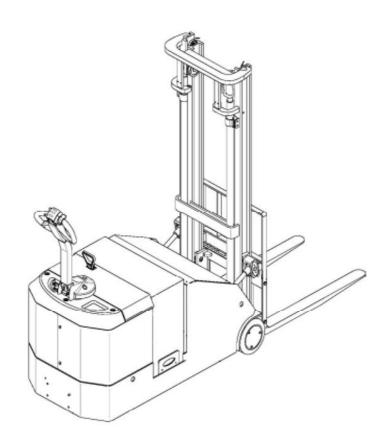
SM-743

WSTX33

Service Manual



November, 2019 Rev 1.1



Technical Publications 700 Enterprise Drive Lexington, KY 40510 www.clarkmhc.com Printed in USA

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SECTION SM

SAFE MAINTENANCE

SM-1 SAFETY SIGNS AND MESSAGES

Safety signs and messages in this manual and on the lift truck provide instructions and identify specific areas where potential hazards exist and special precautions should be taken. Be sure you know and understand the meaning of these instructions, signs, and messages. Damage to the truck, death, or serious injury to you or other persons may result if these messages are not followed.

NOTE

This message is used when special information, instructions or identification is required relating to procedures, equipment, tools, pressures, capacities, and other special data.

IMPORTANT

This message is used when special precautions should be taken to ensure a correct action or to avoid damage to, or malfunction of, the truck or a component.

ACAUTION

This message is used as a reminder of safety hazards that can result in personal injury if proper precautions are not taken.

AWARNING

This message is used when a hazard exists that can result in injury or death if proper precautions are not taken.

ADANGER

This message is used when an extreme hazard exists that can result in injury or death or serious injury if proper precautions are not taken. The above terms have been adopted by Clark Material Handling Company. The same terms may be used in different context in service literature supplied directly or indirectly by vendors of truck components.

SM-2 SAFE MAINTENANCE PRACTICES

The following instructions have been prepared from current industry and government safety standards applicable to industrial truck operation and maintenance. These recommended procedures specify conditions, methods, and accepted practices that aid in the safe maintenance of industrial trucks. They are listed here for the reference and safety of all workers during maintenance operations. Carefully read and understand these instructions and the specific maintenance procedures before attempting to do any repair work.

When in doubt of any maintenance procedure, please contact your local Clark dealer.

- Powered industrial trucks can become hazardous if maintenance is neglected. Therefore, suitable maintenance facilities, trained personnel, and procedures must be provided.
- 2. Maintenance and inspection of all powered industrial trucks shall be done in conformance with the manufacturer's recommendations.
- A scheduled planned maintenance, lubrication, and inspection program shall be followed.
- 4. Only trained and authorized personnel shall be permitted to maintain, repair, adjust, and inspect industrial trucks. Work should be performed in accordance with the manufacturer's specifications.
- 5. Properly ventilate work area, vent exhaust fumes, and keep shop clean and floor dry.
- 6. Avoid fire hazards and have fire protection equipment present in the work area. Do not use an open flame to check for level or leakage of fuel, electrolyte, oil, or coolant. Do not use open pans of fuel or flammable cleaning fluids for cleaning parts.

- 7. Before starting work on truck:
- a. Raise drive wheels off of floor and use blocks or other positive truck positioning devices
- b. Disconnect battery before working on the electrical system.
- 8. Before working on engine fuel system of gasoline- or diesel-powered trucks, be sure the fuel shut-off valve is closed.
- Operation of the truck to check performance must be conducted in an authorized, safe, clear area.
- 10. Before starting to drive truck:
- a. Be in operating position with seat belt fastened.
- b. Be sure parking brake is engaged.
- · c. Put direction control in neutral.
- d. Start engine.
- e. Check functioning of direction and speed controls, steering, brakes, warning devices, and any load handling attachments.
- 11. Before leaving truck
- a. Stop truck.
- b. Put directional control in neutral.
- c. Apply the parking brake.
- d. Stop the engine by turning off the key switch.
- e. Put upright in vertical position and fully lower the forks or attachment.
- f. Put blocks at the wheels if truck is on an incline.
- 12. Brakes, steering mechanisms, control mechanisms, warning devices, lights, governors, guards, safety devices, and frame members must be carefully and regularly inspected and maintained in a safe operating condition.
- 13. Special trucks or devices designed and approved for hazardous area operation must receive special attention to ensure that maintenance preserves the original, approved, safe operating features.
- 14. Fuel systems must be checked for leaks and condition of parts. Extra special consideration must be given in the case of a leak in the fuel system. Action must be taken to prevent the use of the truck until the leak has been corrected.

