

Powered Industrial Trucks (Forklifts)

SOP Number:	Revision:	Approval Date:
SOP-100-03-PR-017	0	2/24/14

1.0 PURPOSE

The purpose of this procedure is to establish the minimum requirements for Powered Industrial Trucks (Forklifts) for STIS DBA Southeast Texas Industrial Services.

2.0 SCOPE

This procedure applies to all HenSu Holdings employees, contractors, subcontractors and visitors associated with an HenSu Holdings site.

3.0 RESPONSIBILITIES

The following personnel have responsibilities defined in this procedure:

- HenSu Holdings Managers
- HenSu Holdings Supervisors
- HenSu Holdings Employees
- HenSu Holdings Contractors
- HenSu Holdings Subcontractors
- HenSu Holdings Visitors

4.0 PROCEDURE

Each site shall make every attempt to prevent the possibility of incidents and accidents to employees while performing work activities involving powered industrial trucks (forklifts), through compliance with safety regulations, the training of employees to properly perform their job activities, and through employee involvement in safe work activities.

4.1 GENERAL REQUIREMENTS

- 4.1.1 All forklifts in use shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation, as defined in ASME B56.1-1993 Safety Standards for Low Lift and High Lift Trucks.
- 4.1.2 All nameplates and markings shall remain in place and shall be legible.
- 4.1.3 Only trained and authorized operators shall be permitted to operate forklifts.
- 4.1.4 All forklifts shall have a service brake system, an emergency brake system, and a parking brake system. These systems may use common components, and shall be maintained in operable condition.
- 4.1.5 Additional lights shall be required whenever visibility conditions warrant them.
- 4.1.6 All forklifts shall be equipped with an adequate audible warning device at the operator's station and it shall be in an operable condition.
- 4.1.7 No forklift having an obstructed view to the rear shall be used unless:
 - 4.1.7.1 Equipped with a reverse signal alarm that is audible above the surrounding noise level, or
 - 4.1.7.2 Is backed up only when an observer signals that it is safe to do so.
- 4.1.8 Seat belts shall be provided on all forklifts with rollover protection.
- 4.1.9 Seat belt shall be worn by the operator at all times during operation.
- 4.1.10 Unauthorized personnel shall not be permitted to ride on forklift unless manufacturer's supplied seating has been provided.
- 4.1.11 No person shall ride on the lifting mechanism of a forklift or use the forklift as a work platform.

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- Manufacturer-approved personnel baskets may be used if all manufacturer's specifications and limitations are met. See section 4.3 of this procedure for additional requirements for lifting personnel.

4.1.12 All forklifts left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, shall have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.

4.1.13 Whenever a forklift is parked, the parking brake shall be set.

4.1.14 Forklifts parked on inclines shall have the wheels chocked and the parking brake set.

4.1.15 All cab glass shall be safety glass, or equivalent, that introduces no visible distortion affecting the safe operation of any machine.

4.1.16 A safe distance shall be kept while operating a forklift around overhead electrical lines. Refer to SOP-100-03-PR-008 - Electrical Safety for more information.

4.1.17 Forklifts shall have the rated capacity clearly posted on the vehicle, clearly visible to the operator.

4.1.17.1 When auxiliary removable counterweights are provided by the manufacturer, corresponding alternate rated capacities also shall be clearly shown on the truck.

4.1.17.2 These ratings shall not be exceeded.

4.1.18 No modifications or additions that affect the capacity or safe operation of the forklift shall be made without the manufacturer's written approval.

4.1.18.1 If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

4.1.18.2 In no case shall the original safety factor of the forklift be reduced.

4.1.19 If a load is lifted by two (2) or more forklifts working in unison, the proportion of the total load carried by any one (1) truck shall not exceed its capacity.

4.1.20 Steering or spinner knobs shall not be attached to the steering wheel unless the steering mechanism is of a type that prevents road reactions from causing the steering hand wheel to spin.

- If so equipped, the steering knob shall be mounted within the periphery of the wheel.

4.1.21 All high lift rider forklifts shall be equipped with overhead guards which meet the configuration and structural requirements as defined in paragraph 421 of ANSI B56.1-1969, Safety Standards for Powered Industrial Trucks.

4.1.22 Wheel stops, or other recognized positive protection shall be provided to prevent railroad cars from moving during loading or unloading operations.

4.1.23 Fixed jacks may be necessary to support a semi-trailer and prevent upending during the loading or unloading when the trailer is not coupled to a tractor.

