Operation & Safety Manual

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

G5–18A

PVC 2405

3122310800

May 13, 2024 - Rev A

English (en-US)

⚠ 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 13, 2024	A	Original Issue 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.

This manual is originally written in English.

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

JLG Industries, Inc.

13224 Fountainhead Plaza

Hagerstown, MD 21742

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Phone: +1-717-485-6591

E-mail:

ProductSafety@JLG.com

Other Publications Available

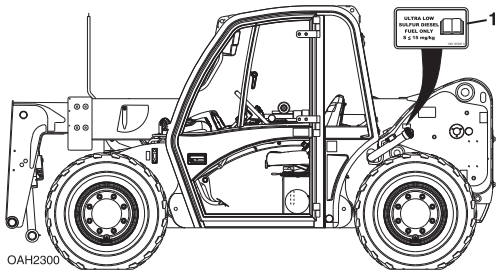
Service Manual 3122310900
Parts Manual 3122311000

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

Machine Configuration

Two configurations of each machine are included in this manual. Determine if machine is equipped with Ultra Low Sulfur Fuel Decal (**1**) as indicated below.

- If equipped with Ultra Low Sulfur decal, all specific references to this machine configuration will be referred to as Ultra Low Sulfur (**ULS**) from this point forward.
- If **not** equipped with Ultra Low Sulfur decal, all specific references to this machine configuration will be referred to as Low Sulfur (**LS**) from this point forward.



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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.

1.2 GENERAL PRECAUTIONS

This vehicle has been designed and built as a self-propelled vehicle with operator's seat and wheels designed for use on paved or natural ground and driven on uneven ground.

It contains a main support structure suitable to support the extendable boom.

The head of the boom can be fitted with forks or other attachments only if approved by JLG.

When used normally, the machine performs load lifting and positioning by extending/retracting the lifting/lowering of the boom.

⚠ WARNING

Any other use is considered contrary to the intended use by JLG which, therefore cannot be responsible for damage to objects and the machine itself, or injury to persons that might derive from misuse.

⚠ 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.

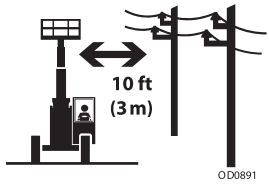
- Hydraulic cylinders are subject to thermal expansion and contraction. This may result in changes to the boom and/or attachment position while the machine is stationary. Factors affecting thermal movement can include the length of time machine is stationary, hydraulic oil temperature, ambient air temperature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

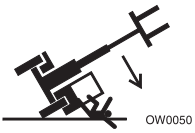
⚠ DANGER

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

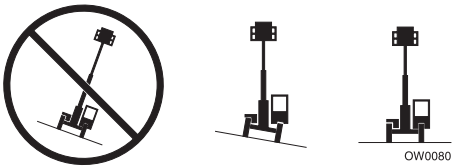
1.3.2 Tip Over Hazard

General

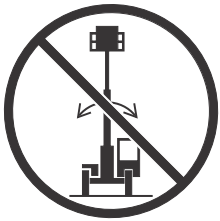
- For additional load requirements, refer to the appropriate capacity chart.



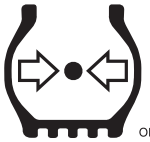
- Never use an attachment without the appropriate original equipment manufacturer (OEM) approved capacity chart installed on the telehandler.
- Understand how to properly use the capacity charts located in cab.
- **DO NOT** exceed rated lift capacity.
- Be sure that the ground conditions are able to 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.



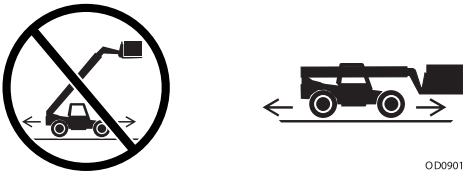
- Always wear seat belt.
- Keep head, arms, hands, legs and all other body parts inside operator's cab at all times.



If telehandler starts to tip over:

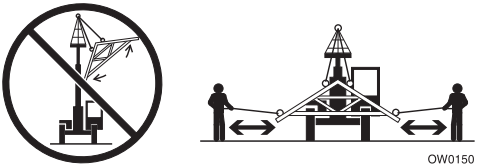
- **DO NOT** JUMP
- BRACE YOURSELF and STAY WITH THE MACHINE
- KEEP YOUR SEAT BELT FASTENED
- HOLD ON FIRMLY
- LEAN AWAY FROM THE POINT OF IMPACT

Non-Suspended Load



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

Suspended Load

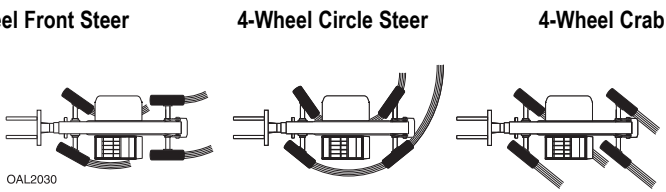


- Tether suspended loads to restrict movement.
- Weight of all rigging (slings, etc.) must be included as part of load.
- **DO NOT** attempt to use telehandler frame-leveling to compensate for load swing.
- Keep heavy part of load closest to attachment.
- Never drag the load; lift vertically.

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



- 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



- 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

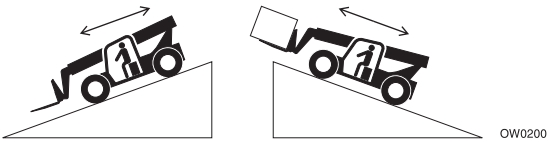


- When lifting personnel, **USE ONLY** an approved personnel work platform, with proper capacity chart displayed in the cab.



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

1.3.6 Driving Hazards on Slopes



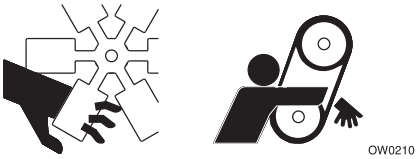
To maintain sufficient traction and braking capabilities, travel on slopes as follows:

- 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.


OW0210

- Stay clear of moving parts while engine is running.


OW0220

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


OW0230

- Keep clear from under boom.


OW0240

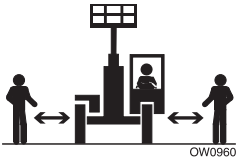
- Keep clear of boom holes.



- 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


OW0300

- **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


OW0950

- **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.

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.

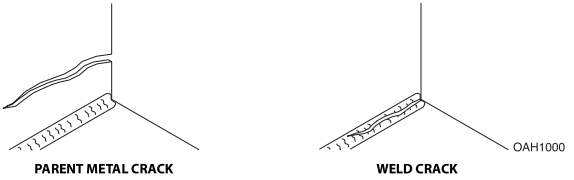
⚠ WARNING

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.

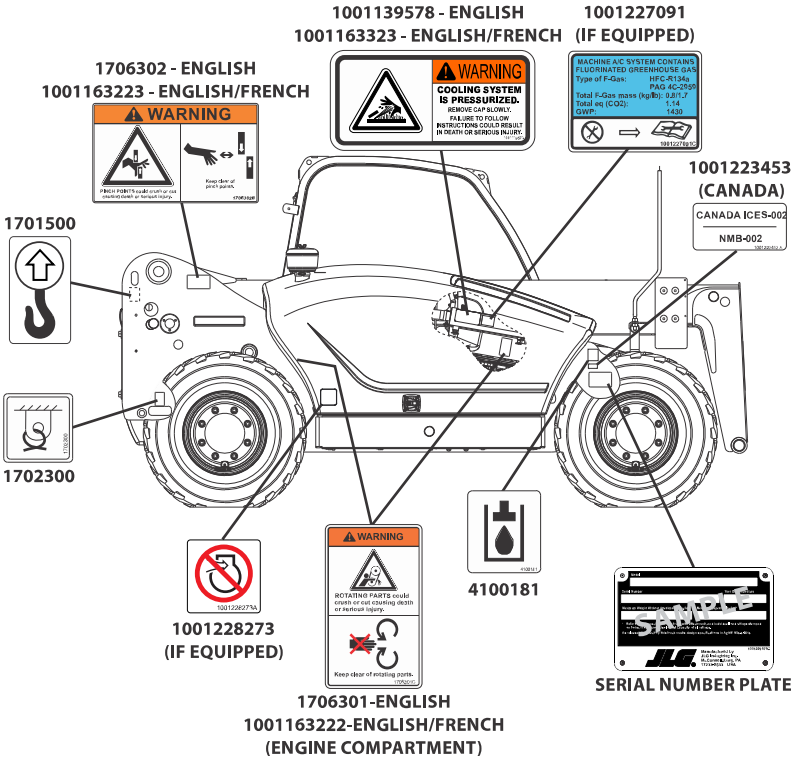
⚠ WARNING

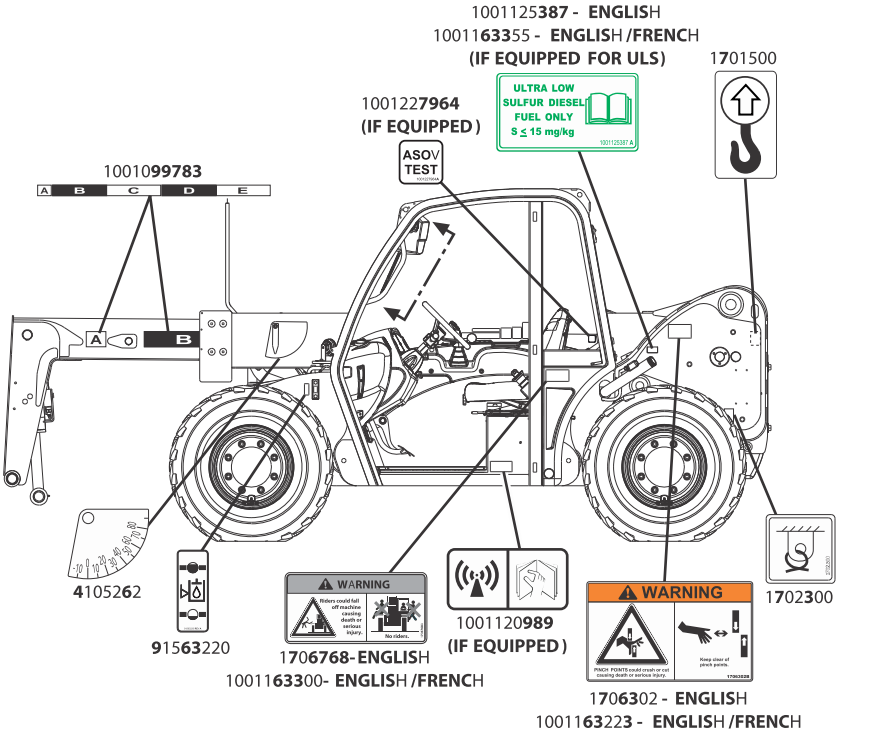
If telehandler does not operate properly, immediately bring machine to a stop, lower boom and attachment to ground and stop the engine. Determine cause and correct before continued use.

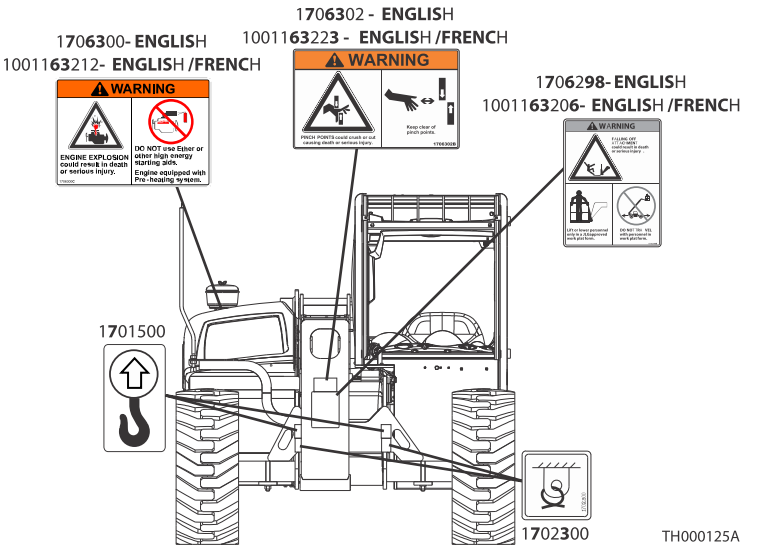
2.3 SAFETY DECALS

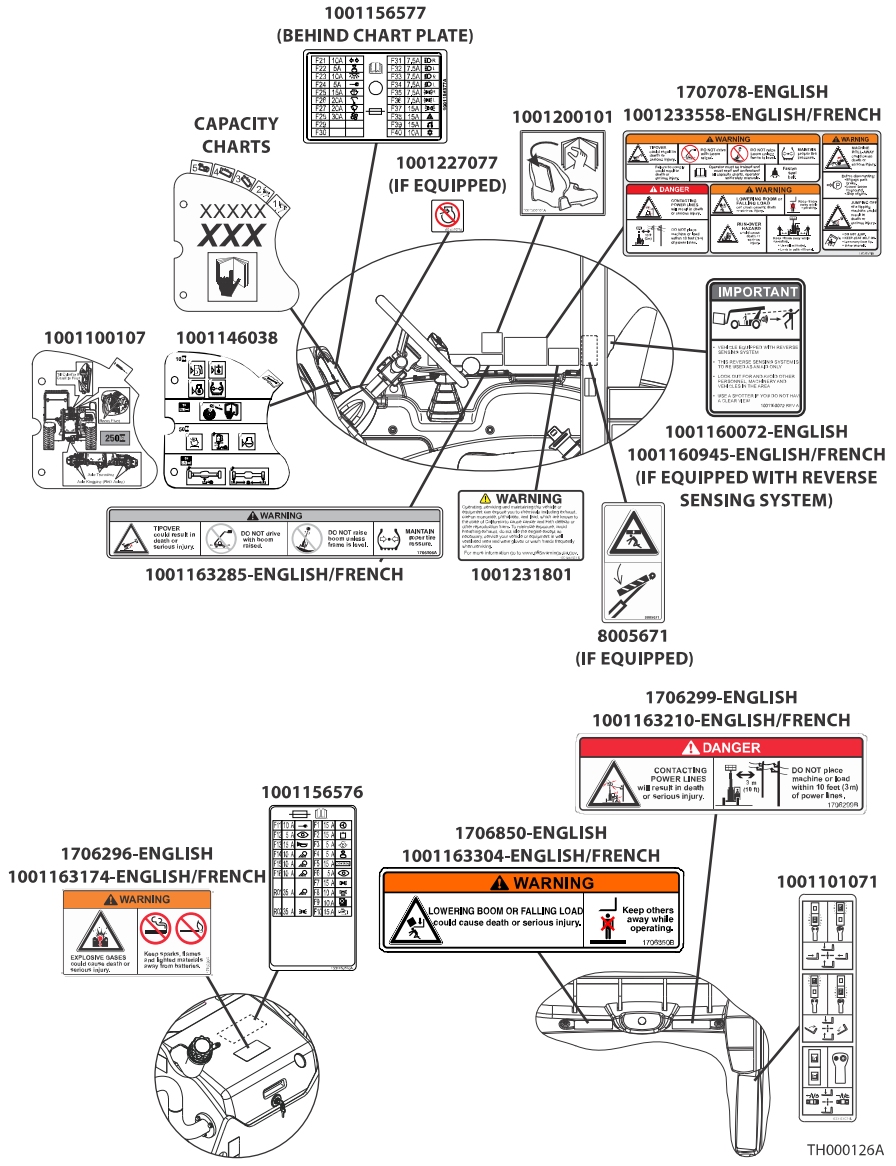
Ensure all **DANGER, WARNING, CAUTION** and instructional decals and proper capacity charts are legible and in place. Clean and replace as required.

