

<p>Carnegie Mellon University Environmental Health & Safety FIRE LAB WORK</p>	<p>Environmental Health and Safety (EHS) Powered Industrial Truck Program</p>
<p>Date of Issuance:</p>	<p>Revision Date: Initial</p>
<p>Revision Number: Initial</p>	<p>Prepared by: EHS, Facility Management and Campus Services (FMCS)</p>

1. Purpose

The purpose of this Powered Industrial Truck Program (PIT) is to protect Carnegie Mellon University faculty and staff (herein referred to as “employee”) from hazards and hazardous situations associated with the use and maintenance of PITs.

2. Scope

This Program establishes the minimum requirements for the use and maintenance of PITs to prevent injury to Carnegie Mellon University employees in accordance with Occupational Safety and Health Act (OSHA) 29 CFR 1910.178 PIT. This Program addresses proper employee training, equipment inspections and incident reporting.

3. Definitions

- a. **Approved PIT:** A PIT that is listed or approved for fire safety purposes for the intended use by a nationally recognized testing laboratory, using nationally recognized testing standards.
- b. **Incident:** A work-related event in which an injury or illness (regardless of severity) or fatality occurred or could have occurred.
- c. **Near-miss:** An incident in which no property was damaged, and no personal injury was sustained, but where, given a slight shift in time or position, damage or injury easily could have occurred.
- d. **Powered Industrial Truck (PIT):** Fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks powered by electric motors or internal combustion engines.
- e. **PIT Operator:** Any person operating a PIT who: is an authorized CMU employee, is operating a PIT for tasks related to CMU or is operating a PIT on CMU property.
- f. **Unattended:** When the PIT operator is 25 feet or more away from the PIT which remains in the operator's view, or whenever the operator leaves the PIT and it is not in their view.

4. Roles and Responsibilities

- a. Environmental Health and Safety (EHS):
 - i. Assist with the coordination of authorized and effective PIT Program training.

- ii. Maintain training and evaluation records to include the name of employee, the date training or evaluation was completed, the results of the evaluation and the name of the evaluator.
- iii. Investigate any incident or near miss involving PITs and obtain a root cause of the incident. Put into place any corrective actions to prevent future incidents or near-misses.
- b. Facility Management and Campus Services (FMCS):
 - i. Assist with the coordination of authorized and effective PIT Program training.
 - ii. Maintain a master list of trained and certified PIT operators and re-certification dates.
 - iii. An inventory list and maintenance schedule for all PIT equipment shall be maintained
 - iv. Ensure that facilities and equipment that are needed for safe operation and maintenance of PITs are in place before any operation or maintenance is conducted.
 - v. Ensure newly purchased PIT equipment is compliant with ANSI B56.1-1969.
 - vi. Require and ensure that this Program is understood and complied with by PIT operators.
 - vii. Ensure all FMCS contractors use their own PIT equipment rather than any CMU owned PIT equipment. Exception: On a case-by-case basis contractors may receive permission to use CMU PIT equipment in certain circumstances, provided:
 - 1. CMU personnel are not available or capable of making the lift
 - 2. The contractor PIT operator has been trained and is certified for that specific type of lift and/or equipment and
 - 3. Approval has been obtained through the development of a Maintenance Operation Procedure (MOP) developed by the contractor, the CMU Project Manager, FMCS, and EHS.
 - viii. Report all incidents or near misses to EHS by email safety@andrew.cmu.edu.
- c. PIT Operators:
 - i. Review, understand and follow all guidelines provided in this Program.
 - ii. Successfully complete all required training and evaluations before operating PITs.
 - iii. Stop work and request guidance and direction from their supervisor at any time when: a hazardous situation is encountered, those involved do not feel safe, there is a lack of adequate training or required equipment or any similar situation is present.
 - iv. Stop work and report any incident or near miss to your supervisor, or the supervisor on duty, immediately.
 - v. Assist EHS in any investigation into incidents or near misses, with or without injury.
 - vi. Complete refresher PIT training at a minimum of once every 3 years.
 - vii. Adhere to the requirements of this Program during the use and maintenance of PITs.
- d. Campus Design Facility Development (CDFD):
 - i. Ensure all CDFD contractors use their own PIT equipment rather than CMU owned PIT equipment. Exception: On a case-by-case basis contractors may receive permission to use CMU PIT equipment in certain circumstances, provided:
 - 1. CMU personnel are not available or capable of making the lift
 - 2. The contractor PIT operator has been trained and is certified for that specific type of lift and/or equipment and

3. Approval has been obtained through the development of an Maintenance Operation Procedure (MOP) developed by the contractor, the CMU Project Manager, FMCS, and EHS.

