

## **Chevron Products**

# **Powered Industrial Motor Vehicle Standard**

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#### 1.0 Purpose, Objectives and Scope

#### 1.1 Purpose

This standard is to establish minimum requirements for the safe operation of such vehicles. Each Chevron Products region or location may enact additional requirements as appropriate.

#### 1.2 Objective

The objective of this standard is to reduce the frequency and severity of injuries, spills and property damage as a result of accidents involving powered forklifts and other Powered Industrial Motor Vehicles.

#### 1.3 Scope

This standard applies to Chevron Products facilities and JV facilities within Chevron's OE reporting boundaries.

In Scope Equipment	Out of Scope Equipment	
Forklifts	Cranes including small carry deck cranes (i.e. Drott cranes)	
Mobile Elevated Work Platforms (MEWPs)	<ul> <li>Small, Medium and Heavy construction equipment such as:</li> <li>Bulldozers</li> <li>GradeAlls</li> <li>Excavators</li> <li>Drilling rigs</li> <li>Pile Drivers</li> <li>Dump Trucks</li> <li>Bobcat</li> </ul>	
Motorized Carts including Golf Carts, Quads and Maintenance Carts	<ul> <li>Road Going Motor Vehicles such as:</li> <li>Trucks</li> <li>Cars</li> <li>Pickups</li> <li>Motorcycles</li> </ul>	
Motorized hand trucks	Boats and other sea going equipment	
Attachments		

## 2.0 Terms and Definitions

Note: Additional equipment and further information can be found in Appendix C.

**Powered Industrial Motor Vehicle** – refers to battery powered or petroleum-fuelled forklifts and other industrial trucks designed for lifting and transporting loads or personnel in industrial environments.

**Dock Boards (dock plates)** - Dock plates and dock boards are generally, by contrast, portable, and not fixed either to dock or truck. Dock plates and dock boards are simply metal ramps, bridging the gaps between dock and truck. Dock plates are generally made out of aluminium whilst dock boards are generally made out of steel.

**Forklift Man Cages (Work Platforms)** - a forklift attachment that includes a platform or floor with handrails on three sides, and backing on the fourth side. It is attached to the forklift's forks using sleeves that are located under the platform and then secured to the forklift using a chain with a hook and a tine lock that prevents the platform from sliding forward off the forks.

**Mobile Elevated Work Platform (MEWP) – (scissor lift, JLG, etc.)** - is a Mobile Elevating Work Platform. MEWPs are also known as:

- Aerial platform
- Vertical lift
- Cherry picker
- Scissor lift
- Aerial work platform
- Boom lift
- Etc.

**Cart (maintenance carts, golf carts, etc.)** – a small motorized vehicle used primarily to transport people and equipment short distances.

## Forklift

- Forklift Truck A vehicle designed to pick up, transport, and deposit materials a short distance. Loads are raised and lowered on a mast attached to the front of the lift truck. The rear wheels steer the truck while the front wheels supply the power to move the truck. This description includes fork trucks, platform lift trucks, and motorized hand trucks.
- Rough Terrain Powered Industrial Trucks (telehandler) A vehicle designed for offroad use to pick up, transport, and deposit materials a short distance. Loads are raised, lowered, or extended with a vehicle-mounted telescoping boom.
- •Tire Option: Large Pneumatic for outdoor use on uneven ground

•Good for lumberyards, construction projects, landscaping and other outdoor applications

 Vehicles can be configured with rear steering and/or articulation. This type of vehicle is also known as a Grade-All (brand name) or Rough Terrain Forklift.

#### Attachment, semi-permanent

A device other than conventional forks or load backrest extension, mounted permanently or removably on the elevating mechanism of a truck for handling the load. Popular types of fork extensions, clamps, rotating devices, side shifters, load stabilizers, rams, and booms.

#### Attachment, removable

An attachment that can be mounted on the forks, or in place of the forks on the carriage, by means of such conventional fasteners as bolts, pins, etc., and that does not require the disassembly of any other portion of the lifting system to install or remove.

**Free rigging -** The direct attachment to or placement of rigging equipment (slings, shackles, rings, etc.) onto the forks of a powered industrial truck for a below-the-forks lift. **Note: This type of lift does not use an approved lifting attachment and is not allowed in Chevron Products.** 

## 3.0 Roles, Responsibilities and Training Requirements

Roles must be clearly defined, and personnel must meet the training and competency requirements of this standard prior to starting work. Local regulations may specify additional training and competency requirements.

## 3.1 Training – General

All personnel required to drive forklifts or other Powered Industrial Motor Vehicles shall be trained:

- Employees are allowed to operate only the powered industrial motor vehicle equipment that they have been trained to operate.
- Contractors, must be trained to safely operate powered industrial motor vehicle equipment in accordance with the COEM process and local requirements.
- Employees and contractors must be trained in the safe use of any attachments they will be using.
- Employees and contractors must be trained in the safe use of any battery charging, refueling, etc. equipment and processes that they will be using.

## 3.1.1 Training program implementation

Each powered industrial vehicle operator shall be designated as competent to operate the vehicle safely, as demonstrated by the successful completion of the training and evaluation specified below.

Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape and written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee) and evaluation of the operator's performance in the workplace.

Trainees may operate a powered industrial truck only:

- Under the direct supervision of persons who have the knowledge, training and experience to train operators and evaluate their competence; and
- Where such operation does not endanger the trainee or other employees.

All operator training and evaluation shall be conducted by persons who have the knowledge, training and experience to train powered industrial truck operators and evaluate their competence, and who have been specifically authorized by the facility.