2.3.1 ANSI (if equipped)

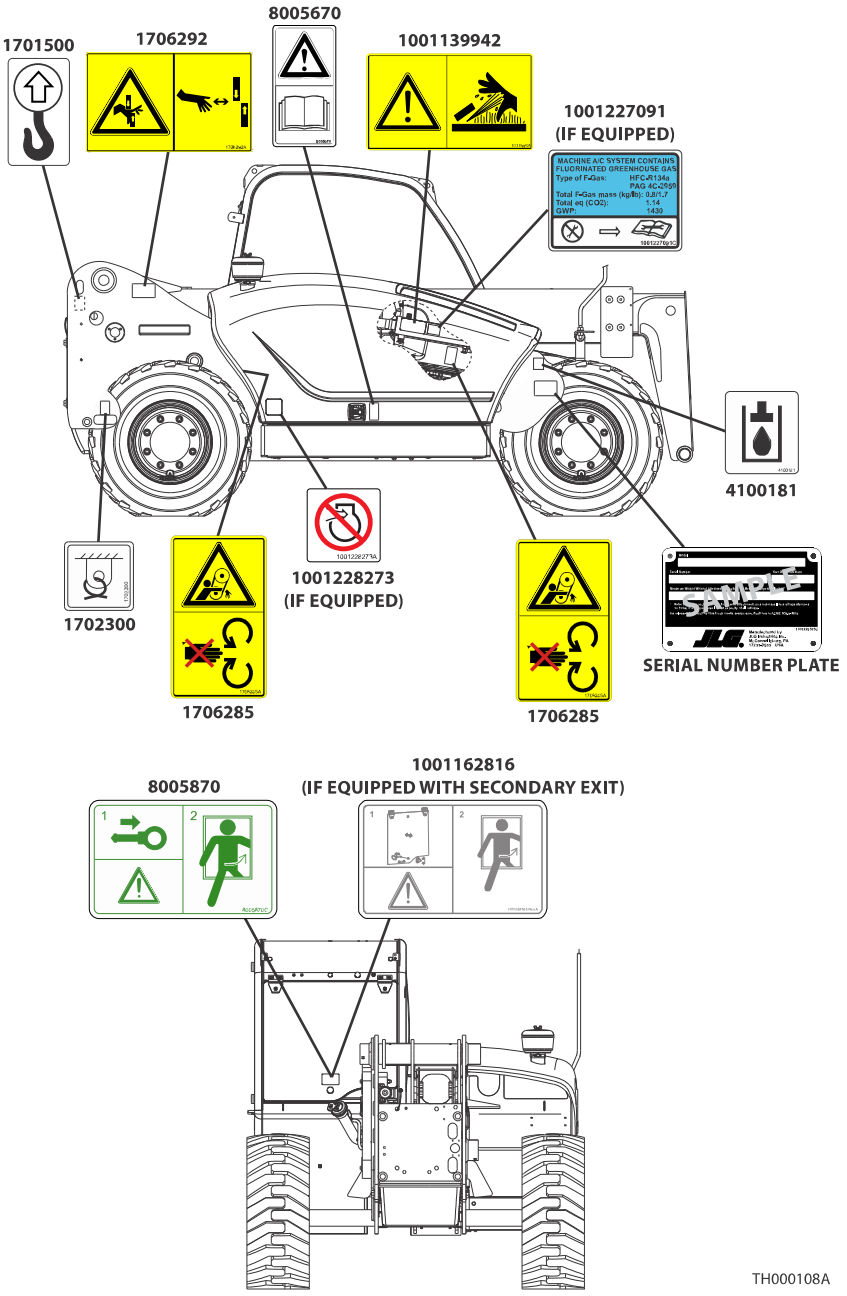


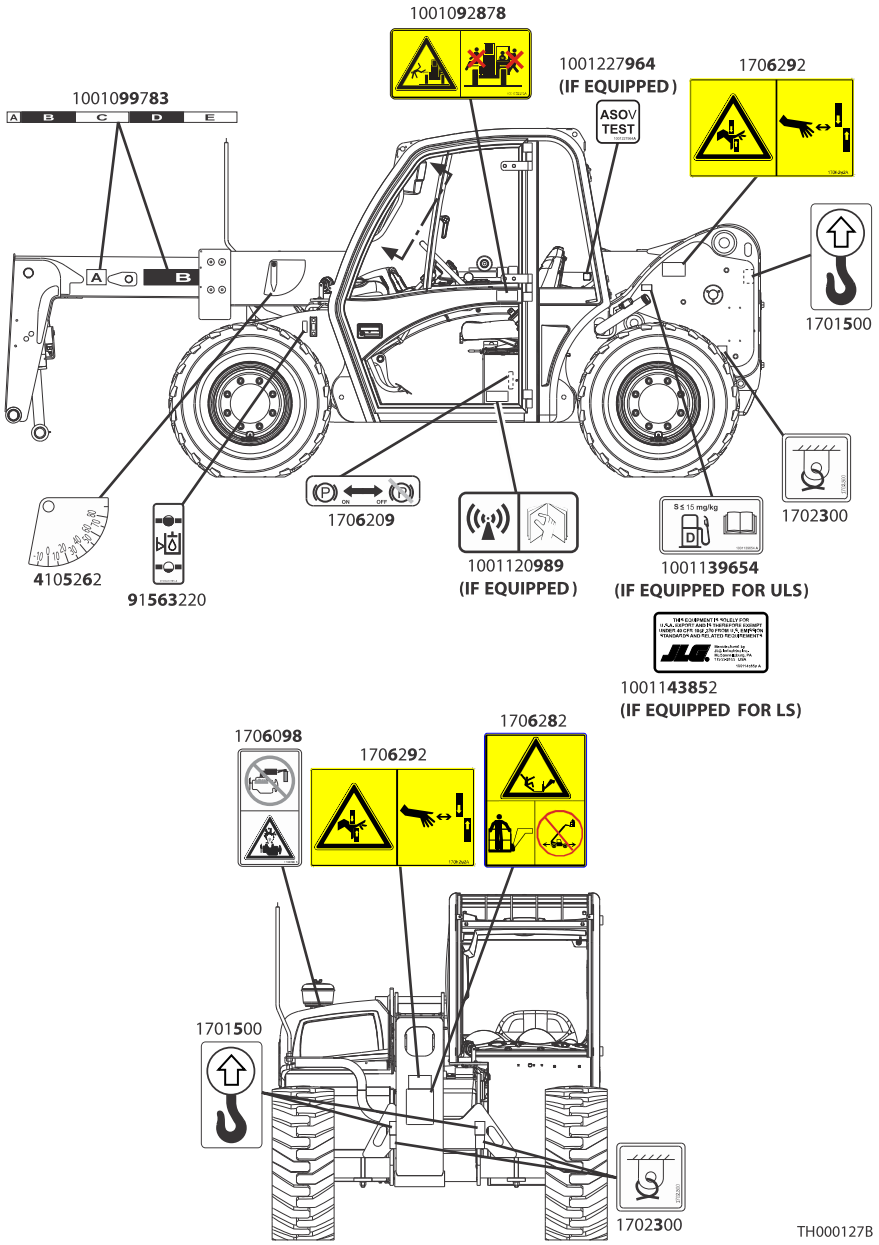

1001125387 - ENGLISH
1001163355 - ENGLISH /FRENCH
(IF EQUIPPED FOR ULS)
1701500
ULTRA LOW SULFUR DIESEL FUEL ONLY S ≤ 15 mg/kg
1001227964
(IF EQUIPPED)
ASOV TEST
1001099783
A B C D E
A
B
4105262
915632220
WARNING
1706768-ENGLISH
1001163300- ENGLISH /FRENCH
1001120989
(IF EQUIPPED)
WARNING
1706302 - ENGLISH
1001163223 - ENGLISH /FRENCH
1702300

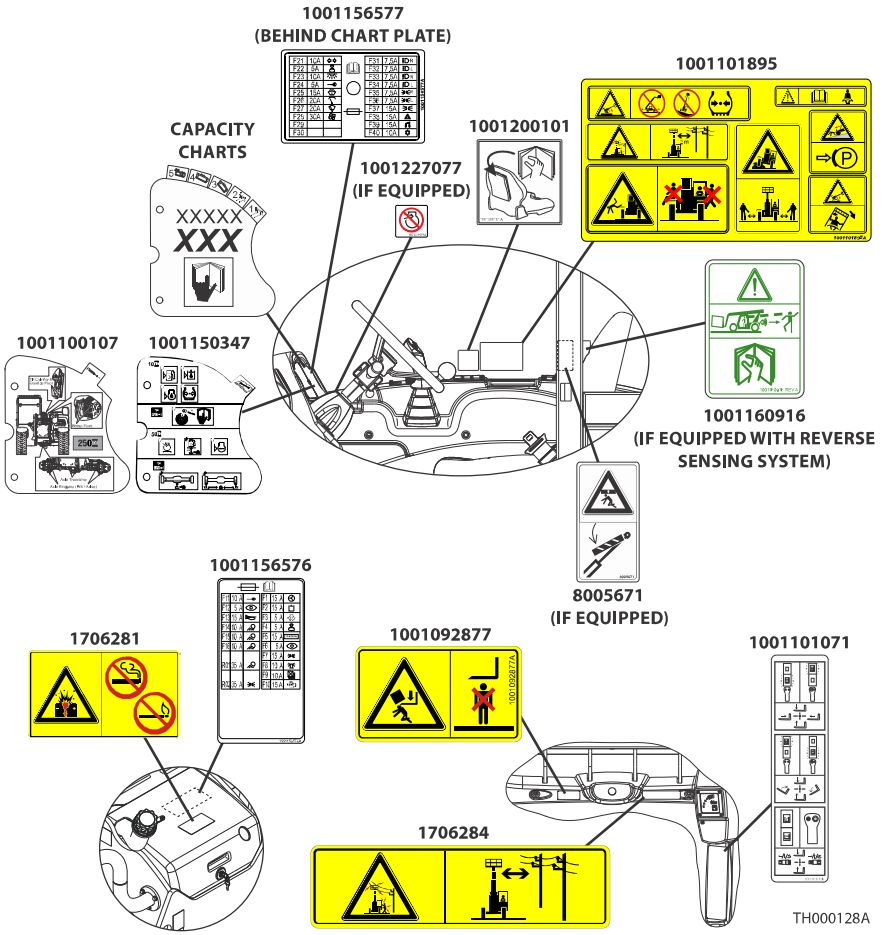

1706302 - ENGLISH
1001163223 - ENGLISH /FRENCH
1706300- ENGLISH
1001163212- ENGLISH /FRENCH
WARNING
ENGINE EXPLOSION could result in death or serious injury.
DO NOT use Ether or other high energy starting aids.
Engine equipped with Pre-heating systems.
WARNING
PINCH POINTS could crush or cut causing death or serious injury.
Keep clear of pinch points.
1706298- ENGLISH
1001163206- ENGLISH /FRENCH
WARNING
1701500
1702300
TH000125A


1001156577
(BEHIND CHART PLATE)
CAPACITY
CHARTS
1001227077
(IF EQUIPPED)
1001200101
1707078-ENGLISH
1001233558-ENGLISH/FRENCH
1001100107
1001146038
IMPORTANT
1001160072-ENGLISH
1001160945-ENGLISH/FRENCH
(IF EQUIPPED WITH REVERSE
SENSING SYSTEM)
WARNING
1001163285-ENGLISH/FRENCH
1001231801
8005671
(IF EQUIPPED)
1706299-ENGLISH
1001163210-ENGLISH/FRENCH
DANGER
1001156576
1706296-ENGLISH
1001163174-ENGLISH/FRENCH
1706850-ENGLISH
1001163304-ENGLISH/FRENCH
1001101071
TH000126A

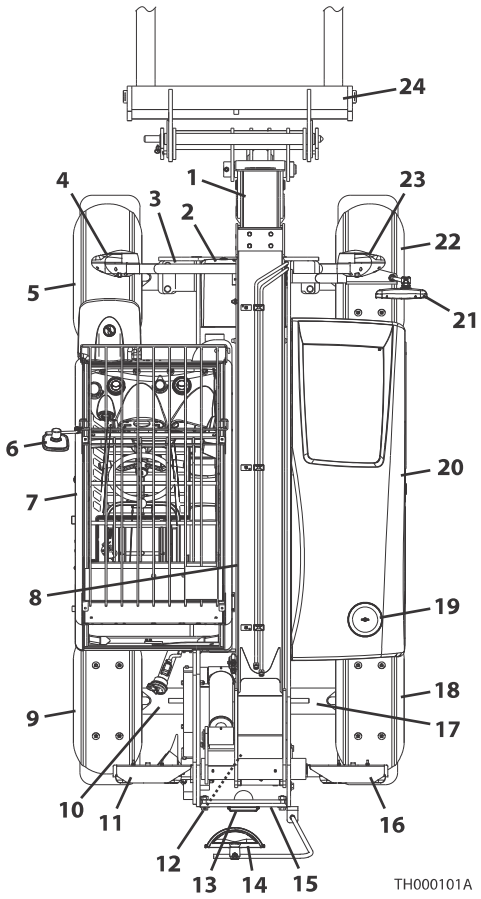
2.3.2 ISO (if equipped)




1001092878
1001227964
(IF EQUIPPED)
1706292
ASOV
TEST
1001099783
A B C D E
1701500
1702300
1706209
1001120989
(IF EQUIPPED)
1001139654
(IF EQUIPPED FOR ULS)
4105262
91563220
1001143852
(IF EQUIPPED FOR LS)
1706098
1706292
1706282
1701500
1702300
TH000127B


1001156577
(BEHIND CHART PLATE)
1001101895
CAPACITY
CHARTS
1001200101
1001227077
(IF EQUIPPED)
XXXXX
XXX
1001100107
1001150347
1001160916
(IF EQUIPPED WITH REVERSE
SENSING SYSTEM)
8005671
(IF EQUIPPED)
1001156576
1706281
1001092877
1001101071
1706284
TH000128A

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. **Battery Compartment** - Cables tight, no visible damage or corrosion. Cover properly secured.

3. **Front Axle** - Steer cylinders undamaged, not leaking; pivot pins secure; hydraulic hoses undamaged, not leaking.
4. **Front Lights (if equipped)** - Clean and undamaged.
5. **Wheel/Tire Assembly** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
6. **Mirror** - Clean and undamaged.
7. **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
8. **Boom Sensor (if equipped)** - See inspection note.
9. **Wheel/Tire Assembly** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
10. **Rear Axle** - Steer cylinders undamaged, not leaking; pivot pins secure; hydraulic hoses undamaged, not leaking.
11. **Rear Lights (if equipped)** - Clean and undamaged.
12. **Main Control Valve** - See inspection note.
13. **Reversing Camera (if equipped)** - See inspection note.
14. **Mirror (if equipped)** - Clean and undamaged.
15. **Reversing System (if equipped)** - 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. **Air Pre-Cleaner (if equipped)** - Check and clean as required.
20. **Engine Compartment** -
    - Drive belts, check condition and replace as required.
    - Engine mounts - See inspection note.
    - Engine cover properly secured.
    - Air Shutoff Valve (ASOV) (if equipped) - See inspection note.

21. **Mirror** - Clean and undamaged.
22. **Wheel/Tire Assembly** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
23. **Front Lights (if equipped)** - Clean and undamaged.
24. **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**.

