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 (http://www.xmfg.com/) is headquartered in Las Vegas, Nevada, and has fabrication facilities in Selma, California. In October 2013, Xtreme Manufacturing became the majority shareholder in Snorkel International Holdings LLC, a global aerial work platform manufacturer, which has manufacturing facilities in the US, UK & New Zealand, as well as a global sales distribution network. Snorkel Europe Limited, Snorkel USA LLC and Snorkel New Zealand Limited are wholly owned by Snorkel International Holdings LLC, whose members are Xtreme Manufacturing, LLC (majority shareholder) and The Tanfield Group Plc. Find out more about Snorkel at www.snorkellifts.com.
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This Operation and Safety Manual provides the information needed to safely operate the SR630 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.

**Notice**

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.

**Warning**

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**

Replacement manuals for the SR630 Reach Forklift can be obtained by contacting our parts department by phone or visiting our website:

Snorkel
Phone: (800) 497-1704
www.snorkellifts.com

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: ____________________________

**Model / Serial Plate**

**Orientation**

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

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**Fig 1. Serial Number Plate**

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**Fig 2. Forklift Direction Orientation**
Snorkel 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. Snorkel 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 Snorkel 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 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 (Red) used with the safety alert symbol indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
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DO NOT Allow Riders On Forklift Frame Or Fenders

Falling Off Of Attachment Can Result In Death Or Serious Injury

Warning! Forklift Roll Away Can Cause Death Or Serious Injury

Warning! DO NOT Travel With Boom Raised

Warning! Electrocution Can Cause Death Or Serious Injury

DO NOT Allow Anyone Under A Raised Load

Warning! Explosion Hazard

DO NOT Use Ether As A Starting Aid

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

Fasten Seat Belt

Set Parking Brake To ON Engage Parking Brake

Set Parking Brake To OFF Disengage Parking Brake

DO NOT Allow Riders On Or In The Operator Cab

DO NOT Jump! If Forklift Tips, Keep Seat Belt ON And Brace Yourself

Tip Over Hazard, Especially Traveling Up A Slope Without A Load

DO NOT Travel With Boom Raised

DO NOT Raise Boom While Traveling On A Slope

DO NOT Jump!

Warning! Forklift Tip Over Can Cause Death Or Serious Injury

Warning! DO NOT Travel With Boom Raised

Warning!

Forklift Roll Away Can Cause Death Or Serious Injury

Warning!

Electrocution Can Cause Death Or Serious Injury

DO NOT Allow Anyone Under A Raised Load

Warning! Explosion Hazard

DO NOT Use Ether As A Starting Aid

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

Warning!

Electrocution Can Cause Death Or Serious Injury

DO NOT Travel With Boom Raised

DO NOT Raise Boom While Traveling On A Slope

DO NOT Jump!

Warning! Forklift Tip Over Can Cause Death Or Serious Injury

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Electrocution Can Cause Death Or Serious Injury

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Warning!

Electrocution Can Cause Death Or Serious Injury

DO NOT Allow Anyone Under A Raised Load

Warning! Explosion Hazard

DO NOT Use Ether As A Starting Aid

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

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.

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 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 hot line to mark all underground hazards.
- Learn the location of all underground hazards at the work site, such as:
  1. Gas and water pipes
  2. Electrical cables
  3. Sewers

Underground objects could cause death or serious injury.
**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 Snorkel Manufacturing for replacement manuals.

Clearly 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.

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**

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.
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

DO NOT use the forklift as a work platform or personnel carrier. Falling of attachments could result in death or serious injury.

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 designed 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 select terrain.
- Use caution around steep slopes, creeks, gullies, ridges, ditches, and ravines.
- Stay away from select edges that could collapse under the forklift.

**Warning**

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.

Follow appropriate procedures to prevent sudden changes in forklift speed that could result in death or serious injury.

- Slow the forklift to the appropriate speed 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.

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 display 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 5,500 pounds (2,494 kilograms). 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.

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

⚠️ Warning

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. The maximum pressure of each auxiliary circuit can be set on the proportional valve from 725 psi to the maximum system pressure of 3,500 psi (the factory setting is 3,200 psi). Exceeding the pressure rating of the attachment by failing to adjust the auxiliary pressure setting, or provide external pressure control, could result in death or serious injury.
- Make sure all hydraulic connections are tight (if equipped).

Shut Down Procedure

⚠️ Warning

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

⚠️ Warning

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

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.
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.

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.

**Warning**

**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.

**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 front of the vehicle AND LOCATE THE FRONT AXLE. Loosen and remove the two (2) screws (A) on each end of the front side of the axle, AND the two (2) screws (B) on each end of the back of the axle, as shown in Fig 3. There will be a total of four (4) screws.
4. Remove the spacers from each of the four (4) screws.
5. Re-install the two (2) screws (without spacers), front and rear, on each end of the front axle assembly. There will be a total of four (4) screws. Alternately tighten the screws 45° at a time (per side). You do not need to completely tighten the screws once re-installed. Just tighten them enough to release the parking brake, then stop.

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. Position the towing vehicle in place. Attach any chain needed to secure the disabled vehicle.
3. Crawl under the front of the vehicle. Loosen and remove the two (2) screws (A) on each end of the front side of the axle (Fig 3), AND the two (2) screws (B) on each end of the back of the axle (Fig. 4). There will be a total of four (4) screws.
4. Re-install the spacers onto each of the four (4) screws.
5. Re-install the four (4) screws (with spacers), front (A) and rear (B), on each end of the front axle assembly. There will be a total of four (4) screws. Alternately tighten the screws 45° at a time (per side). Once re-installed, you need to completely tighten these four screws to the recommended torque.
6. The parking brake is now been re-activated.

