



Operation & Safety Manual

*Original Instructions -
Keep this manual with the machine at all times.*

**823, AG823, 832,
AG832, 925, AG925**

PVC 2305

31222326

May 24, 2024 - Rev B

WARNING

Operating, servicing and maintaining this vehicle or equipment can expose you to chemicals including engine exhaust, carbon monoxide, phthalates, and lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle or equipment in a well-ventilated area and wear gloves or wash your hands frequently when servicing. For more information go to www.P65Warnings.ca.gov.

REVISION LOG

DATE	REVISION	DESCRIPTION
May 8, 2023	A	Original Issue of Manual.
May 24, 2024	B	Revision of Manual.

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READ THIS FIRST

This manual is a very important tool! Keep it with the machine at all times.

The purpose of this manual is to provide owners, users, operators, lessors, and lessees with the precautions and operating procedures essential for the safe and proper machine operation for its intended purpose.

Due to continuous product improvements, JLG Industries, Inc. reserves the right to make specification changes without prior notification. Contact JLG Industries, Inc. for updated information.

Refer to www.JLG.com for Warranty, Product Registration, and other machine-related documentation.

Operator Qualifications

The operator of the machine must not operate the machine until this manual has been read, training is accomplished and operation of the machine has been completed under the supervision of an experienced and qualified operator. Operation within the U.S.A. requires training per OSHA 1910.178.

Operators of this equipment must possess a valid, applicable driver's license, be in good physical and mental condition, have normal reflexes and reaction time, good vision and depth perception and normal hearing. Operator must not be using medication which could impair abilities nor be under the influence of alcohol or any other intoxicant during the work shift.

In addition, the operator must read, understand and comply with instructions contained in the following material furnished with the material handler:

- This Operation & Safety Manual
- Telehandler Safety Manual (ANSI only)
- All instructional decals and plates
- Any optional equipment instructions furnished

The operator must also read, understand and comply with all applicable Employer, Industry and Governmental rules, standards and regulations.

Modifications

Modifications to this machine may affect compliance with Industry Standards and/or Governmental Regulations. Any modification must be approved by JLG.

This product must comply with all safety related bulletins. Contact JLG Industries, Inc. or the local authorized JLG representative for information regarding safety-related bulletins which may have been issued for this product.

JLG Industries, Inc. sends safety related bulletins to the owner of record of this machine. Contact JLG Industries, Inc. to ensure that the current owner records are updated and accurate.

JLG Industries, Inc. must be notified immediately in all instances where JLG products have been involved in an accident involving bodily injury or death of personnel or when damage has occurred to personal property or the JLG product.

FOR:

- Accident Reporting and Product Safety Publications
- Current Owner Updates
- Questions Regarding Product Applications and Safety
- Standards and Regulations Compliance Information
- Questions Regarding Product Modifications

CONTACT:

Product Safety and Reliability Department

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Phone: +1-717-485-6591

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ProductSafety@JLG.com

Other Publications Available

Service Manual	31222308
Parts Manual	
925, AG925	31221599
832, AG832	31222300
823, AG823	31222301

Note: Refer to the machine Serial Number Plate to identify the applicable compliance standard.

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SECTION 1

General Safety Practices

1.1 HAZARD CLASSIFICATION SYSTEM

1.1.1 Safety Alert System and Safety Signal Words

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

CAUTION indicates a potentiality hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE

NOTICE indicates information or a company policy that relates directly or indirectly to the safety of personnel or protection of property.

1.2 GENERAL PRECAUTIONS

WARNING

Before operation, read and understand this manual. Failure to comply with the safety precautions listed in this manual could result in machine damage, property damage, personal injury or death.

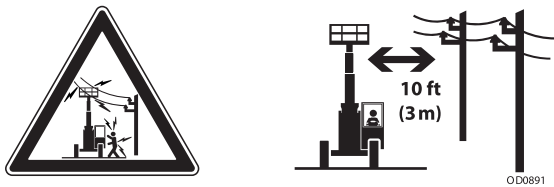
- Hydraulic cylinders are subject to thermal expansion and contraction. This may result in changes to the boom and/or attachment position while the machine is stationary. Factors affecting thermal movement can include the length of time machine is stationary, hydraulic oil temperature, ambient air temperature and boom and/or attachment position.

- Precautions to avoid all hazards in the work area must be taken by the user before and during operation of the machine.

1.3 OPERATION SAFETY

Note: The manufacturer has no direct control over machine application and operation. Therefore, safety issues listed in this manual are non-exhaustive. The user and operator are responsible for conforming with good safety practices.

1.3.1 Electrical Hazards



- This machine is not insulated and does not provide protection from contact or being near electrical current.
- Always check for power lines before raising the boom.
- Maintain distance from electrical lines, apparatus, or any energized (exposed or insulated) parts according to the Minimum Approach Distance (MAD).

Voltage Range (Phase to Phase)	Minimum Approach Distance (MAD)
0 to 50 KV	10 ft (3 m)
Over 50KV to 200 KV	15 ft (5 m)
Over 200 KV to 350 KV	20 ft (6 m)
Over 350 KV to 500 KV	25 ft (8 m)
Over 500 KV to 750 KV	35 ft (11 m)
Over 750 KV to 1000 KV	45 ft (14 m)

Note: This requirement shall apply except where employer, local or governmental regulations are more stringent.

- Allow for machine movement and electrical line swaying.
- Maintain a clearance of at least 10 ft (3m) between any part of the machine and its occupants, their tools and their equipment from any electrical line or apparatus carrying up to 50,000 volts. One foot additional clearance is required for every additional 30,000 volts or less.

- The minimum approach distance may be reduced if insulating barriers are installed to prevent contact, and the barriers are rated for the voltage of the line being guarded. These barriers shall not be part of (or attached to) the machine. The minimum approach distance shall be reduced to a distance within the designed working dimensions of the insulating barrier. This determination shall be made by a qualified person in accordance with the employer, local, or governmental requirements for work practices near energized equipment.

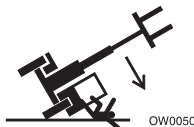
! DANGER

Do not maneuver machine or personnel inside prohibited zone (MAD). Assume all electrical parts and wiring are energized unless known otherwise.

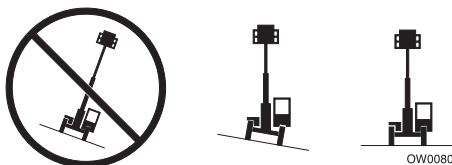
1.3.2 Tip Over Hazard

General

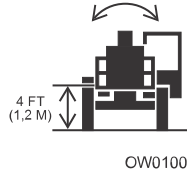
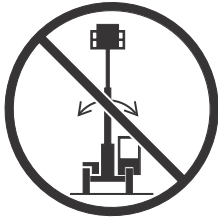
- For additional load requirements, refer to the appropriate capacity chart.



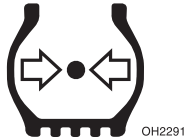
- Never use an attachment without the appropriate original equipment manufacturer (OEM) approved capacity chart installed on the telehandler.
- Understand how to properly use the capacity charts located in cab.
- DO NOT** exceed rated lift capacity.
- Be sure that the ground conditions are able to support the machine.
- Be aware of wind conditions. Wind may cause load swing and dangerous side loads.
- Keep the machine a minimum of 2 ft (0,6 m) from holes, drop-offs, obstructions, debris, concealed holes and other potential hazards at ground level.



- DO NOT** raise boom unless frame is level (0 degrees), unless otherwise noted on capacity chart.



- **DO NOT** level machine with boom/attachment above 4 ft (1,2 m). (AUS - **DO NOT** level machine with load more than 11.8 in (300 mm) above ground surface.)



- **MAINTAIN proper tire pressure** at all times. If proper tire pressures are not maintained, this machine could tip over.
- Refer to manufacturer's specifications for proper fill ratio and pressure requirements for tires equipped with ballast.



- Always wear seat belt.
- Keep head, arms, hands, legs and all other body parts inside operator's cab at all times.



If telehandler starts to tip over:

- **DO NOT JUMP**
- **BRACE YOURSELF** and **STAY WITH THE MACHINE**
- **KEEP YOUR SEAT BELT FASTENED**
- **HOLD ON FIRMLY**
- **LEAN AWAY FROM THE POINT OF IMPACT**

Non-Suspended Load



OD0901

- **DO NOT** drive with boom raised.

Suspended Load



OW0150

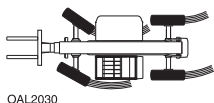
- Tether suspended loads to restrict movement.
- Weight of all rigging (slings, etc.) must be included as part of load.
- **DO NOT** attempt to use telehandler frame-leveling to compensate for load swing.
- Keep heavy part of load closest to attachment.
- Never drag the load; lift vertically.

When driving with a suspended load:

- Start, travel, turn and stop slowly to prevent load from swinging.
- **DO NOT** extend boom.
- **DO NOT** raise the load more than 300 mm (11.8 in) above ground surface or the boom more than 45°.
- **DO NOT** exceed walking speed.

1.3.3 Travel Hazard

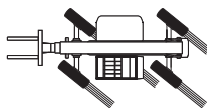
2-Wheel Front Steer



4-Wheel Circle Steer



4-Wheel Crab Steer



- Steering characteristics differ between steer modes. Identify the steer mode settings of the telehandler being operated.
- **DO NOT** change steer modes while traveling. Steer modes must be changed while telehandler is stationary.
- Visually verify proper wheel alignment after each steer mode change.
- Ensure that adequate clearance is provided for both rear tail swing and front fork swing.
- Look out for and avoid other personnel, machinery and vehicles in the area. Use a spotter if you DO NOT have a clear view.
- Before moving be sure of a clear path and sound horn.
- When driving, retract boom and keep boom/attachment as low as possible while maintaining visibility of mirrors and maximum visibility of path of travel.
- Always look in the direction of travel.
- Always check boom clearances carefully before driving underneath overhead obstructions. Position attachment/load to clear obstacles.
- When driving in high speed, use only front wheel steer (if steering modes are selectable).
- Telehandlers equipped with solid or foam filled tires should not be used in applications requiring excessive roading or driving extended distances. In the event an application requires excessive roading or driving expanded distances, it is recommended to use telehandlers not equipped with solid or foam filled tires.

1.3.4 Load Falling Hazard



OW0130

- Never suspend load from forks or other parts of carriage weldment. Use only approved lift points.
- **DO NOT** burn or drill holes in fork(s).
- Forks must be centered under load and spaced apart as far as possible.

1.3.5 Lifting Personnel



OW0171

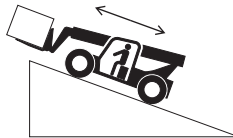
- When lifting personnel, **USE ONLY** an approved personnel work platform, with proper capacity chart displayed in the cab.



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- **DO NOT** drive machine from cab when personnel are in platform.

1.3.6 Driving Hazards on Slopes



OW0200

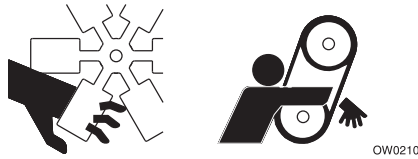
To maintain sufficient traction and braking capabilities, travel on slopes as follows:

- When unloaded, drive with forks pointed downhill.
- When loaded, drive with the forks pointed uphill.
- For additional travel requirements, refer to the appropriate capacity chart.

- To avoid overspeeding the engine and drivetrain when driving down slopes, downshift to a lower gear and use the service brake as necessary to maintain a slow speed. **DO NOT shift into neutral and coast downhill.**
- Avoid excessively steep slopes or unstable surfaces. To avoid tip over **DO NOT** drive across excessively steep slopes under any circumstances.
- Avoid turning on a slope. Never engage “inching” or shift to “Neutral” when going downhill.
- **DO NOT** park on a slope.

1.3.7 Pinch Points and Crush Hazards

Stay clear of pinch points and rotating parts on the telehandler.



- Stay clear of moving parts while engine is running.



- Keep clear of steering tires and frame or other objects.



- Keep clear from under boom.



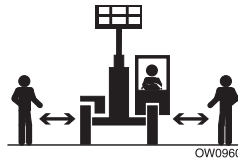
- Keep clear of boom holes.



- Keep arms and hands clear of attachment tilt cylinder.



- Keep hands and fingers clear of carriage and forks.



- Keep others away while operating.

1.3.8 Fall Hazard



- Enter using the proper hand holds and steps provided. Always maintain 3-point contact when mounting or dismounting. Never grab control levers or steering wheel when mounting or dismounting the machine.
- **DO NOT** get off the machine until the [Shut-Down Procedure](#) has been performed.



- **DO NOT** carry riders. Riders could fall off machine causing death or serious injury.

1.3.9 Chemical Hazards

Exhaust Fumes

- **DO NOT** operate machine in an enclosed area without proper ventilation.
- **DO NOT** operate the machine in hazardous environments unless approved for that purpose by JLG and site owner. Sparks from the electrical system and the engine exhaust can cause an explosion.

Flammable Fuel



- **DO NOT** fill the fuel tank or service the fuel system near an open flame, sparks or smoking materials. Engine fuel is flammable and can cause a fire and/or explosion.

Hydraulic Fluid



- **DO NOT** attempt to repair or tighten any hydraulic hoses or fittings while the engine is running or when the hydraulic system is under pressure.
- Stop engine and relieve trapped pressure. Fluid in the hydraulic system is under enough pressure that it can penetrate the skin.
- **DO NOT** use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks. Wear gloves to protect hands from spraying fluid.

1.4 RADIO FREQUENCY (RF) INFORMATION

Note: The ClearSky® CS550 connectivity module antenna is internal to the assembly.

1.4.1 Federal Communications Commission (FCC)

FCC Interference Statement

ClearSky CS550 has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice Regarding Radio Frequency Radiation Exposure

ClearSky CS550 complies with the FCC radio frequency exposure limits prescribed for mobile use (i.e., antennas are greater than 20 cm from a person's body) in an uncontrolled environment. Consequently, a person within 20 cm (8 in) of a CS550 that is connected to machine battery power could expose that person to RF energy in excess of what has been established by the FCC RF exposure guidelines.

1.4.2 Innovation, Science and Economic Development (ISED)

Radio Frequency Interference Requirements

The ClearSky CS550 Class B digital apparatus complies with Canadian ICES-003. [Canada Compliance Label: CAN ICES-3 (B)/NMB-3(B)]

This device complies with Industry Canada license-exempt RSS standard (s). Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Notice Regarding Radio Frequency Radiation Exposure

ClearSky CS550 complies with the ISED radio frequency exposure limits prescribed for mobile use (i.e., antennas are greater than 20 cm from a person's body) in an uncontrolled environment. Consequently, a person within 20 cm (8 inches) of a CS550 that is connected to machine battery power could expose that person to RF energy in excess of what has been established by the ISED RF exposure guidelines.

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SECTION 2

Pre-Operation and Inspection

2.1 PREPARATION, INSPECTION AND MAINTENANCE

The following table covers the periodic machine inspections and maintenance required. Consult local regulations for further requirements for telehandlers. The frequency of inspections and maintenance must be increased as necessary when the machine is used in a harsh or hostile environment, if the machine is used with increased frequency, or if the machine is used in a severe manner.

Inspection and Maintenance				
Type	Frequency	Primary Responsibility	Service Qualification	Reference
Pre-Operation Inspection	Beginning of each work shift or at each change of operator.	User or Operator	User or Operator	Operation & Safety Manual
Pre-Delivery Inspection (see note)	Before each sale, lease or rental delivery.	Owner, Dealer or User	Qualified Mechanic	Service Manual and applicable Inspection form.
Preventative Maintenance	At intervals as specified in the Service Manual and/ or the Maintenance Charts located on the machine.	Owner, Dealer or User	Qualified Mechanic	Service Manual and Maintenance Charts

Note: Inspection forms are available.

2.2 PRE-OPERATION CHECK AND INSPECTION

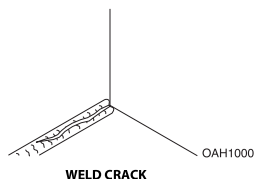
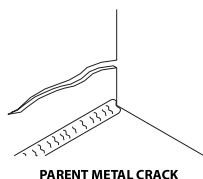
Note: Complete all required maintenance before operating unit.

WARNING

FALL HAZARD. Use extreme caution when checking items beyond your normal reach. Use an approved ladder.

The pre-operation check and inspection, performed at beginning of each work shift or at each change of operator, should include the following:

1. **Cleanliness** - Check all surfaces for leakage (oil, fuel or battery fluid) or foreign objects. Report any leakage to the proper maintenance personnel.
2. **Structure** - Inspect the machine structure for dents, damage, weld or parent metal cracks or other discrepancies.



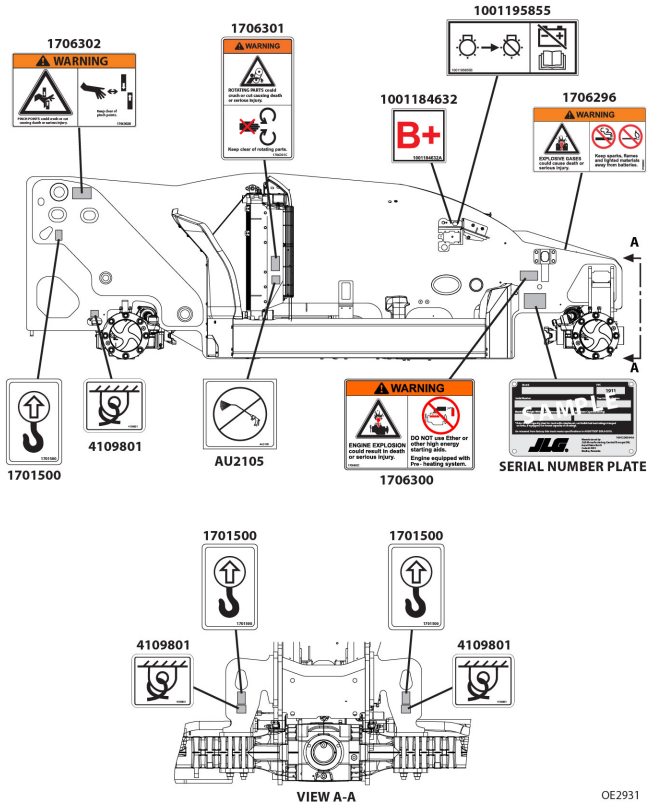
3. **Safety Decals** - Ensure all safety decals are legible and in place. Clean or replace as required. See [Section — Safety Decals](#) for details.
4. **Operation and Safety Manuals** - Operation & Safety Manual and AEM Safety Manual (ANSI only) located in cab manual holder.
5. **Walk-Around Inspection** - See [Section — Walk-Around Inspection](#) for details.
6. **Fluid Levels** - Check fluids, including fuel, diesel exhaust fluid (DEF), hydraulic oil, engine oil and coolant. When adding fluids, refer to [Section — Lubrication and Maintenance](#) and [Section — Specifications](#) to determine proper type and intervals. Before removing filler caps or fill plugs, wipe all dirt and grease away from the ports. If dirt enters these ports, it can severely reduce component life.
7. **Attachments/Accessories** - Ensure correct capacity charts are installed on telehandler. If provided, reference Operation & Safety Manual of each attachment or accessory installed for specific inspection, operation and maintenance instructions.
8. **Operational Check** - Once the walk-around inspection is complete, perform a warmup and operational check (see [Section — Warm-Up And Operational Checks](#)) of all systems in an area free of overhead and ground level obstructions. See [Section — Controls and Indicators](#) for more specific operating instructions.

WARNING

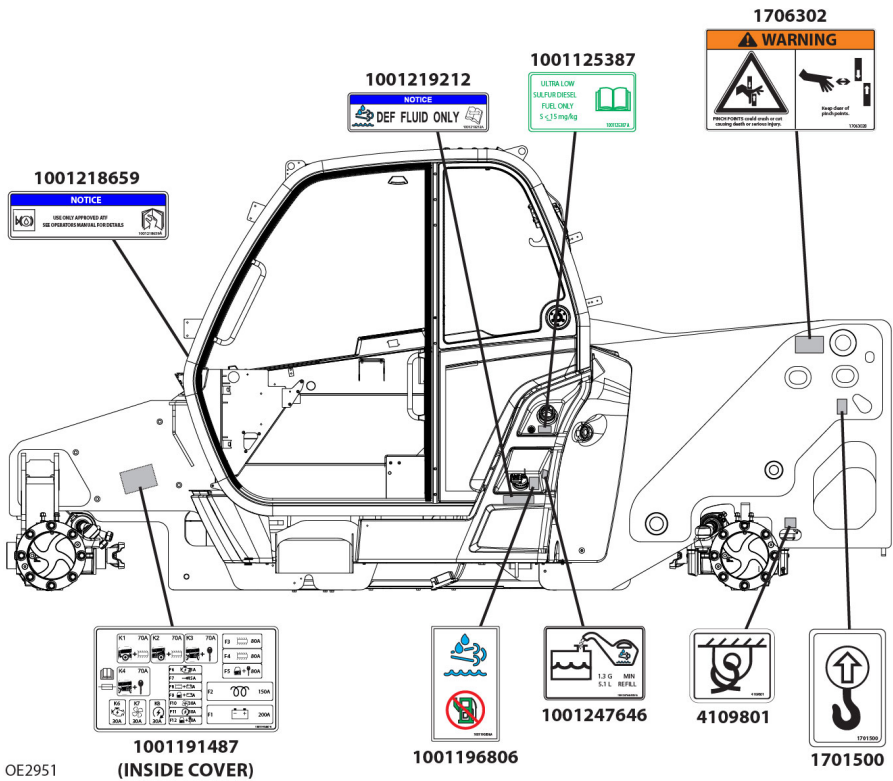
If telehandler does not operate properly, immediately bring machine to a stop, lower boom and attachment to ground and stop the engine. Determine cause and correct before continued use.

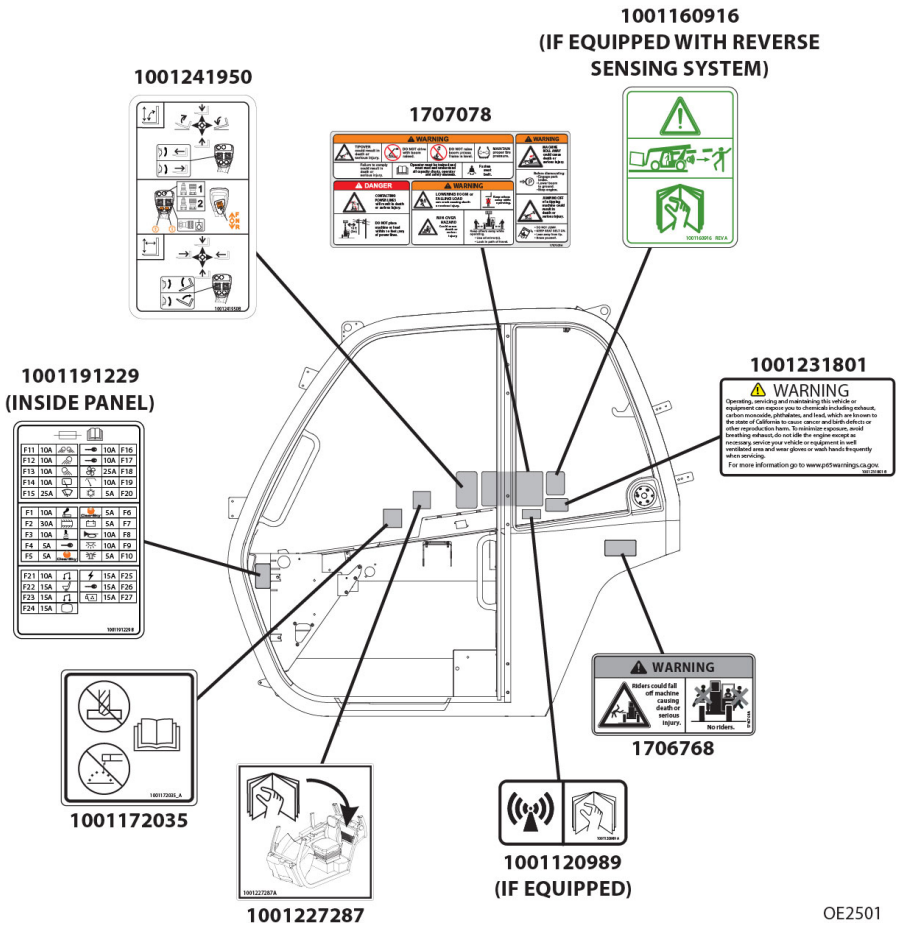
2.3 SAFETY DECALS

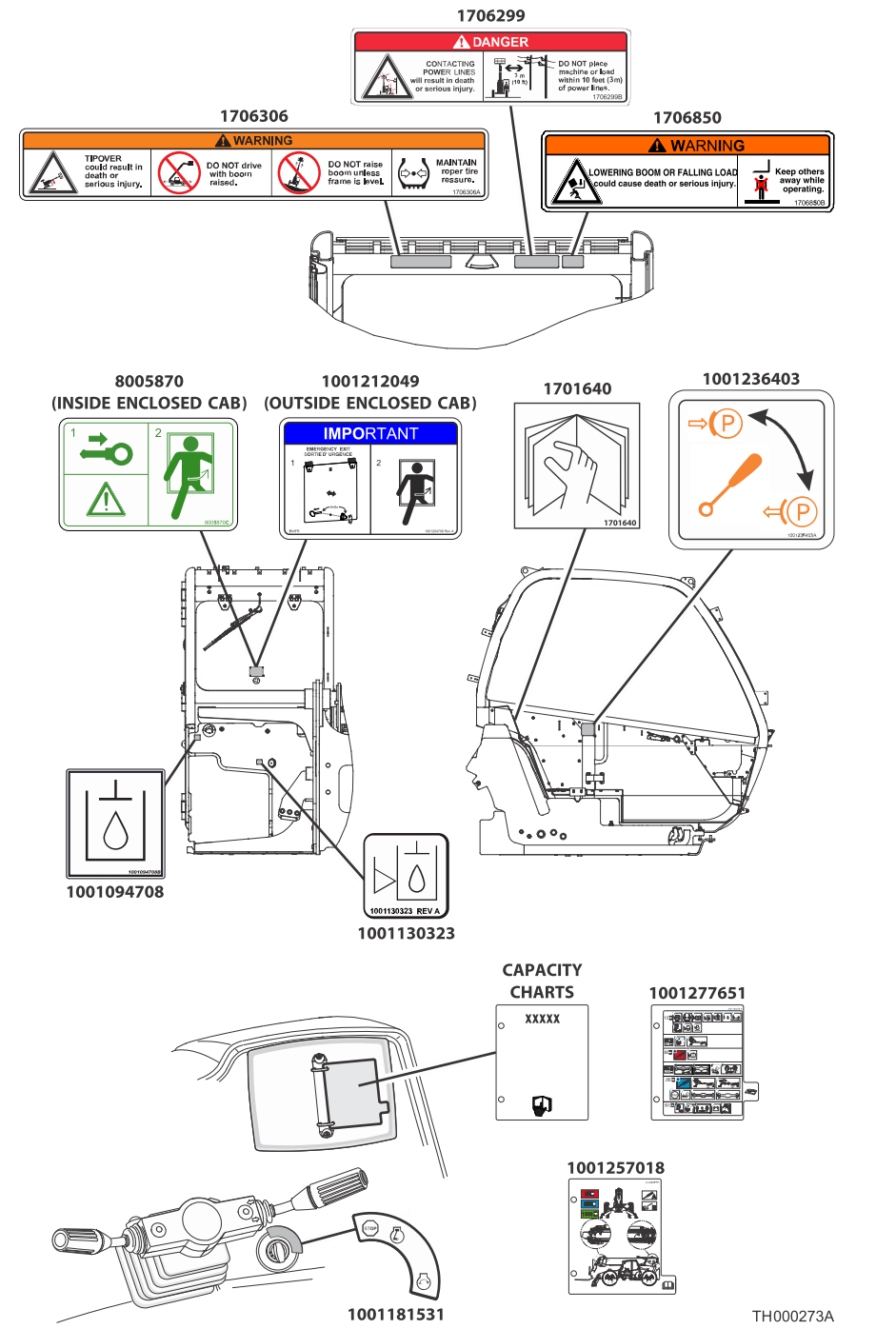
Ensure all **DANGER**, **WARNING**, **CAUTION** and instructional decals and proper capacity charts are legible and in place. Clean and replace as required.