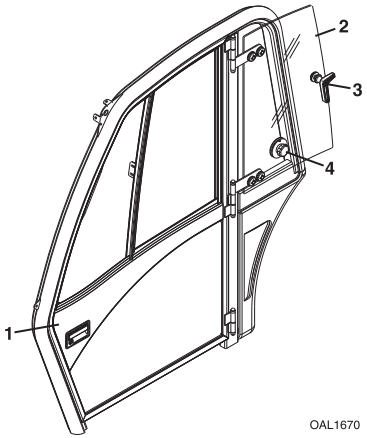
⚠ WARNING

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 WINDOWS

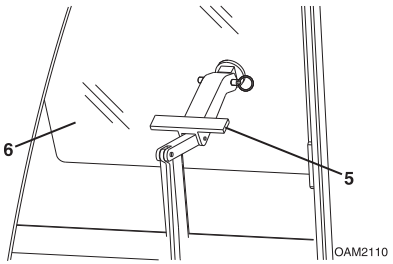
Keep all windows clean and unobstructed.

2.7.1 Cab Door Window (if equipped)



- Cab door (**1**) must be closed during operation.
- 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.
- Rotate knob (**4**) inside the cab or outside the cab to unlatch the window.

2.7.2 Rear Window



- Lift lever (**5**) and push to open the rear window (**6**)
- Lift lever and pull to close

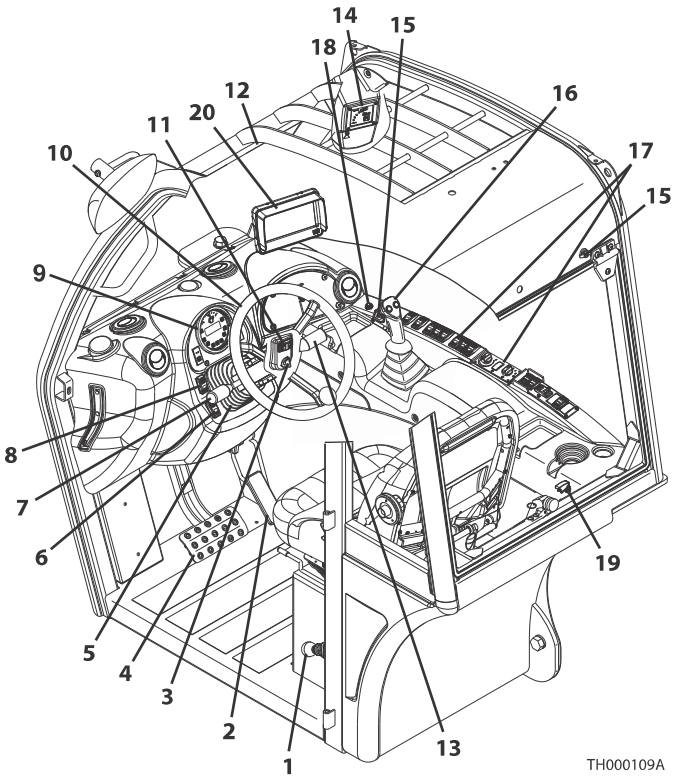
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SECTION 3
Controls and Indicators

3.1 GENERAL

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

3.2 CONTROLS

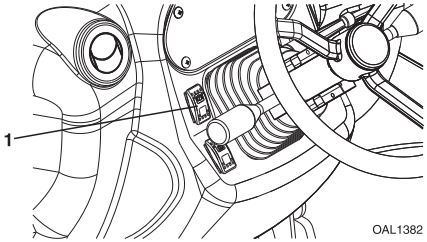


1. **Park Brake Lever (if equipped):** See *Park Brake Switch (if equipped)*.
2. **Accelerator Pedal:** Pressing down the pedal increases engine and hydraulic speed.
3. **Ignition Switch:** Key activated. See *Ignition, page 43*.
4. **Service Brake Pedal:** The further the pedal is depressed, the slower the travel speed.

5. **Tilt Steering Column (if equipped):** See *Steering Column Adjuster (if equipped), page 47*.
6. **Quick Attach Switch (if equipped):** Used in conjunction with the joystick to hydraulically lock or unlock an attachment.
7. **Transmission Control Lever:** See *Transmission Control Lever, page 44*.
8. **Park Brake Switch (if equipped):** See *Park Brake Switch (if equipped)*.
   LSI Override Switch (if equipped): See *LSI Override Switch (if equipped), page 46*.
9. **Instrument Panel:** See *Instrument Panel, page 48*.
10. **Steering Wheel:** Turning the steering wheel to the left or right steers the machine in the corresponding direction. Three steering modes are available. See *Steer Modes*.
11. **Horn Button:** Depress button to sound horn.
12. **Frame Level Indicator:** Enables operator to determine the left to right level condition of the telehandler.
13. **Accessory Control Lever (if equipped):** See *Accessory Control Lever (if equipped), page 55*.
14. **LSI Indicator (if equipped):** See *Load Stability Indicator - LSI (if equipped)*.
15. **Power Outlet:** 12V receptacle.
16. **Joystick:** See *Joystick, page 52*.
17. **Right Hand Console:** See *Right Hand Console, page 54*.
18. **Air Shutoff Valve (ASOV) Indicator Lamp (if equipped):** Indicates when the ASOV valve has been actuated.
19. **Air Shutoff Valve (ASOV) Test Switch (if equipped):** See *Air Shutoff Valve (ASOV) (If Equipped)*.
20. **Reversing Camera Monitor (if equipped):** See *Reversing Camera*.
21. **Seat Belt Indicator Lamp (if equipped):** Not shown; refer to , *page 54*.

3.2.1 Park Brake

Park Brake Switch (if equipped)



Park brake switch (**1**) controls the application and release of the park brake. Indicator light on instrument panel illuminates to indicate brake is applied.

- Depress top of switch to engage park brake. With park brake applied, transmission will not engage forward or reverse.
- Depress bottom of switch to disengage park brake.

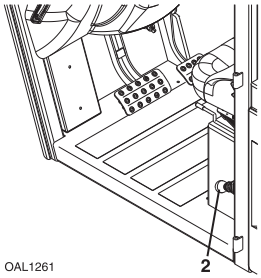
⚠ WARNING

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. To stop the machine in an emergency, either apply the park brake or turn off engine.

Park Brake Lever (if equipped)



Park brake lever (**2**) controls the application and release of the park brake. Indicator light on instrument panel illuminates to indicate brake is applied.

- Pull lever up to engage park brake. With park brake applied, transmission will not engage forward or reverse.
- Lift detent ring and push lever down to disengage park brake.

⚠ WARNING

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

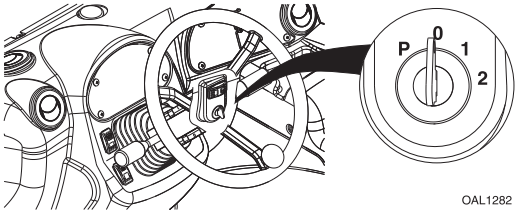
⚠ WARNING

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. To stop the machine in an emergency, either apply the park brake or turn off engine.

3.2.2 Parking Procedure

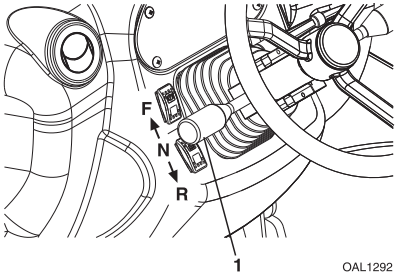
1. Using service brake, stop telehandler in an appropriate parking area.
2. Follow *Section - Shut-Down Procedure*.

3.2.3 Ignition



- Position **P**: Not active, reserved for future use.
- Position **0**: Engine off.
- Position **1**: Voltage available for all electrical functions. Hold in position until engine preheat indicator on instrument panel goes out. Prohibits rotating switch to position 2 in the event the engine does not start. Rotate key to position 0 then back to position 2 to re-engage starter.
- Position **2**: Engine start.
- Not active, reserved for future use.

3.2.4 Transmission Control Lever



Transmission control lever (**1**) engages forward or reverse travel.

- Lift and push lever forward for forward travel; lift and pull lever rearward for reverse travel. Move lever to centered position for 'Neutral'.
- When traveling in REVERSE, the back-up alarm will automatically sound.
- Drive in reverse and turn only at slow rates of speed.
- Do not increase engine speed with the transmission in forward or reverse and the service brake depressed in an attempt to get quicker hydraulic performances. This could cause unexpected machine movement.

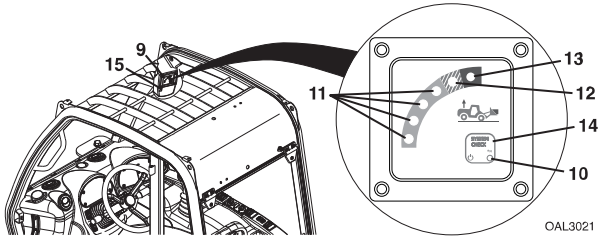
⚠ WARNING

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.

3.2.5 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 **(9)** provides visual and audible indication of forward stability limitations when machine is static on firm, level surface.

- Green LED **(10)** will illuminate when LSI power is on.
- When approaching forward stability limitations LEDs progressively illuminate, green **(11)**, then orange **(12)** and finally red **(13)**.
- 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 **(13)** 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.
- In some instances the LSI system may slow down or stop boom functions if operated close to forward stability limitations. When LEDs begin to flash, certain functions can not be operated. Retract boom and/or return the joystick to neutral position for a short period to allow system to reset and LEDs to stop flashing before proceeding with operation.

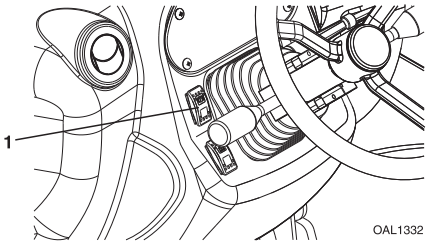
Passive Mode

- The orange LED **(15)** illuminates when the following occurs:
- The park brake is not applied and transmission control lever is in the forward or reverse position.
- 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*.
- Test LSI **(14)** at the beginning of each work shift. See *Section - Additional Checks*.
- 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.

3.2.6 LSI Override Switch (if equipped)



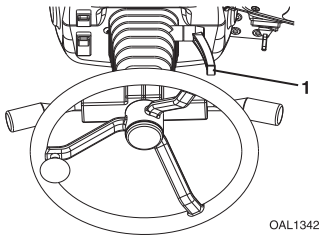
The LSI override switch (**1**) momentarily disables the automatic function cut-out.

- Depress and hold top of switch up to 30 seconds while operating joystick to momentarily disable the automatic function cut-out.
- Release switch to re-enable the automatic function cut-out.

⚠ WARNING

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

3.2.7 Steering Column Adjuster (if equipped)



The steering column adjustment lever (**1**) controls the steering column position.

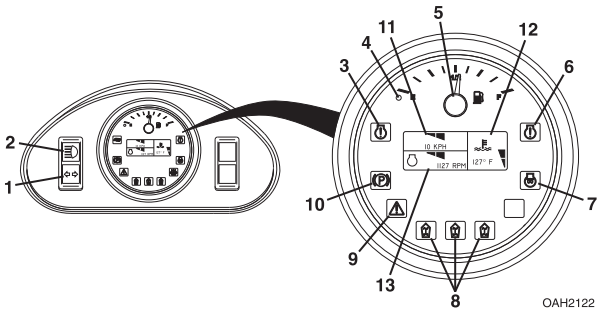
- Follow *Section - Shut-Down Procedure*.
- Turn lever counterclockwise to unlock.
- Place steering column in the desired position.
- Turn lever clockwise to lock steering wheel.

⚠ 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.

3.2.8 Instrument Panel

Early Design



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. **Turn Signal Indicator (if equipped):** Illuminates when turn signal is active.
2. **High Beam Indicator (if equipped):** Illuminates when high beam lights are on.
3. **Check Engine Indicator:** Illuminates when maintenance is required. See Service Manual for details.
4. **Low Fuel Indicator:** Illuminates when fuel level is low.
5. **Fuel Gauge:** Indicates amount of fuel in fuel tank.
6. **Engine Warning Indicator:** Illuminates when engine is in a critical state. Determine cause and correct before continued use.
7. **Engine Pre-Heat Indicator:** Illuminates with ignition key in position P. Light goes out when start temperature has been reached.
8. **Steer Mode Indicators:** Illuminates active steering mode.
9. **System Distress Indicator:** Illuminates when an issue with the fuel level or machine system is present. Flashes when an issue with the machine charge system is present.
10. **Park Brake Indicator:** Illuminates when park brake is applied.

Display Screen

11. **Speed:** Telehandler travel speed displayed in miles per hour (mph) or kilometers per hour (kph).

12. **Engine Coolant Temperature and Fault Codes:**

    a. Engine Coolant Temperature - Normally shown. Displays engine coolant temperature.

    b. Fault Codes - Replaces the engine coolant temperature. Displays fault codes of engine and machine systems.

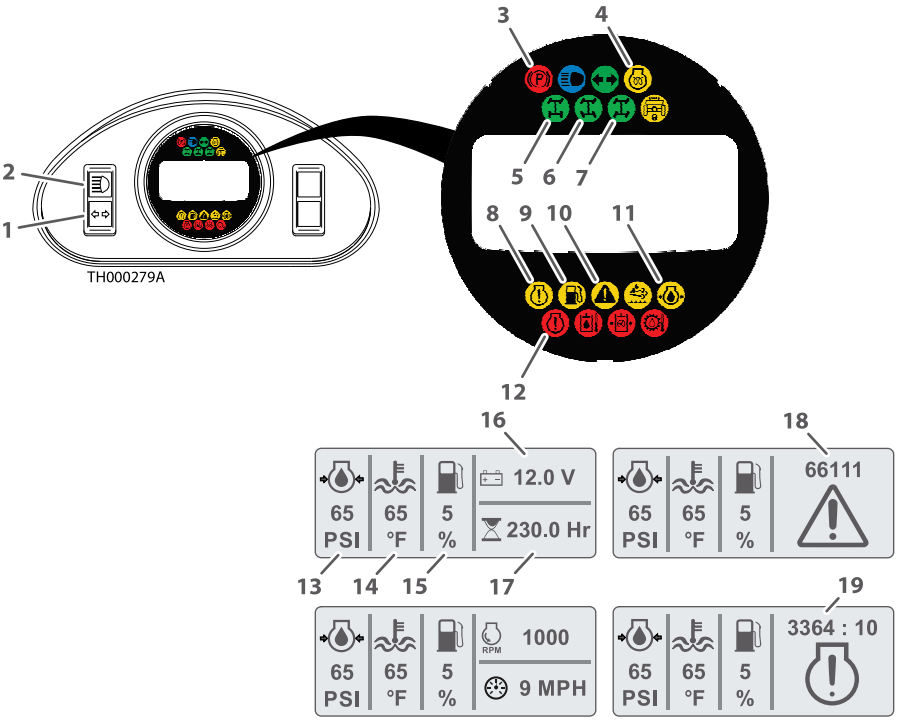
13. **Engine Speed, Battery Voltage and Operating Hours:** Display rotates showing the three items.

    a. Engine Speed - Displays engine speed in revolutions per minute (rpm).

    b. Battery Voltage - Displays voltage supplied by battery.

    c. Operating Hours - Displays total hours of telehandler operation.

Late Design



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. **Turn Signal Indicator (if equipped):** Illuminates when turn signal is active.
2. **High Beam Indicator (if equipped):** Illuminates when high beam lights are on.
3. **Park Brake Indicator:** Illuminates when park brake is applied.
4. **Engine Pre-Heat Indicator:** Illuminates with ignition key in position P. Light goes out when start temperature has been reached.
5. **2-Wheel Front Steer:** Illuminates when two wheel steer is active.
6. **4-Wheel Circle Steer:** Illuminates when all wheel steer is active.
7. **4-Wheel Crab Steer:** Illuminates when crab steer is active.
8. **Check Engine Indicator:** Illuminates when maintenance is required. See Service Manual for details.

9. **Low Fuel Indicator:** Illuminates when fuel level is low.
10. **System Distress Indicator:** Illuminates when an issue with the fuel level or machine system is present. Flashes when an issue with the machine charge system is present.
11. **Low Engine Oil Pressure:** Illuminates when oil pressure is low.
12. **Engine Warning Indicator:** Illuminates when engine is in a critical state. Determine cause and correct before continued use.