#### 3.1.2 Forklift training program content

#### Forklift related topics:

- Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;
- Differences between the truck and the automobile;
- Truck controls and instrumentation: where they are located, what they do, and how they work;
- Engine or motor operation;
- Steering and maneuvering;
- Visibility (including restrictions due to loading);
- Fork and attachment adaptation, operation, and use limitations;
- Vehicle capacity (maximum load weight) and stability;
- Any vehicle inspection and maintenance that the operator will be required to perform;
- Refueling and/or charging and recharging of batteries;
- Operating limitations;
- Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

#### Workplace-related topics:

- Surface conditions where the vehicle will be operated (i.e. indoors vs. outdoors, smooth vs. uneven surfaces, etc.);
- Composition of loads to be carried, load weights and load stability;
- Load manipulation, stacking, and unstacking;

- Pedestrian traffic in areas where the vehicle will be operated;
- Narrow aisles and other restricted places where the vehicle will be operated;
- Hazardous (classified) locations where the vehicle will be operated;
- Ramps and other sloped surfaces that could affect the vehicle's stability;
- Dock lock mechanisms and methods for loading/offloading trucks and trailers;
- Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a build-up of carbon monoxide or diesel exhaust;
- Other unique or potentially hazardous conditions in the workplace that could affect safe operation.

#### 3.1.3 Mobile Elevated Work Platforms training program content

The operator shall be trained by a Qualified person in the following:

- assessment of the risks related to the task to be performed and the worksite where these tasks will be performed, including daily worksite inspections;
- selection of an appropriate MEWP;
- purpose, use and content of the manufacturer's operator's manuals, warnings and instructions and applicable safety rules;
- location and storage of the manufacturer's operator's manuals and the importance of keeping them maintained in the weather-resistant storage compartment on the MEWP when not in use;
- pre-start inspection;
- factors affecting stability;
- hazards and their avoidance;
- general knowledge of the intended purpose and function of all MEWP controls, including emergency controls
- how to address problems or malfunctions affecting the operation of the MEWP;
- use of personal protective equipment (PPE) appropriate to the task, worksite and environment;
- safe travelling;
- transport (if appropriate);
- securing the MEWP from unauthorized use;
- how to obtain assistance from a person on the ground;
- the importance of obtaining specific make and model familiarization prior to operation of a MEWP;

• operation of a MEWP.

#### 3.1.4 Carts training program content

Operators of carts must have a valid government issued driver's license and must read the operator manual for the cart(s) that they will drive.

#### 3.1.5 Refresher training and evaluation:

Refresher training, including an evaluation of the effectiveness of that training, shall be conducted to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely. The content and duration of such training shall be determined by each facility.

Refresher training shall be provided at least every three years and when:

- The operator is assigned to drive a different type of Powered Industrial Motor Vehicle. This includes the use of differect types of forklifts;
- There is an incident or evaluation (LPO, etc.) that reveals there is a lack of knowledge on the operation of the equipment or facility rules.

#### 4.0 Standard Instructions

The operation of powered industrial motor vehicles can result in serious injuries or fatalities if adequate safeguards are not in place. **Forklift** fatality causes are the result of...

Fatal Accident Type	Percent
Crushed by forklift tipping over	46%
Struck by a forklift	42%
Struck by falling material	8%
Fall from platform on the forks	4%

## 4.1 Procurement and Leasing of Powered Industrial Motor Vehicles

#### 4.1.1 Forklifts

Forklifts and other powered industrial motor vehicles must be "fit for purpose"; selection and procurement or leasing must be in consultation with equipment manufacturers, providing knowledge of the loads and conditions of anticipated use.

- All data plates, capacity information and other markings shall be maintained in legible condition.
- When the truck is equipped with front-end attachments other than factory installed attachments, the truck shall be marked to identify the attachments and show the approximate weight of the truck and attachment combination, and capacity of the truck and attachment combination at maximum elevation of the load engaging means with the load laterally centered.

- Major modifications and structural changes to high lift trucks, industrial trucks and rider trucks that affect the capacity and safe handling of the vehicles shall not be performed by the employer or user without prior written approval from the manufacturer unless the modification is designed, manufactured, and installed in accordance with recognized good engineering and manufacturing principles. The capacity, operation and maintenance instruction plates shall be changed accordingly.
- Industrial trucks originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a truck which embodies the features specified for LP (Liquified Petroleum) or LPG (Liquid Petroleum Gas) designated trucks as defined in NFPA 505, or by an equivalent non-US national or international standard. Such conversion equipment shall be manufacturer approved. When a conversion kit is installed, the original type designation shall be removed or obliterated and replaced with a durable, corrosion-resistant plate permanently mounted on the truck indicating the type designation of the converted truck
- The environment and usage of the forklift must be considered. For instance, when the equipment will be operated in a classified area, the equipment must be designed and built for that usage (i.e. EE rated forklifts).
- Dead-man controls for motorized hand trucks
  - Motorized hand and hand/rider trucks shall be designed so that the brakes are applied and the power to the drive motor shut off when the operator releases his grip on the control tongue, or the device used to control travel.
    - Exception: Vehicles designed for use in order picking operations are exempt from the braking requirements, provided the speed of the vehicle does not exceed 6 kph (3.7 mph) while the operator is walking the vehicle.
- Tires
  - Forklifts for use on uneven surfaces and on dirt or gravel surfaces shall be equipped with pneumatic tires or other tires the manufacturer recommends for this use.
    - Fork-lift trucks with small solid rubber tires do not do well on soft or uneven surfaces.
- Steering knobs
  - Steering knobs shall not be used unless the truck is equipped with power steering.
- Batteries installed in trucks shall be secured in suitable racks which are secured to the truck.
- Counterweights shall be so affixed that they cannot be accidentally dislodged.

- Securing of Forks
  - Forks must be affixed so they cannot be dislodged
  - Forks must be restrained from horizontal dislodgement via bolts, pins, etc. that limit their horizontal range of travel along the backrest
- The facility should purchase equipment with electronic or mechanical devices to limit the speed. The facility should retrofit existing vehicles with these devices where they do not exist.
  - When electronic or mechanical devices are not feasible, speedometers and/or other means must be employed to allow drivers to monitor their speed.