Fig 3. Parking Brake Screw Location At The Front Of The Front Axle

Fig 4. Parking Brake Screw Location At The Back Of The Front Axle
XR5519

Labels

Left Side View

Fig 5. Label Legend (Left Side)

Right Side View

Fig 6. Label Legend (Right Side)
Labels

Rear Right Quarter View

Fig 7. Label Legend (Rear Left)

Rear Left Quarter View

Front View

Fig 8. Label Legend (Front)

Cab View

Fig 9. Label Legend (Cab)
## XR5519 Labels

Table 1. Labels

<table>
<thead>
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<th>Description</th>
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<td>10010690</td>
<td>LOAD CHART</td>
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<td>LABEL, CAUTION SLIP/TRIP</td>
</tr>
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<td>4</td>
<td>1</td>
<td>18011-001</td>
<td>LABEL, ENGINE DAMAGE</td>
</tr>
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<td>5</td>
<td>1</td>
<td>18013-002</td>
<td>LABEL, DIESEL ONLY LOW SULFUR</td>
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<td>6</td>
<td>1</td>
<td>18014-002</td>
<td>LABEL, CHECK ENGINE OIL CJ-4</td>
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<td>7</td>
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<td>1</td>
<td>18016-100</td>
<td>LABEL, CAUTION BURN</td>
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<td>18017-001</td>
<td>LABEL, DANGER CRUSHING</td>
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<td>LABEL, DANGER ELECTROCUTION</td>
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<td>LABEL, WARNING TIP-OVER</td>
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<td>LABEL, WARNING UNRESTRAINED</td>
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<td>LABEL, DANGER ROTATING EQUIPMENT</td>
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<td>LABEL, WARNING CHECKLIST</td>
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<td>LABEL, WARNING IMPROPER USE</td>
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<td>30</td>
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<td>BOOM SWOOSH LEFT FRONT</td>
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<td>BOOM SWOOSH LEFT REAR</td>
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<td>BOOM SWOOSH RIGHT FRONT</td>
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<td>BOOM SWOOSH RIGHT REAR</td>
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<td>LABEL, RIGGING BOOM RHS</td>
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<td>38</td>
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<td>LABEL, TIE DOWN POINT*</td>
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<td>41</td>
<td>1</td>
<td>18402-000</td>
<td>BOOM LETTERING ZONES A-F</td>
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<td>42</td>
<td>1</td>
<td>18408-001</td>
<td>LABEL, CONTROL JOYSTICK 10010708</td>
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<td>43</td>
<td>1</td>
<td>18412-000</td>
<td>LABEL, DISCONNECT DELAY</td>
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</tbody>
</table>
Replacement labels can be obtained by contacting Snorkel Manufacturing at (800) 497-1704. Please have the appropriate label number available when you call.

1) 18008-000

3) 18010-100

5) 18013-002

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.

DIESEL
ONLY
Ultra Low Sulphur
Fuel Only
Maximum Sulphur
Content: 15ppm

CHECK
ENGINE OIL
Minimum Oil Specification:
API CJ-4 or higher

4) 18011-001

6) 18014-002
7) 18015-001
8) 18016-100
9) 18017-001
10) 18018-100
11) 18018-002
12) 18019-100
13) 18020-100

14) 18021-100

15) 18022-001

16) 18023-001

17) 18025-100

18) 18026-100
19) 18027-001

20) 18031-001

21) 18032-001

22) 18041-100

23) 18082-100

24) 18083-100
HYDRAULIC FLUID
USE DEXRON III

25) 18086-100

WARNING
TIP OVER HAZARD
DEATH or SERIOUS INJURY could result from tip over.
DO NOT OPERATE this vehicle without foam filled tires.

26) 18086-101

27) 18090-100

28) 18043-000

29) 18044-000

30) 18046-000

31) 18047-000

32) 18048-000
XR5519

33) 18049-000

34) 18400-003

12,000 LBS | 14,000 LBS | 17,000 LBS | 22,000 LBS | 32,000 LBS

32,000 LBS | 22,000 LBS | 17,000 LBS | 14,000 LBS | 12,000 LBS

36) 18233-000

35) 18232-000

37) 18300-001

38) 18312-000

39) 18314-000

40) 18315-000

WARNING

FALLING HAZARD
DEATH or SERIOUS INJURY could result from falling from improper work platform.
- Only use a personnel work platform to lift personnel if there are no other practical options.
- Use only platforms that meet ANSI/ASME B56.6 requirements.
- Only use a platform in accordance with ANSI/ASME B56.6.

WARNING

FALLING HAZARD
DEATH or SERIOUS INJURY could result from falling.
DO NOT STAND OR RIDE on forks or attachments not approved for personnel.
41) 18402-000

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 control systems are not allowed to shutdown properly.