- ii. Contact EHS via safety@andrew.cmu.edu any time that an incident or near miss involving a PIT occurs. Supply near miss or incident investigation documentation and corrective action suggestions to EHS.

5. Procurement of Powered Industrial Trucks

- a. Any time that a PIT is purchased new, it shall meet the requirements and approval of the current edition of ANSI B56.1-1969 and display a label stating the approval.

6. Training and Certification:

- a. All PIT operators must successfully complete PIT training that consists of the following applicable topics:
 - i. Operating instructions, warnings and precautions for the type of PIT the operator will be authorized to operate.
 - ii. PIT controls and instrumentation: where they are located, what they do and how they work.
 - iii. Engine or motor operation
 - iv. Steering and maneuvering
 - v. Visibility and restrictions
 - vi. Fork and attachment adaptation, operation and use limitations
 - vii. Vehicle capacity and stability
 - viii. Vehicle inspection and maintenance
 - ix. Pre-use inspections- necessary to identify deficiencies prior to operating the equipment
 - x. Refueling and/or charging and recharging of batteries
 - xi. Operating limitations
 - xii. Any other operating instructions, warnings or precautions listed in the operator's manual for the types of vehicles that the operator is being trained to operate.
 - xiii. Work related topics such as:
 - 1. Surface conditions where the vehicle will be operated
 - 2. Composition of loads to be carried and load stability
 - 3. Load manipulation, stacking and unstacking
 - 4. Pedestrian traffic in areas where the vehicle will be operated
 - 5. Hazardous locations where the vehicle will be operated
 - 6. Ramps and other sloped surfaces that could affect the vehicle's stability
 - 7. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust
 - 8. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation
- b. Training must be completed under the direct supervision of people who have the knowledge, training and experience to train operators and evaluate their competence. The trainer must be

certified to provide the training. OSHA identifies a certified instructor as someone who can demonstrate the ability to train and evaluate PIT operators through knowledge, training, experience, or a recognized degree, certificate, or professional standing. Training operations must not endanger the trainee or other employees. Environmental conditions also must be considered while completing training.

- i. In-house training or an authorized third party may be used depending on the needs of a particular department. Please contact safety@andrew.cmu.edu for clarification on training needs for the department.
- c. Training shall consist of a combination of formal instruction, practical training, and an evaluation of the operator's performance in the workplace.
- d. Refresher training, including an evaluation, shall take place for all PIT operators at a minimum of once every 3 years.
- e. Refresher training and evaluation must also be conducted when:
 - i. The operator has been observed operating the PIT in an unsafe manner
 - ii. The operator has been involved in an accident or near miss
 - iii. The operator has received an evaluation that reveals that the operator is not operating the PIT safely
 - iv. The operator is assigned to drive a different type of PIT
 - v. A condition in the workplace changes in a manner that could affect safe operation of the PIT
- f. After successful completion of the training and evaluation, PIT operators shall be certified by their trainer.
- g. PIT operator certification shall consist of:
 - i. Name of the operator
 - ii. Date of the training
 - iii. Date of the evaluation
 - iv. Name of person (s) who performed the training and/or evaluation (Training information should be maintained within SciShield)
- h. Operators shall not be permitted to operate PITs before successful completion of the required training and evaluation outlined in this program, including refresher training and evaluation.

