SKYTRAK™

Operation & Safety Manual

Original Instructions
Keep this manual with machine at all times.

Model 3013

PVC 1911

31211476

March 27, 2020 - Rev A

JLG®
An Oshkosh Corporation Company

⚠ 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

March 27, 2020 - A - Original Issue of Manual.

Read This First

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

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

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

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

Operator Qualifications

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

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

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

- This Operation and 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
USA

or Your Local JLG Office

In USA:
Toll Free: 1-877-JLG-SAFE (1-877-554-7233)

Outside USA:
Phone: +1-717-485-6591

E-mail:
ProductSafety@JLG.com

Other Publications Available

Service Manual.....31211477

Parts Manual 31211478

Note: *The following standards may be referenced in this manual:*
ANSI is compliant to ANSI/ITSDF B56.6
AUS is compliant to AS 1418.19
CE is compliant to EN1459
Refer to the machine Serial Number Plate to identify the applicable compliance standard.

TABLE OF CONTENTS

SECTION 1 - GENERAL SAFETY PRACTICES

1.1 HAZARD CLASSIFICATION SYSTEM

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

⚠ WARNING

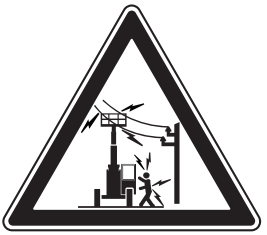
Before operation, read and understand this manual. Failure to comply with the safety precautions listed in this manual could result in machine damage, property damage, personal injury or death.

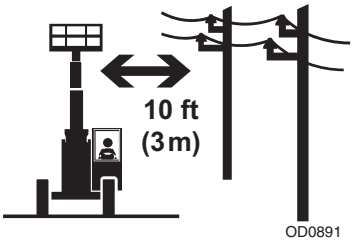
- Hydraulic cylinders are subject to thermal expansion and contraction. This may result in changes to the boom and/or attachment position while the machine is stationary. Factors affecting thermal movement can include the length of time machine is stationary, hydraulic oil temperature, ambient air temperature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

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.

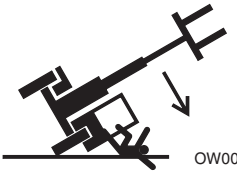
⚠ DANGER

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

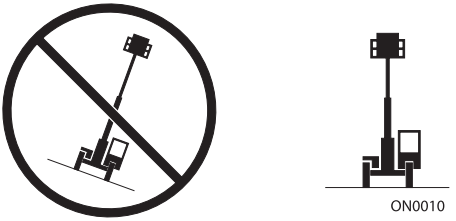
Tip Over Hazard

General

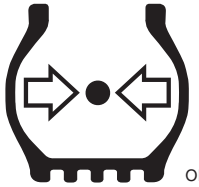
- For additional load requirements, refer to the appropriate capacity chart.



- 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.


OH2291

- **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.


OH20911

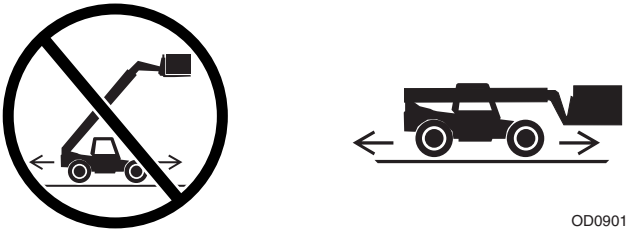
- Always wear seat belt.
- Keep head, arms, hands, legs and all other body parts inside operator's cab at all times.


OH2221

If telehandler starts to tip over:

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

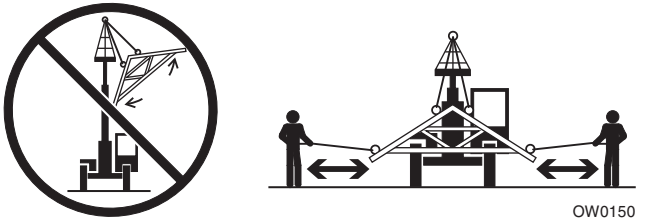
Non-Suspended Load



OD0901

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

Suspended Load

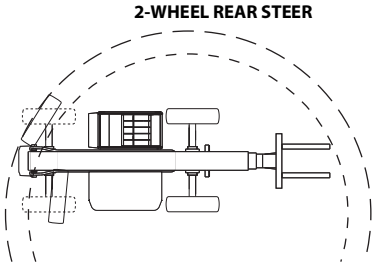


OW0150

- Tether suspended loads to restrict movement.
- Weight of all rigging (slings, etc.) must be included as part of load.
- 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.

Travel Hazard



- Look out for and avoid other personnel, machinery and vehicles in the area. Use a spotter if you DO NOT have a clear view.
- Ensure that adequate clearance is provided between both rear tailswing and front fork swing.
- 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.
- 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.

Load Falling Hazard

OW0130

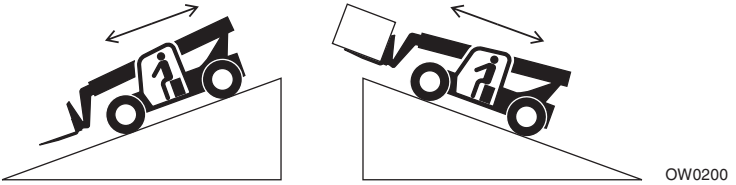
- Never suspend load from forks or other parts of carriage weldment. Use only approved lift points.
- **DO NOT** burn or drill holes in fork(s).
- Forks must be centered under load and spaced apart as far as possible.

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.

Driving Hazards on Slopes

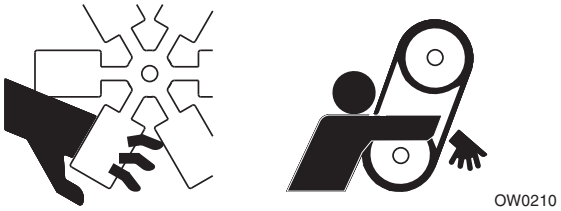


To maintain sufficient traction and braking capabilities, travel on slopes as follows:

- 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, 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.

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

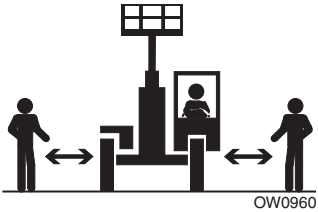
- Keep clear of steering tires and frame or other objects.

OW0230

- Keep clear from under boom.

- Keep arms and hands clear of attachment tilt cylinder.

- Keep hands and fingers clear of carriage and forks.



- Keep others away while operating.

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 shutdown procedure on page 4-4 has been performed.

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

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 CLEARSKY (IF EQUIPPED)

Federal Communications Commission (FCC) Information for Users

FCC Statement Regarding Interference

This equipment 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. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

Do not operate your unit when a person is within eight inches (20 centimeters) of the antenna. A person or object within eight inches (20 centimeters) of the antenna could impair call quality and may cause the unit to operate at a higher power level than necessary, as well as expose that person to RF energy in excess of that established by the FCC RF Exposure Guidelines.

Important: The unit must be installed in a manner that provides a minimum separation distance of eight inches (20 centimeters) or more between the antenna and persons and just not be co-located or operate in conjunction with any other antenna or transmitter in order to satisfy FCC RF exposure requirements for mobile transmitting devices.

Important: To comply with the FCC RF exposure limits and to satisfy the categorical exclusion requirements for mobile transmitters, the requirements described in the following section, "Antenna Installation", must be met.

Antenna Installation

A minimum separation distance of eight inches (20 centimeters) must be maintained between the antenna and all persons.

The combined cable loss and antenna gain must not exceed +7.5 dBi (850 band). The combined cable loss and antenna gain must not exceed +2.5 dBi and total system output must not exceed 2.0W EIRP in the PCS (1900) band in order to comply with the EIRP limit of 24.232 (b). OEM installers must be provided with antenna installation instruction and transmitter operating conditions for satisfying RF exposure compliance.

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 & 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.

PARENT METAL CRACK **WELD CRACK**

3. **Safety Decals** - Ensure all safety decals are legible and in place. Clean or replace as required. See page 2-4 for details.
4. **Operation and Safety Manuals** - Operation & Safety Manual and AEM Safety Manual (ANSI only) are located in cab manual holder.
5. **Walk-Around Inspection** - See page 2-8 for details.
6. **Fluid Levels** - Check fluids, including fuel, brake fluid, hydraulic oil, engine oil and coolant. When adding fluids, refer to Section 7- Lubrication and Maintenance and Section 9 - 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 the telehandler. If provided, reference the 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 warm-up and operational check (see page 2-10) of all systems in an area free of overhead and ground level obstructions. See Section 3 - Controls and Indicators for more specific operating instructions.