42) 18408-001

43) 18412-000R01
### XR5519 Features

<table>
<thead>
<tr>
<th>Standard Equipment</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Boom**           | Two (2) section boom  
|                    | Boom equipped with slide pads  
| **Chassis**        | Sealed pivot pins for extended service periods  
|                    | Side mounted engine  
| **Cab**            | Lights  
|                    | 12 Volt electrical system  
|                    | Electronic Touch-Screen Display  
|                    | Easy access drop down electrical panel  
|                    | 12 Volt accessory power outlet  
|                    | Electric horn and backup alarm  
|                    | Rear view mirror  
|                    | Adjustable seat with seat belt  
|                    | Boom angle indicator  
| **Tires**          | Air-filled  
| **Hydraulics**     | Auxiliary hydraulic circuit with quick attach  
|                    | Multifunction boom control handle  

<table>
<thead>
<tr>
<th>Optional Equipment</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Options**        | Enclosed cab with heat  
|                    | Enclosed cab with heat & A/C  
|                    | Heater/defroster/windshield wiper  
|                    | Work light package  

## Specifications

### Performance

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Capacity</td>
<td>5,500 lbs</td>
</tr>
<tr>
<td>Lift Height</td>
<td>30’</td>
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<tr>
<td>Forward Reach</td>
<td>11’</td>
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<tr>
<td>Frame Leveling L/R</td>
<td>6°/6°</td>
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<tr>
<td>Operating Weight</td>
<td>13,660 lbs</td>
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### Power Train

<table>
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<tr>
<th>Feature</th>
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<tr>
<td>Engine</td>
<td>Deutz 74 hp</td>
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<td>Fuel Capacity</td>
<td>26 gal</td>
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<td>Transmission</td>
<td>Hydrostatic</td>
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<td>Brakes</td>
<td>Inboard Wet Disc</td>
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<tr>
<td>Parking Brake</td>
<td>SAHR</td>
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### Tires

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<td>Tires (Standard Eq)</td>
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### Hydraulics

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<tr>
<td>PSI</td>
<td>3,200</td>
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<tr>
<td>Hydraulic Oil Capacity</td>
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### Dimensions

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<tr>
<td>Length to fork face</td>
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</tr>
<tr>
<td>Width</td>
<td>78”</td>
</tr>
<tr>
<td>Height</td>
<td>84”</td>
</tr>
<tr>
<td>Wheel Base</td>
<td>106”</td>
</tr>
<tr>
<td>Ground Clearance</td>
<td>13.25”</td>
</tr>
<tr>
<td>Turning Radius</td>
<td>11’</td>
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### Standard Equipment

- Heavy-duty Frame/Chassis
- Frame Sway
- Heavy-duty Boom
- Robust Wiring
- Full-time Planetary 4-Wheel Drive
- Steering - 4-Wheel Circle, Crab, 2-Wheel Front
- Back-Up Alarm
- Open ROPS/FOPS
- Xtreme Service Accessibility

### Attachments

- Standard Carriage - 48”
- Standard Forks - 4” x 1.75” x 48”

### Accessories and Options

- Enclosed Cab
- A/C
- Strobe Light on Cab
- Boom Work Lights
**Warning**

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 horn and 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**

A 12 Volt accessory outlet is provided as a power source for personal items, such as a radio or cell phone (10 amps max).

---

**Accelerator Pedal**

Press the accelerator pedal to increase engine speed. The accelerator pedal is spring-loaded to return to idle speed.

---

---
Operator Cab

### Service Brake Pedal
Press the service brake pedal to slow or stop the forklift. The service brake pedal activates the service brakes on the front (2) wheels.

![Service Brake Pedal](image1)

### Horn Button
Press the horn button to sound the horn.

![Horn Button](image2)

### Steering Wheel
Turn the steering wheel left or right to steer the forklift in the corresponding direction.

![Steering Wheel](image3)

### Operator Seat
The operator seat can be adjusted two (2) ways: fore and aft, and backrest angle.

![Operator Seat](image4)

### Operator Seat Controls

---

**Fig 13. Service Brake Pedal**

**Fig 14. Steering Wheel**

**Fig 15. Horn Button**

**Fig 16. Operator Seat**
Pull the backrest angle adjustment lever 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 17. Backrest Angle Adjustment Lever

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

Fig 18. Fore and Aft Adjustment Lever

**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.

Fig 19. Retractable Seat Belt

**Warning**

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.

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.

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.

Rear View Mirrors

Two (2) adjustable rear view mirrors are provided to aid the operator’s rear vision. One rear-view mirror is mounted on the upper left of the operator’s cab (A) and the other on the right front of the chassis (B).

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>Travel Select Lever</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>

The travel select lever automatically locks when it is in the NEUTRAL position. The operator must raise and move the travel select lever when changing to the FORWARD or REVERSE position.

Parking Brake Switch

The Parking Brake switch (A) has two (2) positions: ON and OFF.

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.

Set Parking Brake switch (A) to ON (DOWN) to engage the parking brake and to OFF (UP) to disengage the parking brake. The parking brake indicator (B) illuminates when the parking brake is set to ON (engaged).
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 indicators.

**A. PARKING BRAKE**

The Parking Brake Indicator will be displayed when the parking brake is applied.

**B. STEERING SELECT INDICATOR**

Displays the steering mode selected. The reach forklift includes three STANDARD modes of steering:

- Two Wheel (2W)
- Four Wheel (4W)
- Crab Steering

**C. TRANSMISSION SHIFT INDICATOR**

The transmission has two forward (F) and two reverse (R) modes. It also can operate in High Range or Low Range mode.

When the transmission is in Neutral, the Transmission Shift Indicator highlights (N).

**D. TRANSMISSION RANGE INDICATORS**

The machine starts up with the transmission in High Range mode, and the rabbit icon is displayed at B. Select the desired mode by touching B to switch between Low Range depicted by a turtle icon, and High Range (rabbit icon).

The Low Range mode is used for climbing steep grades, or whenever slow speed is desired. The High Range mode adapts to driving conditions and allows for higher speed travel.

**E. 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.

**F. ENGINE SHUTDOWN**

The Engine Shutdown Indicator will be displayed when there is a serious engine fault and the engine should be shut down. Automatic shut down is imminent.