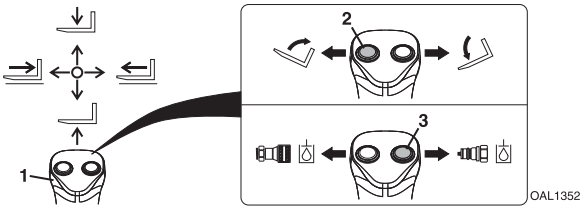
Display Screen

13. **Engine Oil Pressure Level:** Indicates engine oil pressure (PSI).
14. **Engine Coolant Temperature:** Displays engine coolant temperature (°F/°C).
15. **Fuel Level:** Indicates amount of fuel in fuel tank (%).
16. **Battery Voltage and Engine Speed:**
    a. Battery Voltage - Displays voltage supplied by battery only when engine is stopped.
    b. Engine Speed - Replaces battery voltage. Displays engine speed in revolutions per minute (rpm) only when engine is running.
17. **Operating Hours and Speed:**
    a. Operating Hours - Displays total hours of telehandler operation.
    b. Speed - Replaces operating hours. Telehandler travel speed displayed in miles per hour (mph) or kilometers per hour (kph).
18. **System Distress:** Illuminates when critical machine faults exist. See Service Manual.
19. **Fault Display:** Illuminates when critical engine faults exist. See Service Manual.

3.2.9 Joystick

Refer to *Lift/Loader Joystick Pattern Switch, page 55* on right hand console to verify control pattern before operating.

Lift Joystick Pattern



The joystick (**1**) controls the boom, attachment tilt and auxiliary hydraulic 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 the joystick between quadrants. For example; moving the joystick forward and to the left will lower and retract boom simultaneously.

Attachment Function

Tilt control is enabled by the left button (**2**).

- While depressing button move joystick right to tilt down; move joystick left to tilt up.

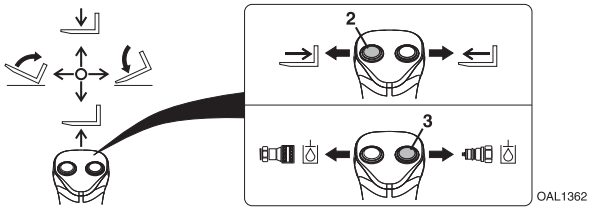
Auxiliary Hydraulic Functions

The right button (**3**) enables function of attachments that require hydraulic supply for operation. See *Section - Attachments and Hitches* for approved attachments and control instructions.

⚠ 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.

Loader Joystick Pattern



The joystick (**1**) controls the boom, attachment tilt and auxiliary hydraulic functions.

Boom Functions

- Move the joystick back to lift boom; move joystick forward to lower boom
- Extend/retract is enabled by the left button (**2**). While depressing button 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 the joystick between quadrants. For example; moving the joystick forward and to the left will lower boom and tilt attachment up simultaneously.

Attachment Function

Tilt control is enabled by the joystick.

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

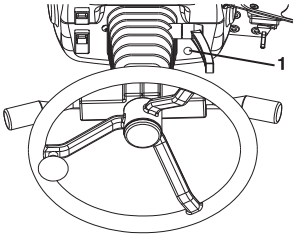
Auxiliary Hydraulic Functions

The right button (**3**) enables function of attachments that require hydraulic supply for operation. See *Section - Attachments and Hitches* for approved attachments and control instructions.

⚠ WARNING

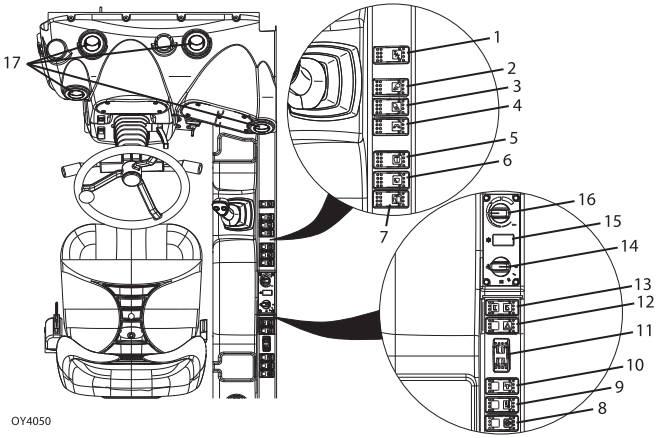
TIP OVER/CRUSH HAZARD. Rapid, jerky operation of controls will cause rapid, jerky movement of the load. Such movements could cause the load to shift or fall or could cause the machine to tip over.

3.2.10 Seat Belt Indicator Lamp (If Equipped)



Lamp illuminates **(1)** and sounds an alarm when the operator is seated but the seat belt is not fastened.

3.2.11 Right Hand Console



1. **Steer Select Switch:** Three position switch. Three steer modes available: 4-Wheel Circle Steer, 2-Wheel Front Steer and 4 - Wheel Crab Steer. See *Steer Modes*.
2. **Boom Work Light Switch (if equipped):** On/Off switch.
3. **Front Work Light Switch (if equipped):** On/Off switch.
4. **Rear Work Light Switch (if equipped):** On/Off switch.

Note: Accessory control lever (if equipped) must be on to enable work light switches.

5. **Front Wiper Switch (if equipped):** Three position switch. Depress right side of switch for fast speed; middle position for slow speed; left side to turn off.
6. **Front Windshield Washer Switch (if equipped):** Depress right side of switch and hold to activate washer fluid.

7. **Skylight and Rear Wiper Switch (if equipped):** Three position switch. Move switch to middle position to turn wipers on; depress and hold right side of switch to activate washer fluid; depress left side of button to turn off.

8. **Reversing Fan Switch (if equipped):** See *Section - Reversing Fan (if equipped), page 57*.

9. **Auxiliary Hydraulic Pressure Relief Switch:** Relieves auxiliary hydraulic circuit pressure. See *Hydraulic Quick Attach*.

10. **Beacon Light Switch (if equipped):** On/Off switch.

11. **Front/Rear Auxiliary Hydraulic Switch (if equipped):** Depress front of switch to enable front auxiliary hydraulics. Depress back of switch to enable rear auxiliary hydraulics.

12. **Hazard Light Switch (if equipped):** On/Off switch.

13. **Lift/Loader Joystick Pattern Switch:** Depress left side of switch to activate lift joystick pattern. Depress right side of switch to activate loader joystick pattern.

Heater and Air Conditioning Controls (if equipped)

14. **Fan Speed Switch (if equipped):** Four position rotary switch.

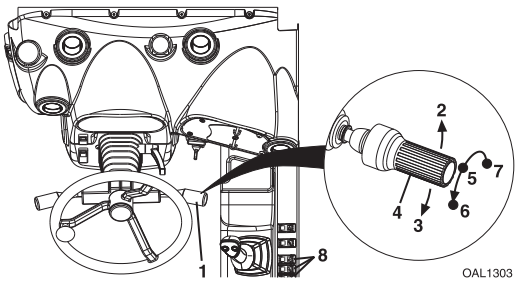
15. **Air Conditioning Switch (if equipped):** On/Off switch.

16. **Temperature Control Switch (if equipped):** Adjustable rotary switch.

17. **Air Louver (if equipped):** Four individually adjustable air louvers.

3.2.12 Accessory Control Lever (if equipped)

The accessory control lever (**1**) enables the work lights and operates the turn signals, parking lights and headlights.



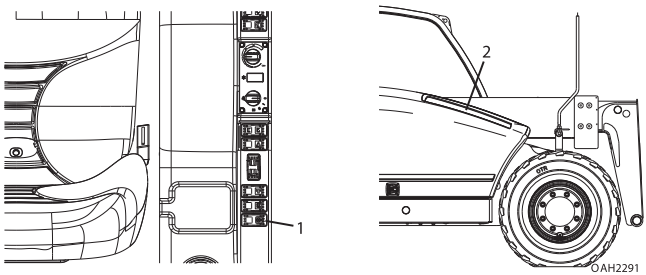
Turn Signals

- Push the lever forward (**2**) to activate the left turn signal.
- Pull the lever back (**3**) to activate the 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.

Parking Lights, Headlights and Work Lights

- Turn the twist grip (**4**) of the lever counterclockwise to the first position (**5**) to turn on the parking lights and enable the work light switches (**8**).
- Turn the twist grip to the second position (**6**) to turn on the headlights.
- Raise/lower the lever to switch between low and high beam.
- Turn the twist grip clockwise to the OFF position (**7**) to turn all lights off.

3.2.13 Reversing Fan (if equipped)



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.

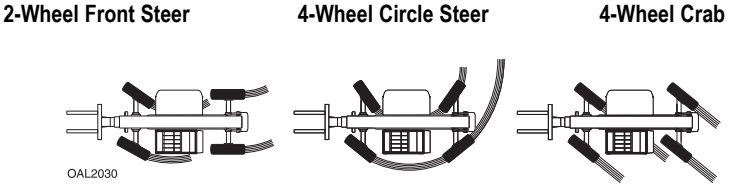
1. **Timed** - Depress right side of switch (**1**) to activate. Fan will reverse automatically every 20 minutes for a duration of 5 seconds. Depress left side of switch to deactivate.

2. **Manual** - With switch (**1**) already activated, depress right side of switch again to immediately activate a fan reversal cycle.

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

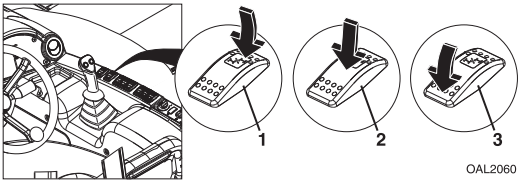
3.3 STEER MODES

Three steer modes are available for operator use.

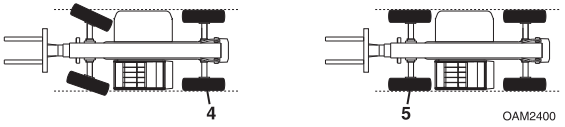


Note: 2-Wheel Front Steer mode is required for travel on public roads.

3.3.1 Steer Mode Change



1. Bring machine to a stop using service brake while either circle steer mode (**1**) or crab steer mode (**3**) is selected.

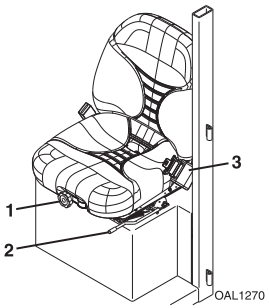


2. Turn the steering wheel until the left rear wheel (**4**) is aligned with the side of the machine.
3. Select front steer mode (**2**).
4. Turn the steering wheel until the left front wheel (**5**) is aligned with the side of the machine.
5. Wheels are now aligned. Select desired steer mode.

3.4 OPERATOR SEAT

3.4.1 Adjustments

Prior to starting engine adjust seat for position and comfort.



1. **Suspension:** Use knob to adjust suspension to the appropriate setting. Turn clockwise to increase stiffness. Turn counterclockwise to reduce stiffness.
2. **Fore/Aft:** Pull up on handle to move seat fore and aft.
3. **Seat Belt:** Always fasten seat belt during operation. If required, a 3 in (76 mm) seat belt is available.

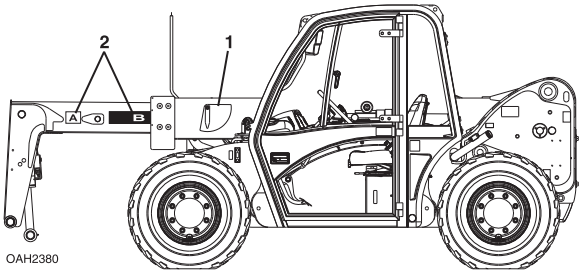
3.4.2 Seat Belt



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, depress red button on the buckle and pull free end from buckle.

3.5 BOOM ANGLE AND EXTENSION INDICATORS



- The boom angle indicator (**1**) is located on the left side of the boom. Use this indicator to determine the boom angle when using the capacity chart (see *Section - Use of the Capacity Chart*).
- Boom extension indicators (**2**) 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*).

3.6 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.

3.6.1 Reverse Sensing System

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

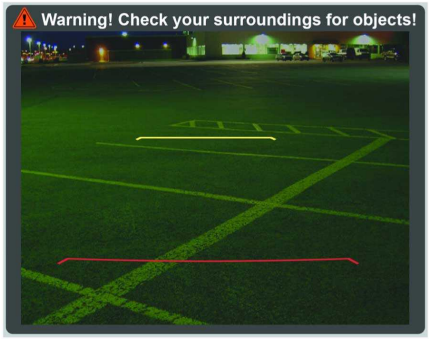
- Alarm sounds signaling machine is placed in reverse gear.

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.

3.6.2 Reversing Camera

The reversing camera provides an additional view of the area directly behind the telehandler. The view displays on the reversing camera monitor when the telehandler is running and transmission is in reverse.



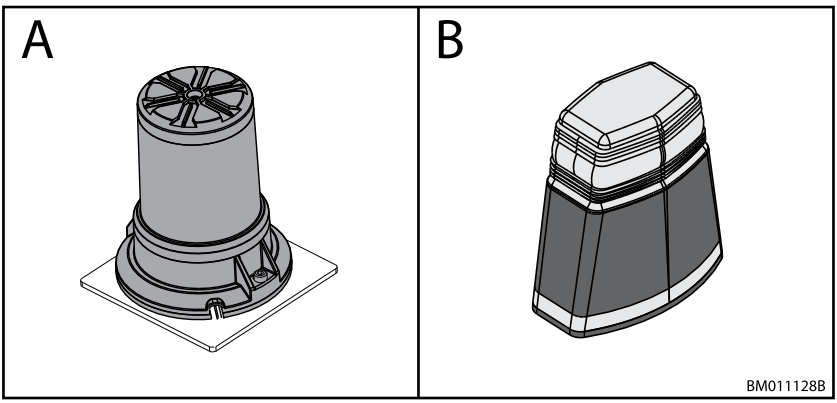
The screen provides a graphic overlay indicating approximate distances of objects at rear of telehandler.

- **Red Line:** Approximately 5 ft (1,52 m).
- **Yellow Line:** Approximately 15 ft (4,57 m).

NOTICE

EQUIPMENT MALFUNCTION. Always keep camera lens clean. Camera may not operate normally at extremely high or low temperatures.

3.7 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.

3.7.1 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.

3.7.2 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 104° F (-20° C to 40° C). Consult JLG for operation outside this range or under abnormal conditions.

If equipped for cold weather, -20° F to 0° F (-30° C to -20° C), see *Cold Weather Starting, page 64* for hydraulic warm-up procedure.

1. Make sure all controls are in “Neutral” and all electrical components (lights, heater, defroster, etc.) are turned off. Apply park brake.
2. Turn the ignition switch to position 1 and wait until engine pre-heat indicator goes out.
3. 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 two minutes before trying again.
4. After engine starts, observe indicators. If indicators remain on for more than five seconds, stop engine and determine cause before restarting engine.
5. Warm up engine at approximately 1/2 throttle.

Note: Engine will not start unless transmission control lever is in “Neutral” and park brake is applied.

⚠ WARNING

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

⚠ WARNING

UNEXPECTED MOVEMENT HAZARD. Always ensure that transmission control lever 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, causing an accident.

4.1.2 Cold Weather Starting

If equipped with cold weather engine components, the machine can be operated in temperatures down to -20°F (-30°C).

1. Follow start-up procedure on *Starting the Engine, page 63* and allow engine to idle 10 minutes.
2. Operate each boom function a minimum of ten complete cycles.
3. While in 4-wheel circle steer mode, turn steering wheel completely left and right a minimum of ten complete cycles.
4. Disengage and engage the park brake a minimum of ten complete cycles.
5. Verify all joystick functions operate correctly and smoothly.
6. Staying under 1800 rpm, drive machine slowly for two minutes.
7. Machine is ready for operation.