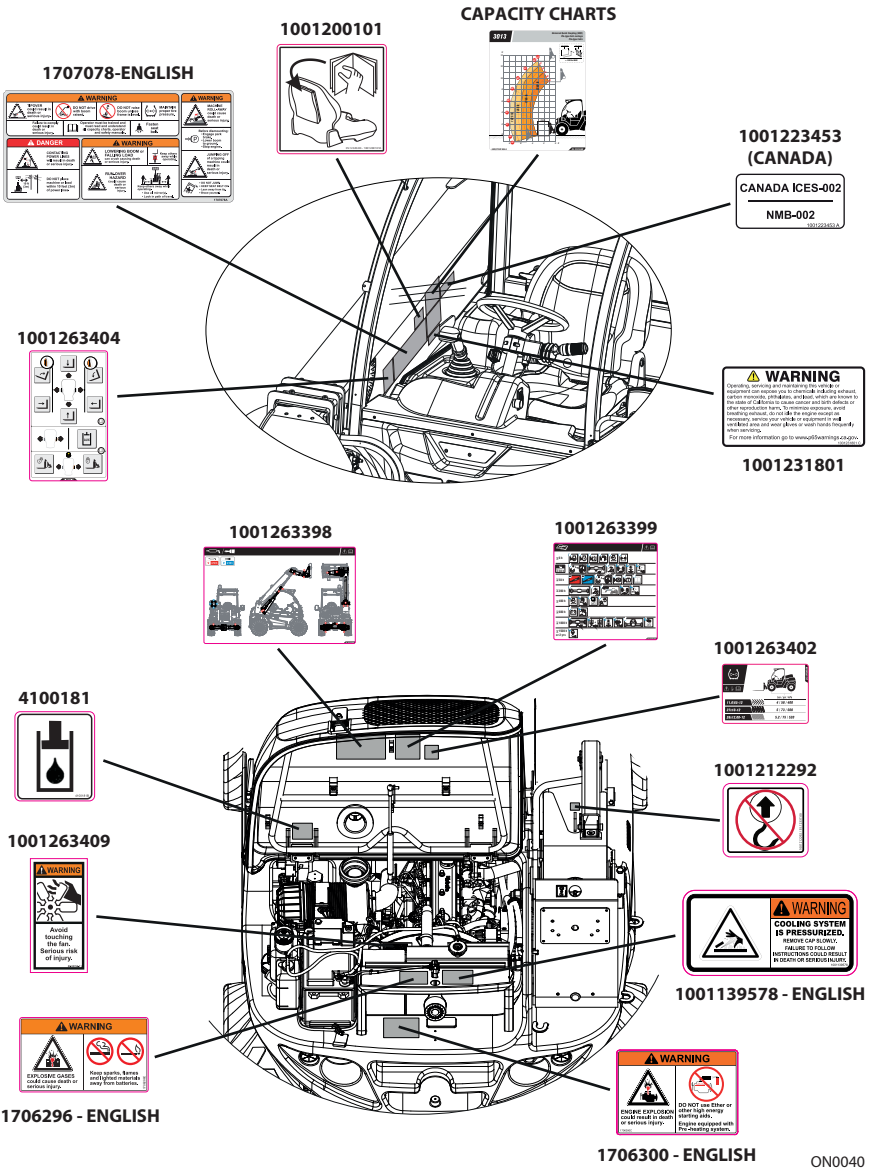
⚠ WARNING

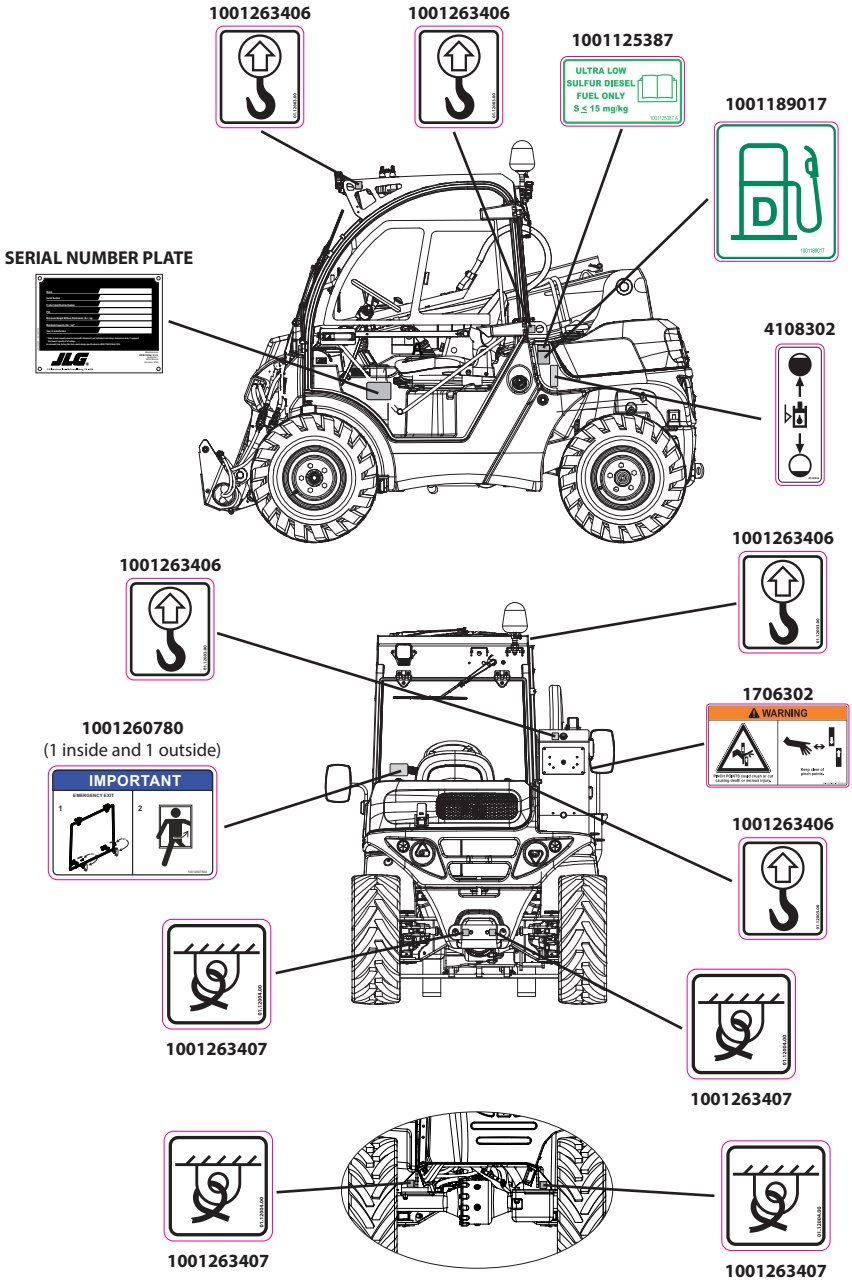
If telehandler does not operate properly, immediately bring machine to a stop, lower boom and attachment to ground and stop the engine. Determine cause and correct before continued use.

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.

ANSI (if equipped)




1001263406
1001263406
1001125387
ULTRA LOW SULFUR DIESEL FUEL ONLY
S ≤ 15 mg/kg
1001189017
SERIAL NUMBER PLATE
4108302
1001263406
1001263406
1706302
WARNING
1001260780
(1 inside and 1 outside)
IMPORTANT
1001263406
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1001263407
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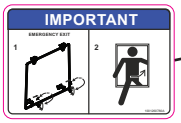
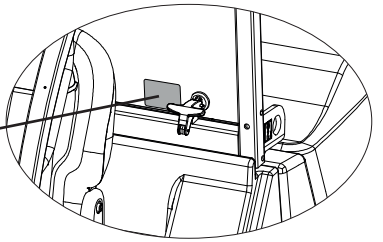
ON0050

1001260780
(1 inside and 1 outside)





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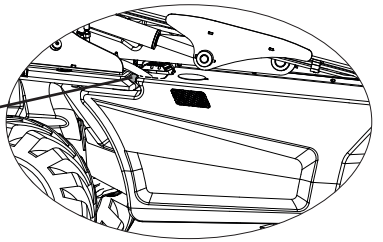

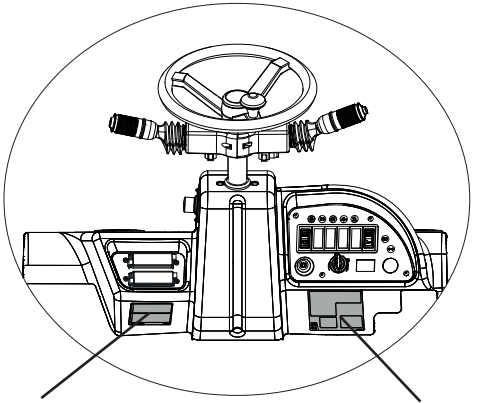

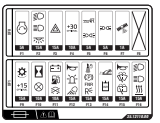

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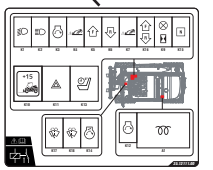

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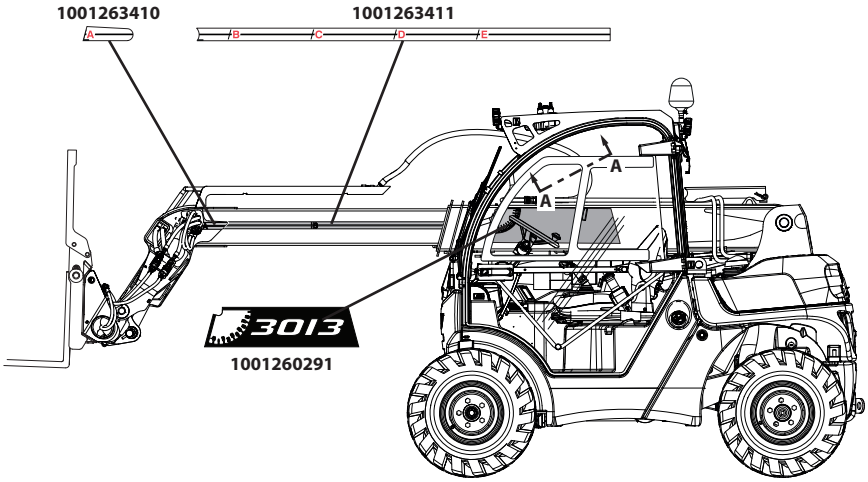
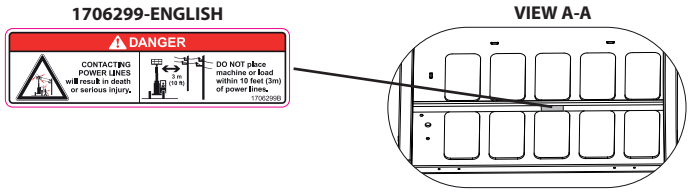
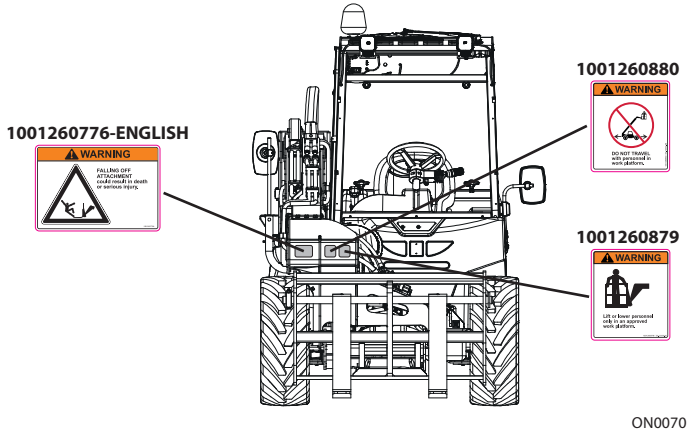
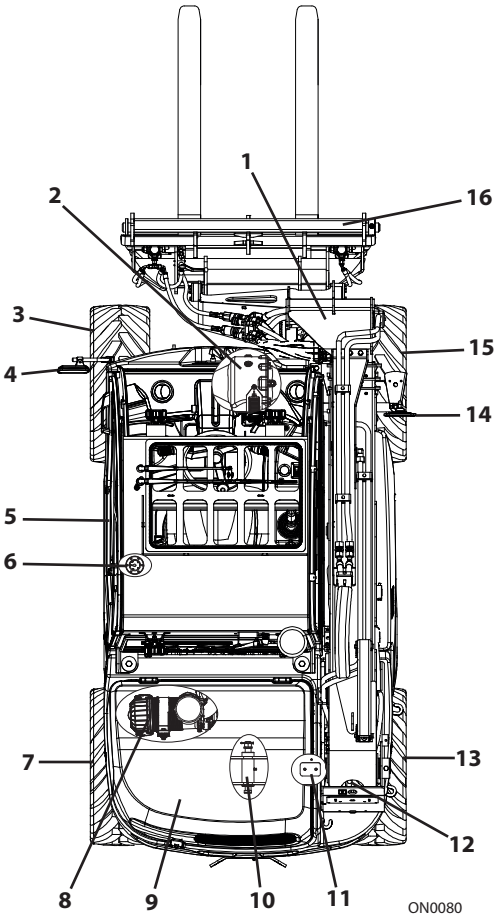

1001263410
1001263411
A
B
C
D
E
A
A
3013
1001260291


1706299-ENGLISH
DANGER
CONTACTING POWER LINES will result in death or serious injury.
3 m (10 ft)
DO NOT place machine or load within 10 feet (3m) of power lines.
1706299B
VIEW A-A


1001260776-ENGLISH
WARNING
FALLING OFF ATTACHMENT could result in death or serious injury.
1001260880
WARNING
DO NOT TRAVEL with personnel in work platform.
1001260879
WARNING
Lift or lower personnel only in an approved work platform.
ON0070

2.4 WALK-AROUND INSPECTION



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

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

1. ***Boom Sections and Lift, Tilt, Extend/Retract, Compensating Cylinders*** -
   - Check front, top, side and rear wear pads for presence of grease.
   - Pivot pins secure; hydraulic hoses undamaged, not leaking.
2. ***Front Axle*** - Not leaking; axle mount bolts secure.
3. ***Wheel/Tire Assembly*** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
4. ***Mirror*** - Clean and undamaged.
5. ***Cab and Electrical*** -
   - General appearance; no visible damage.
   - Frame level indicator 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.
6. ***Fuel Gauge*** - Indicates amount of fuel in the fuel tank.
7. ***Wheel/Tire Assembly*** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
8. ***Air Filter*** - Check and clean as required.
9. ***Engine Compartment*** -
   - Engine cover properly secured.
   - Battery - Cables tight, no visible damage or corrosion. Cover properly secured.
   - Hydraulic Manifold Block - Not leaking; hydraulic hoses undamaged, not leaking.
10. ***Rear Axle*** - Steer cylinder undamaged, not leaking; pivot pin secure; hydraulic hoses undamaged, not leaking.
11. ***LSI Sensor*** - See inspection note.
12. ***Boom Sensor*** - See Inspection Note.
13. ***Wheel/Tire Assembly*** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
14. ***Mirror*** - Clean and undamaged.
15. ***Wheel/Tire Assembly*** - Properly inflated and secured; no loose or missing lug nuts. Inspect for worn tread, cuts, tears or other discrepancies.
16. ***Attachment*** - Properly installed, see *"Attachment Installation"* on page 5-12.

2.5 WARM-UP AND OPERATIONAL CHECKS

Warm-Up Check

During warm-up period, check:

1. Heater, defroster and windshield wiper (if equipped).
2. Check all lighting systems (if equipped) for proper operation.
3. Adjust mirror(s) for maximum visibility.

⚠ WARNING

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

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).
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 8.

2.6 OPERATOR 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**.

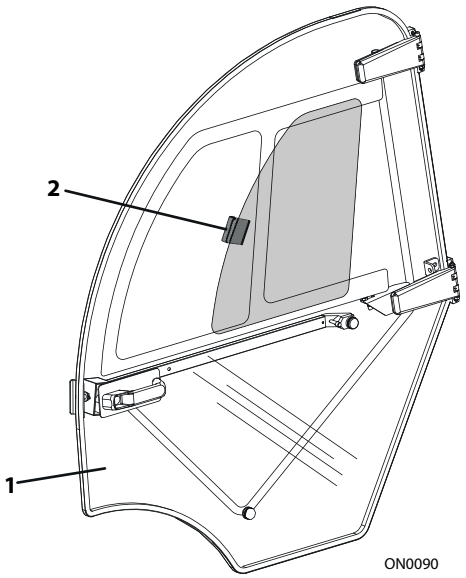
WARNING

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

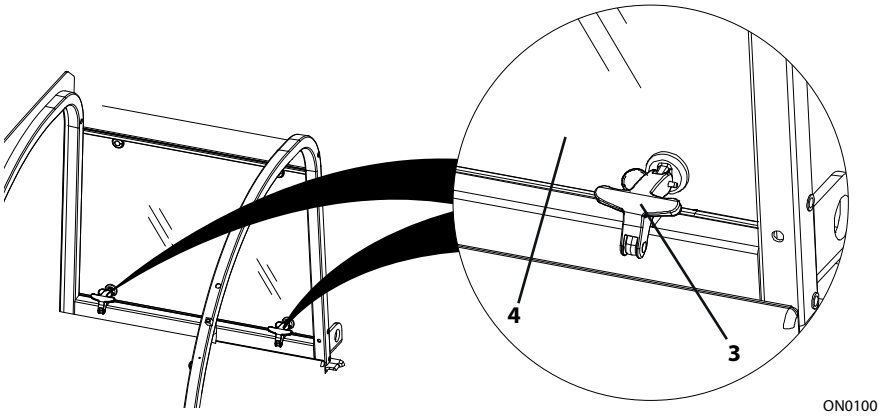
Keep all windows and mirrors clean and unobstructed.

