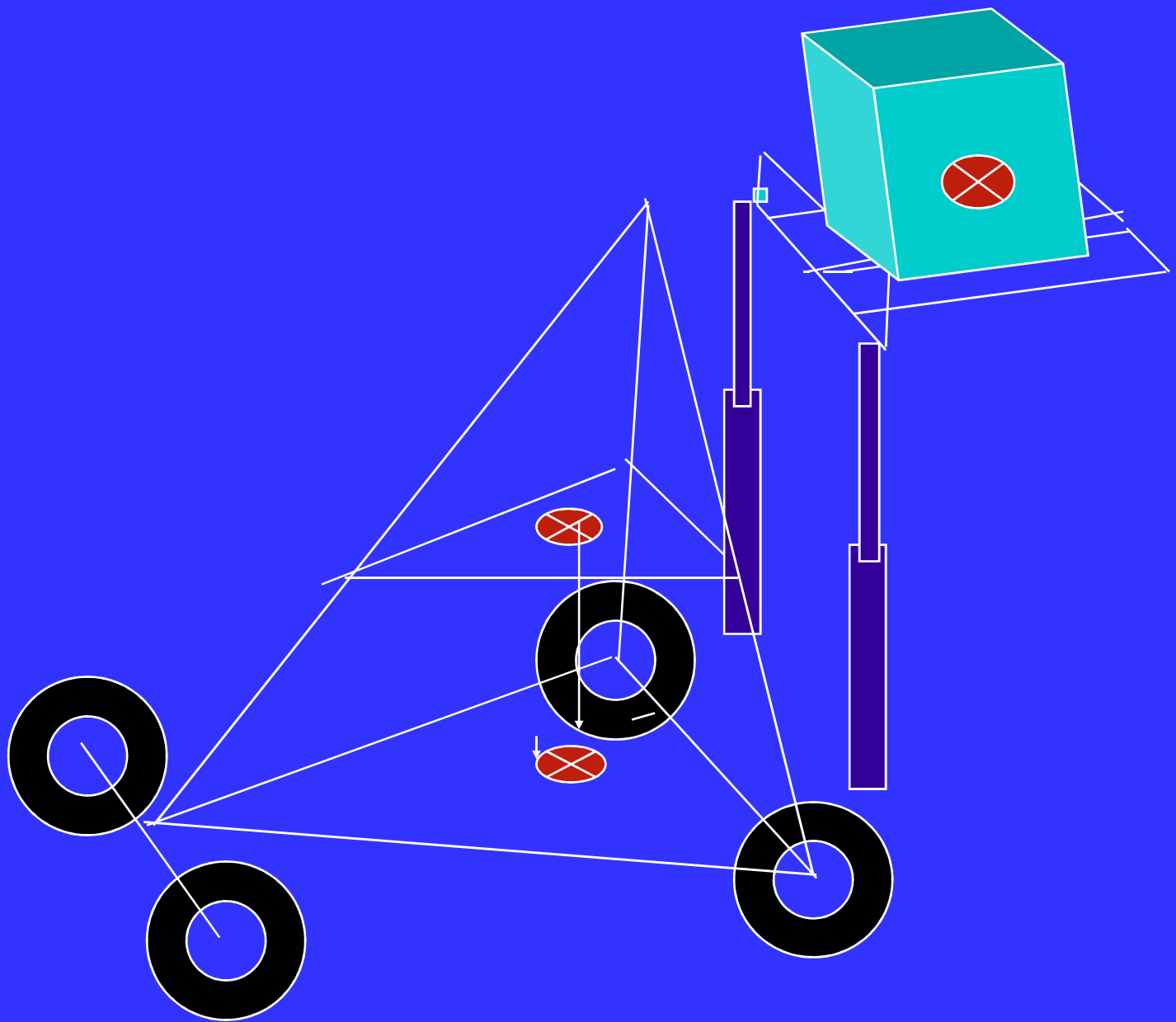


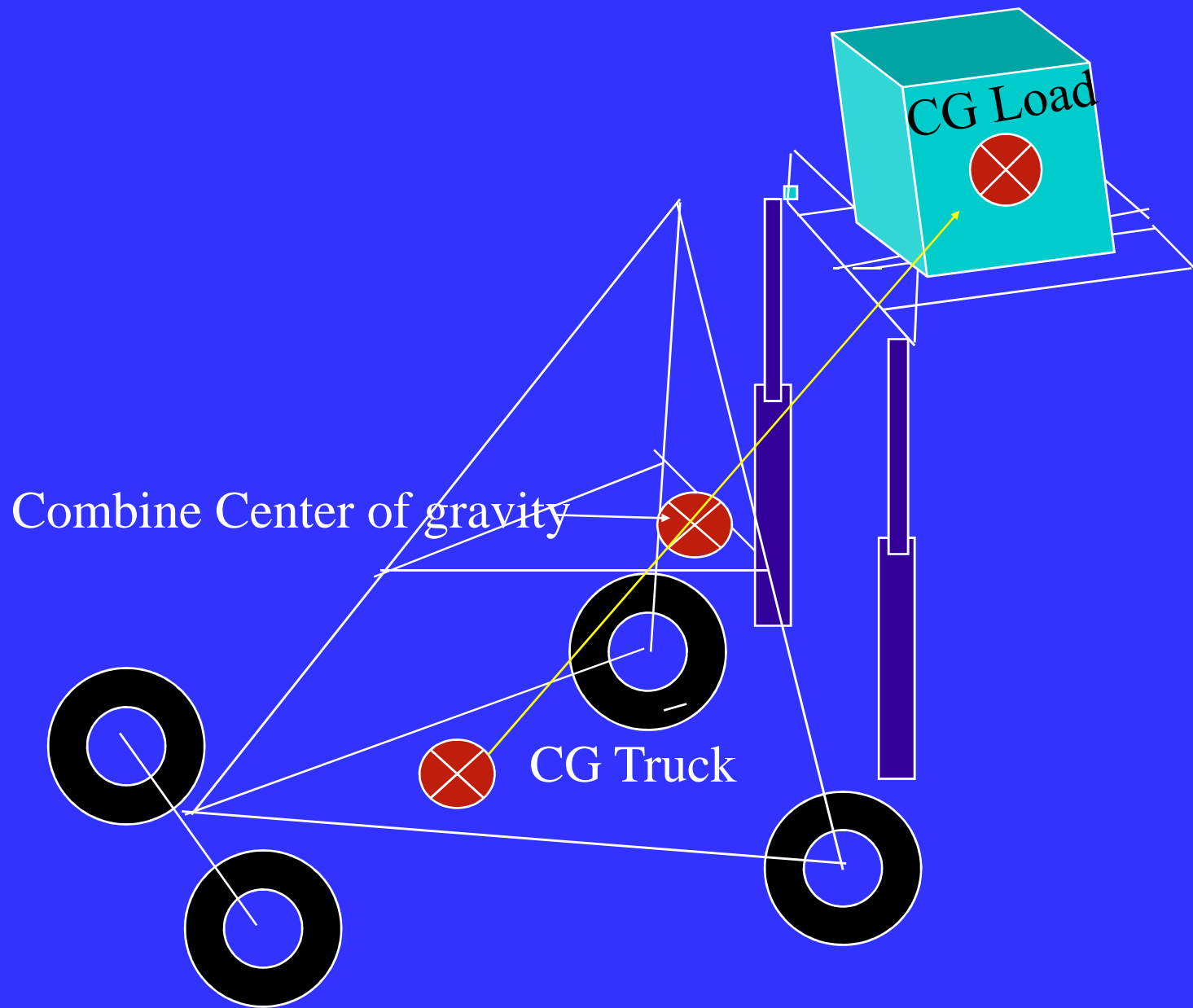
Notes:

1. When the vehicle is loaded, the combined center of gravity (CG) shifts toward line B-C. Theoretically the maximum load will result in the CG at the line B-C. In actual practice, the combined CG should never be at line B-C.
2. The addition of additional counterweight will cause the truck CG to shift toward point A and result in a truck that is less stable laterally.