- 15. The truck manufacturer's capacity, operation, and maintenance instruction plates, tags, or decals must be maintained in legible condition
- 16. Batteries, motors, controllers, limit switches, protective devices, electrical conductors, and connections must be inspected and maintained in conformance with good practice. Special attention must be paid to the condition of electrical insulation.
- 17. To avoid injury to personnel or damage to the equipment, consult the manufacturer's procedures in replacing contacts on any battery connection.
- 18. Industrial trucks must be kept in a clean condition to minimize fire hazards and help in the detection of loose or defective parts.
- 19. Modifications and additions that affect capacity and safe truck operation must not be done without the manufacturer's prior written approval. Capacity, operation and maintenance instruction plates, tags, or decals must be changed accordingly. This is an OSHA requirement.
- 20. Care must be taken to assure that all replacement parts, including tires, are interchangeable with the original parts and of a quality at least equal to that provided in the original equipment. Parts, including tires, are to be installed per the manufacturer's procedures. Always use genuine CLARK or CLARK-approved parts.
- 21. Use special care when removing heavy components from the truck, such as counterweight, seat deck, upright, etc. Be sure that lifting and handling equipment is of the correct capacity and in good condition. Also, this removal may upset the stability of the truck. The frame must always be safely blocked for major component removal.

SM-3 RAISING THE TRUCK

A CAUTION

To perform maintenance that requires the truck to be lifted from the floor, observe the proper safety precautions as follows:

- · Park truck on a flat level surface.
- Retract and fully lower pantograph
- Return control handle to neutral and turn key switch OFF.
- Disconnect Battery

MARNING

Defective equipment can cause accidents. All tools and lifting equipment must be in good condition, meet the load capacity requirements and have OSHA labels when required. Tools with defects can fail, causing severe injury or death.

Raising Rear of Truck

- 1. Place the jack at the designated jacking point to one side of the rear truck frame.
- Elevate side of the truck frame so the drive wheel is off the floor approximately 1 in (25.4 mm). Block that side of the truck in place, using a hardwood block.
- 3. Jack up the other side of the truck frame level with the first side.
- 4. Block that side of the truck in place, using a hardwood block.

Raising Front of Truck

- 1. Place the jack at the designated jacking point on the outrigger.
- 2. Elevate outrigger to desired height and block in place with a hardwood block
- 3. Follow the same procedure to raise opposing side if required for maintenance being performed.

NOTE

You should also be familiar with additional operating and maintenance safety instructions contained in the following publications:

ASME B56.1: Operator Control-Industrial Tow Tractors (Safety Standard for Low Lift and High Lift Trucks). Published by: American Society of Mechanical Engineers, Three Park Avenue, New York, NY10016.

NFPA 505: Fire Safety Standard for Powered Industrial Trucks: Type Designations, Areas of Use, Maintenance and Operation. Available from: National Fire Protection Assoc., Inc., Batterymarch Park, Quincy, MA 02269.

General Industrial Standards, OSHA 2206: OSHA Safety and Health Standards (29 CFR 1910), Subpart N-Materials Handling and Storage, Section 1910.178

Powered Industrial Trucks. For sale by: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

SECTION 1

DESCRIPTION

1-1 INTRODUCTION

This publication describes the 24V WSTX33 lift truck distributed by Clark Material Handling Company. Included are operating instructions, planned maintenance instructions, lubrication procedures, corrective maintenance procedures and a complete parts list with part location illustrations.