Cab Door Window (if equipped)



- Cab door (**1**) must be closed during operation.
- Open the cab door sliding window using pull (**2**).
- Close the cab door sliding window using pull (**2**) and secure it in the latch.

Rear Window



- Lift levers (**3**) and push to open rear window (**4**).
- Lift levers and pull to close.

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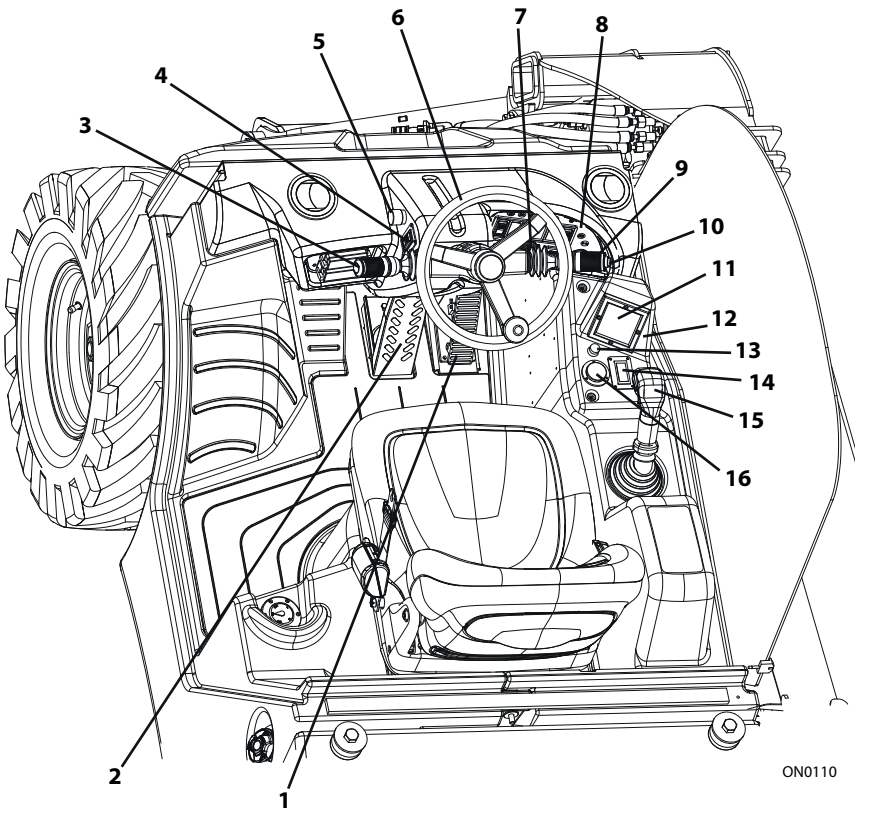
SECTION 3 - CONTROLS AND INDICATORS

3.1 GENERAL

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

3.2 CONTROLS

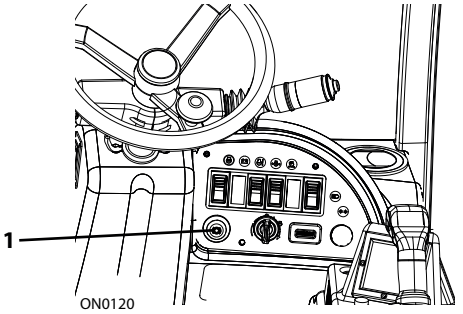


1. ***Accelerator Pedal***: Pressing down the pedal increases engine and hydraulic speed.
2. ***Service Brake Pedal***: The further the pedal is depressed, the slower the travel speed.
3. ***Transmission Control Lever***: See page 3-6.
4. ***LSI Override Switch***: See page 3-9
5. ***Power/Emergency Stop Switch***: Push down to shut off power and stop engine.
6. ***Steering Wheel***: Turning the steering wheel to the left or right steers the machine in the corresponding direction.
7. ***Ignition Switch***: Key activated. See page 3-5.
8. ***Instrument Panel***: See page 3-10.
9. ***Accessory Control Lever (if equipped)***: See page 3-14.
10. ***Horn Button (if equipped)***: Depress button to sound horn.

11. ***LSI Indicator***: See page 3-7.
12. ***Right Hand Console***: See page 3-13.
13. ***Quick Attach Button (if equipped)***: Used in conjunction with the joystick to hydraulically lock or unlock an attachment.
14. ***Continuous Auxiliary Hydraulics Switch (if equipped):*** See page 3-13.
15. ***Joystick***: See page 3-12.
16. ***Frame level indicator:*** Enables operator to determine the level condition of the telehandler.

Park Brake

Park Brake Switch



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

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

WARNING

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

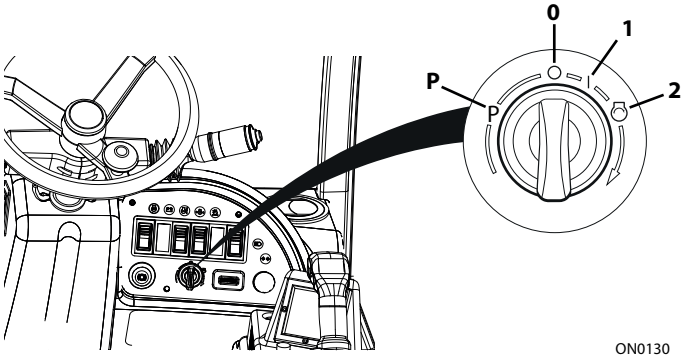
WARNING

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, push down the Power/Emergency Stop Switch to shut off power and stop engine.

Parking Procedure

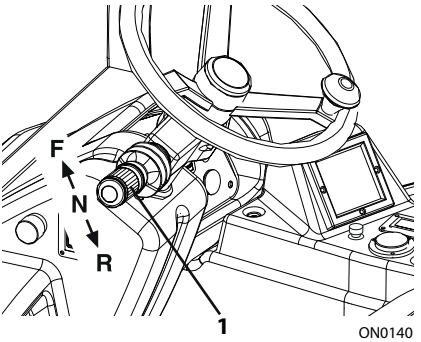
1. Using service brake, stop telehandler in an appropriate parking area.
2. Follow *"Shut-Down Procedure"* on page 4-4.

Ignition



- Position **P**: Not active, reserved for future use.
- Position **0**: Engine off.
- Position **1**: Voltage available for all electrical functions. Wait to start engine until 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.

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.

Note: *After engine starts, shift transmission control lever to 'Neutral' before enganging forward or reverse travel. See "Starting the Engine" on page 4-1*

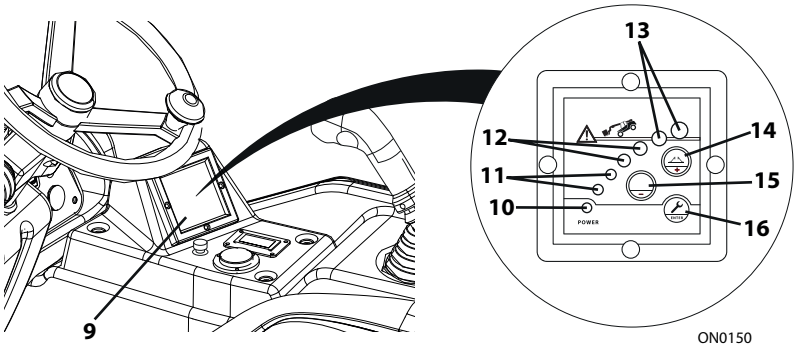
⚠ WARNING

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.

Load Stability Indicator - LSI

⚠ 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**).
- When the orange LEDs illuminate the warning buzzer also sounds intermittently.
- If red LEDs illuminate the warning buzzer sounds constantly.

Note: *Buttons (**14**), (**15**) and (**16**) are utilized for system calibration. See Service Manual for details.*
*Buttons (**14**), (**15**) and (**16**) are also utilized to verify the LSI audible warning. See "Load Stability Indicator System" on page 8-1.*

The LSI has one mode:

Active Mode

- As the telehandler reaches forward stability limitations and the red LEDs (**13**) illuminate, the automatic function cut-out is activated. All boom functions are disabled except for boom retract and boom lift. Retract boom to re-enable functions.

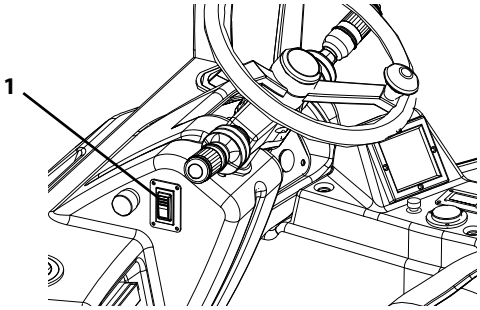
Note: *When functions are cut-out, the LSI Override Switch can be used to temporarily re-enable them. See "LSI Override Switch" on page 3-9.*

- Travel in accordance with the requirements set forth in Section 1- General Safety Practices.
- Test LSI at the beginning of each work shift. See Section 8 - Additional Checks.
- When placing a load, ensure the rear axle is not fully steered in either direction.

⚠ WARNING

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

LSI Override Switch



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

- Sliding the locking actuator down, depress and hold the switch up to 60 seconds while operating joystick to momentarily disable the automatic function cut-out.

  When the LSI override switch (**1**) is depressed, the warning buzzer also sounds intermittently.

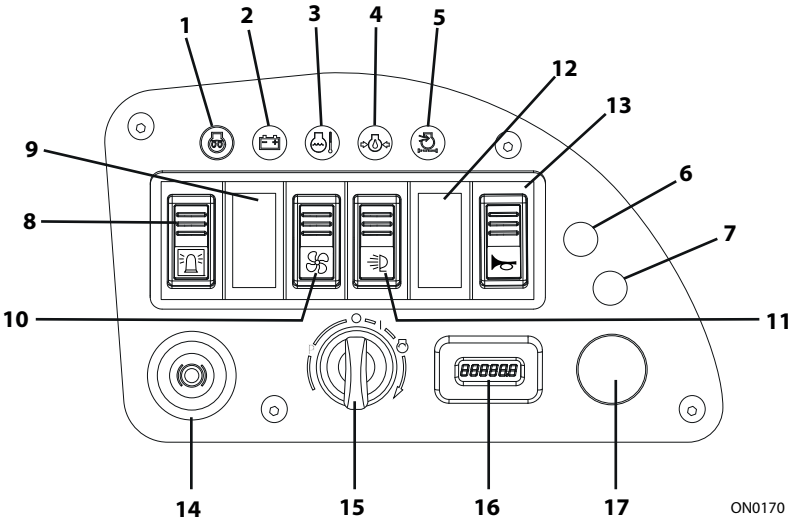
  Note: *If the LSI override switch (**1**) is held longer than 60 seconds, the LSI returns to normal operation. To override again, the LSI override switch (**1**) must be released, depressed and held again.*

- 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.

Instrument Panel



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.

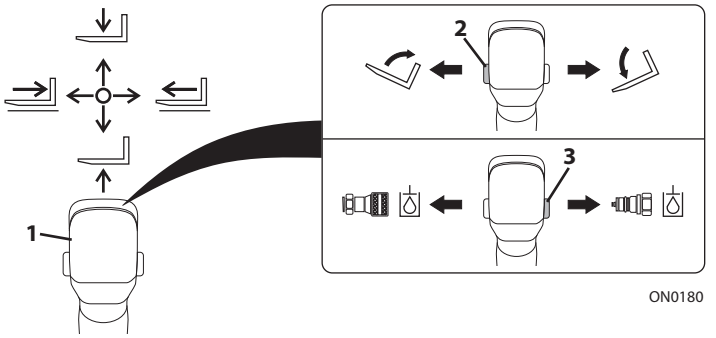
1. ***Engine Pre-Heat Indicator***: Illuminates with ignition key in position P, see *"Ignition"* on page 3-5. Light goes out when start temperature has been reached.
2. ***Low Battery Indicator:*** Illuminates when battery is at low charge or charging system is not functioning properly.
3. ***High Engine Temperature Indicator:*** Illuminates when engine temperature is high. With the engine running a buzzer will sound.
4. ***Low Engine Oil Pressure Indicator:*** Illuminates when oil pressure is low. With the engine running a buzzer will sound.
5. ***Air Cleaner Restriction Indicator:*** Illuminates when air cleaner requires maintenance.
6. Not used. Reserved for future use.
7. Not used. Reserved for future use.

Display and Switches

8. ***Beacon Light Switch***: On/Off switch.
9. Not used. Reserved for future use.
10. ***Heater Fan Speed Switch (if equipped)***: Three position switch. Press to middle position of switch for slow speed; bottom of switch for fast speed; top of switch to turn off.
11. ***Front and Rear Work Lights Switch (if equipped)***: On/Off switch.
12. Not used. Reserved for future use.
13. ***Horn Switch***: Depress bottom of switch to sound horn.
14. ***Park Brake Switch***. See page 3-4.
15. ***Ignition Switch***. See page 3-5.
16. ***Operating Hours***. Displays total hours of telehandler operation.
17. Not used. Reserved for future use.