4.1.3 Battery Boosted Starting



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

- Never allow vehicles to touch.
- Ensure booster vehicle engine is running.
- Connect the positive (+) jumper cable to positive (+) post of discharged battery.
- Connect the opposite end of positive (+) jumper cable to positive (+) post of booster battery.
- Connect the negative (-) jumper cable to negative (-) post on booster battery.
- Connect opposite end of negative (-) jumper cable to ground point on machine away from discharged battery.
- 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 the battery. Lead acid batteries generate explosive gases when charging. Wear safety glasses.

4.1.4 Normal Engine Operation

- Observe instrument panel 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 the engine is not being used, turn it off.
- When operating a machine at high altitudes, a decrease in machine performance may occur due to a decrease in air density. When operating a machine at high temperatures, a decrease in machine performance and an increase in engine coolant temperature may occur. Contact JLG for operation under abnormal conditions.

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 the park brake.
2. Shift the transmission to “Neutral.”
3. Lower forks or attachment to the 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. Turn off electrical master switch (if equipped).
8. Block wheels (if necessary).

4.2 OPERATING WITH A NON-SUSPENDED LOAD

4.2.1 Lift Load Safely

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

⚠ WARNING

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

- Know the rated load capacities (see *Section - Attachments And Hitches*) of the telehandler to determine the operating range in which you can safely lift, transport and place a load.

4.2.2 Before Picking Up a Load

- Note the 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 *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 the operator cab for the telehandler/attachment combination you are using.

4.2.3 Transporting a Load


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- 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 And Hitches*.
- Maintain a slow speed when transporting a load.

4.2.4 Leveling Procedure

1. Position machine in best location to lift or place load.
2. Apply parking brake and move transmission control lever to NEUTRAL.
3. Observe level indicator to determine whether machine must be leveled prior to lifting load.
4. Move boom/attachment to 4 ft (1,2 m) off ground.

Important things to remember:

- Never raise the boom/attachment more than 4 ft (1,2 m) above ground unless telehandler is level.
- The combination of side tilt and load could cause the telehandler to tip over.

4.2.5 Placing a Load

Before placing any load be sure that:

- The landing point can safely support the weight of the load.
- The landing point is level; front to back and side to side.
- Use the capacity chart to determine safe boom extension range. See *Use of the Capacity Chart*.
- Align forks at the level load is to be placed, then extend 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.

4.2.6 Disengaging a Load

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

1. With the forks free from the weight of the load, the boom can be retracted and/or the telehandler can be backed away from under the load if surface will not change level condition of telehandler.
2. Lower the carriage.
3. The telehandler can now be driven from the landing location to continue work.

4.3 OPERATING WITH A SUSPENDED LOAD

4.3.1 Lift Load Safely

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

⚠ WARNING

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

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

4.3.2 Picking Up a Suspended Load

- Note the 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.
- **NEVER** operate telehandler without a proper and legible capacity chart in the operator cab for the telehandler/attachment combination you are using.
- Only use approved lifting devices rated for the lifting of the load.
- Identify the proper lifting points of the load, taking into consideration the center of gravity and load stability.
- Ensure to always properly tether loads to restrict movement.
- Refer to See *Use of the Capacity Chart* for proper lifting guidelines in addition to the appropriate capacity chart in the operator cab.

4.3.3 Transporting a Suspended Load


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- Travel in accordance with the requirements set forth in *Section - General Safety Practices* and *Section - Attachments And Hitches*.
- For additional requirements, refer to the appropriate capacity chart in the operator cab.

Important things to remember:

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

4.3.4 Leveling Procedure

1. Position machine in best location to lift or place load.
2. Apply parking brake and move transmission control lever to NEUTRAL.
3. Observe level indicator 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°.

4.3.5 Placing a Suspended Load

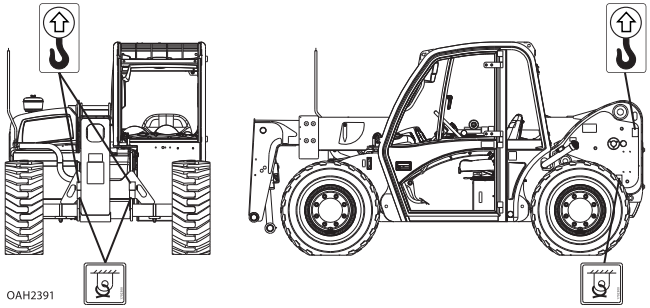
Before placing any load be sure that:

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

4.3.6 Disengaging a Suspended Load

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

4.4 LOADING AND SECURING FOR TRANSPORT



4.4.1 Tiedown

1. Using a spotter, load the telehandler with boom as low as possible.
2. 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.
3. Secure machine to deck by passing chains through the designated tie down points as shown in the figure.
4. Do not tie down front of boom.

Note: User assumes all responsibility for choosing proper method of transportation and tie-down 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.

4.4.2 Lifting

- When lifting machine, it is very important that the lifting device and equipment is attached only to designated lifting points.
- 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.
- Ensure that the lifting device and equipment is adequately rated and suitable for the intended purpose. See *Section - Specifications* for machine weight or weigh machine.
- Remove all loose items from machine prior to lifting.
- Lift machine with smooth, even motion. Set machine down gently. Avoid quick or sudden motions that could cause shock loads to machine and/or lifting devices.

4.5 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.

4.6 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.

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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).

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

[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:

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

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).

Weight of Attachment (lb) x CG Distance of Attachment (in)[1]) + (Weight of Attachment Load (lb) x CG Distance of Load (in)[1]) ÷ 24 in = 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:

$$500 \times 36 = 18000$$

$$1000 \times 45 = 45000$$

$$\frac{18{,}000 + 45{,}000}{24} = 2{,}625 \text{ pounds}$$

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 2,625 lb can be safely moved and placed within the machine operating limits.

⚠ WARNING

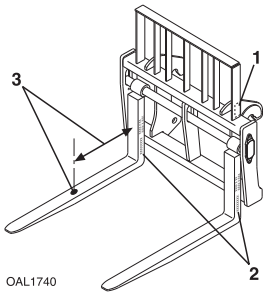
This calculation does not apply to Personnel Work Platforms. Refer to Telehandler Personnel Work Platform Operation & Safety Manual for additional information.

5.5 JLG SUPPLIED ATTACHMENTS

Attachment	Part Number	Quick Coupler	
		STD	UQC
Carriage, 50 in (1270 mm)	1001104435	X	
Carriage, 48 in (1220 mm)	1001113038		X
Side Tilt Carriage, 48 in (1220 mm)	1001102331	X	
	1001104009		X
Side Shift Carriage, 48 in (1220 mm)	1001242501	X	
	1001104025		X
Dual Fork Positioning Carriage, 48 in (1220 mm)	1001242506	X	
	1001242508		X
Fork, Pallet 2x4x48 in (50x100x1220 mm)	1001099458	X	X
Fork, Lumber 1.5x6x60 in (38x150x1525 mm)	1001099457	X	X
Fork, Block 2x2x48 in (50x50x1220 mm)	2340037	X	X
Bale, Dual Tine 48 in (1220 mm)	1001242517	X	
	1001242511		X
Bucket, Fork Mounted 60 in-1.3 yd^3 (1524mm-1,0m^3)	1001195970	X	X
Bucket, Light Material 1.0 yd^3 (0,8 m^3)	1001102324	X	
Bucket, Light Material 1.7 yd^3 (1,3 m^3)	1001102323	X	
Bucket, Grapple 1.0 yd^3 (0,8 m^3)	1001102327	X	
Hook, Fork Mounted	1001097205	X	X
Hook, Coupler Mounted	1001242509	X	
	1001242510		X
Trash Hopper, Fork Mounted	1001238566	X	X
Universal Quick Coupler Adapter	1001272548	X	
Platform, Fork Mounted (ASME)	1001238653	X	X
Platform, Fork Mounted (ASME - French)	1001238655	X	X
Platform, Fork Mounted (ISO)	1001238654	X	X

Attachment	Part Number	Quick Coupler	
		STD	UQC
Auger	1001242617	X	
	1001242616		X

5.6 TELEHANDLER/ATTACHMENT/FORK CAPACITY



Prior to installing the attachment verify it is approved and the telehandler is equipped with the proper capacity chart. See *Approved Attachments*.

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

- Capacity stamped on the attachment identification plate (**1**).
- Fork capacities and load centers are stamped on the side of each fork (**2**) (if equipped). This rating specifies the maximum load capacity that the individual fork can safely carry at the maximum load center (**3**). Total attachment capacity is multiplied by the number of forks on the attachment (if equipped), up to the maximum capacity of the attachment.
- Maximum capacity as indicated on the proper capacity chart. See *JLG Supplied Attachments*.
- When the load rating of the telehandler differs from the 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 JLG approved capacity chart installed on the telehandler.

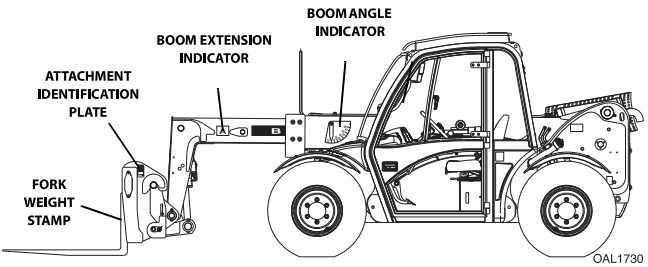
5.7 USE OF THE CAPACITY CHART

To properly use the capacity chart (see *Sample Capacity Chart, page 83*), the operator must first determine and/or have the following:

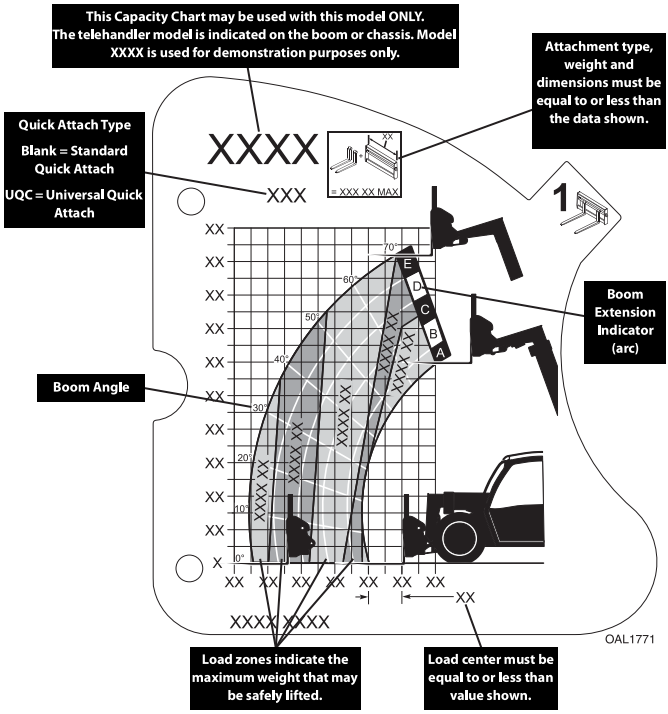
1. An approved attachment. See *JLG Supplied Attachments*.
2. The proper Capacity Chart(s).
3. Weight of the load being lifted.
4. Load placement information:
   a. HEIGHT where the load is to be placed.
   b. DISTANCE from the front tires of the telehandler to where the load is to be placed.
5. On the capacity chart, find the line for the height and follow it over to the distance.
6. The number in the 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 the load zone must be equal to or greater than the weight of the load to be lifted. Determine the limits of the load zone on the capacity chart and keep within these limits.

5.7.1 Capacity Indicator Locations



5.7.2 Sample Capacity Chart



Note: This is a 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 ***Transporting a Load***); 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.

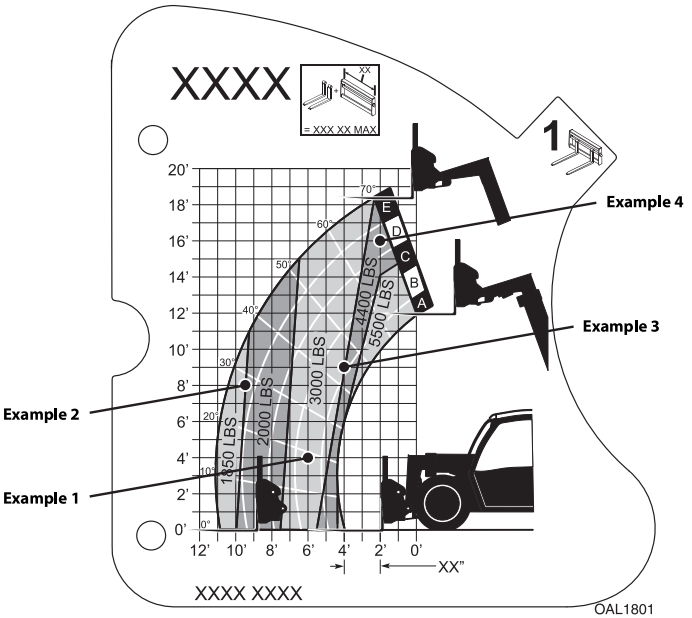
5.7.3 Example

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

- The attachment style, weight, dimensions and load center match the attachment data on the capacity chart.
- The capacity chart is clearly marked for model xxxxx 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.

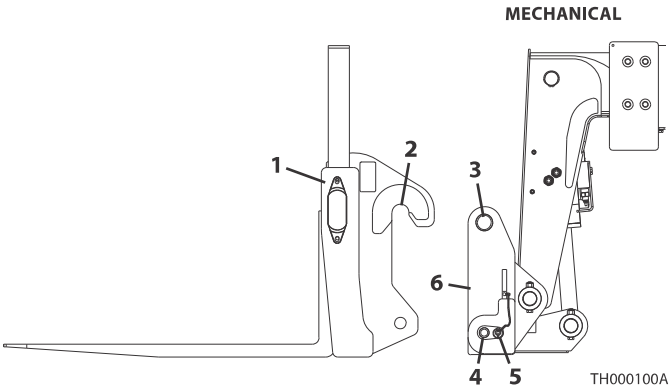
	Load Weight	Distance	Height	OK to Lift
1	2500 lb (1134 kg)	6 ft (1,8 m)	4 ft (1,2 m)	Yes
2	2000 lb (907 kg)	9.5 ft (2,9 m)	8 ft (2,4 m)	NO
3	3000 lb (1361 kg)	4 ft (1,2 m)	9 ft (2,7 m)	Yes
4	5250 lb (2381 kg)	2 ft (0,6 m)	16 ft (4,9 m)	NO



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 Standard Quick Attach



1. **Attachment**
2. **Attachment Pin Recess**
3. **Attachment Pin**
4. **Lock Pin**
5. **Retainer Pin** (mechanical quick attach)
6. **Quick Attach** (attachment tilt control in cab, see *Joystick*)

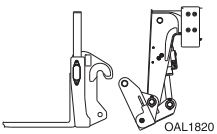
⚠ WARNING

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.

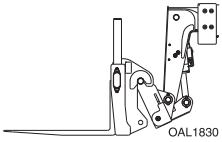
Mechanical Quick Attach

This installation procedure is designed for one-person operation. Prior to exiting cab, perform *Shut-Down Procedure*.

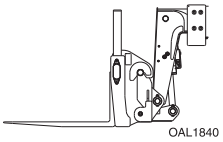
1. Tilt quick attach forward to provide clearance. Check to be sure lock pin and retainer pin are out.



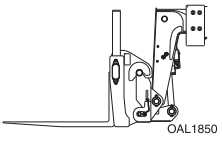
2. Align attachment pin with recess in attachment. Raise boom slightly to engage attachment pin in recess.