#### 4.1.2 Mobile Elevated Work Platforms (MEWPs)

MEWPs should be fit for purpose. Where the MEWP will be used and the type of activities conducted need to be assessed prior to purchase/lease/rent. For instance, some MEWPs are for indoor use only as they are not rated for any wind speed.

MEWPs must be manufactured in accordance with the below standards, as applicable.

- Design standards of EN 280:2013+A1 Mobile elevating work platforms. Design calculations. Stability criteria. Construction. Safety. Examinations and tests Canadian – CSA B354.
- ANSI A92.20: Design, Calculations, Safety Requirements and Test Methods for MEWPs; ANSI A92.22.

## 4.2 The Physical Operating Environment Requirements

#### Lighting

Lighting in the areas where powered industrial motor vehicles operate should be no less than 2 foot candles (22 lux) per square foot, otherwise directional lighting shall be provided on the vehicle.

#### Docks and Other Raised Areas Where Forklifts Operate

Docks in the areas where forklifts operate, must be guarded against a forklift driving or falling over the leading edge. A strong safeguard is a physical barrier to Prevent a forklift from going over the edge. Examples are...

- Angle iron to block wheels from going over the edge. Strong safeguard
- Dock lock system that has a plate that will block the wheels when not trailer is in place. (below middle photo) **Strong safeguard**
- Painted warning on ground near edge. (below left photo) Weak safeguard

#### **Trailer Drive-away Protection**

When forklifts will be driven onto a trailer, the trailer must utilize a means of restraint that will notify the forklift operator when it is in place and when it is removed. This can be accomplished through the use of...

- Dock lock system with an interlock providing a red light / green light system and/or alarm that signals when trailer is locked/unlocked from the loading dock.
- A wheel chock with a proximity sensor so that a light/alarm system is activated when removed
- Other system that provides the same assurance

#### **Pedestrian Walkways**

Facilities shall have a dedicated pedestrian walkway that goes to/from the main areas of the plant. Pedestrians should use the walkway unless they must be off the walkway to accomplish work tasks. Forklift drivers should avoid pedestrian walkways unless work tasks require they operate near or on them.

#### Industrial truck only areas/lanes

Where feasible, the facility shall designate industrial truck operating lanes to provide an extra safeguard where there is heavy traffic or where there are areas with a large number of obstructions or blind spots.

#### Ramps

Ramps must:

- be wide enough and strong enough to take the forklift and load
- have a surface that provides good traction
- allow a smooth weight transfer on and off the ramp
- have a gradient that does not exceed the angle recommended for safe use by either the ramp manufacturer or the Powered Industrial Motor Vehicle (PIMV) manufacturer.
- have edge guards to prevent the mobile equipment from driving/sliding down the side or tipping over. An exception for dock boards and dock plates that do not have edge guards.
- Variable level ramps that a forklift is required to work on must be provided with locking and interlocking mechanisms to prevent collapse
- Portable ramps must be secured according to the manufacturer's instructions and have the appropriate load rating attached

## 4.3 Powered Industrial Motor Vehicle Operation

#### 4.3.1 **Pre-Use Inspection**

All Powered Industrial Motor Vehicles shall be inspected given the following schedule. Use the manufacturer provided checklist to:

Vehicle Type	Frequency	Inspection Type
Forklifts	Each Shift	Documented
MEWPs	Each Day Before Use	Documented
Carts	Each Day Before Use	Visual
Attachments	Each Day Before Use	Visual

- Operators shall check the vehicle and if it is found to be unsafe, they will report the issue immediately to a Supervisor or Lead (per facility requirements), and the vehicle shall not be put in service again until it has been made safe. Attention shall be given to the proper functioning of tires, horn, lights, battery, controller, brakes, steering mechanism, cooling system, and the lift system for forklifts (forks, chains, cable, and limit switches). A sample pre-shift forklift inspection checklist is contained in <u>Appendix B</u>.
- A system must be in place to ensure that defective vehicles are not driven until equipment defects have been corrected, e.g., lockout / tagout.

#### 4.3.2 General Rules Applicable to all Powered Industrial Motor Vehicles (Including Forklifts):

Facilities shall establish traffic rules for Powered Industrial Motor Vehicles (PIMVs). Particular attention must be paid to locations where traffic patterns and activities indicate an elevated risk of collision of PIMVs with other vehicles, materials, pedestrians, and workers. Industrial trucks shall be operated in a safe manner in accordance with the rules of this standard.

- Stunt driving and horseplay are prohibited.
- No riders shall be permitted on vehicles unless designed and equipped with passenger riding equipment.
- Personnel shall not place any part of their bodies outside the running lines of an industrial truck or between mast uprights or other parts of the truck where shear or crushing hazards exist.
- No truck shall be operated with a leak in the fuel system.

- A minimum clearance distance of 6 feet (2 meters) shall be kept between moving PIMVs and pedestrians at all times. It is the responsibility of both the PIMV operator and pedestrian to maintain this minimum distance.
- Always keep a safe distance when following other vehicles. For PIMVs travelling in the same direction, a safe distance may be considered to be approximately 3 truck lengths or preferably a time lapse--3 seconds--passing the same point.
- PIMVs travelling in the same direction shall not be passed at intersections, blind spots, or other hazardous locations.
- The driver shall slow down and sound the horn at cross aisles and other locations where vision is obstructed.
- Operators shall look in the direction of travel and shall not move a vehicle until certain that all persons are in the clear.
- PIMVs shall not be driven up to anyone standing in front of a bench or other fixed object of such size that the person could be caught between the truck and object.
- Grades shall be ascended or descended slowly.
- On grades the load and load engaging means shall be tilted back when applicable, and raised only as far as necessary to clear the road surface.
- Motorized hand and hand/rider trucks shall be operated on grades with the loadengaging means downgrade.
- Vehicles shall not be driven onto any elevator unless the driver is specifically authorized to do so. Before entering an elevator, the driver shall determine that the capacity of the elevator will not be exceeded. Once on an elevator, the industrial truck's power shall be shut off and the brakes set.
- When a Powered Industrial Motor Vehicle (PIMV) is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, keys shall be removed from ignition and brakes set. Wheels shall be blocked if the truck is parked on an incline. A PIMV is considered unattended when the operator is 25 feet (7.6 meters) or more away from the vehicle, or whenever the vehicle is not in view of the operator.