![Fig 23. Display Indicators](image-url)
G. ENGINE WARNING

The Engine Warning Indicator will be displayed when there is an engine fault. Refer to the Operation section on Warning Indicators and Fault Codes and the Engine Indicator Chart.

H. HIGH HYDRAULIC OIL TEMP

The hydraulic oil temperature indicator illuminates when the oil temperature is above 180°F. 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.

I. 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.

J. FUEL GAUGE

Indicates the approximate quantity of fuel available in the tank. The total capacity of the fuel tank is 17 gallons.

K. ENGINE TEMP GAUGE

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

L. OIL PRESSURE INDICATOR / WARNING

The Oil Pressure Indicator will turn yellow when the oil pressure is below normal (between 20 and 10 psi). It turns red under 10 psi. 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.

M. BOOM ANGLE INDICATOR

Use the boom angle indicator to determine the boom angle when referring to load capacity charts.

N. SPEEDOMETER

Analogously displays the machine traveling speed in miles per hour.

O. OIL PRESSURE GAUGE

Displays the engine oil pressure on an analog gauge.

P. TACHOMETER

Indicates engine RPM on an analog gauge.

Q. ENGINE LOAD

Displays the percent of rated load for the current engine RPM that is being applied to the engine.

R. 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, 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. MENU SELECTOR

Allows access to the MENU options.

T. SERVICE MENU

Enables access to the Service Menu.

U. ENGINE MAINTENANCE

Allows access to the ENGINE MAINTENANCE options. Touching this icon opens a new screen depicting the scheduled preventive maintenance mandated by the engine manufacturer.

V. DAY/NIGHT DISPLAY MODE

This option dims the screen brightness to accommodate the night forklift operation.

W. OPERATION MANUAL

Touch this icon to view the operator’s manual.

X. HOUR METER

Indicates and records engine operating hours. Use the hour meter to establish a forklift maintenance schedule.

Y. SCHEDULED MAINTENANCE INDICATOR

Illuminates when a scheduled maintenance task becomes due.
Display Features

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.

POWER UP TO THE MAIN GAUGES DISPLAY

When the ignition is turned on, the display powers up and defaults to the MAIN GAUGES screen, which contains all the necessary gauges for the normal operation of the forklift.

The display should remain in this mode for normal operation.

AVAILABLE MAIN MENU OPTIONS

- System
- Measure
- Adjust
- Preferences

SYSTEM

The SYSTEM menu is accessed from the Main Menu by touching the top selection.

MAIN MENU

Touching the MENU button will bring up the main menu. The (ʼ) button returns to the previous screen, whereas the (X) button will close the current menu.

At any time, touching the Main button (first button from the left at the bottom of the screen) will bring up the Main GAUGES Display.

AVAILABLE SYSTEM OPTIONS

Info

Touching the Info button will display some pertaining system information.

Modules

The Modules is a read-only menu which lists all the electrical components that are connected to the system and shows their active state: OK or Error when the component is malfunctioning or if there's a problem communicating with it.
Logs

Selecting the Logs option allows for accessing the recorded events. Thus, you may view the recorded or new event logs.

Touch the Display Logs to view the recorded events.

Touch the New Event Log to view the new events. Touching the button returns to the previous screen, whereas the button will close the menu.

MEASURE

Select Measure and then scroll down through this menu to view the status of various engine or machine components. This is a view only screen and does not allow any changes.

For example, selecting Joystick Functions will display the status of all joystick functions: Active (True), Inactive (False), or that function activity as a percentage.
ADJUST

Adjust is a password-protected menu that enables users to change the parameter values, such as temperature, angle of sway, etc. of different machine components.

The only parameters that can be accessed by the user at this time allow for adjusting the rotation speed of the drilling auger and are displayed in the Boom Auxiliary Group. Scroll down to this option and select it to enter it.

Select Auxiliary Valve to adjust the current supplied to the valve coil, which in turn adjusts the oil flow through the valve, thus adjusting the auger rotation speed.

The critical values that the operator should be concerned with are:
- Minimum value, which determines the point when the auger starts to rotate and
- Maximum Value, which determines the rotation speed.

NOTE: The other available selection, Auxiliary output cmd is not implemented at this time.

PREFERENCES

Preferences allows for setting user preferences. Available options:
- Display - allows for adjusting basic display parameters such as brightness, contrast, etc.
- Date/Time - allows for time and date setup.
- Language - from the drop-down list, choose one of the available languages.
**SETTINGS**

Touching the **SETTINGS** button will enter a mode where the user is able to select various suitable options. The (X) button will close the menu.

---

**AVAILABLE SETTINGS OPTIONS**

**Background:**

The background themes are displayed on a drop-down list. The selected background theme is displayed in the top right corner of the screen (High Tech background selected, below).

---

**AVAILABLE BACKGROUND THEMES**

The operator is able to choose between the following display themes: Chrome (A) and High Tech (B).

---

**General Units:**

- Imperial
- Metric
Throttle Mode:
- TSC1 OFF
- TSC1 ON

Throttle Response:
- Regular
- Feather (not implemented at this time)

**ENGINE**

The available engine status information can be viewed by touching the **ENGINE** button at the bottom of the main screen.
**MVEC FUSE SCREEN**

Select this option to view the status of the Multiplexed Vehicle Electrical Center (MVEC) fuse panel.

**MVEC RELAY SCREEN**

Allows for viewing the status of the MVEC relay panel.

**DAY/NIGHT MODE**

This touch button allows for selecting the brightness of the screen: brighter, appropriate for day operation or dimmer, for operating the machine at night.

