Operation & Safety Manual

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

Model R11100

31211947

August 28, 2023 - Rev B

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

Date	Revision	Description
August 15, 2022	A	Original Issue
August 28, 2023	B	Revision

Other Publications Available

Publication	Publication Number
Service Manual	31220699
Illustrated Parts Manual	31211944

Vehicle Identification

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

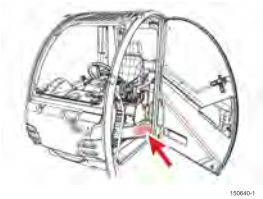


Figure 1. Vehicle model

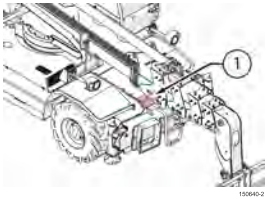


Figure 2. Chassis serial number

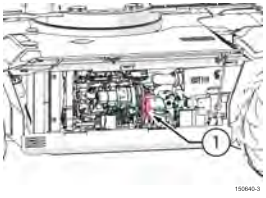


Figure 3. Engine serial number

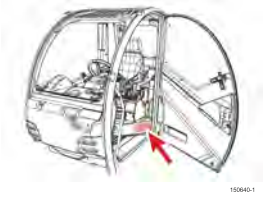


Figure 4. Cab serial number

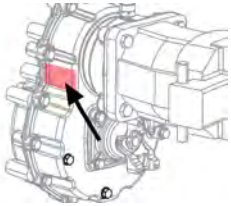
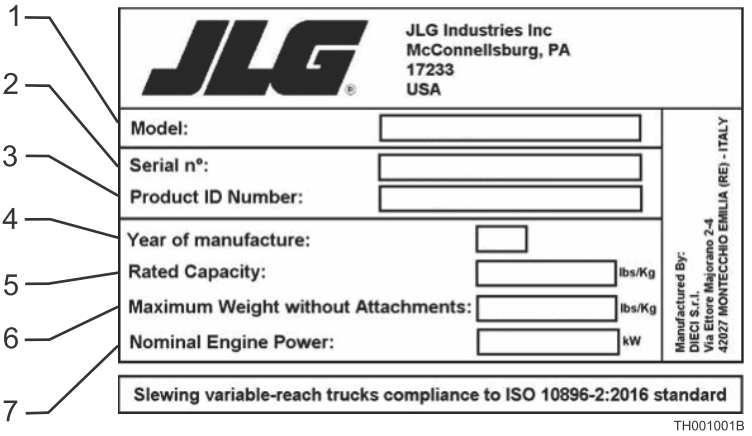


Figure 5. Transmission serial number

Serial Number Plate

The serial number plate shows the main identification data of the machine.



1. Model
2. Serial number
3. Identification number of the product
4. Year of manufacture
5. Estimated capacity
6. Total unladen mass
7. Engine nominal power

To ensure a prompt and efficient service when ordering parts or when requesting information or technical clarification always specify the identification details.

READ THIS FIRST

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

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

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

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

Operator Qualifications

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

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

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

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

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

Modifications

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

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

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

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

FOR:

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

CONTACT:

Product Safety and Reliability Department

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

GENERAL INFORMATION

Introduction

This manual is an integral part of the official documentation and is aimed at supplying the Operator with all the information required concerning technical aspects, operation, and safety during the entire lifespan of the vehicle or equipment.

⚠ ATTENTION

This manual should be read carefully before the first use.

Note: If in doubt on the correct understanding of the instructions, contact the Manufacturer for clarifications.

The instruction manual must be kept in the designated location, inside a dedicated envelope, protected from liquids and anything which may make the manual illegible.

If the manual becomes creased or damaged which makes it illegible or in the case of the loss of the manual it must be replaced immediately by contacting JLG Technical Services, giving the details from the front cover of the manual.

Each vehicle is provided with:

- A copy of this manual
- A copy of the engine manual

These manuals have been prepared by the respective suppliers and are faithfully reproduced in full by JLG with their specific authorization. They may be enriched with additional specifications created by JLG.

Recipients

This manual is addressed to the following persons:

- **Operator**: An instructed person, trained with specific theoretical-practical courses concerning the use of the vehicle or equipment.
- **Generic Maintenance Technician**: A trained and educated person to perform routine maintenance interventions with basic mechanical, electrical, and hydraulic knowledge.

⚠ ATTENTION

The users must not carry out operations reserved for maintenance technicians or qualified technicians. The Manufacturer is not liable for damage deriving from the non-compliance with this prohibition.

Training

This manual gives the users all technical data on the vehicle or on the equipment, the presence and type of control and safety devices, and the presence and meaning of safety decals and plates.

All vehicle or equipment users must have all necessary information, training, and education in relation to the correct use conditions of the means and foreseeable anomalous risks.

The information, training, and education must be implemented upon introduction of new work equipment available to users.

The employer is obliged to inform personnel on the following topics related to safety during use:

- Risk of injury
- Vehicle and equipment safety devices set up for operator safety
- Individual safety devices
- General accident-prevention rules and/or unforeseen by international directives
- Accident-prevention rules of Legislation of the Country where the vehicle or the equipment is intended for use

The operator, before starting work, must know the characteristics of the vehicle and equipment and must have fully read this Operation & Safety manual.

Machine Orientation

Note: The images used to describe components and controls refer to a complete machine with all accessories. These may vary depending on the attachments and the configuration chosen. The below images define the machine's right side, left side, front, and back used throughout the manual.

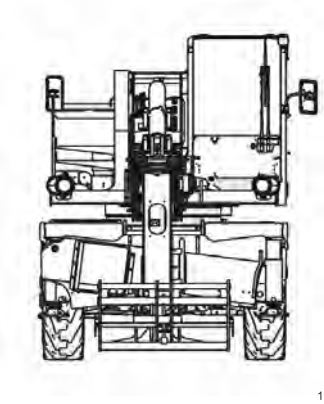


Figure 6. Front View

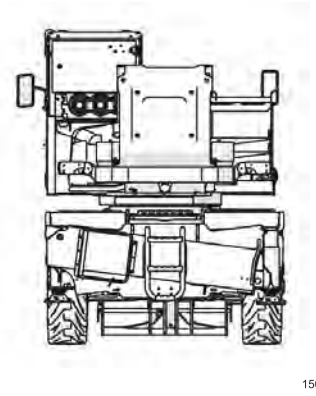


Figure 7. Rear View

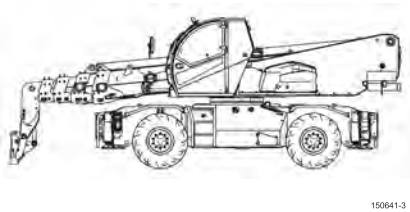


Figure 8. Left View

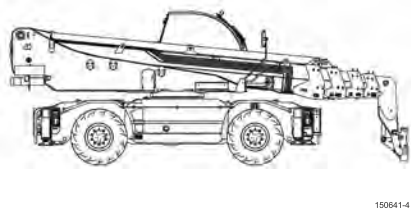


Figure 9. Right View

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SECTION 1
General Safety Practices

1.1 HAZARD CLASSIFICATION SYSTEM

1.1.1 Safety Alert System and Safety Signal Words

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

1.2 GENERAL PRECAUTIONS

⚠ 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.

⚠ DANGER

The machine is not set-up for use in environments or sites exposed to the presence of explosive gases. machine use in these places is prohibited. To operate in these environments, the Manufacturer must be contacted so the necessary modifications can be made to the machine and/or equipment.

⚠ DANGER

All functions and procedures concerning the operation and mounting of the machine or its equipment which are not described in this manual are strictly forbidden.

⚠ WARNING

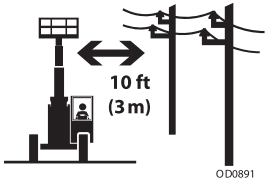
Read all the safety decals on the machine/equipment and observe all regulations printed on these decals before starting up, running, or refueling the machine or before performing any maintenance operations. Immediately replace damaged, lost, or illegible decals. Clean decals when they are covered by mud, concrete, or any debris which renders them illegible.

- Do not use the machine or equipment without reading and understanding all parts of this manual and attending an adequate training course.
- Do not use the machine or equipment when hands or shoes are wet or dirty with grease or greasy substances.
- Verify all safety devices are efficient before using the machine or equipment. The operator must always maintain the machine/equipment state and operation.
- Use the audible warning device or other signals to alert people in the area before starting up the machine.
- Inspect control instruments immediately after start up, while the engine is hot. Inspect control instruments at regular intervals during use in order to promptly recognize and resolve any malfunctions.
- Do not use the machine or equipment if a danger label or maintenance in progress tag is placed inside the cab.

- Do not use the machine force of impact to perform tasks. These machines are not designed for such use and using the machines in this way may cause machine overturning, damage, breakage of components/attachments, or serious personal injury to the user.
- Do not carry passengers on the machine, in the driver's cab, or any other part of the machine (including the personnel platform).
- It is prohibited to use the mobile hydraulic parts of the telehandler to lift people except when using the personnel platform with appropriate personal protective equipment for all personnel.

1.3.1 Electrical Hazards





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

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

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

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

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

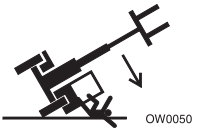
⚠ DANGER

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

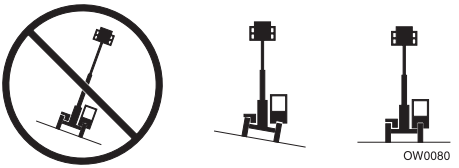
1.3.2 Tip Over Hazard

General

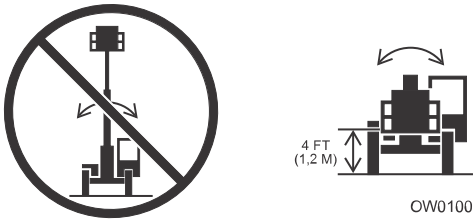
- For additional load requirements, refer to the appropriate capacity chart.



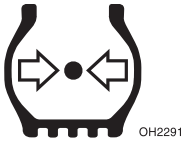
- Never use an attachment without the appropriate original equipment manufacturer (OEM) approved capacity chart installed on the telehandler.
- Understand how to properly use the capacity charts located in cab.
- **DO NOT** exceed rated lift capacity.
- Be sure that the ground conditions are able to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



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



- **DO NOT** level machine with boom/attachment above 4 ft (1,2 m).



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



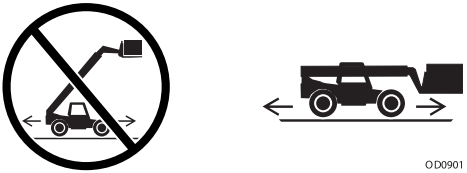
- Always wear seat belt.
- Keep head, arms, hands, legs and all other body parts inside operator's cab at all times.



If telehandler starts to tip over:

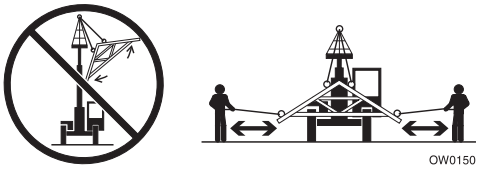
- **DO NOT** jump
- Brace yourself and stay with the machine
- Keep your seat belt fastened
- Hold on firmly
- Lean away from the point of impact

Non-Suspended Load



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

Suspended Load

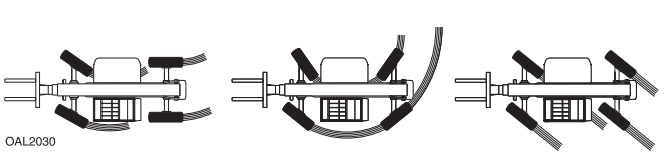


- Tether suspended loads to restrict movement.
- Weight of all rigging (slings, etc.) must be included as part of load.
- **DO NOT** attempt to use telehandler frame-leveling to compensate for load swing.
- Keep heavy part of load closest to attachment.
- Never drag the load; lift vertically.

When driving with a suspended load:

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

1.3.3 Travel Hazard



- Steering characteristics differ between steer modes. Identify the steer mode settings of the telehandler being operated.
- **DO NOT** change steer modes while traveling. Steer modes must be changed while telehandler is stationary.
- Visually verify proper wheel alignment after each steer mode change.
- Ensure that adequate clearance is provided for both rear tail swing and front fork swing.
- Look out for and avoid other personnel, machinery and machines in the area. Use a spotter if you DO NOT have a clear view.
- Before moving be sure of a clear path and sound horn.
- When driving, retract boom and keep boom/attachment as low as possible while maintaining visibility of mirrors and maximum visibility of path of travel.
- Always keep light signals on while the machine is running. These serve to warn ground personnel the machine is in operation.
- Always look in the direction of travel.
- Always check boom clearances carefully before driving underneath overhead obstructions. Position attachment/load to clear obstacles.
- When driving in high speed, use only front wheel steer (if steering modes are selectable).
- Telehandlers equipped with solid or foam filled tires should not be used in applications requiring excessive on road use or driving extended distances. In the event an application requires excessive on road use or driving expanded distances, it is recommended to use telehandlers not equipped with solid or foam filled tires.
- Always operate with the engine hood closed.
- Do not operate with any machine protective parts removed.
- Drive slowly on grass, leaves, or wet steel slabs. Even when operating on slight slopes the machine may lose traction or balance with the risk of tipping.

1.3.4 Load Falling Hazard



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

1.3.5 Lifting Personnel

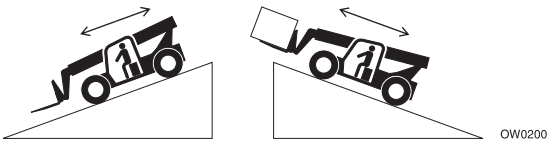


- When lifting personnel, **USE ONLY** an approved personnel work platform, with proper capacity chart displayed in the cab.



- **DO NOT** drive machine from cab when personnel are in platform.
- It is prohibited to use the mobile hydraulic parts of the machine to lift people other than an approved personnel work platform.

1.3.6 Driving Hazards on Slopes



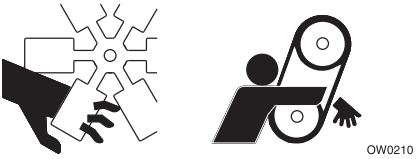
To maintain sufficient traction and braking capabilities, travel on slopes as follows:

- When unloaded, drive with forks pointed downhill.
- When loaded, drive with the forks pointed uphill.

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

1.3.7 Pinch Points and Crush Hazards

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


OW0210

- Stay clear of moving parts while engine is running.


OW0220

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


OW0230

- Keep clear from under boom.