Users shall comply with all requirements indicated in applicable OSHA standards and current edition of ANSI B56.1 Part II. By following these requirements and the recommendations contained in this manual, you will receive many years of dependable service.

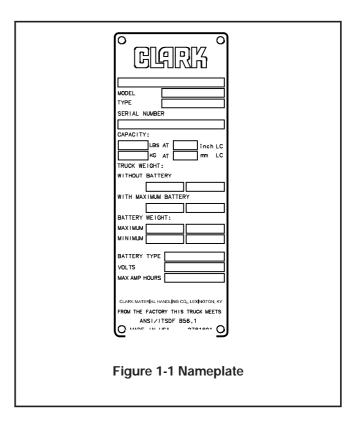
1-2 GENERAL DESCRIPTION

The self-propelled **WSTX33** truck, Figure 1-2, lifts and transports payloads up to 3,300 pounds on adjustable forks.

The forward and reverse motion is controlled by either of two controller levers mounted on the control head. Stopping and turning is controlled by the steering arm. Lift, Lower and Tilt are controlled by pushbuttons on the control head. The battery powered lift truck is quiet and without exhaust fumes.

The reversible AC motor propels the lift truck in forward or reverse direction throughout the available speed range. The WSTX33 lift truck can be driven with forks raised or lowered; however, the speed is restricted when the platform is raised above a preset limit.

The model number will be found on the name plate (Figure 1-1) along with the serial number, lifting capacity, and load center. Figure 1-2 shows the locations of the truck's main components and controls.



- Chassis
- **Drive Wheel**
- **Battery Discharge Indicator** 3
- 4 Key Switch
- Control Handle 5
- **Battery Disconnect** 6
- 7 Controller
- 8 Mast
- 9 **Back Rest**
- 10 Forks
- 11 Load Wheel
- 12 Hydraulic pump
- 13 Battery

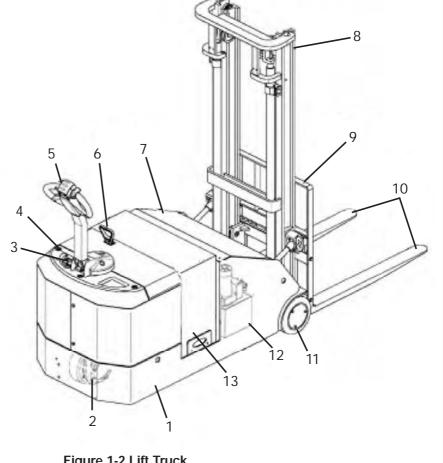


Figure 1-2 Lift Truck

1-3 SAFETY FEATURES

The WSTX33 lift truck is designed and engineered to provide maximum safety for operator and payload. Some of the safety features incorporated into the design are:

- Dead-man brake to apply the brake and cut off drive power when the steering arm is released.
- Belly-button switch to reverse truck should the operator accidentally pin himself against a wall or obstruction.
- High speed limit switch to restrict speed when lift carriage is raised above the preset limit.
- All control functions automatically return to "OFF" when released.

- Externally accessible quick-disconnect battery plug within operator's reach.
- Separately fused control circuits and power circuits.
- Readily accessible horn button.
- Lift carriage backrest to help stabilize the load.
- Handle to provide a firm hand hold for operator.
- Flow control valve regulates maximum lowering speed within prescribed limits.
- Relief valve maintains hydraulic pressure within prescribed limits.
- High visibility color scheme of truck provides visual alert of truck's presence.
- Battery indicator.

SECTION 2

OPERATION

2-1 GENERAL

This section gives detailed operating instructions for the **WSTX33** lift truck. The instructions are divided into the various phases of operations, such as operating lift, driving, and stopping. Routine precautions are included for safe operation.

2-2 OPERATING PRECAUTIONS

WARNING

Improper operation of the lift truck may result in operator injury, or load and/or lift truck damage. Observe the following precautions when operating the WSTX33 lift truck.