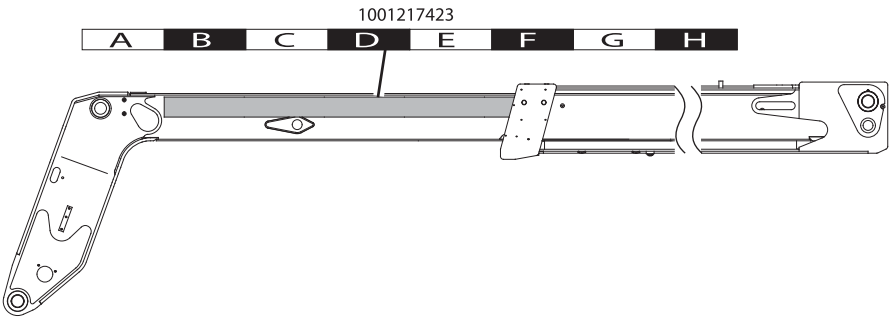


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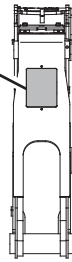






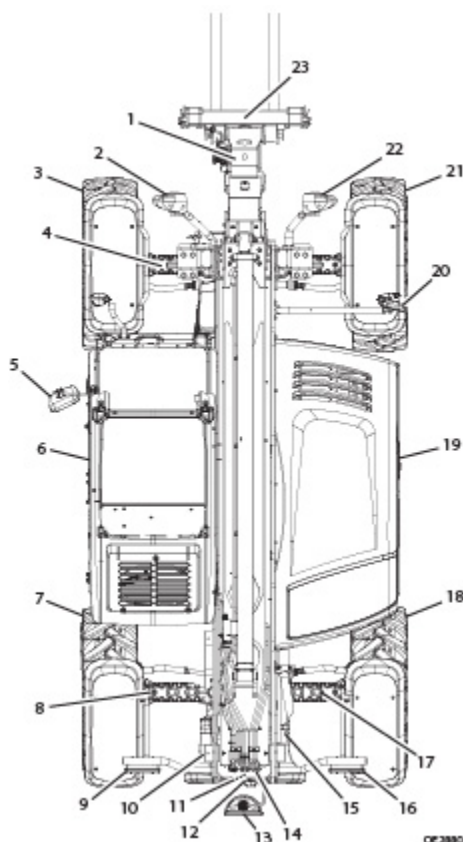


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2.4 WALK-AROUND INSPECTION



Begin your walk-around inspection at item 1, as noted below. Continue to your right (counterclockwise when viewed from top) checking each item in sequence.

INSPECTION NOTE: On all components, make sure there are no loose or missing parts, that they are securely fastened and no visible leaks or excessive wear exists in addition to any other criteria mentioned. Inspect all structural members including attachment for cracks, excessive corrosion and other damage.

1. **Boom Sections and Lift, Tilt, Extend/Retract, Compensating Cylinders -**
 - Check front, top, side and rear wear pads for presence of grease.
 - Pivot pins secure; hydraulic hoses undamaged, not leaking.
2. **Front Lights (if equipped) -** Clean and undamaged.
3. **Wheel/Tire Assembly -** Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.

4. **Front Axle** - Steer cylinders undamaged, not leaking; pivot pins secure; hydraulic hoses undamaged, not leaking.
5. **Mirror** - Clean and undamaged.
6. **Cab and Electrical** -
 - General appearance; no visible damage.
 - Frame level indicator(s) and window glass undamaged and clean.
 - Gauges, switches, joystick, foot controls and horn operational.
 - Check seat belt for damage, replace belt if frayed or cut webbing, damaged buckles or loose mounting hardware.
7. **Wheel/Tire Assembly** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
8. **Rear Axle** - Steer cylinders undamaged, not leaking; pivot pins secure; hydraulic hoses undamaged, not leaking.
9. **Rear Lights (if equipped)** - Clean and undamaged.
10. **Boom Angle Sensor** - See inspection note.
11. **Main Control Valve** - See inspection note.
12. **Reversing Camera (if equipped)** - See inspection note.
13. **Mirror (if equipped)** - Clean and undamaged.
14. **Reverse Sensing Sensor (if equipped)** - See inspection note.
15. **Boom Prop** - See inspection note.
16. **Rear Lights (if equipped)** - Clean and undamaged.
17. **LSI Sensor (if equipped)** - See inspection note.
18. **Wheel/Tire Assembly** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
19. **Engine Compartment** -
 - Drive belts, check condition and replace as required.
 - Engine mounts - See inspection note.
 - Power Distribution Plate - No damage or corrosion on connections or wiring.
 - Engine cover properly secured.
20. **Mirror** - Clean and undamaged.
21. **Wheel/Tire Assembly** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.

22. **Front Lights (if equipped)** - Clean and undamaged.
23. **Attachment** - Properly installed, see [Section — Attachment Installation](#).

2.5 WARM-UP AND OPERATIONAL CHECKS

2.5.1 Warm-Up Check

During warm-up period, check:

1. Heater, air conditioning and wipers (if equipped).
2. Check all lighting systems (if equipped) for proper operation.
3. Adjust mirrors for maximum visibility.

WARNING

CUT/CRUSH/BURN HAZARD. Keep engine cover closed while engine is running.

2.5.2 Operational Check

When engine warms, perform an operational check:

1. Service brake and parking brake operation.
2. Forward and reverse travel.
3. Steering in both directions with engine at low idle (steering lock to lock will not be reached). Check in each steering mode.
4. Horn and back-up alarm. Must be audible from inside operators cab with engine running.
5. All joystick functions operate smoothly and correctly.
6. Perform any additional checks described in [Section - Additional Checks](#).

2.6 CAB

The telehandler is equipped with an open or enclosed ROPS/FOPS cab.

WARNING

Never operate telehandler unless the overhead guard, cab structure and right side glass or screen are in good condition. Any modification to this machine must be approved by JLG to assure compliance with ROPS/FOPS certification for this cab/machine configuration. If the overhead guard or cab structure is damaged, the **CAB CANNOT BE REPAIRED**. It must be **REPLACED**.

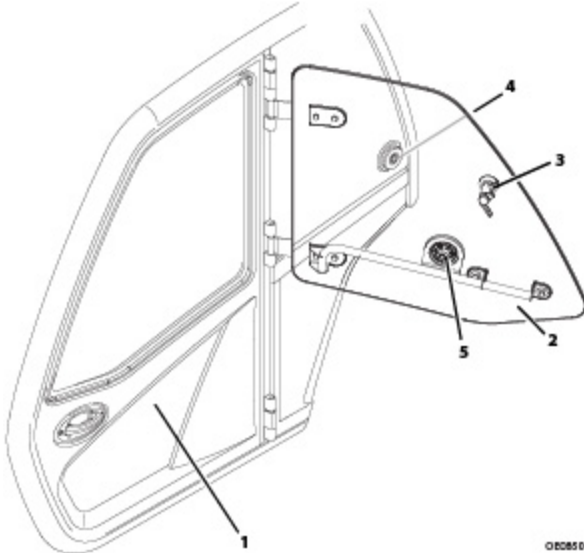
WARNING

Never drill, cut, and/or weld to cab. Any modification to this machine must be approved by JLG to assure compliance with machine configuration. If unauthorized drilling, cutting and/or welding is present, the cab must be **REPLACED**.

2.7 ENCLOSED CAB WINDOWS (IF EQUIPPED)

Keep all windows clean and unobstructed.

2.7.1 Cab Door Window

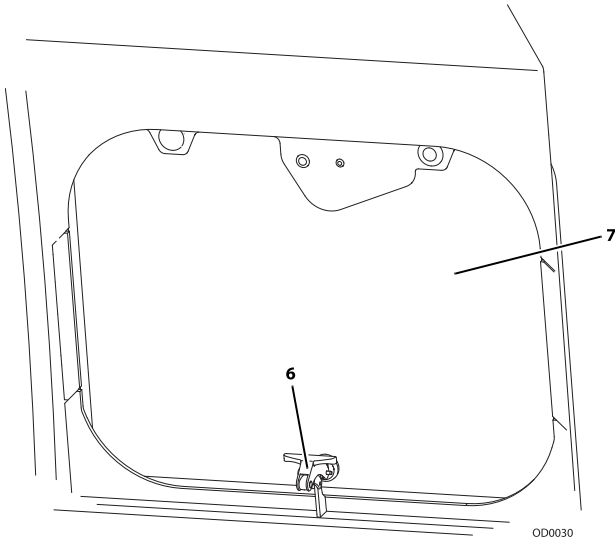


- During operation the cab door window (2) must either be latched open or closed
- Open the cab door window using lever (3) and secure it in the latch (4)
- Press release (4) inside cab or (5) outside cab to unlatch window

NOTICE

EQUIPMENT DAMAGE. Cab door (1) must be closed during operation. Failure to do so may result in machine damage.

2.7.2 Rear Window



OD0030

- Lift lever (6) and push to open the rear window (7)
- Lift lever and pull to close

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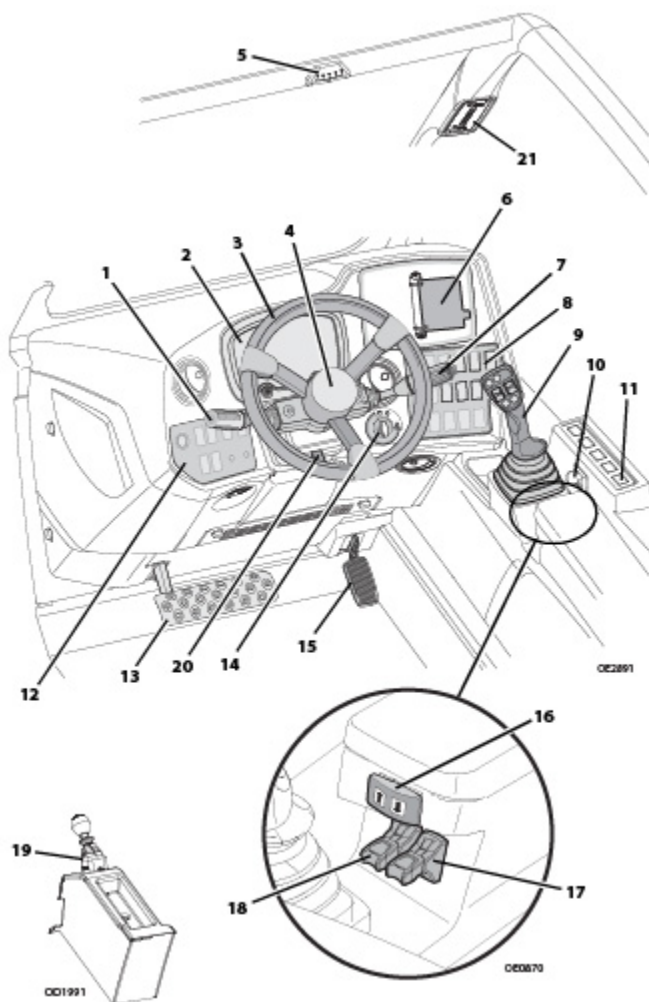
SECTION 3

Controls and Indicators

3.1 GENERAL

This section provides the necessary information needed to understand control functions.

3.2 CONTROLS



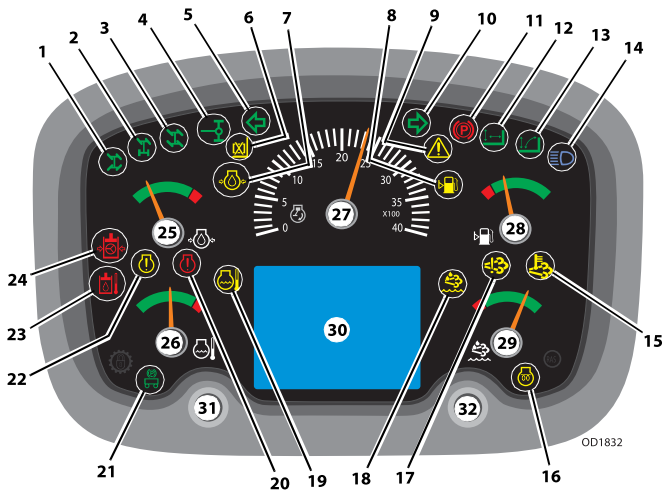
1. **Transmission Control Lever (if equipped):** See [Section — Transmission Control Lever \(if equipped\)](#), page 52.
2. **Instrument Panel:** See [Section — Instrument Panel](#), page 42.
3. **Steering Wheel:** Turning the steering wheel to the left or right steers the machine in the corresponding direction. Three steering modes are available. See [Section — Steer Modes](#).
4. **Horn:** Press to sound horn.
5. **Frame Level Indicator:** Enables operator to determine the left to right level condition of the telehandler.

6. **Capacity and Maintenance Charts:** See [Section — Attachments and Hitches](#) or [Section — Lubrication and Maintenance](#).
7. **Accessory Control Lever:** See [Section — Accessory Control Lever \(if equipped\)](#), page 54.
8. **Right Dash Control Panel:** See [Section — Right Dash Control Panel](#), page 48.
9. **Joystick:** See [Section — Joystick](#), page 59.
10. **Adjustable Armrest Lever:** Activate lever to release armrest position lock.
11. **Control Panel:** See [Section — Control Panel \(if equipped\)](#), page 49.
12. **Left Dash Control Panel:** See [Section — Left Dash Control Panel](#), page 47.
13. **Service Brake Pedal:** Further pedal is pressed, the slower the travel speed.
14. **Ignition Switch:** Key activated. See [Section — Ignition](#), page 50.
15. **Accelerator Pedal:** Pressing down the pedal increases engine and hydraulic speed.
16. **Hitch Up/Down Switch (if equipped):** Controls position of hydraulic hitch. Press and hold right side of switch to raise hitch. Press and hold left side of switch to lower hitch.
17. **Rear Auxiliary 1 Hydraulic Lever (if equipped):** Controls the rear auxiliary hydraulic.
18. **Rear Auxiliary 2 Hydraulic Lever (if equipped):** Controls the rear auxiliary hydraulic.
19. **Park Brake:** See [Section — Park Brake](#), page 51.
20. **Steering Column Adjuster:** See [Section — Steering Column Adjuster](#), page 57.
21. **LSI Indicator (if equipped):** See [Section — Steering Column Adjuster](#), page 57.

3.2.1 Instrument Panel

The instrument panel uses different colors to alert the operator to different types of operational situations that could arise.

- When an indicator illuminates RED (except park brake) or if a gauge enters a red zone, immediately bring machine to a stop, lower boom and attachment to the ground and stop the engine. Determine cause and correct before continued use.
- When an indicator illuminates YELLOW an abnormal operating condition is present. If not corrected, machine interruption or damage may result.
- When an indicator illuminates GREEN or BLUE or if a gauge is in the green zone, important information regarding safe operation is being displayed.



NOTICE

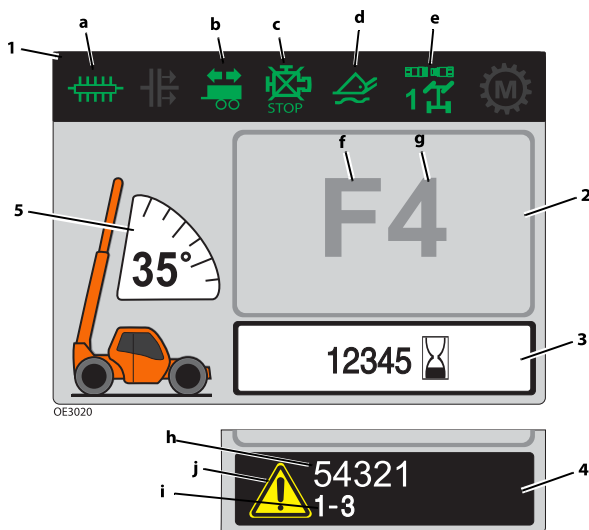
EQUIPMENT DAMAGE. When a red indicator illuminates (except park brake), immediately bring machine to a stop, lower boom and attachment to ground and stop the engine. Determine cause and correct before continued use.

1. **4-Wheel Circle Steer:** Illuminates when all wheel steer is active. See [Section — Steer Modes](#).
2. **2-Wheel Front Steer:** Illuminates when two wheel steer is active. See [Section — Steer Modes](#).
3. **4-Wheel Crab Steer:** Illuminates when crab steer is active. See [Section — Steer Modes](#).
4. **Rear Axle Center:** Illuminates when rear axle is aligned (centered).
5. **Left Turn (if equipped):** Illuminates and flashes when left turn signal or hazard lights are active.

6. **LSI Passive Mode (if equipped):** Illuminates when LSI passive mode is active. See [Section — Load Stability Indicator - LSI \(if equipped\), page 56](#).
7. **Low Engine Oil Pressure:** Illuminates when oil pressure is low.
8. **Low Fuel Level:** Illuminates when fuel level is low.
9. **System Distress:** Illuminates when critical machine and engine faults exist.
10. **Right Turn (if equipped):** Illuminates and flashes when right turn signal or hazard lights are active.
11. **Park Brake:** Illuminates when park brake is applied. See [Section — Park Brake, page 51](#).
12. **Lift Mode:** Illuminates when lift joystick pattern is active. See [Section — Joystick, page 59](#).
13. **Loader Mode:** Illuminates when loader joystick pattern is active. See [Loader Joystick Pattern](#).
14. **High Beam (if equipped):** Illuminates when high beam lights are active.
15. **High Exhaust System Temperature (HEST):** May illuminate during exhaust system cleaning. See [Section — After-Treatment System \(ATS\)](#).
16. **Engine Preheat:** Illuminates with ignition key in position 1. Indicator goes out when start temperature is reached.
17. **Selective Catalytic Reduction (SCR):** Illuminates when stationary cleaning is required. Flashes during cleaning process. See [Section — After-Treatment System \(ATS\)](#) for details.
18. **Low Diesel Emission Fluid (DEF):** Illuminates when DEF is low.
19. **High Engine Temperature:** Illuminates when engine temperature is high.
20. **Engine Fault Critical:** Illuminates when critical engine fault exists.
21. **Trailer Park Brake (if equipped):** Illuminates when trailer park brake is activated.
22. **Engine Fault Warning:** Illuminates when engine is operating outside normal range.
23. **High Hydraulic Oil Temperature:** Illuminates when hydraulic oil temperature is high.
24. **Low Steering Pressure:** Illuminates when steering pressure is low.
25. **Engine Oil Pressure Gauge:** Indicates engine oil pressure.
26. **Engine Coolant Temperature Gauge:** Indicates engine coolant temperature.
27. **Engine Speed:** Indicates engine speed in revolutions per minute (rpm).
28. **Fuel Level Gauge:** Indicates fuel level.

- 29. **Diesel Emission Fluid (DEF) Level Gauge:** Indicates fluid level.
- 30. **LCD Display:** See [Section — LCD Display, page 45](#).
- 31. **Left Control Button:** Press to decrease display brightness. Increases digits in antitheft function. See [Section — Anti-Theft Functionality \(if enabled\)](#).
- 32. **Right Control Button:** Press to increase display brightness. Confirms digits in antitheft function. See [Section — Anti-Theft Functionality \(if enabled\)](#).

3.2.2 LCD Display



VIEW WITH ACTIVE DIAGNOSTICS SHOWN

1. **Indicators:** Indicator will display when active.
 - a. Continuous Auxiliary Hydraulics - Illuminates when continuous auxiliary hydraulics are active.
 - b. Trailer Turn - Illuminates when trailer turn signal is activated.
 - c. Do Not Shut Off engine - Illuminates when stationary exhaust system cleaning is required. See [Section — After-Treatment System \(ATS\)](#).
 - d. Boom Float - Illuminates when boom float function is activated. See [Section — Joystick, page 59](#).
 - e. Auxiliary Hydraulic Selection - Illuminates when auxiliary hydraulics are activated. Indicator will show 1 or 2 depending on operator's selection. See [Section — Joystick, page 59](#).
2. **Driving Direction and Gear:** Displays current driving condition.
 - f. Direction - Forward (F), Neutral (N) or Reverse (R).
 - g. Gear - First (1), Second (2), Third (3), Fourth (4), Fifth (5) or Sixth (6).
3. **Operating Hours:** Displays total hours of telehandler operation. Displays when ignition is in ON position and no fault codes exist.

4. **Active Diagnostics:** Displays icon and applicable diagnostic code. Display cycles through each active warning or diagnostic if multiple are present. See Service Manual for details.
- h. Fault Code - Displays applicable diagnostic code.
- i. Numeric Code Indicator - Displays number of engine fault codes which are present.
- j. Diagnostic Icon - Displays diagnostic symbols.



**TRANSMISSION OIL
TEMPERATURE**



**AIR CLEANER RESTRICTION
INDICATOR**



**LOW BATTERY
INDICATOR**



**SYSTEM DISTRESS
INDICATOR**



**MAINTENANCE RE-
QUIRED INDICATOR**

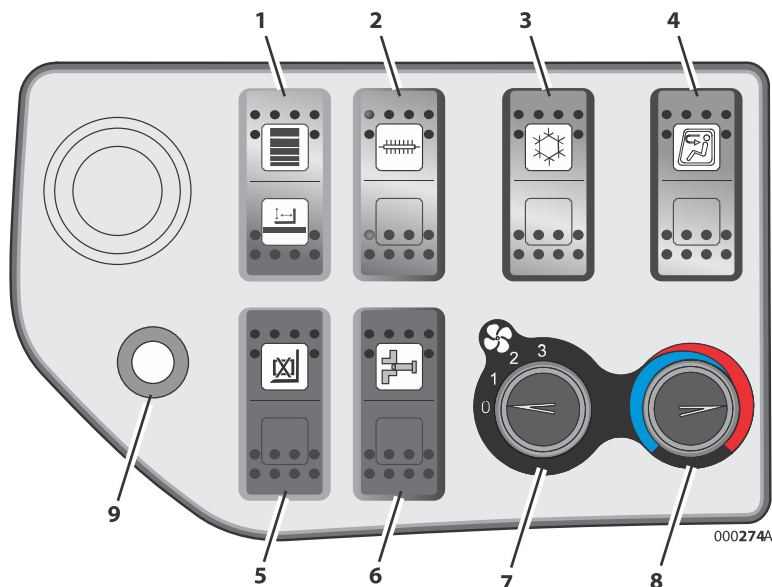


**HYDRAULIC FILTER RE-
STRICTION INDICATOR**

- Transmission Oil Temperature Indicator - Illuminates when transmission temperature is high.
- Air Cleaner Restriction Indicator - Illuminates when air cleaner requires maintenance.
- Low Battery Indicator - Illuminates when battery is at low charge or charging system is not functioning properly.
- System Distress Indicator - Illuminates when critical machine and engine faults exist.
- Maintenance Required Indicator - Illuminates when maintenance is required.
- Hydraulic Filter Restriction Indicator - Illuminates when hydraulic filter requires maintenance.

5. **Boom Angle:** Displays boom angle.