OW0240

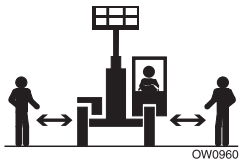
- Keep clear of boom holes.



- Keep arms and hands clear of attachment tilt cylinder.



- Keep hands and fingers clear of carriage and forks.



- Keep others away while operating.

1.3.8 Fall Hazard



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



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

1.3.9 Chemical Hazards

Exhaust Fumes

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

Flammable Fuel


OW0300

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

Hydraulic Fluid


OW0950

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

1.3.10 Windy Conditions

Wind speed variation can cause a number of issues including loss of machine stability, load oscillation, and a decrease invisibility due to dust, leaves, etc.

Adverse factors to machine use are:

- Location of the work site, the aerodynamic effect of buildings, trees, and other structures influence wind speed.
- The height of the extended boom. Wind speeds are greater at higher elevations therefore the higher the boom adversely affects the machine.
- Load bulk area: the more space the load occupies, the more wind force is felt.

Strong Wind

JLG telehandlers can be used up to a wind speed of 28 mph, equal to 12.5 m/s (number 6 on the Beaufort scale) measured on the ground.

At 50° F temperature, wind with a speed of 20 mph the wind chill factor makes the temperature on exposed body parts around 32° F. The higher you climb, the faster the wind speed and the more the sensation of pressure drop increases.

⚠ WARNING

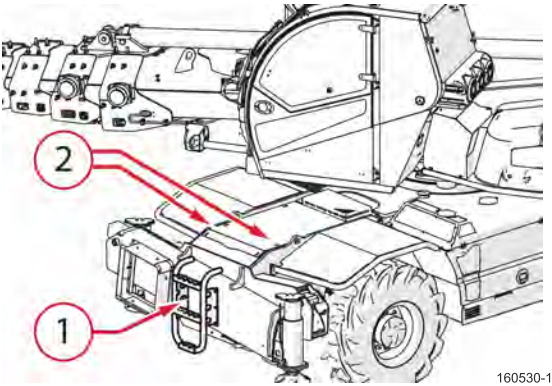
In the presence of strong winds (number 5 on Beaufort scale) never lift loads with surfaces exceeding 11 ft².

Table 1. Beaufort Scale (For Reference Only)

Beaufort Number	Wind Speed		Description	Land Conditions
	mph	m/s		
0	0	0-0.2	Calm	Calm. Smoke rises vertically
1	1-3	0.3-1.5	Light air	Wind motion visible in smoke
2	4-7	1.6-3.3	Light breeze	Wind felt on exposed skin. Leaves rustle
3	8-12	3.4-5.4	Gentle breeze	Leaves and smaller twigs in constant motion
4	13-18	5.5-7.9	Moderate breeze	Dust and loose paper raised. Small branches begin to move.
5	19-24	8.0-10.7	Fresh breeze	Smaller trees sway.
6	25-31	10.8-13.8	Strong breeze	Large branches in motion. Flags waving near horizontal. Umbrella use becomes difficult.
7	32-38	13.9-17.1	Near Gale/Moderate Gale	Whole trees in motion. Effort needed to walk against the wind.
8	39-46	17.2-20.7	Fresh Gale	Twigs broken from trees. Cars veer on road.
9	47-54	20.8-24.4	Strong Gale	Light structure damage.

1.4 ACCESSING A ROTATED CAB

Note: Before climbing into the cab, make sure your hands and your shoes are clean and dry to avoid slipping and falling.



In the front and rear of the machine are steps (**1**) to climb in and out of the machine in case it is necessary to leave the machine rotated and the steps on the side are not accessible.

Use the handles (**2**)located on the carriage to help you climb in and out.

⚠ WARNING

Climbing in and out of the cab is only allowed when the machine is stopped with the parking brake engaged. Do not leave the cab with the telehandler in motion.

1.5 TRAVELING WITH A LOAD

1.5.1 General Warnings for Traveling with a Load

Always adhere to safety regulations. Always transport balanced, properly arranged loads to prevent the risk of tipping.

⚠ ATTENTION

It is strictly prohibited to work without the respective load charts for the equipment and the machine.When using this machine, carefully follow the load charts of the machine with the current attachments.

Do not attempt to carry out operations which exceed the capacity of the assembled equipment or of the machine.

Do not modify the structure and vehicle stability in any way by adding counterweights, whichever artifice is used.

Always ensure pallets, boxes, and other supports for the load are in good condition and adequate to the load being lifted. The sudden collapse of a rack of material is often caused by a faulty pallet.

Do not move the load with the boom lifted or extended.

- Handle the machine with the boom raised only in exceptional circumstances. In these circumstances, operate with due prudence, reduce speed as much as possible, and brake delicately. Make sure visibility is always sufficient and ask the operator on the ground to guide you for the operations.
- Reduce the speed as much as possible and brake gently during handling operations.

⚠ WARNING

Do not lift loads on ground while the vehicle is in motion.

Avoid passing over unstable objects. Remove dangerous, unstable objects instead of passing over or around them. Also avoid pot holes and ditches which may jolt the load.

Before turning, slow down as much as possible and monitor the load.

Do not change direction abruptly or at high speed.

Remember that hydraulic steering is very sensitive to steering wheel movements. Steer gradually and avoid sudden movements.

Slow down before turning.

Pay attention to side space, in particular if transporting wide loads. Keep a clear path for transportation.

⚠ WARNING

Handle all loads with care. Operate at low speed without sudden or jolting movements. This is especially true if loads are carried at great heights.



- Always ensure good visibility in the work area, including direct vision and visibility using the side mirrors in order to check for the presence of peple, animals, obstacles, holes, changes in slope, etc.
- Decrease the working speed of the machine in case of rain, fog, snow, or in any case where visibility is reduced.
- If visibility on the right side is limited during boom operation, before lifting the load ensure the work area is clear. Make note of the position of any possible obstacles and irregularities in the terrain.
- Clean all windows, mirrors, and lights to ensure good visibility.
- Maintain control of the machine and its speed in all circumstances. The speed of a loaded machine must never exceed 6.21 mph. If the load exceeds the maximum allowed load by 50%, the machine speed must be reduced to 3.11 mph.
- Do not drive in reverse for long distances.
- Brake gradually. Avoid abrupt braking.
- Always maintain a safe distance from other machines in order to have sufficient braking space in every condition.

⚠ ATTENTION

Before lifting loads, operator must be familiar with the weight of the load and its center of gravity.

- Transport the load as close as possible to the ground. Keep the load 1 foot from the ground. Never move the load lifted more than necessary.
- The load charts are valid for centers of gravity for standard loads. For particular loads, contact the dealer.

- Be wary when transporting loads with a variable center of gravity, such as liquids. Operate with caution in order to limit such variations and to prevent the risk of the machine overturning.
- Always ensure the moved load is correctly balanced and cannot fall onto the ground. The loss of the load or part of the load can entail a danger of damage to things or people.
- Pay careful attention to object which may fall. Ensure there are no unstable objects on the upper part of the load.

⚠ WARNING

Never lift a load when the machine is on a sloped surface. When on a sloped surface, pay attention to ground conditions. When working with the machine on a sloped surface with a high load, a jolt or a hole is sufficient to overturn the machine.Do not move the boom is the machine is located on terrain with a slope greater than 2° (3.5%).

1.5.2 Handling Loads with Rotary Machines

Before operating the machine, make sure there are no obstacles within the machine range during turret rotation.

⚠ ATTENTION

Before operating the machine, make sure the turret rotation locking pin is not engaged.

⚠ WARNING

Turret rotation with a load must always take place with the boom retracted and lowered as much as possible. Risk of fluctuations, loss of load, and lateral tipping.Carry out turret rotation with caution and the lowest possible speed.

⚠ WARNING

Level the machine and insert the axle oscillation block before picking up and moving loads through the turret rotation. Danger of lateral tipping.

⚠ DANGER

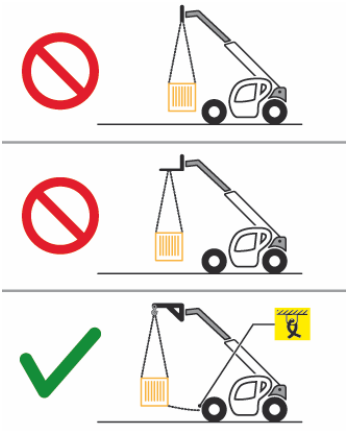
Handle loads only after they are off the ground. Dragging or pushing a load on the ground through the rotation of the turret or the extension/retraction of the boom may cause damage to the machine.

1.5.3 Use of Cables, Ropes, and Slings

⚠ DANGER

It is strictly forbidden to lift or move any load by fastening ropes or chains only to the machine's attachment holding plate, to forks, or to any other equipment not designated for this purpose.

Various equipment set-ups for lifting, provided with suitable hooks used for cables, chains, and slings are available. For further information contact your JLG dealer.



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To keep a suspended load from swaying while being handled, the load can be fixed to the anchoring eyebolts of the machine while being transported.

1.6 PERSONAL PROTECTIVE EQUIPMENT (PPE)

In some cases, when working in particularly uncomfortable environments, adequate clothing or equipment must be worn.

It is mandatory for the operator, before starting work, to learn from the safety manager or the site manager what are the possible risks of the work and which accident prevention clothes must be worn.

⚠ ATTENTION

Always use appropriate PPE for the type of work being performed. The PPE used by the operators can have different characteristics depending on the type of construction site and risks present in the workplace.

⚠ ATTENTION

Keep all PPE in good condition. Accident prevention clothing must always be intact and in good condition. Damaged clothing cannot ensure adequate protection. Do not wear damaged clothing. Always replace damaged or torn clothing before operating the machine.

1.6.1 Protective Clothing

Icon	Refilling	Description
	ISO7010: M004	Wear protective goggles
	ISO7010: M008	Wear safety shoes
	ISO7010: M009	Wear protective gloves
	ISO7010: M015	Wear high visibility clothing
	ISO7010: M013	Wear a protective mask (for work in dusty environments)

Icon	Refilling	Description
	ISO7010: M017	Use a protective breathing apparatus (for work with dangerous substances)
	ISO7010: M018	Wear a safety harness

⚠ DANGER

Pay attention to moving parts to avoid danger of crushing or dragging of the upper or lower limbs. Avoid wearing jewelry or pendants which may be trapped in moving parts. Long hair must be tied back to avoid it being caught in moving parts.Do not wear loose clothing, chains, belts, or other accessories which maybe caught in the control levers or in other parts of the machine or equipment.

1.6.2 Noise Protection

Prolonged exposure to loud noises can damage your hearing or may cause hearing loss.

Icon	Reference	Description
	ISO7010: M003	Wear hearing protection

⚠ ATTENTION

Always wear anti-noise earmuffs or earplugs to protect yourself from excessive and irritating noise.

1.6.3 Protection Against Objects falling from Height

Icon	Reference	Description
	ISO7010: M014	Wear a helmet

⚠ DANGER

Use of a safety helmet is required if there is a risk of falling objects.

1.6.4 Protection from Flying Fragments

Icon	Reference	Description
	ISO7010: M013	Wear a face shield

⚠ WARNING

During operations in certain conditions, particles of material may be ejected. In such conditions, it is a good idea to wear protective goggles and clear the area of personnel without protective goggles.

1.7 PREPARING FOR ACCIDENTS

- Always be prepared in the event of a fire or an accident.
- Keep a fire extinguisher and a first aid kit on hand. (Not supplied by the Manufacturer and are listed as “optional accessories”)
- Carry out periodic inspections to ensure the first aid kit contains all necessary items; replenish content if necessary.
- To properly use the extinguisher, carefully read the instructions located on the extinguisher.
- Carry out periodic inspections and maintenance (every six months) to ensure the fire extinguisher is ready for use at any given moment.
- Create priority procedures to deal with fires or accidents.
- Keep emergency telephone numbers (doctors, ambulance, hospital, and fire) clearly visible and near telephones.
- Adequately trained and educated personnel must be present for managing emergencies with adequate theoretical-practical course carried out on site.

1.7.1 Emergency Call

Good first aid prevention also depends on the timely arrival of rescuers (emergency medical support) to the place of the emergency.

This is why the person in charge of calling the emergency must precisely indicate the following:

- Address of where the accident or illness took place.
- Number of injured or ill persons.
- The possible cause of the event.

- The state of the vitals of the injured party. Specify whether the person is conscious or unconscious and if they are breathing normally or not.

At the end of the call it is recommended to:

- Give own details, indicating a telephone number where to be contacted.
- Wait for rescuers in an easily accessible and visible location.

SECTION 2
Pre-Operation and Inspection

2.1 PREPARATION, INSPECTION AND MAINTENANCE

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

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

Note: Inspection forms are available.

2.2 PRE-OPERATION CHECK AND INSPECTION

Note: Complete all required maintenance before operating unit.

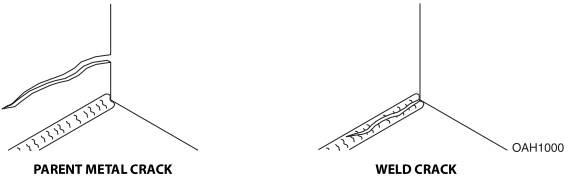
⚠ WARNING

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

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

1. **Cleanliness** - Check all surfaces for leakage (oil, fuel or battery fluid) or foreign objects. Report any leakage to the proper maintenance personnel.

2. **Structure** - Inspect the machine structure for dents, damage, weld or parent metal cracks or other discrepancies.



3. **Safety Decals** - Ensure all safety decals are legible and in place. Clean or replace as required. See Safety Decals, *page 40* for details.

4. **Operation and Safety Manuals** - Operation & Safety Manual and AEM Safety Manual (ANSI only) located in cab manual holder.

5. **Fluid Levels** - Check fluids, including fuel, diesel exhaust fluid (DEF), hydraulic oil, engine oil and coolant. When adding fluids, refer to the Product 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.

6. **Attachments/Accessories** - Ensure correct capacity charts are installed on telehandler. If provided, reference Operation & Safety Manual of each attachment or accessory installed for specific inspection, operation and maintenance instructions.

7. **Walk-Around Inspection** – Inspect the following items for proper operational function.
   - Parking brake efficiency
   - Intact condition of the tires
   - Tire is suitable for type of work
   - Air filter clogging indicator (clean if necessary)
   - Tire inflation and tire pressure
   - Fuel level
   - Signaling and warning devices
   - Steering efficiency
   - Service brake efficiency
   - Tightness of all nuts and bolts
   - Lighting
   - Directional indicators
   - Emergency lights
   - Switches
   - Indicator lights
   - Windshield wipers
   - Reverse movement alarm
   - Rear view mirrors

⚠ DANGER

Immediately stop of the machine does not comply with safety standards. Contact an authorized JLG service center in event of any malfunctions or noncompliance with safety standards.