4.2 INSPECTION

4.2.1 All forklifts in use shall be checked at the beginning of each shift to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use:

- service brakes
- parking system (hand brake)
- emergency stopping system (brakes)

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- tires
- horn
- steering mechanism
- seat belts
- operating controls
- safety devices
- forks - (see Exhibit 7.1 for tolerances)
- bent mast - (contact manufacturer for tolerances)
- bent bars - (contact manufacturer for tolerances)

4.2.2 All defects shall be corrected before the vehicle is placed in service.

- These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.

4.2.3 If a forklift is found to be in need of repair, is defective, or is unsafe in any way, the forklift shall be taken out of service until it has been restored to safe operating condition. A tag shall be attached to the steering wheel stating out of service until repairs are made. All repairs shall be made by authorized personnel only.

4.2.4 Written daily (pre-shift) inspections shall be required. SOP-100-03-FM-017-1 – Forklift Daily Inspection Report shall be used to document inspection findings.

4.2.5 Special attention shall be paid to the forks during the annual inspection. Refer to Exhibit 7.1 for a list of specific issues that should be checked for.

4.3 ELEVATING PLATFORMS

4.3.1 Only approved platforms shall be used to elevate personnel. Approved platforms shall have the following minimum design specifications:

- 4.3.1.1 Structural safety factor of 3:1.
- 4.3.1.2 Slip resistant floor.
- 4.3.1.3 Means to securely attach the platform to the lifting carriage or forks.
- 4.3.1.4 Minimum floor space of 18 inches x 18 inches per occupant.
- 4.3.1.5 Guard rail with a height above the platform floor not less than 36 inches or more than 42 inches, and including a mid-rail.
- 4.3.1.6 Toe plate with minimum height of four (4) inches.
- 4.3.1.7 Guarding of moving parts, such as mast chains. Such guarding (usually expanded metal) shall be installed on the platform between the employee(s) and the forklift.
- 4.3.1.8 The platform floor shall not be more than eight (8) inches above the upper surface of the fork blades.
- 4.3.1.9 The floor dimensions shall not be more than two (2) times the maximum load center of the forklift.
- 4.3.1.10 Markings that indicate the maximum load, platform weight, and minimum capacity of forklift to be used.

4.3.2 Whenever a forklift is equipped with vertical only or vertical and horizontal controls that can be elevated with the lifting carriage or forks for lifting personnel, the following additional precautions shall be taken for the protection of personnel being elevated:

- 4.3.2.1 Means shall be provided whereby personnel on the platform can shut off power to the truck.

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4.3.2.2 Such protection from falling objects, as indicated necessary by the operating conditions shall be provided.

4.4 EXCEPTIONS FOR OVERHEAD PROTECTION

4.4.1 Where overhead obstructions limit the overall lowered height of the forklift and the normal overhead guard height, operation without a guard may be permitted.

4.4.2 A forklift may be operated without the overhead guard, providing all of the following conditions are met:

4.4.2.1 Vertical movement of the lifting mechanism is restricted to six (6) feet or less from the ground;

4.4.2.2 The forklift will operate only in an area where:

- the bottom of the top tiered load is not higher than six (6) feet and the top is not more than ten (10) feet from the ground when tiered;
- only stable loads are handled;
- there is protection against falling objects from adjacent high stack areas.
- the forklift is marked to identify where it can be operated.

4.4.2.3 The above exceptions do not apply for rough terrain forklift.

4.5 SAFE OPERATION RULES AND PRACTICES

4.5.1 Hands and feet shall be kept inside the operator's designated area or compartment.

4.5.1.1 No part of the body shall be put into the mast structure or between the mast and the forklift.

4.5.1.2 Operators shall not operate controls while outside the designated seated position.

4.5.1.3 A forklift shall not be driven up to anyone standing in front of an object.

4.5.1.4 The operator shall ensure that personnel shall stand clear of the rear swing area before conducting turning maneuvers.

4.5.1.5 Particular care (i.e. sounding horn) shall be exercised at cross aisles, doorways, and other locations where pedestrians may step into the path of travel of the forklift.

4.5.1.6 The operator shall not allow anyone to stand or pass under the elevated portion of any forklift, whether empty or loaded

4.6 PICKING UP LOADS

4.6.1 The approximate weight of each load shall be known prior to lifting any loads.

4.6.2 The operator shall not lift any loads that are greater than the forklift's rated capacity.

- If the rated capacity is exceeded, the forklift may tip over or the operator may lose part or all of the steering due to inadequate weight on the steering axle.