7. Operating in Hazardous Environments:

- a. PITs shall only be used in areas where the designation of the PIT meets or exceeds the minimum safety requirements.
- b. PITs shall not be operated in hazardous environments without EHS approval. Hazardous environments are those that contain combustible dust or hazardous materials such as flammable liquids and gases.
- c. When a PIT needs to be operated in a hazardous environment, EHS will conduct a review of the PIT to ensure that it meets the minimum safety requirements for safeguards against fire. Refer to Appendix B (OSHA CFR 1910.178 Table N-1) for additional information on the various designations of PITs.

8. Fuel Handling and Storage:

a. General Requirements

- i. No smoking is permitted while operating a PIT or within 25' of fuel storage and dispensing areas.
- ii. An ABC-rated fire extinguisher shall be within 30' of fuel storage and dispensing areas.
- iii. The PIT shall be parked and shut off when refueling.
- iv. Fuel tanks/containers and hoses shall be visually inspected for evidence of leaks or damage prior to use or refueling.

b. Liquid Petroleum Gas (LPG)

- i. LPG containers shall be closed when the PIT is unattended or not in operation.
- ii. LPG containers shall not be refilled while attached to the PIT. It is highly recommended that refilling is not conducted on site and LPG containers are replaced and refilled by a third-party vendor at an offsite location.
- iii. Spare LPG containers must be stored in a designated area that is a minimum of 10' away from any exit path or exit door. LPG containers may not be stored in basements or other low-lying areas where flammable vapors can accumulate.
- iv. LPG storage shall be in an area where it is not subject to damage and guarded against tampering or vandalism. Where LPG is stored indoors, it must be in an area that is equipped throughout with an automatic fire sprinkler system.
- v. LPG containers shall be prevented from tipping over. Where LPG containers are stored on their side, such as in a cage, the container shall be oriented so that the pressure relief device is positioned in the vapor space of the container.

9. Changing and Charging Storage Batteries:

- a. PITs with batteries shall not be charged in hallways or near exit doors. Charging shall take place in a dedicated area (subject to EHS approval) that is free of combustible materials, equipped with an automatic fire sprinkler system, equipped with an AC-rated fire extinguisher, and contains adequate ventilation for the dispersal of fumes from off-gassing batteries. Where batteries that require periodic refilling are used, an emergency eyewash shall be provided.
- b. A hoist or equivalent material handling equipment shall be provided for handling PIT batteries that cannot be easily lifted.
- c. Reinstalled batteries shall be properly positioned and secured in the PIT.
- d. A carboy tilter or siphon shall be provided and used for handling electrolyte.
- e. When charging batteries, acid shall be poured into water; water shall not be poured into acid.
- f. PITs shall be properly positioned, and brake applied before attempting to change or charge batteries.
- g. Care shall be taken to ensure that vent caps are functioning. The battery cover shall be opened to dissipate heat.

- h. Smoking is prohibited in the battery charging area.
- i. Precautions shall be taken to prevent open flames, sparks or electric arcs in battery charging areas.
- j. Tools and other metallic objects shall be kept away from the top of uncovered batteries.

10. Lighting:

- a. Where general lighting is less than 2 lumens per square foot, auxiliary directional lighting shall be provided on the PIT.

11. Control of gasses and fumes:

- a. Gasoline, diesel fuel or LPG PITs shall not be operated indoors without prior EHS approval.
- b. Requests for the use of these PITs indoors will require a review to ensure that the PIT can safely be operated without the buildup of carbon monoxide or other fumes.
- c. Criteria for the control of carbon monoxide will include ensuring that carbon monoxide levels do not exceed 35 parts per million averaged over an 8-hour work shift, 200 parts per million over a 15-minute period, and 1,500 parts per million at any time.
- d. Upon review, EHS may require the use of portable or fixed gas detection, additional ventilation, or other controls to ensure the safety of all building occupants.