8. **Operational Check** - Perform a warm-up and operational check of all systems in an area free of overhead and ground level obstructions. See Engine Operations *, page 151* 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.

⚠ ATTENTION

Make sure the operator fully understands the correct location and contents of all safety decals.

⚠ WARNING

Do not under any circumstances remove the safety decals and placards.

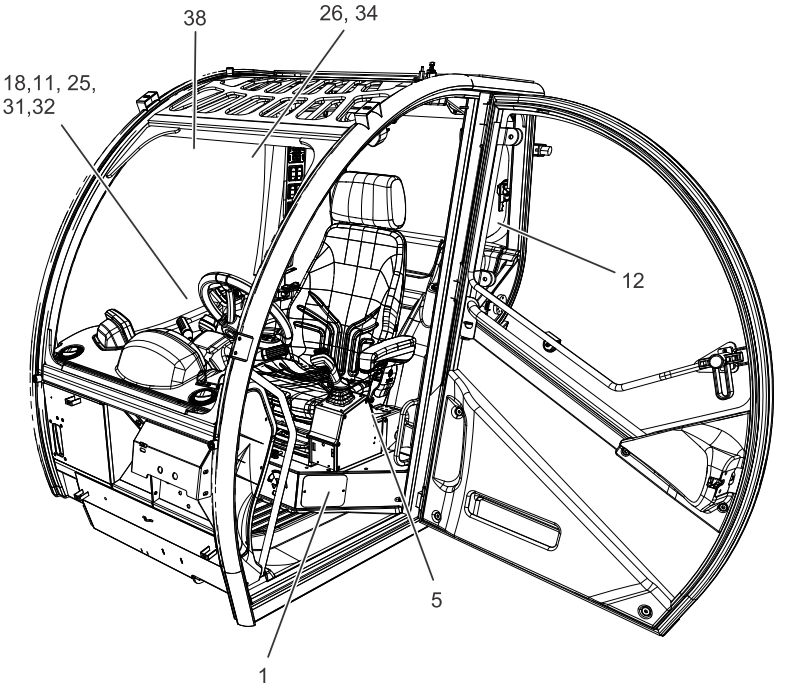


Figure 10. Safety Decals — Operator's Cab

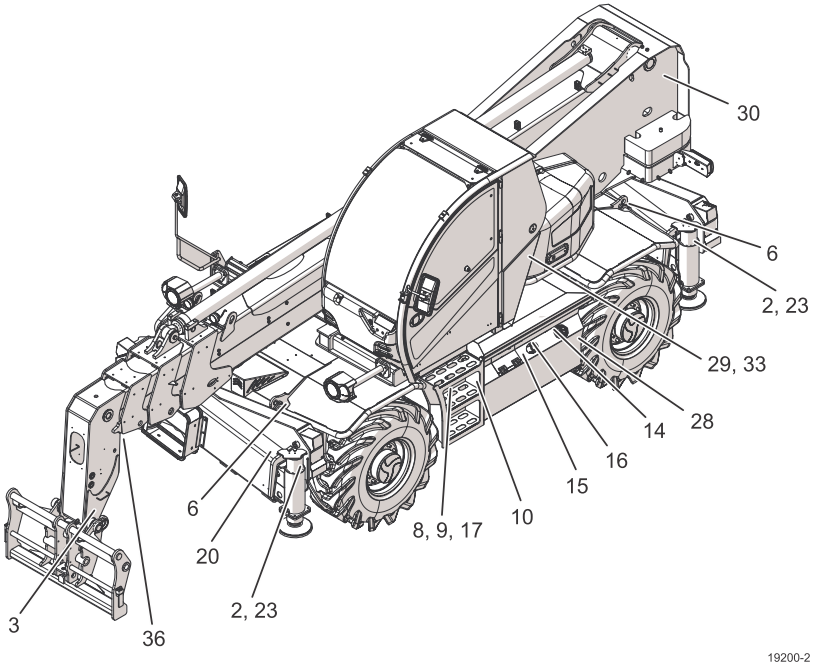


Figure 11. Safety Decals — Left Side

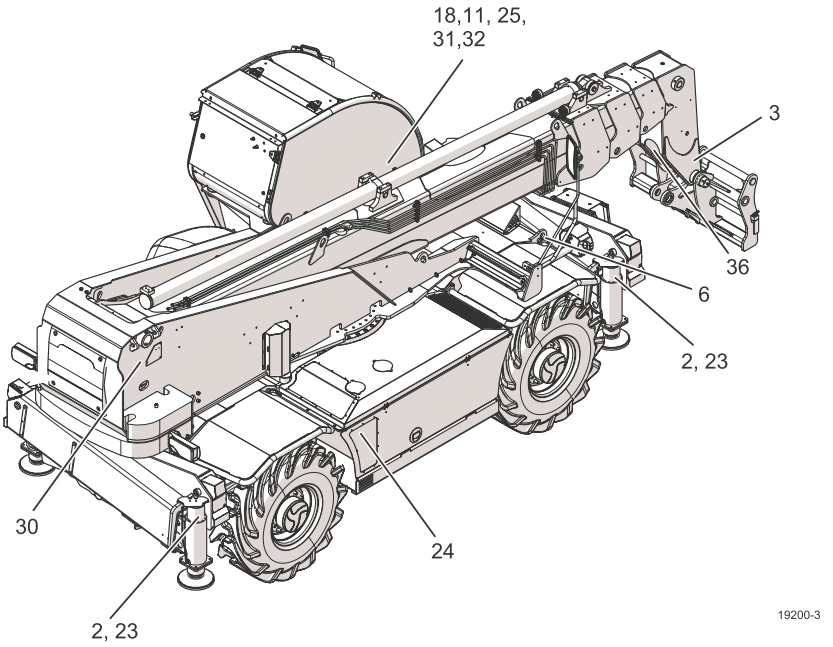
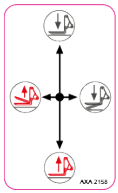
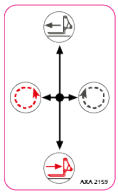
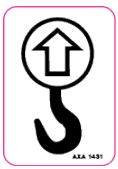
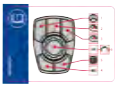


Figure 12. Safety Decals — Right Side

2.3.1 Safety Decal Descriptions

Item	Decal	Code	Description
1		DO-CAD0000646	Indicates the tire pressure
2		DO-CAD0000647	Outriggers maximum load on the ground (R.max daN=) XXXXX
3		1001285655	Warning, Keep the boom fully retracted when operating with buckets
4		AXA2158	Instructions for right joystick with standard 5in2 capacitive personnel presence switch
5		AXA2159	Instructions for left joystick with standard 5in2 capacitive personnel presence switch
6		AXA1431	Indicates the lifting points
7		AXA1432	Indicates the points to anchor the telehandler for transport or towing

Item	Decal	Code	Description
8		AXA1433	Indicates where to check the hydraulic oil level
9		AXA1434	Indicates where refueling hydraulic oil
10		AXA1498	Indicates the position of battery isolation
11		AXA1892	Indicates maximum use of the machine in case of wind
12		AXA1514	Emergency Exit
13		AXA1515	Remove the cotter pin
14		1001218704A	Ultra low diesel fuel only
15		1001196806A	No diesel fuel

Item	Decal	Code	Description
16		1001219212A	DEF fluid filling cap position
17		AXA2708 AXA2798 DO-CAD0000563	Type of oil used in the hydraulic system
18		DO-CAD0000050	Instructions for using the VDC
19		1001184632A	Positive battery
20		DO-CAD0000644	Fire extinguisher position
21		65278B 1001142452–A	No step warning
22		1001285654	Indicates the position of the safety rod for lifting cylinders
23		1001136094A	Danger of crushing
24		1706301C	Danger moving mechanical parts

Item	Decal	Code	Description
25		1707078A	General warnings
26		1706299B	Power lines warning
27		1706296C	Explosive gases
28		1706300C	Engine explosion
29		1706768C	No riders warning
30		1706302B	Pinch points
31		1001227287A	Operation manual location
32		1001172035A	No welding or drilling
33		1001231801C	Prop 65 warning
34		1706306A	Tipover hazard

Item	Decal	Code	Description
35		1001285653	Hot surface
36		1001207217A	Warning swinging loads
37		1001195849A	Warning Fall danger
38		1706850B	Warning — lowering boom or falling load
39		DO-CAD0000056	Emergency Descent

Note: Additional decals are located on individual attachments. See the Attachment section for attachment decals.

2.4 WARM-UP AND OPERATIONAL CHECKS

2.4.1 Warm-Up Check

During warm-up period, check:

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

⚠ WARNING

CUT/CRUSH/BURN HAZARD. Keep engine cover closed while engine is running except when checking transmission oil level.

2.4.2 Operational Check

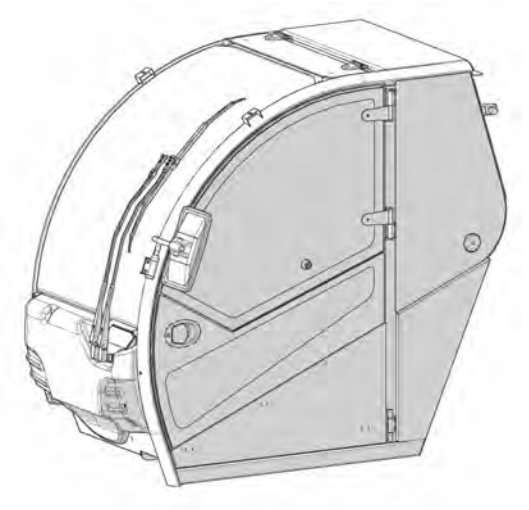
When engine warms, perform an operational check:

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

Remote boom control (if equipped):

1. Check all guards protecting the switches or locks are in place.
2. Operate all functions and check all limiting and cut-out switches to ensure proper operation.
3. Ensure all machine functions are disabled when the Emergency Stop Button is pushed in.

2.5 OPERATOR CAB



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

- **ROPS** — Roll Over Protection Structure
- **FOPS** — Falling Objects Protective Structure

The operator is therefore protected in the event of the machine tipping and in the event of falling objects, as prescribed for earth moving machines.

⚠ WARNING

The cab is a safety device and as such must always be kept in the right condition of use. 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

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**.

In the case of cab tampering, the manufacturer has no civil liability in case of an accident, therefore it is absolutely forbidden to:

- Change, drill, or alter in any way the structure of the cab.
- Weld or mechanically connect parts to the cab chassis.
- If the fastening bolts are replaced, use elements of different strength class.
- Connect chains or ropes to the cab for the purpose of towing.

⚠ WARNING

In the case of vehicle tipping, staying in the cab with fastened seat belt allows for better protection. If the cab has undergone visual damage it must be replaced by consulting the authorized JLG service center.

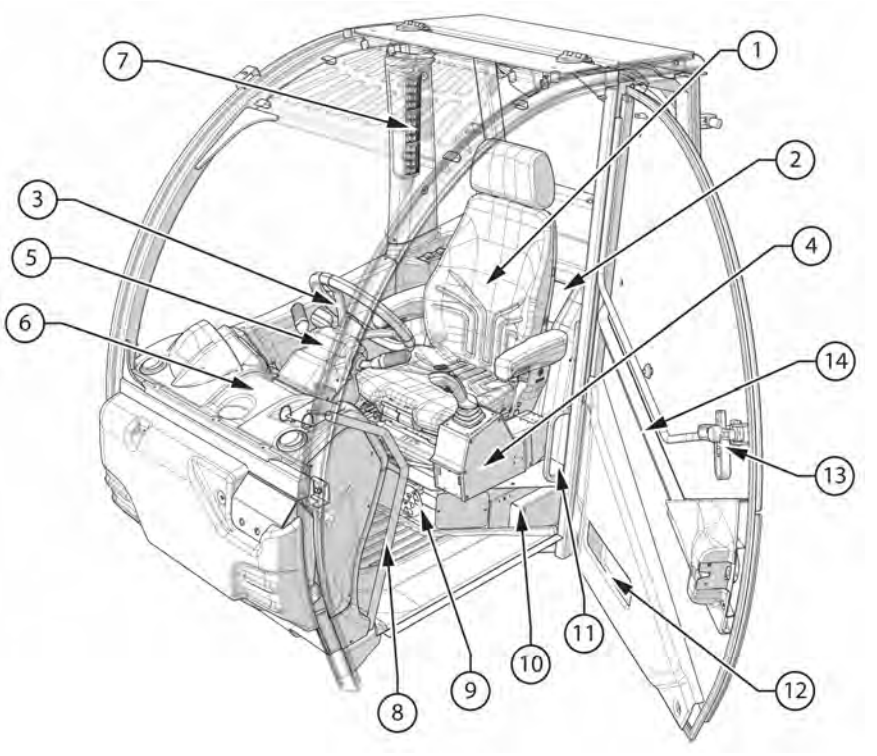
The cab is classified as: CATEGORY "1"

The cab approved as category "1" does not offer full protection against the ingress of dust, aerosols, and vapors. Consult and follow the instructions provided by the manufacturer of the chemicals used (such as pesticides, fungicides, herbicides, etc.) and those supplied by the manufacturer of the sprayer. Use the appropriate personal protective equipment and clothing (PPE) when indicated in these instructions, even when you are inside the cab.

⚠ DANGER

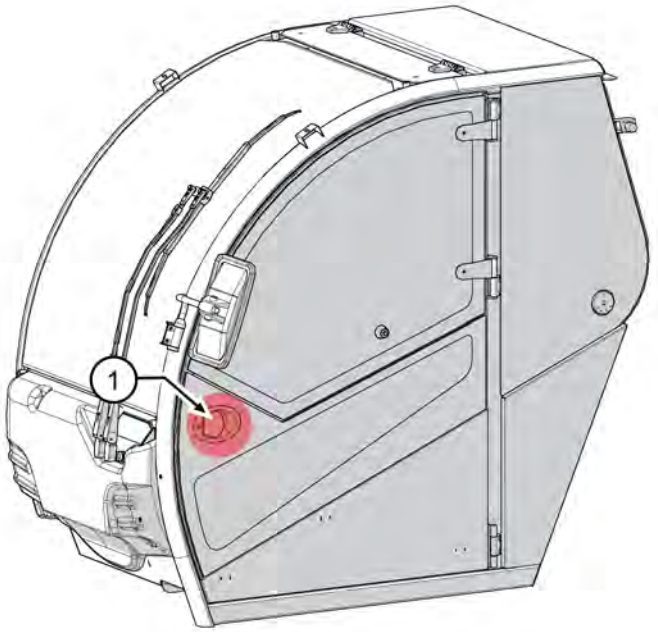
Inhalation danger for operators and bystanders. For protection against harmful dust, aerosols, and vapors, refer to the instructions provided by the manufacturer of chemicals, by the manufacturer of the sprayer, and the basic rules contained in this manual.Refer to the packaging of the product used to use the appropriate protective equipment.