4.6.3 The center of gravity of the load shall be known and the load center (measured from the center of gravity of the load to the face of the forks) shall not exceed the forklift's load center.

4.6.4 Lifting attachments shall be designed for their application.

4.6.4.1 Such attachments shall be marked identifying the attachment, showing the approximate weight of the forklift and the attachment combination, and showing the capacity of the forklift with the attachment at maximum elevation with the load centered laterally.

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- 4.6.5 The operator shall not lift any unstable loads.
- 4.6.6 Loads that can fall towards the operator shall not be lifted.
- 4.6.7 Loads shall be centered on the load-engaging means (e.g. forks).
- 4.6.8 The forks shall be properly adjusted to fit under the center of the load and be set as wide as possible.
- 4.6.9 The forks shall be place all the way under the load for transport.
- After positioning the forks under the load, the forks can then be tilted back to reduce the load center.
- 4.7 TRAVELING
- 4.7.1 A safe distance shall be maintained from the edge of ramps, platforms, and other similar working surfaces.
- 4.7.2 The forks, with or without load, shall be kept low (just enough to clear rough spots). Speed limits shall be approximately three (3) mph when operating in shops and near pedestrians.
- 4.7.3 The ground and/or floor (inside buildings) shall be strong enough to support the forklift and the weight of the load. When loading and unloading a truck/trailer, the truck/trailer shall be secured (e.g. wheeled chocks) to prevent it from moving when traveling across the dock bridge.
- 4.7.4 An assistant shall be used as a spotter or the operator shall travel in reverse when the load obstructs their view.
- 4.7.5 Railroad tracks shall be crossed in a diagonal direction (e.g. one wheel crosses the track at a time).
- 4.7.6 Forklift shall not be traveled across slopes which will cause the forklift to become unstable.
- 4.7.6.1 Grades shall be ascended or descended slowly, and with caution.
 - 4.7.6.2 When ascending or descending grades in excess of 5%, forklift shall be driven with the load pointing uphill.
 - 4.7.6.3 However, unloaded forklift should be operated on all grades with the forks pointing downgrade.
- 4.8 STACKING AND UNSTACKING
- 4.8.1 When stacking or unstacking loads, the mast should be high enough to ensure that the stack is not likely to be pushed over.
- 4.8.2 Stacks shall be stable; uneven stacks and unstable loads are likely to collapse, causing danger to the operator and other person in the vicinity.
- 4.8.3 Broken pallets shall not be used for carrying nor stacking loads and forks shall not be used to push, poke, or compress materials.
- 4.9 PARKING
- 4.9.1 A forklift is unattended when the operator is more than twenty-five (25) feet from the forklift or whenever the operator leaves the forklift and the forklift is not in their view.
- 4.9.2 Before leaving the operator's position, the operator shall:
- bring the forklift to a complete stop;
 - place directional controls in neutral;
 - apply the parking brake; and

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- fully lower the load-engaging means.
- 4.9.3 In addition, when leaving the forklift unattended, the operator shall:
 - stop the engine or turn off the controls.
 - if the forklift must be left on an incline, block the wheels; and
 - fully lower the load-engaging means.
- 4.10 OPERATORS SHALL ADHERE TO THE FOLLOWING BASIC RULES:
 - 4.10.1 Keep to the right on roadways and in wide aisles.
 - 4.10.2 Do not exceed posted speed limits and operate at lower speeds when necessary due to conditions of the work area.
 - 4.10.3 Slow down at intersections, corners, ramps, and other danger points.
 - 4.10.4 Use the horn in blind spots.
 - 4.10.5 Give pedestrians the right of way.
 - 4.10.6 Maintain a clear field of vision.
 - 4.10.7 When parking, do not block traffic.
- 4.11 HAZARDOUS MATERIALS AND AREAS
 - 4.11.1 Operators who are required to carry chemical loads shall know the hazards, possible health effects, PPE required, and action required in case of a spill.
 - This information is available in the material safety data sheets.
 - 4.11.2 Forklift with internal-combustion engines creates carbon monoxide therefore, ventilation shall be provided in enclosed areas where internal-combustion powered equipment is used.
 - 4.11.3 Forklift can provide a source of ignition for a flammable mixture.
 - Only "approved" forklift shall be used in locations where fire hazards exist (see 4.12 Designations).
- 4.12 DESIGNATIONS & DESIGNATED LOCATIONS
 - 4.12.1 Refer to OSHA 1910.178 for a listing of the different designations of forklifts and the locations where each designation should be used.
- 4.13 FUEL HANDLING AND STORAGE
 - 4.13.1 For Gasoline and Diesel-powered forklift, the engines shall be turned off when refuelling and no smoking or open flame shall be allowed in the fuelling area.
 - 4.13.2 The storage and handling of liquid fuels such as gasoline and diesel fuel shall be in accordance with NFPA Flammable and Combustible Liquids Code (NFPA No. 30-1969)
 - 4.13.3 The storage and handling of liquefied petroleum gas fuel shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No. 58-1969)
 - 4.13.4 Changing and charging storage batteries
 - 4.13.4.1 Battery charging installations shall be located in areas designated for that purpose.
 - 4.13.4.2 Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by forklift, and for adequate ventilation for dispersal of fumes from gassing batteries.
 - 4.13.4.3 A conveyor, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries.