The following safety precautions must be adhered to at all times.

- Do not operate this truck unless you have been trained and authorized to do so and have read all warnings and instructions in this manual and on the truck.
- All warnings and instructions must be read and understood before using the equipment.
- Equipment must be inspected by a qualified person on a regular basis.
- Do not exceed the rated capacity. Overloading may result in damage to the hydraulic system and structural components.

Be certain that the lifting mechanism is operating smoothly throughout its entire height, both empty and loaded.

- Be sure that mast is vertical do not operate on slopes or inclines.
- Be sure the truck has a firm and level flooring.
- Avoid overhead wires and obstructions.
- Check for obstructions when raising or lowering the lift carriage.
- Do not handle unstable or loosely stacked loads. Use special care when handling long, high, or wide loads to avoid tipping, loss of load, or striking bystanders.
- Center and carry the load as far back as possible toward the lift carriage back rest.
 The center-of-gravity of the load must not exceed the load center listed on the nameplate. See Figure 2-1 for load center limitations.
- Pick up loads on both forks. Do not pick up on only one fork.
- When traveling, always lower the load as far as possible.

WITHIN STABILITY LIMITS

SPECIFIED LOAD CENTER IN INCHES

BEYOND STABILITY LIMITS

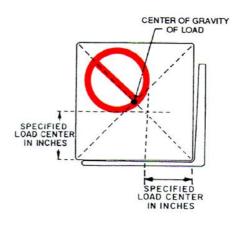


Figure 2-1 Load Center

2-4 GENERAL CONTROL OPERATION

2-4.1 Control Arm

The control arm is used to steer and to control speed and braking of the truck.

Slow Speed: Move the control arm down to the slow speed range and move the travel lever to forward or reverse. See Figure 2-3. Press the travel lever farther to increase speed available in the slow speed range.

High Speed: Move the control arm down to the high speed range and move the travel lever to forward or reverse. See Figure 2-3. Press the travel lever farther to increase speed available in the high speed range.

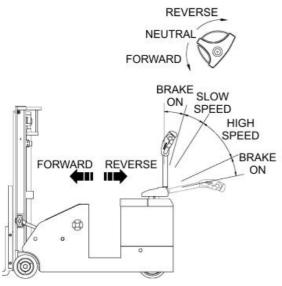


Figure 2-3 Control Arm

Braking: Move the control arm to the lower braking range or release it to the upper braking range. See Figure 2-3.

2-4.2 Control Head

Lift: Pushbutton switch (1, Figure 2-4) activates lower and pushbutton switch (2) activates lift.

Tilt: Pushbutton switch (6) activates tilt back, and pushbutton switch (7) activates tilt forward.

Horn: Pushbutton switch (4) activates the horn.

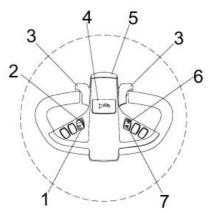


Figure 2-4 Control Head

Belly-button: Switch (5) minimizes the possibility of the driver being pinned by the control arm while driving the lift truck in slow speed. If the switch presses against the operator while the lift truck is being driven toward the operator, the switch changes the direction of the lift truck.

2-5 DRIVING AND STOPPING

2-5.1 Driving

- Connect the batteries and turn on the key switch. Grasp the grips of the steering head so that the speed control can be comfortably operated by either thumb.
- 2. Lower the control arm to a comfortable position above horizontal to disengage the brake and to energize the electrical circuits. If the truck is not moved, the electrical circuits will time out and will de-energize. See Figure 2-3.
- 3. To move forward (with load in front), slowly press the travel control (3, Figure 2-4) forward. Press the travel speed control farther to increase speed.
- 4. To slow down or stop, release the travel control and lower or raise the control arm to the horizontal or vertical position. See Figure 2-3. In those positions, the brake engages, slowing or stopping the truck.
- 5. Procedures for movement in reverse are the same as in the forward direction except slowly press the travel control (3, Figure 2-4) to reverse.