#### 4.3.3 General Rules Specific to the Operation of Forklifts:

- Forklift operators are required to wear seat belts during operation.
- Personnel shall not ride on the forks of lift trucks.
- Personnel shall not be allowed to stand, pass, or work under the elevated portion of any industrial truck, loaded or empty, unless it is effectively blocked to prevent it from falling.
- The forks on forktrucks shall always be carried as low as possible; approximately 6 inches (15 cm), consistent with safe operations.

- When the load being carried obstructs forward view, the driver shall be required to travel with the load trailing.
- Extreme care shall be taken when tilting loads forward or shifting loads when the forks are raised to prevent dropping the load accidently.
- Always lower the load before turning the vehicle. For example, when removing a pallet from a rack, back out of the rack and lower the load before turning.
- Always secure any load prior to moving the forklift.
- When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load uphill. The percent grade is determined by the fraction of vertical distance over horizontal distance.
- Forks on fork-equipped industrial trucks may be in the raised position for placing or removing items on pallets, as long as the forks are raised no more than 42 inches (1 meter) above the level where the operator/loaders are standing, and the power is shut off, controls placed in neutral and the brakes set. When on an incline, the wheels shall be blocked.
- Prior to driving onto trucks and trailers, the flooring shall be checked for breaks and other structural weaknesses.
- Never attach a tow rope to the mast to pull or drag loads
- Never tow (pull or push) with a forklift unless a proper towing connection is fitted and designed to do so in accordance with the manufacturer's recommendations
- Never use a forklift to push or bump other loads into position
- Never add any additional counterweight to the forklift
- Telehandlers/Forklifts shall not be operated outside design limits described in equipment's Operating Manual. Telehandlers designed with outriggers shall use outriggers whenever the boom is extended. Telehandlers without outriggers shall not be used for work with attachments or accessories other than forks. Do not turn Telehandlers with boom extended or elevated.
- Do not jump from an overturning, sit-down type forklift. Stay with the truck, holding on firmly and leaning in the opposite direction of the overturn
- Exit from a stand-up type forklift with rear-entry access by stepping backward when a lateral tip over occurs

#### 4.3.4 Speed Limits

• The safe speed for any Powered Industrial Motor Vehicle is the speed where the driver can see the hazard (i.e. pedestrian), react to the hazard (i.e. apply the brakes) and the equipment can stop, before hitting the hazard. The actual speed the equipment should be operated may need to be much slower than the maximum speeds listed below as speed is ultimately dependent on the area where operated and the proximity of people or other hazards.

- The maximum speed of any Powered Industrial Motor Vehicle operated indoors is 13 kph (8 mph).
- The maximum speed of any Powered Industrial Motor Vehicle operated outdoors is 24 kph (15 mph).
- The maximum speed of any Aerial Lift is 5 mph (5 km/h), regardless of where it is operated.
- Speed of remote control vehicles: Radio remote control vehicles shall be equipped with positive means which restrict the speed of the vehicle to 6 kph (3.7 mph) while the equipment is being operated with radio remote control.

## 4.3.5 **Operation in Potentially Flammable Atmospheres**

Powered industrial trucks shall not be operated in atmospheres containing more than 5 percent of the Lower Flammable Limit (LFL) of flammable gas or vapor unless the vehicle is rated for that environment, or under the approval of a Hot Work Permit in accordance with the CL Hot Work Standard.

Approved trucks shall bear a permanent legible label or some other identifying mark indicating approval by the testing laboratory. An example of an approved truck is the "EX" rating.

• "EX" Electrically powered with the safeguards of ES and EE, AND are constructed to be used in atmospheres containing flammable vapors or dusts

## 4.3.6 Safe Handling of Loads

## **Overhead obstructions**

Industrial trucks shall not be operated in areas that expose the operator to the hazard of collision with overhead obstructions unless the truck is equipped with overhead guards.

#### Awkward Loads

Loads of excessive width, length or height shall be so balanced, braced, and secured as to prevent tipping and falling.

## **Towing Cargo**

Only PIMVs that are specifically designed for towing, are allowed to tow/pull loads.

When cargo is being towed, a safe means shall be provided to protect the driver from sliding loads.

## 4.3.7 Truck and Trailer Loading

Trailers that are disconnected from their tractor shall be secured to prevent them from up-ending during loading or unloading operations. A jack stand or equivalent is required for this purpose.

The truck/trailer must be inspected to ensure the floor is sound, and it can support the forklift and load

The truck/trailer wheels must be chocked. See also section 4.2 in "Trailer Loading" for specific engineering requirements for holding trailers to docks.

The access ramp is sufficiently locked so it won't come adrift, and that it can support the forklift and load.

## 4.3.8 **Fueling and Battery Charging**

Gasoline, diesel and liquefied petroleum gas powered forklifts shall be refuelled in areas free of ignition sources in a 10 meter radius (32 feet). Standard controls must be implemented to minimize accumulation and discharge of static electricity.

#### LPG (Liquified Petroleum Gas):

- Always wear leather or insulated gloves and eye protection when connecting or disconnecting cylinders
- Do not change cylinders near an open flame or heat source.
- Check the condition of all valves and seals before connecting the new tanks.
- Tanks should not be stored in areas where leaking gas might accumulate.
- LPG cylinders should not be stored near exits, stairways, entryways or close to high-traffic and busy areas.
- Cylinders should be stored upright and chained or otherwise secured to prevent falling over.