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- 4.13.4.4 Reinstalled batteries shall be properly positioned and secured in the forklift.
- 4.13.4.5 A carboy tilter, or siphon shall be provided for handling electrolyte.
- 4.13.4.6 When charging batteries, acid shall be poured into water; water shall not be poured into acid.
- 4.13.4.7 Forklift shall be properly positioned, and brake applied before attempting to change or charge batteries.
- 4.13.4.8 Care shall be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) shall be open to dissipate heat.
- 4.13.4.9 Smoking shall be prohibited in the charging area.
- 4.13.4.10 Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.
- 4.13.4.11 Tools and other metallic objects shall be kept away from the top of uncovered batteries

4.14 FORKLIFT TRAINING

- 4.14.1 Prior to permitting an employee to operate a forklift (except for training purposes), the employer shall ensure that each operator has successfully completed the training.
- 4.14.2 Each operator shall be trained and responsible for the safe operation, inspection, maintenance, and safety features of the forklift used.
- 4.14.3 The employer shall ensure that each forklift operator is competent to operate a forklift safely, as demonstrated by the successful completion of the training.
- 4.14.4 Training program implementation
 - 4.14.4.1 Trainees may operate a forklift only when they are:
 - 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.
 - 4.14.4.2 Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, 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.
 - 4.14.4.3 All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train forklift operators and evaluate their competence.
- 4.14.5 Training program content
 - 4.14.5.1 Forklift operators shall receive initial training in the following topics, unless the employer can demonstrate that the topic or topics are not applicable to safe operation of the forklift in the employer's workplace.
 - Operating instructions, warnings, and precautions for the types of forklift the operator will be authorized to operate
 - Differences between the forklift and the automobile
 - Forklift controls and instrumentation: where they are located, what they do, and how they work
 - Engine or motor operation
 - Steering and manoeuvring

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- Visibility (including restrictions due to loading)
- Fork and attachment adaptation, operation, and use limitations
- Forklift capacity
- Forklift stability
- Any forklift inspection and maintenance that the operator will be required to perform
- Refuelling 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 forklift that the employee is being trained to operate.

4.15 WORKPLACE-RELATED CONDITIONS AND TRAINING TOPICS:

- 4.15.1 Surface conditions where the forklift will be operated
- 4.15.2 Composition of loads to be carried and load stability
- 4.15.3 Load manipulation, stacking, and un-stacking
- 4.15.4 Pedestrian traffic in areas where the forklift will be operated
- 4.15.5 Narrow aisles and other restricted places where the forklift will be operated
- 4.15.6 Hazardous (classified) locations where the forklift will be operated
- 4.15.7 Ramps and other sloped surfaces that could affect the forklift's stability
- 4.15.8 Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation
- 4.15.9 Closed environments and other areas where insufficient ventilation or poor forklift maintenance could cause a build up of carbon monoxide or diesel exhaust

4.16 OPERATOR CERTIFICATION AND TRAINING

- 4.16.1 Training shall be provided for each operator. This training shall comply with the equipment manufacturer's requirements as well as the equipment operator training procedures as specified in this Procedure.
- 4.16.2 Personnel shall pass the written evaluation/exam with a score of 80% or greater prior to being certified to operate the equipment.
- 4.16.3 The operator's knowledge of safe operating procedures for this equipment shall be verified by successfully completing a performance test (SOP-100-03-FM-017-2 – Forklift Operators Performance Evaluation) and by observations of their performance during the first month of operation.
- 4.16.4 A competent person shall be designated at each project/facility by the Area/Site Manager. The competent person shall administer the performance evaluation to determine an applicant's/employee's operating ability.
- 4.16.5 A performance evaluation shall be used to determine an applicant's/employee's operating ability for each type and model of equipment to be operated.

