Pre-delivery Inspection Report must be completed upon placing unit in service. Please use QR link or visit www.xmfg.com/warranty/pre-delivery-inspection-report to register online.
Xtreme Manufacturing, LLC (w://www.xmfg.com/) is headquartered in Las Vegas, Nevada, and has fabrication facilities in Selma, California. In October 2013, Xtreme became the majority shareholder in Snorkel, a global aerial work platform manufacturer, which has manufacturing facilities in the US, UK & New Zealand, as well as a global sales distribution network. Find out more about Snorkel at www.snorkellifts.com.

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Pre-delivery Inspection Report must be completed upon placing unit in service. Please use QR link or visit www.xmfg.com/warranty/pre-delivery-inspection-report to register online.
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Introduction

This Operation and Safety Manual provides the information needed to safely operate the XR2450 Reach Forklift.

This manual shall be considered a permanent part of the forklift, and kept in the protective manual case located in the operator’s cab.

Before operating the forklift, read this manual completely and carefully to understand the safety instructions and the operation of controls and safety equipment. You must comply with all DANGER, WARNING, and CAUTION notices. They are for your benefit.

Improper operation of this forklift could result in death or serious injury.

BEFORE starting the engine, do the following:

- Read the Operation and Safety Manual
- Read all the Safety Labels on the Forklift
- Clear the area of all other persons

Learn and practice safe use of forklift controls in a safe, clear area, BEFORE you operate this forklift on a work site.

It is your responsibility to observe applicable laws and regulations and to follow manufacturer’s instructions on forklift operation and maintenance.

Replacement manuals for the XR2450 Reach Forklift can be obtained by contacting our parts department by phone or visiting our website:

Xtreme Manufacturing
Phone: (800) 497-1704
www.XMFG.com

Model / Serial Plate

When contacting our parts department, please have the forklift serial number available. The serial number plate is located in the operator’s cab, at the base of the seat.

For easy reference, you can record the serial number in the space below.

Serial Number: __________________________

Forklift Direction Orientation

Right side, left side, front, and rear are directional references given from the operator’s seat when facing forward.

Notice

Fig 1. Serial Number Plate

Warning

Fig 2. Forklift Direction Orientation
Safety

Xtreme Manufacturing reserves the right to make technical changes for product improvement. This manual may contain illustrations and photographs (for demonstration purposes), which slightly deviate from the actual product.

Safety information provided in this manual is a basic guide and an attempt to prevent accidents. Xtreme Manufacturing cannot anticipate every circumstance that might involve a potential hazard. Warnings in this manual and on the forklift are NOT all-inclusive.

You are responsible for safe operation of the forklift and all attachments. You must satisfy yourself that the techniques, operating procedures, work methods, or tools you use are safe; especially those not specifically mentioned by Xtreme Manufacturing.

The safety of everyone around the forklift depends significantly on your knowledge and understanding of all correct and safe operating practices and procedures. You can help prevent accidents by remaining alert and recognizing potentially hazardous situations.

Follow State and Federal health and safety rules and/or local regulations for operating and maintaining the forklift.

- This manual does not replace any laws and regulations.
- The operator is required to comply with all applicable laws and regulations.

Signal Words

Signal words are the word or words that call attention to the safety sign and designate a degree or level of hazard seriousness. The signal words used in this manual are DANGER, WARNING, and CAUTION.

⚠️ Danger

DANGER (Red) used with the safety alert symbol indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠️ Warning

WARNING (Orange) used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ Caution

CAUTION (Yellow) with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

⚠️ Caution

CAUTION (Yellow) used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Safety Symbols

Safety symbols are provided to remind the operator of hazardous situations. Xtreme Manufacturing provides these symbols in an attempt to inform all operators, regardless of reading and language skills, of as many potential hazards as possible. These symbols cover many, but not all, potential dangers and hazards associated with operating the forklift.

Make safety a high priority while operating the forklift. Learn and follow all safety messages in this manual and on forklift labels to prevent death, serious injury, or equipment damage. The following two pages include a list of some of the safety symbols that may be used on this forklift.
Safety

- General Safety Alert Symbol
- Read Operator Manual Before Operating This Forklift
- Read Material Safety Data Sheets (MSDS) For Chemicals And Fluids
- Read Maintenance Manual Before Working On This Forklift

- DO NOT OPERATE!
- Forklift Down For Service Or Maintenance
- DO NOT Operate If Using Alcohol, Drugs, Or Medications
- Know First Aid Instructions And/Or Locations On Work site

- Perform Operator Inspection Before Starting This Forklift
- Personal Protective Equipment
- Hardhat

- Personal Protective Equipment
- Gloves
- Personal Protective Equipment
- Safety Shoes
- Personal Protective Equipment
- Ear Protectors
- Personal Protective Equipment
- Safety Glasses

- Keep Flames And Ignition Sources Away
- No Smoking
- Keep Lit Cigarettes Away

- Hydraulic System Under Pressure
- Use A Board Or Cardboard To Check Hydraulic Leaks. DO NOT Use Your Hand!

- Keep Hands A Safe Distance From Rotating Fan Blades
- Warning! Rotating Fan Blades Can Cut Or Entangle
- Warning! Rotating Belts Can Cut Or Entangle

- Make Sure All Safety Labels Are Attached And Legible
- Replace Worn And Illegible Safety Labels And Labels

- Use Three Points of Contact When Entering and Exiting Forklift

Know First Aid Instructions And/Or Locations On Work site

Personal Protective Equipment
Hardhat
Safety

DO NOT Jump While Dismounting The Forklift

DO NOT Allow Riders On Forklift Frame Or Fenders

DO NOT Allow Riders On Or In The Operator Cab

Set Parking Brake To OFF Disengage Parking Brake

Falling Off Of Attachment Can Result In Death Or Serious Injury

Set Parking Brake To ON Engage Parking Brake

Warning! Forklift Roll Away Can Cause Death Or Serious Injury

Warning! Forklift Tip Over Can Cause Death Or Serious Injury

Warning! DO NOT Travel With Boom Raised

DO NOT Raise Boom While Traveling On A Slope

Hot Surface! Keep Hands Away

Warning! Electrocution Can Cause Death Or Serious Injury

Danger! Keep A Safe Distance From Electrical Lines

Pinch Points Body

DO NOT Allow Anyone Under A Raised Load

Pinch Points Hands

Have Adequate Ventilation If Operating This Forklift In An Enclosed Space

Warning! Explosion Hazard

DO NOT Use Ether As A Starting Aid

WARNING! Hot Coolant. DO NOT Open Radiator Cap When Hot To Touch.

Use caution when operating the forklift during storms or strong winds.
Safety

Employer Responsibility

Under Occupational Safety and Health Administration (OSHA) rules, employers are required to train workers about hazards related to operating and maintaining the forklift. Successful completion and certification of the Safety Training for Rough Terrain Forklifts is required.

Additional safety information and training resources can be obtained through these publications, organizations, and/or appropriate sources:

- (OSHA) Occupational Safety and Health Administration.
- (NIOSH) National Institute for Occupational Health and Safety.
- (ANSI) American National Standards Institute
- (AEM) Association of Equipment Manufacturers
- (ITSDF) Industrial Truck Standards Development Foundation

Always consult Material Safety Data Sheets (MSDS) for chemical hazards and first aid instructions for any oil or lubricant being used. MSDS should be available from the manufacturer/supplier of the fluid.

Operator Responsibility

Reach forklifts are potentially dangerous if proper safety procedures are not followed. Workers who operate, maintain, or work near the forklift can be at risk of roll over and run over incidents or can be crushed or caught by the forklift or its parts which could result in death or serious injury if the forklift is not properly operated or maintained.

Read the Operation and Safety Manual BEFORE operating the forklift. Follow all safety instructions and labels. Only operate the forklift if you understand the safety instructions and warnings in all applicable manuals and technical publications. Always follow all State and Federal health and safety laws and/or local regulations. Maintenance personnel must have the required training, skills, and tools to perform installation, operation, maintenance, or repair procedures properly and safely. Make sure the forklift and attachments will not be damaged or made unsafe by any procedures chosen.

Operator Qualifications

Operators must be in good physical and mental condition, with appropriate reflexes, reaction time, vision, depth perception, and hearing.

Operators must possess a valid, current operator's license as required for the work site; plus those required by applicable State, Federal, and/or local laws:

Successful completion and certification of Safety Training for Rough Terrain Forklifts is required.

- Operators must be properly instructed on how to operate the forklift and attachments.
- Operators must operate the forklift according to ALL appropriate safety regulations.
- Operator trainees must remain under constant observation and supervision of an experienced operator.

Modifications

Modifications to the forklift or attachments could affect forklift capacity and/or stability which could result in death or serious injury. DO NOT make modifications to the forklift or attachments without prior written approval from the manufacturer. Where such authorization is granted, capacity, operation, and maintenance instruction plates, tags, or labels shall be changed accordingly.

- Unauthorized modifications or alterations will void the warranty.
- DO NOT modify, disable, or bypass any safety devices.
- DO NOT burn or drill holes in forks or other attachments.

Structural damage, modification, or alteration, including welding or drilling, can impair and weaken the protective capability of the Rollover Protective Structure/Falling Object Protective Structure (ROPS/FOPS) and could result in death or serious injury.

- Replace the ROPS/FOPS, if it is damaged, before operating the forklift.
Mounting/Dismounting

⚠️ Warning

Failure to use proper safety procedures when mounting and dismounting the forklift could result in death or serious injury.

- Keep steps clear of dirt, mud, snow, ice, debris, and other hazards.

  Face the forklift for mounting or dismounting. Use hand holds and steps to maintain three (3) points of contact at all times, either both hands and one foot or both feet and one hand.

- DO NOT use the controls, steering wheel, or foot pedals as hand holds or steps. Avoid accidentally engaging or disengaging a control.

  DO NOT jump from the forklift. Clothing can get caught on pedals, levers, or other protruding parts. Landing on uneven surfaces could result in death or serious personal injury.

Work Site Safety

⚠️ Warning

Use proper safety procedures and avoid hazardous situations while operating the forklift to prevent death, serious injury, or property damage.

- Check the work site for any hazards before operating the forklift.
- Check the work surface for loose soil conditions and overhead power lines.
- Contact your local underground utility service or digging hotline to mark all underground hazards.
- Learn the location of all underground hazards at the work site, such as; gas and water pipes, electrical cables, and sewers. Underground objects could cause death or serious injury.

⚠️ Warning

- The forklift is designed to handle rough terrain, however, operating the forklift where large holes, obstructions, debris, loose fill, and other work site hazards exist could result in death or serious injury.
- DO NOT allow bystanders in the work area.
- Avoid personnel, machinery, and vehicles in the work area.
- Know the rules for movement of people and vehicles on the work site.
- Follow work site signs and signals.
- Check boom clearance before driving under a door opening, bridge, etc.
- Slow down when approaching obstructions. Use a spotter, if necessary.
- Stop for poor visibility conditions, such as dust, smoke, fog, etc. Wait until visibility improves before continuing.

Operate the forklift in an enclosed area only if there is a ventilation system capable of routing hazardous fumes outside. Engine exhaust contains products of combustion that could cause death or serious injury.

DO NOT operate the forklift if you are using drugs, alcohol, or any medication that might impair your judgment or ability.

⚠️ Warning

- You must be 18 years of age or older to operate the forklift.
- DO NOT operate the forklift on roads for extended distances. The reach forklift is not equipped for extended road travel.

California Proposition 65

Engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm.

⚠️ Caution

Use caution when operating the forklift during storms or strong winds.
Safety

⚠️ Warning

Wear appropriate protective clothing. Personal protective equipment can include, but is not limited to hardhat, gloves, footwear, safety glasses or goggles, and hearing protection. Make sure clothing is snug and properly belted. DO NOT wear loose clothing, jewelry, watches, or anything that can catch on forklift controls, moving parts, etc. Failure to wear the proper protective clothing could result in death or serious injury.

Before Starting Forklift

⚠️ Warning

Keep the Operation and Safety Manual on the forklift at all times. Contact Xtreme Manufacturing for replacement manuals.

Clear define responsibilities and procedures for operating the forklift and all attachments. DO NOT proceed until seeking expert assistance from a qualified person if any doubt or question arises about the correct or safe methods for operating the forklift.

To avoid death or serious injury, carefully read and understand all instructions before operating the forklift. DO NOT operate, modify, repair, or maintain the forklift without reading and understanding the instructions and warnings in this and all other applicable manuals and technical publications. Follow all State and Federal health and safety laws and/or local regulations.

⚠️ Warning

Perform a pre-operation inspection and functional tests at the beginning of each work shift. Perform the pre-operation inspection first. DO NOT perform the pre-operation inspection with the engine running or hot.

Allow the engine and associated components to cool before performing an inspection. Contact with moving or heated parts could cause death or serious injury.

Perform the pre-operation inspection and functional tests in an open area and away from any other obstacles or equipment. Inspections and functional tests may require assistance. Keep the assistant visible and a safe distance from the forklift to prevent death or serious injury.

Become familiar with all safety and hazard labels, regulations, and procedures. Make sure all proper safety and hazard labels are attached to the forklift and remain legible.

A brief description of controls, indicators, and instruments is provided as a convenience for the operator. These descriptions DO NOT provide complete operation instructions.

Read and understand the entire manual to prevent death, serious injury, or equipment damage.

Keep fingers and feet away from moving parts or pinch points to prevent pinching or crushing. DO NOT allow anyone between the tires and the forklift frame while operating the forklift. Doing so can result in death or serious injury.

Always check the condition of the seat belt and mounting hardware before operating the forklift. If the seat belt or mounting hardware is defective, it may not properly restrain the operator, resulting in death or serious injury.

- DO NOT operate the forklift until the seat belt or mounting hardware is replaced, if worn or damaged.
- The seat belt MUST be worn while operating the forklift. Failure to wear the seat belt could result in death or serious injury.

Consult Material Safety Data Sheets (MSDS) for chemical hazards and first aid instructions. MSDS should be available from the manufacturer or supplier of the fluid.
**Warning**

Operators must be properly trained and qualified to operate this specific forklift. Know the location, learn the specific purpose, and demonstrate safe and proper use of all controls, instruments, indicator lights, and safety and instruction labels. Safety is your responsibility. Failure to follow these guidelines could result in death or serious injury.

To prevent death or serious injury, the operator must be seated with seat belt fastened, the travel select lever set to NEUTRAL, the Parking Brake switch ON (engaged), the service brake applied, and the area free of people and obstructions BEFORE starting the forklift.

**Operation Safety**

**Danger**

Death or serious injury by electrocution will result from contact with or inadequate clearance with energized power lines or apparatus.

- Never operate the forklift in an area where active overhead power lines, overhead or underground cables, or other power sources exist.
- Contact the appropriate power or utility company to de-energize power lines or take other suitable precautions.

Keep the forklift, attachments, and loads a safe distance from electrical power lines.

- Remain at least 10 feet, plus an additional 0.4 inches for each 1,000 volts over 50,000 volts, from active power lines and other power sources.
- Work site operating directives and/or local or state codes might require a greater distance.
- Know the maximum height and reach of this forklift.