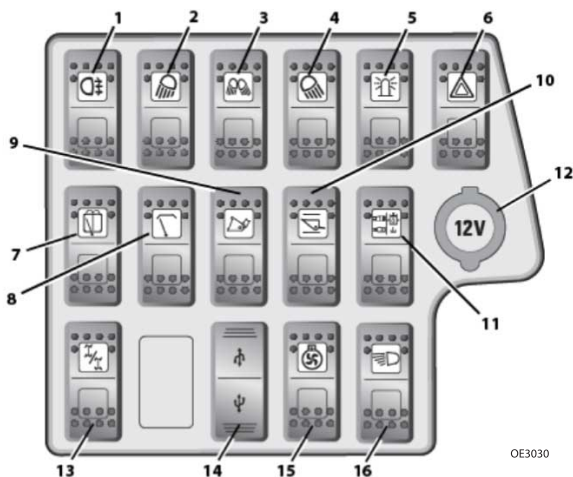
3.2.3 Left Dash Control Panel



1. **Lift/Loader Switch (if equipped):** Activates lift or loader pattern on joystick. See [Section — Steering Column Adjuster, page 57](#) for details. Press top of switch to activate loader joystick pattern. Press bottom of switch to activate lift joystick pattern. Lock at top of switch holds switch in its current position. Press and shift bottom of lock down to unlock. Release to lock switch into selected position.
2. **Continuous Auxiliary Hydraulic Switch (if equipped):** Push for continuous operation of hydraulic powered attachments. To enable, press and hold switch then move auxiliary hydraulics roller switch to desired command and speed on joystick. Release continuous auxiliary hydraulic switch (Continuous Auxiliary Hydraulics indicator will appear in the LCD display, see page 45). Then release the auxiliary hydraulics roller switch to enable continuous operation of attachment. To disable, press continuous auxiliary hydraulics switch or auxiliary hydraulics roller switch again. See [Section — Attachments and Hitches](#) for approved attachments and control instructions.
3. **Air Conditioning Switch (if equipped):** On/Off switch.
4. **HVAC Recirculation Switch (if equipped):** On/Off switch. Push to activate and recirculate air inside the cab. While deactivated, air is circulated from outside the cab.
5. **LSI Override (if equipped):** Momentarily disables the automatic function cut-out. Depress and hold up to 30 seconds while operating joystick to momentarily disable the automatic function cut-out.

6. **Coupler Switch (if equipped):** Used in conjunction with joystick to hydraulically lock or unlock an attachment with boom angle below 20°. See [Section — Hydraulic Coupler, page 87](#) for details.
7. **HVAC Fan Speed (if equipped):** Adjustable rotary switch.
8. **HVAC Temperature Control Switch (if equipped):** Adjustable rotary switch.
9. **Seat Belt Indicator Lamp (if equipped):** Illuminates and sounds an alarm when the operator is seated but the seat belt is not fastened.

3.2.4 Right Dash Control Panel



1. **Fog Lights Switch (if equipped):** On/Off switch.
2. **Front Work Lights Switch (if equipped):** On/Off switch.
3. **Boom Work Lights Switch (if equipped):** On/Off switch.
4. **Rear Work Lights Switch (if equipped):** On/Off switch.
5. **Beacon Light Switch (if equipped):** On/Off switch.
6. **Hazard Lights Switch (if equipped):** On/Off switch.
7. **Rear Wiper Switch:** On/Off switch.
8. **Roof Wiper Switch (if equipped):** On/Off switch.
9. **Bucket Mode Switch:** On/Off switch. Increases response to boom functions.
10. **Boom Ride Control Switch (if equipped):** On/Off switch. While enabled and traveling 5 mph (3 kph) or faster, the system acts to improve boom control over rough terrain. Depress switch again to disable boom ride control.
11. **Auxiliary Decompression Switch (if equipped):** Press to relieve pressure in auxiliary hydraulic circuit. See [Section — Hydraulic Operated Attachment](#).

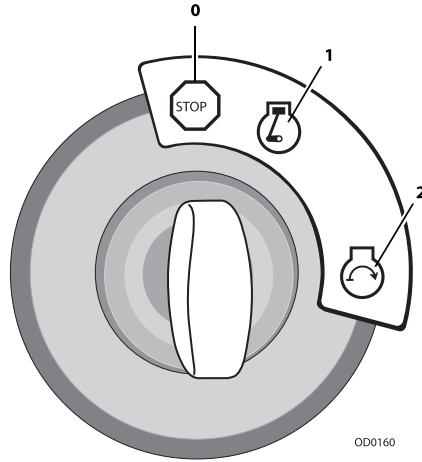
12. **Power Outlet (if equipped):** 12V receptacle.
13. **Steer Select Switch:** Three positions: circle steer, front steer and crab steer. See [Section — Steer Modes](#).
14. **USB Port (if equipped):** USB ports under protective tab.
15. **Reverse Fan Switch:** Three position switch. See [Section — Reversing Fan Switch, page 55](#).
16. **Master Light and Road Lights Switch:** Three positions: Off, enable, On. Switch must be in the enable or on position in order to operate work lights. Prior to machine shutdown, ensure switch is in the off position.

3.2.5 Control Panel (if equipped)



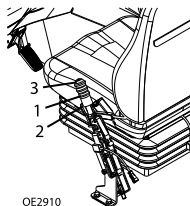
1. **Transmission Disconnect Switch (if equipped):** On/Off switch. With switch in the On position, transmission will disengage when service brake pedal is depressed.
2. **Engine Speed Set Switch (if equipped):** On/Off switch. Once operator has desired engine speed (rpm) using accelerator pedal, press and release to set speed. Press service brake pedal to disable engine speed set.

3.2.6 Ignition



- Position **0** - Engine off, no voltage available.
- Position **1** - Voltage available for all electrical functions. Wait to start engine until preheat indicator on instrument panel goes out.
- Position **1** - Engine run.
- Position **2** - Engine start. In the event the engine does not start, rotate key to position 0 then back to position 2 to re-engage the starter.

3.2.7 Park Brake



The park brake lever (1) controls the application and release of the park brake.

- Pull lever back to apply park brake.
- Squeeze release (2) and push lever forward to release park brake.
- The park brake may be adjusted with the knob (3). Turn clockwise to increase park brake force. Turn counterclockwise to decrease park brake force.

⚠ WARNING

MACHINE ROLL-AWAY HAZARD. In the event of engine failure, apply constant pressure to service brake pedal while activating the park brake to the ON position.

⚠ WARNING

MACHINE ROLL-AWAY HAZARD. Always move park brake switch to ON position, lower boom to ground and stop engine before leaving cab.

⚠ WARNING

CRUSH HAZARD. Turning engine off applies the park brake. Applying park brake or turning engine off while traveling will cause unit to stop abruptly and could cause load loss. Either may be used in an emergency situation.

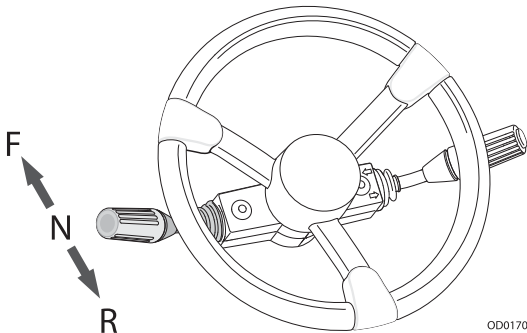
3.2.8 Parking Procedure

1. Using service brake, stop telehandler in an appropriate parking area.
2. Follow [Section — Shut-Down Procedure](#).

3.2.9 Transmission Control Lever (if equipped)

Note: Transmission control lever takes priority over joystick transmission controls.

Direction of Travel Selection



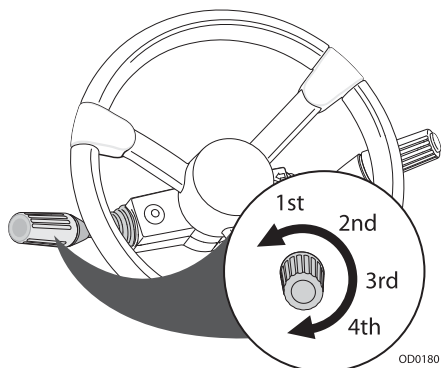
Transmission control lever engages forward or reverse travel.

- Push lever forward for forward travel; pull lever rearward for reverse travel. Move lever to centered position for neutral.
- Forward or reverse travel can be selected while in any gear.
- When traveling in reverse, the back-up alarm will automatically sound.
- Drive in reverse and turn only at slow rates of speed.
- Unless transmission disconnect button is activated, do not increase engine speed with the transmission in forward or reverse and the service brake pressed in an attempt to get quicker hydraulic performances. This could cause unexpected machine movement.

⚠ WARNING

TIP OVER/CRUSH HAZARD. Bring telehandler to a complete stop before shifting transmission control lever. A sudden change in direction of travel could reduce stability and/or cause load to shift or fall.

Gear Selection (if equipped)

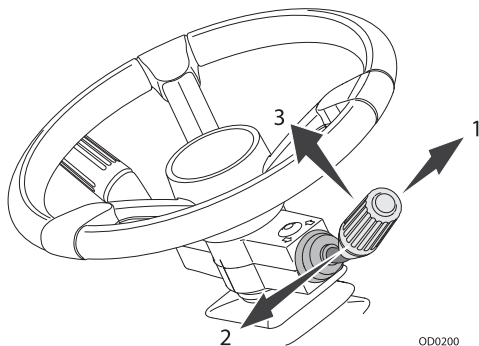


Gear selection is located on the twist grip handle of transmission control lever.

- Twist hand grip to select gear.
- The Transmission is equipped with either six forward and three reverse gears or four forward and three reverse gears.
- Select appropriate gear for task being performed. **Use a lower gear for transporting a load.** Use a higher gear only when driving unloaded for longer distances.
- Slow down prior to downshifting. **Do not downshift more than one gear at a time.**

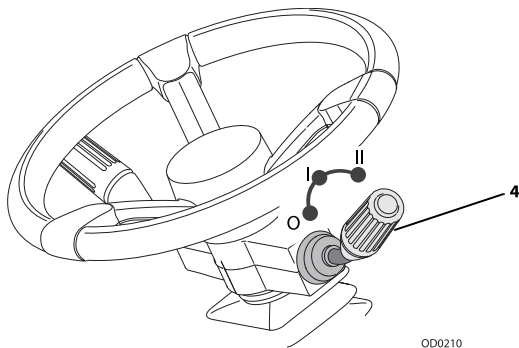
3.2.10 Accessory Control Lever (if equipped)

Turn Signals and Low/High Beam Headlights



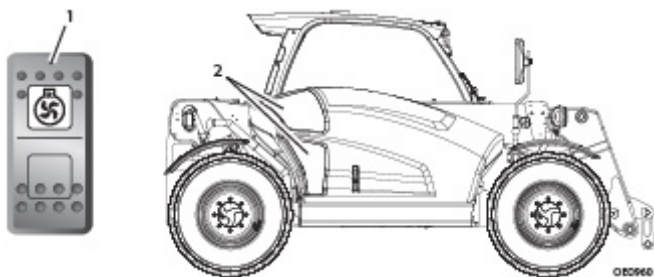
- Push accessory control lever forward (1) to activate left turn signal.
- Pull lever backward (2) to activate right turn signal.
- The lever must be manually returned to the center position to deactivate either turn signal. The lever will not cancel automatically after a turn.
- Pull lever up (3) to switch between low and high beam headlights.

Front Windshield Wiper



- Rotate hand grip (4) to activate front windshield wiper.
O - Off, I - Continuous or II - Fast.
- Push hand grip (4) towards column to activate windshield wiper fluid.

3.2.11 Reversing Fan Switch



The reversing fan enables the operator to clear debris from the engine cover grill (2). Two modes of operation are available at any engine speed.

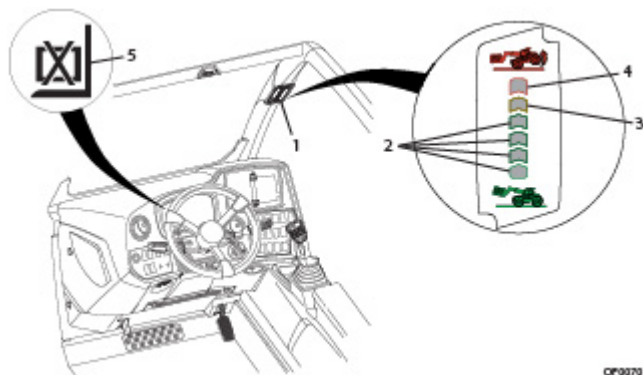
1. **Timed** - Fan will reverse automatically at predetermined intervals.
 - a. The fan will reverse every 20 minutes for a duration of 2 seconds.
 - b. The interval and duration can be adjusted using the analyzer.
2. **Manual** - The operator can depress and hold front of switch (1) to reverse the fan rotation.

Note: It is recommended to operate the reversing fan prior to opening the engine cover to remove debris.

3.2.12 Load Stability Indicator - LSI (if equipped)

! WARNING

TIP OVER HAZARD. The LSI considers only longitudinal stability limitations, observe all operating parameters. Failure to follow operating parameters of the telehandler could damage the equipment and/or cause tip over.



The LSI (1) provides visual and audible indication of forward stability limitations when machine is static on firm, level surface.

- When approaching forward stability limitations LEDs progressively illuminate, green (2), then orange (3) and finally red (4).
- If the red LED illuminates the warning buzzer also sounds.

The LSI has two modes:

Active Mode

- As the telehandler reaches forward stability limitations and the red LED (4) illuminates, the automatic function cut-out is activated. All boom functions are disabled except for boom retract and boom lift. Retract boom to re-enable functions.

Note: When functions are cut-out, the LSI Override Switch can be used to temporarily re-enable them. See [Section — Left Dash Control Panel, page 47](#).

- In some instances the LSI system may slow down or stop boom functions if operated close to forward stability limitations.

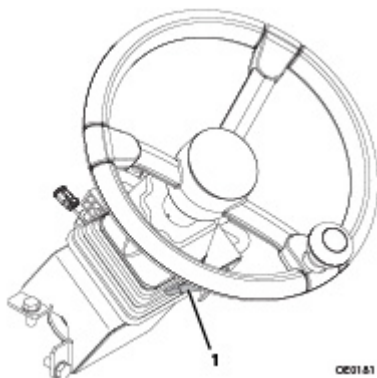
Passive Mode

- The yellow LED (5) on the instrument panel illuminates when either of the following occurs:
 - The boom is fully retracted.
 - The park brake is not applied and transmission is in forward or reverse.
- When approaching forward stability limitations, visual and audible indication is provided and the automatic function cut-out and/or slow down feature is disabled.
- Travel in accordance with the requirements set forth in [Section — General Safety Practices](#).
- When placing a load, ensure axles are not fully steered in either direction.

⚠ WARNING

TIP OVER HAZARD. If the green, orange and red LEDs flash and warning buzzer sounds, retract and lower boom immediately. Determine cause and correct before continued use.

3.2.13 Steering Column Adjuster



- Follow [Section — Shut-Down Procedure](#).
- Push and hold lever (1) to unlock.
- Place steering column in desired position.
- Release lever to lock back into place.

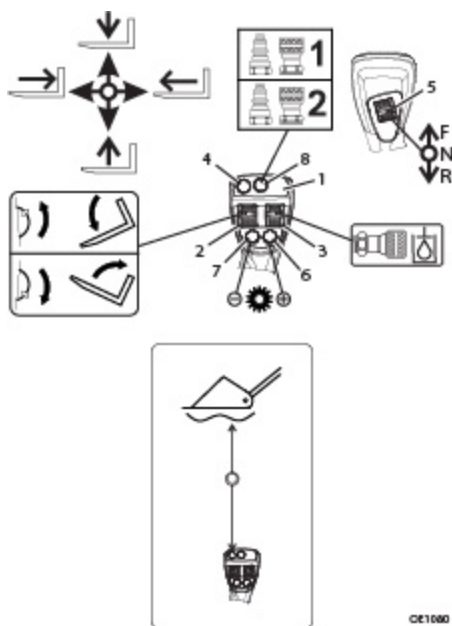
⚠ WARNING

TIP OVER/CRUSH HAZARD. Bring telehandler to a complete stop and shutdown engine before adjusting steering column. A sudden change in direction of travel could reduce stability and/or cause load to shift or fall.

3.2.14 Joystick

Lift Joystick Pattern

Verify the lift joystick pattern icon is active on the display.



The joystick (1) controls the boom, attachment, auxiliary hydraulics and transmission functions.

Boom Functions

- Move the joystick back to lift boom; move joystick forward to lower boom; move joystick right to extend boom; move joystick left to retract boom.
- The speed of boom functions depends upon the amount of joystick travel in corresponding direction. Increasing engine speed will also increase function speed.
- For two simultaneous boom functions, move joystick between quadrants. For example; moving the joystick forward and to the left will lower and retract boom simultaneously.

⚠ WARNING

TIP OVER/CRUSH HAZARD. Rapid, jerky operation of controls will cause rapid, jerky movement of the load. Such movements could cause the load to shift or fall or could cause the machine to tip over.

Attachment Tilt Function

Attachment tilt is controlled by the roller switch (2).

- Push the roller switch up to tilt attachment down; press the roller switch down to tilt attachment up.

Auxiliary Hydraulic Functions (if equipped)

The Auxiliary Hydraulics roller switch (3) controls the function of attachments that require the hydraulic supply for operation. See [Section — Attachments and Hitches](#) for approved attachments and control instructions.

The Auxiliary Hydraulic selection switch (8) allows the desired auxiliary hydraulic function to be selected. Depress button to alternate between functions.

Boom Float Functions (if equipped)

Joystick button (4) controls boom float. Boom float allows free movement of boom (lift/lower) while the attachment follows ground contours.

- With the boom retracted and lowered, press and hold the button; move the joystick forward to activate boom float. Button and joystick position must be held to maintain boom float.
- Release button to deactivate boom float and move joystick to neutral position.

Transmission Control (if equipped)

Note: Transmission control lever (see [Section — Transmission Control Lever \(if equipped\), page 52](#)) takes priority over joystick transmission controls.

Transmission roller switch (5) engages forward or reverse travel.

- Push the roller switch up for forward travel; push the roller switch down for reverse travel. Move roller switch to centered position for neutral.
- Forward or reverse travel can be selected while in any gear.
- When traveling in reverse, the back-up alarm will automatically sound.
- Travel at slow rates of speed when making turns and driving in reverse.

WARNING

TIP OVER/CRUSH HAZARD. Bring telehandler to a complete stop before shifting transmission. A sudden change in direction of travel could reduce stability and/or cause load to shift or fall.

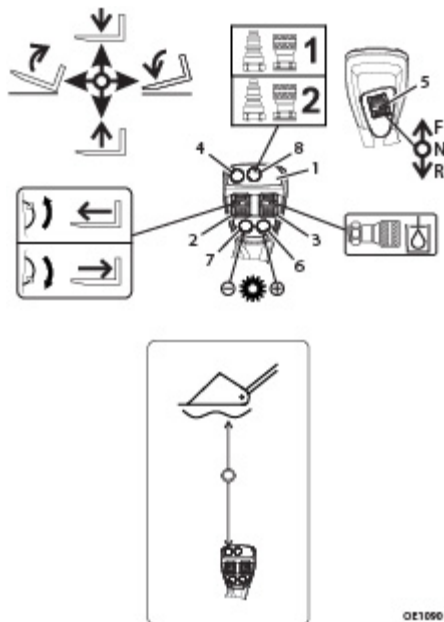
Gear selection is controlled by buttons (6 & 7).

- Depress upshift button (6) to select a higher gear; Depress downshift button (7) to select a lower gear.
- The transmission is equipped with either six forward and three reverse gears or four forward and three reverse gears. Default gear at start-up is third gear.

- Select the appropriate gear for the task being performed. Use a lower gear when transporting a load. Use a higher gear only when driving unloaded for longer distances.
- Slow down prior to downshifting. Do not downshift more than one gear at a time.

Loader Joystick Pattern

Verify the lift joystick pattern icon is active on the display.



The joystick (1) controls the boom, attachment, auxiliary hydraulics and transmission functions.

Boom Functions

- Move the joystick back to lift boom; move joystick forward to lower boom.
- The speed of boom functions depends upon the amount of joystick travel in corresponding direction. Increasing engine speed will also increase function speed.
- For two simultaneous functions, move joystick between quadrants. For example; moving the joystick forward and to the left will lower the boom and tilt forks up simultaneously.

⚠ WARNING

TIP OVER/CRUSH HAZARD. Rapid, jerky operation of controls will cause rapid, jerky movement of the load. Such movements could cause the load to shift or fall or could cause the machine to tip over.

Attachment Tilt Function

Attachment tilt is controlled by the joystick.

- Move joystick right to tilt down; move joystick left to tilt up.

Auxiliary Hydraulic Functions (if equipped)

The Auxiliary Hydraulics roller switch (3) controls the function of attachments that require the hydraulic supply for operation. See [Section — Attachments and Hitches](#) for approved attachments and control instructions.

The Auxiliary Hydraulic selection switch (8) allows the desired auxiliary hydraulic function to be selected. Depress button to alternate between functions.

Boom Float Functions (if equipped)

Joystick button (4) controls boom float. Boom float allows free movement of boom (lift/lower) while the attachment follows ground contours.

- With the boom retracted and lowered, press and hold the button; move the joystick forward to activate boom float. Button and joystick position must be held to maintain boom float.
- Release button to deactivate boom float and move joystick to neutral position.

Transmission Control (if equipped)

Note: Transmission control lever (see [Section — Transmission Control Lever \(if equipped\), page 52](#)) takes priority over joystick transmission controls.

Transmission roller switch (5) engages forward or reverse travel.

- Push the roller switch up for forward travel; push the roller switch down for reverse travel. Move roller switch to centered position for neutral.
- Forward or reverse travel can be selected while in any gear.
- When traveling in reverse, the back-up alarm will automatically sound.
- Travel at slow rates of speed when making turns and driving in reverse.

WARNING

TIP OVER/CRUSH HAZARD. Bring telehandler to a complete stop before shifting transmission. A sudden change in direction of travel could reduce stability and/or cause load to shift or fall.

Gear selection is controlled by buttons (6 & 7).

- Depress upshift button (6) to request a higher gear; Depress downshift button (7) to request a lower gear.
- The transmission is equipped with either six forward and three reverse gears or four forward and three reverse gears. Default gear at start-up is third gear.

- Select the appropriate gear for the task being performed. Use a lower gear when transporting a load. Use a higher gear only when driving unloaded for longer distances.
- Slow down prior to downshifting. Do not downshift more than one gear at a time.

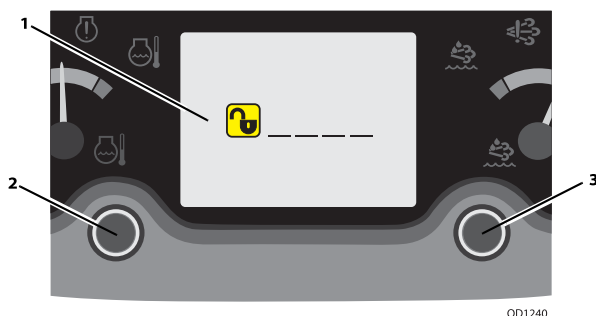
3.3 ANTI THEFT FUNCTIONALITY (IF ENABLED)

Machines with anti theft feature active require entering a numeric code before operation to prevent unauthorized use. If multifunction display is installed, anti-theft feature is accessed from that display only.

Note: If the anti theft feature is active and the current access code is not known, it may be viewed or changed by the machine owner (level 2 password may be required). See Service Manual for information.

3.3.1 Instrument Panel Input

Code entry is accomplished using information provided in the instrument panel display.



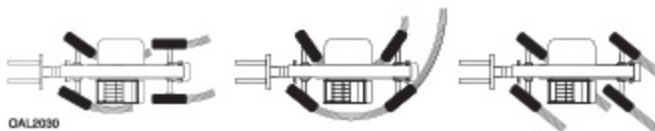
1. Turn ignition switch to position 1. If anti theft is active, the display **(1)** will prompt the operator for a numeric code.
2. Use the left button **(2)** to select the first digit. Press button to increase number. Number will increase from 0 thru 9 then roll over to 0.
3. Press the right button **(3)** to confirm current digit and move to the next digit.
4. Continue until the code is complete.
5. If an incorrect code is entered, the display will prompt the operator again for the numeric code.
6. If the correct code is entered, normal start up can continue.

3.3.2 Multifunction Display Input

If machine is equipped with Multifunction Display, refer to [Section - Anti-Theft Functionality, page 64](#) for anti-theft functionality information.

3.4 STEER MODES

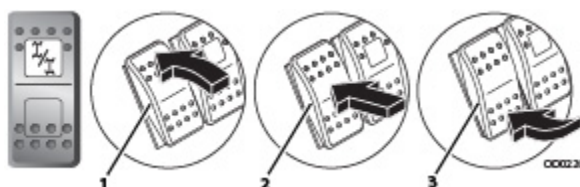
Three steer modes are available for operator use.



Note: 2-Wheel Front Steer mode is required for travel on public roads.

3.4.1 Manual Steering Alignment Mode Change

Note: Steer mode will change immediately after selection.



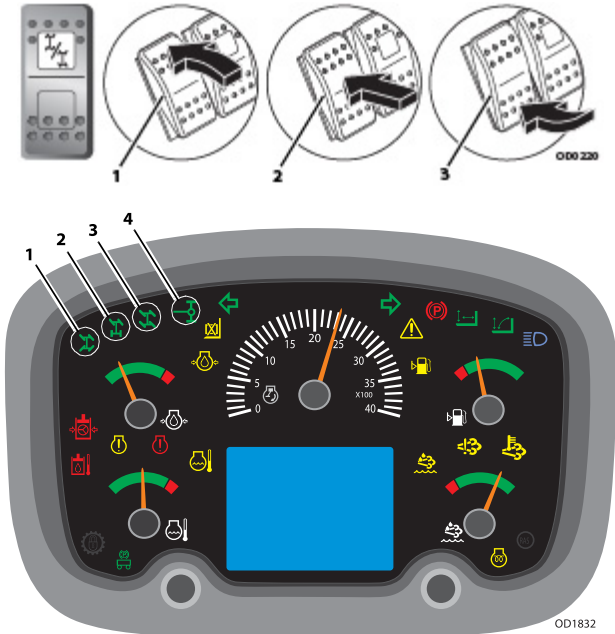
1. Bring machine to a stop using service brake. If front steer mode (2) is active and rear wheels are aligned, go directly to step 4.



2. With circle steer (1) or crab steer (3) mode active, turn the steering wheel until the left rear wheel (4) is aligned with the side of the machine.
3. Select front steer mode (2).
4. Turn the steering wheel until the left front wheel (5) is aligned with the side of the machine.
5. Wheels are now aligned. Select desired steer mode.

3.4.2 All Wheel Assisted Steering Alignment Mode Change

1. Bring machine to a stop using service brake.



2. Select desired steer mode: circle steer (1), front steer (2) or crab steer (3).

Note: Selected steer mode LED will flash until the change is complete. After steering alignment is complete, steer mode LED will illuminate solid.