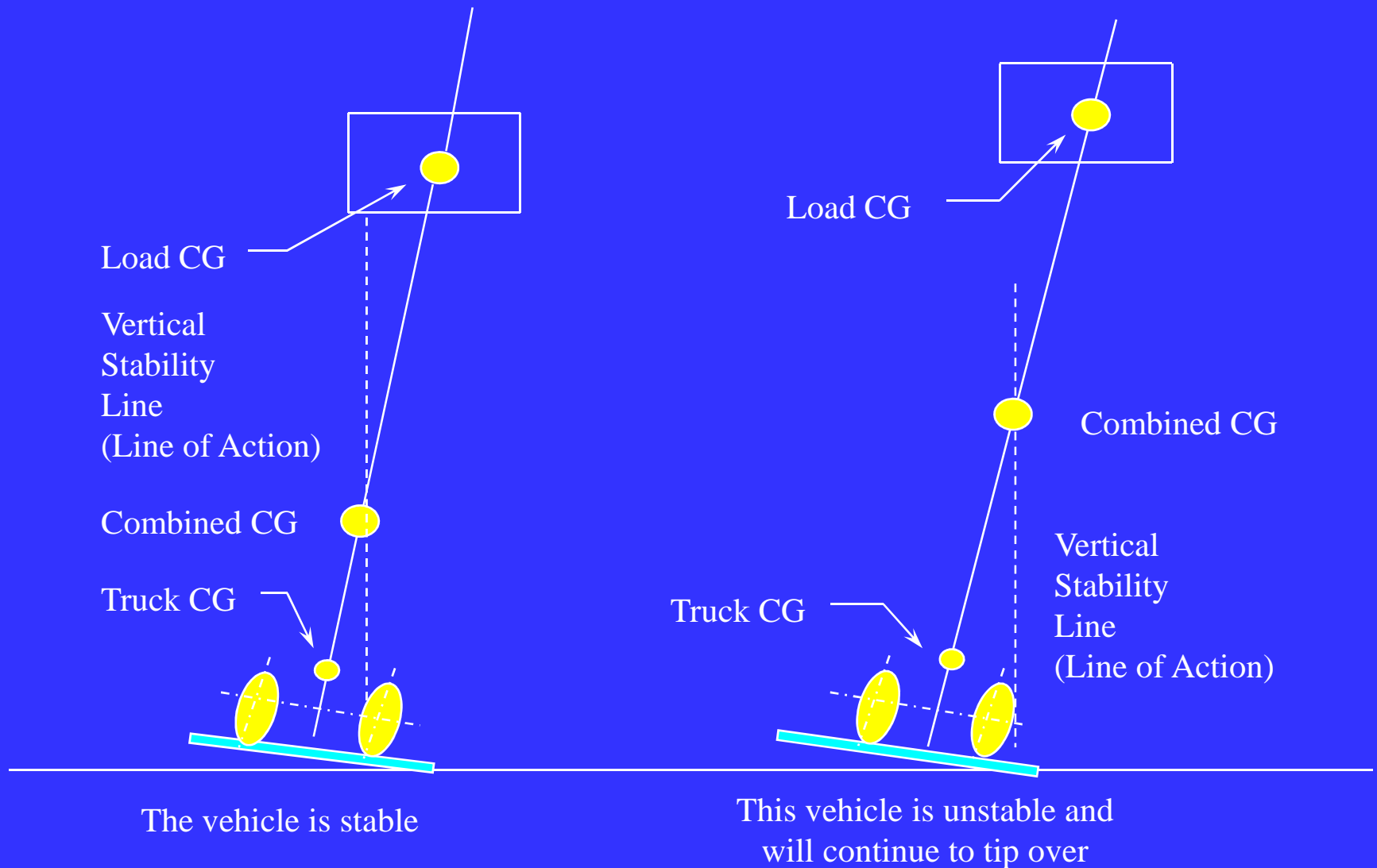








Stability Triangle - Figure 2



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- 1910.178 (m) Truck Operations:
 - ◆ Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.
 - ◆ No person shall be allowed to stand on or pass under the elevated portion of any truck, whether loaded or empty.
 - ◆ Absolutely no unauthorized passengers.
 - ◆ Keep all body parts inside the lift at all times.
 - ◆ When lift truck is left unattended, load shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if parked on an incline.

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- 1910.178 (m) Truck Operations:
 - ◆ A power industrial truck is unattended when the operator is 25 ft. or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle and it is not in his view.
 - ☞ Forks must be lowered.
 - ☞ Controls neutralized.
 - ☞ Brakes set.

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- 1910.178 (m) Truck Operations:
 - ◆ A safe distance from the edge of ramps or platforms while on any elevated dock, or platform or freight car.



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- 1910.178 (m) Truck Operations:
 - ◆ An overhead guard shall be used as protection against falling objects.
 - ◆ A load backrest extension shall be used whenever necessary to minimize the possibility of the load falling rearward.
 - ◆ Only approved industrial trucks shall be used in hazardous locations.



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- 1910.178 (m) Truck Operations:
 - ◆ An approved safety platform must be used when employees are being elevated by the lift truck. This platform must be secured to the carriage, and/or forks. Note: Never allow anyone to stand on the forks.



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- 1910.178 (n) Traveling:
 - ◆ A distance of approximately three truck lengths shall be maintained from the lift truck ahead.
 - ◆ Passing shall not be permitted at blind spots or dangerous locations.
 - ◆ Driver shall look in the direction of travel and keep a clear view of the path of travel.