**Warning**

Use of the frame sway control with the boom raised above horizontal could cause tip over resulting in death or injury. Always use the frame sway control to level the forklift BEFORE raising the boom above horizontal. If the forklift cannot be leveled using the frame sway control, do not attempt to raise or place load. Reposition forklift or have the surface leveled.

**Warning**

To prevent death, serious injury, or property damage, the operator must be seated with seat belt fastened, arms, legs, and head completely inside the Rollover Protection Structure/Falling Object Protection Structure (ROPS/FOPS), the travel select lever in NEUTRAL, the Parking Brake switch ON (engaged), and the service brakes applied BEFORE starting the forklift.

- The seat belt MUST be worn while operating the forklift. Failure to wear the seat belt could result in death or serious injury.

DO NOT adjust the seat or seat belt while the forklift is moving. Keep both hands on the wheel while the forklift is moving to prevent loss of forklift control which could result in death or serious injury.

Never try to escape the forklift if it becomes unstable. Learn and practice these safety procedures to protect yourself from a roll over or tip over incident:

- Remain securely fastened in the seat belt.
- Keep your head, body, and limbs within the ROPS/FOPS structure.
- Brace yourself and hold on firmly.
- Lean away from the point of impact.
- Stay on the forklift and ride out the roll over or tip over.

**Warning**

It is unlawful to tamper with or remove any component of the aftertreatment system. It is also unlawful to use Diesel Exhaust Fluid (DEF) that does not meet the specifications provided or to operate the machine with no DEF.

**Warning**

Diesel Exhaust Fluid contains urea. DO NOT get the substance in your eyes. In case of contact, immediately flush eyes with large amounts of water for a minimum of 15 minutes. DO NOT swallow internally. In the event the DEF is ingested, contact a physician immediately. Refer to the Material Data Safety Sheet (MSDS) for additional information.
Never attempt to create Diesel Exhaust Fluid by mixing agricultural grade urea with water. Agricultural grade urea does not meet the specifications required and the aftertreatment system may be damaged.

NEVER allow passengers to ride on the forklift. DO NOT allow riders on the frame or operator cab. Allowing passengers to ride could result in serious injury. The forklift is designated for the safety of the operator only.

NEVER use crab or four wheel (4W) steering for traveling at high speeds. Use only two wheel (2W) steering for higher speed travel and slow the forklift before turning. Rapid turning while using crab or four wheel-steering can cause tip over which could result in death or serious injury.

DO NOT travel with an elevated boom. Retract the boom fully. Lower the boom as low as practical for proper visibility. Maintain enough ground clearance for conditions. Traveling with an elevated boom can cause tip over, which could result in death or serious injury.

Allow for adequate clearance between the attachment and other objects when turning. The attachment extends beyond the front of the forklift. The operator must be aware of the maximum sweep of any attachment being used to avoid hitting personnel and other objects in the area and to prevent death, serious injury, or property damage.

To prevent death, serious injury, or property damage, make sure the forklift comes to a complete stop before moving the travel select lever. A sudden change in direction of travel, while carrying a load, could reduce stability and/or cause the load to shift or fall.

DO NOT shift through multiple gears with a single turn of the gear select lever. Allow the engine speed to slow down before shifting to the next lower gear. Improper use of the gear select lever could cause transmission damage or forklift tip over/roll over and result in death or serious injury.

Operate the forklift for maximum stability. Unstable forklifts can tip over, resulting in death, serious injury, or property damage. Keep the forklift stable by following these and other appropriate guidelines:

- Adjust speed for terrain and conditions.
- Avoid obstacles by driving around them rather than over them, when possible.
- Start, stop, travel, steer, and brake smoothly.
- Load, unload, and turn the forklift on level ground, when possible.
- Slow down for turns.
- Slow down for rough, slippery, or soft terrain.
- Use caution around steep slopes, creeks, gullies, ridges, ditches, and ravines.
- Stay away from soft edges that could collapse under the forklift.

Become completely familiar with the forklift before operating on slopes. The forklift could overturn due to sudden movement or while operating on a slope resulting in death or serious injury.

DO NOT raise the boom while operating on a slope. Raising the boom on a slope, even without a load, will change the center of gravity, could cause a tip over, and result in death or serious injury.

- DO NOT turn on a steep slope.
- DO NOT drive the forklift across slopes.
- Always drive the forklift straight up and down a slope (never drive diagonally up or down a slope).
- Drive the forklift forward up a slope (front of forklift facing uphill).
- Back the forklift down a slope when loaded (front of forklift facing uphill).
Follow appropriate procedures to prevent sudden changes in forklift speed that could result in death or serious injury.

- Turn the gear select lever to the appropriate gear before descending a slope and before loading or unloading a trailer.
- DO NOT change directions (F/R) of the travel select lever while the forklift is moving.
- DO NOT coast downhill. Keep the transmission in the appropriate gear.

DO NOT exit the forklift without following proper shut down procedures.

Engine fuel is flammable and can cause a fire or explosion resulting in death or serious injury. DO NOT smoke while refueling and keep sparks and open flames away from the forklift.

**Warning**

The reach forklift includes a Frame Sway Override Button. Improper use of the Frame Sway Override Button could result in death, serious injury, or property damage.

Make sure the forklift frame is level before raising and extending the boom. Frame swaying left or right with the boom raised is extremely dangerous and can result in death or serious injury.

- Use the frame sway control to level the forklift before raising the boom.
- Reposition the forklift if it cannot be leveled using the frame sway control.
- Remain seated with the seat belt securely fastened while the cab is tilted.

Contact with hot surfaces and the exhaust pipe after the forklift has been operated could result in serious personal injury.

Check warning indicators and gauges on the dash panel frequently during operation. If a warning indicator is illuminated or a gauge shows abnormal readings, stop the forklift, follow proper shut down procedures, tag the forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift BEFORE placing it into service again. Ignoring warning indicators can result in death, serious injury, or property damage.

**Caution**

Release the key immediately once the motor starts. If the motor does not start, DO NOT crank the starter motor continuously for more than 15 seconds. Failure to release the key after the motor has started or continuous cranking can damage the starter motor.

DO NOT change steering modes until the forklift comes to a complete stop. Align all four (4) tires “straight-ahead,” or perpendicular to the axle, before changing steering mode.

**Load Safety**

Failure to follow proper safety procedures when lifting, lowering, and traveling with a load could result in death, serious injury, or property damage.

DO NOT exceed forklift capacity of 24,000 pounds (10,886 kilograms) with a 72 inch fixed carriage or 23,000 lbs (10,432 kilograms) with a 72 inch adjustable carriage. The total rated capacity of the forks being used must equal or exceed forklift capacity. Forks can bend or break causing loss of load and possible death or serious injury.

DO NOT exceed the manufacturer’s rated load for any auxiliary attachment. Any attempt to lift or carry loads in excess of the manufacturer’s rated load may cause forklift tip-over, loss of load, or structural damage which could result in death or serious injury.
Safety

Failure to keep personnel clear of the load area while the load is being raised or lowered could result in death or serious injury. DO NOT lift, swing, or move a load over anyone.

• Review the rated load capacity of each auxiliary attachment before performing any operation.
• Use the correct load chart and NEVER exceed specified weights and load centers.
• DO NOT exceed the manufacturer’s recommended load capacity.
• DO NOT operate the forklift with an unsafe load distribution.
• Adjust the load as necessary, especially for nonstandard loads.
• Use caution when handling loose material that can fall into the cab.
• Remove overhanging load materials, when possible, and watch for sliding material.
• DO NOT reach a load over posts or other objects that can enter the cab, if tipped.
• Avoid sudden stops, starts, or turns.
• Avoid carrying a swinging load from the boom lift point. If necessary, secure the load by attaching it to the forklift tie-downs and/or have another person assist with safely steadying the load.

Attachments

Improper connection of an auxiliary attachment could result in death or serious injury. Attachments not locked into place can become unstable and fall on the operator or other personnel near the forklift.

• Make sure attachment locking devices are always in place.
• Hydraulic attachments have a maximum hydraulic pressure rating. Failure to make sure the attachment is equipped with a pressure reducing valve, or is rated to be equal or greater than 4,300 psi (297 bar), which is the maximum pressure of the forklift auxiliary hydraulic system at the quick-disconnect couplers, could result in death or serious injury.
• Make sure all hydraulic connections are tight (if equipped).

Shut Down Procedure

To prevent death or serious injury, follow these procedures before leaving the forklift cab:

• Park forklift on a firm, level surface.
• Move travel select lever to NEUTRAL (N).
• Set parking brake to ON (engaged).
• Either lower forks and attachments to the ground, or leave boom raised and retracted.

Always engage the parking brake before leaving the forklift. The forklift can roll if the parking brake is not ON (engaged), which could result in death, serious injury, or property damage.

• Turn Ignition switch to the OFF position.
• Remove the key.
• Unbuckle the seat belt.
• Place “Do Not Operate” tags on the Starter switch and steering wheel when maintenance or service is required.
• Block wheels when maintenance is required.

Forklift Maintenance

Follow the manufacturer’s instructions for proper maintenance to make sure the forklift continues to meet manufacturer’s specifications. Failure to properly maintain the forklift can result in improper performance, which could cause death, serious injury, or property damage.

Attach “Do Not Operate” tags to the Ignition switch and steering wheel before beginning any service or maintenance.

• “Do Not Operate” tags indicate the forklift should not be operated until all service or maintenance is completed.
• Keep two (2) legible “Do Not Operate” tags with the forklift at all times. “Do Not Operate” tags are provided in this manual.
• DO NOT operate the forklift and attachments if they require repairs.
• Make sure basic maintenance is completed and service problems are corrected.
• Death or serious injury can result from operating a forklift before all repairs have been made and all proper maintenance is completed.

**Warning**

Tires must have proper ballast. DO NOT replace foam-filled tires with pneumatic tires. Use of pneumatic tires will severely affect vehicle load capacity, which could result in death, serious injury, or property damage.

Check hydraulic oil lines, tubes, and hoses carefully. DO NOT use your bare hand to check for leaks. Always use a board or cardboard when checking for a hydraulic leak. Escaping hydraulic fluid under pressure, even a pinhole size leak, can penetrate body tissue, which could cause death or serious injury. If hydraulic oil is injected into your skin, a doctor familiar with this type of injury must treat it immediately.

**Warning**

Serious injury could result from hydraulic oil pressure or hot oil. DO NOT remove a hydraulic tank filler cap unless it is cool enough to touch with bare hands. Remove the hydraulic tank filler cap slowly to relieve pressure. Relieve all pressure in a hydraulic system before any caps, lines, fittings, or related items are disconnected or removed.

The parking brake can be manually released to tow the forklift. In this condition, it is possible for the forklift to move suddenly when the brakes are released, which could result in death, serious injury, or property damage. To prevent sudden movement of the forklift, place wheel chocks in front of and behind wheels before the brakes are released.

If the forklift is to be towed, make sure the released brake(s) can be reapplied or the tow vehicle has the braking capacity to stop the forklift.

**Warning**

DO NOT use ether as a starting aid. Ether is flammable and can cause an explosion when starting the engine, which could result in death or serious injury. Follow the cold starting procedures and engine manufacturer’s specifications for using a starting aid.

**Warning**

Lead-acid batteries produce flammable and potentially explosive gases. To avoid death or serious injury when checking, testing, or charging batteries:

• DO NOT use smoking materials near batteries.
• Keep arcs, sparks, and open flames away from batteries.
• Provide ventilation for flammable vapors.
• Wear proper personal protective equipment, including safety glasses.

Fluid in electric storage batteries contains sulfuric acid, which is poisonous and could cause severe chemical burns. Avoid all contact of fluid with eyes, skin, or clothing. Use protective gear when handling batteries. DO NOT tip a battery beyond a 45° angle in any direction.

If contact does occur, follow these First Aid suggestions:

• External contact - Flush with water.
• Eyes - Flush with water (including under the eyelids) for at least 15 minutes and get medical attention immediately. Flushing must begin immediately to avoid permanent eye tissue damage.
• Internal contact - Drink large quantities of water or milk to dilute stomach contents. Do not induce vomiting. Get medical attention immediately.

IMPORTANT - In case of internal contact, DO NOT give fluids that induce vomiting.

**California Proposition 65**

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. Wash hands after handling these items.
Jump Starting

**Warning**

Wear eye protection when connecting jump start cables. Improper jump start procedures could cause the battery to explode, which could result in death or serious injury.

- Never jump start a frozen battery, as it can explode. Let the battery thaw out before charging.
- NEVER jump start the forklift when travel select lever is in gear, which can cause the forklift to lurch forward or backward, and could result in death, serious injury, or property damage.
- To avoid injury or death when jump starting with another forklift, make sure the two (2) forklifts are not touching.
- DO NOT allow jump start cable ends to contact each other.
- Connect charged battery positive (+) to stalled forklift battery positive (+).
- Connect charged battery negative (−) to stalled forklift ground. Make the connection to the stalled forklift ground last.
- Connect jump start cable to stalled forklift ground a safe distance from the battery to prevent sparks near the battery.
- Jump start only with a power source with the same voltage as the stalled forklift.
- Turn off all lights and accessories on the stalled forklift to prevent them from operating when the power source is connected.
- Electrolyte contains acid and could cause serious personal injury if it contacts the skin or eyes.

Dead Engine Towing

**Parking Brake Release (Front Axle)**

**Warning**

Block all four wheels. Failure to do so could result in death or serious injury from vehicle roll away.

1. Block all four wheels to prevent the vehicle from moving once the parking brake is disabled.
2. Position the towing vehicle in place. Attach any chain needed to secure the disabled vehicle.
3. Crawl under the vehicle. Locate the parking brake assembly.
4. Release lock nut. Turn adjusting screw clockwise until brake disc is fully engaged. Turn adjusting screw counter-clockwise 1/2 turn. Tighten lock nut. Parking brake is now re-activated.
5. Verify the parking brake works.
6. Re-install dust cover cap and tighten.
7. Re-activate parking brake (Front Axle)

![Fig 3. Parking Brake Location (Front Axle)](image)

![Fig 4. Parking Brake Assembly Location](image)
Re-Activating Parking Brakes (Front Axle)

⚠️ Warning

Block all four wheels. Failure to do so could result in death or serious injury from vehicle roll away.

1. Block all four wheels to prevent the vehicle from moving once the parking brake is disabled.

2. Crawl under the front or side of the vehicle and locate the parking brake assembly.

3. Remove the dust cover cap and set aside.

4. Release lock nut. Turn adjusting screw clockwise until brake disc is free. Tighten lock nut. Parking brake is now released. Replace dust cover cap and hand tighten to prevent debris from contaminating the park brake assembly.

5. Re-install dust cover cap and tighten.

6. Verify the parking brake is working.

7. Remove any warning tags from the ignition or steering wheel.
Fig 7. Label Legend (Left Side)
Right Side View

Fig 8. Label Legend (Right Side)
Labels

Rear View

Fig 9. Label Legend (Rear)

Cab View

Fig 10. Label Legend (Cab)
### Table 1. Labels

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Replacement labels can be obtained by contacting Xtreme Manufacturing at (800) 497-1704. Please have the appropriate label number available when you call.