3. Tilt quick attach back to engage attachment.

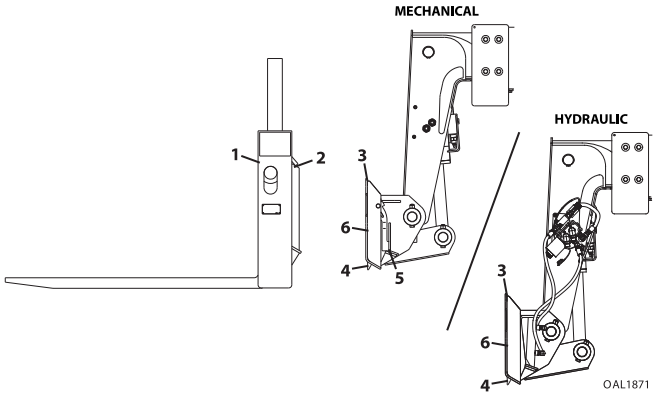


4. Insert lock pin and secure with retainer pin.



5. If attachment is equipped, connect auxiliary hydraulic hoses. See *Hydraulic Operated Attachment*.

5.8.2 Universal Quick Attach (UQC)



1. **Attachment**
2. **Attachment Recess**
3. **Engaging Edge**
4. **Lock Pin**
5. **Lock Pin Handle** (mechanical quick attach)
6. **Universal Quick Attach** (attachment tilt control in cab, see *Joystick*)

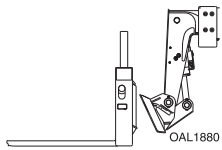
⚠ WARNING

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.

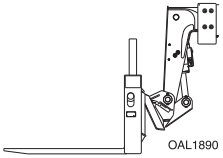
Mechanical Quick Attach

This installation procedure is designed for one-person operation. Prior to exiting cab, perform *Shut-Down Procedure*.

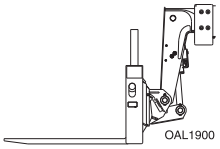
1. Tilt quick attach forward to provide clearance. Check to be sure lock pin handles and pins are pulled up.



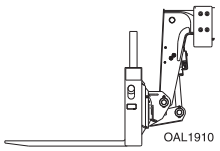
2. Align engaging edge with recess in attachment. Raise boom slightly to engage edge in recess.



3. Tilt quick attach back to engage attachment.



4. Lower lock pin handles to engage lock pins.

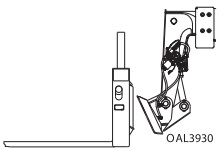


5. If attachment is equipped, connect auxiliary hydraulic hoses. See *Hydraulic Operated Attachment*.

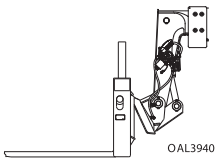
Hydraulic Quick Attach

This installation procedure is designed for one-person operation.

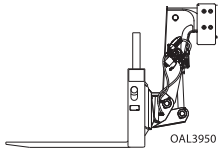
1. Tilt quick attach forward to provide clearance.



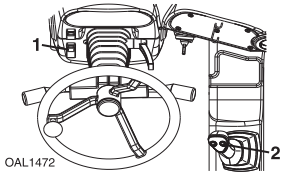
2. Align engaging edge with recess in attachment. Raise boom slightly to engage edge in recess.



3. Check to be sure lock pin is disengaged. Tilt quick attach back to engage attachment.



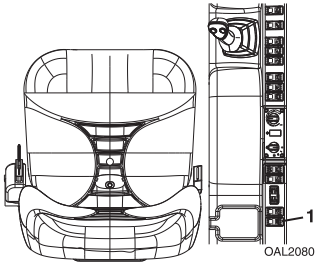
4. Press and hold switch (**1**) and button (**2**), at the same time move the joystick right to engage or left to disengage the quick attach.

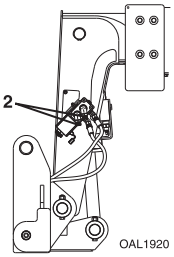


5. Raise boom to eye level and visually check that the quick attach pin protrudes through the hole. If the pin does not protrude through the hole, place the attachment on the ground and return to step 2.

6. If attachment is equipped, connect auxiliary hydraulic hoses. See *Hydraulic Operated Attachment*.

5.9 HYDRAULIC OPERATED ATTACHMENT





1. Install attachment (see *Hydraulic Quick Attach*).
2. Press and hold auxiliary hydraulic pressure relief switch (**1**) for two seconds to relieve pressure at both auxiliary fittings (**2**).
3. Perform *Shut-Down Procedure*.
4. Connect attachment hoses to both auxiliary fittings.

5.10 ADJUSTING/MOVING FORKS

Carriages may have different locations where forks can be positioned. Two different methods can be used for repositioning, depending upon the 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* or *Section - Universal Quick Attach (UQC)*.
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 the side of the carriage. To slide fork toward the center of the carriage, push the fork near the fork eye. To slide fork toward the edge of the carriage, pull the fork near the fork eye. To avoid pinching, do not place fingers or thumb between the 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.

5.11 ATTACHMENT OPERATION

- Capacities and range limits for the telehandler change depending on the 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 the attachment if it is equipped with a manual holder.

Note: Operations described within this section reference the Lift joystick pattern. Refer to ***Loader Joystick Pattern*** if using Loader joystick pattern.

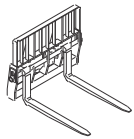
NOTICE

EQUIPMENT DAMAGE. Some attachments may contact the 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.

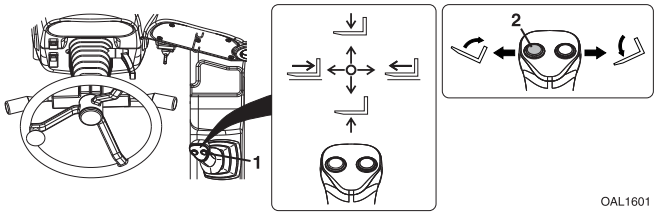
5.11.1 Carriage with Forks



TH000110A

Use Carriage Attachment Capacity Chart

To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables fork tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.

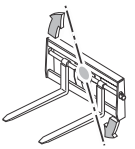
Installation Procedure:

- Refer to *Section - Attachment Installation*.

Equipment Damage Precautions:

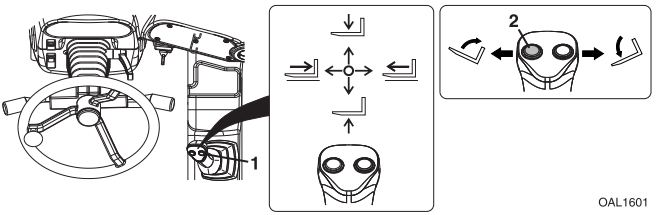
- Do not use forks as a lever to pry material. Excessive prying forces could damage forks or machine structure.
- Do not attempt to lift loads that are attached or connected to another object.

5.11.2 Side Tilt Carriage


TH000112A

Use Side Tilt Carriage Attachment Capacity Chart

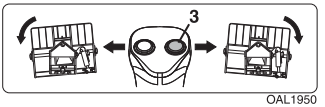
To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables fork tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.



To Side Tilt:

The auxiliary hydraulic button (**3**) enables carriage side tilt.

- While depressing button move joystick right to side tilt right.
- While depressing button move joystick left to side tilt left.

Installation Procedure:

- Refer to *Section - Attachment Installation*.

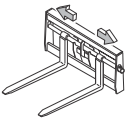
⚠ WARNING

CRUSH HAZARD. Do not use side tilt 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.

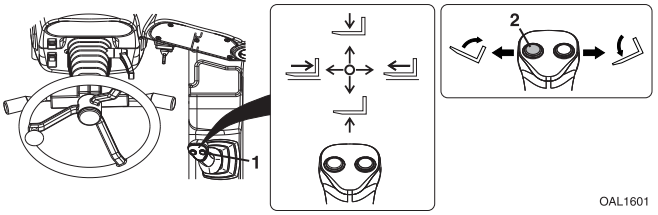
5.11.3 Side Shift Carriage



TH000113A

Use Side Shift Carriage Attachment Capacity Chart

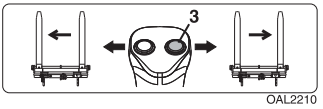
To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables fork tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.



To Side Shift:

The auxiliary hydraulic button (**3**) enables carriage side tilt.

- While depressing button move joystick right to side shift right.
- While depressing button move joystick left to side shift left.

Installation Procedure:

- Refer to *Section - Attachment Installation*.

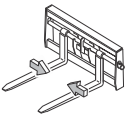
⚠ WARNING

CRUSH HAZARD. Do not use side shift 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.

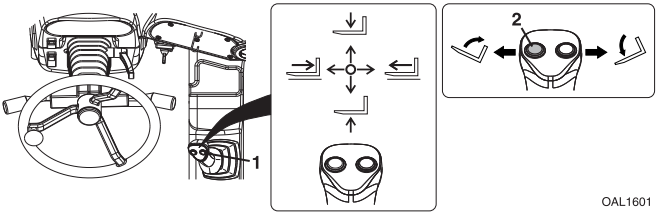
5.11.4 Dual Fork Positioning Carriage



TH000114A

Use Dual Fork Positioning Carriage Capacity Chart

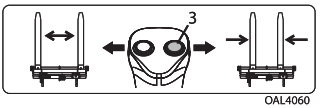
To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables fork tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.



To Fork Position:

The auxiliary hydraulic button (**3**) enables fork positioning.

- While depressing button move joystick right to shift forks in.
- While depressing button move joystick left to shift forks out.

Installation Procedure:

- Refer to *Section - Attachment Installation*.

⚠ WARNING

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

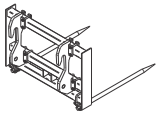
Operation:

- 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.

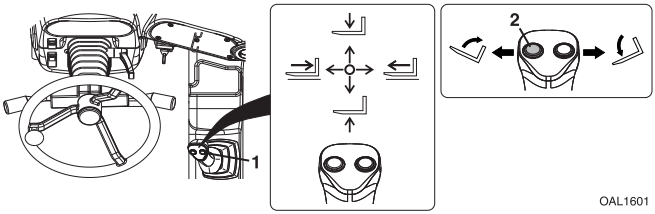
5.11.5 Dual Tine Bale



TH000115A

Use Dual Tine Bale Capacity Chart

To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables fork tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.

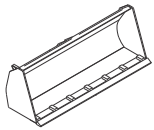
Installation Procedure:

- 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.

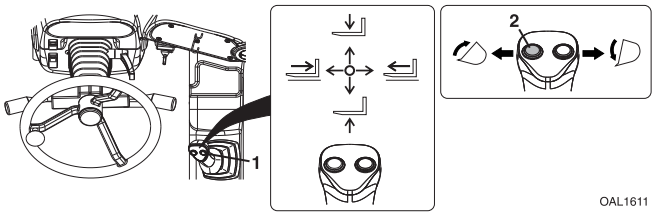
5.11.6 Bucket



TH000116A

Use Appropriate Bucket Capacity Chart

To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables bucket tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.

Installation Procedure:

- Refer to *Section - Attachment Installation*.

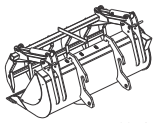
Operation:

- 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 quick attach or machine structure.
- Do not use bucket for "back dragging." This could cause severe damage to quick attach.

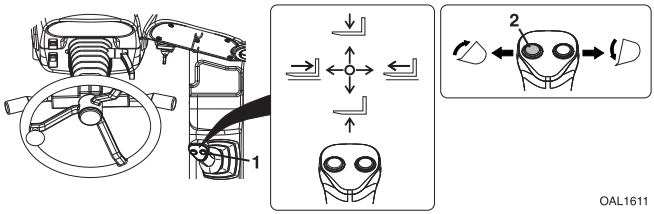
5.11.7 Grapple Bucket



TH000117A

Use Grapple Bucket Capacity Chart

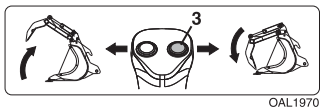
To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables bucket tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.



To Open/Close Grapple:

The auxiliary hydraulic button (**3**) enables open/close movement of the grapple.

- While depressing button move joystick right to close grapple.
- While depressing button move joystick left to open grapple.

Installation Procedure:

- Refer to *Section - Attachment Installation*.

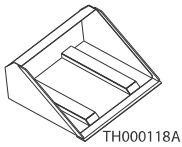
Operation:

- 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, close grapple, 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:

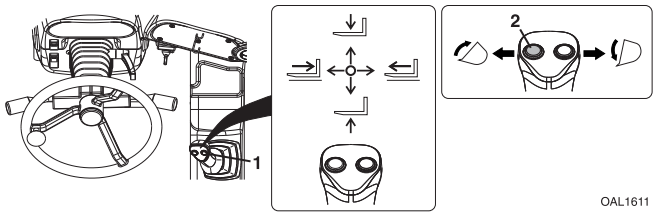
- Except for lifting or dumping a load, the boom must be fully retracted for all bucket operations.
- Do not corner-load bucket. Distribute material evenly within the bucket. Bucket capacity charts are for evenly distributed loads only.
- Do not use bucket as a lever to pry material. Excessive prying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

5.11.8 Bucket - Fork Mounted



Use Appropriate Carriage Attachment Capacity Chart

To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables bucket tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.

Installation Procedure:

- Ensure carriage is properly installed. Refer to *Section - Attachment Installation*.
- Secure the fork mounted bucket to the forks by sliding the fork mounted bucket onto the parent forks and install the retaining pin behind the vertical shank of the fork.

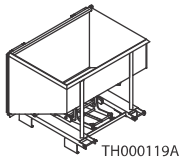
Operation:

- Raise or lower boom to appropriate height for loading material 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.
- Fork mounted bucket weight must be included as part of total load being lifted.
- Do not use fork mounted bucket with attachments capable of rotating (i.e. side tilt and swing carriages) without disabling the rotation feature(s).

Equipment Damage Precautions:

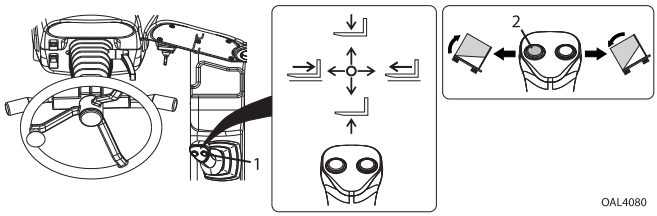
- Except for lifting or dumping a load, the boom must be fully retracted for all bucket operations.
- Do not corner-load bucket. Distribute material evenly within the bucket. Capacity charts are for evenly distributed loads only.
- Do not use bucket as a lever to pry material. Excessive prying forces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

5.11.9 Trash Hopper - Fork Mounted



Use Appropriate Carriage Attachment Capacity Chart

To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables trash hopper tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.

Installation Procedure:

- Ensure carriage is properly installed. Refer to *Section - Attachment Installation*.
- Secure the fork mounted trash hopper to the forks by sliding the fork mounted trash hopper onto the parent forks and install the retaining pin behind the vertical shank of the fork.

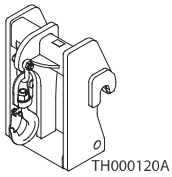
Operation:

- 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 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.

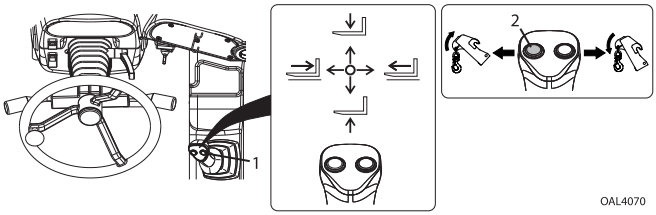
5.11.10 Coupler Mounted Hook



Use Coupler Mounted Hook 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*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables coupler mounted hook tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.