3. Turn the steering wheel slowly until the rear wheels are centered (4). This step will be skipped if changing from front steer mode and rear wheels are already centered.
4. Turn the steering wheel slowly until the front wheels are centered. This step will be skipped if changing to front steer mode.
5. Wheels are now aligned and steer mode change is complete.

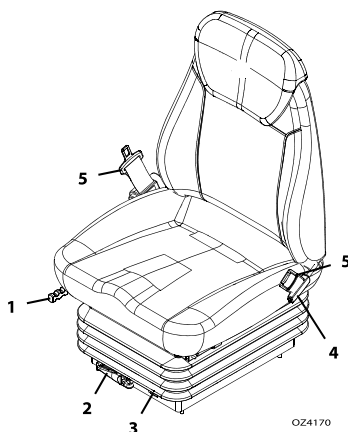
Note: Avoid turning steering wheel while machine is shut down. If wheels are not correctly aligned, manual adjustment may be required. See [Section — Steer Modes, page 65](#).

3.5 OPERATOR SEAT

3.5.1 Adjustments

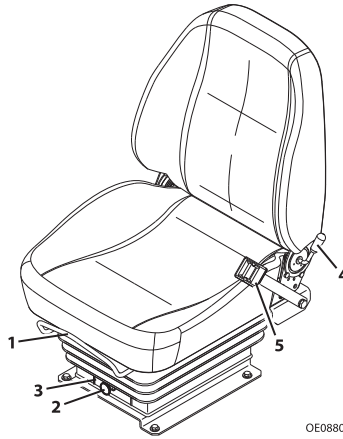
Prior to starting the engine adjust seat for position and comfort.

Mechanical Suspension Seat



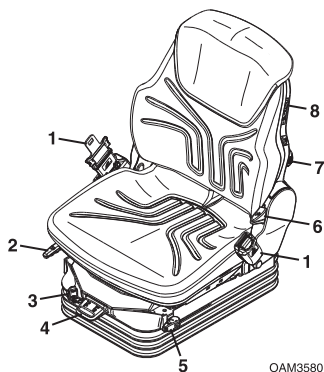
1. **Fore/Aft:** Use handle to move seat fore and aft.
2. **Suspension:** Use handle to adjust the suspension to the appropriate weight setting.
3. **Weight:** Displays current weight setting.
4. **Backrest:** Use lever to adjust backrest angle.
5. **Seat Belt:** Always fasten seat belt during operation. If required, a 3 in (76 mm) seat belt is available.

Pneumatic Suspension Seat



1. **Fore/Aft:** Use handle to move seat fore and aft.
2. **Suspension:** Use knob to adjust the suspension to the appropriate weight setting.
3. **Weight:** Displays current weight setting.
4. **Backrest:** Use lever to adjust backrest angle.
5. **Seat Belt:** Always fasten seat belt during operation. If required, a 3 in (76 mm) seat belt is available.

Pneumatic Suspension Seat



1. **Seat Belt:** Always fasten seat belt during operation. If required, a 3 in (76 mm) seat belt is available.
2. **Fore/Aft:** Use handle to move seat fore and aft.
3. **Absorber:** Use lever to adjust cushioning to soft or hard.
4. **Suspension:** Use the lever to adjust the suspension to the appropriate weight and height settings.
5. **Fore/Aft Isolator:** Use lever to activate fore/aft isolator.
6. **Backrest:** Use lever to adjust backrest angle.
7. **Lumbar:** Use knob to adjust the height and curvature of the backrest cushion.
8. **Heater:** Use switch to activate seat heater.

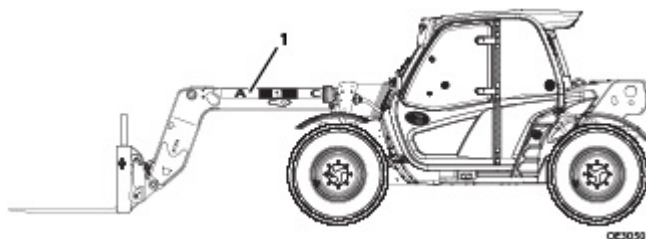
3.5.2 Seat Belt



Fasten seat belt as follows:

1. Grasp both free ends of the belt making certain that belt webbing is not twisted or entangled.
2. With back straight in the seat, couple the retractable end (male end) of the belt into the receptacle (buckle) end of the belt.
3. With belt buckle positioned as low on the body as possible, pull the retractable end of the belt away from the buckle until it is tight across the lap.
4. To release belt latch, press red button on the buckle and pull free end from buckle.

3.6 BOOM INDICATORS



3.6.1 Boom Extension

- The boom extension indicators (1) are located on the left side of the boom. Use these indicators to determine boom extension when using the capacity chart (see [Section — Use of the Capacity Chart](#)).

3.7 REVERSE SYSTEMS (IF EQUIPPED)

WARNING

CRUSH HAZARD. Running into persons or objects can cause death, serious injury, or damage to property and equipment. Always check mirrors and area behind vehicle before and when backing up. Reverse systems are for supplementary use only.

3.7.1 Reverse Sensing System

The reverse sensing system provides audible indication of objects to rear of unit while in reverse gear.

- Alarm sounds signaling machine is placed in reverse gear.

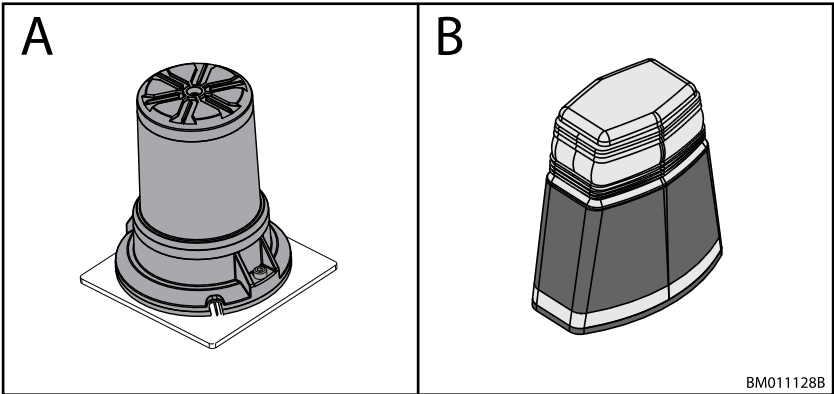
Note: Reverse Sensing System detects objects larger than 36 square inches (232.25 square centimeters) area and is functional when machine is moving in reverse direction.

- No alarm when detection zone is clear of objects.
- Pulsing alarm sounds when an object is in range of Reverse Sensing System. Alarm increases in frequency as object becomes closer.
- If alarm sounds at a frequency of eight pulses per second (8 Hz) an object is detected within 5 feet (1.5 m). Stop reverse direction of machine by applying service brake. Perform [Shut-Down Procedure](#). Check and clear area behind machine of objects before proceeding in a reverse direction.

3.7.2 Reversing Camera

If machine is equipped with Multifunction Display, refer to [Section — Reversing Camera \(if equipped\)](#) for reversing camera information.

3.8 BEACONS



A. Beacon

B. LED Motion / Amber Beacon (CS550)

Note: Image for reference only. Beacon design may vary based on beacon type, machine model and installation location.

3.8.1 ClearSky® LED Motion / Amber Beacon (CS550)

The ClearSky® CS550 is installed on ClearSky Smart Fleet™ equipped machines.

The CS550 can function as a machine beacon using multiple colors and flash patterns for communication and identification purposes. In addition to amber, colors include: red, blue, green, cyan, and white. The ClearSky Smart Fleet mobile app can command visual alerts or audible alarms to assist in machine identification.

The CS550 also functions as a visible connectivity point for ClearSky Smart Fleet. Refer to the ClearSky Smart Fleet section for more information.

3.8.2 Amber Beacon

This amber-colored beacon flashes at a constant rate to alert those nearby that the machine is in an active work state. The device may also use different flash patterns to identify specific machine alerts.

SECTION 4

Operation

4.1 ENGINE

4.1.1 Starting the Engine

This machine can be operated under normal conditions in temperatures of 0°F to 118°F (-18°C to 48°C). Consult JLG for operation outside this range or under abnormal conditions.

If equipped for extreme cold weather, -40°F to 0°F (-40°C to -20°C), see [Section — Extreme Cold Weather Starting \(if equipped\), page 74](#) for starting procedure.

1. Turn on electrical master switch.
2. Make sure all controls are in “Neutral” and all electrical components (lights, heater, etc.) are turned off. Apply park brake.
3. Turn ignition switch to position 1 and wait for engine preheat indicator on instrument panel to go out.
4. Turn ignition switch to position 2 to engage starting motor. Release key immediately when engine starts. If engine fails to start within 20 seconds, release key and allow starting motor to cool for a few minutes before trying again.

Note: If engine preheat indicator flashes after engine starts, accelerator pedal is deactivated until indicator goes out.

5. After engine starts, observe indicators. If indicators remain on for more than five seconds, stop engine and determine cause before restarting engine.
6. Warm up engine at approximately 1/2 throttle.

Note: Engine will not start unless transmission is in neutral and park brake is applied.

WARNING

UNEXPECTED MOVEMENT HAZARD. Always ensure that transmission is in neutral and the service brake is applied before releasing park brake. Releasing park brake in either forward or reverse could cause the machine to move abruptly.

WARNING

ENGINE EXPLOSION. Do not spray ether into air intake for cold weather starting.

4.1.2 Extreme Cold Weather Starting (if equipped)

If equipped with extreme cold weather components, machine can be operated in temperatures of -40°F to 0°F (-40°C to -20°C).

1. Machine must be equipped with heating components and extreme cold weather fluids. See [Section — Specifications](#) for fluid details.
2. Locate the three yellow extension cords stored behind seat in cab.
3. Connect the hydraulic tank heater to one extension cord and the battery and block heaters to the other extension cord. Connect each extension cord to separate A/C power supplies with a minimum rating of 15 Amps each.
4. Allow the heating components to operate a minimum of 12 hours prior to machine operation.
5. Follow start-up procedure on [Section — Starting the Engine, page 73](#) and allow engine to idle 20 minutes.
6. Operate all boom functions continuously for five minutes to circulate the warm hydraulic fluid.
7. Perform [Section — Shut-Down Procedure, page 76](#).
8. Disconnect A/C power supplies and place back in storage locations.
9. Machine is ready for operation.

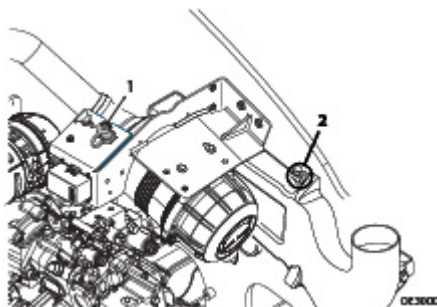
4.1.3 Battery Boosted Starting



OW0530

If battery-boost starting (jump-start) is necessary, proceed as follows:

- Never allow vehicles to touch.
- Ensure boosting vehicle engine is running.



- Remote battery post is located on right side of engine compartment for jump-starting.
- Connect positive (+) jumper cable to positive (+) post (1) of discharged battery.
- Connect opposite end of positive (+) jumper cable to positive (+) post of booster battery.
- Connect negative (-) jumper cable to negative (-) post on booster battery.
- Connect opposite end of negative (-) jumper cable to ground point on machine (2).
- Follow standard starting procedures.
- Remove cables in reverse order after machine has started.

WARNING

BATTERY EXPLOSION HAZARD. Never jump-start or charge a frozen battery as it could explode. Keep sparks, flames and lighted smoking materials away from battery. Lead acid batteries generate explosive gases when charging. Wear safety glasses.

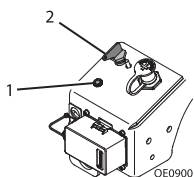
4.1.4 Normal Engine Operation

- Observe instrument panel and display frequently to be sure all systems are functioning properly.
- **Be alert for unusual noises or vibration.** When an unusual condition is noticed, park machine in safe position and perform shut-down procedure. Report condition to your supervisor or maintenance personnel.
- **Avoid prolonged idling.** If engine is not being used, turn it off.
- If prolonged idling is required (park brake applied and all controls in neutral), engine idle may increase if any of the following conditions are present.
 - Driving lights on.
 - Air conditioning on.
 - Ambient temperature below -1°F (-17°C).

4.1.5 Shut-Down Procedure

When parking the telehandler, park in a safe location on flat level ground and away from other equipment and/or traffic lanes.

1. Apply park brake.
2. Shift transmission to "Neutral".
3. Lower forks or attachment to ground.
4. Operate engine at low idle for 3 to 5 minutes. **DO NOT over rev engine.**
5. Shut off engine and remove ignition key.
6. Exit telehandler properly.



7. If equipped for ULS, purge indicator (1) will illuminate until DEF is purged from the system. Do not turn key (2) to off while indicator is illuminated.
8. Turn off electrical master switch.
9. Block wheels (if necessary).

4.2 AFTER-TREATMENT SYSTEM (ATS)

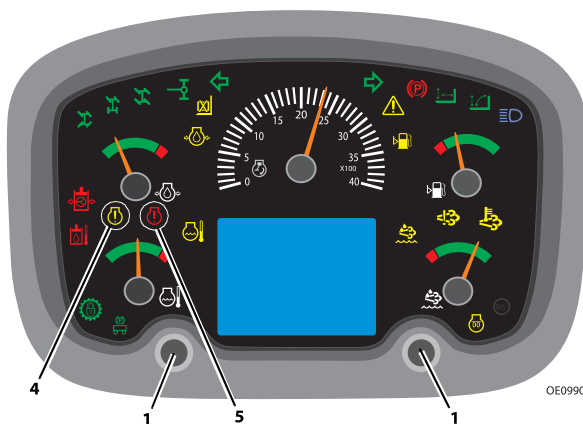
This machine is equipped with an exhaust After-Treatment System. Selective Catalytic Reduction (SCR) Indicator (2) will slowly blink when a maintenance / desulphurization or decrystallization refresh is required. Prior to a stationary exhaust system cleaning, ensure all stationary conditions are met.

1. Move telehandler to a level area free of flammables and people that could be exposed to hot exhaust.
2. Keep engine warm (coolant temperature above 39° C) and at idle speed and ensure no engine system faults are active.
3. Shift transmission to neutral, retract and lower boom and engage park brake.

Note: In cold environments, ensure DEF tank is thawed so that DEF pump can prime and inject.

4.2.1 Stationary Exhaust System Cleaning

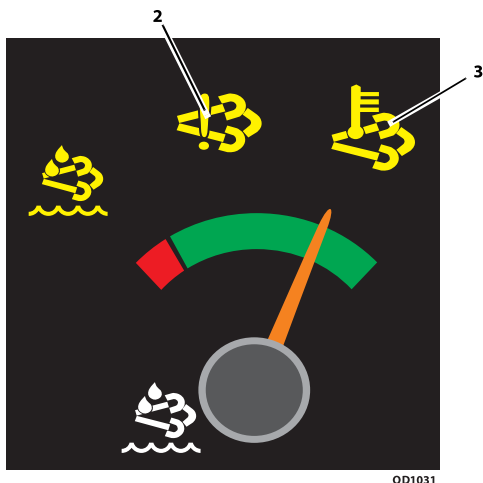
To initiate stationary exhaust system cleaning, hold instrument panel buttons (1) simultaneously for 3 seconds.



Note: JLG Analyzer may also be used to initiate exhaust system cleaning (except during idle lock inducement).

! WARNING

HIGH EXHAUST TEMPERATURE. Keep flammables and people away from hot exhaust.



1. SCR (2) and High Exhaust System Temperature (HEST) (3) Indicators will illuminate during stationary exhaust system cleaning.

Note: Do not operate boom controls, park brake or accelerator pedal during exhaust system cleaning. Stationary exhaust system cleaning will stop and may be incomplete if any controls are inadvertently moved or activated.

2. If exhaust system cleaning is interrupted, both instrument panel buttons (1) must be pressed again simultaneously for 3 seconds to re-initiate cycle.
3. Exhaust system cleaning takes up to approximately 35 minutes. Stationary exhaust system cleaning is complete after SCR and HEST indicators go off.
4. If exhaust system cleaning is unsuccessful, SCR indicator (2) will turn off for 2 seconds before resuming a slow blink. ensure all stationary conditions have been met.

NOTICE

EQUIPMENT DAMAGE. If exhaust system cleaning is ignored, engine Fault Warning Indicator (4) will illuminate and a 25% power derate will begin. Immediately bring machine to a stop and perform stationary exhaust system cleaning. If cleaning is still ignored, engine Fault Critical Indicator (5) will illuminate and engine will go into idle speed lock. Contact the local dealer.

4.3 OPERATING WITH A NON-SUSPENDED LOAD

4.3.1 Lift Load Safely

- You must know weight and load center of every load you lift. If you are not sure of weight and load center, check with your supervisor or with supplier of the material.

! WARNING

TIP OVER HAZARD. Exceeding lift capacity of the telehandler could damage the equipment and/or cause tip over.

- Know rated load capacities (refer to [Section — Attachments](#)) of telehandler to determine operating range in which you can safely lift, transport and place a load.

4.3.2 Picking Up a Load

- Note conditions of the terrain. Adjust travel speed and reduce amount of load if conditions warrant.
- Avoid lifting double-tiered loads.
- Make sure load is clear of any adjacent obstacles.
- Adjust spacing of forks so they engage the pallet or load at maximum width. See [Section — Adjusting/Moving Forks](#).
- Approach load slowly and squarely with fork tips straight and level. **NEVER** attempt to lift a load with just one fork.
- NEVER** operate telehandler without a proper and legible capacity chart in operator cab for telehandler/attachment combination you are using.

4.3.3 Transporting a Load



- After engaging the load and resting it against the backrest, tilt the load back to position it for travel. Travel in accordance with the requirements set forth in [Section — General Safety Practices](#) and [Section — Attachments](#).

4.3.4 Leveling Procedure

1. Position machine in best location to lift or place load.
2. Apply parking brake and shift transmission to NEUTRAL.
3. Observe level indicator(s) to determine whether machine must be leveled prior to lifting load. If equipped, level machine with frame level switch (see [Section — Controls](#)) or outrigger controls (see [Section — Controls](#) or [Outrigger Levers \(If Equipped\)](#)).
4. Move boom/attachment to 4 ft (1,2 m) off ground.
(AUS - Move boom so forks are no more than 11.8 in (300 mm) above ground surface.)

Important things to remember:

- Never raise boom/attachment more than 4 ft (1,2 m) above ground unless telehandler is level.
(AUS - Never raise the forks more than 300 mm (11.8 in) above ground surface unless telehandler is level.)
- Combination of frame leveling and load could cause telehandler to tip over.

4.3.5 Placing a Load

Before placing any load be sure that:

- Landing point can safely support weight of the load.
- Landing point is level; front to back and side to side.
- Use capacity chart to determine safe boom extension range. See [Section — Use of the Capacity Chart](#).
- Align forks at level the load is to be placed, then position boom slowly until load is just above area where it is to be placed.
- Lower the boom until the load rests in position and the forks are free to retract.

4.3.6 Disengaging a Load

Once the load has been placed safely at the landing point, proceed as follows:

1. With forks free from weight of load, boom can be retracted.
2. Lower carriage.
3. Telehandler can now be driven from landing location to continue work.

4.4 OPERATING WITH A SUSPENDED LOAD

4.4.1 Lift Load Safely

- You must know weight and load center of every load you lift. If you are not sure of weight and load center, check with your supervisor or with supplier of the material.

WARNING

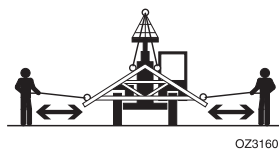
TIP OVER HAZARD. Exceeding lift capacity of the telehandler could damage the equipment and/or cause tip over.

- Know rated load capacities (refer to [Section — Attachments and Hitches](#)) of telehandler to determine operating range in which you can safely lift, transport and place a load.

4.4.2 Picking Up a Suspended Load

- Note conditions of terrain. Adjust travel speed and reduce amount of load if conditions warrant.
- Avoid lifting double-tiered loads.
- Make sure load is clear of any adjacent obstacles.
- **NEVER** operate telehandler without a proper and legible capacity chart in operator cab for telehandler/attachment combination you are using.
- Only use approved lifting devices rated for lifting of load.
- Identify proper lifting points of load, taking into consideration center of gravity and load stability.
- Ensure to always properly tether loads to restrict movement.
- Refer to [Section — Use of the Capacity Chart](#) for proper lifting guidelines in addition to appropriate capacity chart in operator cab.

4.4.3 Transporting a Suspended Load



- Travel in accordance with the requirements set forth in [Section — General Safety Practices](#) and [Section — Attachments and Hitches](#).
- For additional requirements, refer to appropriate capacity chart in operator cab.

Important things to remember:

- Ensure boom is fully retracted.
- Never raise load more than 11.8 in (300 mm) above ground surface or boom more than 45°.
- Combination of frame leveling and load could cause telehandler to tip over.
- Guide persons and operator must remain in constant communication (verbal or hand) and be in visual contact with operator at all times.
- Never place guide persons between suspended load and telehandler.
- Only transport load at walking speed, 0.9 mph (0.4 m/s), or less.

4.4.4 Leveling Procedure

1. Position machine in best location to lift or place load.
2. Apply parking brake and shift transmission to NEUTRAL.
3. Observe level indicator(s) to determine whether machine must be leveled prior to lifting load.
4. Move boom so load is no more than 11.8 in (300 mm) above ground surface and boom/or boom is raised no more than 45°.

4.4.5 Placing a Suspended Load

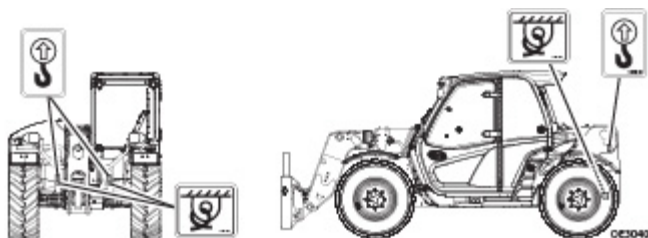
Before placing any load be sure that:

- Landing point can safely support weight of load.
- Landing point is level; front to back and side to side.
- Use capacity chart to determine safe boom extension range. See [Section — Use of the Capacity Chart](#).
- Align load at level the load is to be placed, then position boom slowly until load is just above area where it is to be placed.
- Ensure that guide persons and operator remain in constant communication (verbal or hand) when placing load.

4.4.6 Disengaging a Suspended Load

- Never place guide persons between suspended load and telehandler.
- Once at destination of load, ensure to bring telehandler to a complete stop and apply park brake prior to disengagement of lifting devices and tethers.

4.5 LOADING AND SECURING FOR TRANSPORT



4.5.1 Tie Down

1. Level telehandler prior to loading.
2. Using a spotter, load telehandler with boom as low as possible.
3. Once loaded, apply parking brake and lower boom until boom or attachment is resting on deck. Move all controls to "Neutral," stop engine and remove ignition key.
4. Secure machine to deck by passing chains through designated tie down points as shown in figure.
5. Do not tie down front of boom.

Note: User assumes all responsibility for choosing proper method of transportation and tiedown devices, making sure equipment used is capable of supporting weight of vehicle being transported and that all manufacturer's instructions and warnings, regulations and safety rules of their employer, Department of Transportation and/or any other local, state or federal/ provincial laws are followed.

⚠ WARNING

TELEHANDLER SLIDE HAZARD. Before loading telehandler for transport, make sure deck, ramps and telehandler wheels are free of mud, snow and ice. Failure to do so could cause telehandler to slide.

4.5.2 Lifting

The weight of the machine is listed on the serial number plate located at the front of the frame. Actual machine weight and center of gravity will vary depending on attachment, fluid levels and machine options. Actual weight and center of gravity should be verified prior to lifting.

The following precautions must be taken when lifting the machine with a mobile crane:

- Make adjustments to the lifting device and equipment to ensure the machine will be level when elevated. The machine must remain level at all times while being lifted.
- Machine must never be lifted by any point on the boom.
- Take care not to let cables, chains, slings, etc. contact any part of the vehicle during lift.
- Ensure that the boom is retracted and lowered.
- Ensure that the lifting device and equipment is adequately rated and suitable for the intended purpose.
- Remove all loose items from machine prior to lifting of the machine.
- Obtain any additional training regarding the proper lifting procedures that may be required. Please consult the local, state and employer regulations.

4.6 CLEARSKY SMART FLEET™

ClearSky Smart Fleet™ integrates on-machine hardware with web-based software and a mobile app to provide fleet management data and analytics. Personnel with the appropriate permissions can access telematics and machine identification data using a dashboard visible in the ClearSky Smart Fleet web portal or the ClearSky Smart Fleet mobile app. (Navigation and visual configuration may vary between the web portal or mobile app.)

Features include machine monitoring such as fuel level and battery charge, remote analyzer tasks including diagnostic trouble codes or system alerts, and access control (if available) restrictions.

Refer to the Access Control and Beacons sections of this manual for more information. Visit the ClearSky section of the JLG website for more resources and information about accessing web portal or mobile app data.

4.7 ACCESS CONTROL - CLEARSKY SMART FLEET™ (IF EQUIPPED)

NOTICE

Operator access to the machine may be placed into a restricted state remotely.

If a modification to a restricted state is required, contact the ClearSky Smart Fleet™ account owner. Only authorized personnel can make changes from within the web portal or mobile app.

This machine may be equipped with ClearSky Smart Fleet Access Control. Using the ClearSky Smart Fleet mobile app or web portal (remotely or locally), the machine can be placed into restricted states that limit machine functionality for all operators.

By using this machine, the operator acknowledges Access Control functionality, including restricted states, and accounts for it in their safe use plan.

Restricted states may include:

1. Speed Restricted — Machine drive speed is restricted to low speed and boom lift speed is reduced.
2. Speed and Function Restricted — Machine drive speed is restricted to low speed and boom lift speed is reduced. On certain machines, the maximum boom angle allowed will be reduced.
3. Locked Out — Machine has been locked out and will not operate (including engine start, if applicable).

Note: Restricted functionality may occur if the CS550 (ClearSky® LED Motion / Amber Beacon) is damaged or removed. A protective cage is available through JLG.