1) 18008-000

2) 18004-090

3) 18010-001

4) 18011-001

5) 18013-002

6) 18014-002

---

**CAUTION**

SLIP / TRIP HAZARD
MINOR or MODERATE INJURY may result from slipping or tripping.
WATCH YOUR STEP while entering or exiting.

**CAUTION**

ENGINE DAMAGE HAZARD
Engine damage and voiding of engine warranty may result from use of ether starting aids.

**CHECK**

ENGINE OIL

Minimum Oil Specification: API CJ-4 or higher
7) 18015-001

8) 18016-001

9) 18017-001

10) 18018-001

11) 18018-002

12) 18019-001
13) **18020-001**

**WARNING**

**TIP-OVER HAZARD**

DEATH or SERIOUS INJURY could result from operating vehicle on upward slope.

DO NOT OPERATE vehicle on upward slope with boom fully retracted.

14) **18021-001**

**DANGER**

**CRUSHING HAZARD**

DEATH or SERIOUS INJURY will result from vehicle roll away.

Before dismounting:
- Engage parking brake.
- Lower boom and load to the ground.
- Follow all shutdown procedures.

15) **18022-001**

**WARNING**

**TIP OVER HAZARD**

DEATH or SERIOUS INJURY could result from improper operation.

Proper Operation:
- DO NOT exceed rated lift capacities.
- Level vehicle before raising boom.
- Lower boom before traveling.
- Only raise boom on firm surface.

16) **18023-001**

**DANGER**

**CRUSHING HAZARD**

DEATH or SERIOUS INJURY may occur from improper welding or modification of equipment.

- DO NOT WELD on any structural member or make modifications without factory authorization.
- Disconnect battery cables and alternator before welding on equipment.
- Welding may cause electrical or structural damage to equipment.
- Modifications made without factory authorization will void warranty.

17) **18025-001**

**WARNING**

**FALLING HAZARD**

DEATH or SERIOUS INJURY could result from falling.

DO NOT RIDE on vehicle.

18) **18026-001**

**DANGER**

**UNRESTRAINED OPERATOR HAZARD**

DEATH or SERIOUS INJURY could result from not being properly retrained.

FASTEN SEAT BELT.

www.xmfg.com
19) 18027-001

20) 18031-001

21) 18032-001

22) 18033-000

23) 18039-000

24) 18041-001
CAUTION
CRUSHING HAZARD
VEHICLE DAMAGE may result from leaving hood open.
CLOSE HOOD before lowering boom.

WARNING
INJECTION HAZARD
DEATH or SERIOUS INJURY could result from contact with pressurized fluid.
KEEP CLEAR of leaks.

WARNING
EXPLOSION HAZARD
DEATH or SERIOUS INJURY could result from ignition of explosive gases.
AVOID OPEN FLAMES and SPARKS near battery.

HYDRAULIC FLUID USE DEXTRON III
31) 18090-001

32) 18300-001

33) 18312-000

34) 18315-000

35) 18095-000

36) 18081-000
37) 18351-000
38) 18352-000
39) 18353-000
40) 18354-000
41) 18338-000
42) 18409-000
43) 18311-010
44) 18341-000

**WARNING**
TIP OVER HAZARD
DEATH or SERIOUS INJURY could result from improper operation.
DO NOT EXCEED RATED LIFT CAPACITY
- Max capacity of lifting point is 24,000 lbs.
- Refer to the "Standard Fork Carriage Load Chart" for vehicle’s load handling capacity.
- Refer to Operator’s Manual or ANSI / ITSDF B56.6 for information regarding the handling of suspended loads.

**CAUTION**
CARRIAGE DAMAGE
DAMAGE may result from adjusting forks when carriage is loaded.
ONLY ADJUST FORKS WHEN CARRIAGE IS UNLOADED.
45) 18340-000

46) 18341-000

47) 18342-000

WARNING
DEATH or SERIOUS INJURY could result from improper operation when using tow connection.
• DO NOT ELEVATE BOOM ABOVE 30° WHEN TOWING.
• DO NOT EXCEED RATED TOW CAPACITY.
  • Max vertical load 500 LBS.
  • Max tow capacity 5000 LBS.

48) 18332-000

CAUTION
EQUIPMENT DAMAGE
Wait at least two (2) minutes after shutting engine off before setting the battery disconnect switch to OFF. Equipment damage may occur if the engine ECM and DEF systems are not allowed to shutdown properly.

49) 18411-000

50) 18412-000

WARNING
FALLING HAZARD
DEATH or SERIOUS INJURY could result from falling.
NO STEP

51) 18307-001

52) 18067-100
53) 18347-000

54) 17090-001

55) 18334-001

56) 18306-000

57) 18306-001

58) 18413-000
## Features

<table>
<thead>
<tr>
<th>Standard Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Boom</strong></td>
<td>Two (2) section boom</td>
</tr>
<tr>
<td></td>
<td>Boom equipped with heavy duty rollers for longer life and less maintenance</td>
</tr>
<tr>
<td><strong>Chassis</strong></td>
<td>Rear axle stabilization</td>
</tr>
<tr>
<td></td>
<td>2” main frame plate</td>
</tr>
<tr>
<td></td>
<td>Sliding engine/transmission cowling</td>
</tr>
<tr>
<td></td>
<td>Low mounted central engine drive train</td>
</tr>
<tr>
<td><strong>Cab</strong></td>
<td>Lights (front)</td>
</tr>
<tr>
<td></td>
<td>12 Volt electrical system</td>
</tr>
<tr>
<td></td>
<td>Display with fuel level, engine coolant temperature, oil pressure, tachometer, DEF level and battery voltage gauges; and brake oil pressure, parking brake, axle lock, rear wheel alignment, and tilt interlock warning indicators &amp; brake oil pressure, parking brake, axle lock, rear wheel alignment, and tilt interlock warning lights</td>
</tr>
<tr>
<td></td>
<td>Easy access drop down electrical panel</td>
</tr>
<tr>
<td></td>
<td>12 Volt accessory power outlet</td>
</tr>
<tr>
<td></td>
<td>Electric horn and backup alarm</td>
</tr>
<tr>
<td></td>
<td>Rear view mirrors</td>
</tr>
<tr>
<td></td>
<td>Adjustable deluxe suspension seat with seat belt</td>
</tr>
<tr>
<td></td>
<td>Rear camera for rearward visibility</td>
</tr>
<tr>
<td></td>
<td>Boom angle and frame level indicator</td>
</tr>
<tr>
<td><strong>Tires</strong></td>
<td>Foam-filled</td>
</tr>
<tr>
<td><strong>Hydraulics</strong></td>
<td>Dual auxiliary hydraulic circuits with quick attach</td>
</tr>
<tr>
<td></td>
<td>Multifunction boom control handle</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Optional Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Options</strong></td>
<td>Enclosed cab with A/C</td>
</tr>
<tr>
<td></td>
<td>Heater/defroster/windshield wiper</td>
</tr>
<tr>
<td></td>
<td>Work light package</td>
</tr>
<tr>
<td></td>
<td>Backup camera</td>
</tr>
</tbody>
</table>
### XR2450 Specifications

#### Performance
- **Capacity**: 24,000 lbs
- **Lift Height**: 50’
- **Forward Reach**: 36’
- **Frame Leveling L/R**: 8°/8°
- **Operating Weight**: 52,500 lbs

#### Power Train
- **Engine**: Perkins 130 hp
- **Fuel Capacity**: 72 gal
- **Transmission**: 3-Speed
- **Brakes**: Inboard Wet Disc
- **Parking Brake**: SAHR

#### Tires
- **Tires (Standard Eq)**: Foam Filled 16 x 25 E3

#### Hydraulics
- **GPM**: 49
- **PSI**: 4300
- **Hydraulic Oil Capacity**: 58 gal

#### Dimensions
- **Length to fork face**: 27’
- **Width**: 102”
- **Height**: 9’6”
- **Wheel Base**: 148”
- **Ground Clearance**: 15”
- **Turning Radius**: 16’8”

#### Standard Equipment
- Heavy-duty Frame/Chassis
- Heavy-duty Roller Boom
- Melonite Pins and Rollers
- Direct Dual Control Hydraulic Valve Actuation
- Robust Wiring, No Spades, No Pins
- Rear Axle Stabilization (RAS)
- Center Inline Engine Drive Train
- Full-time Planetary 4-Wheel Drive
- Steering - 4-Wheel Circle, Crab, 2-Wheel Front
- Back-Up Alarm
- Open ROPS/FOPS
- Adjustable Hydraulic Operator Controls
- Suspension Seat
- Quick Attach (Common Fit)
- Xtreme Service Accessibility

#### Attachments
- Standard Carriage - 48” or 72”
- + 10” Side Tilt Carriage - 48” or 72”
- + 45° Swing Carriage - 52” or 72”
- Pallet Forks - 2.25” X 4” X 48”
- Lumber Forks - 1.75” X 7” X 60”
- Block Forks - 2” X 2” X 48”
- Utility Bucket - 1.25 cu. yd.
- Concrete Bucket - 0.5 cu. yd., or 1.00 cu. yd.
- Truss Boom - 12’
- Wallboard/Sheet Material Handler

#### Accessories and Options
- Enclosed Cab
- Limited Slip Differential
- 4th Steer Mode, Rear Pivot
- A/C
- Work Light Package
- Rotating Beacon
A brief description of controls, indicators, and instruments is provided as a convenience for the operator. These descriptions DO NOT provide complete operation instructions. Read and understand the entire manual to prevent death, serious injury, or equipment damage.

**Ignition Switch**

A key is required to operate the ignition switch.

The ignition switch has three (3) positions: OFF, RUN, and START.

<table>
<thead>
<tr>
<th>Position</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>Shuts down entire electrical system, except the accessory outlet.</td>
</tr>
<tr>
<td>RUN</td>
<td>All controls and indicators are operable.</td>
</tr>
<tr>
<td>START</td>
<td>Engages starter motor to crank engine.</td>
</tr>
</tbody>
</table>

**NOTE:** The START position is spring-loaded. When the key is released, the Ignition switch will automatically return to the RUN position.

**Accessory Outlet**

An accessory outlet is provided as a power source for personal items, such as a radio or cell phone. This outlet is 12VDC and rated for 10 Amps maximum current.
Operator Cab

### Steering Wheel and Horn Button

Turn the steering wheel A left or right to steer the forklift in the corresponding direction. Push the button B in the center of the steering wheel to activate the horn.

![Fig 15. Steering Wheel (A) and Horn Button (B)](image)

### Lumbar Support Adjustment

The seat controls include a four (4) position lumbar support knob. Rotate the lumbar support knob to raise, lower, increase, or decrease the lumbar support.

![Fig 17. Lumbar Support](image)

### Operator Seat

### Operator Seat Controls

The operator seat can be adjusted four (4) ways: weight suspension, height, fore and aft, and backrest angle.

### Weight Suspension Lever

Rotate the weight suspension lever to increase or decrease the seat cushion suspension based on the weight of the operator and comfort level desired.

![Fig 16. Weight Suspension Lever](image)

Pull the fore and aft adjustment lever A outward from the seat to release the seat lock (Fig 18). Slide the seat forward or backward to a comfortable location and release the lever to lock the seat in the desired position.

Pull the backrest angle adjustment lever B up to release the seat backrest lock. Adjust the angle of the backrest and release the lever to lock the backrest to the desired angle.

![Fig 18. Fore and Aft Adjustment Lever](image)
2. Pull the retractable seat belt across your lap. Position the seat belt as low on your body as possible.

3. Insert the latch plate into the buckle (on the right side of the seat) until a “click” is heard.

4. Make sure seat belt retracts snugly across your lap.

---

### Seat Belt

**Warning**

Always check the condition of the seat belt and mounting hardware before operating the forklift. If the seat belt or mounting hardware is defective, it may not properly restrain the operator, which could result in death or serious injury.

- **DO NOT** operate the forklift until the seat belt or mounting hardware is replaced, if worn or damaged.
- The seat belt **MUST** be worn while operating the forklift. Failure to wear the seat belt could result in death or serious injury.

The reach forklift is equipped with a standard two inch (2”) wide retractable seat belt. A three inch (3”) wide retractable seat belt is available where required by state and local laws and regulations.

---

### Rear View Mirrors

Two (2) adjustable rear view mirrors are provided to aid the operator’s rear vision. One (1) rear view mirror is mounted on the upper left of the operator’s cab.

![Fig 20. Cab-Mounted Mirror](image)

One (1) rear view mirror is mounted on the sway cylinder.

![Fig 21. Sway Cylinder Mounted Mirror](image)

---

**Warning**

DO NOT adjust the seat or seat belt while the forklift is moving. Keep at least one hand on the wheel while the forklift is moving to prevent loss of forklift control which could result in death or serious injury.

Before starting the engine, adjust the seat for position and comfort (refer to the Operator Seat section of this manual) and then adjust the seat belt as follows:

1. Grasp the free end of the seat belt (located on the left side of the seat) and make sure the belt webbing is not twisted or entangled in any portion of the seat assembly.
Controls and Indicators

Travel Select Lever

The travel select lever has three (3) positions: FORWARD, NEUTRAL, and REVERSE, which change the direction of travel.

<table>
<thead>
<tr>
<th>Position</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>F (Forward)</td>
<td>UP Position (away from the operator)</td>
</tr>
<tr>
<td>N (Neutral)</td>
<td>CENTER Position</td>
</tr>
<tr>
<td>R (Reverse)</td>
<td>DOWN Position (toward the operator)</td>
</tr>
</tbody>
</table>

NOTE: The travel select lever must be in the NEUTRAL position to start the reach forklift.

NOTE: The back-up alarm automatically sounds when the travel select lever is in the REVERSE position, and the display switches to the back-up camera view.

Gear Select Switch

The Gear Select switch has a twist grip handle with momentary up and momentary down positions for six (6) forward and three (3) reverse gears.

NOTE: Transmission gear range can also be changed on the joystick with the Drive Speed thumb switch.

Load Capacity Charts

Load Capacity Charts are located on the left side of the front control panel. Load Capacity Charts are provided to assist the operator in determining how to safely handle loads with the reach forklift, including boom angle, height, and reach.
Operation Manual

Light Switches

The Light Switches control the standard cab and optional boom lights.

Turn Signal and Hazard Switches

The Turn Signal Switch controls the optional turn signals (toggle left or right). The optional Hazard Light Switch flashes all four (4) turn signals (toggle up or down).

Warning

DO NOT change steering modes until the forklift slows or comes to a complete stop. Align all four (4) wheels perpendicular to the axle, before changing steering mode. Changing steering modes at higher travel speeds can make the forklift unstable, and cause a loss of control, which could result in death, serious injury, or property damage.

The Steering Select switch has three (3) steering positions: Crab, Two Wheel Steering (2W), and Four Wheel Steering (4W).