2.5.1 Cab Components Description



1. Seat	8. Handle
2. Storage Compartment	9. Cab Ventilation Adjustment
3. Right Joystick	10. Cab Air Filter
4. Left Joystick (If Equipped)	11. Handle
5. Steering Wheel	12. Storage Compartment
6. Central Instrument Panel	13. Glass Opening Handle
7. High Instrument Panel	14. Internal Door Handle

2.5.2 Door Opening — External Handle



The door of the cab is equipped with an external handle (**1**) with lock.

To open the door from the outside:

- Insert the key into the lock and turn it clockwise/counterclockwise to engage/ disengage the lock.

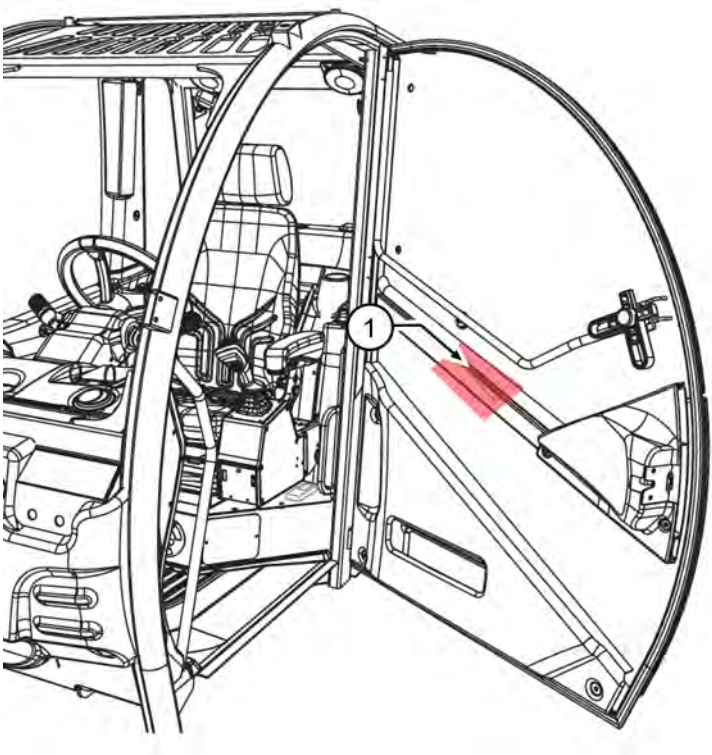
Note: With lock engaged, the door will not open by the handle.

- Pull the handle towards yourself to release the door with lock disengaged.

⚠ WARNING

It is absolutely forbidden to operate with the cab door open.

2.5.3 Door Opening — Interior Handle



To open the door from the inside:

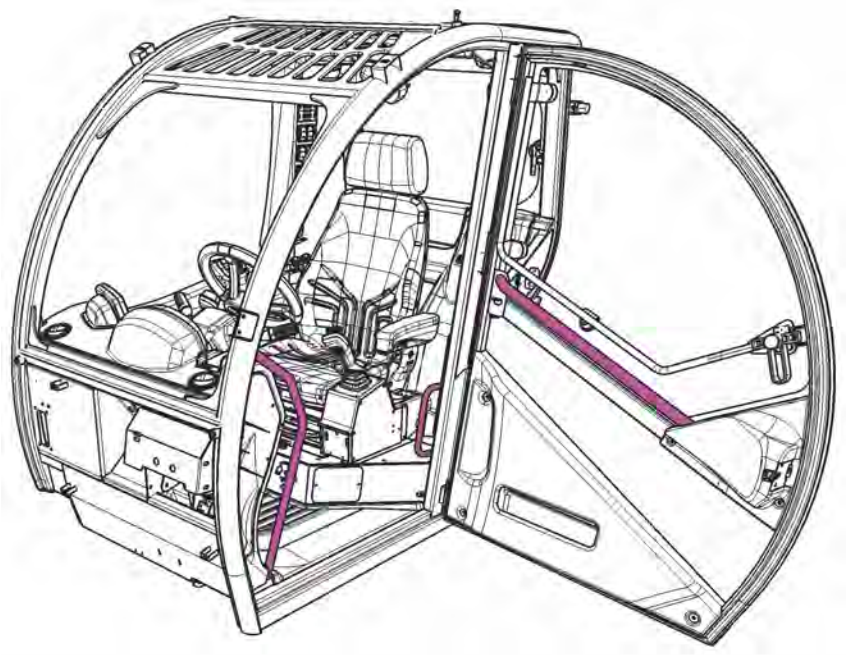
- Press the button (**1**) on the handle to release the door.
- Push the door to the outside to complete the opening.
- Accompany the door with one hand while opening it.

⚠ ATTENTION

Before pushing the door outwards, verify the opening area is free from obstacles of various kinds.

2.5.4 Climbing In and Out of the Cab

Note: Before climbing into the cab, make sure your hands and your shoes are clean and dry to avoid slipping and falling.



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Use only the appropriate handles and steps to access the cab. Do not use the controls and/or the steering wheel from inside. Climb in and out of the machine always turned towards the driver's cab.

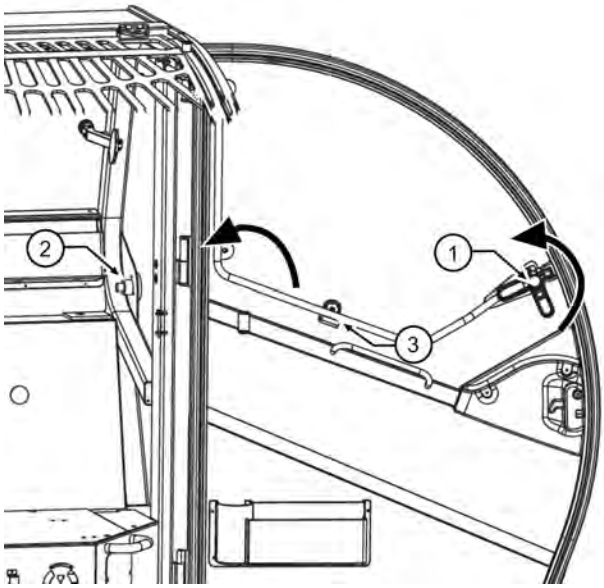
⚠ DANGER

Climbing in and out of the cab is allowed only when the machine is stopped with the parking brake engaged. Do not leave the cab with the machine in motion.

2.6 CAB FEATURES

Keep all windows clean and unobstructed.

2.6.1 Cab Door Window



To open the cab door window:

- Lower the grip (**1**) turning it counterclockwise and pushing the glass outward.
- To stop the window in the open position, push the window bolt (**2**) inside the fastener (**3**) pressing slightly.

To close the cab door window:

- Press the button inside the pin (**3**) to unlock the window in order to close it.
- Pull the window towards yourself to the starting position.
- Rotate the grip (**1**) in a clockwise direction to lock the window in the closed position.

NOTICE

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

⚠ ATTENTION

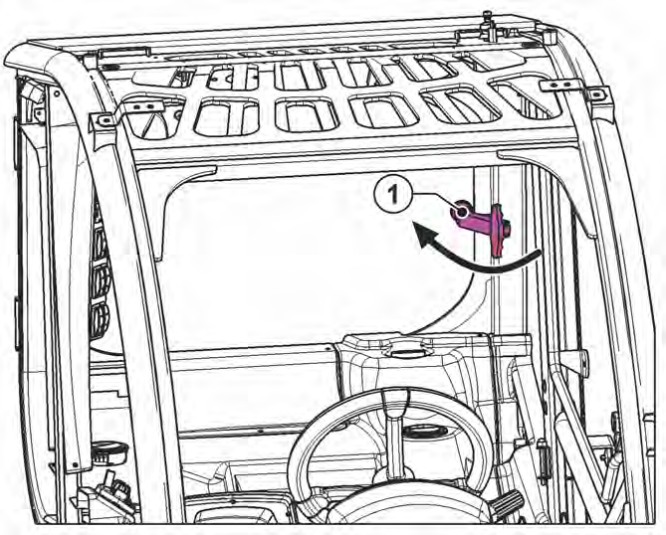
Before opening or closing the window, make sure the surrounding area is free from any obstacles. Before start of work, make the sure the cab door window is locked, whether it is in the open or closed position.

2.6.2 Heated Mirrors (If Equipped)

To start the heated mirrors function, turn on the heated mirror switch.

The illuminated warning light on the switch indicates the heated mirror function is on.

2.6.3 Rear Window



To open the rear window, lift the handle (**1**) and push the window outward.

The rear window is held open by the window handle.

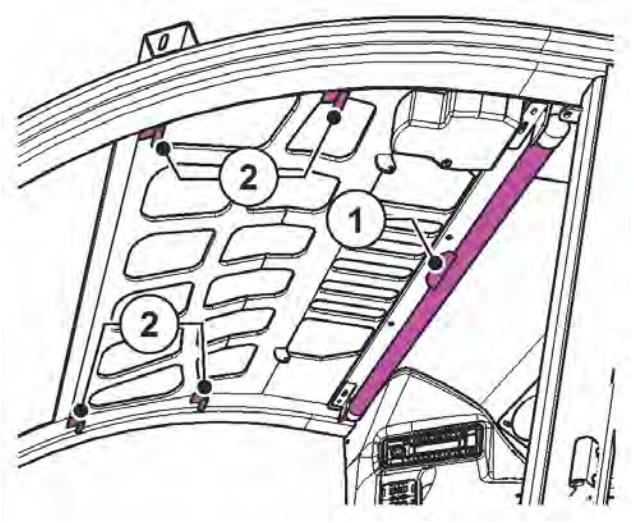
To close the rear window, pull the handle back into the cab and lower until the whole unit is completely locked.

⚠ WARNING

Danger of Crushing If the handle will no longer hold the window in the open position, replace the handle as soon as possible.

Note: The rear window also serves as an emergency exit. See Safety Devices for more information.

2.6.4 Sunshade



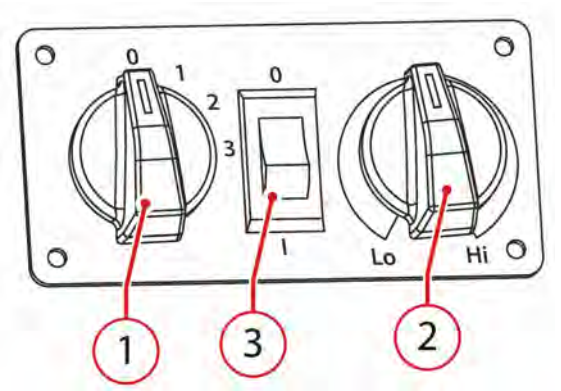
170811-1

The sunshade is located at the top of the cab.

To lower the sunshade, Lower the handle (**1**) located in the center of the cab inside roof, and lock into the provided hooks (**2**).

To close the sunshade, lower the handle (**1**) to release it from the hooks (**2**) and return the sunshade to its original position.

2.6.5 Cab Ventilation



161208-1

Ventilation Adjustment

Use the button (**3**) to activate the cab ventilation system.

To adjust the ventilation, turn the knob (**1**).

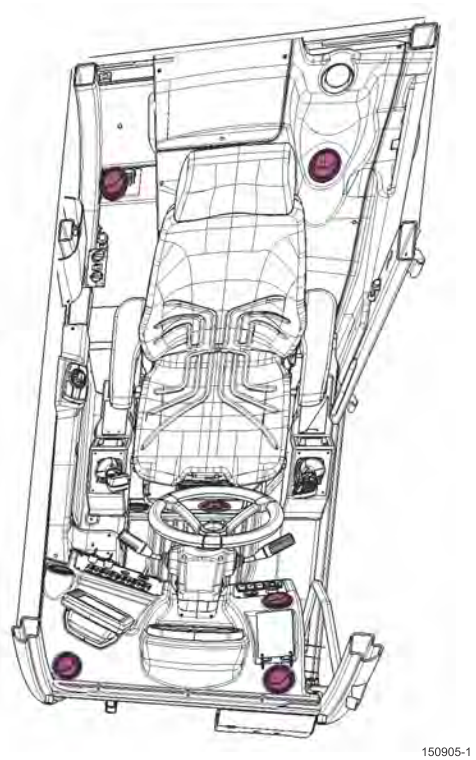
- 0 — Off
- 1 — First Speed
- 2 — Second Speed
- 3 — Third Speed

Air Temperature Adjustment

Use the knob (**2**) to adjust the temperature of the air coming out of the vents.

- Turning the knob clockwise (in the red scale) increases the temperature.
- Turning the knob counterclockwise (in the blue scale) decreases the temperature until it is next to the outside temperature.

Air Vents

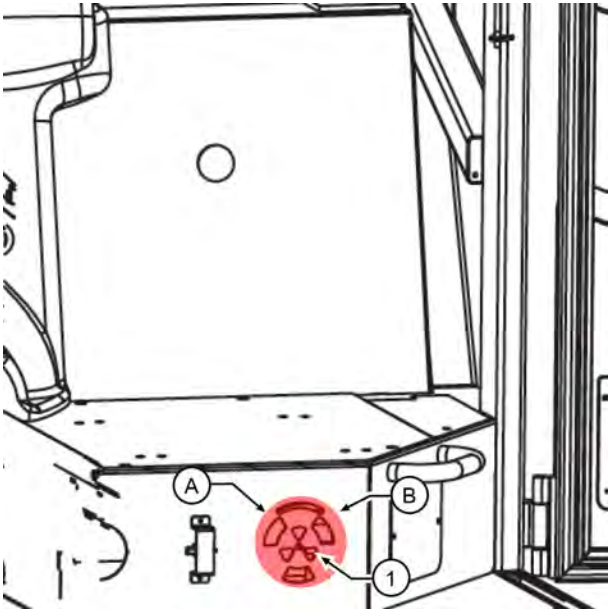


150905-1

To open the air vents, press one side of the vent and adjust the air flow using the fins or rotating the vent.

To close the vents, push the fins to the horizontal closed position.