#### Gasoline or Diesel:

- Always wear leather or insulated gloves and eye protection
- Shut-off engine.
- Grounding and bonding must be accomplished to prevent static accumulation from occurring in the system
- Clean up any spills following facility procedures for fuel spills.
- Check for any leaks

#### Changing and Charging Batteries

- Battery charging installations must be located in areas designated for that purpose.
- Always add battery acid to water, never add water to battery acid.
- Make sure that metal objects do not come in contact with the terminals on the battery.
- Make sure that the correct charger (e.g. voltage is correct) is used for the equipment to be charged.
- Make sure that the charger is off before connecting it to the battery.

- Make sure that the vent caps are not plugged.
- When handling (changing, adding water, etc.) batteries, PPE suitable for contact with Sulfuric Acid must be worn. Typical PPE for these activities are rubber gloves, rubber apron, face shield, goggles, etc.
- Eye wash stations must be within 50 feet (15 meters) of the battery handling areas (potential for sulfuric acid or other chemicals to enter the eyes) in accordance with Safety in Designs requirements
- Facilities must be provided for flushing and neutralizing spilled electrolyte and for adequate ventilation for dispersal of air contaminants from gassing batteries.
- A conveyor, overhead hoist, or equivalent material handling equipment must be provided for handling batteries.

#### 4.4 Mobile Elevated Work Platforms (MEWPS)

This section relates to vehicle-mounted aerial devices used to elevate personnel to job sites aboveground.

#### Hazards Associated with Aerial Lifts

The following hazards, among others, can lead to personal injury or death:

- Fall from elevated level,
- Objects falling from lifts,
- Tip-overs,
- Ejections from the lift platform,
- Structural failures (collapses),
- Electric shock (electrocutions),
- Entanglement hazards,
- Contact with objects, and
- Contact with ceilings and other overhead objects.

#### **Requirements Prior to Operating an Aerial Lift**

#### **Pre-start Inspection**

Prior to each work shift, conduct a pre-start inspection to verify that the equipment and all its components are in safe operating condition. Follow the manufacturer's recommendations and include a check of:

#### Vehicle components

- Proper fluid levels (oil, hydraulic, fuel and coolant);
- Leaks of fluids;

- Wheels and tires;
- Battery and charger;
- Lower-level controls;
- Horn, gauges, lights and backup alarms;
- Steering and brakes.

#### Lift components

- Operating and emergency controls;
- Personal protective devices;
- Hydraulic, air, pneumatic, fuel and electrical systems;
- Fiberglass and other insulating components;
- Missing or unreadable placards, warnings, or operational, instructional and control markings;
- Mechanical fasteners and locking pins;
- Cable and wiring harnesses;
- Outriggers, stabilizers and other structures;
- Loose or missing parts;
- Guardrail systems.

Do not operate any aerial lift if any of these components are defective until it is repaired by a qualified person. Remove defective aerial lifts from service (tag out) until repairs are made.

#### Other Requirements

- Aerial baskets or platforms shall not be allowed to rest on or against any structure when workers are on the platform or in the basket while in an elevated position.
- Personnel shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices to gain greater height.
- A safety harness and lanyard shall be used in conformance with the Chevron Products Work at Height standard. The lanyard shall be attached to a manufacturer approved anchor point that is part of the lift's equipment.
- A standby person is in place in accordance with the Chevron Products Work at Height standard.
- Boom and basket load limits specified by the manufacturer shall not be exceeded.

- Only one employee is in the basket, unless specifically designed to carry additional personnel.
- Level sensors shall not be violated or by-passed on any equipment.
- The braking systems shall be set
- Outriggers shall be used if they are part of the equipment; they shall be positioned on pads or a solid surface. All outriggers shall be equipped with individual locks at the outriggers.
- The use of MEWPs on a non-level surface needs to be in conformance with the manufacturer's written instructions. Wheel chocks shall be installed before using an aerial device on an incline provided they can be safely installed.
- The insulated portion of an aerial device shall not be altered in any manner that might reduce its insulating value.
- An aerial device truck shall not be moved when the boom is elevated in a working position with an employee in the basket except when all of the following are complied with:
  - Lower level controls shall not be operated unless permission has been obtained from the employee in the device, except in emergency.
  - All controls and signaling devices are tested and are in good operating condition.
  - Both the driver and/or the elevated employee have been specifically trained for this type of work in accordance with the manufacturer's recommendations.
  - The route to be traveled is surveyed immediately prior to the work trip, checking for overhead obstructions, traffic, holes in the pavement, ground or shoulder, ditches, slopes, etc. For areas other than paved, a survey should be made on foot.
  - Only one employee is in the basket while travelling.
  - $\circ$   $\;$  The speed of the vehicle does not exceed 3 mph (5 km/h).
- Aerials should never be used to lift anything other than personnel and tools. No rigging shall be attached to the boom, basket, or platform for lifting.

#### Work Zone

Employers must assure that work zones are inspected for hazards and take corrective actions to eliminate such hazards before and during operation of an aerial lift. Items to look for include:

- Place warning devices (cones, barricades, etc.) around work area to ensure that other equipment and personnel will stay out of area;
- Drop-offs, holes, or unstable surfaces such as loose dirt;

- Inadequate ceiling heights;
- Slopes, ditches, or bumps;
- Debris and floor obstructions;
- Overhead electric power lines and communication cables;
- Other overhead obstructions;
- Other hazardous locations and atmospheres;
- High wind and other severe weather conditions, such as ice; and the presence of others in close proximity to the work.

#### **Electrical Hazards**

From the CL – Electrical Safety Standard:

Mobile equipment not rated for electrical work, or any part of equipment shall maintain an approach distance of:

- 20 feet of an overhead power line if voltages are unknown or
- The Minimum Clearance Distances specified in the table below

Voltage (nominal, kV, alternating current)	Minimum (proximity) Clearance Distance (feet)
Up to 50	10 (3.1 meters)
Over 50 to 200	15 (4.6 meters)
Over 200 to 350	20 (6.2 meters)
Over 350 to 500	25 (7.6 meters)
Over 500 to 750	35 (10.7 meters)
Over 750 to 1,000	45 (13.7 meters)
Over 1,000	As established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution.