Joystick

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.

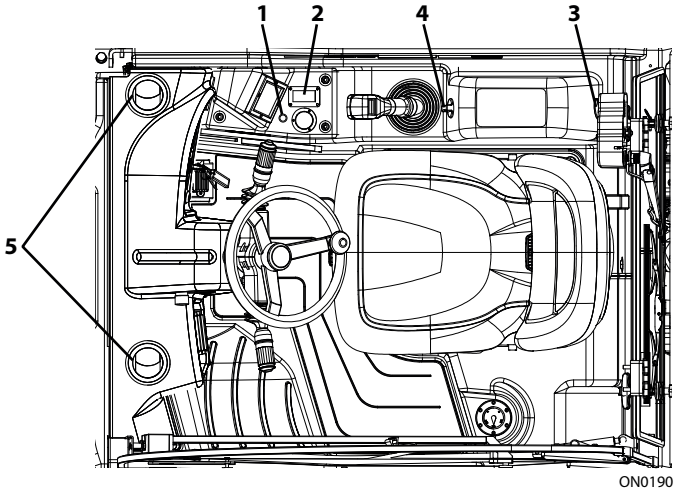
Auxiliary Hydraulic Functions

The right button (**3**) enables function of attachments that require hydraulic supply for operation. See Section 5 - 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.

Right Hand Console



1. ***Quick Attach Button***: Used in conjunction with joystick to hydraulically lock or unlock an attachment. See page 5-15 for details.
2. ***Continuous Auxiliary Hydraulics Switch (if equipped)***: Provides continuous operation of hydraulic powered attachments. Three position switch. To enable, press top or bottom of switch. To disable, press to middle position of switch. See Section 5 - Attachments and Hitches for approved attachments and control instructions.
3. ***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.

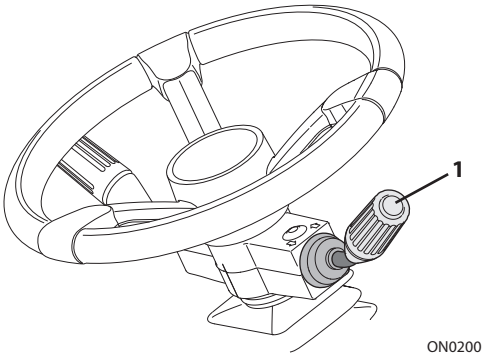
Heater Controls (if equipped)

4. ***Temperature Control Switch (if equipped)***: Adjustable rotary switch.
5. ***Air Louver (if equipped)***: Two individually adjustable air louvers.

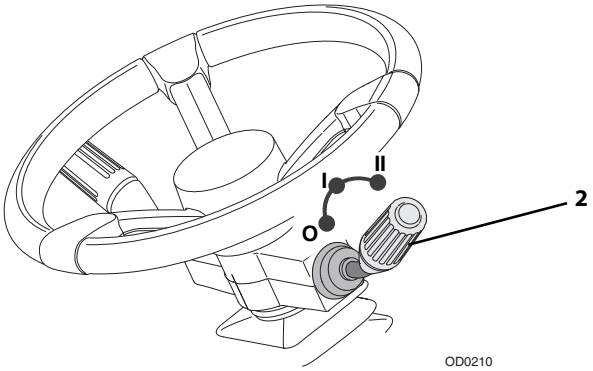
Note: *See "Display and Switches" on page 3-11 for Heater Fan Speed Switch.*

Accessory Control Lever (if equipped)

The accessory control lever (**1**) enables the skylight and front windshield wiper.



Skylight and Front Windshield Wiper



- Rotate hand grip (**2**) to activate skylight and front windshield wiper.

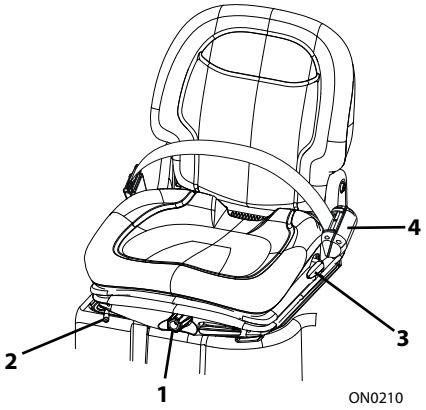
  O - Off, **I** - Continuous or **II** - Fast.

- Push hand grip (**2**) towards column to activate windshield wiper fluid.

3.3 OPERATOR SEAT

Adjustments

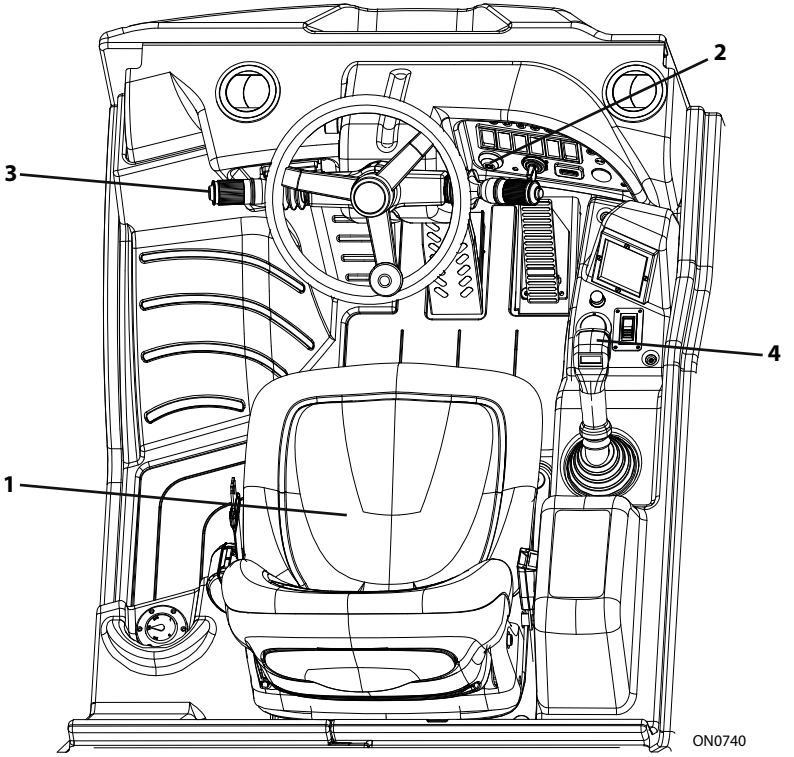
Prior to starting engine adjust seat for position and comfort.



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. ***Back Rest***: Use lever to adjust backrest angle.
4. ***Seat Belt***: Always fasten seat belt during operation. If required, a 3 in (76 mm) seat belt is available.

Operator Presence

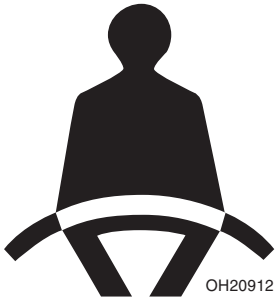
Note: *Operator Presence works in conjunction with the seat belt sensor. See "Seat Belt Fastened" on page 3-18.*



The operator seat (**1**) is equipped with an operator presence system. Transmission is disabled and joystick (**4**) movements are locked if operator is not present. If the system detects a loss of pressure during operation, after a three second delay one of the following will occur:

1. With the park brake (**2**) engaged or disengaged and transmission in neutral (**3**):
   - Joystick (**4**) movements are locked. (Continuous Auxiliary function permitted).
   - Upon returning to seated position, joystick (**4**) movements are unlocked.
2. With the park brake (**2**) disengaged and transmission in forward or reverse (**3**):
   - Joystick (**4**) movements are locked and transmission shifts to neutral.
   - Upon returning to seated position, joystick (**4**) movements are unlocked. Return transmission to neutral to allow system to reset prior to reengaging forward or reverse travel.

Seat Belt

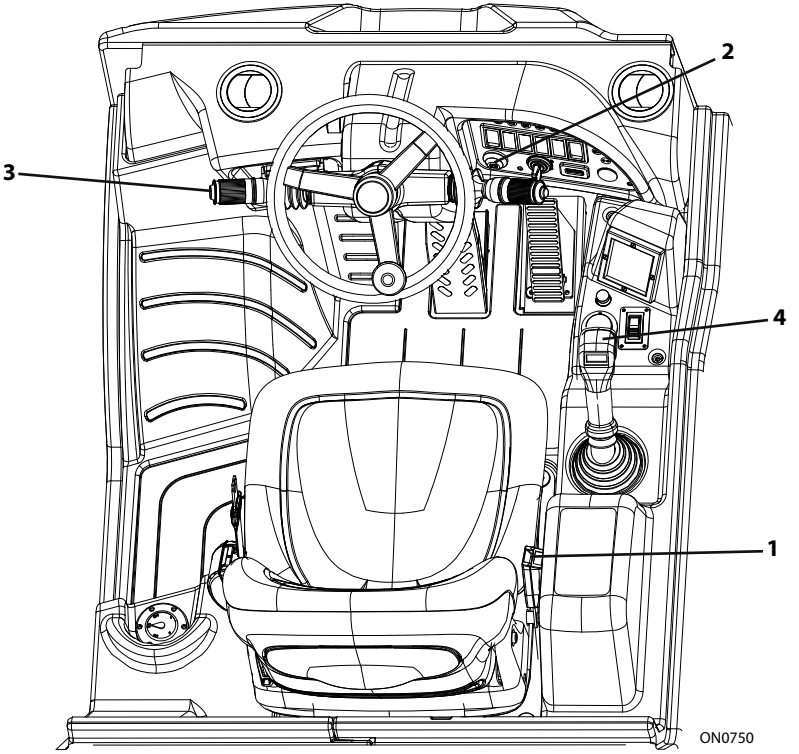


Fasten seat belt as follows:

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.

Seat Belt Fastened

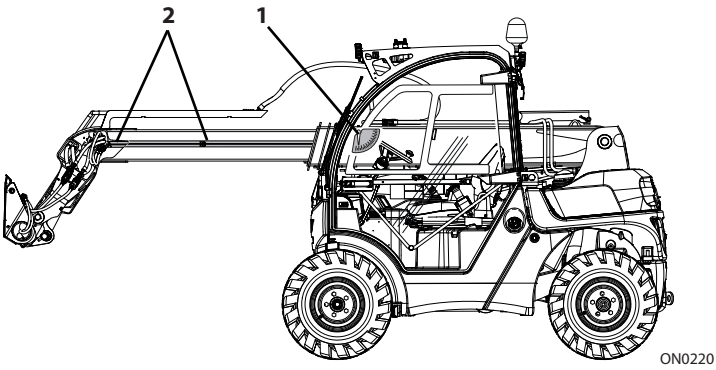
Note: *Seat Belt Fastened works in conjunction with the Operator Presence. See "Operator Presence" on page 3-16.*



The seat belt receptacle (buckle) (**1**) is equipped with a seat belt fastened system. Transmission is disabled and joystick (**4**) movements are locked if seat belt is unfastened. If the system detects an unfastened seat belt during operation, after three second delay one of the following will occur:

1. With the park brake (**2**) engaged or disengaged and transmission in neutral (**3**):
   - Joystick (**4**) movements are locked. (Continuous Auxiliary function permited).
   - Upon fastening the seat belt, joystick (**4**) movements are unlocked.
2. With the park brake (**2**) disengaged and transmission in forward or reverse (**3**):
   - Joystick (**4**) movements are locked and transmission shifts to neutral.
   - Upon fastening the seat belt, joystick (**4**) movements are unlocked. Return transmission to neutral to allow system to reset prior to reenganging forward or reverse travel.

3.4 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 *"Use of the Capacity Chart"* on page 5-9).
- 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 *"Use of the Capacity Chart"* on page 5-9).

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SECTION 4 - OPERATION

4.1 ENGINE

Starting the Engine

This machine can be operated under normal conditions in temperatures of 6°F to 114°F (-14°C to 45°C). Consult JLG for operation outside this range or under abnormal conditions.

If equipped for cold weather, -20°F to 86°F (-30°C to 30°C), see page 4-2 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: *If equipped with Continuous Auxiliary Hydraulics, engine will not start unless function is disabled. See page 3-11.*

⚠ 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.

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 page 4-1 and allow engine to idle 10 minutes.
2. Operate each boom function a minimum of ten complete cycles.
3. 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.

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.

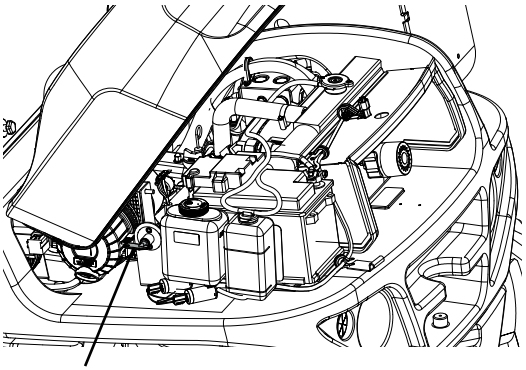
⚠ WARNING

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.