12. Powered Industrial Truck Inspections:

- a. Before a PIT operator may operate any PIT, the operator must complete a pre-use inspection, and the PIT verified as being in a safe working condition. Any discrepancies shall be noted on the inspection and turned into the operator's supervisor.
- b. Any incident involving a PIT, with or without injury, must be reported to EHS so that a thorough investigation can be performed with the involved parties, root causes can be identified, and corrective actions can be put into place.
- c. Any deficiencies that affect the safety of the PIT or its operator found during a pre-use inspection shall be addressed by tagging out the deficient PIT so that it is unavailable to be used until deficiencies have been repaired or corrected.
- d. Any time that a PIT is removed from service, the operator shall notify their direct supervisor immediately.
- e. A post-use inspection shall be conducted by the operator of the PIT at the end of each working shift that a PIT was used. This does not apply to groups that do not have shift work.
- f. The post-use inspection must note any differences from the pre-use inspection.
- g. The post-use inspection shall be made available to all other operators after it has been completed.
- h. Before completing a new pre-use inspection, the most current post-use inspection must be read by the oncoming PIT operator.

13. Powered Industrial Truck Operations:

- a. PIT shall not be driven up to anyone who is between the PIT and any other fixed object.
- b. Any incident involving PIT, with or without injury, must be reported to EHS so that: a thorough investigation can be performed with the involved parties, root causes can be identified, and corrective actions can be put into place.
- c. When not in use, PITs shall not be left unattended in any housing building.
- d. No person shall be allowed to stand or pass under the elevated portion of any PIT, whether loaded or empty.
- e. Unauthorized personnel shall not ride on PIT. A safe place to ride shall be provided where riding is authorized.
- f. At no time shall any person place their arms or legs between the uprights of the mast or outside the running lines of the PIT.
- g. Load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set any time that a PIT is left unattended.
- h. When the operator of a PIT is dismounted and within 25 feet of the PIT still in view, the load engaging means shall be lowered, the controls neutralized, and the brakes set to prevent movement.
- i. A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, platform, or freight car. PITs shall not be used for the opening or closing of freight doors.
- j. Brakes shall be set and wheel blocks in place to prevent movement of PITs or trailers while loading or unloading. Fixed jacks may be necessary to support a semi-trailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of PITs and trailers shall be checked for breaks and weakness before they are driven onto.
- k. When operating PITs, sufficient headroom under overhead installations, lights, pipes, sprinkler systems, and alike equipment shall be maintained.
- l. An overhead guard shall be used as protection against falling objects. Overhead guards provide protection from the impact of small packages, boxes, bagged material, and other alike material, but do not withstand the impact of a falling capacity load.
- m. A load backrest extension shall be used whenever necessary to minimize the possibility of the load, or part of it, falling rearward.
- n. Fire aisles, access to stairways, exits, and fire equipment shall be kept clear.
- o. If at any time a PIT is found to need repair, defective, or in any way unsafe, the PIT shall be tagged out of service until it has been restored to safe operating condition.
- p. Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.
- q. Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting the engine. Please refer to the spill Program for further information.
- r. No PIT shall be operated with a leak in the fuel system until the leak has been corrected.
- s. Open flames shall not be used for checking the electrolyte level in storage batteries or gasoline level in fuel tanks.

14. Traveling:

- a. A safe distance of approximately three PIT lengths shall be maintained from the PIT and any other vehicle, and the PIT shall be always kept under control.
- b. The right of way shall be yielded to ambulances, fire trucks or other vehicles in emergency situations.
- c. Other PITs traveling in the same direction at intersections, blind spots or other dangerous locations shall not be passed.
- d. The driver shall slow down and sound the horn at cross aisles, walkways and other locations where vision is obstructed, or pedestrian traffic is reasonably expected.
- e. If the load being carried obstructs forward view, the operator shall travel with the load trailing.
- f. The PIT operator shall look in the direction of and keep a clear view of the path of travel.
- g. Grades shall be ascended and descended slowly.
- h. When ascending and descending grades more than 10%, loaded PITs shall be driven with the load upgrade.
- i. On all grades, the load and load engaging means shall be tilted back if applicable and raised only as far as necessary to clear the road surface.
- j. PITs shall always be operated at a speed that will permit it to be brought to a stop in a safe manner.
- k. No stunt driving or horseplay is permitted while operating PITs.
- l. PIT operators must reduce speed while operating in wet or slippery conditions.
- m. Dock boards or bridge plates shall be properly secured before they are driven over. Dock boards and bridge plates shall be driven over carefully and slowly, and their rated capacity never exceeded.
- n. Motorized hand PITs must enter elevators or other confined areas with load end forward.
- o. Running over loose objects on the roadway surface shall be avoided.
- p. While turning, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