**MACHINE OPERATION MANUAL**

This touch button allows for viewing of all the available operation and instructional documentation related to the current machine.

**ON-SCREEN LOAD CHART**

Besides the printed load chart attached to the front control console, the load chart can be viewed on-screen by selecting the "Labels" option and then navigating to the available load charts.
**Transmission Range Selector Switch**

Select the desired mode by pushing the top of this switch to engage the High Range (rabbit), or the bottom to select the Low Range (turtle).

The Low Range mode is used for climbing steep grades, or whenever slow speed is desired. The High Range mode adapts to driving conditions and allows for higher speed travel.

---

**Light Switches**

The Light Switches control the boom and cab lights. Their status can be monitored within the Steering Cluster in the Main Switch cluster screen. This screen is accessed from the Settings screen, touching the CAN Switches button.

---

**Turn Signal Switch (Optional)**

If available, the Turn Signal Switch controls the turn signals (left or right).

---

**Hazard Switch (Optional)**

The optional Hazard Light Switch flashes all four (4) turn signals.

---

If equipped with this option, the Strobe Light Switch turns on and off the strobe light mounted on top of the ROPS/FOPS cab.
Windshield Wiper / Washer Switch

This switch is available only on enclosed cab models.

Fig 58. Wiper Switch

Steering Mode Select Switch

⚠️ Warning

DO NOT change steering modes until the forklift 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 reach forklift includes three STANDARD modes of steering:

· Two Wheel (2W)
· Four Wheel (4W)
· Crab Steering

Fig 59. Steering Select Switch

Select the appropriate steering mode using the Steering Select rocker switch. The status of this switch can be viewed and/or monitored on the touchscreen, in the Steering Cluster within the Main Switch cluster screen. This screen is accessed from the Settings screen, touching the CAN Switches button.

See the SETTINGS - CAN Switches paragraph for mode details.

Multifunction Joystick Controller (Joystick)

The joystick is used to raise, lower, extend, retract the boom, tilt the carriage (or attachment), and sway the machine frame.

Fig 60. Multifunction Joystick Controller (Joystick)

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

NOTE: Increasing engine speed can increase boom lift, extend, and carriage tilt speeds.

NOTE: Two (2) boom functions can be performed at the same time by moving the joystick into the corner between (2) individual functions (Positions B, D, F or H).
### Boom Control Handle Functions

<table>
<thead>
<tr>
<th>Function</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aux Button 1</td>
<td>Control auxiliary direction 1</td>
</tr>
<tr>
<td>Aux Button 2</td>
<td>Control auxiliary direction 2</td>
</tr>
<tr>
<td>Joystick Enable</td>
<td>Depressed enables joystick functions.</td>
</tr>
<tr>
<td>Trigger</td>
<td>If not depressed, joystick is inert</td>
</tr>
<tr>
<td>Sway Enable</td>
<td>Trigger must be enabled for frame sway function</td>
</tr>
<tr>
<td>Trigger</td>
<td></td>
</tr>
<tr>
<td>Tilt Thumbstick</td>
<td>Control carriage tilt (UP/DOWN)</td>
</tr>
</tbody>
</table>

A visual presentation of the joystick functions is accomplished with the label 18408-001 affixed right below the joystick for easy reference.

The Joystick Enable button needs to be depressed in order for the joystick to be operational. This avoids unintended joystick moves, such as hitting the joystick with your elbow, etc.

The Sway Enable button on the joystick is used to enable the machine frame sway before lifting any loads.

---

**Fig 61.** Joystick Enable Trigger (A) and Sway Enable Button (B)

**Fig 62.** Joystick Functions
Operator Cab

**Boom Angle Indicator**

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 -2.3° to +69°

![Boom Angle Indicator](image1)

**Boom Extend Letters**

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.

![Boom Extend Letters](image2)

**Boom Maintenance Stand (Optional)**

The Boom Maintenance Stand is 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.

![Boom Extend Letters](image3)

**Frame Level Indicator**

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.

![Frame Level Indicator](image4)
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.

Removing 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.

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.

Warning

Wear eye protection when starting a forklift with 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 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.

Caution

Use caution when operating the forklift during storms or strong winds.
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 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 cylinder 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.
  ☐ Low tires.
☐ Check mirrors for cracks, cleanliness, and proper adjustment.
☐ Check hydraulic reservoir for proper fluid level. Add hydraulic fluid, if necessary.
☐ Check engine compartment for:
  ☐ Loose or damaged belts, hoses, and radiator fan blades.
  ☐ Coolant reservoir level. Add radiator coolant, if necessary.
  ☐ Engine oil level. Add engine oil, if necessary.
  ☐ Check electrical wires and connectors.
☐ Check front and rear axles for leaks or any other damage.
☐ Check boom lift and carriage 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 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.

- Release the parking brake.
- Operate 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 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.
  - The Oil Pressure Indicator will be displayed when the engine oil pressure is below normal. 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.

- 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 thumbstick up and down to tilt the attachment.
- 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.
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.

NOTE: Keep the Operation and safety manual in the protective case provided inside the operator cab, as shown below.