# Table 1: Minimum Clearance Distance for overhead power lines at Specific Voltages (OSHA 1926.1408 Table A)

The following requirements shall apply to aerial man-lifts and similar equipment that are required to work within Minimum Clearance Limits noted in Table 1 above. They include but are not limited to:

• Mobile equipment booms and buckets used specifically for energized electrical work shall be insulated and tested at least annually.

- Mobile equipment used for electrical work shall be operated only by personnel trained and qualified in the use of this equipment.
- Qualified Electrical Personnel shall establish a barricade around any mobile equipment that is to be operated within the 10 feet (3.0 meters) safety distance or within any of the Minimum Clearance Distances noted in Table 1 above.
- Mobile equipment shall be grounded, with the exception that when electrical conductors or circuit parts associated with overhead lines (including any possible back-feeds) have been grounded (earthed) from all possible directions relative to the mobile equipment.
- A dedicated spotter shall be used when equipment is operated near (within the Minimum Clearance Distances noted in Table 1 above) overhead power lines.

#### **Requirements when Operating an Aerial Lift**

#### Fall Protection:

- Ensure that access gates or openings are closed.
- Stand firmly on the floor of the bucket or lift platform.
- Do not climb on or lean over guardrails or handrails.
- Do not use planks, ladders, or other devices as a working position.
- Use a body harness with a lanyard attached to the boom or bucket.

#### Exiting the Lift

• Exiting out of a basket onto a structure of any kind is allowed only through the use of 100% tie off in conformance with the Chevron Products Work at Height standard. Never tie off to anything outside of the basket except in cases where 100% tie off needs to be attained for exiting.

#### Operation/Traveling/Loading:

- Do not exceed the load-capacity limits. Take the combined weight of the worker(s), tools and materials into account when calculating the load.
- Do not use the aerial lift as a crane.
- Do not carry objects larger than the platform.
- Do not drive with the lift platform raised (unless the manufacturer's instructions allow this).
- Do not operate lower level controls unless permission is obtained from the worker(s) in the lift (except in emergencies).
- Do not exceed vertical or horizontal reach limits.

- Do not operate an aerial lift in high winds above those recommended by the manufacturer. MEWPs should never be used in winds above 28 mph (12.5 m/s). Always refer to the equipment's identification plate and operations manual.
- Do not override hydraulic, mechanical, or electrical safety devices.
- Use ground guides when moving to look out for and communicate hazards.

#### Overhead Protection:

- Be aware of overhead clearance and overhead objects, including ceilings.
- Do not position aerial lifts between overhead hazards if possible.
- Treat all overhead power lines and communication cables as energized, and stay at least 10 feet (3 meters) away.
- Ensure that the power utility or power line workers de-energize power lines in the vicinity of the work.

#### Stability in the Work Zone:

- Set outriggers on pads or on a level, solid surface.
- Set brakes when outriggers are used.
- Set up work zone warnings, such as cones and signs, when necessary to warn others

NOTE: Aerial manlift operation requires two people at all times, in accordance with the CL Work at Height standard.

#### 4.4.1 Elevating Personnel Using Forklifts

Lifting personnel using forklifts is not allowed at Chevron Products facilities. This includes the use of man cages or work platforms.

Use scaffolding, Mobile Elevated Work Platforms (MEWPS) such as JLG, scissor lift, etc, or another safer alternative to conduct work at height.

#### 4.5 Forklift Attachments

It is never allowed to suspend a load below the forks by attaching the load directly or via slings to the mast or the forks. Only specially designed equipment allowed by the forklift manufacturer or determined safe by a Qualified Person (ie. Profesional Engineer) can be used for this purpose.

Fork extensions and other attachments shall be secured so that they cannot be inadvertently dislodged, and shall be used only in accordance with the manufacturer's recommendations. I.e. by using a chain

Forklift attachments can be useful tools. Some examples of forklift attachments are:

## Permanent / Semi-permanent attachments

These attachments are permanently/semi-permanently affixed to the industrial truck. This type of truck won't have forks, but will have the "attachment" in their place. Examples:

Squeeze mechanism (i.e. Drum dumper)

Extending jib booms

#### **Removable attachments**

Drum lifters

Davits

Fork extensions

Although convenient, forklift attachments can result in a change in the safe working load of the forklift.

Planning is necessary when using attachments to determine their affect on the stability of the forklift. When considering capacity of potential attachments for your forklift, it's crucial to review the forklift's rating at its load center, which determines how much weight the machine can safely lift under normal conditions. It is also necessary to understand the center of gravity of the load (in relation to the load center) and its effect on the safe lifting capacity of the forklift.

Since forklifts are rated at a load center, the further out (away from the load center) you want to lift, the lower the capacity becomes. A 5,000-lb. capacity forklift will lift that much weight up to 48-inch forks (with a 24-inch load center) but going out to 60 inches (with a 30-inch load center), for example, drops the capacity to 4,000 pounds.

#### Load Moment

The weight capacity of a forklift attachment is tied to what is known as the Maximum Load Moment, which is when the load center distance increases, changing the weight distribution, and as a result, the amount of weight a truck can carry under those conditions. Increasing the load center distance too far can cause a forklift to tip.

Load Moment is the product of the object's weight multiplied by the object's distance from the fulcrum, which is a fixed point that acts as the pivot point. On a sit-down counterbalanced forklift, the fulcrum or pivot point is the axle of the front wheels. It is this product, or Load Moment, which determines how much overturning force is being applied to the forklift.