15. Loading:

- a. Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.
- b. Only loads within the load capacity of the PIT shall be handled.
- c. The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.
- d. PITs equipped with attachments shall be operated as partially loaded PITs when not handling a load.
- e. A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.
- f. Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated is prohibited except to pick up a

load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

16. Maintenance:

- a. Any PIT not in safe operating condition shall be tagged out of service and the supervisor notified immediately. All repairs shall be made by authorized personnel.
- b. No repairs shall be made in class I, II, or III locations, see Appendix B for location definitions.
- c. Repairs to the fuel and ignition systems of industrial PITs which involve fire hazards shall be conducted only in locations designated for such repairs.
- d. The battery shall be disconnected prior to making any electrical repairs to a PIT.
- e. All parts of any such industrial PITs requiring replacement shall be replaced by parts equivalent to those used in the original design.
- f. PITs shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts.
- g. An inventory list and maintenance schedule for all PIT equipment shall be maintained by FMCS.
- h. Water mufflers shall be filled daily or as frequently as is necessary to prevent depletion of the supply of water below 75% of the filled capacity.
- i. When the temperature of any part of a PIT is found to be more than its normal operating temperature, thus creating a hazardous condition, the PIT shall be removed from service and not returned to service until the cause for such overheating has been eliminated.
- j. PITs shall be kept in a clean condition, free of lint, excess oil and grease. Noncombustible agents should be used for cleaning PITs. Low flash point (below 100 F) solvents shall not be used. Precautions regarding toxicity, ventilation and fire hazards shall be consistent with the agent or solvent being used.
- k. PITs originally approved for the use of gasoline for fuel may be converted to liquefied petroleum fuel provided the complete conversion results in a PIT which embodies the features specified for LP or LPS designated PITs. Such conversion equipment shall be approved. The description of the component parts of this conversion system and the recommended method of installation on specific PITs are contained in the "listed by report."

Appendix A – Stability of Powered Industrial Trucks

A-1. Definitions

The following definitions help to explain the principle of stability:

Center of gravity: the point on an object at which all the object's weight is concentrated. For symmetrical loads, the center of gravity is in the middle of the load.

Counterweight: the weight that is built into the PIT's basic structure and is used to offset the load's weight and to maximize the vehicle's resistance to tipping over.

Fulcrum: the PIT's axis of rotation when it tips over.

Grade: the slope of a surface, which is usually measured as the number of feet of rise or fall over a hundred-foot horizontal distance (the slope is expressed as a percent).

Lateral stability: a PIT's resistance to overturning sideways.

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

Load center: the horizontal distance from the load's edge (or the fork's or other attachment's vertical face) to the line of action through the load's center of gravity.

Longitudinal stability: the PIT's resistance to overturning forward or rearward.

Moment: the product of the object's weight times the distance from a fixed point (usually the fulcrum). In the case of a powered industrial PIT, the distance is measured from the point at which the PIT will tip over to the object's line of action. The distance is always measured perpendicular to the line of action.

Track: the distance between the wheels on the same axle of the PIT.

Wheelbase: the distance between the centerline of the vehicle's front and rear wheels.

A-2. General

A-2.1. Determining the stability of a PIT is simple once a few basic principles are understood: the PIT's wheelbase, track and height; the load weight distribution; and the counterweight location (if so equipped).

A-3. Basic Principles

A-3.1. Whether an object is stable depends on the object's moment at one end of a system being greater than, equal to, or smaller than the object's moment at the system's other end. This principle can be seen in the way a seesaw or teeter-totter works, that is, if the product of the load and distance from the fulcrum (moment) is equal to the moment at the device's other end, the device is balanced, and it will not move. However, if there is a greater moment at one end of the device, the device will try to move downward at the end with the greater moment.