In liquid-cooled engines, the coolant must be conditioned and monitored, otherwise the engine could be damaged by:

- Corrosion
- Cavitation
- Freezing
- Overheating

The right water quality is important for conditioning the coolant. Clear, clean water within the following analysis values should always be used:

<table>
<thead>
<tr>
<th>Analysis values</th>
<th>min</th>
<th>max</th>
<th>ASTM</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH value</td>
<td>6.5</td>
<td>8.5</td>
<td>D 1293</td>
</tr>
<tr>
<td>Chlorine (Cl) [mg/l]</td>
<td>-</td>
<td>100</td>
<td>D 512 D 4327</td>
</tr>
<tr>
<td>Sulphate (SO₄) [mg/l]</td>
<td>-</td>
<td>100</td>
<td>D 516</td>
</tr>
<tr>
<td>Total hardness (CaCO₃) [mmol/l]</td>
<td>3.56</td>
<td>356</td>
<td>D 1126</td>
</tr>
<tr>
<td>[dGH]</td>
<td>20.0</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[e]</td>
<td>25.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[fH]</td>
<td>35.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The conditioning of the coolant for liquid-cooled DEUTZ compact engines is performed by mixing an anti-freeze with corrosion protection inhibitors based on ethylene glycol into the water. The cooling system corrosion protection agent should be free from nitrite, amine, and phosphate to protect the materials used in DEUTZ engines.

The cooling system must be monitored regularly. This also includes checking the coolant system corrosion protection agent concentration in addition to checking the coolant level.

The cooling system corrosion protection agent concentration can be checked with conventional test instruments (e.g. refractometer).

At temperatures below -41 °C, please contact your local Xtreme Manufacturing or DEUTZ partner.

It is possible to use other cooling system corrosion protection agents (e.g. chemical corrosion protection agents) in exceptional cases. Consult your Xtreme Manufacturing or DEUTZ partner.

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.

Check coolant reservoir level only when the engine is cool to touch. Add coolant, if necessary.

Modern diesel engines place very high demands on the lubricating oil to be used. The specific engine performances lead to an increased thermal load on the lubricating oil. The lubricating oil is also more exposed to contamination due to reduced oil consumption and longer oil change intervals. For this reason it is necessary to observe the requirements and recommendations described in this operating manual in order not to shorten the life of the engine.

Lubricating oils always consist of a base oil and an additive package. The most important tasks of a lubricating oil (e.g. wear protection, corrosion protection, neutralization of acids from combustion products, prevention of coke and soot deposits on the engine parts) are assumed by the additives. The properties of the base oil are also decisive for the quality of the product, e.g. with regard to thermal load capacity.
In principle, all engine oils of the same specification can be mixed. However, mixing of engine oils should be avoided because the worst properties of any of the components in the mixture are always dominant, affecting the result.

The following lubricating oils are permissible for the engine in this operating manual:

<table>
<thead>
<tr>
<th>Engines without exhaust aftertreatment system</th>
<th>DQC II</th>
<th>Please contact your DEUTZ partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>DQC III</td>
<td>DQC III LA *</td>
<td></td>
</tr>
<tr>
<td>DQC IV</td>
<td>DQC IV LA *</td>
<td></td>
</tr>
</tbody>
</table>

* Sulphur content in the fuel < 15 mg/kg

The ambient temperature at the installation site or in the application area of the engine is decisive for choosing the right viscosity class. Too high a viscosity can lead to starting difficulties, too low a viscosity can endanger the lubrication effect and cause a high lubricating oil consumption.

Depending on the ambient temperature, the following common viscosity classes are recommended:

Check the engine oil level by pulling out the yellow oil dipstick handle (A), located adjacent to the fuel filter can. Unscrew the oil fill cap (B) and add engine oil (API CJ-4), if necessary.

**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.
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.

Before starting the reach forklift:

1. Make sure the master battery disconnect is ON.

2. Turn the Fuel Shut-off valve ON.

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

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

5. Adjust mirrors (this may require assistance).

6. Fasten seat belt.

7. Make sure the travel select lever is set to NEUTRAL (N)

8. The Parking Brake MUST be engaged. Make sure that the Parking Brake switch (A) is ON (DOWN). The parking brake indicator (B) illuminates when the parking brake is set to 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.

3. Turn key in ignition switch clockwise to the START position. You may need to hold the key in this position for a few seconds before the engine begins to crank (see NOTE).

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

Caution

Release the key immediately once the engine starts. If the engine does not start, DO NOT crank the starter motor continuously for more than 15 seconds. Failure to release the key after the engine 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.

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.

NOTE: The engine requires fuel pressure to be generated before the engine will crank. You may have to hold the ignition key in the START position for a few seconds before the engine begins to crank.

NOTE: Wait for display to boot up and “Engine Wait to Start” indicator to go out.
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 or four wheel (4W) 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, which provides 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 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 72. Maximum Fork Sweep
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 an Engine Shutdown fault condition is present, 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. Report all warning indicators and fault codes to a qualified mechanic. Ignoring warning indicators or fault codes can cause improper performance, which could result in death, serious injury, or property damage.

Fault condition dialog boxes may pop up and warning lights on the display will illuminate during critical circumstances. Some of these conditions demand immediate attention and forklift servicing. If an Engine Shutdown fault condition is present, the forklift should be shut down as soon as practical to prevent serious mechanical failure.

Some of the following indicators are green while the engine is within normal operation range, turning yellow when the normal operating range is exceeded. Some of these indicators turn red and become warnings when a particular parameter reaches or exceeds a critical level.

A list of usual warning indicators along with a brief explanation is presented below.

- **Battery Voltage Indicator,** between 11.5 to 12.5 V. Normal operating range: 12.6-14V
- **Critically Low Battery Voltage Warning,** below 11.5 V
- **High Coolant Temperature Indicator,** between 205 and 215°F. Normal operating range: 180 to 205°F
- **Critically High Coolant Temperature Warning,** above 216°F
**Shut Down Procedure**

1. Park forklift on 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.
5. Turn the ignition key to OFF and remove the key.