Machines equipped with ClearSky Smart Fleet Access Control are also equipped with the CS550. Refer to the ClearSky Smart Fleet and Beacons sections of this manual for more information.

SECTION 5

Attachments and Hitches

5.1 APPROVED ATTACHMENTS

5.1.1 Coupler Mounted Attachments

To determine if an attachment is approved for use on specific telehandler you are using, perform following prior to installation.

- The attachment type, weight and dimensions must be equal to or less than the data shown on a capacity chart located in the operator cab.
- The model on the capacity chart must match the model telehandler being used.
- Hydraulically powered attachments must only be used on machines equipped with auxiliary hydraulics.
- Hydraulically powered attachments that require auxiliary electrics must only be used on machines equipped with auxiliary hydraulics and electrics.
- The attachment is clearly labeled in accordance with ANSI/ITSDF B56.6

If any of the above conditions are not met, do not use attachment. Telehandler may not be equipped with proper capacity chart or attachment may not be approved for the model telehandler being used. Contact JLG or a local distributor for further information.

5.1.2 JLG Supplied Fork Mounted Attachments

To determine if an attachment is approved for use on specific telehandler you are using, perform following prior to installation.

- The machine is authorized for use with JLG supplied fork mounted attachments.
- The model on the capacity chart must match the model telehandler being used.
- Hydraulically powered attachments must only be used on machines equipped with auxiliary hydraulics.
- Hydraulically powered attachments that require auxiliary electrics must only be used on machines equipped with auxiliary hydraulics and electrics.

If any of the above conditions are not met, do not use attachment. Telehandler may not be equipped with proper capacity chart or attachment may not be approved for the model telehandler being used. Contact JLG or a local distributor for further information.

For requirements regarding fork mounted attachments, see [Section - Fork Mounted Attachments](#).

5.1.3 Non-OEM Fork Mounted Attachments

JLG authorizes the use of non-OEM fork mounted attachments provided the criteria and instructions are followed. See [Section - Fork Mounted Attachments](#).

5.2 UNAPPROVED ATTACHMENTS

Do not use unapproved attachments for the following reasons:

- Range and capacity limitations for “will fit,” homemade, altered, or other non-approved attachments cannot be established.
- An overextended or overloaded telehandler can tip over with little or no warning and cause serious injury or death to the operator and/or those working nearby.
- The ability of a non-approved attachment to perform its intended function safely cannot be assured.

WARNING

Use only approved attachments. Attachments which have not been approved for use with your telehandler could cause machine damage or an accident.

5.3 FORK MOUNTED ATTACHMENTS

5.3.1 General Requirements

- Certain fork mounted attachments have a dedicated capacity chart. The attachment type, weight and dimensions must be equal to or less than the data shown on a capacity chart located in the operator cab. If it does not have a dedicated capacity chart, utilize the applicable carriage capacity chart on which the fork mounted attachment is attached.
- Fork mounted attachments are to be used on telehandlers with a standard carriage or side tilt carriage with pallet or lumber forks only.
- All fork mounted attachments must ensure secure connection with pins behind the heel of the forks. Do not secure using chains, straps or clamps directly to the forks, fork carriage, load bar and/or the boom.
- The forks of the carriage must support 2/3 of the load length for any load applied.
- The weight of the fork mounted attachment, rigging and the associated load is to be included in the total load being lifted. Refer to the capacity chart for the carriage in use.
- The capacity chart for the applicable carriage is established with a 24-inch load center, and the load center of the attachment and load must equal 24 inches to utilize the existing load chart capacities.

- When the load center of a combined attachment and/or load exceeds 24 inches, the equivalent load must be calculated to use with the carriage capacity chart. See [Fork Mounted Attachments Equivalent Load](#).

Note: When lifting loads, ensure that the center of gravity (CG) of the load being lifted is centered (right to left) between the forks.

5.3.2 Non-OEM Attachments

User of non-OEM attachments is responsible for:

- Design
- Fabrication
- Workmanship
- Structural Integrity
- Maximum Capacity
- Fit and Function
- Overall Quality
- Any operation and safety instructions specific to the attachment
- The attachment is clearly labeled in accordance with ANSI/ITSDF B56.6
- Ensure that the attachment and use of the attachment complies with this and all other applicable standards

5.4 EQUIVALENT LOAD

5.4.1 Load Centers Beyond 24 Inches

Carriage and fork capacity charts provided by JLG are validated based on load centers of 24 inches. When the load center for the application being performed exceeds 24 inches, the Equivalent Load must be calculated to use with the carriage capacity chart.

Utilizing Equivalent Load Calculation is applicable for all carriage and fork arrangements. The forks of the JLG carriage must support 2/3 of the load length for any load applied.

Equivalent Load Calculation

The Equivalent Load is determined with the calculation below. The Equivalent Load is the value applied to the respective carriage capacity chart to determine the appropriate use zone(s).

$$\frac{\text{Weight of Attachment Load (lb)} \times \text{CG Distance of Load (in)}^1}{24 \text{ in}} = \text{Equivalent Load}$$

¹ Center of Gravity (CG) Distance is measured horizontally from the front surface of the fork.

Example

- Weight of load = 5,000 pounds
- Center of gravity of load = 36 inches

The Equivalent Load for this example is:

$$\frac{5,000 \times 36}{24} = 7,500 \text{ pounds}$$

This value is cross-checked to the capacity of the forks to ensure the forks are rated to equally share this load. The user then utilizes the carriage capacity chart to determine where 7,500 lb can be safely moved and placed within the machine operating limits.

5.4.2 Fork Mounted Attachments Equivalent Load

Equivalent Load Calculation

The Equivalent Load is determined with the calculation below. The Equivalent Load is the value applied to the respective carriage capacity chart to determine the appropriate use zone(s).

$$\text{Weight of Attachment (lb) x CG Distance of Attachment (in)}^1 + (\text{Weight of Attachment Load (lb) x CG Distance of Load (in)}^1) \div 24 \text{ in} = \text{Equivalent Load}$$

¹ Center of Gravity (CG) Distance is measured horizontally from the front surface of the fork.

Example

- Weight of attachment = 500 pounds
- Center of gravity of attachment = 36 inches
- Weight of load = 1,000 pounds
- Center of gravity of load = 45 inches

The Equivalent Load for this example is:

500 X 36	=	18000
1000 X 45	=	45000
18,000 + 5000	=	2,625 pounds
24		

This value is cross-checked to the capacity of the forks to ensure the forks are rated to equally share this load. The user then utilizes the carriage capacity chart to determine where 2,625 lb can be safely moved and placed within the machine operating limits.

WARNING

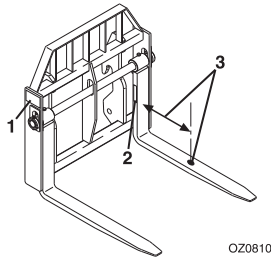
This calculation does not apply to Personnel Work Platforms. Refer to Telehandler Personnel Work Platform Operation & Safety Manual for additional information.

5.5 JLG SUPPLIED ATTACHMENTS

Attachment	Part Number	Applicable Model		
		925, AG925	832, AG832	823, AG823
Carriage, 50 in (1270 mm)	1001104435	X	X	X
Carriage, 60 in (1524 mm)	1001259144	X	X	X
Carriage, 72 in (1829 mm)	1001259146	X	X	X
Carriage, FEM	1001265218	X	X	X
Dual Fork Positioning Carriage, 48 in (1225 mm)	1001091313	X	X	X
Side Tilt Carriage, 48 in (1225 mm)	1001184041	X	X	X
Side Tilt Carriage, 60 in (1575 mm)	1001184043	X	X	X
Side Tilt Carriage, 72 in (1829 mm)	1001184045	X	X	X
Side Shift Carriage, 48 in (1225 mm)	1170002	X	X	X
Fork, Pallet, 2x4x47.2 in (50x100x1200 mm)	1001257263	X	X	X
Fork, Pallet, 2x4x47.2 in (50x100x1200 mm)	1001257265	X	X	X
Fork, Pallet, 2x4.9x48 in (50x125x1220 mm)	1001257318	X	X	X
Fork, Pallet, 2x4.7x47.2 in (50x120x1200 mm)	1001257327	X	X	X
Fork, Lumber, 2x5.9x72 in (50x150x1830 mm)	1001257317	X	X	X
Fork, Lumber, 1.75x6x60 in (45x150x1540 mm)	1001197598	X	X	X
Fork Extension, 2.4x6.4 in (62x163 mm)	1001137512	X	X	X
Bale, Dual Tine, 48 in (1225 mm)	1001211897	X	X	X
Bale Handler, Tube	0240117	X	X	X
Bale Handler, Spike	0240118	X	X	X
Bucket, General Purpose, 72 in-1.3 yd ³ (1829 mm-1,0 m ³)	1001290109	X	X	X
Bucket, General Purpose, 96 in-2.0 yd ³ (2450 mm-1,5 m ³)	1001290111	X	X	X
Bucket, General Purpose, 96 in-2.6 yd ³ (2450 mm-2,0 m ³)	1001290113	X	X	X
Bucket, General Purpose, 96 in-3.3 yd ³ (2450 mm-2,5 m ³)	1001290115	X	X	X

Attachment	Part Number	Applicable Model		
		925, AG925	832, AG832	823, AG823
Bucket, General Purpose, 96 in-4.0 yd ³ (2450 mm-3,0 m ³)	1001290122	X	X	X
Bucket, Multi-Purpose, 1.3 yd ³ (1,0 m ³)	0930003	X	X	X
Bucket, Multi-Purpose, 0.8 yd ³ (0,6 m ³)	0930006	X	X	X
Concrete Bucket Mixer, 132 gal (500 L)	1001106930	X	X	X
Bucket, Grapple, 1.3 yd ³ (1,0 m ³)	0930004	X	X	X
Bucket, Manure Grapple	1001216001	X	X	X
Muck Fork, 94 in (2450 mm)	1001216003	X	X	X
Auger	1001206173	X	X	X
Truss Boom, 7.5 ft (2286 mm)	1001292996	X	X	X
Truss Boom, 12 ft (3658 mm)	1001292995	X	X	X
Truss Boom w/Winch, 3 ft (914 mm)	1001206669	X	X	X
Truss Boom w/Winch, 12 ft (3658 mm)	1001206671	X	X	X
Silage Defacer	1001275274	X		X
Universal Quick Coupler Adapter	1001272548	X	X	X
Fork Mounted Hook	1001097205	X	X	X
Trash Hopper	1001238566	X	X	X
Platform, Fork Mounted (ASME)	1001238653	X	X	X
Platform, Fork Mounted (ASME — French)	1001238655	X	X	X
Platform, Fork Mounted (ISO)	1001238654	X	X	X

5.6 TELEHANDLER/ATTACHMENT/FORK CAPACITY



Prior to installing attachment, verify it is approved and telehandler is equipped with proper capacity chart. See [Section — Approved Attachments](#).

To determine maximum capacity of telehandler and attachment, use the **smallest** of the following capacities:

- Capacity stamped on attachment identification plate (1).
- Fork capacities and load centers are stamped on the side of each fork (2) (if equipped). This rating specifies maximum load capacity that the individual fork can safely carry at maximum load center (3). Total attachment capacity is multiplied by number of forks on attachment (if equipped), up to maximum capacity of attachment.
- Maximum capacity as indicated on the proper capacity chart. See [Section — Approved Attachments](#).
- When load rating of telehandler differs from capacity of the forks or attachment, the lower value becomes the overall load capacity.

Use the proper capacity chart to determine maximum capacity at various machine configurations. Lifting and placing a load may require use of more than one capacity chart based on machine configuration.

Other than block forks, all forks should be used in matched pairs, block forks used in matched sets.

WARNING

Never use an attachment without the appropriate manufacturer approved capacity chart installed on the telehandler.

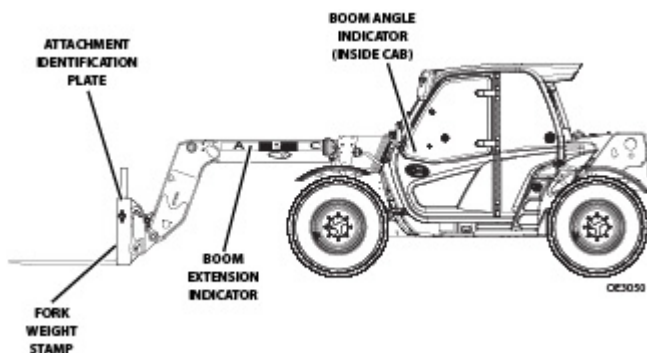
5.7 USE OF THE CAPACITY CHART

To properly use capacity chart (see [Section — Sample Capacity Chart, page 96](#)), operator must first determine and/or have the following:

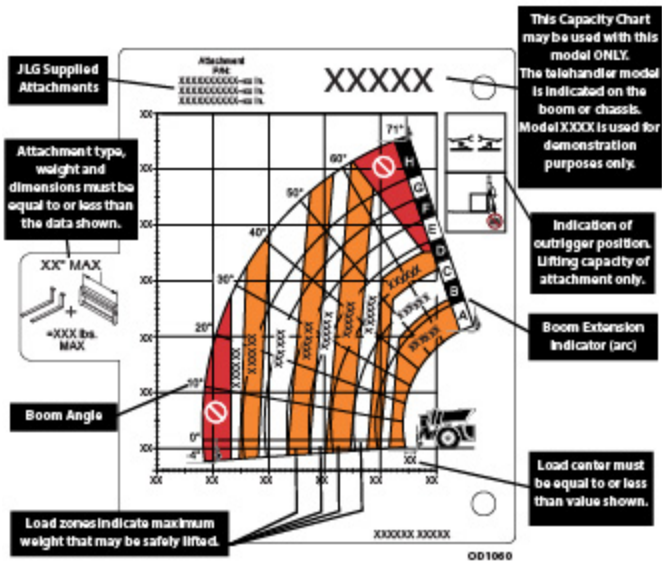
1. An approved attachment. See [Section — Approved Attachments](#).
2. Proper Capacity Chart(s).
3. Weight of load being lifted.
4. Load placement information:
 - a. HEIGHT where load is to be placed.
 - b. DISTANCE from front tires of telehandler where load is to be placed.
5. On capacity chart, find the line for height and follow it over to distance.
6. Number in load zone where the two cross is the maximum capacity for this lift. If the two cross at a division between zones, the smaller number must be used.

The number in load zone must be equal to or greater than weight of load to be lifted. Determine limits of load zone on capacity chart and keep within these limits.

5.7.1 Capacity Indicator Locations



5.7.2 Sample Capacity Chart



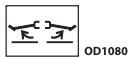
Note: This is sample capacity chart **only!** **DO NOT** use this chart, use the one located in your operator cab.

⚠ WARNING

TIP OVER HAZARD. All loads shown on rated capacity chart are based on machine being on firm ground with frame level (see [Section — Leveling Procedure](#) or [Section — Leveling Procedure](#)); the forks being positioned evenly on carriage; the load being centered on forks; proper size tires being properly inflated; and the telehandler being in good operating condition.

To identify the proper capacity chart on telehandlers equipped with outriggers, refer to the following icons which may be located on the capacity chart.

- Use when lifting a load with outriggers up.



- Use when lifting a load with outriggers down.



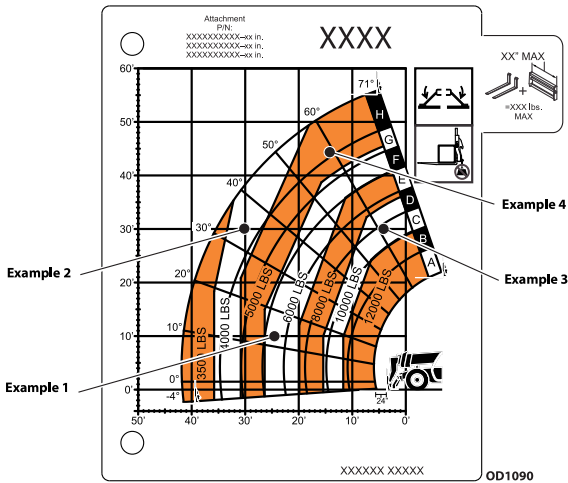
5.7.3 Example

A contractor owns a model xxxx telehandler with a fork carriage. The contractor knows this attachment may be used with his model since:

- The part number on the attachment identification plate matches the attachment part number on a capacity chart located in the operator cab.
- The attachment style, weight, dimensions and load center match the attachment data on the capacity chart.
- The capacity chart is clearly marked for model xxxx and corresponds with machine configuration being used.

Below are examples with various conditions the contractor may encounter and whether or not the load may be lifted.

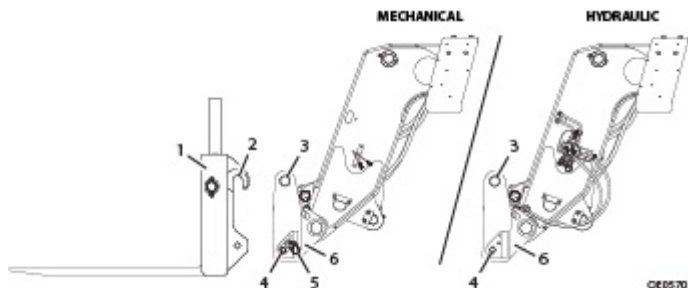
	Load Weight	Distance	Height	OK to Lift
1	5750 lb (2608 kg)	25 ft (7,62 m)	10 ft (3 m)	Yes
2	4900 lb (2223 kg)	30 ft (9,2m)	30 ft (9,2 m)	NO
3	8100 lb (3674 kg)	5 ft (1,5 m)	30 ft (9,2 m)	Yes
4	5250lb (2381kg)	15ft (4,6 m)	45 ft (13,7 m)	NO



Note: This is a sample capacity chart **only!** **DO NOT** use this chart, use the one located in your operator cab.

5.8 ATTACHMENT INSTALLATION

5.8.1 Coupler



1. **Attachment**
2. **Attachment Pin Recess**
3. **Attachment Pin**
4. **Lock Pin**
5. **Retainer Pin** (mechanical coupler)
6. **Coupler** (attachment tilt control in cab, see [Section — Joystick](#))

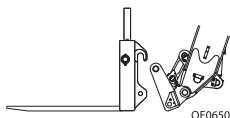
⚠ WARNING

CRUSH HAZARD. Always be certain that carriage or attachment is properly positioned on boom and is secured by lock pin and retainer pin. Failure to ensure proper installation could permit carriage/attachment/load to disengage

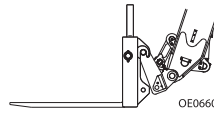
Mechanical Coupler

This installation procedure is recommended for one-person operation. Prior to exiting cab, perform [Section — Shut-Down Procedure](#).

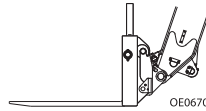
1. Tilt coupler forward to provide clearance. Check to be sure lock pin and retainer pin is out.



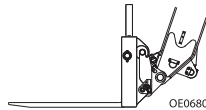
- Align attachment pin with recess in attachment. Raise boom slightly to engage attachment pin in recess.



- Tilt coupler back to engage attachment.



- Insert lock pin and secure with retainer pin.

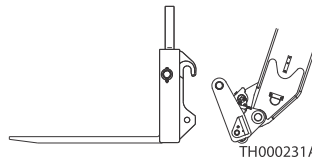


- If attachment is equipped, connect auxiliary hydraulic hoses. See [Section — Hydraulic Operated Attachment](#).

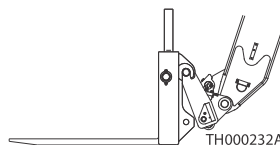
Hydraulic Coupler

This installation procedure is recommended for one-person operation.

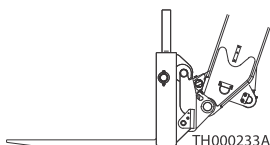
- Tilt coupler forward to provide clearance. Check to be sure lock pin is disengaged.



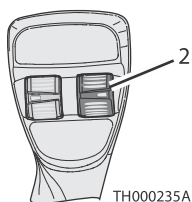
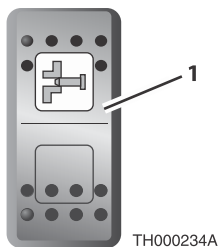
- Align attachment pin with recess in attachment. Raise boom slightly to engage attachment pin in recess.



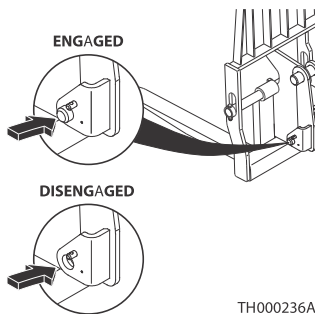
3. Tilt coupler back to engage attachment.



4. Press and hold the coupler switch (1) on left control panel. At the same time, press roller switch (2) up to engage lock pin. Press roller switch (2) down to disengage lock pin.

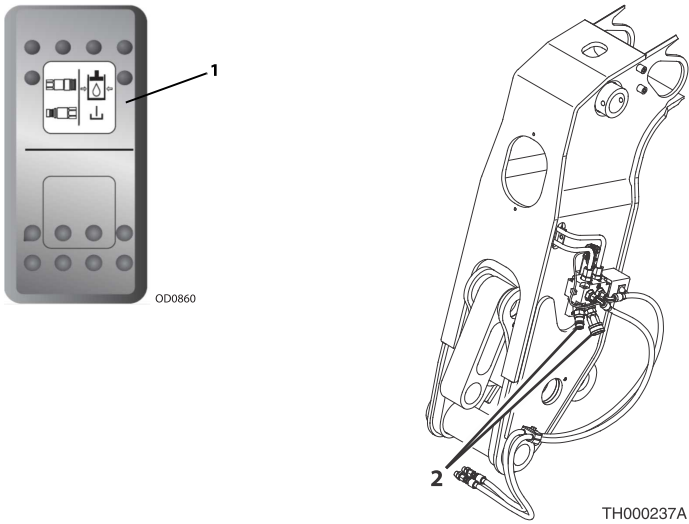


5. Raise boom to eye level and visually check that the lock pin protrudes through the hole. If the pin does not protrude through the hole, place the attachment on the ground and return to step 2.



6. If attachment is equipped, connect auxiliary hydraulic hoses. See [Section — Hydraulic Operated Attachment](#).

5.8.2 Hydraulic Operated Attachment



1. Install attachment (see page 5–15).
2. Lower attachment to ground.
3. Press and hold auxiliary decompression switch **1** on right control panel for three seconds to relieve pressure at both auxiliary fittings (**2**).
4. Perform [Shut-Down Procedure](#).
5. Connect attachment hoses to both auxiliary fittings.

5.9 ADJUSTING/MOVING FORKS

Carriages may have different locations where forks can be positioned. Two different methods can be used for repositioning, depending upon carriage structure.

Note: Apply a light coating of appropriate lubricant to ease sliding of forks or fork bar.

To slide forks:

1. Ensure attachment is properly installed. See [Section — Attachment Installation](#).
2. If equipped, loosen fork locking bolt.
3. Elevate attachment to approximately 5 ft (1,5 m) and tilt carriage forward until fork heel is free from attachment.
4. Stand at side of carriage. To slide fork toward center of carriage, push fork near fork eye. To slide fork toward edge of carriage, pull fork near fork eye. To avoid pinching, do not place fingers or thumb between fork and carriage structure.
5. If equipped, tighten fork locking bolt.

If removing fork bar is necessary:

1. Rest forks on ground.
2. If equipped, loosen fork locking bolt.
3. Remove fork bar.
4. Reposition forks.
5. Reinstall the fork bar and fork bar retaining mechanism(s).
6. If equipped, tighten fork locking bolt.

5.10 ATTACHMENT OPERATION

- Capacities and range limits for telehandler change depending on attachment in use.
- Separate attachment instructions must be kept in manual holder in cab with this Operation & Safety Manual. An additional copy must be kept with attachment if it is equipped with a manual holder.

Note: Operations described within this section reference the Lift joystick pattern. Refer to [Section — Loader Joystick Pattern, page 56](#) if utilizing the Loader joystick pattern.

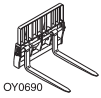
NOTICE

EQUIPMENT DAMAGE. Some attachments may contact front tires or machine structure when the boom is retracted and the attachment is rotated. Improper use of attachment may result in attachment or machine structural damage.

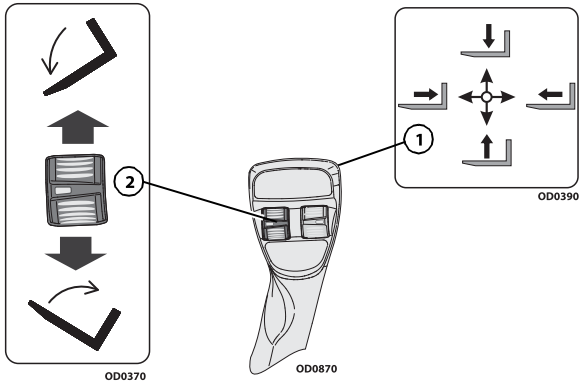
NOTICE

EQUIPMENT DAMAGE. Avoid contact with any structure or object when lifting a load. Maintain clearance around boom structure and load. Failure to maintain clearance may result in attachment or machine structural damage.

5.10.1 Carriage with Forks



Use Carriage Attachment Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Push roller switch down to tilt up.
- Push roller switch up to tilt down.

Installation Procedure:

Refer to [Section — Attachment Installation](#).

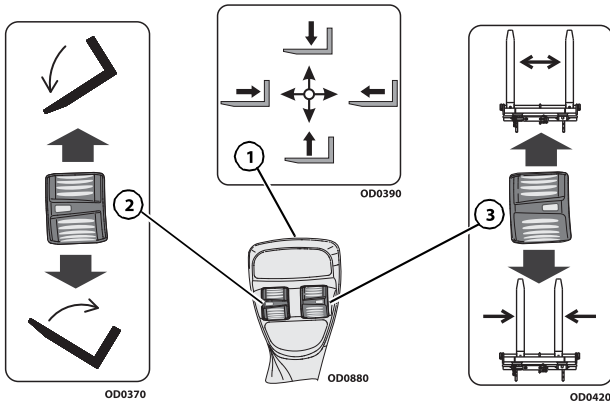
Equipment Damage Precautions:

- Do not use forks as a lever to pry material. Excessive prying forces could damage forks or machine structure.
- Do not attempt to lift loads that are attached or connected to another object.