Air Recirculation Inside the Cab

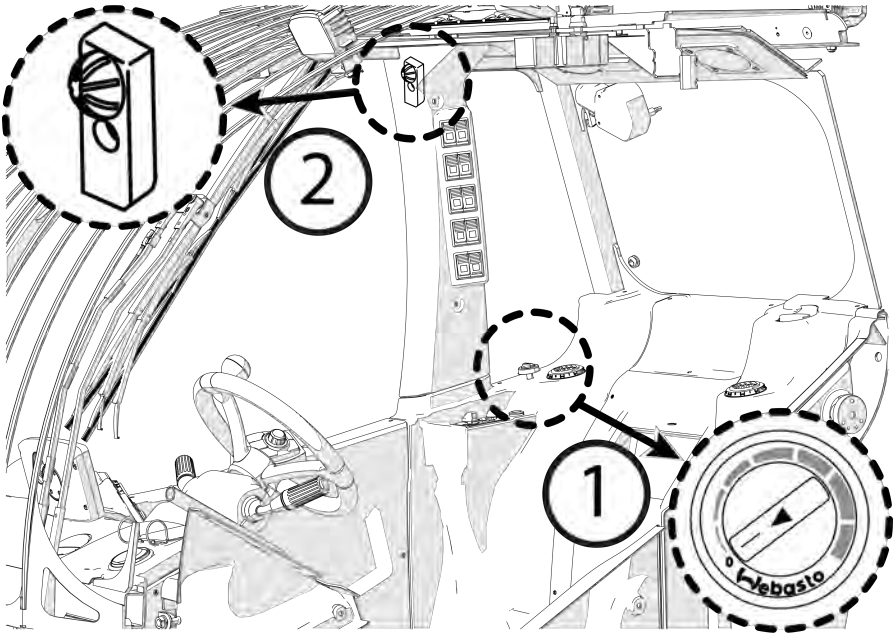


Use the lever (**1**) to enable or deactivate the air circulation in the cab.

- Turn the lever to the **A** position to enable air circulation inside the cab.
- Turn the lever to the **B** position to disable air circulation inside the cab and allow the ventilation system to draw air from the outside.

Note: The lever acts on the air "draw" by the ventilation system. The air flow and temperature must always be controlled by the ventilation system inside the cab.

2.6.6 Webasto Auxiliary Heating



Turn the rotating selector (**1**) clockwise to turn on and increase the temperature. The operating indicator will light up green.

⚠ DANGER

To avoid any issues with overheating, ensure the heater the front and rear air distribution vents remain open during normal operation.

Turn the rotating selector (**1**) counterclockwise to decrease the temperature. Turn the potentiometer until it clicks (Off) and the operating indicator turns off (Green LED off).

Wait for the completion of the heater cleaning/cooling phase.

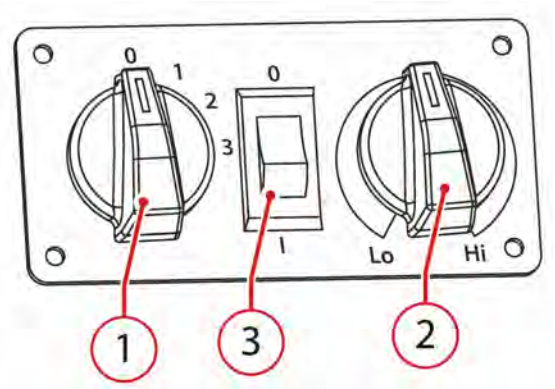
⚠ DANGER

The fan motor will remain active approximately 5 minutes after the heater has been turned off. During the 5 minute cool down phase DO NOT DISCONNECT the machine battery. The machine battery may be disconnected using the Battery Isolation Switch in the *Batteries Section, page 281* after this cool down phase. Failure to wait the 5 minute cool down period will result in damage to the equipment.

The air temperature sensor (**2**) detects the actual temperature inside the cab. When the set temperature is reached, the sensor will switch the auxiliary heating on or off.

Note: Make sure the heater is turned off when leaving the machine. The heater will continue to run and drain the machine's battery if not turned off.

2.6.7 Air Conditioning (If Equipped)



161208-1

Follow the steps below for correct use of the air conditioning system.

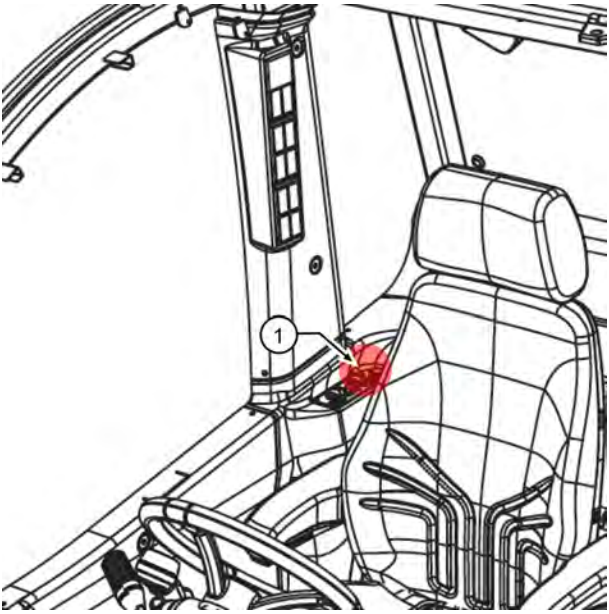
1. Check that all doors and windows are closed.
2. Ensure the heater is turned off by moving the lever towards the end of the blue scale.
3. With the engine running, turn on the air conditioning by moving the switch (**3**) to position **1**.
4. Turn the knob (**1**) to adjust the airflow to the desired intensity.
5. Open and adjust the vents to obtain the optimal cooling according to the ambient temperature.
6. Turn the temperature knob (**2**) to obtain the desired temperature.

Note: Turn on the air conditioning for two minutes every fifteen days, even in colder temperatures, with the engine idling (without accelerating). This keeps the moving parts lubricated.

⚠ DANGER

Do not loosen any air conditioning system hoses in effort to reach the capacitor. Contact between skin and refrigerant can cause frostbite.

2.6.8 12 Volt Socket

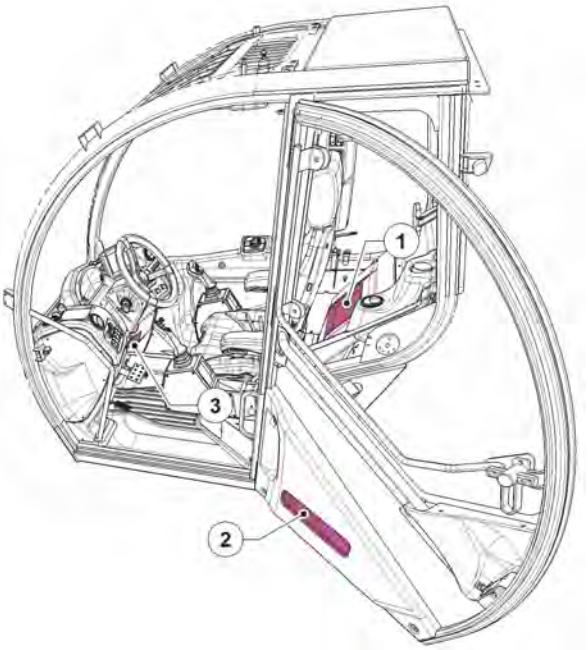


The 12 V — 180 W socket (1) accepts certain direct current devices (battery chargers, cell phones, etc.).

⚠ WARNING

Do not connect devices with nominal voltage greater than 12 V and power consumption greater than 180 W.Doing so has a risk of damaging the electrical system.

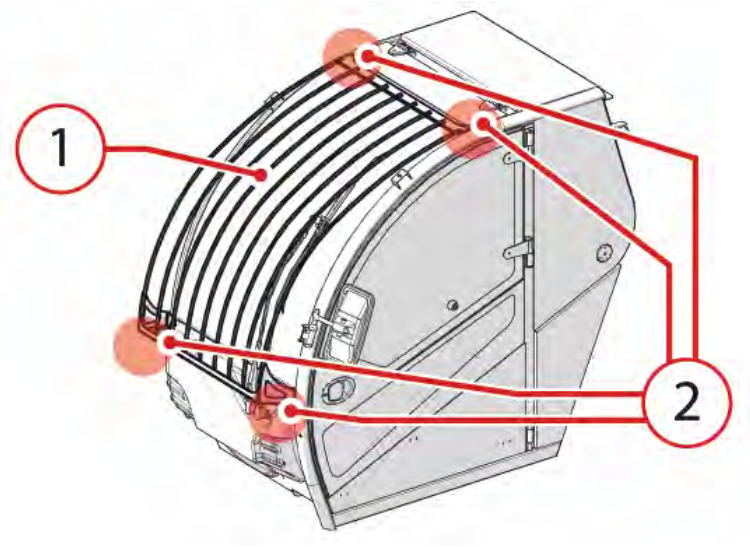
2.6.9 Storage Compartment



There are three different storage compartments inside the cab.

1. Behind the seat
2. On the door
3. Under the steering wheel

2.6.10 Cab Front Glass Protection (If Equipped)



The cab front glass protection (1) provides a higher protection level against any large/ heavy loads or objects which may fall onto the cab.

⚠ ATTENTION

Cab front glass protection is not allowed when driving the machine on public roads.

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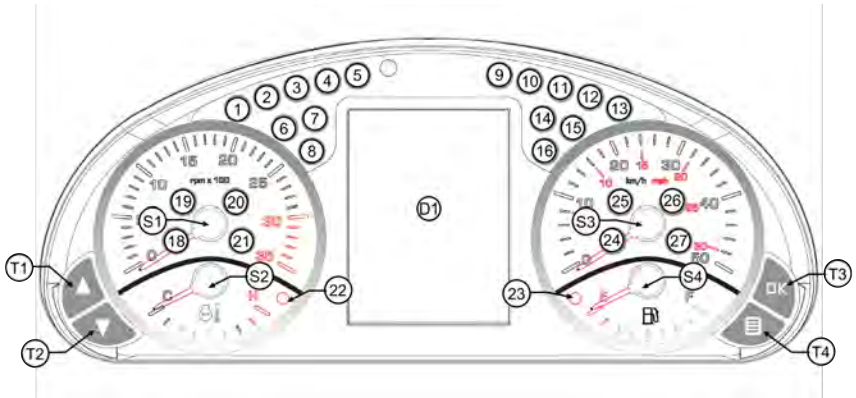
SECTION 3
Controls and Indicators

3.1 GENERAL

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

3.2 CONTROLS

3.2.1 Instrument Panel



Position	Indicator Light			Description
T1	—	—	—	Up button
T2	—	—	—	DOWN button
T3	—	—	—	OK button
T4	—	—	—	MENU button
D1	—	—	—	Display
S1	—	—	—	Tachometer indicator
S2	—	—	—	Engine water temperature indicator
S3	—	—	—	Speed indicator
S4	—	—	—	Fuel level indicator
1		Red	Fixed	Generator, battery failure

Position	Indicator Light			Description
2		Red	Fixed	Engine oil low pressure
3		Yellow	Fixed	Glow plugs
4		Red	Fixed	Parking brake insufficient pressure
5		Red	Fixed	Engine air filter clogging
6		Red	Fixed	Hydrostatic oil filter clogging
7		Red	Fixed	Hydraulic oil high temperature
8		Green	Fixed	Forward movement engaged
9		Red	Fixed	Park brake engaged
10		Red	Flashing	Brake oil level low
			Fixed	Brake system failure
11		Green	Fixed	Manual gear shift engaged*

Position	Indicator Light			Description
12		Yellow	Fixed	Slow gear engaged*
13		Yellow	Fixed	Fast gear engaged*
14		Yellow	Fixed	Front axle wheels alignment*
15		Yellow	Fixed	Rear axle wheels alignment*
16		Green	Fixed	Backward movement engaged
17	—	—	—	Not used
18		Blue	Fixed	High beam
19		Green	Fixed	Turn signals
20		Red	Fixed	General alarm
21		Green	Fixed	Side lights
22	—	Red	—	Engine water high temperature
23	—	Yellow	—	Fuel reserve
24		Yellow	Fixed	AdBlue quality

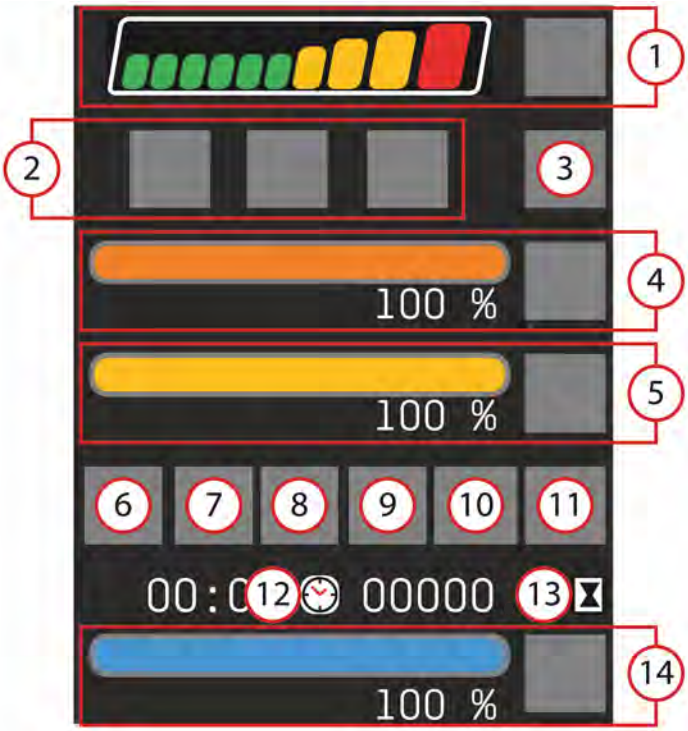
Position	Indicator Light			Description
25		Yellow	Fixed	AdBlue level
26		Yellow	Fixed	AdBlue system error
27		Yellow	Fixed	Not used
* — Indicator lights used depending on configurations or optional attachment.				

⚠ WARNING

If the warning light illuminates, stop the working operations as soon as possible.

3.2.2 Display Screen

The screen is the standard display, containing the necessary information related to the machine transmission and engine.



160460-2

Position	Description
1	Longitudinal movement indicator and anti-tipping icon
2	DRIVE MODE icon
3	ECO-WORK function icon
4	Hand throttle
5	Maximum speed limiter
6	Not available
7	Steering Mode icon
8	Steering status icon
9	Transmission status icon
10	Engine status icon

Position	Description
11	Engine error icons
12	Clock and clock settings
13	Hour meter
14	AdBlue level

3.2.3 Indicators

Travel Icons

The travel icon shows the machine status and the possibility or not to travel.

Icon	Color	Description
	Red	Travel not allowed • The outriggers are lowered to the ground. • The turret is rotated
	Yellow	Off-road travel • The outriggers are not in the travel position. • The turret is in the front position or 180° rotated.
	Green	Transport allowed • The outriggers are in the travel position. • The turret is in the front position and the rotation lock is engaged.

NOTICE

Road travel is prohibited in North America.

Steering Status Icon

The steering status icon indicates the presence of errors by the steering system.