The maximum Load Moment for a truck is derived by multiplying the weight rating of the forklift by the center load distance. If we multiply the 5,000-pound capacity of our theoretical forklift by its 24-inch center load, we arrive at a maximum Load Moment of 120,000 inch-pounds. However, when exceeding that 24 inches by use of a longer attachment, that capacity estimate must be revised. In order to discover the maximum load when the load center distance is greater than the distance stated on the data plate, one must divide the maximum Load Moment by the actual load center distance.

Calculate Weight Capacity

To determine what your forklift's capacity will become when using an attachment, use the following formula:

Truck Capacity X Load Center (for its Load Moment) / New load center of desired attachment

You can also express this formula with an equation: (TC x LC)/NLC

So, in our 5,000-lb. forklift example, we'd multiply 5,000 by 24 (its load center), for a result of 120,000 inch-pounds as its maximum load moment. Then we divide 120,000 by 30, which is the load center for the desired 60-inch attachment. The end result is 4,000 pounds of maximum weight when using that specific attachment.

## **Positioning Concerns**

According to the Occupational, Safety & Health Administration (OSHA), the way a load is arranged on a forklift will also factor into load capacity. Most loads do not have their center of gravity exactly in the middle; so to whatever extent that the load differs from its theoretical centered load—like in instances when the load is irregularly shaped, has unbalanced weight distribution, or is not centered on the forks—capacity may be reduced further. If not factored into the calculated capacity, this can cause tipping, collisions, dropped loads and loss of steering control.

One way to address positioning concerns is to reduce the distance from the front wheels to the load center. For example, load a large rectangular box widthwise across the forks of the truck, instead of lengthwise, which causes the load center to shift forward and away from the front wheels, lifting the rear wheels off the ground. It is also helpful to load as close to the front wheels as possible, limiting the load center distance, and load the heaviest part toward the mast.

## 4.6 Maintenance

#### 4.6.1 Maintenance of Powered Mobile Industrial Equipment

- Any changes to the equipment shall be managed in accordance with the Management of Change (MOC) process.
- All replacement parts shall be equivalent in safety to the Original Equipment Manufacturer (OEM).
- Repairs to the fuel and ignition systems which involve fire hazards shall be conducted only in locations designated as safe for such repairs.
- Shall not be altered so that the relative positions of the various parts are different from OEM.
  - Shall not be altered either by the addition or elimination of any parts without prior written approval from OEM.
  - $\circ$   $\;$  Additional counterweighting shall not be done unless approved by the OEM.

- LP (Liquified Petroleum) conversion is allowed provided the complete conversion results in a truck which embodies the features specified for LP or LPG designated trucks.
- Ensure that Powered Mobile Industrial Equipment is properly labeled.
- Work must be conducted in accordance with Safe Work Practices, including Permit to Work and Hazard Analysis. Significant hazards exist with the repair and maintenance of Powered Industrial Motor Vehicles:
  - Crawling and reaching underneath a jacked up (lifted) Powered Industrial Motor Vehicles can result in amputations or death if the Vehicle falls.
  - Fire hazards exist from crossed battery terminals and from gas/diesel/LPG vapors. Sometimes cutting, grinding, torching to loosed bolts, and welding take place as part of the repairs.
  - o Shocks from batteries
  - Battery chemicals (e.g. sulfuric acid)
  - Often times the forklift maintenance person is working alone.
- Preventative maintenance must follow the manufacturers recommendations.
- Preventative maintenance must be conducted by approved contractors, in compliance with the CHESM process.

#### 5.0 Records

#### 5.1 Required Records

The following records will be kept for conformance with this standard:

- Training Records
- Inspection Records
- Maintenance Records

#### 6.0 References

The following is a complete list of the documents referenced by this standard:

Document Title	Link to Document
NFPA 505	
F&L - Hot Work Standard	
F&L - Work at Height Standard	
F&L - Electrical Safety Standard	

## 7.0 Revision History

#### Table 1. Revision History

Revision Number	Date	Note
0	February 2013	Initital Release
1	March 2019	Major Update
2.1	May 2023	Simple naming change to reference Products

#### Appendix A – Safeguards List

The following lists are scenarios and common safeguards available to prevent serious injury.

Risk assessments need to be conducted for areas and tasks at each facility. These risk assessments will determine the best combination of these safeguards that need to be used in specific areas of the facility, doing specific activities, etc.

Preference should be given to those safeguards that are higher on the hierarchy of controls. For instance having railings/barriers in operating areas separating people and forklifts is a good safeguard. Relying on mirrors and horn honking are relatively weak safeguards.

Note: This list of safeguards is not comprehensive, but should be used as reference when determining the right combination of safeguards to use in certain areas or for certain tasks at the facility.

#### Powered Industrial Motor Vehicle Tipping Over:

Safeguard	Preventative / Mitigative	Human Action / Hardware / Both
<ul> <li>Positive protection against truck/trailer drive aways when loading:</li> <li>Dock locks with green/red light indicators</li> <li>Proximity sensing wheel chocks with green/red light indicators</li> <li>Etc.</li> </ul>	Preventative	Both
Edge guards (railings, curbs, etc.) on ramps	Preventative	Hardware
Edge guards and/or barricading on docks and platforms	Preventative	Hardware
Loading bays protected by closing doors when no truck is present	Preventative	Both
Loading bays protected by edge guards when no truck is present	Preventative	Hardware
Governors to limit speed	Preventative	Hardware
Observing speed limits with the use of speedometer	Preventative	Both
Slowing down at intersections and blind corners	Preventative	Human Action
Removal of equipment and materials that create blind corners/areas	Preventative	Human Action
Key removed from unattended PIMVs to keep unauthorized personnel off forklifts	Preventative	Human Action
Understanding and completing the calculations for any load to be lifted. Not	Preventative	Human Action

Safeguard	Preventative / Mitigative	Human Action / Hardware / Both
lifting any load unless it's less than safe working load of forklift.		
Seat belts worn by PIMV drivers	Mitigative	Both