**Stopping Travel**

1. Stop the forklift by applying the service brake pedal.
2. 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).

**Changing Travel Direction**

1. Stop the forklift by applying the service brake pedal.
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.

**Starting Travel**

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.

**Starting Travel**

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. Move the travel select lever to FORWARD or REVERSE for the appropriate direction of travel.
5. Release the service brake pedal.
6. Slowly press the accelerator pedal to start travel.
6. If the forklift is parked on an incline, block the wheels.

7. Depending on the situation, you may choose to use the Battery Disconnect Switch. However, you should wait 2 minutes after the engine is shut down before disconnecting the battery with the switch. This operation is necessary so that the engine ECU has enough time to write the data from the volatile memory after the engine is off. **THROWING THE BATTERY DISCONNECT SWITCH TOO EARLY MAY CONFUSE THE ECU IF THE WRITING PROCESS IS NOT COMPLETED.**

8. Turn the Fuel Shut-off Valve to the OFF (Closed) position. It is located in the center of the chassis on the cab side towards the rear.

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**NOTE:** The fuel tank capacity is 17 gallons (64.3 liters).

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

**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.

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

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

---

**Winter Operation With Diesel Fuel**

**Warning**

For engines with common rail injection, the mixing of petroleum and adding of extra low additives is not permissible.

Special care is needed while operating in cold environment, such as winter or arctic operation.

At low ambient temperatures, paraffin discharges can lead to blockages in the fuel system and cause operating faults. For ambient temperature below freezing (32°F / 0°C) use winter diesel, suitable for temperatures down to -4°F (-20°C).

**NOTE:** Special diesel fuels can be used for arctic climates down to -47°F (-44°C).
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.

Snorkel 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. Snorkel Manufacturing assumes no liability for any third party attachment that would alter the center of gravity or stability.

DO NOT exceed forklift capacity of 5,500 pounds (2,494 kilograms). 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 24 inch (610 mm) load center (B). This rating specifies the maximum load capacity that the individual fork can safely carry at a maximum load center of 24 inches (610 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 is 5,500 pounds (2,494 kilograms). The matched pair or set of forks used on this forklift should have total load ratings which equal or exceed 5,500 pounds (2,494 kilograms). When the load rating of the forklift differs from the load capacity of the forks, the lower value becomes the overall load capacity.
Standard Carriage Operation

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

Quick Attach System

This forklift includes a quick attach system that allows for easy attachment changes. Perform attachment connection and removal procedures on level ground.

Attachment Connection

**Warning**

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 18 to 20 inches (0.4 to 0.5 meters).

2. Tilt the quick attach adapter forward.

3. Extend the boom and/or drive the forklift forward until the pivot pins (A) are below and between the two (2) attachment hooks (B).

Fig 75. Attachment Tilt Control Switch. (A) Attachment Tilt Down; (B) Attachment Tilt Up

Fig 76. Drive Vehicle Forward to Align Pivot Pins (A) with Attachment Hooks (B)
4. Raise the boom until pivot pins (A) have seated fully in attachment hooks (B).

5. Tilt the attachment up slightly. The quick attach adapter should be tight against the rear of the attachment. Align the holes between the quick attach adapter and attachment.

6. Insert pin completely through the attachment and quick attach adapter.

7. Insert quick attach pin keeper.

---

**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 greater than 3,200 psi (220.6 bar), which is the maximum pressure of the forklift auxiliary hydraulic system at the quick-disconnect couplers, could result in death or serious injury.

8. Connect the quick attach couplers (this only applies to attachments with a quick attach hydraulic system).
**Attachment Removal**

**NOTE:** To remove a standard carriage with forks, spread the forks apart on the carriage shaft. This provides adequate 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 18 to 20 inches (0.46 to 0.5 meters).
5. With attachment 10” to 12” off of the ground, tilt the attachment backward.
6. Disconnect the quick attach couplers (this only applies to attachments with a quick attach hydraulic system).

7. Remove the quick attach pin keeper.

8. Remove the pin at the bottom of the adapter.

9. Lower the attachment to the ground in a level position.

10. Tilt and lower boom until pivot pins (A) have disconnected from attachment hooks (B).

11. Retract the boom to fully disconnect the attachment from the quick attach adapter.
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.

**Warning**

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 5,500 pounds (2,494 kilograms). The total rated capacity of the forks being used must equal to, or exceed, the 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.

**Warning**

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. If necessary, secure the load by attaching it to the forklift tie-downs and/or have another person assist with safely steadying 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.

There is 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 on the forklift, 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.
1. Do not exceed the forklift’s load capacity (as shown 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.

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. 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.
3. Set the Parking Brake switch to ON (engaged).
4. Align the forks at the level the load is to be placed.
5. Extend the boom slowly until the load is just above the area where it is to be placed.
6. Lower the boom until the pallet rests in position and the forks are free to retract.
7. Retract the forks slowly from under the load.

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.
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 in the center 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.

**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.

**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 -2.3° to +69°.

**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 2,430 pounds (1,102 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
3. The operator determines height of structure where load is to be placed.
   The structure height is 10 feet (3.04 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 7 feet (2.13 meters).
5. Operator reads load capacity chart for attachment carriage to learn it will be safe to place the load at any boom angle with the boom extend letter “D” showing.

![Load Capacity Chart](image)

**Fig 90. Load Capacity Chart**

### Frame Leveling

**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.

![Frame Sway Override Switch](image)

**Fig 91. Frame Sway Override Switch**

The Sway Enable button on the joystick is used to enable the machine frame sway before lifting any loads. This button needs to be depressed at all times while the joystick is moved sidewalks for frame sway purposes.