Wiper Switch

The Wiper Switch operates the windshield wiper on enclosed cab models. The switch has three (3) positions: Down - OFF, Up - On, Hold Up - Wash.
Display Indicators

The display allows the operator to view vital engine information and other critical functions, including gauge display, engine diagnostics to monitor engine condition and performance, rear camera video, fault codes, and warning indicators.

A. HIGH HYDRAULIC OIL TEMP

The hydraulic oil temperature indicator illuminates when the oil temperature is above 180°F (82°C). If the hydraulic oil temperature indicator illuminates, stop and idle the engine to allow time for cooling. If the hydraulic oil temperature indicator does not go out after five (5) minutes, stop the forklift, follow proper shut down procedures, tag the forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift BEFORE placing it into service again.

B. WATER IN FUEL

The Water in Fuel Indicator will be displayed when water is detected in the fuel filter. Drain the water by opening the petcock on the bottom of the fuel filter.

C. LOW BRAKE PRESSURE

The Low Brake Pressure indicator illuminates if the hydraulic oil pressure gets too low. If the Low Brake Pressure indicator is illuminated, do not release the parking brake or engage transmission until the indicator is out. If the indicator does not go out, stop the forklift, follow proper shut down procedures, tag forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift BEFORE placing it into service again.

D. LOW OIL PRESSURE

The Low Oil Pressure Indicator will be displayed when the engine oil pressure is below normal (10 psi or lower). If the Oil Pressure Indicator comes on during normal operation, stop the forklift, follow proper shut down procedures, tag forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift BEFORE placing it into service again.

E. LOW COOLANT LEVEL

The Low Coolant Level Indicator will be displayed when the coolant level in the surge tank drops below normal. Add coolant to the top of the sight gauge of the surge tank.

F. WAIT TO START

The Wait to Start Indicator is displayed when the key switch is moved to the RUN position. Wait until the indicator goes out before starting the engine.

G. ENGINE SERVICE REQUIRED

The Engine Service Required Indicator will be displayed when a maintenance interval has been exceeded.
**H. REGENERATION MENU**

Pushing the soft button adjacent to the Regen Menu indicator displays the exhaust system regeneration mode with the available options.

**I. REAR AXLE LOCKED**

The Rear Axle Locked Indicator illuminates when the forklift is in the axle lock mode. The rear axle locks when the parking brake is set to ON (engaged), or the transmission is in NEUTRAL or the service brake is applied, and when the boom is above 10°. If the Rear Axle Locked Indicator does not illuminate when the forklift is in the axle lock mode, stop the forklift, follow proper shut down procedures, tag forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift **BEFORE** placing it into service again.

**J. REAR AXLE CENTERED**

The Rear Axle Centered Indicator will be displayed when the rear wheels are aligned perpendicular to the rear axle. The rear wheels should be centered before changing steering modes.

**L. TACHOMETER**

The Tachometer indicates engine RPM using a 0-2500 RPM analog dial and also using digital RPM readout at the bottom of the tachometer display.

**M. HOURMETER**

The Hourmeter indicates and records engine operating hours. Use the Hourmeter to establish a forklift maintenance schedule.

**N. DEF GAUGE / LOW DEF LEVEL INDICATOR**

The DEF Gauge indicates the quantity of fluid in the Diesel Exhaust Fluid (DEF) tank. The total capacity of the DEF tank is 5 gallons. The DEF tank should be filled after every fuel refill. DEF should be added when the Low DEF (Diesel Exhaust Fluid) Level indicator is displayed. Refer to the Operation section on Warning Indicators and the Engine Indicator Chart (Fig. 67).

**O. ENGINE TEMP GAUGE AND HIGH TEMP INDICATOR**

The Engine Temp Gauge indicates the temperature of the coolant in the engine cooling system. After starting the forklift, allow time for the Engine Temp Gauge to begin moving before operating the forklift. After the engine has sufficiently been warmed up, normal engine coolant temperature should read between 180° to 200° F.

**P. VOLTAGE GAUGE**

The Voltage Gauge indicates the amount of charge (in Volts). Normal system voltage is between 12.5 and 14 Volts. If the voltage gauge shows abnormal readings, stop the forklift,
Operator Cab

follow proper shut down procedures, tag forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift BEFORE placing it into service again.

Q. FUEL GAUGE AND LOW FUEL INDICATOR
The fuel gauge indicates the approximate quantity of fuel in the tank. The total capacity of the fuel tank is 72 gallons (273 liters).

R. OIL PRESSURE GAUGE
The Oil Pressure Gauge indicates the engine oil pressure. Normal engine oil pressure is between 40 and 80 psi. If the Oil Pressure Gauge shows abnormal readings, stop the forklift, follow proper shut down procedures, tag forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift BEFORE placing it into service again.

S. STOP INDICATOR (RED)
The Engine Stop Indicator is displayed with a flashing Engine Warning Indicator when the engine is either shut down or an engine shutdown is imminent.

T. CHECK ENGINE/GENERAL WARNING INDICATOR
In case of any engine errors, the general error lamp of the engine will be activated. Whenever the error lamp is active, a fault code is stored in the error memory.

Two different states are possible:
• Solid on - Errors that allow continuing engine operation with minor restrictions.
• Blinking - Errors that cause an engine shut down or shut down request.

Emission related errors of the EAT system will also be displayed on the Status Display X and the malfunction indicator will come on.

The Check Engine Indicator will be displayed when there is a minor engine or ESC fault. Refer to the Operation section on Warning Indicators and the Engine Indicator Chart (Fig. 69).

U. EXHAUST SYSTEM CLEANING (ESC) INDICATOR
The Exhaust System Cleaning (ESC) Indicator will be displayed when a manual regeneration is recommended or required. Refer to the Operation section on Warning Indicators and the Engine Indicator Chart (Fig. 67).

V. HIGH EXHAUST TEMPERATURE (HEST)
The High Exhaust Temperature (HEST) indicator will be displayed when the exhaust temperature is higher than normal. Refer to the Operation section on Warning Indicators and the Engine Indicator Chart (Fig. 67).

W. ESC REGEN DISABLED
The ESC Regen Disabled indicator will be displayed if the ESC Regen has been manually disabled by the user.

X. MESSAGE / STATUS DISPLAY
Displays engine status messages or additional warnings.

Y. LEFT SIDE OUTRIGGER DOWN
Indicates that the outrigger on the left side of the forklift is locked in the DOWN position.

Z. RIGHT SIDE OUTRIGGER DOWN
Indicates that the outrigger on the right side of the forklift is locked in the DOWN position.

π. BACKUP CAMERA (OPTIONAL)
The display allows the operator to view vital engine information and other critical functions, including gauge display, engine diagnostics to monitor engine condition and performance, fault codes, and warning lights.

Fig 34. Power Up

POWER UP
When the ignition is turned on, the display powers up and defaults to GAUGE DISPLAY mode. The display should remain in this mode for normal operation.

Fig 35. Main Menu
MAIN MENU
Pressing the MENU button will bring up the MAIN MENU. Pressing the MENU button again, or the GAUGE DISPLAY soft button, will return to the GAUGE DISPLAY mode.

ENGINE DIAGNOSTICS
Pressing the ENGINE DIAGNOSTICS soft button will display engine information. Pressing the MENU button will return to the GAUGE DISPLAY mode.

USER SETTINGS
Pressing the USER SETTINGS soft button will enter a mode where some display settings may be adjusted. Pressing the MENU button will return to the GAUGE DISPLAY mode.

SYSTEM SETTINGS
Pressing the SYSTEM SETTINGS soft button will display communication parameters. Pressing the MENU button will return to the UTILITIES mode.

UTILITIES
Pressing the UTILITIES soft button will allow access to the Service Reminders Menu, depicted below.

SERVICE REMINDERS
Pressing the SERVICE REMINDERS soft button will display data pertaining to maintenance schedules. Pressing the MENU button will return to the UTILITIES mode.
Operator Cab

**PDM DIAGNOSTICS**
Pressing the PDM DIAGNOSTICS soft button will display the status of the Power Distribution Module.

**REGENERATION MENU**
Pressing the ENTER button while in GAUGE DISPLAY mode or pressing the REGEN MENU soft button will bring up a menu that displays the exhaust system regeneration mode with the available options. The operator may disable an automatic regen or force a manual regeneration from this menu (a manual regen can only be initiated if the system is requesting it). Pressing the ENTER button will return to the GAUGE DISPLAY mode.

**FAULT CONDITION POP-UPS**
A fault condition may trigger a pop-up dialog box describing the nature of the fault. A soft button may need to be pressed to acknowledge the fault.

**BACKUP CAMERA (OPTIONAL)**
The display will automatically change to the backup camera when the transmission is placed in REVERSE. When the transmission is in NEUTRAL or FORWARD, the display can be switched from the GAUGE DISPLAY to the BACKUP CAMERA by pressing the lower left-hand soft button (above the MENU button). Pressing the soft button again will return to GAUGE DISPLAY.

**Boom Control**

The boom control handle (Fig. 46) has variable motions from the center position that control boom and tilt functions. It is used to raise, lower, extend, retract the boom, and tilt the carriage (or attachment).

**NOTE:** The boom control handle is a variable speed control. Function speed is proportional to handle movement. The more the handle is moved in the appropriate direction, the faster the corresponding function will occur.

**NOTE:** Increasing engine speed can increase boom lift and extend speed.

Fig 42. Regeneration Menu

Fig 43. Backup Camera (Optional)

Fig 44. Boom Control Handle
**Attachment Tilt Switch**

The Attachment Tilt Switch located on the top of the boom control handle controls attachment tilt functions.

The Attachment Tilt Switch:
- Controls the attachment tilt functions by rolling the switch forward and backward.
- Is a variable speed switch. Function speed is proportional to how far the switch is rolled. The more the switch is rolled in the appropriate direction, the faster the corresponding function will occur.

<table>
<thead>
<tr>
<th>Function</th>
<th>Handle Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATTACHMENT TILT DOWN</td>
<td>Roll switch forward away from the operator</td>
</tr>
<tr>
<td>ATTACHMENT TILT UP</td>
<td>Roll switch backward toward the operator</td>
</tr>
</tbody>
</table>

**NOTE:** Two (2) boom functions can be performed at the same time by moving the handle into the corner between two (2) functions. For example, moving the handle to the forward, left corner will lower and retract the boom at the same time.
The Frame Sway Control Handle:
- Controls the frame sway functions by moving the control handle left and right.
- Is a variable speed control. Function speed is proportional to control handle movement. The more the control handle is moved in the appropriate direction, the faster the corresponding function will occur.

### Frame Sway Control Handle

<table>
<thead>
<tr>
<th>Function</th>
<th>Handle Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRAME SWAY RIGHT</td>
<td>Move Control Handle RIGHT</td>
</tr>
<tr>
<td>FRAME SWAY LEFT</td>
<td>Move Control Handle LEFT</td>
</tr>
</tbody>
</table>

**NOTE:** Lock the frame sway by placing the travel select lever in NEUTRAL or applying the service or parking brake.

**NOTE:** Maximum frame sway is 16° overall or 8° each direction, left and right.

---

The reach forklift includes a Frame Sway Override switch. Improper use of the Frame Sway Override switch could cause death, serious injury, or property damage.

The frame sway feature becomes locked and will not operate when the boom is raised 40° or more. Pressing the Frame Sway Override switch (the trigger) on the control handle will override the lockout feature and allow slow frame sway.
The boom angle indicator is located on the left side of the boom and is visible from the operator's seat. Use the boom angle indicator to determine the boom angle when referring to load capacity charts. Refer to the LOAD CAPACITY CHARTS section of this manual for more information.

**NOTE:** The boom angle indicator is a plumb arrow with angular graduations from -5 to +57°

---

The auxiliary attachment control lever controls the functions of approved optional attachments that can be mounted to the forklift and require hydraulic supply for operation.

---

As the boom is extended, the boom extend letters on the left side of the boom are visible to the operator. These letters indicate boom extension as it corresponds to the load capacity charts.

---

The frame level indicator is mounted on the upper right corner of the operator’s cab. The frame level indicator allows the operator to view if the forklift has been positioned in a level condition. Always frame sway the forklift left or right until the indicator shows 0° (level).
The Boom Maintenance Stand is an optional safety equipment used to support the boom during any and maintenance activities where the boom is raised.

- When preparing to set boom stand, make sure machine is on a flat level ground and machine has no load on the forks.
- Raise machine boom to 40 degrees for clearance and remove latch and pin from boom stand weldment.
- Position the boom stand in the upright position and re-apply the pin to secure stand. Proceed by slowly lowering machine boom to lay on stand.

When not in use, fold the support down and latch it in place. When preparing to remove boom stand, make sure all maintenance has been performed and area is clean.

- Raise machine boom to 40 degrees for clearance and remove pin from stand weldment
- Lay boom stand in the down position and re-latch stand to secure.

The XR2450 lifting points are shown below. The forklift should only be lifted if lifting points are installed.

![Warning]

Ensure that no one is in the work radius before lifting forklift to avoid crushing hazard.

DO NOT try to lift or handle heavy components without the use of appropriate lifting equipment.

DO NOT use attachments that are corroded excessively.

- All the attachments should be stored in an appropriate enclosure as to prevent corrosion and deterioration due to environmental conditions.
- Inspect the forklift and the attachments periodically for corrosion.
Pre-Operation Inspection

To perform the pre-operation inspection make sure the forklift is NOT running, the engine is cool, the forklift is parked on level ground, the boom is completely retracted, and the frame is level.

NOTE: Copy and use the Pre-Operation Inspection Checklist in this section.

**Warning**

Wear appropriate protective clothing. Personal protective equipment can include, but is not limited to hardhat, gloves, footwear, safety glasses or goggles, and hearing protection. Make sure clothing is snug and properly belted. DO NOT wear loose clothing, jewelry, watches, or anything that can catch on forklift controls, moving parts, etc. Failure to wear the proper protective clothing could result in death or serious injury.

Perform a pre-operation inspection and functional tests at the beginning of each work shift. Perform the pre-operation inspection first. DO NOT perform the pre-operation inspection with the engine running or hot. Contact with moving or heated parts could cause death or serious injury.

Perform a pre-operation inspection and functional tests in an open area.

Become familiar with all safety and hazard labels, regulations, and procedures. Make sure all proper labels are attached to the forklift and remain legible.

Remove forklift from service and place “Do Not Operate” tags on the Starter switch and steering wheel if anything is found to be in need of repair or maintenance, defective, or unsafe in any way.

**Caution**

Contact with hot surfaces and the exhaust pipe after the forklift has been operated could result in serious personal injury.

**Warning**

Always check the condition of the seat belt and mounting hardware before operating the forklift. If the seat belt or mounting hardware is defective, it may not properly restrain the operator, resulting in death or serious injury.

- DO NOT operate the forklift until the seat belt or mounting hardware is replaced, if worn or damaged.
- The seat belt MUST be worn while operating the forklift. Failure to wear the seat belt could result in death or serious injury.