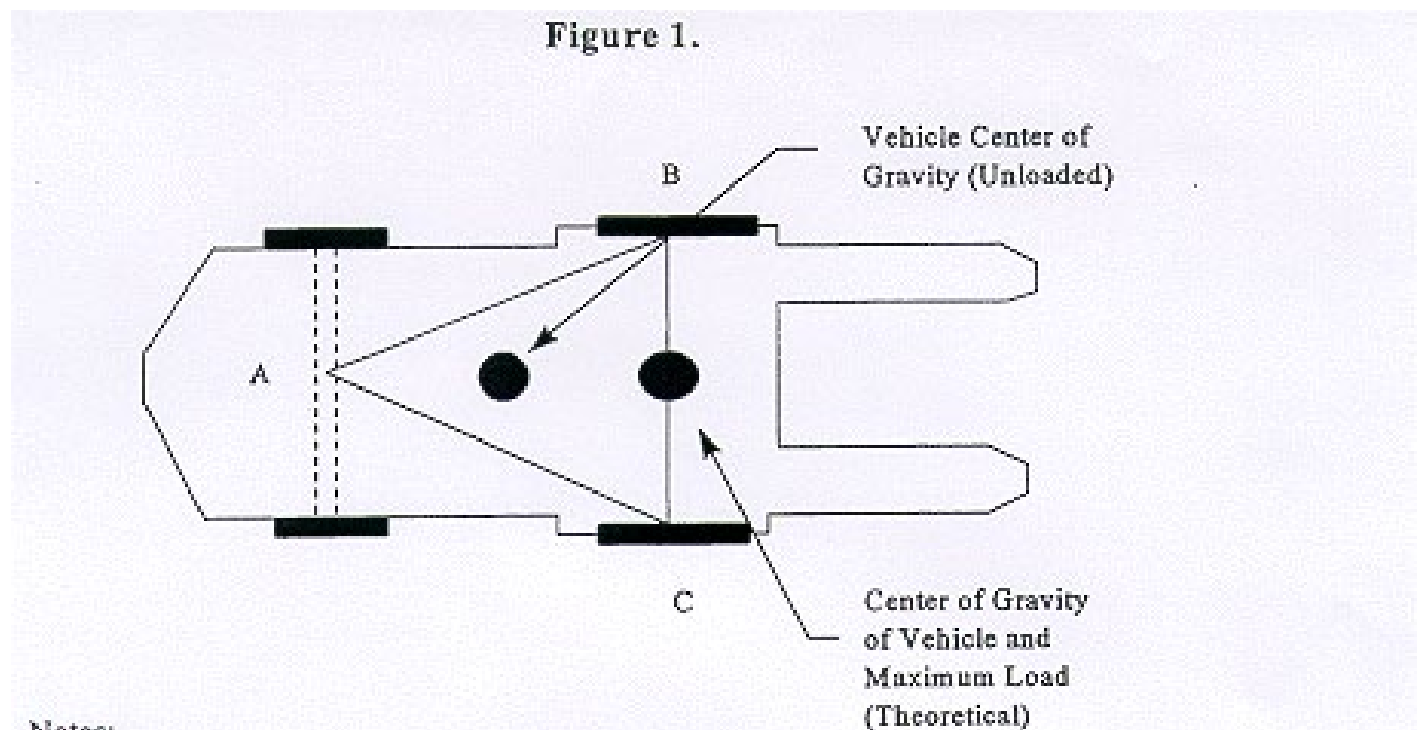
A-3.2. The longitudinal stability of a counterbalanced powered industrial PIT depends on the vehicle's moment and the load's moment. In other words, if the mathematical product of the load moment (the distance from the front wheels, the approximate point at which the vehicle would tip forward) to the load center of gravity times the load's weight is less than the vehicle's moment, the system is balanced and will not tip forward. However, if the load's moment is greater than the vehicle's moment, the greater load-moment will force the PIT to tip forward.

A-4. The Stability Triangle

A-4.1. The "Stability Triangle", used in most stability discussions, demonstrates stability simply.

A-4.2. Almost all counterbalanced PITs have a three-point suspension system, that is, the vehicle is supported at three points. This is true even if the vehicle has four wheels. The PIT's steer axle is attached to the PIT by a pivot pin in the axle's center. When the points relate to imaginary lines, this three-point support forms a triangle called the stability triangle. Figure 1 depicts the stability triangle.