5.10.2 Dual Fork Positioning Carriage



Use Dual Fork Positioning Carriage Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Fork Position:

Roller switch (3) controls fork position.

- Press roller switch down to shift forks in.
- Press roller switch up to shift forks out.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

⚠ WARNING

CRUSH HAZARD. Do not use mast to push or pull objects or load. Failure to comply could cause object or load to fall.

Operation:

- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).

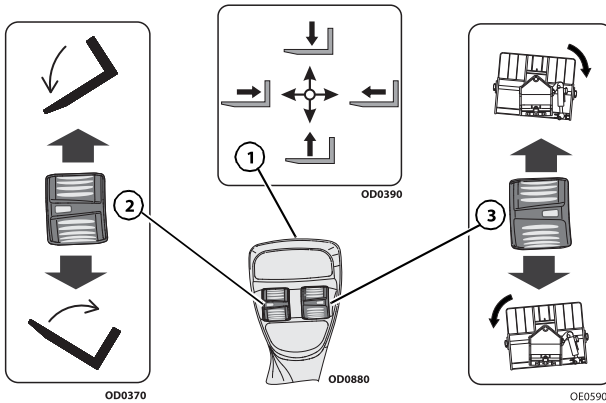
Equipment Damage Precautions:

- Do not use forks as a lever to pry material. Excessive prying forces could damage forks or machine structure.
- Do not attempt to lift loads that are attached or connected to another object.

5.10.3 Side Tilt Carriage



Use Appropriate Side Tilt Carriage Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/ Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Rotate:

Roller switch (3) controls carriage rotation.

- Press roller switch down to rotate left.
- Press roller switch up to rotate right.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

WARNING

CRUSH HAZARD. Do not use rotation to push or pull objects or load. Failure to comply could cause object or load to fall.

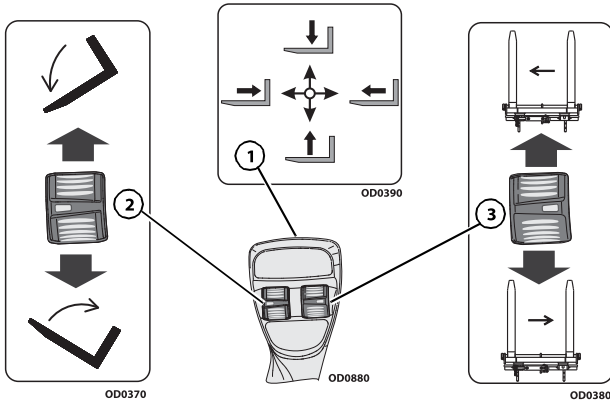
Equipment Damage Precautions

- Do not use forks as a lever to pry material. Excessive prying forces could damage forks or machine structure.
- Do not attempt to lift loads that are attached or connected to another object.

5.10.4 Side Shift Carriage



Use Side Shift Carriage Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Side Shift:

Roller switch (3) controls carriage side shift.

- Press roller switch down to shift forks right.
- Press roller switch up to shift forks left.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

! WARNING

CRUSH HAZARD. Do not use rotation to push or pull objects or load. Failure to comply could cause object or load to fall.

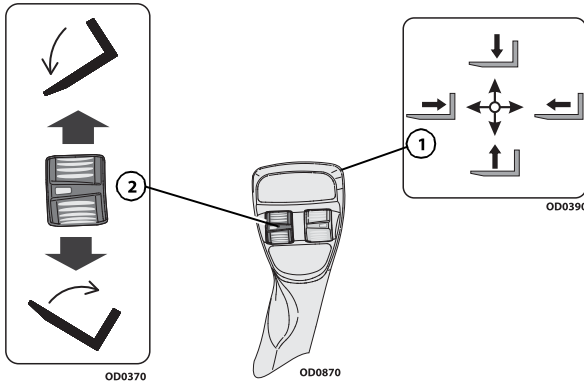
Equipment Damage Precautions

- Do not use forks as a lever to pry material. Excessive prying forces could damage forks or machine structure.
- Do not attempt to lift loads that are attached or connected to another object.

5.10.5 Fork Extension



Use Appropriate Carriage Attachment Capacity Chart To determine maximum capacity, refer to [Section — Telehandler/ Attachment/ Fork Capacity](#). The maximum capacity of the carriage when equipped with fork extensions may be reduced to the capacity indicated on the fork extensions. If the load exceeds the capacity of the fork extension, contact JLG to obtain forks and/or fork extensions of the proper load rating and length.



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

Installation Procedure:

- Ensure carriage is properly installed. Refer to [Section — Attachment Installation](#).
- Ensure length and cross section of the parent fork arm is equal to or exceeds the parent fork arm blade length stamped into the fork extension.
- Secure the fork extensions to the forks by sliding the fork extensions onto the parent forks and install the retaining pin behind the vertical shank of the fork.

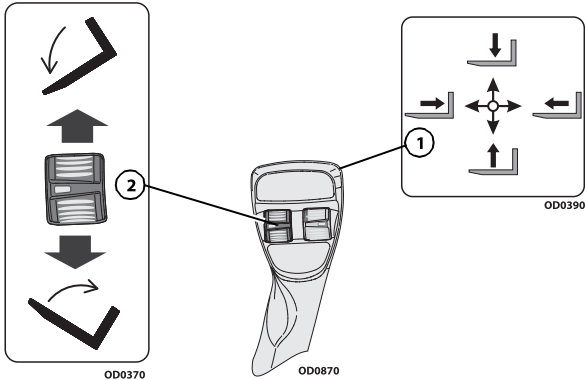
Operation:

- Heavy part of load must be against carriage backrest.
- Do not allow load center of gravity to be in front of tip of the supporting fork.
- Do not pick up a load or pry materials with tip of fork extensions.

5.10.6 Dual Tine Bale



Use Dual Tine Bale Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

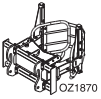
Installation Procedure:

Refer to [Section — Attachment Installation](#).

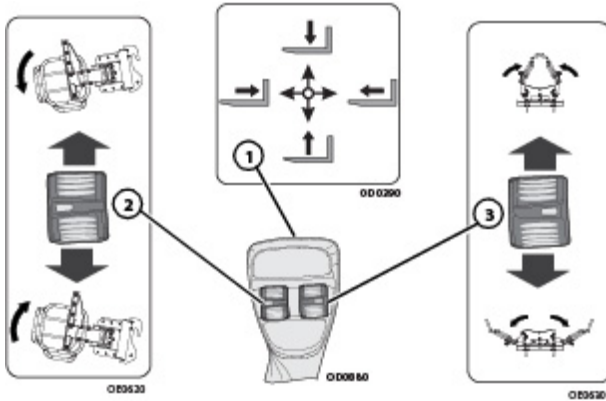
Equipment Damage Precautions:

- Do not use forks as a lever to pry material. Excessive prying forces could damage forks or machine structure.
- Do not attempt to lift loads that are attached or connected to another object.

5.10.7 Bale Handler



Use Carriage Attachment Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/ Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Open/Close Bale Handler:

Roller switch (3) controls open/close movement of the bale handler.

- Press roller switch down to open bale handler.
- Press roller switch up to close bale handler.

Installation Procedure:

Refer to [Section — Attachment Installation](#).

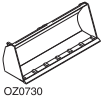
Operation:

- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).

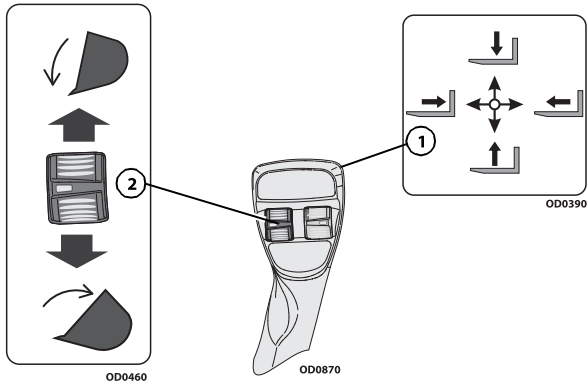
Equipment Damage Precautions

- Do not use bale handler as a lever to pry material. Excessive prying forces could damage the bale handler or machine structure.
- Do not attempt to load material which is hard or frozen. This could cause severe damage to coupler or machine structure.

5.10.8 Bucket



Use Appropriate Bucket Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/ Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Push roller switch down to tilt up.
- Push roller switch up to tilt down.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

Operation:

- Raise or lower boom to appropriate height for loading material from stockpile.
- Align telehandler with face of stockpile and drive slowly and smoothly into pile to load bucket.
- Tilt bucket up far enough to retain load and back away from pile.
- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- Tilt bucket down to dump load.

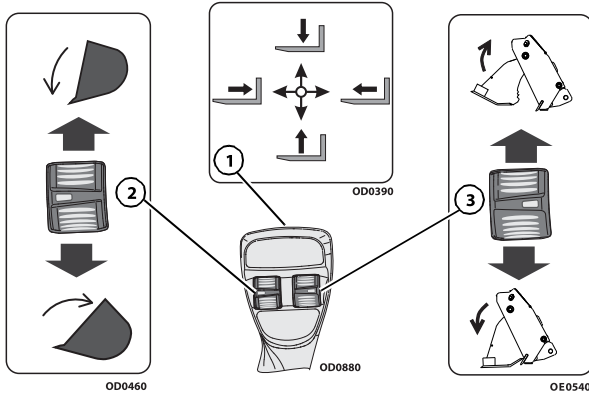
Equipment Damage Precautions

- Except for lifting or dumping a load, the boom must be fully retracted for all bucket operations.
- Do not corner-load bucket. Distribute material evenly within the bucket. Bucket capacity charts are for evenly distributed loads only.
- Do not use bucket as a lever to pry material. Excessive prying forces could damage bucket or machine structure.
- Do not attempt to load material which is hard or frozen. This could cause severe damage to coupler or machine structure.
- Do not use bucket for "back dragging." This could cause severe damage to coupler and retraction cables/chains.

5.10.9 Multi-Purpose Bucket



Use Appropriate Multi-Purpose Bucket Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Open/Close Bucket:

The attachment auxiliary hydraulic roller switch (3) controls open/close movement of the bucket.

- Press roller switch down to close bucket.
- Press roller switch up to open bucket.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

Operation:

- Raise or lower boom to appropriate height and close bucket for loading material from stockpile.
- Align telehandler with face of stockpile and drive slowly and smoothly into pile to load bucket.
- Tilt bucket up far enough to retain load and back away from pile.
- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- Open bucket or tilt bucket down to dump load.

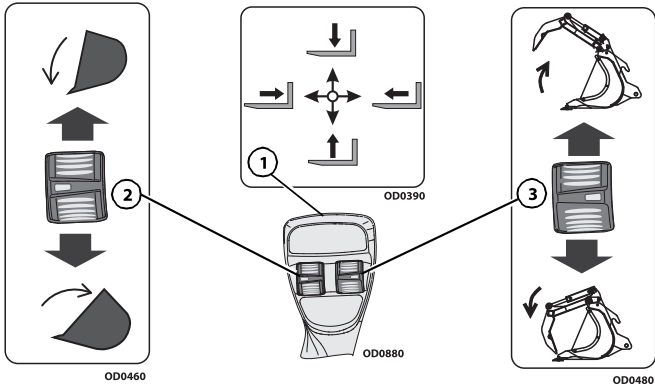
Equipment Damage Precautions

- Except for lifting or dumping a load, the boom must be fully retracted for all bucket operations.
- Do not corner-load bucket. Distribute material evenly within the bucket. Bucket capacity charts are for evenly distributed loads only.
- Do not use bucket as a lever to pry material. Excessive prying forces could damage bucket or machine structure.
- Do not attempt to load material which is hard or frozen. This could cause severe damage to coupler or machine structure.
- Do not use bucket for "back dragging." This could cause severe damage to coupler.

5.10.10 Grapple Bucket



Use Grapple Bucket Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Open/Close Grapple:

Roller switch (3) controls the open/close movement of the grapple.

- Press roller switch down to close grapple.
- Press roller switch up to open grapple.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

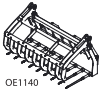
Operation:

- Raise or lower boom to appropriate height and open grapple for loading material from stockpile.
- Align telehandler with face of stockpile and drive slowly and smoothly into pile to load bucket.
- Tilt bucket up far enough to retain load and back away from pile.
- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- Open grapple and tilt bucket down to dump load.

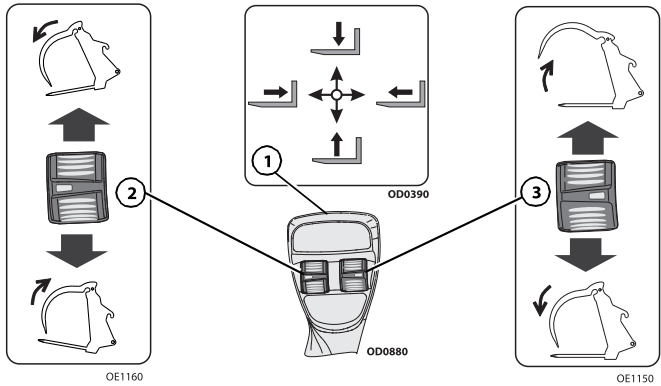
Equipment Damage Precautions

- Except for lifting or dumping a load, the boom must be fully retracted for all bucket operations.
- Do not corner-load bucket. Distribute material evenly within the bucket. Bucket capacity charts are for evenly distributed loads only.
- Do not use bucket as a lever to pry material. Excessive prying forces could damage bucket or machine structure.
- Do not attempt to load material which is hard or frozen. This could cause severe damage to coupler or machine structure.
- Do not use bucket for "back dragging." This could cause severe damage to coupler and retraction cables/chains.

5.10.11 Manure Grapple



Use Manure Grapple Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls manure grapple tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Open/Close Manure Grapple:

Roller switch (3) controls the open/close movement of the manure grapple.

- Press roller switch down to close grapple.
- Press roller switch up to open grapple.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

Operation:

- Raise or lower boom to appropriate height and open manure grapple for loading material from stockpile.
- Align telehandler with face of stockpile and drive slowly and smoothly into pile to load manure grapple.
- Tilt manure grapple up far enough to retain load, close manure grapple and back away from pile.
- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- Open manure grapple and tilt down to dump load.

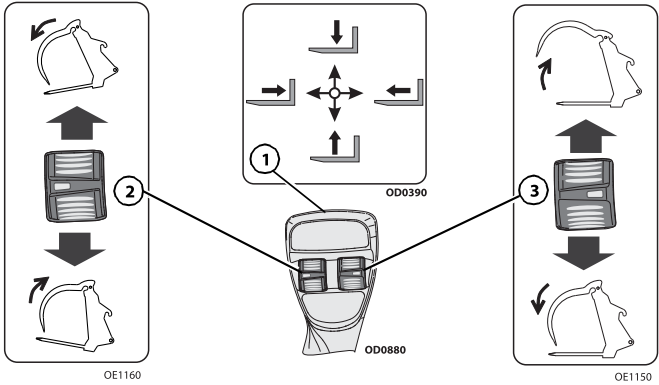
Equipment Damage Precautions

- Except for lifting or dumping a load, the boom must be fully retracted for all operations.
- Do not corner-load manure grapple. Distribute material evenly within the manure grapple. Manure grapple capacity charts are for evenly distributed loads only.
- Do not use manure grapple as a lever to pry material. Excessive prying forces could damage manure grapple or machine structure.
- Do not attempt to load material which is hard or frozen. This could cause severe damage to coupler or machine structure.
- Do not use manure grapple for "back dragging." This could cause severe damage to coupler and retraction cables/chains.

5.10.12 Muck Fork



Use Muck Fork Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/ Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Open/Close Muck Fork:

Roller switch (3) controls the open/close movement of the muck fork.

- Press roller switch down to close muck fork.
- Press roller switch up to open muck fork.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

Operation:

- Raise or lower boom to appropriate height and open muck fork for loading material from stockpile.
- Align telehandler with face of stockpile and drive slowly and smoothly into pile to load muck fork.
- Tilt muck fork up far enough to retain load, close muck fork and back away from pile.
- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- Open muck fork and tilt down to dump load.

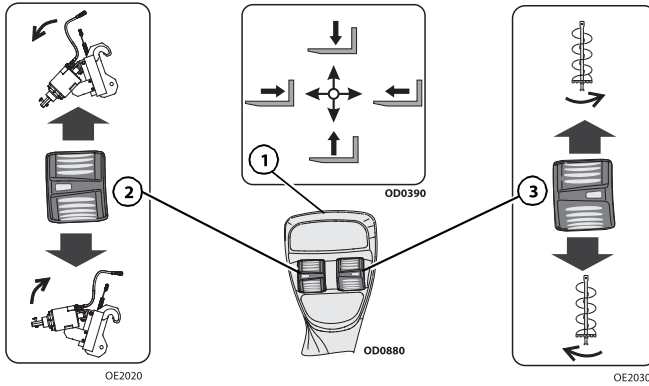
Equipment Damage Precautions

- Except for lifting or dumping a load, the boom must be fully retracted for all operations.
- Do not corner-load muck fork. Distribute material evenly within the muck fork. Muck fork capacity charts are for evenly distributed loads only.
- Do not use muck fork as a lever to pry material. Excessive prying forces could damage muck fork or machine structure.
- Do not attempt to load material which is hard or frozen. This could cause severe damage to coupler or machine structure.
- Do not use muck fork for "back dragging." This could cause severe damage to coupler and retraction cables/chains.

5.10.13 Auger



Use Auger Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Control Auger Bit:

Roller switch (3) controls the auger bit rotation.

- Press roller switch down to rotate clockwise.
- Press roller switch up to rotate counter-clockwise.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

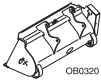
Operation:

- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- Tilt auger down so auger bit is perpendicular to ground and carriage is horizontal.
- Lower auger to ground so that only the center point penetrates ground.
- Operate roller switch (3) to turn auger in a clockwise ("digging") rotation.
- Release roller switch (3) to stop auger rotation.
- Raise auger from hole to clean out debris.

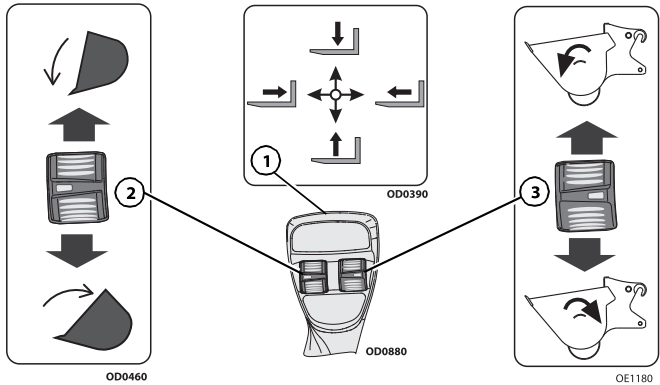
Equipment Damage Precautions

- Travel with the auger in a safe transport position to prevent uncontrolled movement.
- Transport the auger unit as low as practical at a slow speed without rapid side to side movement.
- Do not engage auger rotation unless the point of the auger cutting head is touching the ground.

5.10.14 Concrete Bucket Mixer



Use Concrete Bucket Mixer Capacity Chart.
To determine maximum capacity, refer to [Section — Telehandler/ Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Control Mixer:

Roller switch (3) controls the bucket mixer.

- Press roller switch down to rotate rearward.
- Press roller switch up to rotate forward.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

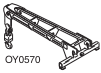
Operation:

- Close bucket gate, level bucket and fully retract and lower boom to load material.
- Distribute material evenly within the bucket. Bucket capacity charts are for evenly distributed loads only.
- Load center will vary depending on the amount of material in the bucket. Always ensure compliance with the capacity chart.
- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- Position bucket and open bucket gate to release load.

Equipment Damage Precautions

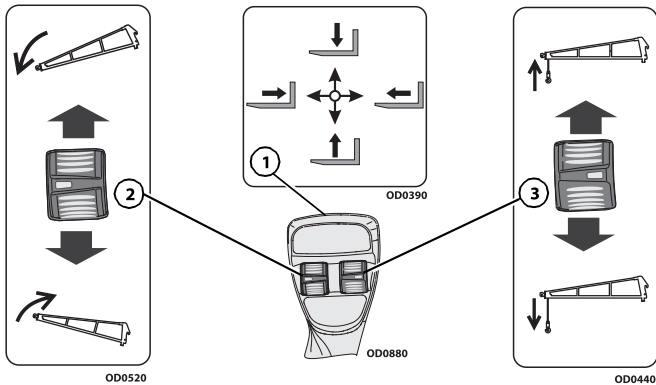
- Transport the concrete bucket as low as practical at a slow speed and without rapid side to side movement.

5.10.15 Truss Boom



Use Appropriate Truss Boom Attachment Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).

Suspend loads in accordance with requirements set forth in [Section — General Safety Practices](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

Winch Control (if equipped):

Roller switch (3) controls truss boom mounted winch.

- Press roller switch down to lower cable.
- Press roller switch up to raise cable.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

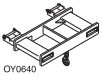
⚠ WARNING

CRUSH HAZARD. Maintain a minimum of three wraps of wire rope on the cable drum at all times. Failure to comply could cause object or load to fall.

Operation:

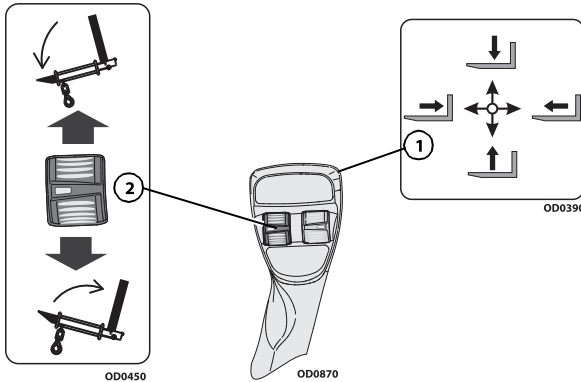
- Weight of rigging must be included as part of total load being lifted.

5.10.16 Fork Mounted Hook



Use Appropriate Carriage Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/ Attachment/ Fork Capacity](#).

Suspend loads in accordance with requirements set forth in [Section — General Safety Practices](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

Installation Procedure:

- ensure carriage is properly installed. Refer to [Section — Attachment Installation](#).
- Secure the fork mounted hook to the forks by sliding the fork mounted hook onto the parent forks and install the retaining pin behind the vertical shank of the fork.

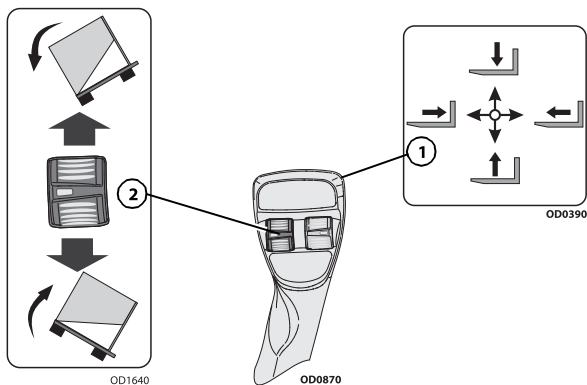
Operation:

- Pallet or lumber forks of an appropriate load rating must be used. Do not use with cubing or block forks.
- Weight of fork mounted hook and rigging must be included as part of total load being lifted.
- Do not use with mast carriage attachment.
- Do not use fork mounted hook with attachments capable of rotating (i.e. side tilt and swing carriages) without disabling the rotation feature(s).

5.10.17 Trash Hopper - Fork Mounted



Use Appropriate Trash Hopper Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

Installation Procedure:

- Ensure carriage is properly installed. Refer to [Section — Attachment Installation](#).
- Secure the trash hopper to the forks by sliding the trash hopper onto the parent forks and install the retaining pin behind the vertical shank of the fork.

Operation:

- Raise or lower boom to appropriate height for loading material.
- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- To release gate, tilt fork mounted trash hopper down approximately 10 degrees and engage bottom bumper on edge of dumpster. The gate will open allowing the contents to slide out.
- Tilt fork mounted trash hopper back to close and secure the gate.
- Do not use with mast carriage attachment.
- Do not use fork mounted trash hopper with attachments capable of rotating (i.e. side tilt carriages) without disabling the rotation feature(s).

Equipment Damage Precautions:

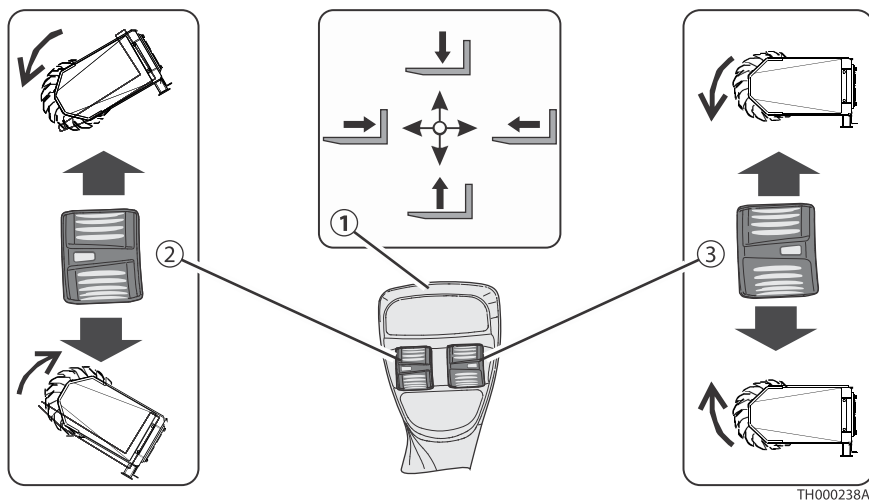
- Except for lifting or dumping a load, the boom must be fully retracted for all fork mounted trash hopper operations.

5.10.18 Silage Defacer



TH000240A

Use Silage Defacer Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).



TH000238A

Joystick (1) controls movement of the boom.

Roller switch (2) controls silage defacer tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

To Control Silage Defacer:

Roller switch (3) controls the silage defacer rotation.