Check hydraulic oil lines, tubes, and hoses carefully. DO NOT use your bare hand to check for leaks. Always use a board or cardboard when checking for a hydraulic leak. Escaping hydraulic fluid under pressure, even a pinhole size leak, can penetrate body tissue, which could cause death or serious injury. If hydraulic oil is injected into your skin, a doctor familiar with this type of injury must treat it immediately.

Serious injury could result from hydraulic oil pressure or hot oil. DO NOT remove a hydraulic tank filler cap unless it is cool enough to touch with bare hands. Remove the hydraulic tank filler cap slowly to relieve pressure. Relieve all pressure in a hydraulic system before any caps, lines, fittings, or related items are disconnected or removed.

Never remove the radiator cap while the engine is hot. The cooling system is under pressure. Hot coolant could cause severe burns or eye injury. Wear protective clothing and safety glasses.
Lead-acid batteries produce flammable and potentially explosive gases. To avoid death or serious injury when checking, testing, or charging batteries:

- DO NOT use smoking materials near batteries.
- Keep arcs, sparks, and open flames away from batteries.
- Provide ventilation for flammable vapors.
- Wear proper personal protective equipment, including safety glasses.

Fluid in electric storage batteries contains sulfuric acid, which is poison and could cause severe chemical burns. Avoid all contact of fluid with eyes, skin, or clothing. Use protective gear when handling batteries. DO NOT tip a battery beyond a 45° angle in any direction.

If contact does occur, follow these First Aid suggestions:

- External contact - Flush with water.
- Eyes - Flush with water (including under the eyelids) for at least 15 minutes and get medical attention immediately. Flushing must begin immediately to avoid permanent eye tissue damage.
- Internal contact - Drink large quantities of water or milk to dilute stomach contents. Do not induce vomiting. Get medical attention immediately.

WARNING - In case of internal contact, DO NOT give fluids that induce vomiting.

California Proposition 65

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm. Wash hands after handling these items.

Use only Ultra Low Sulfur fuel. Maximum sulfur content: 15 ppm.

Tires must have proper ballast. DO NOT replace foam-filled tires with pneumatic tires. Use of pneumatic tires will severely affect vehicle load capacity, which could result in death, serious injury, or property damage.

Do not idle for extended periods of time. Excessive idle time can cause poor engine performance.
Pre-Operation Inspection Checklist

Walk around the ENTIRE forklift while visually performing the pre-operation inspection.

☐ Check that “Do Not Operate” tags have not been placed on the forklift.
☐ Check that load capacity charts are legible.
☐ Check that frame level indicator is working properly.
☐ Check condition and operation of the seat belt and mounting hardware.
☐ Check that Operation and Safety Manual is in the protective case and legible.
☐ Check forks for welds, cracks, misalignment, or any other damage.
☐ Check that carriage fork pins are straight and in place to prevent forks from changing position or coming off the carriage.
☐ Check all hydraulic hoses and hose connections for wear or leaks.
☐ Check tilt cylinders for leaks or any other damage.
☐ Check boom for straightness or any other damage.
☐ Check all four (4) tires and wheels for:
  ☐ Punctures, cracks, cuts, gouges, bulges, foreign objects, or any other damage to tires.
  ☐ Loose or missing lug nuts.
  ☐ Bent flanges or any other damage to rims.
☐ Check front and rear sway cylinders and hoses for leaks or any other damage.
☐ Check electrical connections on rear sway cylinder.
☐ Check mirrors for cracks, cleanliness, and proper adjustment.
☐ Check hydraulic reservoir sight gauge for proper fluid level. Add hydraulic fluid, if necessary.
☐ Check engine compartment for:
  ☐ Loose or damaged belts, hoses, and radiator fan blades.
  ☐ Check air filter minder (on air filter housing).
  ☐ Coolant reservoir level. Add radiator coolant, if necessary.
  ☐ Engine oil level. Add engine oil, if necessary.
  ☐ Electrical wires and connectors.
☐ Check front and rear axles for leaks or any other damage.
☐ Check boom lift and carriage master tilt cylinders and hydraulic lines for leaks or any other damage.
☐ Check battery terminals for corrosion.
☐ Check battery for cracked, melted, or damaged case.
☐ Check that all labels are present and legible. Replace any damaged or illegible labels.
☐ Check that operator’s cab is empty of all trash, debris, or any loose items.
☐ Check that personal belongings are secured in the personal storage box.
☐ Check that pedals, and non-skid surfaces are clean and free of grease, oil, dirt, snow, or ice.

☐ Date: __________________________  ☐ Initials: __________________________
Perform a pre-operation inspection and functional tests at the beginning of each work shift. Perform the pre-operation inspection first. DO NOT perform the pre-operation inspection with the engine running or hot. Contact with moving or heated parts could cause death or serious injury.

Perform the pre-operation inspection and functional tests in an open area and away from any other obstacles or equipment. Inspections and functional tests may require assistance. Keep the assistant visible and a safe distance from the forklift to prevent death or serious injury.

Remove forklift from service and place “Do Not Operate” tags on the starter switch and steering wheel if anything is found to be in need of repair or maintenance, defective, or unsafe in any way.

The safety, efficiency, and service life of your reach forklift will be increased by performing functional tests at the beginning of each shift. If any of the items in the functional tests are not operating properly or within set tolerances, stop the forklift, follow proper shut down procedures, tag the forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift before placing it into service again.

NOTE: The enable trigger must be actuated for boom functions to operate.

☐ Operate the joystick forward and backward to lower and raise boom.
☐ Operate the joystick left and right to retract and extend boom.
☐ Operate the attachment tilt Thumb Stick up and down to tilt the attachment.
☐ Operate the sway control Thumb Stick left and right to sway the frame left and right.
☐ Operate the auxiliary attachment control if an auxiliary attachment is being used.
☐ Turn work lights on and off.
☐ Press the horn button to sound the horn.

☐ Place the travel select lever in reverse to sound the backup alarm and check function of back up camera.
☐ Release the parking brake.
☐ Operate the forklift in forward and reverse.
☐ Test the gear select lever (and/or thumb switch) while operating the forklift in forward and reverse.
☐ Test the service and parking brakes.
  • Apply the service brake pedal after the forklift begins to move and the forklift should stop immediately.
  • Apply the parking brake. The forklift should not move unless the parking brake is released.
☐ Test each steering function. Operate the forklift in forward and reverse at low idle speed and turn the steering wheel approximately 1/2 turn in each direction for each of the following modes:
  • Align the wheels and set the Steering Select switch to crab steering.
  • Align the wheels and set the Steering Select switch to 2 wheel (2W) steering.
  • Align the wheels and set the Steering Select switch to 4 wheel (4W) steering.
☐ Check the gauges on the display after the engine warms to the proper operating range.
  • Check the voltage gauge. The voltage gauge should read between 12.5 to 14 Volts.
  • Check the engine coolant temperature gauge. The engine coolant temperature gauge should read between 180°F to 200°F.
  • Check the engine oil pressure gauge. The engine oil pressure gauge should read between 40 to 80 PSI.
Operator Maintenance

![Fig 55. Check Hydraulic Oil](image)

Check Hydraulic Oil Sight Gauge (A); Add Hydraulic Oil, if Necessary (B). **WARNING! DO NOT Remove Hydraulic Tank Filler Cap Unless It Is Cool Enough To Touch With Bare Hands.**

![Fig 56. Add DEF If Necessary](image)

Add DEF (Diesel Exhaust Fluid) when the Low DEF Level indicator is displayed. Fill DEF tank at each fuel fill.

![Fig 57. Check Coolant Reservoir Level. Add Coolant, if Necessary](image)

**WARNING! Hot Coolant. DO NOT Open Radiator Cap When Hot To Touch.**

![Fig 58. Check Engine Oil Level](image)


![Fig 59. Check Battery Case and Terminals](image)

![Fig 60. Store Operation and Safety Manual in Protective Case](image)

Add DEF (Diesel Exhaust Fluid) when the Low DEF Level indicator is displayed. Fill DEF tank at each fuel fill.

**WARNING! Hot Coolant. DO NOT Open Radiator Cap When Hot To Touch.**
Before Starting Forklift

⚠️ Warning

Failure to use proper safety procedures when mounting and dismounting the forklift could result in death or serious injury.

- Keep steps clear of dirt, mud, snow, ice, debris, and other hazards.
  
  Face the forklift for mounting or dismounting. Use hand holds and steps to maintain three (3) points of contact at all times, either both hands and one foot or both feet and one hand.

- DO NOT use the controls, steering wheel, or foot pedals as hand holds or steps. Avoid accidentally engaging or disengaging a control.

  **DO NOT** jump from the forklift. Clothing can get caught on pedals, levers, or other protruding parts. Landing on uneven surfaces could result in death or serious personal injury.

1. Master battery disconnect on.

2. Use safe mounting/dismounting procedures to enter the operator cab.

3. Adjust the operator seat for position and comfort. (Refer to Seat Adjustment section in this manual)

4. Adjust mirrors (this may require assistance).

5. Adjust side arm rest.

6. Fasten seat belt.

7. Make sure the travel select lever is set to NEUTRAL (N) and the Parking Brake is ON (engaged).

**NOTE:** The engine will only start when the travel select lever is in NEUTRAL (N) and the Parking Brake switch is ON (engaged).
Starting Forklift

Normal Starting

Warning

To prevent death, serious injury, or property damage, the operator must be seated with seat belt fastened, arms, legs, and head completely inside the Rollover Protection Structure/Falling Object Protection Structure (ROPS/FOPS), the travel select lever in NEUTRAL, and the Parking Brake switch ON (engaged) BEFORE starting the forklift.

1. Place Key in Ignition Switch.
2. Turn key in ignition switch clockwise to the RUN position.

![Fig 63. Turn Key in Ignition Switch to RUN](image)

NOTE: Wait for display to boot up.

3. Wait until the Wait to Start Indicator goes off and then turn the key to the START position to crank the engine.

![Fig 64. Turn Key in Ignition Switch to START](image)

4. Release key immediately after the engine starts. The Ignition Switch will automatically return to RUN.

Caution

Release the key immediately once the motor starts. If the motor does not start, DO NOT crank the starter motor continuously for more than 15 seconds. Failure to release the key after the motor has started or continuous cranking can damage the starter motor.

NOTE: The Start position is spring-loaded. When the key is released, the ignition switch will automatically return to the RUN position.

![Fig 65. Ignition Switch Automatically Returns to RUN](image)

NOTE: If the engine fails to start on the first try, wait until the engine and starter come to a complete stop before cranking the engine again.

5. After the engine starts, allow the engine to idle for approximately 60 seconds.

6. Apply the service brake pedal and disengage the Parking Brake switch.

7. Depress the accelerator pedal and carefully drive off, being fully aware of your surroundings.
Forklift Travel

Steering Modes

Warning

Never use crab or four wheel (4W) steering for traveling at high speeds. Use only two wheel (2W) steering for higher speed travel and slow the forklift before turning. Rapid turning using crab, four wheel (4W), or the optional two wheel rear (2WR) steering could cause tip over, which could result in death, serious injury, or property damage.

Check the turning radius around the forklift before making a turn, especially if using four wheel (4W) steering or two wheel rear (2WR) steering, which provide a tighter turning radius. Look over your shoulder in the direction of the turn when backing. Failure to remain aware of your turning radius area could result in death, serious injury, or equipment damage.

Caution

DO NOT change steering modes until the forklift slows or comes to a complete stop.

The reach forklift includes three STANDARD modes of steering; Crab, Two Wheel (2W), and Four Wheel (4W) Steering. Use the Steering Select switch located on the dash panel to change steering modes.

Crab Steering

Crab steering allows all four (4) wheels to turn in the same direction as the steering wheel, allowing the forklift to move “sideways”. Crab steering is useful in a congested work site to line up to a loading location.

Two Wheel Front Steering (2W)

Two wheel (2W) steering allows the front wheels to turn in the same direction as the steering wheel. The rear wheels remain in a fixed forward position. Two wheel (2W) steering is useful for traveling at higher speeds.

Four Wheel Steering (4W)

Four wheel (4W) steering allows the front wheels to turn in the same direction and the rear wheels to turn in the opposite direction of the steering wheel. The rear wheels follow the front wheel path. Four wheel (4W) steering is useful for a short turning radius and in muddy or sandy conditions.

Warning

Allow for adequate clearance between the attachment and other objects when turning. The attachment extends beyond the front of the forklift. The operator must be aware of the maximum sweep of any attachment being used, when turning, to avoid hitting personnel and other objects in the area to prevent death, serious injury, or property damage.

Fig 66. Maximum Fork Sweep
Warning

Use proper safety procedures and avoid hazardous situations while operating the forklift to prevent death, serious injury, or property damage.

- Check the work site for any hazards before operating the forklift.
- Check the work surface for loose soil conditions and overhead power lines.

Warning

To prevent death or serious injury, the operator must be seated with seat belt fastened, the travel select lever set to NEUTRAL, the Parking Brake ON (engaged), and the area free of people and obstructions BEFORE starting the forklift.

1. Start the forklift. Refer to the Starting Forklift section in this manual.
2. Apply service brake.
3. Release parking brake.
4. Rotate gear select switch to the desired gear.
5. Move the travel select lever to FORWARD or REVERSE for the appropriate direction of travel.
6. Release the service brake pedal.
7. Slowly press the accelerator pedal to start travel.

Warning

The transmission has three (3) gears that can be used for traveling forward or reverse.

To shift gears, rotate the gear select lever to the next gear while the forklift is traveling.

- Use first gear (1) for the highest torque and pulling power.
- Use higher gears for higher ground speed.
- Never travel in higher gears when carrying a load.
- Allow the engine speed to slow down before shifting to a lower gear.

Caution

Do not idle for extended periods of time. Excessive idle time can cause poor engine performance.

Warning Indicators

A fault condition may trigger a popup dialog box on the display describing the nature of the fault during operation. Corresponding red or amber warning lights will illuminate to indicate the severity of the fault. If a fault condition is present, stop the forklift, follow proper shutdown procedures, tag the forklift with “Do Not Operate” tags, and have a qualified mechanic service or repair the forklift BEFORE placing it into service again. Ignoring warning indicators or fault codes can cause improper performance, which could result in death, serious injury, or property damage.

Fault condition dialog boxes will pop up and warning lights on the display will illuminate during critical circumstances. Some of these conditions demand immediate attention and forklift servicing. The forklift should be shut down as soon as practical to prevent serious mechanical failure.

Warning

Allow the engine speed to slow down before shifting to the next lower gear. Improper use of the gear select lever could cause transmission damage or forklift tip over/roll over and could result in death or serious injury.
CHECK ENGINE INDICATOR LIGHT
The Check Engine Indicator displayed by itself shows the engine is operating normally but there are one or more minor faults with the engine electronic management system.

The Check Engine Indicator displayed with a steady Engine Shutdown Indicator shows there are one or more severe faults with the engine electronic management system and the engine is operating at reduced power.

The Check Engine Indicator displayed with a flashing Engine Shutdown Indicator shows there are one or more very severe faults with the engine electronic management system and the engine should be shut down as soon as possible (the engine may automatically shutdown in some conditions).