4.17 REFRESHER TRAINING AND EVALUATION

- 4.17.1 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 forklift safely.
- 4.17.2 Refresher training in relevant topics shall be provided to the operator when:
 - 4.17.2.1 The operator has been observed to operate the forklift in an unsafe manner;

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- 4.17.2.2 The operator has been involved in an incident or near-miss incident;
- 4.17.2.3 The operator has received an evaluation that reveals that the operator is not operating the forklift safely;
- 4.17.2.4 The operator is assigned to drive a different type of forklift;
- 4.17.2.5 A condition in the workplace changes in a manner that could affect safe operation of the forklift.
- 4.17.2.6 An evaluation of each forklift operator's performance shall be conducted at least once every three (3) years.
- 4.17.2.7 If an operator has previously received training in a topic and it has been this practice, and such training is appropriate to the forklift and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the forklift safely.
- 4.17.2.8 The employer shall certify that each operator has been trained and evaluated as required by this Procedure.
- 4.17.2.9 Supervision shall verify that an operator is qualified to operate each piece/type of equipment that they are required to operate.
- 4.17.3 All training and evaluations shall be documented, and records maintained in the HSE Training Database.

5.0 REFERENCES

OSHA 1910.178	Powered Industrial Trucks
OSHA 1926.602	Materials Handling Equipment
ASME B56.1-1993	Safety Standards for Low Lift and High Lift Trucks
ANSI B56.1-1969	Safety Standards for Powered Industrial Trucks

6.0 TERMINOLOGY

ANSI	American National Standards Institute
Center of Gravity	The point where the shape's weight is spread evenly in all directions. For a uniform load, the center of gravity is located at the center of the object.
Counterweight	The weight that is part of the basic structure of a lift truck that is used to offset the weight of a load and to maximize the resistance of the lift truck to tipping over.
Load Center	The horizontal distance from the faces of the load-engaging e.g. forks to the center of gravity of the load.
Overhead Guard	A framework fitted to a truck over the head of a riding operator for the purpose of providing protection for the operator from falling objects.
Rough Terrain Lift Truck	A wheeled-type lift truck designed primarily as a forklift truck. This lift truck is intended for operation on unimproved natural terrain as well as the disturbed terrain of construction sites.
Site	Any location where HenSu Holdings employees are involved in work activities.

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7.0 EXHIBITS

7.1 ITEMS TO CHECK FOR ON FORKS DURING THE ANNUAL INSPECTION

Surface cracks; The fork shall be thoroughly examined visually for cracks and, if considered necessary, subjected to a non-destructive crack detection process, special attention being paid to the heel and welds attaching all mounting components to the fork blank. The forks shall not be returned to service if surface cracks are detected.

Straightness of Blade and Shank: The straightness of the upper face of the shank shall be checked. If the deviation from straightness exceeds 0.5% of the length of the blade and/or height of the shank respectively, the fork shall not be returned to service.

Fork Angle (Upper Face of Blade to Load Face of the Shank): Any fork that has a deviation of greater than three (3) degrees from the original specification shall not be returned to service.

Difference in Height of Fork Tips; The difference in height of one set of forks when mounted on the fork carrier shall be checked. If the difference in tip heights exceeds 3% of the length of the blade, the set of forks shall not be returned to service.

Positioning Lock (when originally provided): It shall be confirmed that the positioning lock is in good repair and correct working order. If any fault is found, the fork shall be withdrawn from service.

Wear - Fork Blade and Shank: The fork blade and shank shall be thoroughly checked for wear; special attention being paid to the vicinity of the heel. If the thickness is reduced to 90% of the original thickness, the fork shall not be returned to service.

Wear - Fork Hooks (when originally provided): The support face of the top hook and the retaining faces of both hooks shall be checked for wear, crushing and other local deformations. If these are apparent to such an extent that the clearance between the fork and the fork carrier becomes excessive, the fork shall not be returned to service.

Legibility of Marking (when originally provided): If the fork marking is not clearly legible, it shall be renewed. Markings shall be renewed per instructions from original supplier.