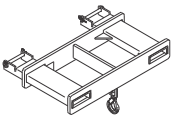
Installation Procedure:

- Refer to *Section - Attachment Installation*.

Operation:

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

5.11.11 Fork Mounted Hook

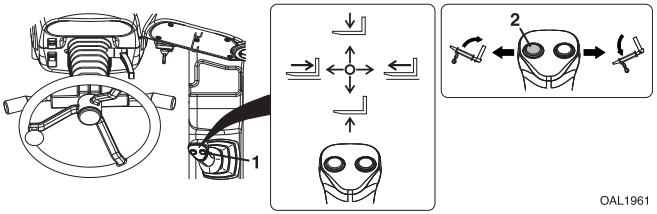


TH000121A

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*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables fork mounted hook tilt..

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right 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 fork mounted hook with attachments capable of rotating (i.e. side tilt and swing carriages) without disabling the rotation features.

5.11.12 Personnel Work Platform - Fork Mounted

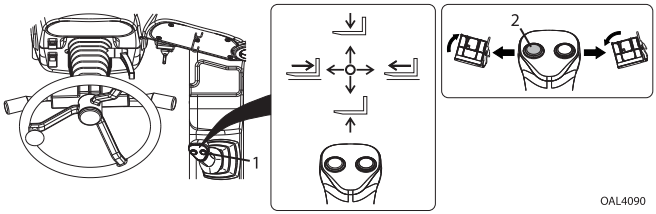


TH000122A

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.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables platform tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right 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 trash hopper onto the parent forks and install the retaining pin behind the vertical shank of the fork.

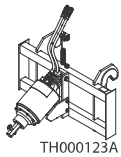
Preparation and Setup:

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 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

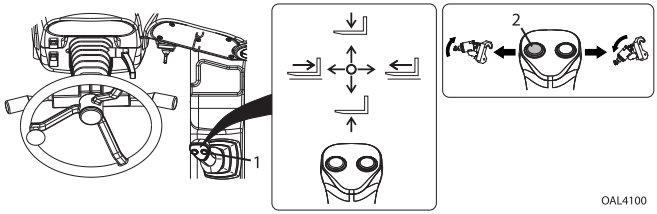
FALL HAZARD. Never tilt the platform forward, rearward, or level the machine when the platform is occupied.

5.11.13 Auger



Use Auger Capacity Chart

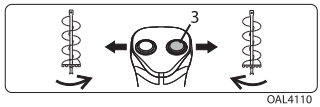
To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables bucket tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.



To Control Auger Bit:

The auxiliary hydraulic button (3) enables rotation of the auger bit.

- While depressing button move joystick right to rotate clockwise.
- While depressing button move joystick left to rotate counter-clockwise.

Installation Procedure:

- Refer to *Section - Attachment Installation*.

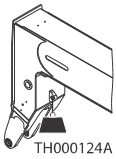
Operation:

- 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 button (**3**) and joystick to turn auger in a clockwise ("digging") rotation.
- Return joystick to neutral position and release button (**3**) to stop auger rotation.
- Raise auger from hole to clean out debris.

Equipment Damage Precautions:

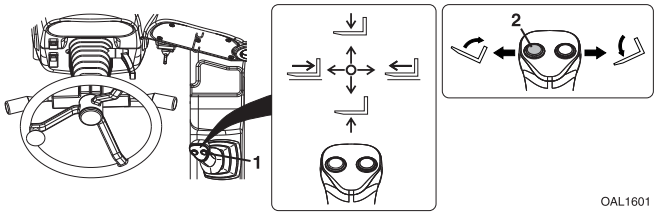
- Travel with the auger in a safe transport position to prevent uncontrolled movement.
- Transport the auger unit as low as practical at a slow speed without rapid side to side movement.
- Do not engage auger rotation unless the point of the auger cutting head is touching the ground.

5.11.14 Boom Mounted Lifting Lug



Use Boom Mounted Lifting Lug Capacity Chart

To determine maximum capacity, refer to *Section - Telehandler/Attachment/Fork Capacity*.



The joystick (**1**) controls lift/lower and the extend/retract movement of the boom.

The tilt button (**2**) enables fork tilt.

- While pressing and holding button move joystick left to tilt up.
- While pressing and holding button move joystick right to tilt down.

⚠ WARNING

TIP OVER HAZARD. No load may be on attachment when lifting load with boom mounted lifting lug. Failure to comply could result in tip over..

Operation:

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

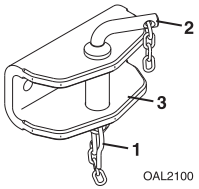
5.12 HITCHES

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

5.12.1 Retrieval Hitch



Connecting for retrieval:

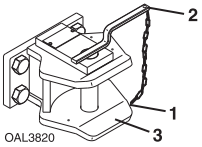
1. Remove safety pin (**1**) and pull pin (**2**) from hitch (**3**).
2. Place pin through hitch and retrieval device. Secure pin with safety pin.

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

5.12.2 Pin Hitch - CUNA C

Hitch Capacities

Maximum combined weight of trailer and load . . . . . 13 225 lb (6000 kg)
Maximum vertical load at hitch interface . . . . . 3305 lb (1500 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.

SECTION 6
Emergency Procedures

6.1 TOWING A DISABLED PRODUCT

The following information assumes the 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 100 ft (30 m), it is permissible to use a vehicle of sufficient capacity to tow the unit with no previous preparation. Drive wheels will not roll.

6.1.2 Moving Longer Distances

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

Contact your local Authorized Distributor 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 JLG Industries or the local Authorized Distributor for specific instructions.**

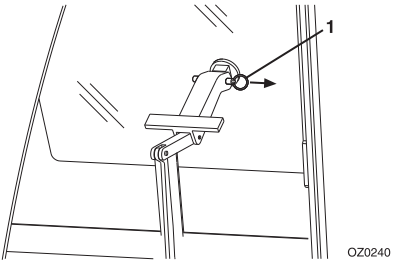
Secure the telehandler using the following procedures:

1. Clear the area around telehandler of all personnel.
2. Engage the parking brake. Place the transmission control lever in “NEUTRAL”.
3. Block all four wheels.

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

6.3 EMERGENCY EXIT FROM ENCLOSED CAB

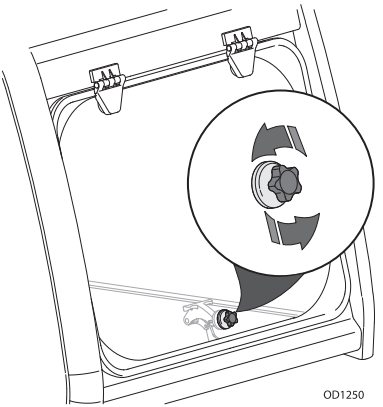
6.3.1 Inside Cab



In an emergency the rear window can be used to exit the telehandler.

- Remove the latch pin (**1**). The window is then free to swing open.

6.3.2 Outside Cab (if equipped)



- Remove the knob (2) securing window. The window is then free to swing open.

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

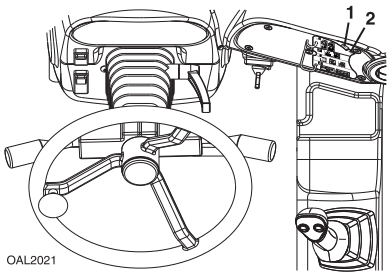
Contact the ClearSky Smart Fleet™ account owner if the machine is in a Locked Out state.

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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 the product in accordance with the maintenance schedule on the following pages.



The Lubrication (**1**) and Maintenance (**2**) Charts contain instructions that must be followed to keep this product in good operating condition. The Operation & Safety Manual and Service Manual contain more detailed service information with specific instructions.

7.1.1 Clothing and Safety Gear

- Wear all the 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 *Shutdown 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. 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 the engine running.

7.3 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 Engine Oil Level



Check Hydraulic Oil Level



Check Tire Condition and Pressure



Additional Checks (see ***Section - Additional Checks***)

7.3.2 First 50 Hours



Check Wheel Lug Nut Torque

7.3.3 Every 50 Hours



Drain Fuel/Water Separator



Check Engine Coolant Level



Check Air Filter



Check Battery



Check Brake Fluid Level



Check Washer Fluid Level (if equipped)

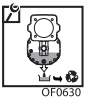
7.3.4 First 250 Hours



Change Axle Differential Oil

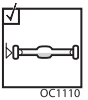


Change Wheel End Oil

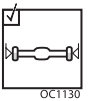


Change Front Axle Drop Box Oil

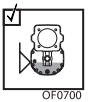
7.3.5 Every 250 Hours



Check Axle Differential Oil Level



Check Wheel End Oil Levels



Check Drop Box Oil



Check Fan Belt



Check Boom Wear Pads



Check Enclosed Cab Air Filter (if equipped)



Lubrication Schedule

7.3.6 Every 500 Hours



Change Engine Oil and Filter



Change Air Filter Elements



Change Fuel Filter (if equipped for LS)



Check LSI Calibration (if equipped)



Check Wheel Lug Nut Torque

7.3.7 Every 1000 Hours



Change Axle Differential Oil



Change Wheel End Oil



Change Front Axle Drop Box Oil



Change Hydraulic Fluid and Filters



Check Hydraulic Tank Cap



Change Transmission Filter



Change Fuel Filter (if equipped for ULS)

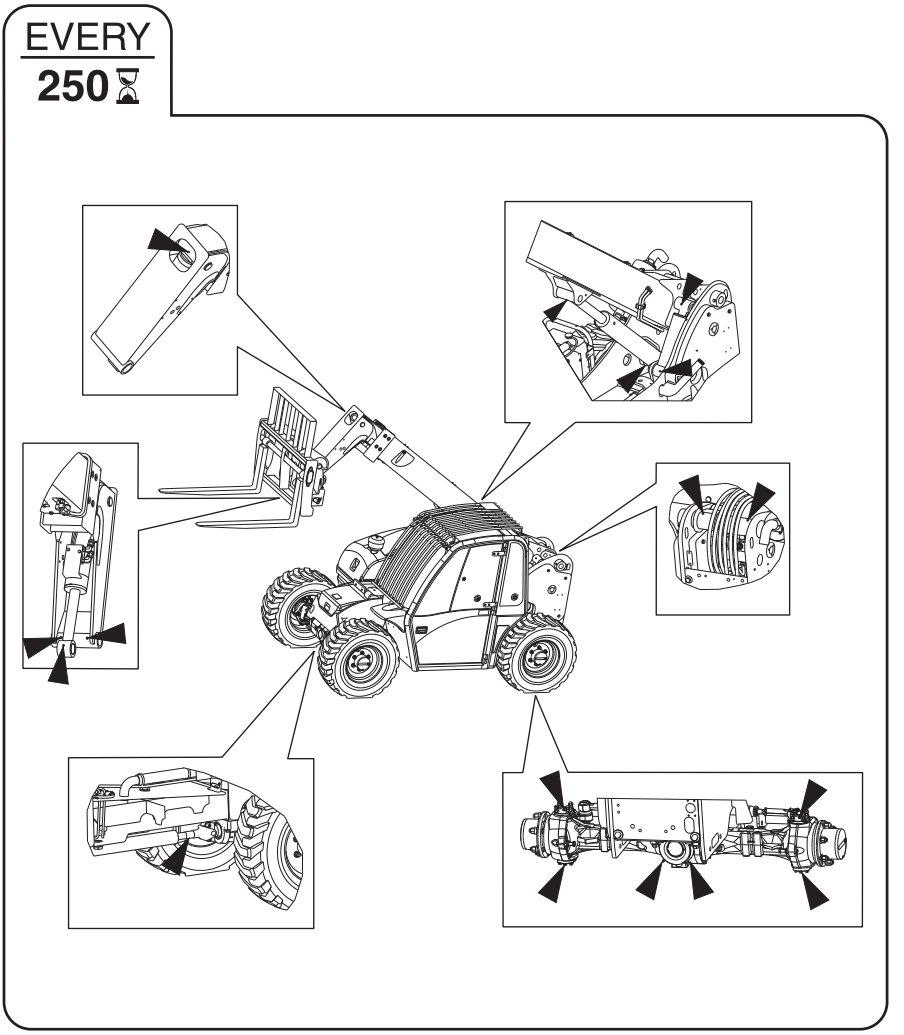
7.3.8 Every 6000 Hours or 4 Years



Change Engine Coolant

7.4 LUBRICATION SCHEDULES

7.4.1 250 Hour Lubrication Schedule



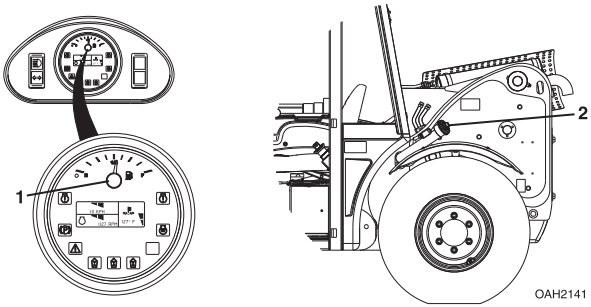
OAL1980

7.5 OPERATOR MAINTENANCE INSTRUCTIONS

7.5.1 Fuel System

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Fuel Level Check



1. Check fuel gauge (**1**) located on instrument panel in cab.
2. If fuel is low, proceed to fuel source and perform *Shut-Down Procedure*.
3. Turn fuel tank cap (**2**) and remove from filler neck.
4. Add diesel fuel as needed.
5. Replace fuel tank cap.

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

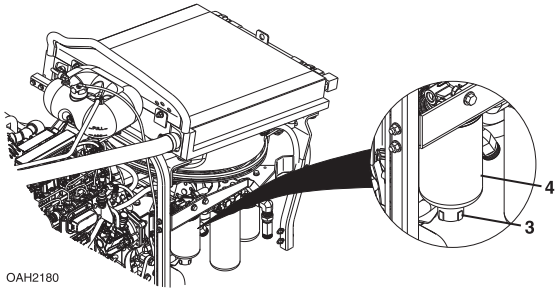
NOTICE

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

Drain Fuel/Water Separator

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OW1000

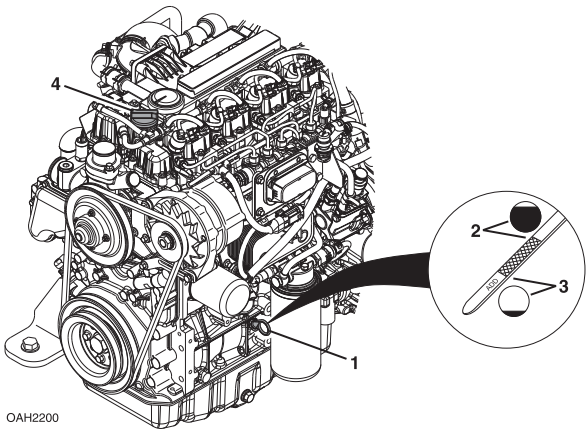


1. Perform *Shut-Down Procedure*.
2. Open the engine cover.
3. Loosen drain cock (**3**) on underside of fuel filter (**4**) and allow all water to drain into a glass until clear fuel is visible. Tighten drain cock.
4. Close and secure the engine cover.

7.5.2 Engine Oil

Engine Oil Level Check

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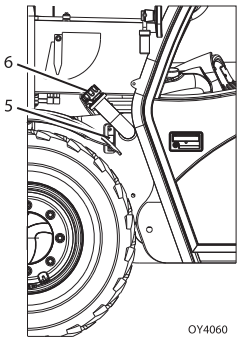


1. Perform *Shut-Down Procedure*.
2. Open the engine cover.
3. Remove dipstick (**1**) and check oil mark. The oil should be between the full (**2**) and add (**3**) marks within the crosshatched area of the dipstick.
4. Replace dipstick.
5. If oil is low, remove oil fill cap (**4**) and add motor oil to bring oil up to the full mark in the crosshatch area.
6. Replace oil fill cap.
7. Close and secure the engine cover.