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.

Shut-Down Procedure



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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 (**1**).
8. Block wheels (if necessary).

4.2 OPERATING WITH A NON-SUSPENDED LOAD

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 5) of the telehandler to determine the operating range in which you can safely lift, transport and place a load.

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"* on page 5-17.
- 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.

Transporting a Load

- After engaging the load and resting it against the backrest, tilt the load back to position it for travel. Travel in accordance with the requirements set forth in Section 1-General Safety Practices and Section 5 - Attachments and Hitches.
- Maintain a slow speed when transporting a load.

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.

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"* on page 5-9.
- 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.

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

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 5) of the telehandler to determine the operating range in which you can safely lift, transport and place a load.

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"* on page 5-9. for proper lifting guidelines in addition to the appropriate capacity chart in the operator cab.

Transporting a Suspended Load


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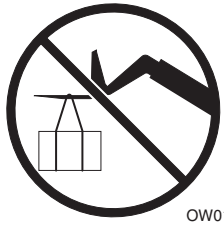
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- Travel in accordance with the requirements set forth in Section 1- General Safety Practices and Section 5 - Attachments and Hitches.
- For additional requirements, refer to the appropriate capacity chart in the operator cab.

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 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.

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°.

Placing a Suspended Load

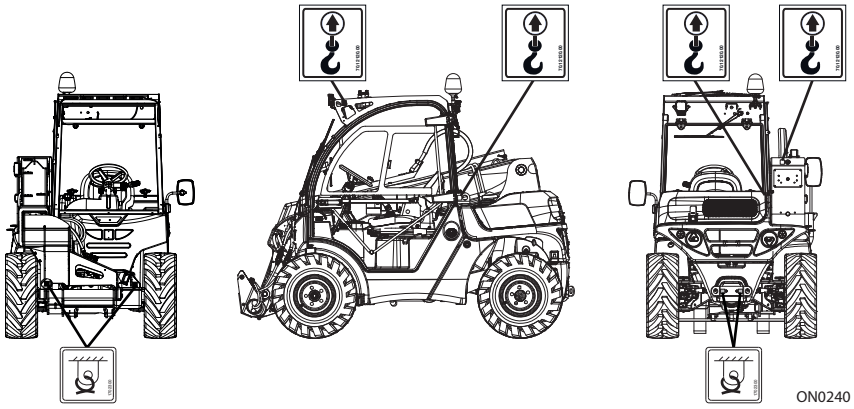
Before placing any load be sure that:

- 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"* on page 5-9.
- 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.

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



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.

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 9 - 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.

SECTION 5 - ATTACHMENTS AND HITCHES

5.1 APPROVED ATTACHMENTS

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.
- 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.

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 *"Fork Mounted Attachments"* on page 5-3.

Non-OEM Fork Mounted Attachments

JLG authorizes the use of non-OEM fork mounted attachments provided the criteria and instructions are followed. See *"Fork Mounted Attachments"* on page 5-3.

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

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"* on page 5-6.

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

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

Load Centers Beyond 24 Inches

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

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

Equivalent Load Calculation

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

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

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

Example

- Weight of load = 1,100 pounds
- Center of gravity of load = 36 inches

The Equivalent Load for this example is:

$$\frac{1,100 \times 36}{24} = 1,650\ \text{pounds}$$

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 1,650 lb can be safely moved and placed within the machine operating limits.

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 = 10 inches
- Weight of load = 1,500 pounds
- Center of gravity of load = 30 inches

The Equivalent Load for this example is:

$$500 \times 10 = 5{,}000$$

$$1{,}500 \times 30 = 45{,}000$$

$$\frac{5{,}000 + 45{,}000}{24} = 2{,}083 \text{ pounds}$$

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 2,083 lb can be safely moved and placed within the machine operating limits.

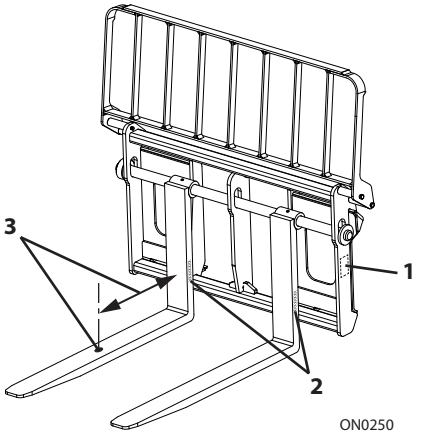
WARNING

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, 41 in (1050 mm)	1001261158	X	
	1001263389		X
Fork, Pallet 1.4x4x48 in (35x100x1200 mm)	1001262108	X	X
Bucket, Light Material 0.45 yd^3 (0,34 m^3)	1001263392	X	
	1001263394		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"* on page 5-1.

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"* on page 5-7.
- 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.

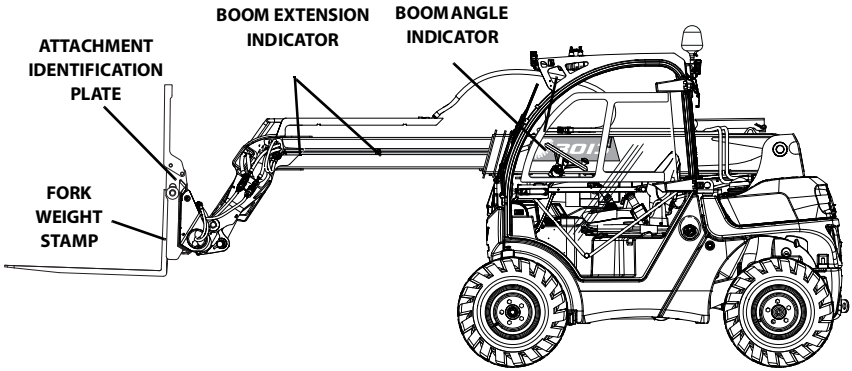
5.7 USE OF THE CAPACITY CHART

To properly use the capacity chart (see page 5-10), the operator must first determine and/or have the following:

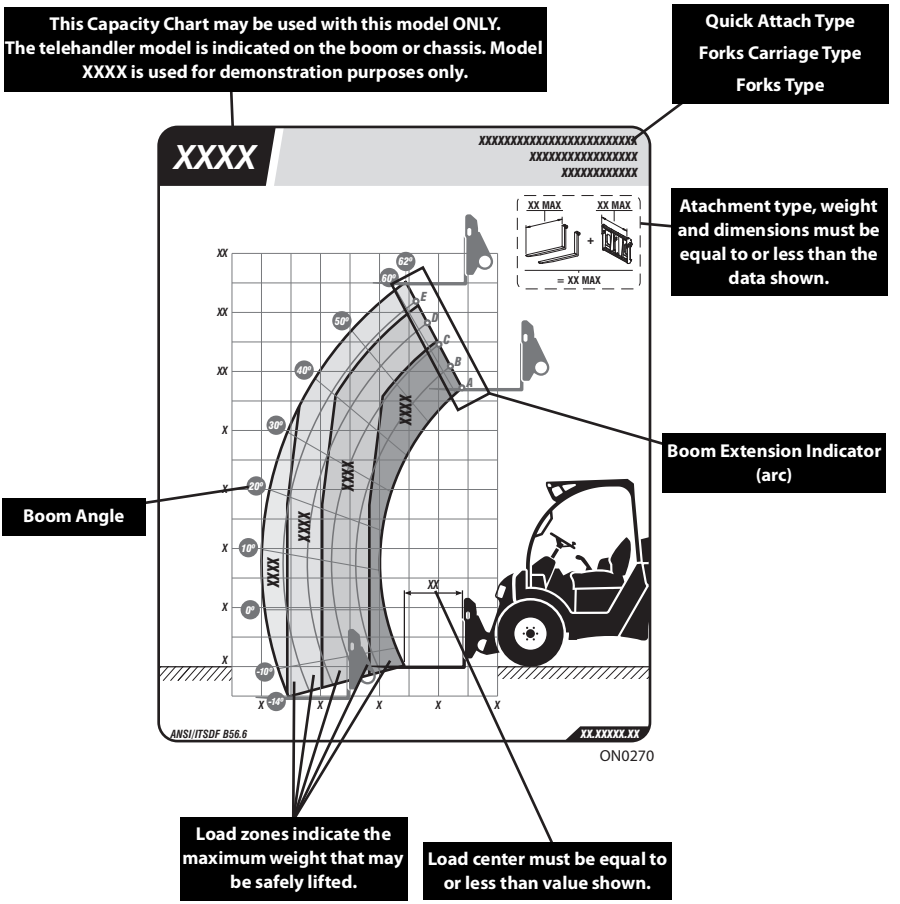
1. An approved attachment. See *"JLG Supplied Attachments"* on page 5-7.
2. The proper Capacity Chart(s).
3. Weight of the load being lifted.
4. Load placement information:
   a. HEIGHT where the load is to be placed.
   b. DISTANCE from the front tires of the telehandler to where the load is to be placed.
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.

Capacity Indicator Locations



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 page 4-6); 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.

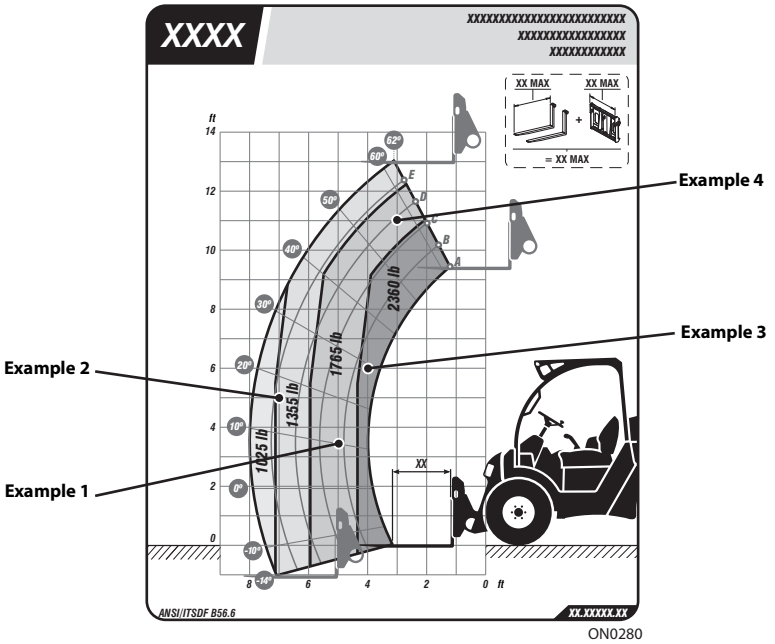
Example

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.

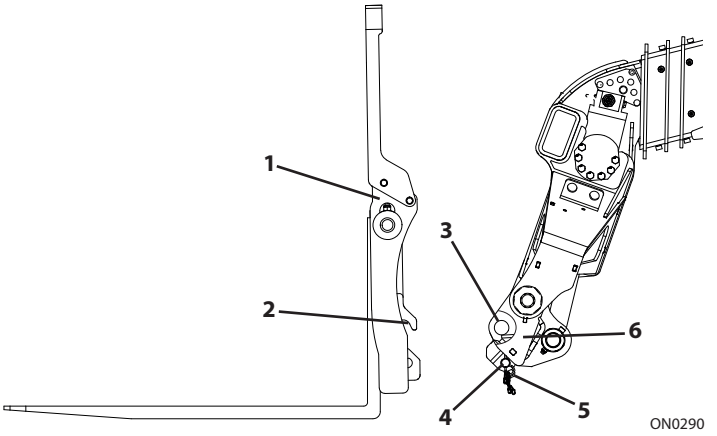
	Load Weight	Distance	Height	OK to Lift
1	1500 lb (680 kg)	5 ft (1,5 m)	3.5 ft (1 m)	Yes
2	1450 lb (657 kg)	7 ft (2,1 m)	5 ft (1,5 m)	NO
3	1800 lb (816 kg)	4 ft (1,2 m)	6 ft (1,8 m)	Yes
4	2350 lb (1065 kg)	3 ft (0,9 m)	11 ft (3,3 m)	NO



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

Mechanical Standard Quick Attach



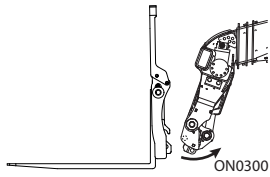
1. ***Attachment***
2. ***Attachment Pin Recess***
3. ***Attachment Pin***
4. ***Lock Pin***
5. ***Retainer Pin*** (mechanical quick attach)
6. ***Quick Attach*** (attachment tilt control in cab, see page 3-12)

⚠ WARNING

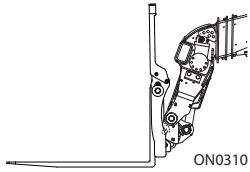
CRUSH HAZARD. Always be certain that carriage or attachment is properly positioned on boom and is secured by lock pin and retainer pin. Failure to ensure proper installation could permit carriage/attachment/load to disengage.

This installation procedure is designed for one-person operation. Prior to exiting cab, perform *"Shut-Down Procedure"* on page 4-4.