Photo from the Occupational Health and Safety Administration (OSHA):

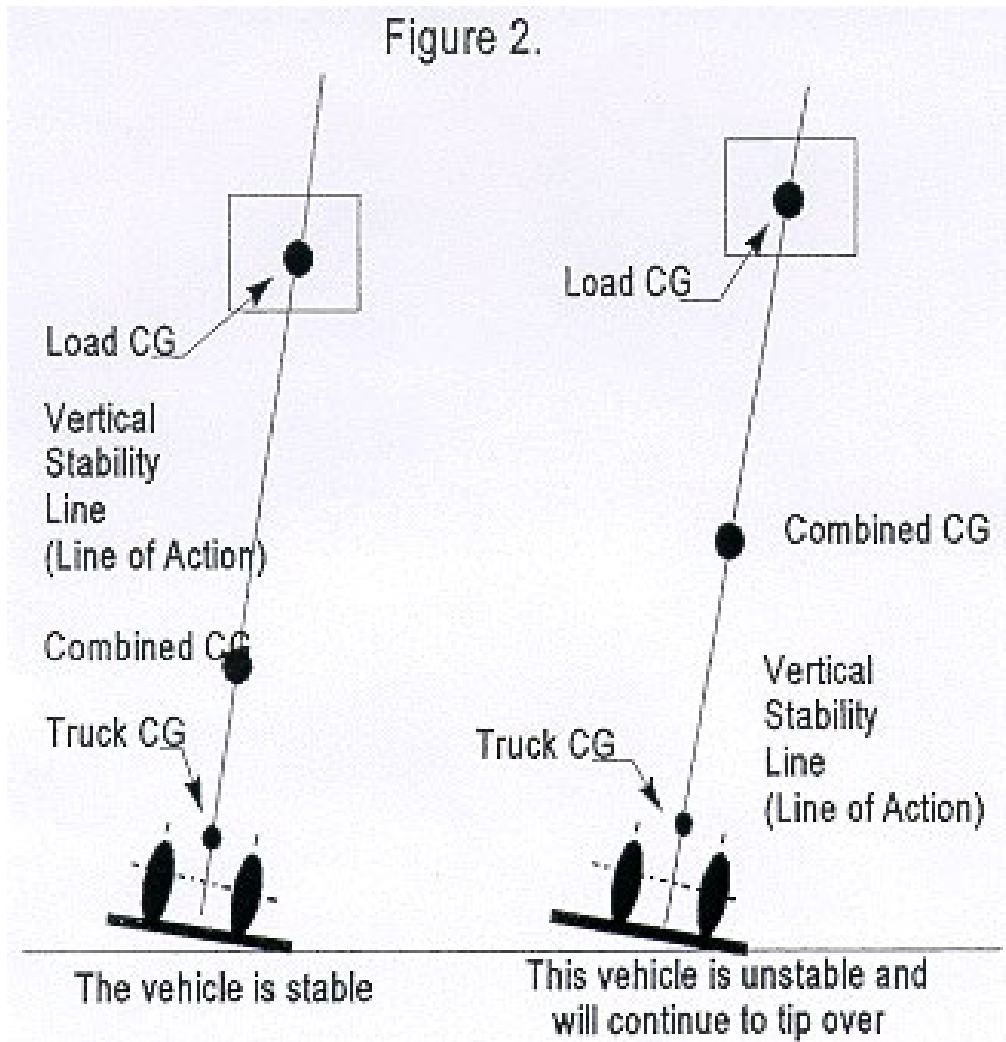


Notes:

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.

A-4.3. When the vehicle's line of action, or load center, falls within the stability triangle, the vehicle is stable and will not tip over. However, when the vehicle's line of action or the vehicle/ load combination falls outside the stability triangle, the vehicle is unstable and may tip over. (See Figure 2.)

Photo from the Occupational Health and Safety Administration (OSHA):



A-5. Longitudinal Stability

A-5.1. The axis of rotation when a PIT tips forward is the front wheels' points of contact with the pavement. When a PIT tips forward, the PIT will rotate about this line.