7.5.3 Hydraulic Oil

Hydraulic Oil Level Check

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1. Perform *Shut-Down Procedure*.
2. Check level of hydraulic oil at the sight gauge (**5**) on the frame. The oil level should be visible in the gauge window.
3. If hydraulic oil is low, remove oil fill cap (**6**) from filler neck. Add hydraulic fluid to bring oil up to the upper mark on the sight gauge.
4. Replace hydraulic oil fill cap.

7.5.4 Tires

Tire Air Pressure Check

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1. Perform *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.

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.

- A smooth even cut through the cord piles which exceeds 3 in (7,5 cm) in total length.
- Any tears or rips (ragged edges) in the 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 the above noted criteria, the tire must be inspected daily to ensure the damage has not propagated beyond the allowable criteria.

Tire and Wheel Replacement

It is recommended that a replacement tire to be the same size, ply, inflation medium and brand as originally installed. Refer to the 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.

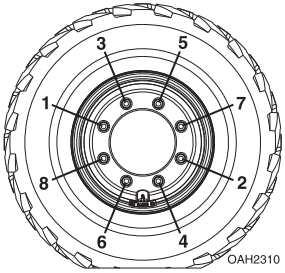
The rims installed have been designed for stability requirements which consist of track width, tire pressure and load capacity. Size changes such as rim width, center piece location, larger or smaller diameter, etc., without written factory recommendations, may result in unsafe condition regarding stability.

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

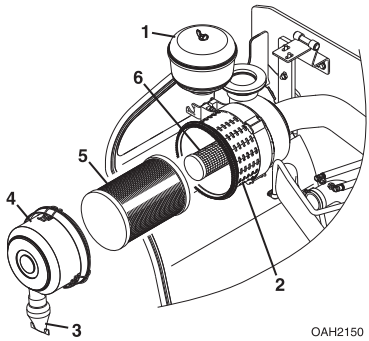
TIP OVER HAZARD. Lug nuts must be installed and maintained at the proper torque to prevent loose wheels, broken studs and possible separation of wheel from the axle.

7.5.5 Air Intake System

Air Filter Check

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1. Perform *Shut-Down Procedure*.
2. If equipped, locate precleaner bowl (**1**) on engine cover, remove cover from precleaner canister.
3. Remove dust from precleaner bowl.
4. Replace precleaner bowl and secure cover.
5. Open the engine cover.
6. Locate air cleaner (**2**) and remove dust from vacuator valve (**3**) by squeezing bottom of valve to allow loose particles to fall out.
7. 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.

Element Change

1. Perform *Shut-Down Procedure*.
2. Open engine cover.
3. Unlock air cleaner cover (**4**) and remove from air cleaner.
4. Remove outer primary element (**5**). Inspect element for damage then discard.
5. Thoroughly clean interior of air cleaner canister and vacuator valve.
6. Replace inner safety element (**6**) 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

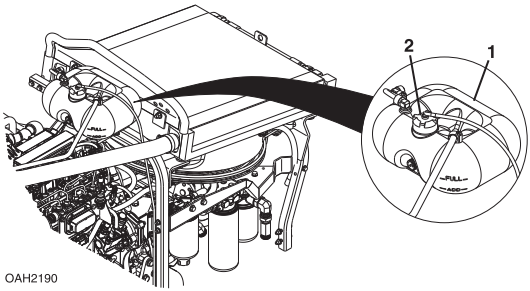
EQUIPMENT DAMAGE. Primary and safety elements are required to be replaced if used in an application longer than two years regardless of hours of operation.

7.5.6 Engine Cooling System

Engine Coolant Level Check

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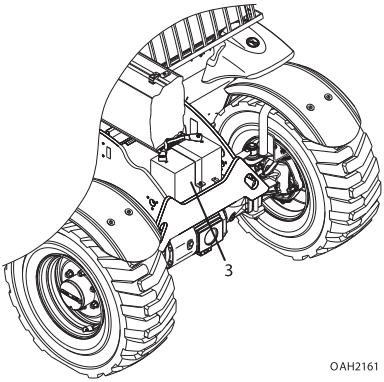
1. Perform *Shut-Down Procedure*.
2. Open the engine cover.
3. Check coolant level in surge tank (**1**). When coolant is hot, the tank should be 1/2 to 3/4 full. When coolant is cool, bottle should be 1/4 to 1/2 full.
4. If coolant is low, allow fluid to cool.
5. Remove surge tank cap (**2**) slowly. Add coolant as required.
6. Replace overflow bottle cap.
7. Close and secure the engine cover.

7.5.7 Battery

Battery Check

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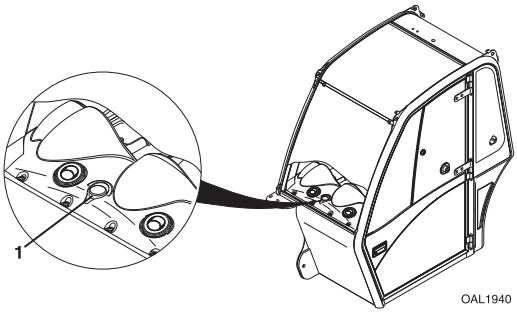
1. Perform *Shut-Down Procedure*.
2. Remove the battery cover.
3. Wearing eye protection, visually inspect the battery (**3**). Check terminals for corrosion. Replace battery if it has a cracked, melted or damaged case.
4. Replace and secure the battery cover.

7.5.8 Brake System

Brake Fluid Level Check

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1. Perform *Shut-Down Procedure*.
2. The brake fluid level should be visible in the reservoir (**1**).
3. If brake fluid level is low, add hydraulic fluid as needed.

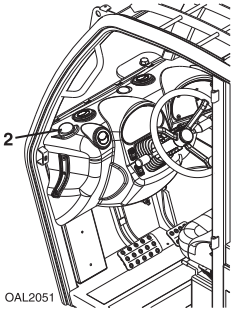
Note: All other work on the brake system must be performed by qualified personnel.

7.5.9 Windshield Washer System (if equipped)

Windshield Washer Fluid Level Check

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1. Perform *Shut-Down Procedure*.
2. The windshield washer fluid should be visible in the reservoir (**2**).
3. If washer fluid level is low, add fluid as needed.

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 LOAD STABILITY INDICATOR SYSTEM (IF EQUIPPED)

Load Stability Indicator System Test





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

1. **Fully retract and level boom, with no load. Do not raise the boom during this test.**
2. Ensure machine is level.
3. Press the system check button on the LSI display. This will cause all LEDs to flash on and an audible warning to sound. This indicates that the system is functioning properly.

8.3 REVERSE SENSING SYSTEM (IF EQUIPPED)

Reverse Sensing System Check

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OW0970

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 5 to 7 ft (1.5 to 2.1 m) Produces pulsing audible alarm at a frequency of four per second (4 Hz).
8. Verify operation when object is under approximately 5 ft (1.5 m) from machine. Produces pulsing audible alarm at a frequency of eight per second (8 Hz).

8.4 AIR SHUTOFF VALVE (ASOV) (IF EQUIPPED)

Air Shutoff Valve Test

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OW0970

Air Shutoff Valve (ASOV) is an overspeed protection device mounted to the engine's air intake system. When the valve is actuated, it obstructs airflow intake and stops the engine. Weekly tests are recommended to ensure the valve remains in good working condition.

1. Start the engine, running at idle.
2. Open the red switch guard of ASOV test switch, then activate toggle to test mode (see *Section — Controls*).
3. Rev the engine in neutral until the valve actuates at the test RPM of 1500. Once valve actuates, engine will stop.
4. Turn ignition to OFF.
5. Visually inspect valve to ensure it appears in good condition.
6. Reset valve by rotating valve handle to the Open position.

Note: The handle cannot be turned unless the machine is off. Ensure the ignition is moved to the OFF position.

⚠ WARNING

Do not use ASOV as an alternative to shutting down machine properly.

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SECTION 9
Specifications

9.1 PRODUCT SPECIFICATIONS

9.1.1 Fluids

If Equipped for ULS

Compartment or System	Type and Classification	Viscosities	Ambient Temperature Range			
			°F		°C	
			Min	Max	Min	Max
Engine Crankcase	Deutz DQC III-10 LA Deutz DQC IV-10 LA Deutz DQC IV-18 LA	SAE 0W-40	-40	115	-40	46
		SAE 0W-30	-40	86	-40	30
		SAE 5W-30	-22	86	-30	30
		SAE 5W-40	-22	115	-30	46
		SAE 10W-30	-4	86	-20	30
		SAE 10W-40	-4	115	-20	46
		SAE 15W-40	5	115	-14	46
		SAE 20W-50	24	122	-5	50
Axle Differential and Wheel End	API GL5 with LS Additives	75W-90 LS	-40	104	-40	40
		80W-90 LS or 85W-90 LS	-4	115	-20	46
Hydraulic System	Mobilfluid 424 Spirax S4 TXM	10W-30	5	115	-15	46
	Exxon Univis HVI		-40	100	-40	40
Brake System	Mobilfluid 424	10W-30	6	115	-15	46
Boom Wear Pad Grease	Mystik Tetrimoly	NLGI Grade 2	-4	104	-20	40
Grease Fittings	Extreme Pressure Grease	NLGI Grade 2 EP with Moly Additive or NLGI Grade 3 EP with Moly Additive	5	115	-15	46
Engine Coolant	DEUTZ DQC CB-14 OR CC-14	Ethylene Glycol (50%) and Water (50%) Mix	Standard (-32°C to max ambient temperature for machine)			

Compartment or System	Type and Classification	Viscosities	Ambient Temperature Range			
			°F		°C	
			Min	Max	Min	Max
Fuel	EN590 ASTM D 975 Grade 1-D ASTM D 975 Grade 2-D (Maximum B5 Biodiesel)	Ultra Low Sulfur (S ≤ 15 mg/kg)				
Air Conditioning	Refrigerant R-134-a	Tetrafluoroethane				

If Equipped for LS

Compartment or System	Type and Classification	Viscosities	Ambient Temperature Range			
			°F		°C	
			Min	Max	Min	Max
Engine Crankcase	Deutz DQC III-10 Deutz DWC III-10 LA Deutz DQC IV-10 Deutz DQC IV-10 LA Deutz DQC IV-18 LA	SAE 0W-40	-40	115	-40	46
		SAE 0W-30	-40	86	-40	30
		SAE 5W-30	-22	86	-30	30
		SAE 5W-40	-22	115	-30	46
		SAE 10W-30	-4	86	-20	30
		SAE 10W-40	-4	115	-20	46
		SAE 15W-40	5	115	-15	46
		SAE 20W-50	24	122	-5	50
Axle Differential and Wheel End	API GL5 with LS Additives	75W-90 LS	-40	104	-40	40
		80W-90 LS or 85W-90 LS	-4	115	-20	46
Hydraulic System	Mobilfluid 424 Spirax S4 TXM	10W-30	5	115	-15	46
	Exxon Univis HVI		-40	100	-40	40
Brake System	Mobilfluid 424	10W-30	6	115	-15	46
Boom Wear Pad Grease	Mystik Tetrimoly	NLGI Grade 2	-4	104	-20	40
Grease Fittings	Extreme Pressure Grease	NLGI Grade 2 EP with Moly Additive or NLGI Grade 3 EP with Moly Additive	5	122	-15	50
Engine Coolant	DEUTZ DQC CB-14 OR CC-14	Ethylene Glycol (50%) and Water (50%) Mix	Standard (-32°C to max ambient temperature for machine)			
Fuel	EN590 ASTM D 975 Grade 1-D ASTM D 975 Grade 2-D(Maximum B5 Biodiesel)	Low Sulfur (S ≤ 500mg/kg)				
Air Conditioning	Refrigerant R-134-a	Tetrafluoroethane				

9.1.2 Capacities

Engine Crankcase Oil
Capacity with Filter Change . . . . . 9.6 qt (9,1 L)

Fuel Tank
Capacity . . . . . 20 gal (76 L)

Cooling System
System Capacity . . . . . 14 qt (13,2 L)

Hydraulic System
System Capacity . . . . . 27 gal (103 L)
Reservoir Capacity to Full Mark . . . . . 19 gal (73 L)
Auxiliary Hydraulic Circuit Max Flow. . . . . 18.7 gpm (71 lpm)

Brake System
System Capacity . . . . . 0.7 qt (0,7 L)

Axles
Differential Housing Capacity . . . . . 4.4 qt (4,2 L)
Wheel End Capacity . . . . . 30.4 oz (0,9 L)
Front Axle Drop Box. . . . . 23.7 oz (0,7 L)

Air Conditioning System (if equipped)
System Capacity . . . . . 2.5 lb (1134 g)

9.1.3 Tires

12.00 x 16.5, Bias - 12 Ply

Pneumatic. . . . . 80 psi (5,5 bar)
Foam. . . . . Approx 225 lb (102 kg)

14.00 x 17.5, Bias - 14 Ply

Pneumatic. . . . . 70 psi (4,8 bar)
Foam. . . . . Approx 250 lb (113 kg)

10.50 x 18.0, Bias - 16 Ply

Pneumatic. . . . . 87 psi (6,0 bar)

33 x 19.5, 12 Ply

Pneumatic. . . . . 75 psi (5,2 bar)

Wheel Lug Nut
Torque. . . . . 220 lb-ft (300 Nm)

9.1.4 Performance

Maximum Lift Capacity . . . . . 5500 lb (2494 kg)

Maximum Lift Height . . . . . 18.2 ft (5,5 m)

Capacity at Maximum Height

Standard Quick Attach. . . . . 4400 lb (1996 kg)
Universal Quick Attach . . . . . 3000 lb (1360 kg)

Maximum Forward Reach . . . . . .11 ft (3,4 m)

Capacity at Maximum Height

Standard Quick Attach. . . . . 1850 lb (839 kg)
Universal Quick Attach . . . . . 1700 lb (771 kg)

Maximum Forward Reach . . . . . 2 ft (0,6 m)

Maximum Travel Speed (see note). . . . . 17 mph (27 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

Overall Height . . . . . 75.6 in (1920 mm)

Overall Width . . . . . 71.5 in (1816 mm)

Track Width . . . . . 58.5 in (1486 mm)

Wheelbase . . . . . 90.0 in (2286 mm)

Length at Front Wheels . . . . . 129.9 in (3299 mm)

Overall Length (less Attachment) . . . . . 144.2 in (3663 mm)

Ground Clearance . . . . . 10.8 in (274 mm)

Outside Turning Radius . . . . . 126.0 in (3200 mm)

Turning Radius at Forks . . . . . 169.0 in (4293 mm)

Maximum Operating Weight (no attachment) . . . . . 12 500 lb (5670 kg)

Distribution of Maximum Operating Weight (no attachment, boom level and fully retracted)

Front Axle . . . . . 5270 lb (2390 kg)
Rear Axle . . . . . 7230 lb (3280 kg)

Maximum Ground Bearing Pressure

12.00 x 16.5

Air Filled . . . . . 148 lb/in² (10,4 kg/cm²)
Foam Filled . . . . . 172 lb/in² (12,1 kg/cm²)

14.00 x 17.5

Air Filled . . . . . 125 lb/in² (8,8 kg/cm²)
Foam Filled . . . . . 151 lb/in² (10,6 kg/cm²)

10.50 x 18.0

Air Filled . . . . . 235 lb/in² (16,5 kg/cm²)
33 x 12-20 . . . . . 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.

Off-Road . . . . . 6600 lb (3000 kg)
On-Road . . . . . 0 lb (0 kg)

Serial Number ______________________________

Date	Comments



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