## Person Struck by Powered Industrial Motor Vehicle:

Safeguard	Preventative / Mitigative	Human Action / Hardware / Both
Railings/barriers to protect pedestrians and workers in their work spaces	Preventative	Hardware
Establish a suitable pedestrian walkway and rules governing. Adherence to pedestrian walkway requirements.	Preventative	Both
Honking horn at intersections, blind spots, when changing direction, etc.	Preventative	Both
High visibility vests being worn by personnel in forklift areas	Preventative	Human Action
Speed limiting devices on PIMVs	Preventative	Hardware
Speedometers and adherence to speed limits by drivers.	Preventative	Both
Mirrors at blind corners	Preventative	Both
Proximity / motion sensing technology with alarms or flashing lights	Preventative	Both
Gates at Intersections	Preventative	Both
Railings or other hard barriers that physically separate forklift from pedestrians	Preventative	Hardware
PIMV mounted lights that highlight the path of travel	Preventative	Both
Backup alarm	Preventative	Both
Adherence to the 6 foot (2 meter) rule	Preventative	Human Action

Safeguard	Preventative / Mitigative	Human Action / Hardware / Both
Removal of equipment and materials that create blind corners/areas	Preventative	Human Action
Key removed from unattended PIMVs to keep unauthorized personnel off forklifts	Preventative	Human Action
Making eye contact between pedestrian/worker and PIMV driver	Preventative	Human Action

## Struck by Falling Material

Safeguard	Preventative / Mitigative	Human Action / Hardware / Both
Low clearance detectors (bars, proximity alarms, etc.)	Preventative	Both
Keeping forks as low to the ground as possible	Preventative	Human Action
Key management to keep unauthorized personnel off powered industrial motor vehicles	Preventative	Human Action
Using only approved attachments for lifting loads. Never lift loads by tieing off to the forks or mast.	Preventative	Both
Roof/cage on forklift to protect driver	Mitigative	Hardware
Always wear seat belts when operating a powered industrial motor vehicle	Mitigative	Both
Understanding and complying with the requirement to remain in forklift if debris is falling	Mitigative	Human Action

#### Fall from Mobile Elevated Work Platform

Safeguard	Preventative / Mitigative	Human Action / Hardware / Both
Approved railing system in place	Preventative	Hardware
Always wearing harness and lanyard while in the MEWP	Preventative	Both
Avoid uneven surfaces when moving	Preventative	Human Action
Never use in high winds	Preventative	Human Action
Never leaving the confines of the railing system unless trained and using 100% tie off	Mitigative	Both

Appendix B - Forklift Pre-Shift Checklist (generic)

	Mo	onday	Tu	esday	Wed	nesday	Thu	ursday	F	riday	Sat	urday	S	unday
Date:														
Inspectors Initials:		1		1				1		1		1		
ITEM INSPECTED	ок	Repair	ОК	Repair	ок	Repair	ОК	Repair	ОК	Repair	ОК	Repair	ок	Repair
Forks & Attachments														
Mast, Chain, Hydraulic Lines														
Tires & Axles														
Overhead Guard														
Fuel Tank & Connections														
Fuel Level														
Engine Oil Level														
Radiator Water Level (cold)														
Leaks under truck														
Seat & Seat Belts														
Horn & Backup Alarm														
Lights														
Gauges/Instruments														
Brakes – All														
Hydraulic Controls & Lifts														
Steering														
Tires/Wheel Nuts														
Backrest/Carriage														

## Appendix C – Equipment Guide

	Lift Trucks					
<b>4 Wheel Forklift</b> Good for unloading trucks and moving pallets and other loads		3 Wheel Forklift Good for unloading trucks and moving pallets and other loads Has a tighter turn radius for more maneuverability in small spaces				
Stand up Forklift Good for working indoors on smooth surfaces and quick loading/unloading in situations where the rider needs to mount and dismount often Has a tighter turn radius for more maneuverability in small spaces		Rough Terrain Powered Industrial Trucks (telehandler) – A vehicle designed for off-road use to pick up, transport, and deposit materials a short distance. Loads are raised, lowered, or extended with a vehicle- mounted telescoping boom.				
Rough Terrain Powered Industrial Trucks (telehandler) – A vehicle designed for off-road use to pick up, transport, and deposit materials a short distance. Loads are raised, lowered, or extended with a vehicle-mounted telescoping boom.		Motorizedhand/rider trucksGood for movingloads short distancesComes in twoversions: Ride-on orWalk-behindForks are generally48" long, can comedouble-long forloading two pallets,and rise slightly offthe groundWalk behind can beequipped with a mastand/or reach whichwill allow you to raiseloads onto racking				

Motorized Pallet Jack Can walk behind or rode on Good for moving pallets from one location to another							
Good for areas with a lot of congestion as it is a safer option than a 4 or 3 wheel forklift							
	Mobile Elevated Work	Platforms (MEWPs)					
Scissor Lift Good for maintenance work Scissor Lift – A raising/lowering device that is supported or stabilized by one or more pantograph leg sections.		Articulating Boom Lift Aerial Extensible Boom Manlift - A vehicle-mounted articulating boom platform (basket) with two or more hinged boom sections which are used to elevate and position personnel.					
Straight Boom Lifts Aerial Articulating Boom Truck - A vehicle-mounted telescoping boom with a platform (bucket) which is used to elevate and position personnel.							
Motorized Carts							
Maintenance Cart		Golf Cart					
Attachments							

Personnel Basket (man basket, forklift work platform)	Self Dumping Hoppers Industrial space has a lot of challenges and you want to have the right equipment to make your operation run smoothly. When you are maintaining a plant or trying to keep your job site clean, try a self dumping hopper. These low-cost units help collect, store and transport bulk materials, and it's easy for a forklift operator to transport them by sliding forks into their built-in fork	
Drum Handlers	pockets. Once it has been moved to the right location, release the safety latch and the hopper will tilt forward and release its content. Semi Permanent drum clamps and drum dumpers	
Fork Extensions	Forklift Boom	

Dock Plate (dock board)		