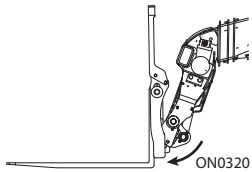
1. Tilt quick attach forward to provide clearance. Check to be sure lock pin and retainer pin are out.



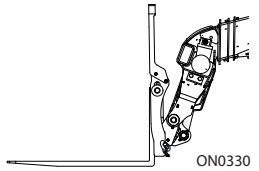
2. Align attachment pin with recess in attachment. Raise boom slightly to engage attachment pin in recess.



3. Tilt quick attach back to engage attachment.

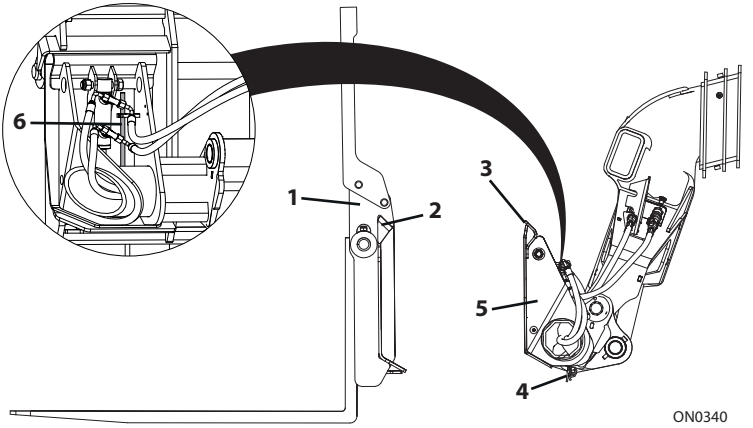


4. Insert lock pin and secure with retainer pin.



If attachment is equipped, connect auxiliary hydraulic hoses. *"Attachment Installation"* on page 5-12.

Hydraulic Universal Quick Attach (UQC)



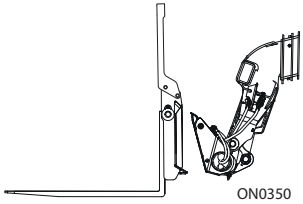
1. ***Attachment***
2. ***Attachment Recess***
3. ***Engaging Edge***
4. ***Lock Pin***
5. ***Universal Quick Attach*** (attachment tilt control in cab, see page 3-12)
6. ***Latch Pin***

⚠ WARNING

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

This installation procedure is designed for one-person operation.

1. Tilt quick attach forward to provide clearance.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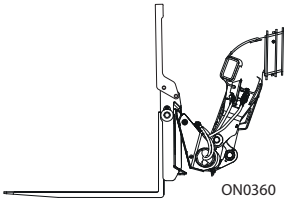
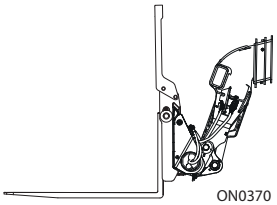
2. Align engaging edge with recess in attachment. Raise boom slightly to engage edge in recess.

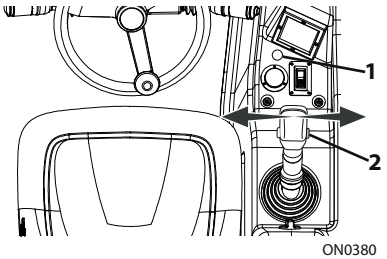

ON0360

3. Check to be sure lock pins are disengaged. Tilt quick attach back to engage attachment.


ON0370

4. Press and hold button (**1**) and button (**2**), at the same time move the joystick right to engage or left to disengage the lock pins. At the same time, the latch pins go in and out of the slot.

   Note: *From inside the operator's cab, visually check that latch pins are in the slot before raising the boom.*

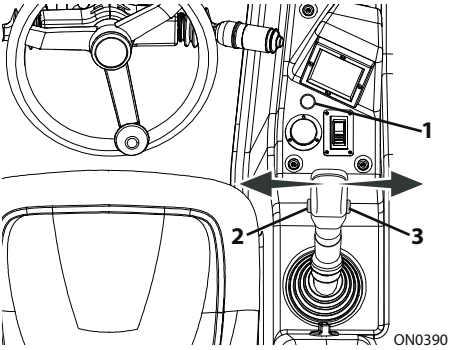


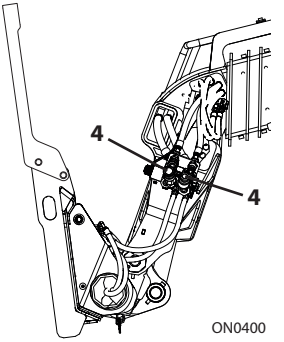
ON0380

5. Raise boom to eye level and visually check that the lock pins protrude through the attachment holes. If the pins do not protrude through the holes, place the attachment on the ground and return to step 2.

6. If attachment is equipped, connect auxiliary hydraulic hoses. See *"Hydraulic Operated Attachment"* on page 5-16.

5.9 HYDRAULIC OPERATED ATTACHMENT





1. Install attachment (see page 5-12).
2. Perform *"Shut-Down Procedure"* on page 4-4.
3. Turn the ignition switch to position 1. See *"Ignition"* on page 3-5.
4. Press and hold button (**1**), button (**2**) and button (**3**), at the same time move the joystick right and then left to relieve pressure at auxiliary fittings (**4**).

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 *"Attachment Installation"* on page 5-12 or *"Hydraulic Universal Quick Attach (UQC)"* on page 5-14.
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.

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

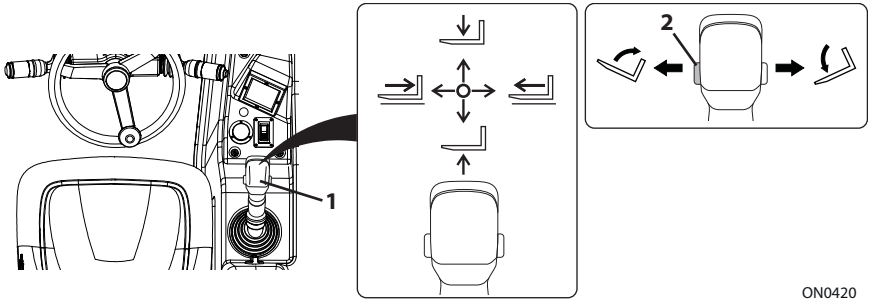
EQUIPMENT DAMAGE. Avoid contact with any structure or object when lifting a load. Maintain clearance around boom structure and load. Failure to maintain clearance may result in attachment or machine structural damage.

Carriage with Forks


ON0410

Use Carriage Attachment Capacity Chart

To determine maximum capacity, refer to *"Telehandler/Attachment/Fork Capacity"* on page 5-8.



ON0420

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 *"Attachment Installation"* on page 5-12.

Equipment Damage Precautions:

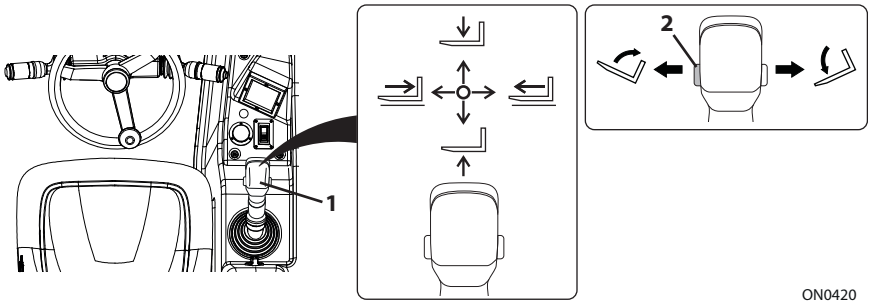
- Do not use forks as a lever to pry material. Excessive prying forces could damage forks or machine structure.
- Do not attempt to lift loads that are attached or connected to another object.

Side Shift Carriage


ON0430

Use Side Shift Carriage Attachment Capacity Chart

To determine maximum capacity, refer to *"Telehandler/Attachment/Fork Capacity"* on page 5-8.

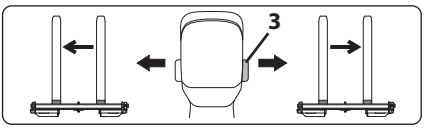


ON0420

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.



ON0440

To Side Shift:

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

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

Installation Procedure:

- Refer to *"Attachment Installation"* on page 5-12.

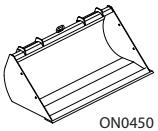
⚠ WARNING

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.

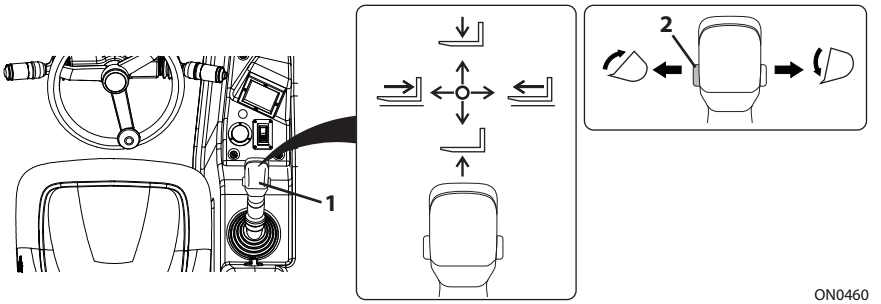
Bucket



ON0450

Use Appropriate Bucket Capacity Chart

To determine maximum capacity, refer to *"Telehandler/Attachment/Fork Capacity"* on page 5-8.



ON0460

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 *"Attachment Installation"* on page 5-12.

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 1- 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.

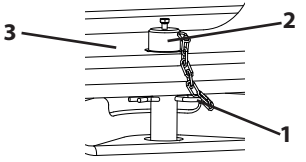
5.12 HITCHES

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 page 9-6 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.*

Retrieval Hitch



ON0490

Connecting for retrieval:

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

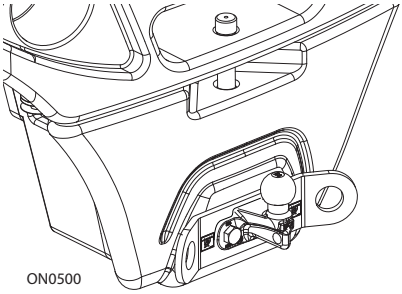
Note: *Retrieval devices are not intended for trailer towing applications.*

Ball Hitch - 2" (50 mm)

Hitch Capacities

Maximum combined weight of trailer and load ..... not available at publication
Maximum vertical load at hitch interface..... not available at publication

Note: *Verify that the trailer ball and hitch sizes match.*


ON0500

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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).

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.

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

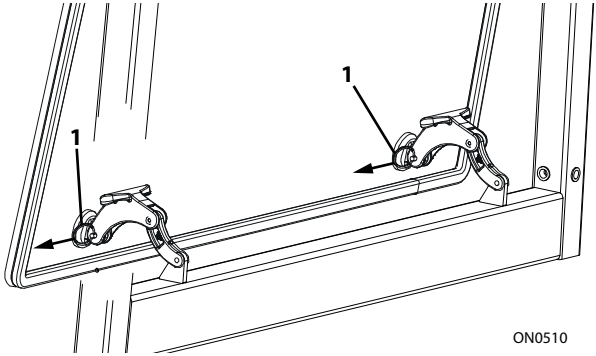
In the event of total loss of engine power or hydraulic pump failure with an elevated load, the situation must be properly evaluated and dealt with on an individual basis. **Contact JLG Industries or the local Authorized Distributor for specific instructions.**

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

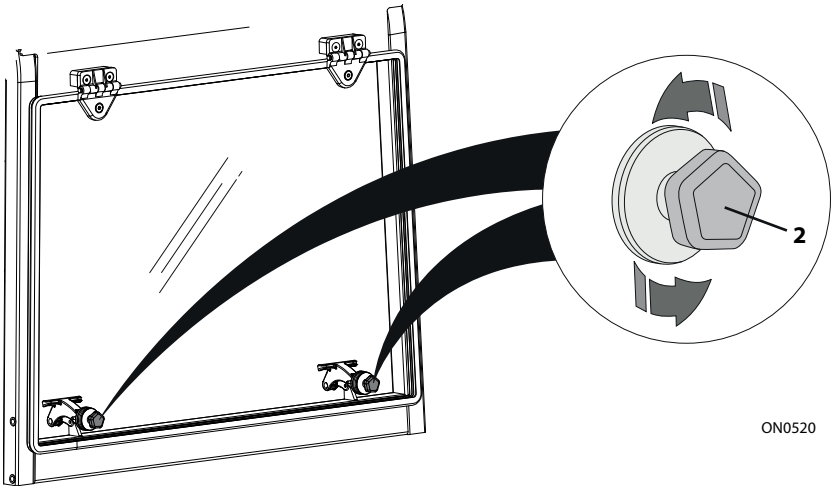
Inside Cab



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

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

Outside Cab (if equipped)



- Remove knobs (**2**) securing window. The window is then free to swing open.