A-5.2. To determine the maximum safe load-moment, the PIT manufacturer normally rates the PIT at a maximum load at a given distance from the front face of the forks. The specified distance from the front face of the forks to the line of action of the load is commonly called the load center.

A-5.3. Although the true load-moment distance is measured from the front wheels, this distance is greater than the distance from the front face of the forks. Calculating the maximum allowable load-

moment using the load-center distance always provides a lower load-moment than the PIT was designed to handle.

A-6. Lateral Stability

A-6.1. The PIT's lateral stability is determined by the line of action's position (a vertical line that passes through the combined PIT's and load's center of gravity) relative to the stability triangle. When the PIT is not loaded, the PIT's center of gravity location is the only factor to be considered in determining the PIT's stability.

A-6.2. Factors that affect the PIT's lateral stability include the load's placement on the PIT, the height of the load above the surface on which the vehicle is operating, and the vehicle's degree of lean.

A-7. Dynamic Stability

A-7.1. The weight's transfer and the resultant shift in the center of gravity due to the dynamic forces created when the PIT is moving, braking, cornering, lifting, tilting, and lowering loads, etc., are important stability considerations.

A-7.2. When determining whether a load can be safely handled, the operator should exercise extra caution when handling loads that cause the PIT to approach its maximum design characteristics.

Appendix B - Summary Table on Use of Industrial Trucks in Various Locations

Classes	Unclassified		Class I locations			Class II locations		Class III locations	
Description of classes	Locations not possessing atmospheres as described in other columns		Locations in which flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures			Locations which are hazardous because of the presence of combustible dust		Locations where easily ignitable fibers are present but not likely to be in suspension in quantities sufficient to produce ignitable mixtures.	
Groups in classes	None	A	B	C	D	E	F	G	None
Examples of locations or atmospheres in classes and groups	Piers and wharves inside and outside general storage, general industrial or commercial properties	Acetylene	Hydrogen	Ethyl ether	Gasoline Naphtha Alcohols Acetone Lacquer solvent Benzene	Metal dust	Carbon black coal dust, coke dust	Grain dust, flour dust, starch dust, organic dust	Baled waste, cocoa fiber, cotton, excelsior, hemp, istle, jute, kapok, oakum, sisal, Spanish moss, synthetic fibers, and tow.

Summary Table on Use of Power Industrial Trucks in Various Locations-Continued

		1	2	1	2	1	2
Divisions (nature of hazardous conditions)	None	Above condition exists continuously, intermittently, or periodically under normal operating conditions	Above condition may occur accidentally as due to a puncture of a storage drum	Explosive mixture may be present under normal operating conditions, or where failure of equipment may cause the condition to exist simultaneously with arcing or sparking of electrical equipment, or where dusts of an electrically conducting nature may be present	Explosive mixture not normally present, but where deposits of dust may cause heat rise in electrical equipment, or where such deposits may be ignited by arcs or sparks from electrical equipment	Locations in which easily ignitable fibers or materials producing combustible materials are handled, manufactured, or used	Locations in which easily ignitable fibers are stored or handled (except in the process of manufacture).

Authorized uses of PITs by types in groups of classes and divisions

Groups in classes	None	A	B	C	D	A	B	C	D	E	F	G	E	F	G	None	None
Type of truck authorized:																	
Diesel:																	
Type D	D**																
Type DS									DS						DS		DS
Type DY									DY						DY	DY	DY
Electric:																	
Type E	E**																E
Type ES									ES						ES		ES
Type EE									EE						EE	EE	EE
Type EX					EX				EX	EX		EX			EX	EX	EX

Gasoline:													
Type G	G**												
Type GS						GS				GS		GS	
LP-Gas:													
Type LP	LP**												
Type LPS						LP S				LPS		LPS	
Paragraph Ref. in No. 505	210.21	201 (a)	203 (a)	209 (a)	204 (a), (b)	202 (a)	205 (a)	209 (a)	206 (a), (b)	207(a)	208 (a)		