Icon	Description
	**Steering Error** It turns on when the auxiliary steering electro-pump begins working, if the pressure drops below the threshold value, and if the machine is moving.

⚠ WARNING

If the warning light illuminates, stop all operations as soon as possible. Contact the JLG Service Center to find a solution to the issue.

Transmission Status Icon

The transmission status icons indicates alarms or warnings in the transmission.

Icon	Description
	Transmission Alarm
	Transmission Warning

Engine Status Icon

The engine status icons indicates alarms or warnings in the engine.

Icon	Description
	Engine Alarm
	Engine Warning

⚠ WARNING

If the warning light illuminates, stop all working conditions as soon as possible. Contact the JLG Service Center to find a solution to the issue.

Engine Error Icons

The icons indicate engine errors.

Icon	Description
	Air Intake Overheating The icon illuminates when the engine detects an excessive intake air intake temperature.
	The icon illuminates when the fuel filter detects water in the fuel or low fuel quality.

⚠ WARNING

If the warning light turns on, stop all working operations as soon as possible.Contact the JLG Service Center to find a solution to the issue.

Clock

The clock is located on the home screen.
Refer to the Tera7 display to set the clock.



Hourmeter

The hourmeter is located on the home screen.



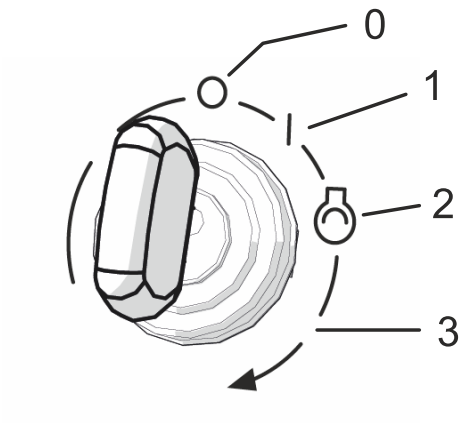
AdBlue Level

There is an indication of the remaining AdBlue in the tank on the home screen.



Note: Refer to the section on AdBlue.

3.2.4 Ignition



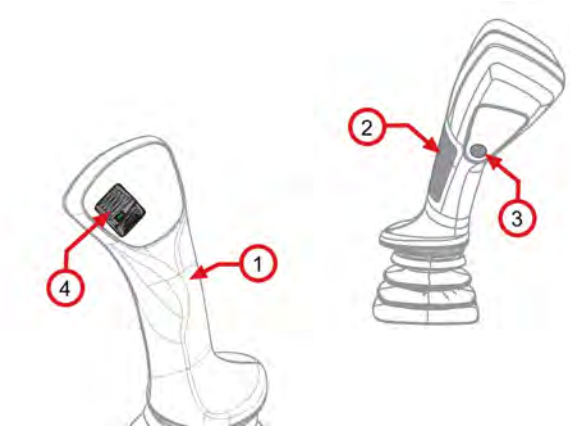
150538-1

- Position **0** - Engine off, no voltage available.
- Position **1** - Voltage available for all electrical functions. Wait to start engine until preheat indicator on instrument panel goes out.
- Position **2** - Engine run.
- Position **3** - Engine start. In the event the engine does not start, rotate key to position 0 then back to position 2 to re-engage the starter.

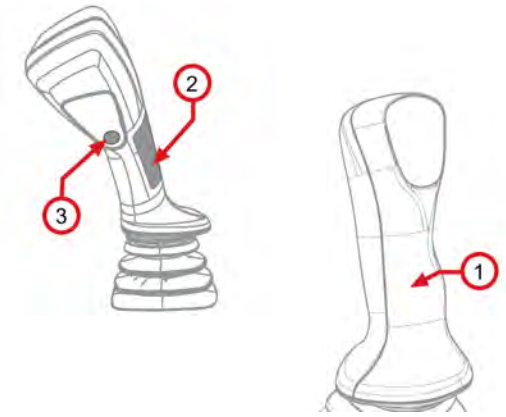
3.2.5 Joystick

Double Joystick with Capacitive Captive Personnel Presence Sensor

The Double Joystick allows you to operate the vehicle movements.



1. Grip	2. Capacitive Sensor
3. Personnel Presence Button	4. Services Roller



1. Grip	2. Capacitive Sensor
3. Personal Presence Button	

⚠ ATTENTION

The personnel presence joystick function prevents any accidental movements of the boom.

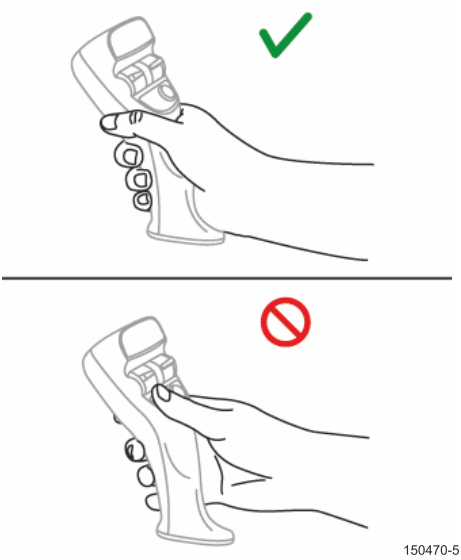
The Joystick features a personnel presence capacitive sensor. To enable it to function you need to place your hand on the grip (**1**) correctly so as to activate the capacitive sensor (**2**).

If your hand is not resting on the capacitive sensor (**2**), boom movements are disabled.

⚠ WARNING

Before operating the boom, make sure the area around the machine is clear.

Make sure the loads to be lifted are included in the vehicle load charts.



Adjust the seat so you can hold the joystick correctly.

It is possible to use the personnel presence button (**3**) if the sensor (**2**) fails to work properly.

Unless you hold the joystick correctly or press the personnel presence button, all the joystick functions are disabled.

⚠ 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.

The following movements are possible by using the right joystick:

Control	Movement	
Grip Forward	Boom Down	
Grip Backward	Boom Up	
Grip to the Left	Tilt Up	
Grip to the Right	Tilt Down	

Control	Movement	
Services Forward	Oil to the hydraulic socket selected (color **blue** or + sign)	
Services Backward	Oil to the hydraulic socket selected (color **red** or - sign)	

The following movements are possible by using the left joystick:

Control	Movement	
Grip Forward	Boom Extend	
Grip Backward	Boom Retract	
Grip to the Left	Turret Left Rotation	
Grip to the Right	Turret Right Rotation	

Note: The joystick controls correspond to proportional movements of the machine.

3.2.6 Anti-Tipping Device

The telehandler is equipped with an electronic anti-tipping device which helps the operator to use the vehicle safely with different acoustic and visual warning signals according to the vehicle overturning danger.

The anti-tipping device is always active.

⚠ WARNING

This device cannot replace the experience of an operator in using the machine safely. The operator is the only one responsible for the safe operation of the machine and compliance with all safety standards prescribed.

The operator must be able to determine the data provided by the instrument are correct and real, using them for a safe use of the vehicle. When checking the loaded weight, make sure it is lifted from the ground. When turned on, the device starts a self-diagnostic program to check the proper operation of itself and of the transducers. In case of failure, the device sets itself in a safety state and stops the operations.

Before starting work, the operator must ensure the anti-tipping device is working correctly by doing the following:

- Correct settings check
- Check the sizes indicated on the display
- Check for messages and alarms on the panel
- Check the device operates correctly

If any anomaly in the checks are found the operator must immediately contact the JLG Service Center.

⚠ WARNING

The operator is responsible for selecting the correct settings depending on the attachment installed on the telehandler. When it is turned on, the last configuration used is set automatically until it is changed.

An incorrect setting of the accessory may cause undesired operation of the device and therefore create a dangerous situation of operation.

Anti-Tipping Device Description

The device consists of the following:

- Longitudinal momentum indicator
- Bypass key

- Attachment Selection key





150931-2



150931-3

The Anti-Tipping Device is always in operation.

The device is not intended for warning about the risk of tipping in case of any of the following:

- Transverse overturning
- A sudden overload
- Transport/movement with the load in an elevated position
- Movement over rough terrain
- Transport/movement on a slope or in the vicinity of a slope
- High speed of movement on straight lines and in turns

⚠ ATTENTION

When the limit load is reached, the device automatically locks all the aggravating movements for the stability of the machine. Only movements which allow to return the telehandler in safety conditions will remain active.

Longitudinal Movement Indicator and Anti-Tipping Icon



150931-4

The tipping indicator is displayed by a bar (**1**) which indicates the telehandler current risk of tipping.

When the machine nears the tipping point, the Tipping Hazard icon (**2**) starts flashing. It will stop flashing when the machine returns within the safety parameters.

The degree of stability of the machine is indicated by:

- Tipping status bar (**1**)

- Signalling icons (**2**)
- Acoustic signalling

The signalling increases proportionately to the risk of the telehandler tipping during load handling operations, as described in the table below.

When the limit load is reached, the device stops the movements of the machine causing the alarm. The alarm stops when the safety conditions are restored.

Load	Icon	Status Bar	Condition	Audible Alarm
Load is 90% less than the maximum allowed load		Within the green zone	Work in safe conditions	None
Load is 90% greater than the maximum allowed load		Yellow zone start	Pre-alarm condition	Intermittent
Load at 100% of maximum allowed load		Red zone start	Machine at tipping limit	Continuous
Load is 100% greater than the maximum permitted load		Red zone end	Aggravating movements lock	Continuous

3.2.7 ByPass Key

⚠ DANGER

The ByPass Key must be used only if all of the following conditions occur:

- In case of the maximum tipping limit and danger of telehandler overturning has been reached.
- By skilled and properly trained personnel.
- Only used for short periods of time.
- After trying to restore the safety conditions through the machine movements that remained active.
- In case it is not possible to restore the safety conditions through the machine movements that remained active.

The ByPass Key has a hold down action to activate. Therefore, the key must be held in the rotated position during the operation in order to move the machine to safe conditions



150932-1

Keep the ByPass key turned and simultaneously use the joystick to return the machine to safe conditions.

When using the ByPass key, the display will show the related icon below.



The ByPass Key function will turn off automatically after 30 seconds, even if the key continues to be rotated.

After reaching the safety zone, the alarm stops and the ByPass key can be released.

⚠ DANGER

It is prohibited to use the Bypass key to operate with loads that exceed the capacities established by the manufacturer.

⚠ DANGER

Do not lower or extend the boom when using the ByPass key as these movements increase the chance for machine tipping.

When using the bypass key, only retract the telescopic boom, bringing it to a safe position.

⚠ WARNING

When using the bypass key the anti-tipping systems are disabled.

It is mandatory to consult the load charts of the machine and the attachments installed before performing any maneuver. Use the data displayed on the instrument panel and the letters on the boom to know the exact position of the load.

In these conditions do not perform aggravating movements to the stability of the telehandler, there is a danger of loss of stability and tipping.

Note: The bypass function is performed by a key to give the Safety Officer the ability to extract the key in order to prevent deactivating the anti-tipping system during normal working conditions.

3.2.8 Attachment Selection Key

The machine is designed for use with different attachment/attachments. Through the Attachment page on the menu, it is possible to display the attachments installed and those which are available.

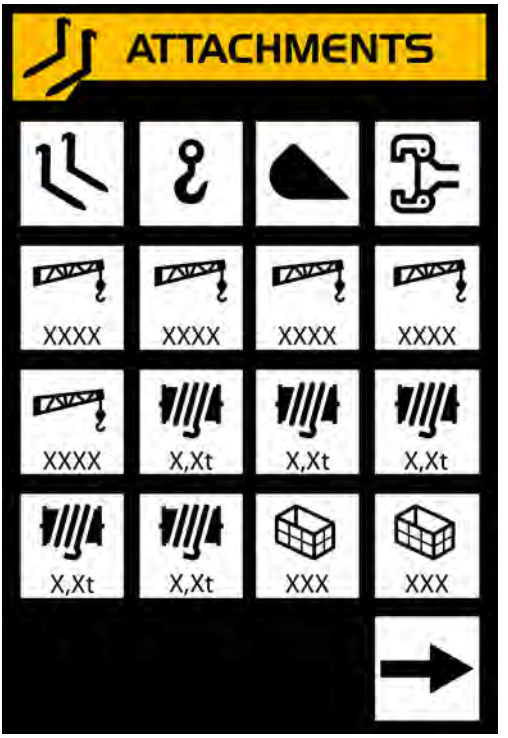
Use the Attachment Selection key to choose the proper attachment. The Attachment Selection screen will appear on the instrument panel by turning the key.
Use the VDC controller to scroll through the menu items. Press and hold the **OK** button for 3 seconds to confirm the selection.



150931-3

Attachments available in this menu are as follows:

- With a yellow background — Attachment selected
- With a white background — Enabled attachment
- With a gray background — Attachment not enabled



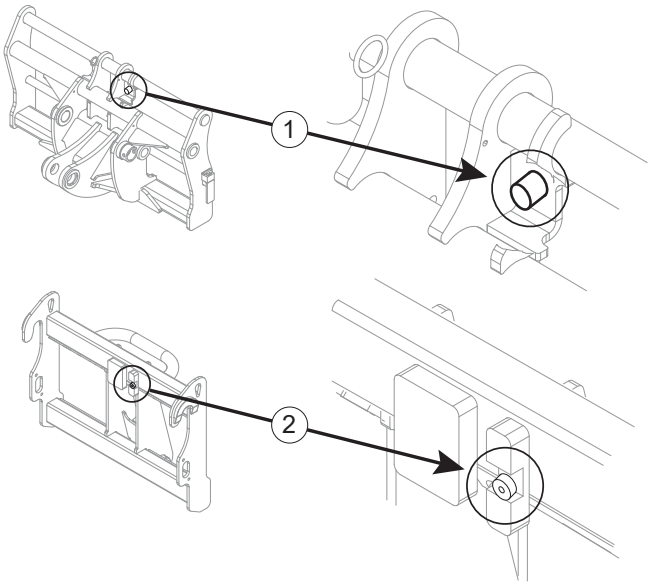
See the Attachments section for a full list of available attachments.

⚠ DANGER

It is forbidden to use the machine with any attachment other than that set on the Attachment page.

Attachment Automatic Recognition System

The machine has an automatic attachment recognition.



1. Antenna on Machine Coupler
2. TAG on attachment interface

The two components allow the machine to automatically recognize the equipment to be installed.

When the telehandler recognizes the presence of an attachment automatically, the Attachment Selection Key is disabled.

When the icon below appears, the operator has to confirm the equipped attachment by pressing the central VDC button.



If the attachment is not confirmed, the machine is configured with a loading capacity equal to that of the fork attachment halved.

3.2.9 Steering Wheel

The steering wheel of the telehandler allows steering the machine wheels according to the steering mode set.