The Check Engine Indicator displayed with a flashing Low DEF Level Indicator shows the DEF tank is critically low and the engine is operating at reduced power; add DEF as soon as possible.

The Check Engine Indicator displayed with a steady Engine Shutdown Indicator and a flashing Low DEF Level Indicator shows the DEF tank is empty and the engine is operating at reduced power or limited to idle; add DEF immediately.

The Check Engine Indicator displayed with the Exhaust System Cleaning Indicator shows that a manual regeneration of the exhaust system is required and the engine is operating at reduced power.

ENGINE SHUTDOWN INDICATOR
A steady Engine Shutdown Indicator displayed with the Check Engine Indicator shows there are one or more severe faults with the engine electronic management system and the engine is operating at reduced power.

A flashing Engine Shutdown Indicator displayed with the Check Engine Indicator shows there are one or more very severe faults with the engine electronic management system and the engine should be shut down as soon as possible (the engine may automatically shutdown in some conditions).

A steady Engine Shutdown Indicator displayed with the Check Engine Indicator and a flashing Low DEF Level Indicator shows the DEF tank is empty and the engine power is operating at reduced power or limited to idle; add DEF immediately.

WAIT TO START INDICATOR
The Wait to Start Indicator is displayed when the key switch is moved to the RUN position. Wait until the indicator goes out before starting the engine.

ENGINE SERVICE REQUIRED INDICATOR
The Engine Service Required Indicator will be displayed when a maintenance interval has been exceeded.

LOW COOLANT LEVEL INDICATOR
The Low Coolant Level Indicator will be displayed when the coolant level in the surge tank drops below normal. Add coolant to the top of the sight gauge of the surge tank.

WATER IN FUEL INDICATOR
The Water in Fuel Indicator will be displayed when water is detected in the fuel filter. Drain the water by opening the petcock on the bottom of the fuel filter.

EXHAUST AFTER TREATMENT SYSTEM
The engine control system monitors and manages the exhaust after treatment system. The system works to reduce soot loading. If excessive soot loading is detected, the engine control system will enter an automatic regeneration mode by elevating the exhaust temperature. The forklift can be operated normally during this regeneration as long as there are no issues with the high exhaust temperature. If the forklift is being operated in an area where the high exhaust temperature could cause problems, such as near combustibles, the automatic regeneration may be temporarily disabled by pressing the Enter button or Regen soft button to bring up the After Treatment Control menu and then pressing the Regen Mode Disable soft button.

If the automatic regeneration is unable to keep the soot loading under control, a manual regeneration will be requested. If a manual regeneration is not performed and the soot loading becomes serious, the engine power will be reduced and a manual regeneration is required. The forklift must not be operated during a manual regeneration.
EXHAUST SYSTEM CLEANING (ESC) INDICATOR

The ESC Indicator will be displayed by itself when a manual regeneration is recommended. The ESC Indicator will be displayed with the Check Engine Indicator when a manual regeneration is required. The engine is operating with reduced power.

A flashing ESC Indicator will be displayed with the HEST Indicator when the exhaust temperature is elevated due to a manual regeneration. The forklift must not be operated in this condition.

HIGH EXHAUST TEMPERATURE (HEST) INDICATOR

The HEST Indicator will be displayed by itself when the exhaust temperature is elevated due to an automatic regeneration. The forklift may be operated in this condition as long as there is no concern for operating with high exhaust temperature.

The HEST Indicator will be displayed with a flashing ESC Indicator when the exhaust temperature is elevated due to a manual regeneration. The forklift must not be operated in this condition.

ESC REGEN DISABLED INDICATOR

The ESC Regen Disabled indicator will be displayed if the ESC Regen has been manually disabled by the user. The forklift should only be operated in this condition if it is in an area where the high exhaust temperature could cause problems, such as near combustibles. As soon as the concern for high exhaust temperature subsides, the automatic regeneration should be enabled by pressing the Enter button or Regen soft button to bring up the After Treatment Control menu and then pressing the Regen Mode Auto soft button.

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Fig 67. Engine Indicator Chart
Operation

**Manual Regeneration**

**Caution**

DO NOT leave forklift unattended during manual regeneration.

The manual regeneration should be performed by qualified personnel. This procedure requires the engine to run continuously for 15 to 30 minutes. The forklift cannot be operated during this procedure.

1. Stop the forklift and set the parking brake (Do not release the parking brake until the regeneration is complete).
2. Verify the engine is at low idle.
3. Verify the fuel level is sufficient for 30 minutes of operation.
4. Verify the accelerator pedal is not depressed.
6. The engine speed will increase to 1000 RPM and the High Exhaust System Temperature (HEST) indicator will be displayed.
7. Do not press the accelerator pedal.
8. Allow the manual regeneration to complete without interruption.
9. The engine speed will decrease to low idle and the High Exhaust System Temperature (HEST) indicator will turn off.
10. The manual regeneration is complete.
11. Turn the engine off and re-start to reset the Exhaust Aftertreatment System.

**Changing Travel Direction**

**Warning**

Make sure the forklift comes to a complete stop before moving the travel select lever. A sudden change in direction of travel, while carrying a load, can reduce stability and/or cause the load to shift or fall, which could result in death, serious injury, or property damage.

1. Stop the forklift by applying the service brake pedal. If necessary, shift to a lower gear to help slow the forklift.
2. Move the travel select lever to FORWARD (F) or REVERSE (R).
3. Release the service brake pedal.
4. Slowly press the accelerator pedal to start travel.

**Shut Down Procedure**

**Caution**

Do not idle for extended periods of time. Excessive idle time can cause poor engine performance.

1. Park forklift on firm level ground, if possible.
2. Stop the forklift by applying the service brake pedal.
3. Place the travel select lever in NEUTRAL (N) and set the parking brake to ON (engaged).
4. Lower the boom and rest carriage on ground, or raise and retract boom.
5. Turn the ignition key to OFF and remove the key.
6. If the forklift is parked on an incline, chock the wheels.

**Stopping Travel**

1. Stop the forklift by applying the service brake pedal.
2. Downshift the forklift to a lower gear, if necessary, to slow the forklift until it comes to a complete stop.
3. Move the travel select lever to NEUTRAL (N).
4. Set the parking brake to ON (engaged).

**Warning**

To prevent death, serious injury, or property damage, apply service brakes until the forklift comes to a complete stop, move travel select lever to NEUTRAL (N), set the Parking Brake switch to ON (engaged), lower and retract the boom, and shut off the engine before exiting the forklift.
### Refueling

**Warning**

Engine fuel is flammable and can cause a fire or explosion resulting in death or serious injury. DO NOT smoke while refueling and keep sparks and open flames away from the forklift.

**NOTE:** The fuel tank capacity is 72 gallons (273 liters).

- Make sure the forklift is level to obtain an accurate fuel level reading.
- Shut off the engine.
- Ground the fuel nozzle against the filler neck to avoid sparks.

### Fuel Types

**Caution**

Use of improper grade of fuel may result in damage to engine or exhaust aftertreatment system.

Use ASTM #2 diesel fuel with a minimum Cetane rating of 40 for better fuel economy and performance under most operating conditions.

Use standard #2 diesel fuel for operating at temperatures above 32°F (0°C).

Use a blend of #1 and #2 diesel fuel ("winterized" #2 diesel) for operating at temperatures below 32°F (0°C).

Fuels with Cetane ratings higher than 40 may be needed in higher altitude or an extremely low temperature climate to prevent misfiring and excessive smoke.

Use only Ultra Low Sulfur fuel. Maximum sulfur content: 15 ppm.

### Diesel Exhaust Fluid (DEF)

The DEF tank should be filled after every fuel refill. DEF should be added when the Low DEF Level indicator is displayed. Refer to the Operation section on **Warning Indicators and Fault Codes** and the Engine Indicator Chart (Fig. 69). The total capacity of the DEF tank is 5 gallons.

**Warning**

If no DEF reagent is available in the DEF tank, the emission requirements cannot be fulfilled and the machine derates eventually to idle only, following a predetermined schedule.

**Caution**

Using anything other than DEF fluid may result in permanent aftertreatment damage.

### Attachments

**Attachment Disclaimer**

DO NOT exceed the manufacturer’s rated load for any auxiliary attachment. Any attempt to lift or carry loads in excess of the manufacturer’s rated load may cause forklift tip over, loss of load, or structural damage which could result in death, serious injury, or property damage.

Xtreme Manufacturing makes no representations or warranties, expressed or implied, as to the design, manufacture, or fitness for use with this forklift of any third party attachment. This forklift is not intended to be used and should not be used with an attachment that would alter the center of gravity or stability of this forklift. Xtreme Manufacturing assumes no liability for any third party attachment that would alter the center of gravity or stability.
Standard Carriage Operation

The standard carriage uses manually adjustable forks and can be tilted up or down by using the thumb switch on the control handle.

Swing Carriage Operation (Optional)

The swing carriage pivot left or right using the auxiliary attachment control lever.

Warning

DO NOT exceed forklift capacity of 24,000 pounds (10,886 kilograms) with a 72 inch fixed carriage or 23,000 lbs (10,432 kilograms) with a 72 inch adjustable carriage. The total rated capacity of the forks being used must equal or exceed forklift capacity. Forks can bend or break causing loss of load and could result in death or serious injury.

All approved forks for this forklift are marked with a maximum load capacity rating (A). This rating is stamped on the left edge of the fork just below the fork pivot shaft. The rating listed is in U.S. pounds and is based upon a 36 inch (914 mm) load center (B). This rating specifies the maximum load capacity that the individual fork can safely carry at a maximum load center of 36 inches (914 mm).

Because forks are always used in multiples, the total rating of any combination of forks will be the sum of their rated capacity. Other than block forks, all forks should be used in matched pairs. Block forks should be used in matched sets.

The maximum load capacity for this forklift with the boom fully retracted is 24,000 pounds (10,886 kilograms) using a 72 inch fixed carriage, or 23,000 lbs (10,432 kilograms) when using a 72 inch adjustable carriage.

The matched pair or set of forks used on this forklift should have total load ratings which equal or exceed 24,000 pounds (10,886 kilograms) when using a fixed carriage and 23,000 lbs (10,432 kilograms) when using a 72 inch adjustable carriage. When the load rating of the forklift differs from the load capacity of the forks, the lower value becomes the overall load capacity.

Warning

DO NOT use attachments that are corroded excessively. Inspect the forklift and the attachments periodically for corrosion. Attachments should be stored in an appropriate enclosure as to prevent corrosion and deterioration due to environmental conditions.
Do not adjust forks when the Fork Positioning Carriage is loaded. Adjusting forks when carriage is loaded may result in loss of load or carriage damage. Adjust the forks BEFORE loading the carriage.

To move the forks outward, press the top button (A) on the front control handle, or move the auxiliary handle (B) to the left. To move the forks inward, press the lower button (C) on the front control handle, or move the auxiliary handle (B) to the right.

Hydraulic attachments have a maximum hydraulic pressure rating. Failure to make sure the attachment is equipped with a pressure reducing valve, or is rated to be equal or slightly greater than 4,000 psi (276 bar), which is the maximum pressure of the forklift auxiliary hydraulic system at the quick-disconnect couplers, could result in death or serious injury.

Make sure all hydraulic connections are tight (if equipped).

When the auxiliary attachment control lever (B) is moved right or left, it activates hydraulic pressure through the quick attach couplers to move the attachment.

---

**Quick Attach System**

This forklift includes a quick attach system, located in the center of the horsehead below the tilt cylinder; it allows for easy attachment changes. Perform attachment connection and removal procedures on level ground.

---

**Attachment Connection**

Improper connection of an auxiliary attachment can result in death or serious injury. Attachments not locked into place could become unstable and fall on the operator or other personnel near the forklift, which could result in death or serious injury.

- Make sure attachment locking devices are always in place.
- DO NOT operate the forklift until you have positive indication that the carriage attachment is fully engaged.

1. Position the forklift directly behind the attachment. **NOTE:** Allow enough distance to extend the boom approximately 36 inches (0.91 meters).
2. Tilt the attachment adapter forward.
3. Extend the boom and/or drive the forklift forward until pivot pins (A) are below and between the two (2) attachment hooks (B).
4. Tilt and raise the boom until pivot pins have seated fully in attachment hooks.

5. The attachment adapter should be tight against the rear of the attachment.

6. Install the retaining pin to lock in attachment.

7. Connect the quick attach couplers (Fig. 73). This only applies to attachments with a quick attach hydraulic system.

**Warning**

Hydraulic attachments have a maximum hydraulic pressure rating. Failure to make sure the attachment is equipped with a pressure reducing valve, or is rated to be equal or slightly greater than 4,000 psi (276 bar), which is the maximum pressure of the forklift auxiliary hydraulic system at the quick-disconnect couplers, could result in death or serious injury.

Make sure all hydraulic connections are tight (if equipped).
Attachment Removal

NOTE: To remove a standard carriage with forks, spread the forks apart on the carriage shaft. This provides better support for the carriage to stand alone.

1. Bring the forklift to a complete stop.
2. Move the travel select lever to NEUTRAL (N).
3. Set the parking brake switch to ON (engaged).
4. Extend the boom approximately 36 inches (0.91 meters).
5. Position the attachment just off the ground and tilt the attachment backward.
6. Disconnect the quick attach couplers (this only applies to attachments with a quick attach hydraulic system (Fig. 69).
7. Remove the retaining pin.

---

Load Handling

⚠️ Danger

Death or serious injury by electrocution will result from contact with or inadequate clearance with energized power lines or apparatus.
- Take extreme caution when operating the forklift in an area where active overhead power lines, overhead or underground cables, or other power sources exist.
- Contact the appropriate power or utility company to de-energize power lines or take other suitable precautions.

Keep the forklift, attachments, and loads a safe distance from electrical power lines.
- Remain at least 10 feet (3 meters), plus an additional 0.4 inches (10 millimeters) for each 1,000 Volts over 50,000 Volts, from active power lines and other power sources.
- Work site operating directives and/or local or state codes might require a greater distance.
- Know the maximum height and reach of this reach forklift.

⚠️ Warning

Failure to follow proper safety procedures when lifting, lowering, and traveling with a load could cause death, serious injury, or property damage.
- DO NOT exceed forklift capacity of 24,000 pounds (10,886 kilograms) with a 72" fixed carriage or 23,000 lbs (10,432 kilograms) with a 72" adjustable carriage. The total rated capacity of the forks being used must equal or exceed forklift capacity. Forks can bend or break causing loss of load and could result in death or serious injury.

⚠️ Warning

DO NOT exceed the manufacturer's rated load for any auxiliary attachment. Any attempt to lift or carry loads in excess of the manufacturer’s rated load may cause forklift tip over, loss of load, or structural damage which could result in death, serious injury, or property damage.