With the Sway Enable button depressed, the joystick controls the frame sway (right and left) when moved right or left accordingly.

<table>
<thead>
<tr>
<th>Function</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame sway right</td>
<td>Press sway enable &amp; move joystick right</td>
</tr>
<tr>
<td>Frame sway left</td>
<td>Press sway enable &amp; move joystick left</td>
</tr>
</tbody>
</table>

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

**NOTE:** Maximum frame sway is 22° overall or 11° each direction, left and right.

![Frame Sway Override Switch](image)

**Warning**

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. Applying service brake, parking brake, and placing travel select lever in NEUTRAL, then pressing the Frame Sway Override switch (the trigger on the Front Control handle) will override the lockout feature and allow frame sway.

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).

![Frame Level Indicator](image)

**Fig 92. Frame Level Indicator**
Preventive Maintenance

Establishing a Maintenance Program

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
- Lubricate front and rear axle grease fittings
- Check wheel lug nuts torqued to 250 ft lbs
- Lubricate boom pivot point grease fittings
- Lubricate slide block contact areas
- Replace hydraulic return line filter
- Replace hydraulic filter on drive pump

After Every 50 Hours of Operation

- Lubricate boom pivot point grease fittings
- Lubricate rear axle grease fittings
- Check tire pressure (80 psi)

After First 100 Hours of Operation

- Top off axle wheel-end and differential oil

After First 200 Hours of Operation

- Change axle wheel-end and differential oil & clean magnetic drain plugs
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 rear axle grease fittings
- Inspect slide blocks for condition and tightness
- Lubricate slide block contact areas

After Every Month or 300 Hours of Operation
- Top off axle wheel-end and differential oil

After Every 500 Hours of Operation
- Comply with 50-Hour Maintenance Requirements
- Comply with 250-Hour Maintenance Requirements
- Replace air filter
- Replace fuel filter
- Empty air filter dust cup
- 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 hydraulic reservoir air breather
- Replace hydraulic return line filter
- Replace hydraulic high-pressure filter
- Replace hydraulic filter on drive pump

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 axle wheel-end and differential oil & clean magnetic drain plugs

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

After Every 4,000 Hours of Operation
- Drain and flush cooling system
- Clean or replace hydraulic reservoir strainer
Both of the lift and extend cylinders are equipped with a needle valve which allows the cylinder to retract without the direct assist of the machine's hydraulic power. This feature is intended to be used only in the event of total loss of engine or hydraulic pump failure with an elevated boom.

In any event, the vehicle should be secured until the situation has been properly evaluated. Secure the vehicle and area by following the procedures below:

1. Clear the area around the vehicle of all personnel.
2. Place the shift lever in NEUTRAL and engage the parking brake switch to the ON position.
3. Section off a large area under the boom with tape to restrict any personnel from entering this potentially dangerous area.
4. If the load is in a position where it can be removed safely, completely remove the load from the carriage and/or attachment. Otherwise leave the load in place.
5. Remove boom access cover on back of boom.

6. Locate needle valve on extend cylinder. Loosen nut on valve, then loosen valve with hex wrench.

7. Thread a 125mm long M8-1.25 capscrew into the manual operator of the extend/retract section on the proportional control valve (second section from boom side, on top of the valve) and use it to manually operate the valve to retract the boom.

8. When boom is fully retracted, tighten valve with hex wrench, then tighten nut to secure valve.

9. Locate needle valve on lift cylinder (under the boom).
10. Loosen nut on valve, then loosen valve with hex wrench.

**Warning**

Keep fingers and feet away from moving parts or pinch points to prevent pinching or crushing. Failure to do so can result in death or serious injury.
11. Thread a 125mm long M8-1.25 capscrew into the manual operator of the lift/lower section on the proportional control valve (first section from boom side, on top of the valve) and use it to manually operate the valve to lower the boom. Be aware of lowering the boom to avoid pinch points and crushing hazards.

12. When the boom is fully lowered, tighten the valve with hex wrench, then tighten the nut to secure valve.
Lockout/Tagout

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 tagout the forklift. This procedure, requiring a lock and danger tags, are to be used whenever the forklift is unsafe for operation or maintenance.

Removing Forklift From Service

1. Attach “DO NOT OPERATE” tags to the steering wheel and the ignition key.
2. Open engine access cover.
3. Set battery disconnect switch to OFF.
4. Lock battery disconnect switch.
5. Attach “DO NOT OPERATE” tag to battery disconnect switch.
6. If you use the Battery Disconnect Switch, you should wait 2 minutes after the engine is shut down before disconnecting the battery with the switch. This operation is necessary so that the engine ECU has enough time to write the data from the volatile memory after the engine is off.

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.

Return 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 “DO NOT OPERATE” tag from battery disconnect switch.
2. Close engine access cover.
3. Remove “DO NOT OPERATE” tags from steering wheel and ignition key.
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 years 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 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, Service Department or from 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.
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/SSC are 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 have 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 or 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.

APPEAL
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 WARRANTY SCHEDULE

#### Limited Warranty Periods

<table>
<thead>
<tr>
<th>Item</th>
<th>Warranty Period</th>
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<tbody>
<tr>
<td>Main Frame and Chassis</td>
<td>10 years or 10,000 hours, parts replacement or repair</td>
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<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>
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<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>
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<tr>
<td>Fuel injectors</td>
<td>Not covered by Warranty</td>
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<tr>
<td>Brake pads</td>
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<td>Glow plugs</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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<td>Coolants</td>
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<td>Lubricants</td>
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<tr>
<td>Cleaning materials</td>
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<tr>
<td>All consumable / wear parts.</td>
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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.