- Press roller switch down to rotate clockwise.
- Press roller switch up to rotate counter-clockwise.

Installation Procedure:

- Refer to [Section — Attachment Installation](#).

Operation:

- Travel in accordance with requirements set forth in [Section — General Safety Practices](#).
- Position silage defacer at top of bunker and operate roller switch (3) to engage silage defacer. When defacer has reached full speed, slowly lower into silage at desired cutting depth. It is recommended to not cut deeper than the length of the defacer teeth.
- To help maintain an even cut, keep silage defacer angled upward for best control.
- After the first downward pass, move telehandler to the side and position the silage defacer adjacent to the previous pass. Do not try to cut multiple passes deep.

Equipment Damage Precautions:

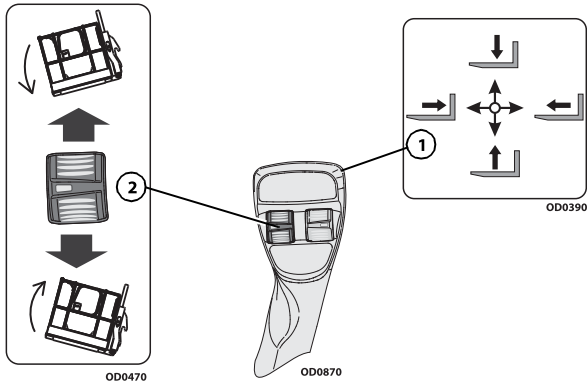
- Travel with the silage defacer in a safe transport position to prevent uncontrolled movement.
- Transport the silage defacer as low as practical at a slow speed without rapid side to side movement.
- Avoid direct contact with bunker walls and floor.

5.10.19 Personnel Work Platform - Fork Mounted



Use Fork Mounted Platform Attachment Capacity Chart
To determine maximum capacity, refer to [Section — Telehandler/
Attachment/ Fork Capacity](#).

The operator and personnel in platform must read and understand the separate personnel work platform manual prior to installing and using a platform.



Joystick (1) controls movement of the boom.

Roller switch (2) controls carriage tilt.

- Press roller switch down to tilt up.
- Press roller switch up to tilt down.

Installation Procedure:

- Ensure carriage is properly installed. Refer to [Section — Attachment Installation](#).
- Secure the fork mounted platform to the forks by sliding the fork mounted platform onto the parent forks and install the retaining pin behind the vertical shank of the fork.

Preparation and Setup:

1. ensure the telehandler is on a firm surface and is level.
2. engage the park brake. Blocking the wheels is also recommended.
3. Level the platform, both side to side (frame level) and front to back (attachment tilt).
4. Keep area under platform free from personnel.
5. When personnel are on platform, the operator must remain seated in cab with personnel in direct line of sight.
6. **DO NOT** lift or carry persons in a bucket or on forks.

WARNING

FALL HAZARD. Never tilt the platform forward, rearward, or level the machine when the platform is occupied.

5.11 HITCHES AND TRAILER BRAKES

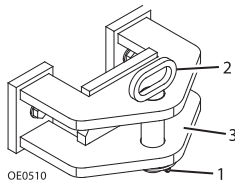
Machines may be equipped with various types of hitches. If not previously installed, secure hitch to machine with hardware supplied with installation.

Maximum towing capacity shall be the smallest of the telehandler and hitch capacities. Refer to [Section — Machine Towing Capacity](#) for details.

Note: Hitches are not intended for on-road trailer towing applications.

Note: ensure hitch is in lowest position when towing trailer. Speed and/or load may need reduced if traveling on ground which is not level.

5.11.1 Retrieval Hitch



Connecting for retrieval:

1. Remove safety pin (1) and pull pin (2) from hitch (3).
2. Place pin through hitch and retrieval device. Secure pin with safety pin.

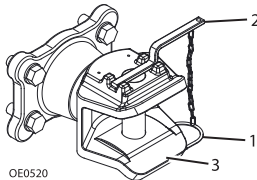
Note: Retrieval devices are not intended for trailer towing applications.

5.11.2 Fixed Hitch

Hitch Capacities

Maximum combined weight of trailer and load 26,450 lb (12 000 kg)

Maximum vertical load at hitch interface 5,500 lb (2500 kg)



Connecting trailer for towing:

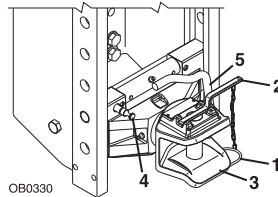
1. Remove safety pin (1) and pull pin (2) from hitch (3).
2. Align machine and tow eye of trailer.
3. Place pin through hitch and tow eye. Secure pin with safety pin.

5.11.3 EEC Manual Pin Hitch

Hitch Capacities

Maximum combined weight of trailer and load 26,450 lb (12 000 kg)

Maximum vertical load at hitch interface 5,500 lb (2500 kg)



Connecting trailer for towing:

1. Remove safety pin (1) and pull pin (2) from hitch (3).
2. Align machine and tow eye of trailer.
3. Place pin through hitch and tow eye. Secure pin with safety pin.
4. If equipped, connect trailer harness to trailer plug.
5. If equipped, connect trailer hydraulics to rear auxiliary fittings.

Adjusting Hitch Height:

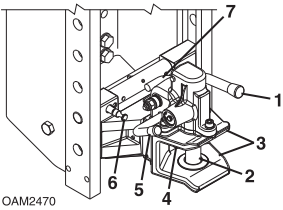
1. Pull lock pin (4) and lift handle (5) to release locking mechanism.
2. Move hitch to desired height.
3. Lower handle. When locking mechanism engages, lock pin will return to locked position.

5.11.4 EEC Auto Hitch

Hitch Capacities

Maximum combined weight of trailer and load 26,450 lb (12 000 kg)

Maximum vertical load at hitch interface 5,500 lb (2500 kg)



Connecting trailer for towing:

- 1. Rotate lever (1) until pin (2) fully retracts.
- 2. Align hitch mouth (3) and tow eye of trailer.
- 3. Reverse machine toward trailer.
- 4. After the tow eye contacts trigger (4), the pin and lever will be released.
- 5. If equipped, connect trailer harness to trailer plug.
- 6. If equipped, connect trailer hydraulics to rear auxiliary fittings.

Note: Use lever (5) to lower pin (2) after disconnecting from trailer.

Adjusting Hitch Height:

- 1. Pull lock pin (6) and lift handle (7) to release locking mechanism.
- 2. Move hitch to desired height.
- 3. Lower handle. When locking mechanism engages, lock pin will return to locked position.

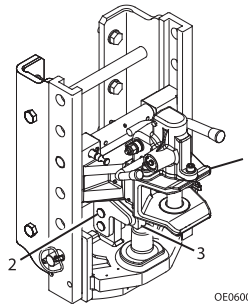
5.11.5 Piton Frame and EEC Auto Hitch

Hitch Capacities

Maximum combined weight of trailer and load 26,450 lb (12 000 kg)

Maximum vertical load at hitch interface 5,500 lb (2500 kg)

Note: See [Section — Auto Hitch, page 138](#) information.



Connecting trailer for towing:

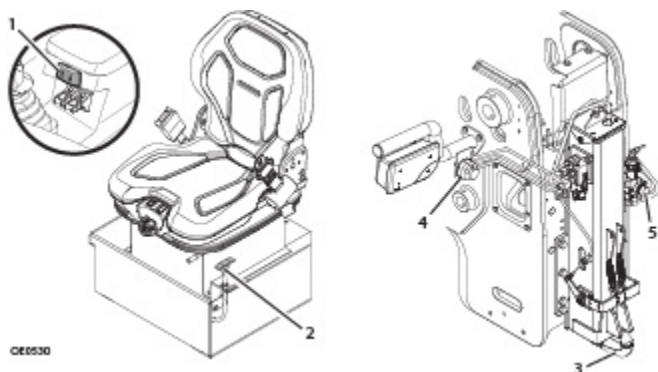
1. Raise Auto Hitch (1) to highest position.
2. Remove safety pin (2) and lift locking latch (3).
3. Insert safety pin to hold locking latch in the up position.
4. Align machine and tow eye of trailer.
5. Remove safety pin and lower locking latch. Secure locking latch with safety pin.
6. If equipped, connect trailer harness to trailer plug.
7. If equipped, connect trailer hydraulics to rear auxiliary fittings.

5.11.6 Hydraulic Hitch

Hitch Capacities

Maximum combined weight of trailer and load 26,450 lb (12 000 kg)

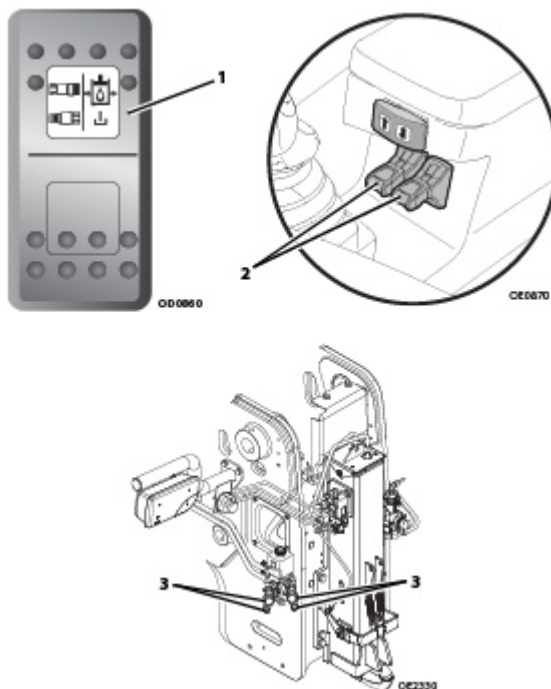
Maximum vertical load at hitch interface 5,500 lb (2500 kg)



Connecting trailer for towing:

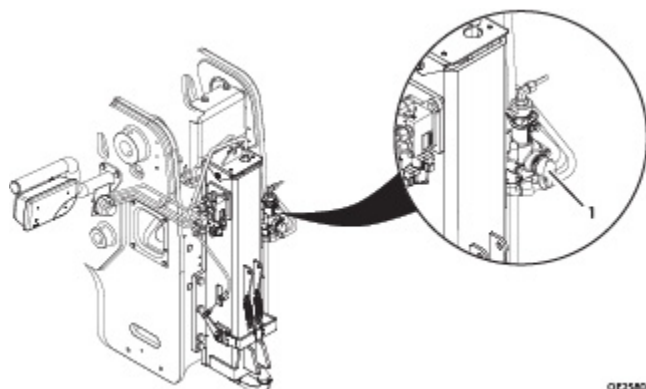
1. Depress and hold right side of hydraulic hitch switch (1) to raise hitch safety posts off safety hooks.
2. Pull and hold cable release (2) to withdraw safety hooks. Cable can be released once posts are lower than safety hooks.
3. Depress and hold left side of hydraulic hitch switch to lower the hitch (3) to the required height.
4. Reverse machine until the hitch is under the center of the tow eye.
5. Depress and hold right side of hydraulic hitch switch to raise hitch until the safety hooks are engaged.
6. If equipped, connect trailer harness to trailer plug (4).
7. If equipped, connect trailer brake line to trailer coupling (5). See [Section — Trailer Brakes, page 142](#).

5.11.7 Rear Auxiliary Hydraulics



1. Press and hold auxiliary decompression switch (1) on right control panel then operate the rear auxiliary hydraulic levers (2) to relieve pressure at rear auxiliary fittings (3).
2. Perform [Section — Shut-Down Procedure](#).
3. Connect hoses to auxiliary fittings.

5.11.8 Trailer Brakes



OE2580

Connecting trailer brake system:

1. Ensure trailer is properly connected for towing.
2. Connect trailer brake line to machine coupling (1).

SECTION 6

Emergency Procedures

6.1 TOWING A DISABLED PRODUCT

The following information assumes telehandler cannot be moved under its own power.

- Before moving the telehandler, read all of the following information to understand options available. Then select the appropriate method.
- Machine mounted retrieval devices provide suitable means to attach a tow rope, chain or tow bar only in the event the telehandler becomes stuck or disabled.
- Retrieval devices are not intended for on-road trailer towing applications.
- The steering system permits manual steering if engine or power assist feature fails; however, **steering will be slow and will require much greater force.**
- **DO NOT** attempt to tow a telehandler that is loaded or the boom/attachment is raised above 4 ft (1,2 m).

6.1.1 Moving Short Distances

- If it is only necessary to move telehandler a short distance, less than 30 m (100 ft), it is permissible to use a vehicle of sufficient capacity to tow the unit with no previous preparation.

6.1.2 Moving Longer Distance

- See Service Manual for information.
- Dependant on local regulations the appropriate machine Service Manual should be kept in the cab at all times.

Contact the local dealer for specific instructions if neither of these methods are applicable.

6.2 EMERGENCY LOWERING OF BOOM

In the event of total loss of engine power or hydraulic pump failure with an elevated load, the situation must be properly evaluated and dealt with on an individual basis. **Contact the local dealer for specific instructions.**

Secure the telehandler using the following procedures:

1. If equipped with platform attachment, rescue platform occupants.
2. Clear the area around telehandler of all personnel.
3. Apply the parking brake. Place the transmission in "NEUTRAL".
4. Block all four wheels.

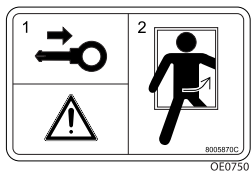
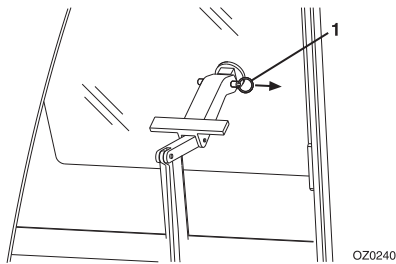
- 5. Section off a large area under the boom to restrict any personnel from entering this area.
- 6. See Service Manual for information.

6.3 EMERGENCY EXIT FROM ENCLOSED CAB

In an emergency the rear window can be used to exit the telehandler if it is not possible to use the cab door.

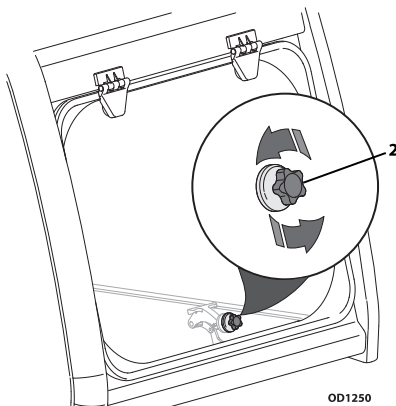
If possible, fully lower the boom, shut off the engine and remove ignition key before using any of the following procedures to exit the telehandler.

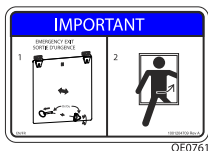
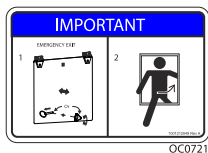
6.3.1 Rear Window Inside Cab



- 1. Remove the latch pin (1).
- 2. Swing open the window and exit the telehandler.

6.3.2 Rear Window Outside Cab (if equipped)





1. Remove the knob (2) securing the window.
2. Swing open the window and exit the telehandler.

6.4 CLEARSKY SMART FLEET™ - LOCKED OUT STATE

The machine may be placed into a Locked Out state remotely through ClearSky Smart Fleet.

If the CS550 (ClearSky® LED Motion / Amber Beacon) is removed from a machine or disconnected from the control system through damage, the machine may also be placed into a Locked Out state.

NOTICE

Contact the ClearSky Smart Fleet™ account owner if the machine is in a Locked Out state.

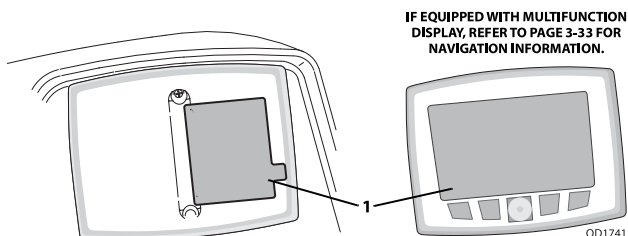
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SECTION 7

Lubrication and Maintenance

7.1 INTRODUCTION

This section is intended as information to assist the operator to perform maintenance tasks only. Service product in accordance with maintenance schedule on the following pages.



Lubrication and maintenance charts **(1)** contain instructions that must be followed to keep this product in good operating condition. Operation & Safety Manual and Service Manual contain more detailed service information with specific instructions. If equipped with Multifunction Display, refer to [Navigation Information](#).

7.1.1 Clothing and Safety Gear

- Wear all protective clothing and personal safety devices issued to you or called for by job conditions
- **DO NOT** wear loose clothing or jewelry that can get caught on controls or moving parts

7.2 GENERAL MAINTENANCE INSTRUCTIONS

Prior to performing any service or maintenance on the telehandler, follow the [Shut-Down Procedure](#) unless otherwise instructed. Ensure telehandler is level, for proper fluid readings.

- Clean lubrication fittings before lubricating.
- After greasing telehandler, cycle all functions several times to distribute lubricants. Perform this maintenance procedure without attachment installed.
- Apply a light coating of engine oil to all linkage pivot points.
- Intervals shown are for normal usage and conditions. Adjust intervals for abnormal usage and conditions.
- Check all lubricant levels when lubricant is cool, with the exception of the transmission fluid. For ease of filling hydraulic reservoir, use a funnel with a hose or flexible tube for best results.

WARNING

CUT/CRUSH/BURN HAZARD. Do not perform service or maintenance on the machine with engine running with the exception of transmission fluid level check.

7.3 SERVICE AND MAINTENANCE SCHEDULES

Note: If hour and year intervals are listed, perform maintenance at interval that occurs first.

7.3.1 Every 10 Hours



Check Fuel Level



Check Tire Condition
and Pressure



Check Brake Fluid
Level



Check engine Oil
Level



Check Hydraulic Oil
Level



Check Transmis-
sion Oil Level



Drain Fuel/Water
Separator



Check DEF Level



Check Air Cleaner



Check engine Coolant Level



Additional Checks
(see Section 8)

7.3.2 First 50 Hours



Check Wheel Lug
Nut Torque

7.3.3 Every 50 Hours



Lubrication
Schedule



Check Washer
Fluid



Check Cab Filter



Check LSI System

7.3.4 First 250 Hours



Change Axle Oil



Change Wheel end
Oil



Change Transfer
Case Fluid



Change Transmis-
sion Fluid and
Filter

7.3.5 Every 250 Hours



Lubrication
Schedule



Check Axle Oil
Level



Check Wheel end
Oil Level



Check Transfer
Case Fluid Level



Check Boom Wear
Pads

7.3.6 Every 500 Hours



Check Battery



Check V-Belt



Check Wheel Lug
Nut Torque



Change engine Oil
and Filter



Check engine Cool-
ant Quality

7.3.7 Every 750 Hours



Change Hydraulic
Tank Breather



Change Hydraulic
Filters

7.3.8 Every 1000 Hours



Change Axle Oil



Change Wheel end Oil



Check Air Intake System



Check Park Brake



Change Transfer Case Fluid



Change Transmission Fluid and Filter



Change V-Belt



Change Fuel Filters



Change DEF Pump
Filter



Check LSI
Calibration

7.3.9 Every 1500 Hours



Change Hydraulic
Fluid and Filters

7.3.10 Every 2000 Hours



Change DEF Tank
Filter



Change Air Filter
Elements

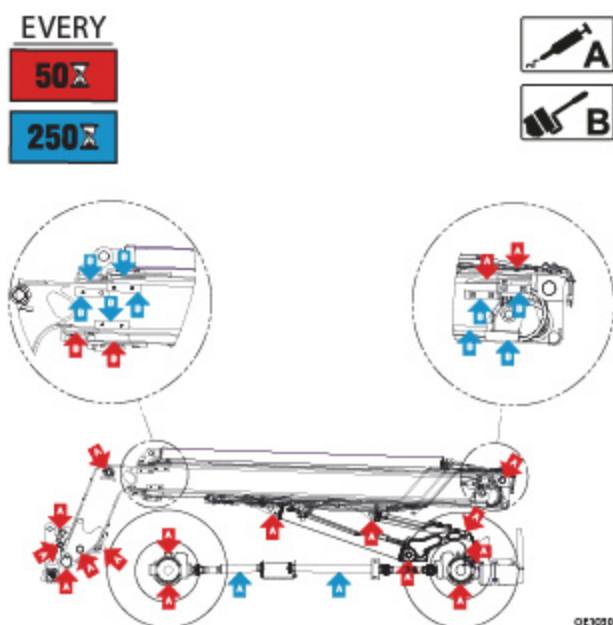
7.3.11 Every 3000 Hours or 2 Years



Change engine
Coolant (see note)

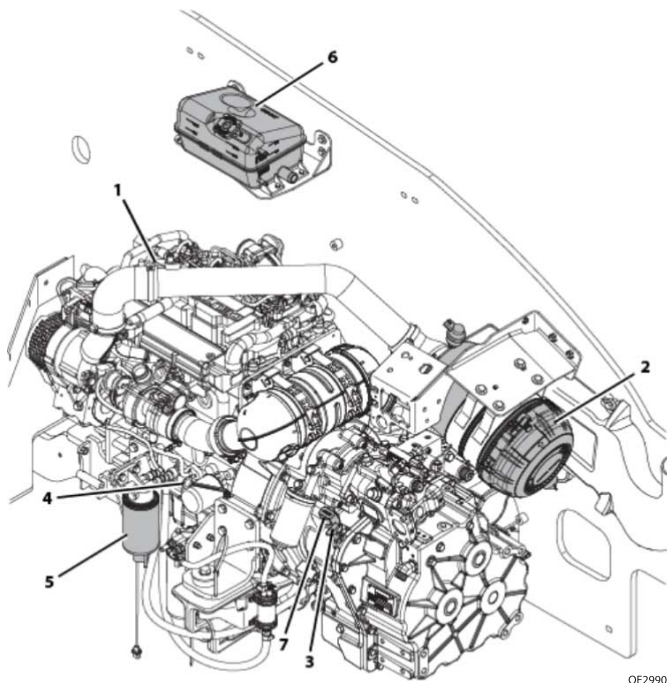
For first engine coolant change or if using DQC CA-14 engine coolant, change intervals are 3,000 hours or 2 years. If using DQC CB-14 or DQC CC-14 engine coolant, all subsequent change intervals are 6,000 hours or 4 years.

7.4 LUBRICATION SCHEDULES



7.5 OPERATOR MAINTENANCE INSTRUCTIONS

7.5.1 Engine Maintenance Components

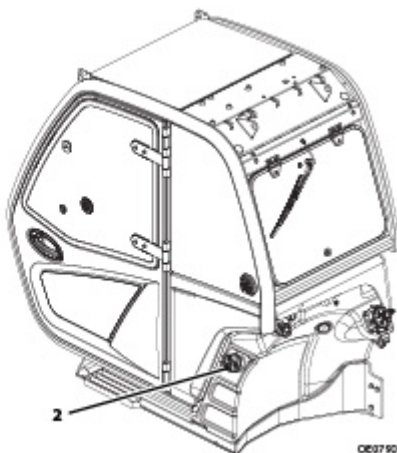


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1. **Engine Oil Cap:** See [Section — Engine Oil, page 160](#).
2. **Air Cleaner:** See [Section — Air Intake System, page 161](#).
3. **Transmission Fluid Dipstick:** See [Section — Transmission Oil, page 165](#).
4. **Engine Oil Dipstick:** See [Section — Engine Oil, page 160](#).
5. **Primary Fuel Filter:** See [Section — Fuel System, page 157](#).
6. **Surge Tank:** See [Section — Engine Cooling System, page 168](#).
7. **Transmission Fluid Plug:** See [Section — Transmission Oil, page 165](#).

7.5.2 Fuel System

A. Fuel Level Check

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1. Check Fuel Gauge (1) located in right side of Instrument Panel in cab.
2. If fuel is low, proceed to fuel source and perform [Section — Shut-Down Procedure](#).
3. Turn fuel tank cap (2) to remove from filler neck.
4. Add fuel as needed.
5. Replace fuel tank cap.

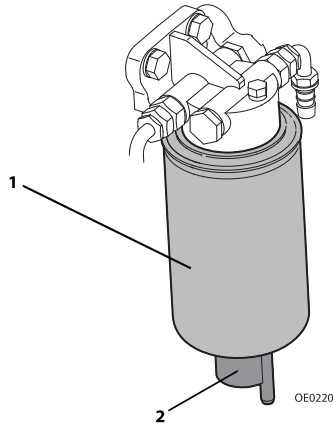
Note: Replenish diesel fuel at end of each work shift to minimize condensation.

NOTICE

EQUIPMENT DAMAGE. Do not allow machine to run out of fuel during operation. See engine Operation & Maintenance Manual for details prior to servicing.

B. Drain Fuel/Water Separator

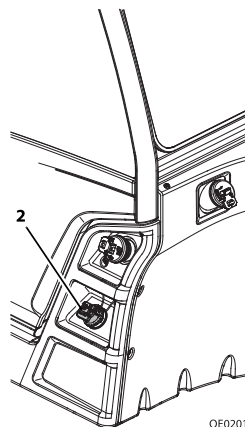
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1. Perform [Section — Shut-Down Procedure](#).
2. Open engine cover.
3. Loosen drain cock (2) on underside of fuel filter (1) and allow all water to drain into a glass until clear fuel is visible. Tighten drain cock.
4. Close and secure engine cover.

7.5.3 Emission System

A. Diesel Emission Fluid (DEF) Level Check



1. Check Diesel Emission Fluid (DEF) Gauge (1) located in right side of Instrument Panel in cab.
2. If DEF is low, proceed to DEF source and perform [Section — Shut-Down Procedure](#).
3. Turn DEF tank cap (2) to remove.
4. Add DEF as needed.
5. Replace DEF tank cap.