Failure to keep personnel clear of the load area while the load is being raised or lowered could result in death or serious injury. DO NOT lift, swing, or move a load over anyone.
Operation

- Review the rated load capacity of each auxiliary attachment before performing any operation.
- Use the correct load chart and NEVER exceed specified weights and load centers.
- DO NOT exceed the manufacturer’s recommended load capacity.
- DO NOT operate the forklift with an unsafe load distribution.
- Adjust the load as necessary, especially for nonstandard loads.
- Use caution when handling loose material that can fall into the cab.
- Remove overhanging load materials, when possible, and watch for sliding material.
- DO NOT reach a load over posts or other objects that can enter the cab, if tipped.
- Avoid sudden stops, starts, or turns.
- Avoid carrying a swinging load. If necessary, secure the load by attaching it to the forklift tie-downs and/or have another person assist with safely steadying the load.

There is a boom lift point on the underside of the boom that may be used to lift and carry loads.

There is a dedicated boom lift point load chart available, which should be referenced when using the boom lift point. Refer to the suspended loads section of this manual when handling suspended loads for specific warnings and instructions unique to this type of operation.

---

**Suspended Loads**

Avoid carrying a suspended load. If necessary, secure the load by attaching it to the forklift tie-downs and/or have another person assist with safely steadying the load. The handling of suspended loads can introduce dynamic forces drastically affecting the stability of the forklift. Grades and sudden starts, stops, and turns can cause the load to swing and create a hazard if not stabilized. Swinging loads can become unstable, and could cause death, serious injury, or property damage.

1. Do not exceed the forklift’s load capacity (as noted on the load chart).
2. Only lift the load vertically, and never drag it horizontally.
3. Transport the load with the bottom of the load and the boom as low as possible.
4. With the load elevated, move the forklift slowly and cautiously. Only move the forklift to the extent needed to raise, transport, and place the load.
5. Use guy lines to restrain load swing if possible.

---

**Pick Up A Load**

1. Use correct load chart to review the rated load capacity of the carriage or auxiliary attachment being used. NEVER exceed specified weights and load centers.
2. Approach the load slowly and squarely with the fork tips straight and level.
3. Adjust the spacing of the forks so they engage the pallet or load at its maximum width. NEVER use just one fork to lift a load.
4. Insert forks under the load until the load is against the fork frame. Load should be supported in such a manner that the forks can be positioned in a resistance free manner.
5. Tilt the forks back, and raise the boom slightly to secure the load.

---

**Warning**

DO NOT exceed rated capacities. Any attempt to lift or carry loads in excess of those shown on the load capacity charts could cause forklift tip over, loss of load, or structural damage which could result in death, serious injury, or property damage.

---

**Boom Lift Point**

![Boom Lift Point](Fig 81. Boom Lift Point)
**Carry A Load**

1. Carry the load as low as possible while maintaining good ground clearance and visibility.
2. Back away slowly.
3. To travel with a load, use first gear (1) for highest torque and pulling power. NEVER travel in higher gears when carrying a load.

**Place A Load**

1. Before placing the load, refer to the appropriate load capacity chart to determine safe boom extension range.
2. Position the forklift and place the Gear Selector in Neutral (N).
3. Set the Parking Brake switch to ON (engaged).

**Tow Pin & Pintle Hook (Optional)**

**Warning**

Death or serious injury could result from improper operation when using the tow connection. Do not elevate the boom above 30° when towing. Do not exceed rated tow capacity (500 LBS vertical load, 5,000 LBS tow capacity).

The Pintle Hook is used for towing trailers and equipment, rated at or below 5,000 LBS maximum capacity. Failure to comply with this capacity limitation, or elevating the boom above 30° when towing could result in death or serious injury.

**Load Shift**

1. If the load shifts, stop the forklift immediately.
2. Lower and adjust the load to center its weight.
3. If the load shift is too great for adjustment, rearrange the load before attempting to move the forklift.
Operation

Elevating Personnel

⚠️ Warning

Use only a ANSI/ITSDF B56.6 compliant work platform to lift or lower personnel. Never drive the vehicle with the work platform in a raised position or with personnel on board, even for a short distance. Doing so could result in death, serious injury, or property damage.

Please refer to ANSI/ITSDF B56.6 for additional design and operating information regarding elevating personnel.

Design Requirements For A Personnel Platform:

1. Platform floor must have a slip resistant surface located not more than 8” above the normal load supporting surface of the fork.
2. Platform floor dimensions shall not exceed two times the load center distance. This floor dimension is measured parallel to the longitudinal center pane of the vehicle.
3. Platform floor width shall not be greater than the overall width of the vehicle, measured across the load bearing tires, plus 10” on each side.
4. Minimum space requirements for each person on the platform shall not be less than 18” in either direction.
5. 4” minimum height toe plate around the perimeter of the platform which may be omitted at the access opening.
6. On the overhead protection device, when requested by the user.
7. Protection must be provided for the personnel in their normal working position on the platform from moving parts of the rough terrain forklift that represent a hazard.
8. Information prominently indicated on the platform;
   - Maximum work load including personnel and equipment.
   - Weight of empty platform.
9. Provide a means so that the platform can only be centered laterally on the rough terrain forklift truck and retained against the vertical face of the forks, carriage, or lifting mechanism.
10. Provide a means to securely attach the platform to the lifting mechanism, and to prevent the platform from inadvertent pivoting.
11. Provide restraining means for securing personnel such as an anchorage for attaching the lanyard of a body belt or harness.
12. Provide a guardrail or similar structure with a nominal height to the platform of 42” around its upper periphery and include a mid rail. It may be hinged, removable, or of chains, and used if proper positioning is easily discernible. Such restraining means shall be capable of withstanding a concentrated horizontal force of 200 lbs applied at the point of least resistance without permanent deformation. A body belt and lanyard is to have an attachment point provided for freedom of movement, and its length is limited to a free-fall of 5’ measured from the point of attachment to the operator. The complete system shall be capable of withstanding three consecutive drop test to simulate a 250 lbs person free falling 6’ without allowing the test weight to fall free to the ground. A deceleration device may be included.
13. Lanyards shall be arranged so as not to cause a tripping hazard.
14. Body belts should have a width of at least 1.75”.
15. Structural safety factor - all load supporting structural elements of the work platform shall have a structural safety factor of not less than 2 to 1 based on the minimum yield strength of the material used.

Capacity Limitations:

The combined weight in pounds of the platform, load, and personnel shall not exceed 33% of the capacity of the related load center position indicated on the machine load chart. See specific load chart when using a personnel platform.

Preparation and Set-Up:

1. DO NOT alter or modify the work platform in any manner that is detrimental to its safe use.
2. Make sure that the work platform is securely attached to the quick attach or forks. Follow the platform manufacturer's instructions.
3. Make sure the platform, carriage, and forks are secured to prevent them from pivoting from side to side.
4. On side tilt or swing carriage, the carriage must be centered and/or leveled horizontally and vertically. The hydraulic system quick disconnects must also be disconnected and the carriage securely fastened to prevent any tilting or side to side swinging motion.
5. Ensure the vehicle has a firm footing and is level.
6. Be sure the vehicle is in a level position (side to side) before any operation is begun. Use the frame sway to level the vehicle. If the vehicle cannot be leveled, reposition the vehicle.
7. Place the travel select lever in the NEUTRAL position.
8. Engage the parking brake switch. Blocking the wheels is also recommended.
9. Level the platform in both the side-to-side and front-to-back directions before use.
10. Before lifting or lowering personnel, be sure the vehicle lifting mechanism operates smoothly through the entire lifting and lowering of the platform and maintains its self leveling function. The vehicle must operate smoothly both empty and loaded.
11. Lift and lower personnel smoothly, with caution, and only at their request.
12. Keep hands and feet clear of controls other than those in use.
13. Be certain that the path of platform travel is clear of hazards, e.g., storage racks, scaffolds, overhead obstructions, and electrical wires.
14. A trained operator shall be in position to control the rough terrain forklift truck. When the operator is not in the operating position, block the truck wheels and apply the parking brake with all controls in neutral.
15. Alert elevated personnel before moving the platform. Then move the platform smoothly and with caution.
16. Always lower the platform if you must move the rough terrain forklift truck for adjustment in positioning.
17. Be certain that personnel and equipment on the platform do not exceed the available space.
18. Any body belt, lanyard, or deceleration devices which has sustained permanent deformation or is otherwise damaged shall be replaced.
19. Use of railings, planks, ladder, etc. on the platform for purpose of achieving additional reach or height is prohibited.
20. Before elevating personnel, the area around and under the work platform should be marked to warn anyone on the ground that overhead work is being done.
21. The platform shall be lowered to ground level for personnel to enter and exit. Personnel shall not climb on any part of the rough terrain forklift in attempting to enter and exit.
22. Protection must be provided for the personnel on the work platform from pinch points or moving parts while in their normal working position on the platform.
23. Provide overhead protection device as required by work site conditions or if requested by the user of the platform.

---

### Frame Leveling

#### Warning

Use of the frame sway control with the boom raised above horizontal could cause tip over, which could result in death or serious injury. Always use the frame sway control to level the forklift BEFORE raising the boom above horizontal. If the forklift cannot be leveled using the frame sway control, do not attempt to raise or place load. Reposition forklift or have surface leveled.

The frame sway control handle has variable motions from the center that control frame sway (right and left).

#### Frame Sway Control Handle

<table>
<thead>
<tr>
<th>Function</th>
<th>Handle Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRAME SWAY RIGHT</td>
<td>Move Control Handle RIGHT</td>
</tr>
<tr>
<td>FRAME SWAY LEFT</td>
<td>Move Control Handle LEFT</td>
</tr>
</tbody>
</table>

---

**Fig 83. Frame Sway Control Handle**

The frame sway control handle controls the frame sway (right and left) functions.

To lock the frame sway, place the travel select lever in NEUTRAL or apply the service or parking brake.

**NOTE:** Maximum frame sway is 16° overall or 8° each direction, right and left.

A frame level indicator is mounted on the inside upper right corner of the operator’s cab. The frame level indicator allows the operator to view if the forklift has been positioned in a level condition. Always frame sway the forklift right or left until the indicator shows 0° (level).
Using Load Capacity Charts

The reach forklift includes two (2) indicators to assist the operator for accurately using the load capacity charts. These indicators are the Boom Extend Letters and the Boom Angle Indicator.

Boom extend letters are located on the left side of the boom and visible to the operator as the boom is extended. These letters indicate boom extension as it corresponds to the load capacity charts.

Warning

DO NOT exceed rated capacity. Any attempt to lift or carry loads in excess of those shown on the load capacity charts could cause forklift tip over, loss of load, or structural damage which could result in death, serious injury, or property damage.

All load ratings shown on load capacity charts are based on the forklift being on firm, level ground, the forks being evenly positioned on the carriage, the load being centered on the forks, properly sized tires properly inflated and/or foam filled, and the forklift being in good operating condition.

Load capacity charts, located on the left side of the dash panel, are provided to assist the operator in determining how to safely operate the boom to pick up, carry, and set down a load with the reach forklift, including what angle, how high, and how far to extend the boom.
NOTE: For example, when letter “A” first appears, the boom extension corresponds to the arc of line “A” throughout all the load capacity charts.

The boom angle indicator is located on the left side of the boom and is visible from the operator’s seat. Use the boom angle indicator to determine the boom angle when referring to load capacity charts.

NOTE: The boom angle indicator is a plumb arrow with angular graduations from -5 to +57°.

For example:

1. The operator determines load weight and makes sure load does not exceed fork, attachment, or boom capacity.

The load is 10,000 pounds (4,536 kg).

2. The operator safely moves the load to a loading position.
   - Places forks under load
   - Tilts and raises load safely
   - Fully retracts boom
   - Drives forklift to position perpendicular to structure
   - Levels the forklift

3. The operator determines height of structure where load is to be placed.
   - The structure height is 25 feet (7.6 meters) from ground level.

4. The operator determines distance from front tires where load will be placed.
   - The distance in front of forklift where load will be placed is 27 feet (8.2 meters).

5. Operator reads load capacity chart for attachment carriage, OUTRIGGERS DOWN, to learn it will be safe to place the load at any boom angle with the boom extend letter “E” showing.

Reading Load Capacity Charts

To accurately read the load capacity charts, you must determine three (3) things:

- Weight of the load being lifted
- Height of structure where load is to be placed
- Distance from front tires where load will be placed

For example:

1. The operator determines load weight and makes sure load does not exceed fork, attachment, or boom capacity.

The load is 10,000 pounds (4,536 kg).

2. The operator safely moves the load to a loading position.
   - Places forks under load
   - Tilts and raises load safely
   - Fully retracts boom
   - Drives forklift to position perpendicular to structure
   - Levels the forklift

3. The operator determines height of structure where load is to be placed.
   - The structure height is 25 feet (7.6 meters) from ground level.

4. The operator determines distance from front tires where load will be placed.
   - The distance in front of forklift where load will be placed is 27 feet (8.2 meters).

5. Operator reads load capacity chart for attachment carriage, OUTRIGGERS DOWN, to learn it will be safe to place the load at any boom angle with the boom extend letter “E” showing.

For example:
Preventive Maintenance

Establishing a Maintenance Program

The hourmeter displays elapsed engine operating hours. Use the hour meter and the schedules contained in this section to establish a comprehensive preventive maintenance program.

Fig 90. Hourmeter

Maintenance Schedule

Every Day or 8 Hours of Operation

See Pre-Operation Inspection Checklist

After First 50 Hours of Operation

- Change engine oil and filters
- Check air filter (replace if necessary)
- Replace fuel filter and prefilter
- Check engine hoses and connections for leaks, damage, and tightness
- Check radiator hoses for leaks, damage, and tightness
- Check electrical cables, leads, and connections for damage and tightness
- Check for oil and coolant leaks
- Check condition and tension of drive belts (use tension meter to check belt tension)
- Lubricate front and rear driveshaft grease fittings

After Every 50 Hours of Operation

- Lubricate boom pivot point grease fittings
- Lubricate front and rear axle cylinder pivot point grease fittings
- Change differential oil
- Change wheel-end oil
- Check wheel lug nuts torqued to 380-420 ft lbs
- Lubricate boom pivot point grease fittings
- Lubricate boom roller grease fittings
- Replace hydraulic return line filters
- Replace transmission filter and top off fluid, as required

After Every 250 Hours of Operation

- Comply with 50-Hour Maintenance Requirements
- Change engine oil and filter
- Check air filter (replace if necessary)
- Check tension and condition of drive belts (use tension meter to check belt tension)
- Lubricate front and rear drive shaft grease fittings
- Lubricate front and rear axle grease fittings
- Check differential oil level
- Check wheel-end oil level
- Inspect boom rollers and slide blocks for condition and tightness
- Lubricate boom roller grease fittings
**Preventive Maintenance**

**After Every 500 Hours of Operation**
- Comply with 50-Hour Maintenance Requirements
- Comply with 250-Hour Maintenance Requirements
- Replace air filter
- Replace fuel filters
- Check engine hoses and connections for leaks, damage, and tightness
- Check radiator hoses for leaks, damage, and tightness
- Check electrical cables, leads, and connections for damage and tightness
- Check specific gravity of engine coolant
- Replace transmission fluid and filters
- Replace hydraulic reservoir air breather
- Replace hydraulic return line filters
- Replace hydraulic high-pressure filters

**After Every 2,000 Hours of Operation**
- Comply with 50-Hour Maintenance Requirements
- Comply with 250-Hour Maintenance Requirements
- Comply with 500-Hour Maintenance Requirements
- Comply with 1000-Hour Maintenance Requirements
- Change hydraulic fluid
- Clean or replace hydraulic reservoir strainer

**After Every 4,000 Hours of Operation**
- Drain and flush cooling system

**After Every 1,000 Hours of Operation**
- Comply with 50-Hour Maintenance Requirements
- Comply with 250-Hour Maintenance Requirements
- Comply with 500-Hour Maintenance Requirements
- Change wheel-end oil
- Change differential oil
- Inspect boom chains
In the event of total loss of engine power or hydraulic pump failure with an elevated load, the situation must be properly evaluated and dealt with on an individual basis.