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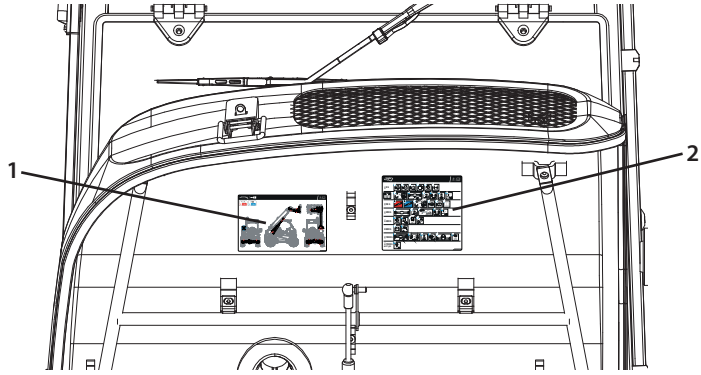
SECTION 7 - LUBRICATION AND MAINTENANCE

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.



ON0530

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.

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 shut-down procedure on page 4-4 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

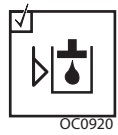
CUT/CRUSH/BURN HAZARD. Do not perform service or maintenance on the machine with the engine running.

7.3 MAINTENANCE SCHEDULES

Every 8 Hours

Check Engine Coolant Level

Check Engine Oil Level



Check Hydraulic Oil Level

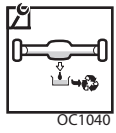
Check Fuel Level

Check Air Filter

Check Tire Condition and Pressure

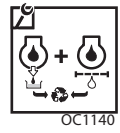
First 50 Hours

Check Wheel Lug Nut Torque



Change Axle Differential Oil

Check Fan Belt



Change Engine Oil and Filter

Change Transmission Filter

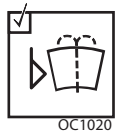
Change Fuel Pre-Filter

Every 50 Hours

Lubrication Schedule

Check Wheel Lug Nut Torque

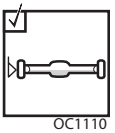
Check Brake Fluid Level



Check Washer Fluid Level (if equipped)

Additional Checks (see Section 8)

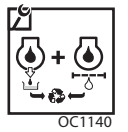
Every 200 Hours



Check Axle Differential Oil Level

Check Fan Belt

Check Boom Wear Pads



Change Engine Oil and Filter

Change Fuel Pre-Filter

Every 400 Hours

Change Air Filter Elements

Change Fuel Filter

Check LSI Calibration

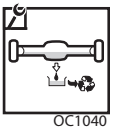
Check Hydraulic Tank Cap

Every 600 Hours

Check Battery

Change Fan Belt

Every 1000 Hours

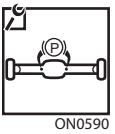


Change Axle Differential Oil

Change Hydraulic Fluid and Filters

Change Transmission Filter

Change Hydraulic Tank Breather



Check Park Brake

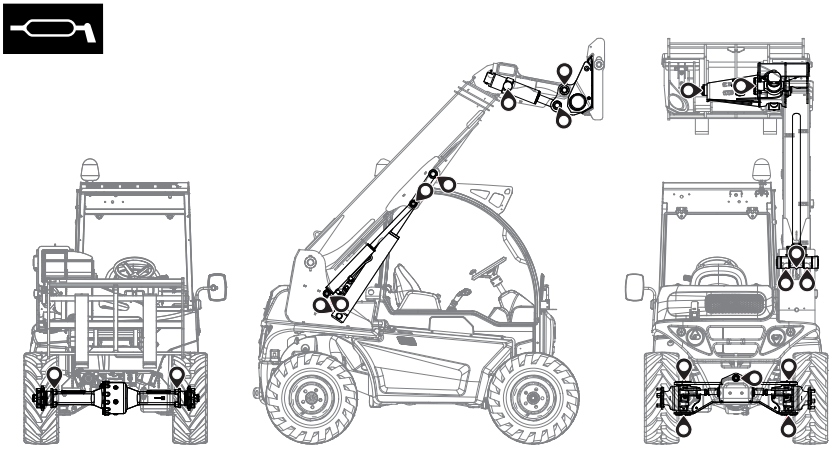
Engine Valve Lash Adjustment

Every 1500 Hours

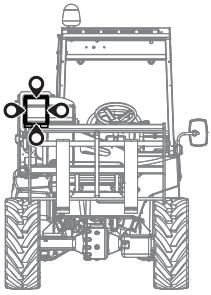
Change Engine Coolant

7.4 LUBRICATION SCHEDULES

50 Hour Lubrication Schedule



ON0610



ON0620

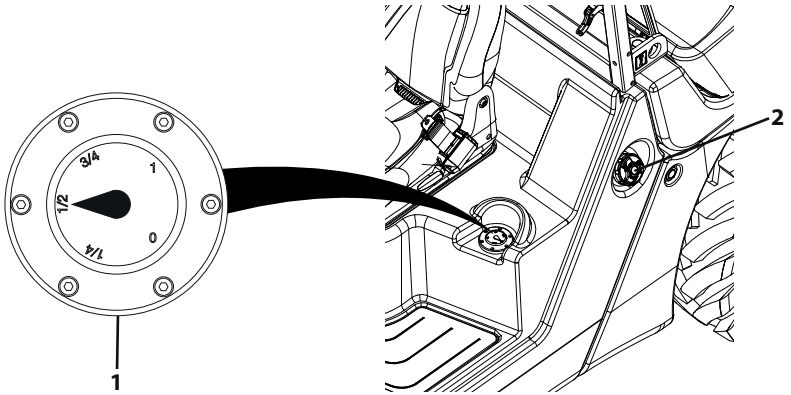
7.5 OPERATOR MAINTENANCE INSTRUCTIONS

Fuel System

A. Fuel Level Check

8 ON0630

OW0990



ON0640

1. Check fuel gauge (**1**) located in cab.
2. If fuel is low, proceed to fuel source and perform *"Shut-Down Procedure"* on page 4-4.
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.

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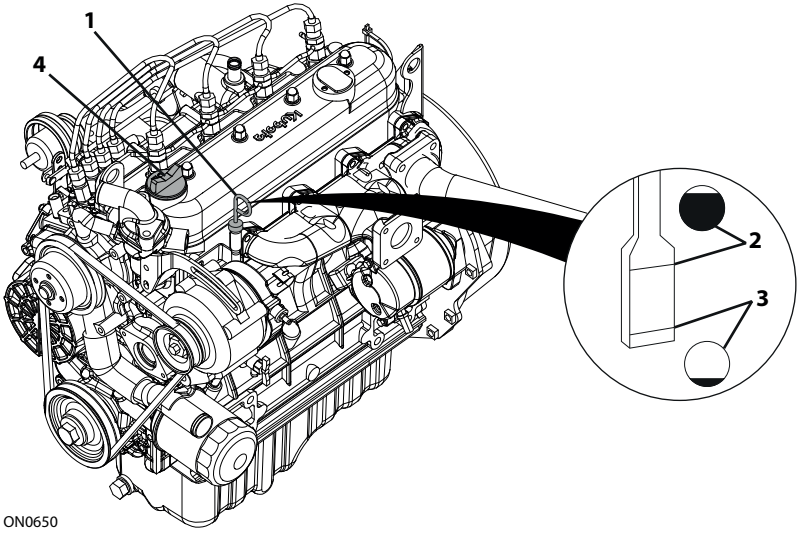
Engine Oil

A. Engine Oil Level Check

8 ON0630

OW1020



ON0650

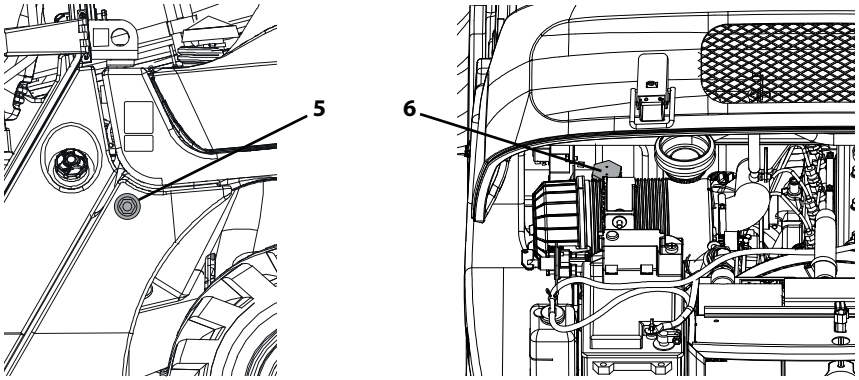
1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Open the engine cover.
3. Remove dipstick (**1**) and check oil mark. The oil should be between the full (**2**) and add (**3**) marks within the crosshatched area of the dipstick.
4. Replace dipstick.
5. If oil is low, remove oil fill cap (**4**) and add engine 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.

Hydraulic Oil

A. Hydraulic Oil Level Check

8 ON0630

OW1030



ON0660

1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Check level of hydraulic oil at the sight gauge (**5**) on the hydraulic oil tank. The oil level should be visible in the gauge window.
3. If hydraulic oil is low, proceed to hydraulic fluid source.
4. Open the engine cover.
5. Remove oil fill cap (**6**) from filler neck. Add hydraulic fluid to bring oil up to the center mark on the sight gauge.
6. Replace hydraulic oil fill cap.
7. Close and secure the engine cover.

Tires

A. Tire Air Pressure Check

1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Remove valve stem cap.
3. Check tire pressure.
4. Add air if required. See page 9-3 for tire pressures.
5. Replace valve stem cap.

B. Tire Damage

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

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

- A smooth even cut through the cord plies 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.

C. 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.

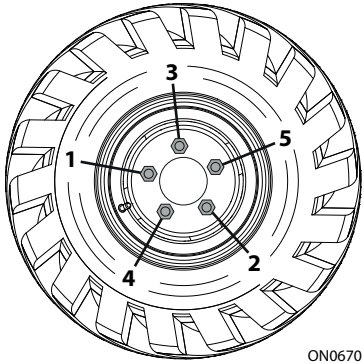
The rims installed have been designed for stability requirements which consist of track width, tire pressure and load capacity. Size changes such as rim width, center piece location, larger or smaller diameter, etc., without written factory recommendations, may result in unsafe condition regarding stability.

D. Wheel Installation

Torque lug nuts after first 50 hours, then every 500 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 page 9-3 for torque value.

WARNING

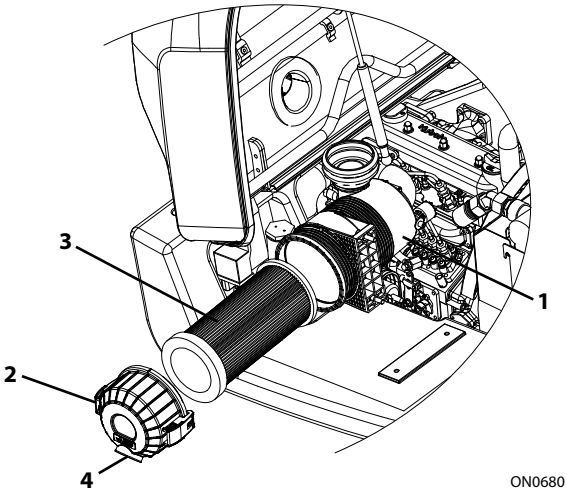
TIP OVER HAZARD. Lug nuts must be installed and maintained at the proper torque to prevent loose wheels, broken studs and possible separation of wheel from the axle.

Air Intake System

A. Air Filter Check and Element Cleaning

8 ON0630

OW1010



ON0680

1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Open the engine cover.
3. Locate air cleaner (**1**).
4. Unlock air cleaner cover (**2**) and remove from air cleaner.
5. Remove element (**3**). Inspect the element dust holding.
6. If necessary, clean the cartridge using compressed air jet. Pressure must not exceed 87 psi (6 bar) directed towards the outside of the element.
7. Thoroughly clean interior of air cleaner canister and vacuator valve (**4**).
8. Slide element making sure sealing edge is flush with base of air cleaner.
9. Position air cleaner cover in place and lock into position.
10. Close and secure engine cover.

NOTICE

EQUIPMENT DAMAGE. Elements should be cleaned and reused 6 times. Then install new element.

B. Element Change

1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Open engine cover.
3. Unlock air cleaner cover (**2**) and remove from air cleaner.
4. Remove element (**3**). Inspect element for damage then discard.
5. Thoroughly clean interior of air cleaner canister and vacuator valve.
6. Slide new element making sure sealing edge is flush with base of air cleaner.
7. Position air cleaner cover in place and lock into position.
8. Close and secure engine cover.