Note: Refer to the Transmission Control Lever section.

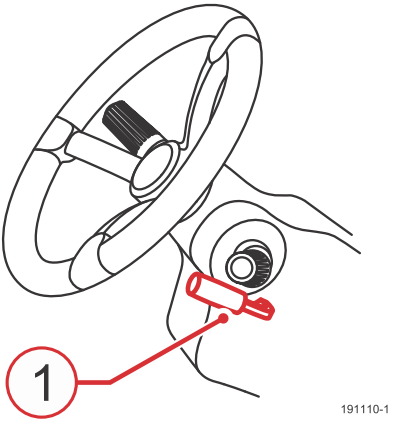


Figure 13. Steering Wheel Adjustment Lever

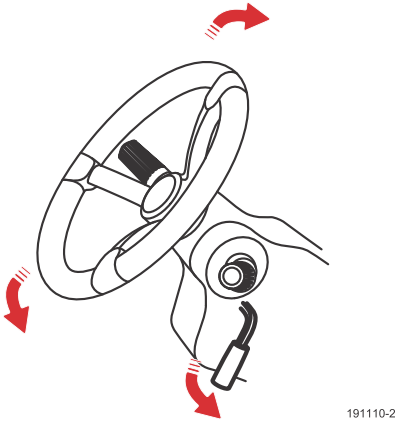


Figure 14. Steering Wheel Adjustment

Steering Wheel Adjustment

Use the following steps to adjust the steering wheel angle.

- Move the steering wheel adjustment lever (**1**) down to unlock the steering wheel movement.
- Push the steering wheel forward or pull it towards the operator to the desired position.
- Push down or pull up on the steering wheel until it reaches the desired height.
- Move the steering wheel adjustment lever (**1**) up to the lock the steering wheel in the current position. For proper locking, tighten the locking nut firmly.

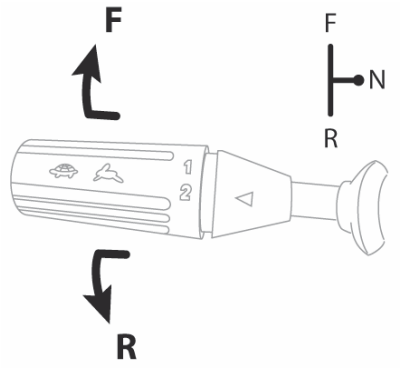
Note: The steering wheel is properly adjusted when the operator's back is firmly against the backrest of the seat and is able to grasp the furthest side of the steering wheel while keeping the elbow slightly bent.

⚠ WARNING

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

3.2.10 Transmission Control Lever

Direction of Travel Selection



Transmission control lever engages forward or reverse travel.

- Push lever forward for forward travel (**F**); pull lever rearward for reverse travel (**R**). Move lever to centered position for neutral (**N**).
- When traveling in reverse, the back-up alarm will automatically sound and the rear camera will activate.
- With the lever in neutral, the transmission is in neutral and the machine is partially braked.
- If the lever is in any position other than **N** the engine will not start.
- 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 pressed in an attempt to get quicker hydraulic performances. This could cause unexpected machine movement.

After selecting a direction of travel, the corresponding indicator lights on the instrument panel illuminate:

Icon	Description
	**F** Forward Movement
	**R** Reverse movement
—	While holding the lever in the neutral position (**N**) both indicator lights will be off.

⚠ 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.

The movements of the lever are not active when:

- The handbrake is engaged
- The operator is not properly seated in the driver's seat

Note: If the operator engages the park brake, the transmission is automatically turned off. To continue moving the machine, the operator must disengage the park brake and set the Transmission Control Lever to the neutral position.

⚠ WARNING

Before selecting the movement direction make sure no one is standing near the machine. After selecting the travel direction, the machine begins to move in the selected direction.

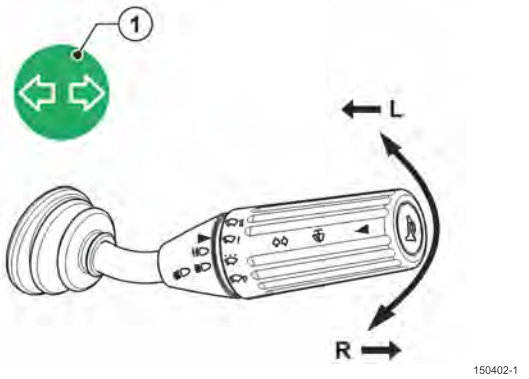
⚠ WARNING

It is dangerous to move the Transmission Control Lever with the engine at a high rpm or at a speed greater than 1.2 mph.Minimize engine speed before reversing the direction of travel. Danger of machine tipping and sever mechanical parts damage.

3.2.11 Accessory Control Lever

The multifunction lever contains several functions: direction indicators, horn, headlights, window wipers, and window washer.

Direction Indicators



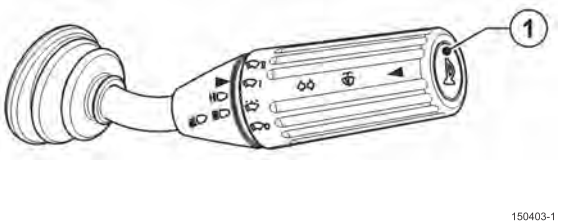
- Push accessory control lever forward (**L**) to activate left turn signal.
- Pull lever backward (**R**) to activate right turn signal.
- The indicator light (**3**) on the central instrument panel will illuminate when turn signals are activated.

Note: The direction indicators only work when the ignition switch is moved to the On position.

⚠ ATTENTION

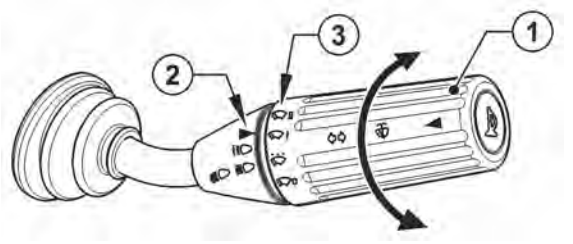
The lever must be manually returned to the center position to deactivate either turn signal. The lever will not cancel automatically after a turn.

Horn



Press the button (**1**) on the end of the Accessory Control lever to activate the horn.

Front Windshield Wiper



150404-1

Turning the knob (**1**) activates the front windshield wiper.

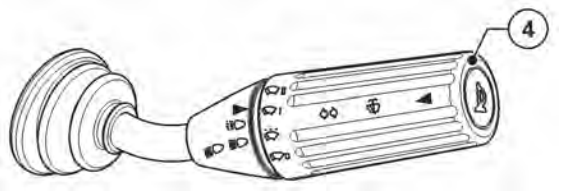
The arrow (**2**) indicates which mode (3) the windshield wiper is currently active:

- 0 : Off
- I : Slow
- II : Fast
- – – – : Intermittent

⚠ WARNING

Worn blades cause viewing difficulties and scratches to the glass.Replace blades if they are damaged or worn.

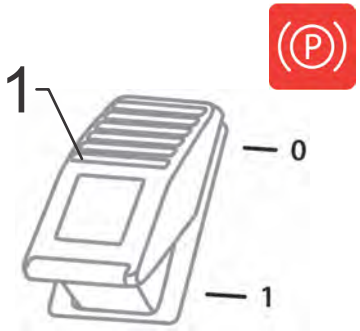
Window Washer



150405-1

Slide the handle (**4**) on the Accessory Control lever inward (towards the steering column) to activate the front windshield washer.

3.2.12 Park Brake



150454-1

Park brake switch controls the application and release of the park brake. To engage the park brake, press the switch to the **1** position.



150454-2



150454-3

- With the engine running and the park brake switch in OFF position, park brakes are disengaged.
- With switch in ON position, park brake is engaged and transmission will not engage forward or reverse.

The park brake must be engaged in the following instances:

- Every time the operator leaves the machine, even in the case of a momentary stop.
- Whenever the machine operates from a standstill, even with the outriggers fully down.
- To start the engine.

The park brake engages automatically when the engine is stopped.

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

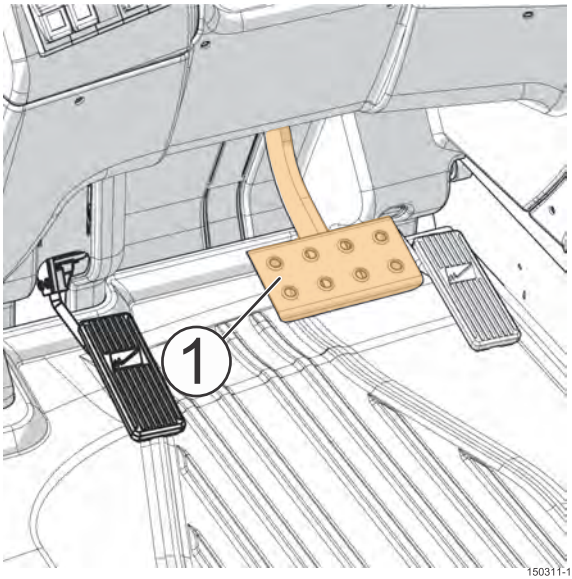
⚠ WARNING

Unauthorized modification of the axle ratios, machine weight, and/or size of wheels and tires will affect the park brake efficiency.

Parking Procedure

1. Using service brake, stop telehandler in an appropriate parking area.
2. Follow proper shut-down procedures.

3.2.13 Service Brake Pedal



Press the service brake pedal (**1**) to slow or stop the machine.

When the brake pedal is pressed, the rear stop lights illuminate. The lights remain on as long as the pedal is pressed.

⚠ WARNING

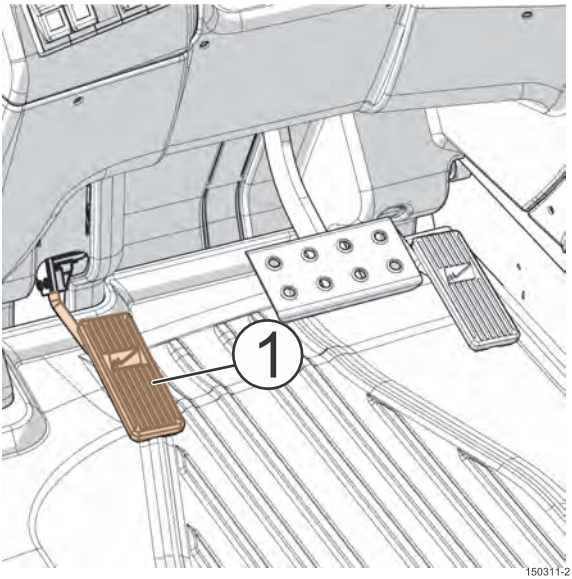
In the case of restricted use of the pedal periodically check its proper operation. In case of issues contact the JLG Service Center.

⚠ DANGER



If the warning light turns on intermittently, it indicates a low brake fluid level. If the warning light turns on in a fixed way, the parking brake is stuck or damaged.Do not use the machine until the issue has been resolved. Contact a JLG Service Center.

3.2.14 Inching Pedal



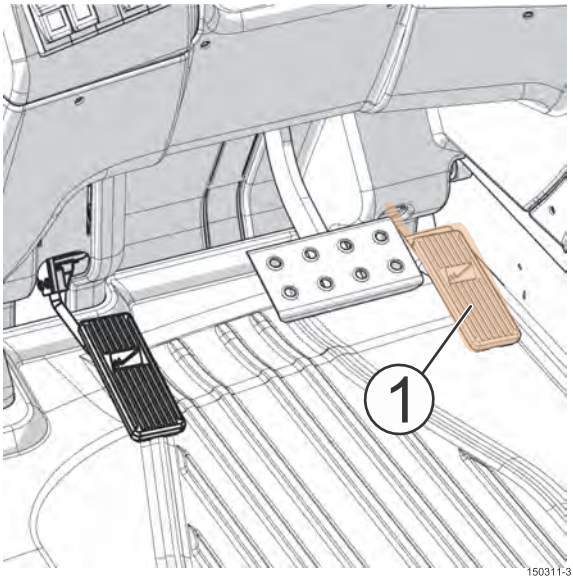
The inching pedal (**1**) acts directly on the hydrostatic transmission and allows to slow down the machine forward movement.

The pedal allows slow and precise forward movements with high rpm heat engine. With pedal fully pressed, the vehicle stops the forward movement.

⚠ DANGER

Do not press the inching pedal at high speeds, the machine brakes suddenly and the diesel engine risks over-revving.

3.2.15 Accelerator Pedal



Press the accelerator pedal (**1**) to increase the engine speed, when the pedal is released the engine rpm will decrease.

⚠ WARNING

If while driving, the telehandler exceeds the maximum allowed speed, the "Over speed protection" transmission electronic control goes into operation. The function automatically limits the machine speed in order to prevent transmission and diesel over revving. Triggering of the "Over speed protection" function is signaled by the general alarm warning light switching on and the intermittent acoustic signal.

If the function intervenes, the operator must lift his foot from the accelerator pedal and reduce the speed of the machine.

3.2.16 Outrigger Levers

⚠ WARNING

TIP OVER HAZARD. Outriggers increase stability and load capacity only if they are used properly. Using outriggers on soft surfaces could cause telehandler to tip over. Always ensure surface can support telehandler and load.Before lowering the outrigger feet, place the machine in a working position. Make sure that the ground is firm and can support the weight of the telehandler without the outrigger feet sinking into the ground.

⚠ WARNING

It is allowed to operate only if the vehicle transverse inclination is less than 2°.

⚠ ATTENTION

Before traveling on a road, lift and completely retract all outriggers.

The anti-tipping device of the machine is able to automatically recognize if the operator is working on tires or outriggers.

The machine is designed to work on tires or with all 4 outrigger feet lowered to the ground.

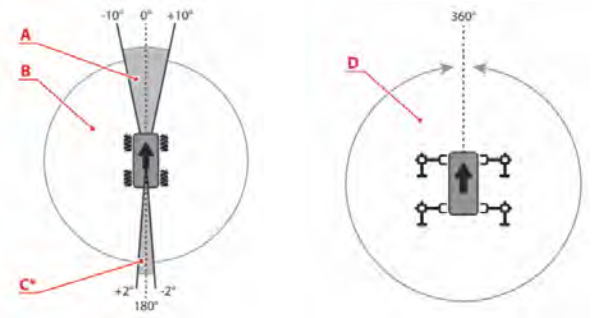
⚠ WARNING

The telehandler is considered properly stabilized when all four tires are off the ground.It is possible to work with only 1, 2, or 3 outrigger feet lowered, but the capacity of the telehandler will be considered as on tires.

Note: Only move the outriggers with the boom at an angle less than 12° or with boom extended not more than 19.69 in.