 - ◆ Grades shall be ascended and descended slowly.
 - ☞ Loads kept upgrade.
 - ☞ Loads must be tilted back for stability.

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- 1910.178 (n) Traveling:
 - ◆ Horseplay is not permitted.
 - ◆ Slow down when wet and slippery conditions exists.
 - ◆ Dockboards or bridgeplates, shall be secured before they are driven over. Never exceed capacities.
 - ☞ Inspect trailer floor, lift jacks (if detached from tractor), and wheel chocks before entering any trailer.
 - ◆ Running over lose objects on roadway surface shall be avoided.
 - ◆ Safe speeds shall be maintained when turning.

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- 1910.178 (o) Loading:
 - ◆ Only stable loads shall be handled.
 - ◆ Only loads within the rated capacity shall be handled.
 - ◆ A load engaging means shall be placed under the load as far as possible and carefully tilted back for stability.



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- 1910.178 (p) Operation of the truck:
 - ◆ If at anytime a powered industrial truck is found in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.
 - ◆ Fuel tank shall not be filled while engine is running.
 - ◆ No truck shall be operated with a leak in the fuel system.

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- 1910.178 (q) Maintenance of industrial trucks:
 - ◆ Trucks in need of repair to the electrical system shall have the battery disconnected prior to such repairs.
 - ◆ Replacement parts must meet manufactures requirements.
 - ◆ Additional counterweights shall not be added unless approved by the manufacturer.
 - ◆ Forklift shall be inspected daily, or at the beginning of each shift. Defects must be reported immediately.

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- Safe Operating Rules cont.
 - ◆ Carry loads approximately 4-6 inches off the floor (empty forks - just high enough to clear any obstacles).
 - ◆ Use extra caution around pedestrians - assume they are not paying attention.