**Contact a local Xtreme Authorized Distributor for specific instructions.**

Secure the Telehandler and area by following the procedure below until the situation has been properly evaluated.

1. Clear the area around the Telehandler of all personnel.
2. Engage the parking brake switch to the ON position and Place the lift lever in NEUTRAL.
3. Block all four wheels.
4. Section off a large area under the boom with tape to restrict any personnel from entering this potentially dangerous area.
Do Not Operate - Accident Prevention Tags

Before beginning any maintenance or service, place a Do Not Operate Tag on both the starter key switch and the steering wheel, stating that the vehicle should not be operated. Do Not Operate Tags, which can be cut out and used, are included at the end of this manual. Retain these Tags for use at a later date.

New or Additional Operators

At the time of original purchase, the purchaser of this vehicle was instructed by the seller on its proper use. If this vehicle is to be used by an employee or is loaned or rented to someone other than the purchaser, make certain that the new operator is trained, in accordance with OSHA regulations, and reads and understands this Operation & Safety Manual before operating the vehicle.

In addition, make sure that the new operator has completed a walk-around inspection of the vehicle, is familiar with all the labels on the vehicle, and has demonstrated the correct use of all controls.

Lockout/Tagout Procedure

Perform the following procedure to lockout and tag out the forklift. This procedure, requiring a lock, and danger tags are to be used whenever the forklift is unsafe for operation or maintenance.

Caution

Wait at least two (2) minutes after shutting engine off before setting the battery disconnect switch to OFF. Equipment damage may occur if the engine ECM and DEF systems are not allowed to shutdown properly.

Removing Forklift From Service

1. Attach “DO NOT OPERATE” tags to steering wheel and ignition key.
2. Pull back on both battery cover T-handles until they release from their holders.
3. Lower battery cover.
4. Set battery disconnect switch to OFF.
5. Lock battery disconnect switch.
6. Attach “DO NOT OPERATE” tag to battery disconnect switch.

Returning Forklift To Service

When the forklift has been repaired and made safe for operation and maintenance, perform the following procedure to return forklift to service.

1. Remove lock and Attach “DO NOT OPERATE” tag from battery disconnect switch.
2. Raise and secure battery cover.
3. Remove “DO NOT OPERATE” tags from steering wheel and ignition key.

Warning

If forklift is unsafe for operation or maintenance, the defect or defects must be clearly documented and posted in a conspicuous place on the forklift. Failure to comply could result in death, serious injury, or property damage.
Preventive Maintenance

Do Not Operate Tags

![Danger Tags](image)
Xtreme Manufacturing Product Warranty Policy

1) Xtreme Manufacturing warrants, its authorized sales and service centers (herein referred to as “SSC”), new product(s) the mainframe and chassis weldments shall be free from defect in material and workmanship for the period of 10 years or 10,000 hours whichever comes first. The boom weldment and boom rollers shall be free from defects in material and workmanship for the period of 5 years or 5,000 hours whichever comes first. The powertrain assemblies consisting of engine, transmission and drive axles and all other components not listed above shall be free from defects in material and workmanship for the period of 2 year or 2,000 hours after date of delivery. This warranty is made to the original owner of the new product(s) and is transferable for the duration of the coverage period, to the subsequent owner with prior written approval from Xtreme Manufacturing (see limitations).

2) Machines may be held in an authorized Distributor/SSC’s stock for a maximum period of six (6) months from the date of shipment from Xtreme, before the warranty period is automatically initiated on each machine.

3) It is the responsibility of the Distributor/SSC to complete and return to Xtreme Manufacturing a Pre-delivery Inspection Record, Warranty Registration Form, before the act of rental/loan/demonstration of the machine or delivery to an end user. In the case of direct sale to end customers the same responsibility lies with the end customer.

4) Any end customer, SSC, distributor or dealer shall not be entitled to the benefits of this warranty and Xtreme Manufacturing shall have no obligations hereunder unless the “Pre-Delivery and Inspection Record” has been properly completed and returned to the Xtreme Manufacturing Warranty department within fifteen (15) days after delivery of the Xtreme Manufacturing product to the Customer or Dealer’s demonstration/rental fleet. Xtreme Manufacturing must be notified, in writing, within ten (10) days, of any machine sold to a Customer from a Dealer/SSC’s rental fleet during the warranty period.

5) Any part or parts which upon examination by the Xtreme Product Support Department are found to be defective within the specified warranty period, will be replaced or repaired at the sole discretion of Xtreme Manufacturing through its local Authorized Distributor/SSC, at no charge. Any parts replaced under warranty must be original Xtreme parts obtained through an authorized Xtreme Manufacturing Distributor/SSC unless expressly agreed otherwise in writing and in advance by Xtreme Manufacturing’s warranty department.

Xtreme Warranty Statement

Effective: 1/1/2017
Xtreme Manufacturing Product Warranty Policy

6) All parts claimed under warranty must be held available for return and inspection upon request for a period of 90 days from date of claim submission, it is necessary that all parts are individually tagged or marked with their part number and the warranty claim number. All parts returning should be still in a factory state, free of any alteration to the original design. If the parts are subject to repair it will need to be pre-authorized by the Xtreme Product Support Group and or Warranty Department prior to the repair being completed. After 90 days all parts replaced under warranty which have not been returned, to Xtreme Manufacturing should be destroyed. Failure to produce parts requested by the Warranty Administrator for inspection within a period of 14 days will result in the claim being automatically rejected in full. Materials returned for warranty inspection must have the following procedure:

- Carefully packaged to prevent additional damaged during shipping
- Drained of all contents and all open ports capped or plugged
- Shipped in a container tagged or marked with the RMA number
- Shipped PREPAID (ground service only). Any item(s) returned for warranty by any other means may be refused and returned, unless prior approval is agreed with Xtreme.

7) At the direction of the Xtreme Manufacturing Warranty department, any component part(s) of Xtreme Manufacturing products to be replaced or repaired under this warranty program must be returned freight prepaid for inspection. An RMA (Returns material authorization) must be requested from Xtreme Manufacturing Warranty department, a copy to be placed with the returning component part(s).

8) All warranty replacement parts will be shipped freight prepaid (standard charges, ground shipping only) from the Xtreme Manufacturing Parts Department or the Vendor to Dealer/SSC or Customer. Any other shipping method is the customer responsibility.

9) All warranty claims are subject to approval by Xtreme Manufacturing Service department. Xtreme Manufacturing reserves the right to limit or adjust claims with regard to defective parts, labor or travel time based on usual and customary guidelines.

10) Reimbursement policy, labor will be paid at 75% of posted hourly shop rate. Travel time will be paid at $50 per hour up to a maximum of 3 hours. Xtreme Manufacturing will pay 1 hour of troubleshooting time per warranty claim, unless expressly agreed otherwise in writing and in advance by Xtreme’s Warranty Department. An annual rate declaration must be supplied to the Xtreme Warranty administrator by January 31st and will be used as the reimbursable rate for that calendar year.
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REPLACEMENT PARTS WARRANTY

1. Any part replaced under this limited warranty is not subject to further warranty cover beyond the normal warranty period of the machine upon which the part was installed.
2. Any replacement parts sold (not delivered under a warranty claim) will be subject to a warranty period of (6) six months from the date of invoice.
3. Parts held by an authorized Distributor/SSCare covered under warranty for a period of (12) twelve months from the date of invoice, provided that those parts have been subject to appropriate storage to prevent damage and deterioration (conditional on Xtreme Manufacturing review).

CLAIM PROCEDURE

The Xtreme Manufacturing Warranty department must be notified within forty-eight hours (48) of any possible warranty situation during the applicable warranty period. Personnel performing major warranty repair or parts replacement must obtain specific approval by the Xtreme Manufacturing Warranty department prior to performing the warranty repair or replacement.

When a Distributor/SSC / Customer perceive a warranty issue to exist the following steps must be adhered to:

• Customer/SSC / Distributor to place a purchase order for genuine Xtreme Manufacturing replacement parts.
• Xtreme Manufacturing to dispatch parts via the requested method (in line with the required response time).
• Confirmation that a qualified technician is available to replace the part and that this person has been accepted by Xtreme Manufacturing to carry out such work under the warranty of the machine. Failure to do this may nullify the warranty.
• Customer / SSC / Distributor to allocate a warranty claim number to the repair.
• All correspondence in respect of the claim to be on an official Xtreme Manufacturing warranty claim form as supplied by Xtreme Manufacturing’s warranty department.
• All warranty claims must be submitted within 30 days of the date of the machine repair.

FREIGHT DAMAGE

• If a machine is received in a damaged condition, then the damage must be noted on the bill of lading and/or delivery documents and photographs must be taken at the point of delivery, prior to signing acceptance of the consignment.
• The freight company and Xtreme Manufacturing must be contacted by the Distributor and a damage claim registered by either party immediately.
Xtreme Manufacturing Product Warranty Policy

• The above requirements apply only to freight damage associated with equipment supplied by Xtreme Manufacturing transport. Customer freight issues are excluded from this warranty policy.

THIS PRODUCT WARRANTY POLICY SPECIFICALLY EXCLUDES:

1. Engines, motors, tires and batteries are manufactured by specialist suppliers to Xtreme Manufacturing, who furnish their own warranty policies. Xtreme Manufacturing will, however, to the extent permitted pass through any such warranty protection to the Distributor/SSC/ Customer.

2. Xtreme Manufacturing products which has been modified or altered outside Xtreme Manufacturing factories without written approval, if such modification or alteration, in the sole judgment of Xtreme Manufacturing Engineering and/or Service Departments, adversely affects the stability, reliability or service life of the Xtreme Manufacturing product or any component thereof.

3. Any Xtreme Manufacturing product which has been subject to misuse and abuse, improper maintenance or accident. “Misuse” includes but is not limited to operation beyond the factory-rated load capacity and speeds. “Improper maintenance” includes but is not limited to failure to follow the recommendations contained in the Xtreme Manufacturing Operation, Maintenance, and repair Parts Manuals.

4. Normal wear of any Xtreme Manufacturing component part(s). Normal wear of component parts may vary with the type, application or type of environment in which the machine may be used; such as, but not limited to sandblasting applications.

5. Routine maintenance, routine maintenance items and minor adjustments are not covered by this warranty, including but not limited to hydraulic fluid, filters and lubrication, paint and decals engine tune-up, brake adjustments etc. Xtreme Manufacturing will not cover leaks from fittings, hoses and any other connection points after the unit has been in service for 90 days or 150 hours of operation which ever comes first.

6. Any Xtreme Manufacturing product that has come into direct contact with any chemical or abrasive material.

7. Incidental or consequential expenses, losses, or damages related to any part or equipment failure, including but not limited to freight cost to transport the machine to a repair facility, downtime of the machine, lost time for workers, lost orders, lost rental revenue, lost profits, expenses or increased cost. This warranty is expressly in lieu of all other warranties, representations or liabilities of Xtreme Manufacturing, either expressed or implied, unless otherwise amended in writing by Xtreme Manufacturing.

8. Xtreme Manufacturing warranty policy does not cover any duties, taxes, environmental fees including without limitation, disposal or handling of tires, batteries and petrochemical items.

9. Items specifically excluded are: fuel injectors, motor brushes, glow plugs, contactor tips and springs, filters, lamp bulbs, lamp lenses, coolants, lubricants, brake pads and cleaning materials.

10. Failure of replacement parts due to fault misdiagnosis or incorrect fitting by the
Xtreme Manufacturing Product Warranty Policy

Distributor/SSC/ Customer.

XTREME MANUFACTURING MAKES NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THIS LIMITED WARRANTY. XTREME MANUFACTURING MAKES NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND DISCLAIMS ALL LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO INJURY TO PERSONS OR PROPERTY.

Wherever possible the end customer shall obtain all warranty support & make all warranty claims through the local Xtreme Manufacturing authorized Distributor/SSC/ Dealer. Warranty support should be from the Distributor/SSC/ Dealer from whom the Xtreme Manufacturing product was purchased. Where Xtreme Manufacturing equipment is supplied directly from the factory, the end customer, if unable to contact a Distributor/SSC/ Dealer, may contact the Xtreme Manufacturing Warranty Department for further assistance.

APEAL
The buyer may appeal in writing against a rejected or adjusted claim to Xtreme Manufacturing warranty department within a period of 21 days of receiving the rejection or adjustment notice. The appeal should be grounded on express reasons and supported by relevant evidence. Appeals received outside of this time limit will not be considered.
# Xtreme Manufacturing Product Warranty Policy

## XTREME MANUFACTURING WARRANTY SCHEDULE

### Limited Warranty Periods

<table>
<thead>
<tr>
<th>Item</th>
<th>Warranty Period</th>
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</thead>
<tbody>
<tr>
<td>Main Frame and Chassis</td>
<td>10 years or 10,000 hours, parts replacement or repair</td>
</tr>
<tr>
<td>Boom weldment and rollers</td>
<td>5 years or 5,000 hours, parts replacement or repair</td>
</tr>
<tr>
<td>Powertrain and all other components not listed above</td>
<td>2 years or 2,000 hours, parts replacement or repair</td>
</tr>
<tr>
<td>Parts held in a Distributor’s stock</td>
<td>12 months from date of invoice, subject to adequate storage / protection.</td>
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<tr>
<td>Parts sold (non warranty)</td>
<td>6 months from date of invoice</td>
</tr>
<tr>
<td>Batteries supplied on new machines</td>
<td>6 months from warranty registration date</td>
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<tr>
<td>Other specifically excluded parts:</td>
<td>Not covered by Warranty</td>
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<tr>
<td>Fuel injectors</td>
<td></td>
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<tr>
<td>Brake pads</td>
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<td>Glow plugs</td>
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<td>Springs</td>
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<td>Oils</td>
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<td>Filters</td>
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<td>Lamp bulbs</td>
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<td>Lamp lenses</td>
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<tr>
<td>Coolants</td>
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<tr>
<td>Lubricants</td>
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<tr>
<td>Cleaning materials</td>
<td></td>
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<tr>
<td>All consumable / wear parts.</td>
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</tbody>
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Xtreme Warranty Statement

Effective: 1/1/2017
Pre-delivery Inspection Report must be completed upon placing unit in service. Please use QR link or visit www.xmfg.com/warranty/pre-delivery-inspection-report to register online.