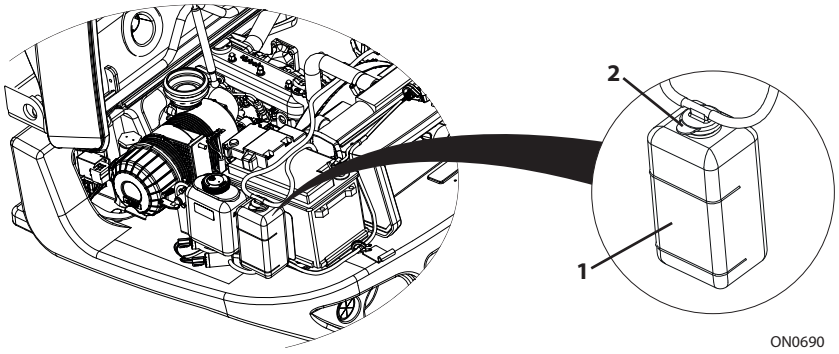
NOTICE

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

Engine Cooling System

A. Engine Coolant Level Check

50 OW0980 OW1070



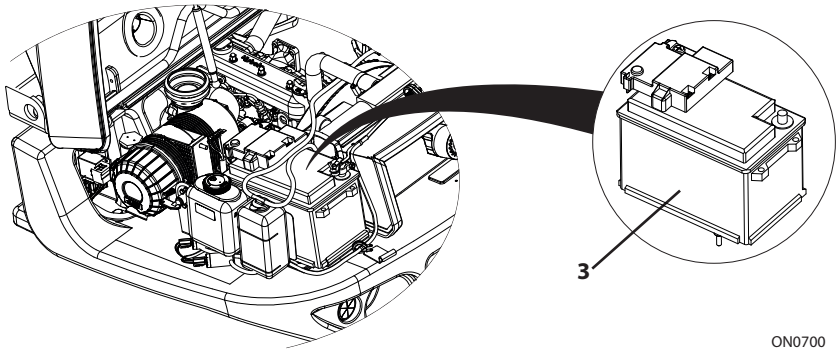
1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Open the engine cover.
3. Check coolant level in surge tank (**1**). When coolant is hot, the tank should be 1/2 to 3/4 full. When coolant is cool, bottle should be 1/4 to 1/2 full.
4. If coolant is low, allow fluid to cool.
5. Remove surge tank cap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

Battery

A. Battery Check

50 OW0980

OW1080

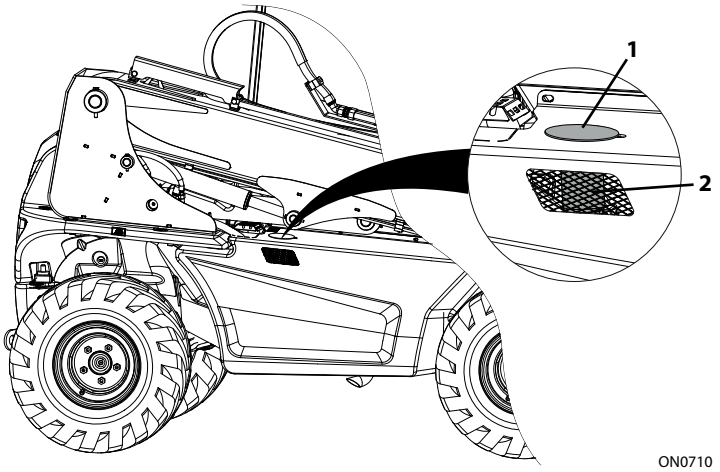


1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Open the engine cover.
3. Wearing eye protection, visually inspect the battery (**3**). Check terminals for corrosion. Replace battery if it has a cracked, melted or damaged case.
4. Close and secure the engine cover.

Brake System

A. Brake Fluid Level Check

50 OW0980 OD1380



1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Remove inspection cap (**1**).
3. The brake fluid level should be visible in the reservoir (**2**).
4. If brake fluid level is low, add mineral fluid as needed.
5. Replace inspection cap.

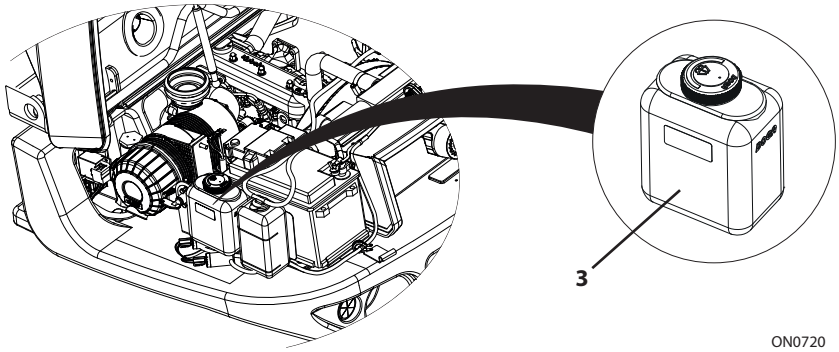
Note: *All other work on the brake system must be performed by qualified personnel.*

Windshield Washer System (if equipped)

A. Windshield Washer Fluid Level Check

50 OW0980

OAL2040



1. Perform *"Shut-Down Procedure"* on page 4-4.
2. Open the engine cover.
3. The windshield washer fluid should be visible in the reservoir (**3**).
4. If washer fluid level is low, add fluid as needed.
5. Close and secure the engine cover.

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SECTION 8 - ADDITIONAL CHECKS

8.1 GENERAL

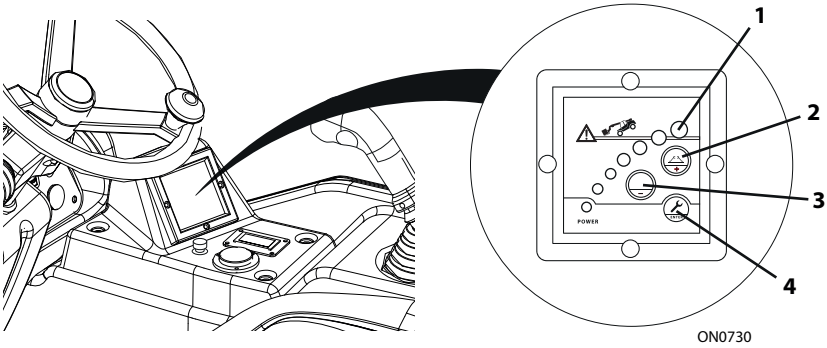
If any of the following test results cannot be achieved, the system is not functioning properly and the machine must be removed from service and repaired before continued operation.

8.2 LOAD STABILITY INDICATOR SYSTEM

A. Load Stability Indicator System Test

8 ON0630

OZ0840



The Load Stability Indicator (LSI) is intended to continuously monitor the forward stability of the telehandler. This feature performs a two step check:

1. The first step (1 second duration) performs a test to verify the buttons. If this step fails, red LED (**1**) begins to flash and the warning buzzer sounds constantly. See Service Manual for details.
2. The second step (5 seconds duration) performs a test to verify the LEDs to illuminate and the audible warning to sound.

Note: *This check is automatic after engine starts.*

After the two step check, during operation of the machine when LSI power is on, press any of the following buttons (**2**), (**3**) or (**4**) to verify the audible warning sounds properly.

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SECTION 9 - SPECIFICATIONS

9.1 PRODUCT SPECIFICATIONS

Fluids

Compartment or System	Type and Classification	Viscosities	Ambient Temperature Range			
			°F		°C	
			Min	Max	Min	Max
Engine Crankcase	Repsol MID SAPS	SAE 10W-40	-4	114	-20	45
	Shell Rotella T6	SAE 5W-40	-22	86	-30	30
	Mobil DEVLAC 1 ESP	SAE 5W-40	-22	86	-30	30
Axle Differential and Wheel End	API GL5 EP	75W-90	-40	115	-40	46
		SAE 90	-4	115	-20	46
Hydraulic System	Mobilfluid 424	SAE 10W-30	6	115	-15	46
	Exxon Univis HVI		-40	100	-40	40
Brake System	API GL4 or ATF FLUID	SAE 10W	-40	115	-40	46
Boom Wear Pad Grease	EUROLUBE Z 4 AZ R4	NLGI Grade 1	-7	115	-22	46
Grease Fittings	Extreme Pressure Grease	NLGI Grade 2 EP with lithium soap or NLGI Grade 3 EP with lithium soap	5	122	-15	50
Engine Coolant	Ethylene Glycol and Water	50/50 Mix	-31	114	-35	45
Fuel	EN590 ASTM D 975 Grade 1-D ASTM D 975 Grade 2-D	Ultra Low Sulfur ($S \leq 15$ mg/kg)				

Capacities

Engine Crankcase Oil

Capacity with Filter Change ..... 5.4 qt (5,1 L)

Fuel Tank

Capacity ..... 14.5 gal (55 L)

Cooling System

System Capacity ..... 5.3 qt (5 L)

Hydraulic System

System Capacity ..... 14.5 gal (55 L)

Reservoir Capacity to Full Mark ..... 8.5 gal (32 L)

Auxiliary Hydraulic Circuit Max Flow (standard) ..... 5.5 gpm (20,8 lpm)

Auxiliary Hydraulic Circuit Max Flow with
Continuous Auxiliary Hydraulics (if equipped) ..... 11 gpm (40 lpm)

Brake System

System Capacity ..... 0.52 qt (0,5 L)

Axles

Front Axle Differential Housing Capacity ..... 1.6 qt (1,5 L)

Tires

Multi-Purpose Ag Tires 11.00/65, Bias - 8 Ply
- Pneumatic ..... 57 psi (4 bar)
- Foam ..... 112 lb (51 kg)

Non-Marking Tires (if equipped) 27 x 10, Bias - 14 Ply
- Pneumatic ..... 72 psi (5 bar)
- Foam ..... 117 lb (53 kg)

Turf Tires (if equipped) 26 x 12.00, Bias - 14 Ply
- Pneumatic ..... 75 psi (5,2 bar)

Wheel Lug Nut

Front Wheels Torque ..... 110 ± 14 lb-ft (150 ± 20 Nm)

Rear Wheels Torque ..... 110 ± 14 lb-ft (150 ± 20 Nm)

Performance

Maximum Lift Capacity
- Standard Quick Attach..... 2700 lb (1225 kg)
- Universal Quick Attach ..... 2360 lb (1070 kg)

Maximum Lift Height..... 13.1 ft (3,9 m)

Capacity at Maximum Height
- Standard Quick Attach.....1555 lb (705 kg)
- Universal Quick Attach .....1355 lb (615 kg)

Maximum Forward Reach .....7.1 ft (2,1 m)

Capacity at Maximum Forward Reach
- Standard Quick Attach.....1200 lb (544 kg)
- Universal Quick Attach .....1025 lb (465 kg)

Reach at Maximum Height .....3.28 ft (1 m)

Maximum Travel Speed (see note)..... 10.5 mph (17 kph)

Maximum Travel Grade (boom in travel position)
- Gradeability 22%
- Side Slope.....12%

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

Dimensions

Overall Height ..... 78.7 in (2000 mm)

Overall Width ..... 55.3 in (1405 mm)

Track Width ..... 44.5 in (1132 mm)

Wheelbase ..... 66.9 in (1700 mm)

Length at Front Wheels ..... 96.6 in (2455 mm)

Overall Length (less Attachment) ..... 105.7 in (2685 mm)

Ground Clearance ..... 9.8 in (250 mm)

Outside Turning Radius ..... 117 in (2982 mm)

Turning Radius at Forks ..... not available at publication

Maximum Operating Weight (no attachment) ..... 5291 lb (2400 kg)

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

- Front Axle ..... 7716 lb (3500 kg)
- Rear Axle ..... 3527 lb (1600 kg)

Maximum Ground Bearing Pressure

Multi-Purpose Ag Tires 11.00/65, Bias - 8 Ply

- Pneumatic ..... 58.3 lb/in^2 (4,1 kg/cm^2)
- Foam ..... 112 lb/in^2 (7,8 kg/cm^2)

Non-Marking Tires (if equipped) 27 x 10, Bias - 14 Ply

- Pneumatic ..... 72.5 lb/in^2 (5,1 kg/cm^2)
- Foam ..... 117 lb/in^2 (8,2 kg/cm^2)

Turf Tires (if equipped) 26 x 12.00, Bias - 14 Ply

- Pneumatic ..... 75.3 lb/in^2 (5,3 kg/cm^2)

Turning Radius ..... 117 in (2982 mm)

Machine Towing Capacity

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

Off-Road .....not available at publication
On-Road.....0 lb (0 kg)

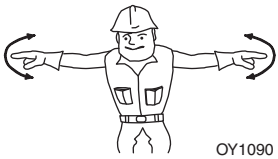
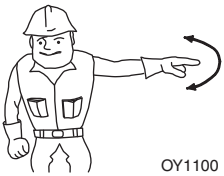
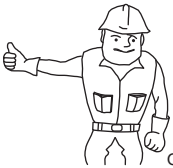
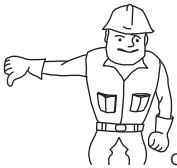
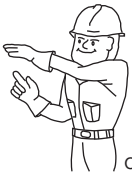
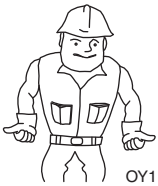
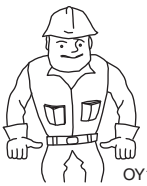
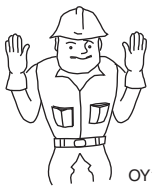
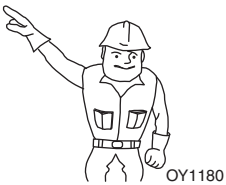
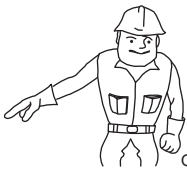
Serial Number ______________________________________

Date	Comments

Inspection, Maintenance and Repair Log

Date	Comments

Hand Signals

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

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

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