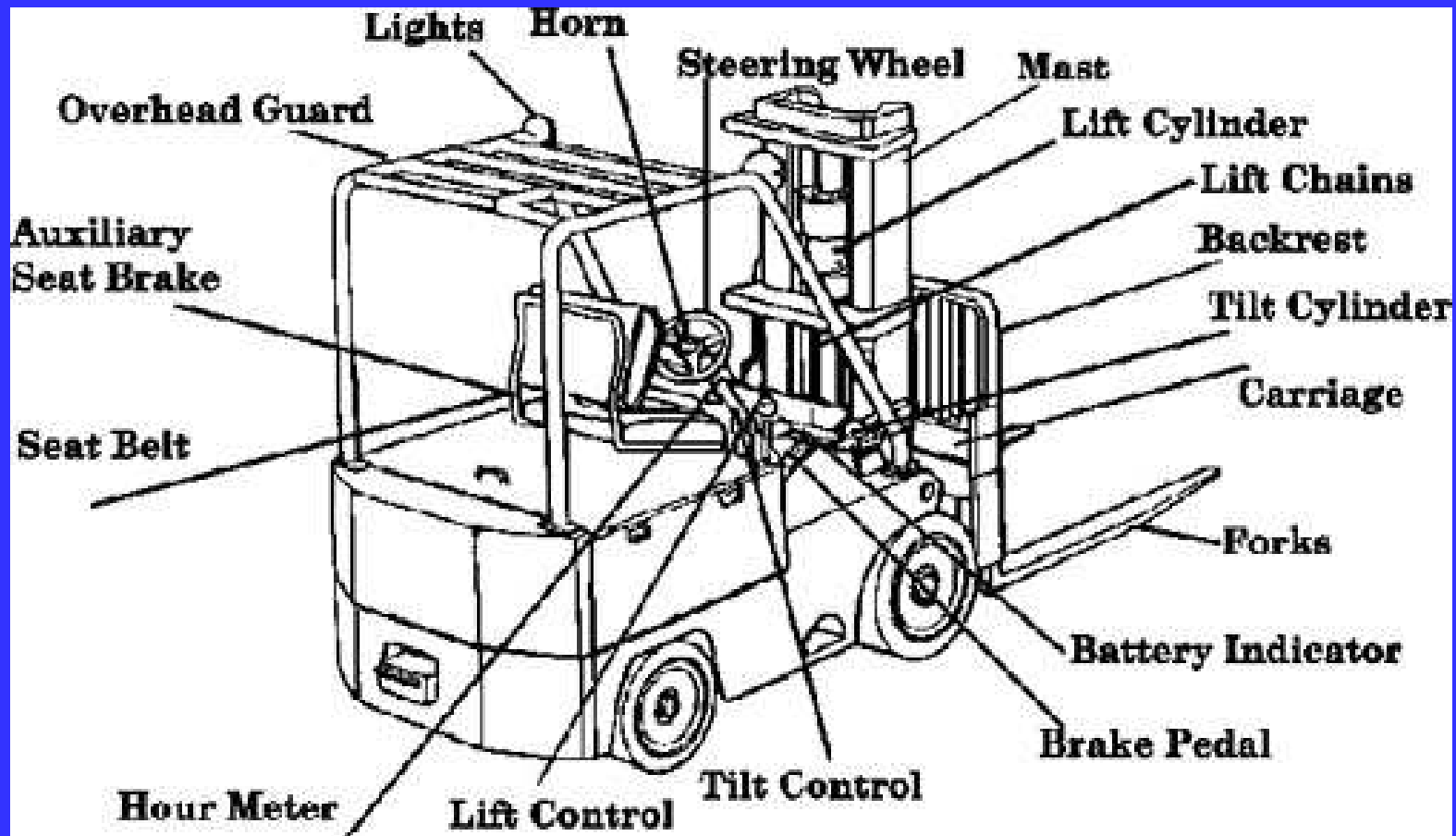
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- Safe Operating Rules cont.
 - ◆ Watch for overhead obstructions.
 - ◆ Always wear the safety belt.
 - ◆ Use proper PPE when checking LP gas levels (gloves, safety glasses).
 - ◆ Cross railroads at an angle.
 - ◆ Make sure there is sufficient lighting (where general lighting is less than 2 lumens per square foot, auxiliary directional lighting is required).