NOTICE

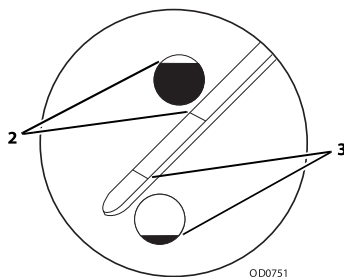
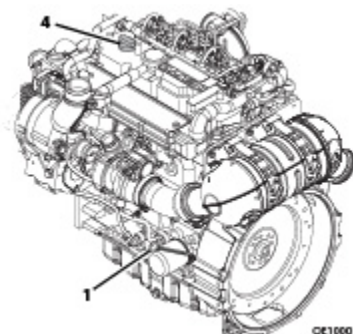
EQUIPMENT DAMAGE. Do not allow machine to run out of Diesel Emission Fluid (DEF) during operation. See the engine Operation & Maintenance Manual for details prior to servicing.

7.5.4 Engine Oil

A. Engine Oil Level Check

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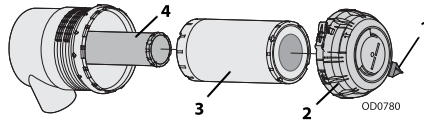
1. Perform [Section — Shut-Down Procedure](#).
2. Open engine cover.
3. Remove dipstick (1) and check oil mark. Oil should be between full (2) and add (3) marks of dipstick.
4. Replace dipstick.
5. If oil is low, remove oil fill cap (4) and add oil to bring oil up to full mark in crosshatch area.
6. Replace oil fill cap.
7. Close and secure engine cover.

7.5.5 Air Intake System

A. Air Cleaner Check

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1. Perform [Section — Shut-Down Procedure](#).
2. Open engine cover.
3. Remove dust from vacuator valve (1) by squeezing bottom of valve to allow loose particles to fall out.
4. Close and secure engine cover.

NOTICE

EQUIPMENT DAMAGE. Only remove air cleaner cover to service elements. Excessive access to check elements can lead to premature element and/or engine failure.

B. Filter Change

Note: Change elements as air cleaner restriction indicator indicates or every two years. Use the interval that occurs first.

1. Perform [Section — Shut-Down Procedure](#).
2. Open engine cover.
3. Unlock air cleaner cover (2) and remove from air cleaner.
4. Remove outer primary element (3). Inspect element for damage then discard.
5. Remove outer primary element (3). Inspect element for damage then discard.
6. Replace inner safety element (4) every third primary element change or if primary element was found to be damaged. If replacing inner safety element at this time, carefully slide element out and replace with new element.
7. Slide new primary element over inner safety element making sure sealing edge is flush with base of air cleaner.
8. Position air cleaner cover in place and lock into position.
9. Close and secure engine cover.

Note: Elements should never be washed or reused. Always install new elements

NOTICE

EQUIPMENT DAMAGE. Primary and safety elements are required to be replaced if used in an application longer than two years regardless of hours of operation.

7.5.6 Tires

A. Tire Air Pressure Check



1. Perform [Section — Shut-Down Procedure](#).
2. Remove valve stem cap.
3. Check tire pressure.
4. Add air if required. See [Section — Tires](#) for tire pressures.
5. Replace valve stem cap.

B. Tire Damage

For pneumatic tires, when any cut, rip or tear is discovered that exposes sidewall or tread area cords in the tire, measures be taken to remove the product from service immediately. Arrangements must be made for replacement of the tire or tire assembly.

For polyurethane foam filled tires, when any of the following are discovered, measures must be taken to remove the product from service immediately. Arrangements must be made for replacement of the tire or tire assembly.

- Smooth even cut through the cord piles which exceeds 3 in (7,5 cm) in total length
- Any tears or rips (ragged edges) in cord plies which exceeds 1 in (2,5 cm) in any direction
- Any punctures which exceed 1 in (2,5 cm) in diameter

If a tire is damaged but within above noted criteria, tire must be inspected daily to ensure damage has not propagated beyond allowable criteria.

C. Tire and Wheel Replacement

Machines equipped with pneumatic tires from manufacturer must use pneumatic replacements. Machines equipped with foam filled or ballast filled tires from manufacturer must use foam filled or ballast filled replacements.

It is recommended that a replacement tire to be same size, ply, inflation medium and brand as originally installed. Refer to appropriate parts manual for ordering information. If not using an approved replacement tire, replacement tires must have the following characteristics:

- Equal or greater ply/load rating and size of original
- Tire tread contact width equal or greater than original
- Wheel diameter, width and offset dimensions equal to the original

- Approved for application by tire manufacturer (including inflation pressure and maximum tire load)

Due to size variations between tire brands, when selecting and installing a replacement tire ensure both tires on the axle are the same.

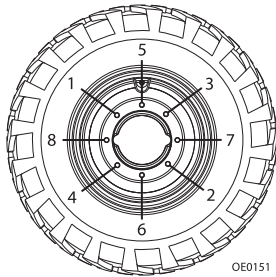
The rims installed have been designed for stability requirements which consist of track width, tire pressure and load capacity. Size changes such as rim width, center piece location, larger or smaller diameter, etc., without written factory recommendations, may result in unsafe condition regarding stability.

D. Wheel Installation

Torque lug nuts after first 50 hours and after each wheel installation.

Note: If machine is equipped with directional tire assemblies, wheel and tire assemblies must be installed with directional tread pattern “arrows” facing in direction of forward travel.

1. Start all nuts by hand to prevent cross threading. DO NOT use a lubricant on threads or nuts.



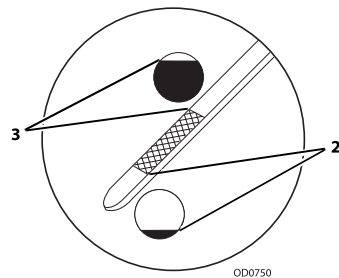
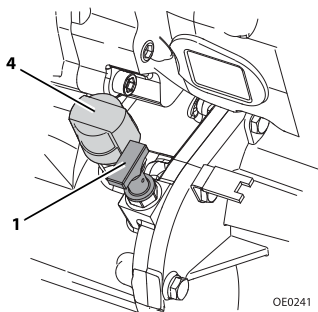
2. Tighten lug nuts in an alternating pattern as indicated in figure. See [Section — Tires](#) for torque value.

⚠ WARNING

TIP OVER HAZARD. Lug nuts must be installed and maintained at the proper torque to prevent loose wheels, broken studs and possible separation of wheel from the axle.

7.5.7 Transmission Oil

A. Transmission Oil Level Check



Note: Final transmission oil level must always be checked with engine at idle and transmission oil at operating temperature (minimum 176°F/80°C).

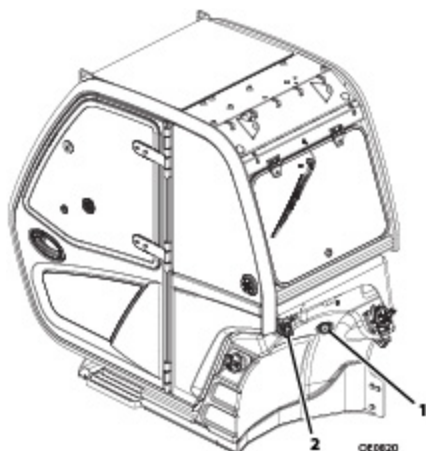
1. Start machine on a firm, level surface, level machine, fully retract boom, lower boom, place transmission in (N) NEUTRAL, engage park brake and run engine at idle.
2. Open engine cover.
3. Remove the transmission dipstick (1) and check the oil level. The cold oil level after 2-3 minutes of idle must be between the MIN (2) and MAX (3) oil level marks.
4. If the oil is low, remove plug (4) and add oil as required.
5. Replace the transmission dipstick and plug.
6. Close and secure the engine cover.

7.5.8 Hydraulic Oil

A. Hydraulic Oil Level Check

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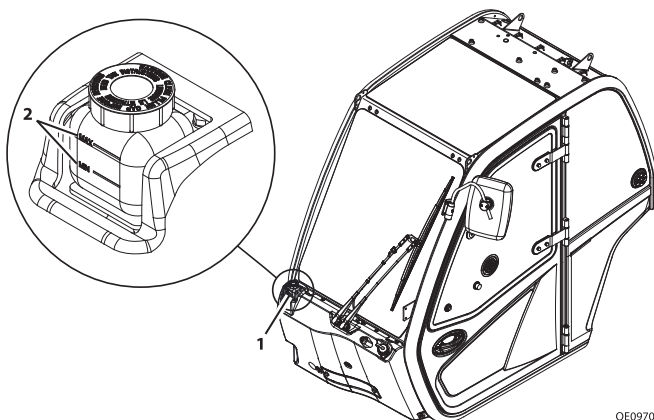
1. Be sure all cylinders are fully retracted, outriggers (if equipped) are fully raised and machine is level.
2. Perform [Section — Shut-Down Procedure](#).
3. Allow hydraulic oil to cool. Check fluid level at sight gauge (1). Oil level should be visible in gauge window.
4. Remove fill cap (2). Add fluid to bring oil up to the center of the sight gauge.
5. Replace hydraulic oil fill cap.

7.5.9 Brake Fluid

A. Brake Fluid Level Check

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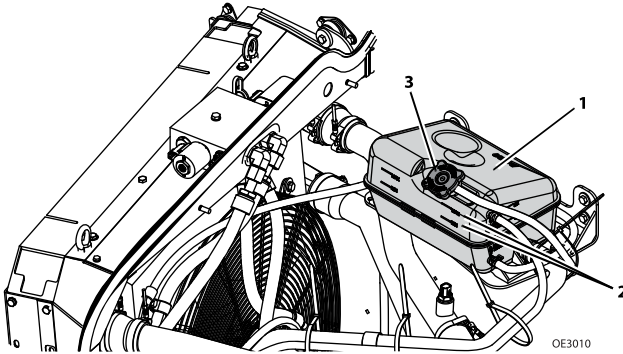

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1. Perform [Section — Shut-Down Procedure](#).
2. Check the brake fluid level (1). Fluid should be between Max and Min (2) marks on brake reservoir.
3. If fluid is low, remove the product from service. See Service Manual for information.

7.5.10 Engine Cooling System

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A. Engine Coolant Level Check

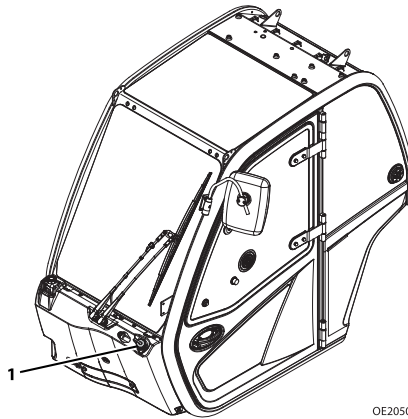
1. Perform [Section — Shut-Down Procedure](#).
2. Open engine cover.
3. Check coolant level in surge tank (1). Coolant should be between Max and Min (2) marks on surge tank.
4. If coolant is low, allow fluid to cool.
5. Remove surge tank cap (3) slowly. Add coolant as required.
6. Replace surge tank cap.
7. Close and secure engine cover.

Note: When filling coolant, maximum fill rate is 2.5 gallon per minute (9,5 liter per minute).

7.5.11 Windshield Washer System

Windshield Washer Fluid Level Check

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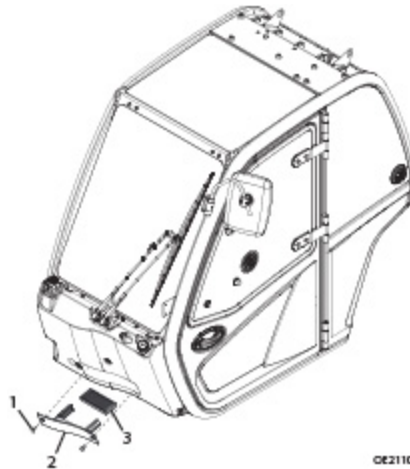


1. Perform [Section — Shut-Down Procedure](#).
2. Remove reservoir cap (1).
3. Windshield washer fluid should be visible in the reservoir.
4. If washer fluid level is low, add fluid as needed.
5. Replace reservoir cap.

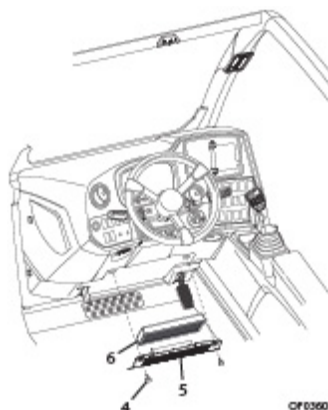
7.5.12 Cab Air Filters (if equipped)

A. Cab Air Filters Check

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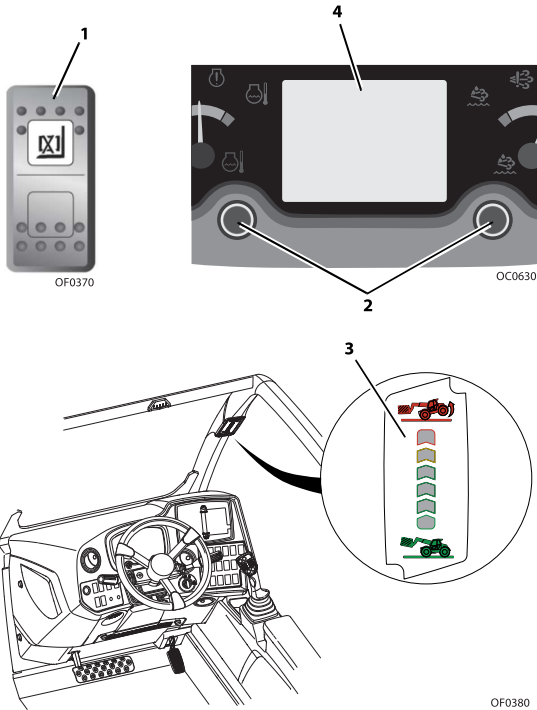
1. Perform [Section — Shut-Down Procedure](#).
2. Remove two thumb screws (1) and panel (2) from front of cab.
3. Remove filter (3) and inspect.
4. If filter is not damaged, clean and place back under dash. If damaged, replace filter.
5. Replace panel on front of cab and secure with thumb screws.



6. Remove two thumb screws (4) and panel (5) from under dash.
7. Remove cab air filter (6) and inspect.
8. If filter is not damaged, clean and place back under dash. If damaged, replace filter.
9. Replace panel and secure with thumb screws.

7.5.13 Load Stability Indicator System (if equipped)

Load Stability Indicator System Check



The Load Stability Indicator (LSI) is intended to continuously monitor the forward stability of the telehandler. To check this feature, perform the following:

1. Remove attachment and fully retract and fully raise boom.
2. Press and hold LSI override switch **(1)** on left control panel and the two control buttons **(2)** on instrument panel.
3. LSI indicator LEDs **(3)** will illuminate sequentially then repeat if check is successful. LSI indicator LEDs will resume normal functionality when control buttons are released.
4. If check fails, a fault code will appear in the LCD display **(4)** and must be corrected before continued use. Repeat system check or re-calibrate machine. See Service Manual for LSI system calibration information.

SECTION 8

Additional Checks

8.1 GENERAL

If any of the following test results cannot be achieved, the system is not functioning properly and the machine must be removed from service and repaired before continued operation.

8.2 REVERSE SENSING SYSTEM (IF EQUIPPED)

8.2.1 Reverse Sensing System Check



Reverse Sensing System provides audible indication of objects to rear of unit while in reverse gear.

1. Clear all people and/or obstacles behind machine before performing Reverse Sensing System check.
2. Start machine and depress and hold brake. Place machine in reverse gear.
3. Verify alarm sounds upon system start up.

Note: Reverse Sensing System detects objects of size more than 36 square inches (232.25 square centimeters) area and is functional when machine is moving in reverse direction.

Note: The use of a construction cone or similar object must be used to test the Reverse Sensing System.

WARNING

CRUSH HAZARD. Do not use a person to test the reverse sensing system.

4. Verify operation with no objects in detection zone. No audible alarm.
5. Verify operation when object is in range of approximately 9 to 15 ft (2.7 to 4.5 m). Produces pulsing audible alarm at a frequency of one per second (1 Hz).
6. Verify operation when object is in range of approximately 7 to 9 ft (2.1 to 2.7 m). Produces pulsing audible alarm. Produces pulsing audible alarm at a frequency of two per second (2 Hz).
7. Verify operation when object is range of approximately 3 to 7 ft (0.9 to 2.1 m). Produces pulsing audible alarm at a frequency of four per second (4 Hz).

Additional Checks

8. Verify operation when object is under approximately 3 ft (0.9 m) from machine.
Produces pulsing audible alarm at a frequency of eight per second (8 Hz).

SECTION 9

Specifications

9.1 PRODUCT SPECIFICATIONS

9.1.1 Fluids

Compartment or System	Type and Classification	Viscosities	Ambient Temperature Range			
			°F		°C	
			Min	Max	Min	Max
Engine Crankcase	Deutz DQC III-10 LA or Deutz DQC IV-10 LA	SAE 0W-40	-40	104	-40	40
		SAE 0W-30	-40	86	-40	30
		SAE 5W-30	-22	86	-30	30
		SAE 5W-40	-22	86	-30	30
		SAE 10W-30	-4	86	-20	30
		SAE 10W-40	-4	114	-20	45
		SAE 15W-40	6	114	-14	45
		SAE 20W-50	24	122	-5	50
Transmission and Transfer Case	Shell Donax TA		-4	104	-20	40
		SAE 10W	-4	104	-20	40
	Mobilfluid 424 Spirax S4 TXM	SAE 0W-20	-40	95	-40	35
		10W-30	-4	122	-20	50
		SAE 30	32	95	0	35
		SAE 50	50	122	10	50
Axle Differential and Wheel end	API GL5 with LS Additives	80W-140	14	122	-10	50
		75W-90	-40	104	-40	40
Hydraulic System	Mobilfluid 424 Spirax S4 TXM	10W-30	6	122	-14	50
	Exxon Univis HVI		-40	100	-40	38
Boom Wear Pad Grease	Extreme Pressure Grease	NLGI Grade 000	-31	122	-35	50

Specifications

Compartment or System	Type and Classification	Viscosities	Ambient Temperature Range			
			°F		°C	
			Min	Max	Min	Max
Grease Fittings	Extreme Pressure Grease	NLGI Grade 2 EP or NLGI Grade 3 EP with Moly Additive	5	122	-15	50
Engine Coolant*	DQC CA-14DQC CB-14DQC CC-14	50% Ethylene Glycol and 50% Water	-40	122	-40	50
Fuel	en590 ASTM D975 Grade 2-D ASTM D975 Grade 1-D (Maximum B5 Biodiesel)	Ultra Low Sulfur(S ≤ 15 mg/kg)				
Diesel Exhaust Fluid	ISO22241-1	32.5% Urea				
Brake Fluid	Mobil ATF 220		-40	122	-40	50
Air Conditioning	Refrigerant R-134-a	Tetrafluoroethane				

*Do not mix coolants from different specifications.

9.1.2 Capacities

Engine Crankcase Oil

Capacity with Filter Change 8.5 qt (8,0 L)

Fuel Tank

Capacity 39 gal (148 L)

Diesel Exhaust Fluid Tank

Capacity 5.3 gal (20.25 L)

Cooling System

System Capacity 20 qt (19 L)

Hydraulic System

System Capacity 31.7 gal (120 L)

Reservoir Capacity to Full Mark 25.6 gal (97 L)

Transmission System

Capacity with Filter Change 4.8 gal (18 L)

Transfer Case

Capacity 3 qt (2,8 L)

Axles

Differential Housing Capacity

Front Axle 6.5 qt (6,15 L)

Rear Axle 7.9 qt (7,5 L)

Wheel End Capacity

Front Axle 1.7 qt (1,6 L)

Rear Axle 1.5 qt (1,4 L)

Brake Fluid

Capacity 0.5 qt (0,5 L)

Air Conditioning System (if equipped)

System Capacity 2.65 lb (1200 g)

9.1.3 Tires

15.5/80-24	62 psi (4,25 bar)
15.5 R25 XHA TL	62 psi (4,25 bar)
460/70 R24 XMCL	58 psi (4,0 bar)
500/70 R24 XMCL	44 psi (3,0 bar)
440/80-24 POWER CL	51 psi (3,5 bar)
400/80-24 POWER CL	58 psi (4,0 bar)
370/75-28	76 psi (5,25 bar)
460/70 R24 BIBLOAD	58 psi (4,0 bar)

Wheel Lug Nut

Torque.....	340 ±30 lb-ft (460 ±40 Nm)
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9.1.4 Performance

Maximum Lift Capacity

925, AG925 8800 lb (4000 kg)

832, AG832 7716 lb (3500 kg)

823, AG823 7716 lb (3500 kg)

Maximum Lift Height

925, AG925 25.0 ft (7610 mm)

832, AG832 32.2 ft (9800 mm)

823, AG823 23.0 ft (7010 mm)

Capacity at Maximum Height

925, AG925 4740 lb (2150 kg)

832, AG832 1918 lb (870 kg)

823, AG823 4882 lb (2214 kg)

Maximum Forward Reach

925, AG925 14.0 ft (4276 mm)

832, AG832 21.7 ft (6600 mm)

823, AG823 12.2 ft (3718 mm)

Capacity at Maximum Forward Reach

925, AG925 2811 lb (1275 kg)

832, AG832 992 lb (450 kg)

823, AG823 2986 lb (1354 kg)

Reach at Maximum Height

925, AG925 3.0 ft (900 mm)

832, AG832 3.9 ft (1200 mm)

823, AG823 1.8 ft (550 mm)

Auxiliary Hydraulic Circuit Max Flow 26.4 gpm (100 lpm)

Maximum Travel Speed 24.9 mph (40 kph)

Maximum Travel Grade (boom in travel position)

Gradeability 45%

Side Slope 8.75%

Note: Refer to machine specific documents and/or plates for local governmental requirements and/or restrictions.

9.1.5 Dimensions

Maximum Overall Height	97.4 in (2475 mm)
Maximum Overall Width	93.8 in (2382 mm)
Maximum Track Width	78.3 in (1988 mm)
Wheel Base	124.6 in (3165 mm)
Length at Front Wheels	174.5 in (4433 mm)
Overall Length (no attachment)	
925, AG925	207.0 in (5258 mm)
832, AG832	207.6 in (5272 mm)
823, AG823	195.8 in (4972 mm)
Ground Clearance	16.9 in (429 mm)
Outside Turning Radius Over Tires	151.5 in (3847 mm)
Outside Turning Radius Over Forks	
925, AG925	178.2 in (4525 mm)
832, AG832	180.5 in (4585 mm)
823, AG823	173.2 in (4400 mm)
Maximum Operating Weight (no attachment)	
925, AG925	18,438 lb (8363 kg)
832, AG832	20,170 lb (9149 kg)
823, AG823	16,931 lb (7680 kg)
Distribution of Maximum Operating Weight (no attachment, boom level and fully retracted)	
Front Axle	
925, AG925	8,785 lb (3985 kg)
832, AG832	9,420 lb (4273 kg)
823, AG823	Not Available at Publication
Rear Axle	
925, AG925	10,421 lb (4727 kg)
832, AG832	11,054 lb (5014 kg)
823, AG823	Not Available at Publication
Maximum Ground Bearing Pressure	
925, AG925	
15.5/80-24	145.5 lb/in ² (10.23 kg/cm ²)

15.5 R25 XHA TL	105.4 lb/in ² (7,41 kg/cm ²)
460/70 R24 XMCL	163.3 lb/in ² (11,48 kg/cm ²)
500/70 R24 XMCL	124.6 lb/in ² (8,76 kg/cm ²)
400/80-24 POWER CL	165.7 lb/in ² (11,65 kg/cm ²)
440/80-24 POWER CL	146.1 lb/in ² (10,27 kg/cm ²)
460/70 R24 BIBLOAD	127.4 lb/in ² (8,96 kg/cm ²)
832, AG832	
15.5/80-24	151.5 lb/in ² (10,65 kg/cm ²)
15.5 R25 XHA TL	106.8 lb/in ² (7,51 kg/cm ²)
460/70 R24 XMCL	170.7 lb/in ² (12,00 kg/cm ²)
500/70 R24 XMCL	129.7 lb/in ² (9,12 kg/cm ²)
400/80-24 POWER CL	171.5 lb/in ² (12,06 kg/cm ²)
440/80-24 POWER CL	150.5 lb/in ² (10,58 kg/cm ²)
460/70 R24 BIBLOAD	134.0 lb/in ² (9,42 kg/cm ²)
823, AG823	
460/70 R24 XMCL	Not Available at Publication
500/70 R24 XMCL	Not Available at Publication

9.1.6 Machine Towing Capacity

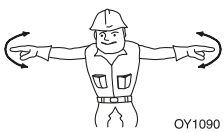
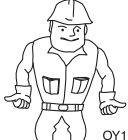
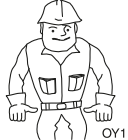
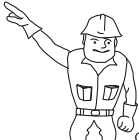
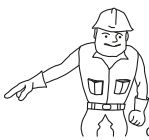
Note: Refer to machine specific documents and/or plates for local governmental requirements and/or restrictions.

Unbraked	6,614 lb (3000 kg)
Hydraulic or Pneumatic Braked	26,455 lb (12000 kg)

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Hand Signals

 OY1090 EMERGENCY STOP - With both arms extended laterally, hands open downward, move arms back and forth.	 OY1100 STOP - With either arm extended laterally, hand open downward, move arm back and forth.	 OY1110 STOP ENGINE - Draw thumb or forefinger across throat.
 OY1120 RAISE BOOM - With either arm extended horizontally, fingers closed, point thumb upward.	 OY1130 LOWER BOOM - With either arm extended horizontally, fingers closed, point thumb downward.	 OY1140 MOVE SLOWLY - Place one hand motionless in front of hand giving motion signal. (Raise load slowly shown)
 OY1150 EXTEND BOOM - With both hands clenched, point thumbs outward.	 OY1160 RETRACT BOOM - With both hands clenched, point thumbs inward.	 OY1170 THIS FAR TO GO - With hands raised and open inward, move hands laterally, indicating distance to go.
 OY1180 TILT FORKS UP - With one arm held at side, extend other arm upward at about 45 degrees.	 OY1190 TILT FORKS DOWN - With one arm held at side, extend other arm downward at about 45 degrees.	

Special Signals - When signals for auxiliary equipment functions or conditions not covered are required, they shall be agreed upon in advance by the operator and signalman.



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