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- Safe Operating Rules cont.
 - ◆ Be aware of CO levels when working in areas of poor ventilation.
 - ◆ When unloading trucks and railroad cars follow the requirements outlined in 1910.178 (k).

Components of a Forklift Truck*



*One of the most common types of powered industrial trucks

FORKLIFT INSPECTION CHECKLIST

Truck ID#	Make
Date:	Shift
Hour meter reading: Start:	End: Hours for shift

Place an O.K. in the correct columns if the item is without defect.

ITEM	Start of shift	During Shift	End of Shift	Specific Comments if not O.K.
Forks, Carriage & Mast				
Wheels & Tires				
Operating Controls				
Steering				
Brakes				
Safety Devices (Seat Belt/Harness)				
Lights, Horn				
Gauges and Dials				
Capacity Plate Information				
Hydraulics:				
Fluids Levels:				
Overhead Guard:				
Cylinders:				
Muffler, Hoses, and Belts				
Battery:				
Cables and Connections				
Fuel Tank Condition				

OVERALL REMARKS: _____

DEFECTS REPORTED TO: _____

OPERATOR'S SIGNATURE: _____

DO NOT OPERATE AN UNSAFE LIFT TRUCK.

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- Daily Inspections.
 - ◆ Must be done by the operator.
 - ◆ Must be documented.

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- Operator Evaluation/Performance
 - ◆ Must be performed by a competent person
 - ◆ Done in the Operator's normal work environment. (If operator is new have them practice in an open area first until you feel they are capable of being evaluated in the work area).
 - ◆ Must be done:
 - ☞ After initial training,
 - ☞ After refresher training, and
 - ☞ At least once every three years.

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- Operator Evaluation/Performance cont.
 - ◆ OSHA has put the responsibility on the employer to determine if an operator is “Certified”. For this reason it is critical to document the following:
 - ☞ Formal instruction
 - ☞ Practical training
 - ☞ Evaluation of operator in the workplace

EVALUATION/PERFORMANCE CHECKLIST

Operator's Name: _____

Observation Date: _____ Instructor: _____ Location: _____

	Satisfactory	Needs
Improvement		
Visual Checks		
Forks, Carriage & Mast		
Wheels & Tires		
Fluid Levels/Leaks (Engine or battery)		
Guards, Covers & Decals		
Capacity Plate Information		
Safety Devices (Seat Belt/Harness)		
Operator Checks		
Instrument Readings		
Lights & Horn		
Lift/Lower System		
Direction and Speed Control		
Brakes & Steering		
Basic Operating Procedures		
Competent and Smooth Operation and Controls		
Travels with Load/Forks at Safe Height		
Travels at Safety Speed for all Conditions		
Keeps Clear View of Path of Travel		
Is Aware of All Clearances		
Maintains Control at All Times		
Operates in Designated Areas Only		
Checks Rear Clearance Before Moving		
Starts All Turns in Proper Position		
Starts All Turns in Proper Position		
Checks Load Before Lifting		
Approaches and Lifts Loads Correctly		
Load Properly on Forks with Correct Tilt		
Avoids Bumping and Pushing Loads		
Places and Pulls Out of Load Correctly		
Unit Parked Correctly and Safely		
General Safety		
Sounds Horn When Necessary		
Yields to Pedestrians		
Keeps Body Parts Inside the Operating Compartment		

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- Operator Evaluation/Performance cont.
 - ◆ To document an operators performance, you will want to devise a scoring system. As a suggestion, assign each exercise a maximum number of points (a perfect score). Then score each operator according to his/her ability to complete the maneuvers.

Review Accident reports (Depending on time)