Rotary Telehandler Working Modes with Four Outriggers

The rotary telehandler changes the behavior depending on the position of the turret with respect to the carriage and the outriggers.



Area	A	B	C*	D
Position	Front turret on tires	Rotated turret on tired	Turret rotated 180°	Turret on outriggers
Gear	Enabled	Disabled	Optional	Disabled
Axles Swing	Enabled for rear axle	Disabled	Enabled for front axle	Ineffective

Area	A	B	C*	D
Leveling	Enabled	Disabled	Disabled	Ineffective
Outriggers	Lifted	Lifted	Lifted	Lowered
The area (**C**)is linked to the optional "Kit for running with turret rotated of 180°", if this option is not available, the space occupied the area (**C**) is considered as area (**B**).				

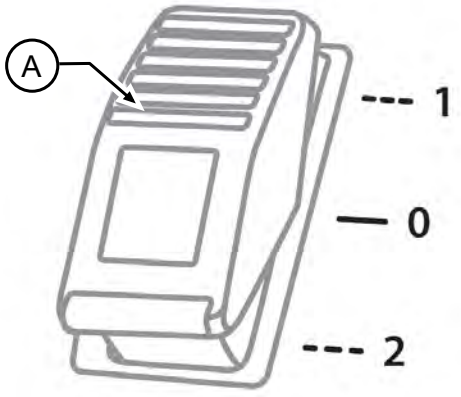
Note: The machine is considered to be on outriggers when it is correctly leveled and all 4 outrigger feet are lowered to the ground, lifting the tires completely from the ground.

Outriggers Movements

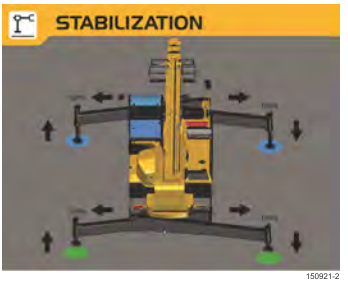
The correct sequence for the positioning of the telehandler on outriggers is as follows:

- Lay the load on the ground.
- Lower and fully retract the telescopic boom.
- Align the turret to the lower chassis.
- Level the telehandler.
- Lock the rear axle swing.
- Extend the crossmember.
- Lower the outriggers.
- Level the machine, as needed, using the outriggers.

Proceed in the reverse direction to retract the outrigger feet.



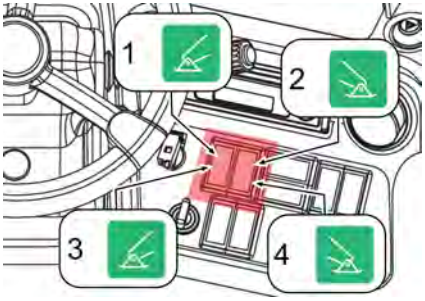


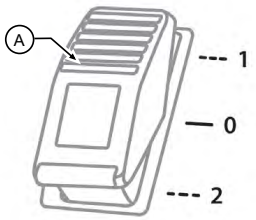


When the key for handling the outriggers is pressed, the display shows the pop-up related to the vehicle stability:

	Icon	Color	Description
1		Blue	Outrigger lowered to the ground.
		Orange	Outrigger not yet lowered to the ground.
		Green	Outrigger completely lifted.
2		-	Indicates the crossmember extension or retraction movement compared to the telehandler.
		-	Indicates the outrigger lowering.
		-	Indicates the outrigger lifting.

	Icon	Color	Description
3	0% / 100%	-	Indicates the crossmember extension percentage.







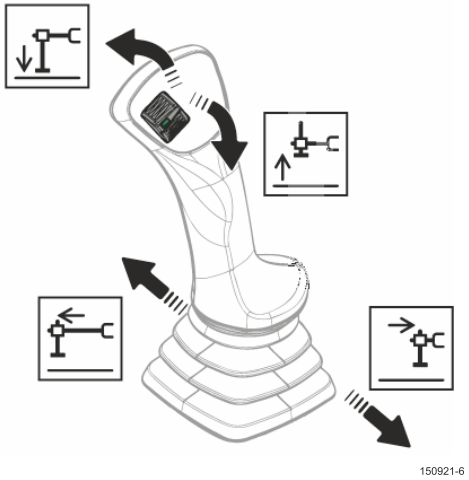
To move the outriggers it is necessary to do the following:

- Select the switch to move the appropriate outrigger.
  - Switch **1**: Left front foot and beam
  - Switch **2**: Right front foot and beam.
  - Switch **3**: Left rear foot and beam
  - Switch **4**: Right rear foot and beam
- Grasp the joystick grip.
- Press the button (**A**) to enable the outrigger movements. Press and hold this button until the outrigger finishes moving.
  - The roller LED on the joystick will light red.
  - The display will show the pop-up related to the machine stability.
- Use the joystick to move the feet and the beams.
- Release the button (**A**).
- Release the joystick.

⚠ WARNING

Perform beam extension and retraction movements only if the outrigger feet are completely lifted.

5in2 joystick:

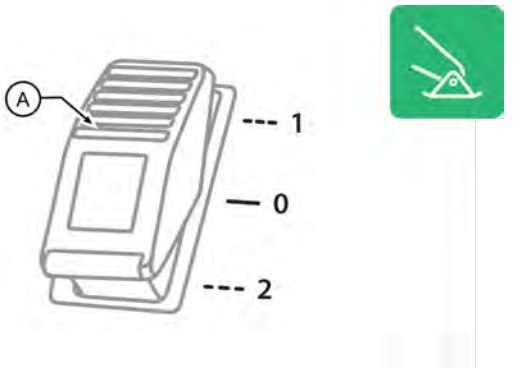


Hold the right joystick and use the rollers to move the feet and beams:

- Move the left roller forward to lower the outrigger feet.
- Move the left roller backwards to lift the outrigger feet.
- Move the right joystick forward to extend the beams of the outrigger feet.
- Move the right joystick backwards to retract the beams of the outrigger feet.

Automatic Flatness of Telehandler on Outriggers

The automatic planarity allows to level the machine on uneven ground when the machine is on outriggers.



To activate the automatic levelness do the following:

- Extend the beams as much as possible.

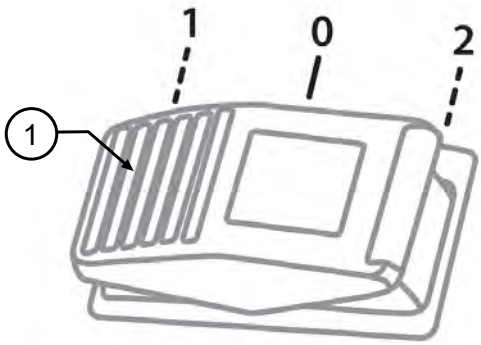
- Press the button (**A**) on the side (**1**) and grab the joystick.

The roller LEDs on the joystick will start blinking red.

Keep the button (**A**) on the side (**1**) pressed and your hand on the joystick until the machine is properly leveled.
Release the button or the joystick to stop the planarity procedure.

3.2.17 Transverse Leveling





To level the machine it is necessary to do the following:

- Place the load on the ground.
- Lower and fully retract the telescopic boom.
- Press the transverse leveling button:
  - Press the left side (**1**) to tilt the machine to the left.
  - Press the right side (**2**) to tilt the machine to the right.

⚠ DANGER

It is not possible to work with tilting greater than 2°. Danger of transverse tipping.

Use the bubble level in the cab to check the inclination of the machine.

3.2.18 Continuous Oil Function

The continuous oil function allows the machine to maintain a constant volume of oil passing through the hydraulic sockets without acting consistently on the selector of the joystick.

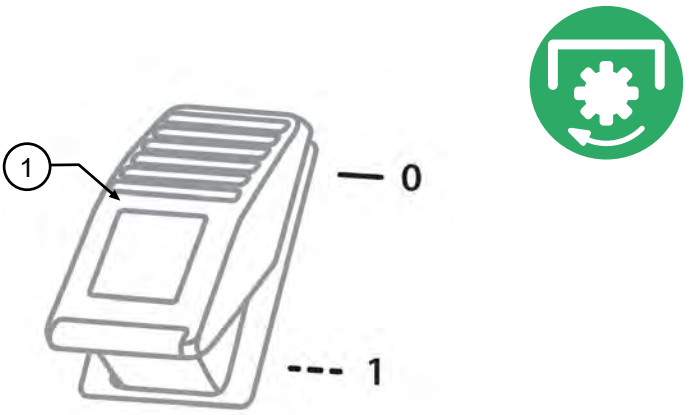
⚠ DANGER

Do not change the hydraulic socket selection while using the continuous oil function. The hydraulic coupler will begin to work according to the flow set by the function.Risk of damage to things, people, and mechanics of the machine or attachment.

⚠ ATTENTION

With the continuous oil function enabled do not move away from the driver's cab.

Note: With the continuous oil function active it is still possible to use the joystick to move the boom.



To enable the continuous oil function, it is necessary to do the following:

- Select, using the coupler switch on the boom head (if installed), the desired hydraulic coupler on which to activate the function.
- Use the joystick control used for services (service roller or lever) to set the desired oil flow rate.

- Press the switch (**1**) to enable the continuous oil function.

The red flashing LED on the joystick indicates the continuous oil function is active.

The continuous oil function can only be activated with the vehicle in fork mode.

To disable the continuous oil function, it is necessary to do the following:

- Press the switch (**1**).
- When the red LED on the joystick stops flashing, it indicates the continuous oil function is disabled.

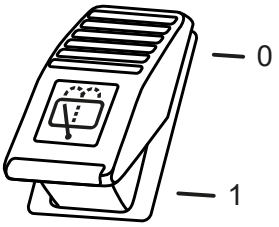
⚠ WARNING

The continuous oil function is disabled temporarily when the joystick is moved without pressing the personnel presence button. The continuous oil function will resume when the joystick returns to the rest position.

Note: With the continuous oil function active, the joystick to move the boom and the turret remains active but the services roller and the quick coupling (if equipped) are disabled.

3.2.19 Window Wiper/Washer Controls

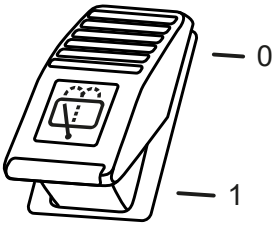
Rear Window Wiper and Washer



The switch for the rear window wiper and washer has 2 positions:

- 0 — Rear window wiper/washer Off
- 1 — Rear window wiper/washer On

Upper Window Wiper and Washer

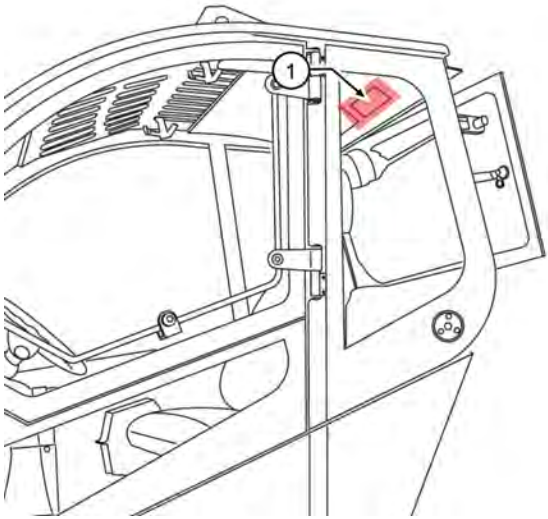


The switch for the upper window wiper and washer has 2 positions:

- 0 — Upper window wiper/washer Off
- 1 — Upper window wiper/washer On

3.2.20 Lights

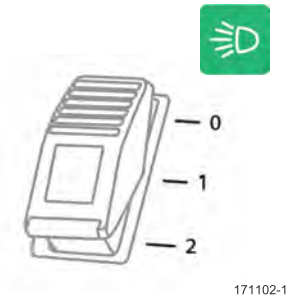
Cab Lights



An interior cab light (**1**) is available for operator use.

- Central position — light on
- Left position — light always on
- Right position — light only on when door is open

Side Lights and Low Beam Lights



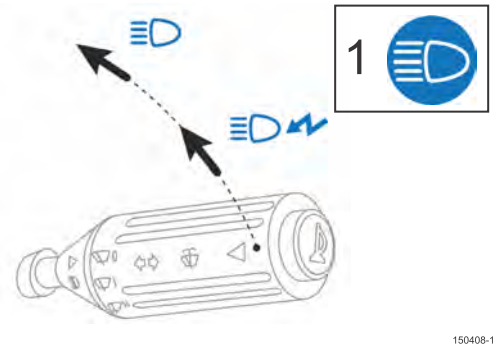
Use the switch on the left instrument panel to activate the front and rear side lights of the machine.

The switch has 3 positions:

- 0 — Lights Off
- 1 — Side lights On
- 2 — Low beam lights on

Note: It is possible to turn on the side lights with the ignition key in **0** position. However, the ignition key must be in the **1** position to operate the low beam lights.

High Beam Lights



Use the Accessory Control lever to operate the high beam lights.

- To make individual flashes with the high beam lights, pull the Accessory control lever towards the steering wheel to the first click.
  It is possible to use this function with the lights Off and the ignition key in the **0** position.
- To turn on the high beam lights, pull the Accessory Control lever towards the steering wheel to the second click. The ignition key must be in the **1** position and

the low beam lights on. A warning light on the instrument panel will indicate the high beam lights are on.

The Accessory Control lever will always return to its neutral position.

Front/Rear Cab Lights and Boom Work Light

Press the switch (**1**) to activate the front or rear cab lights and the boom work light.

The switch has 2 positions:

- 0 — Lights Off
- 1 — Lights On

The indicator on the switch illuminates when lights are on.



Figure 15. Front Cab Light Indicator

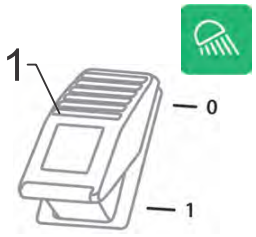


Figure 16. Rear Cab Light Indicator

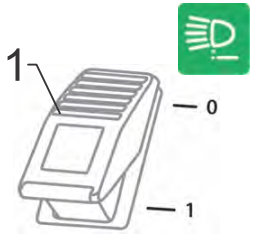


Figure 17. Boom Work Light Indicator

Note: The ignition key must be in position **1** to activate cab lights.

Beacon Light



Use the following steps to position and activate the rotating beacon light:

1. Clean and dry the top of the operator's cab.
2. Position the rotating beacon light on the cab.
3. Insert the beacon light plug into the electrical socket located on the rear left side of the cab, under the rear glass.

4. Activate the beacon by pressing the switch (1) located on the right-hand column keypad inside the cab.

The switch has 2 positions:

- 0 — Lights Off
- 1 — Lights On

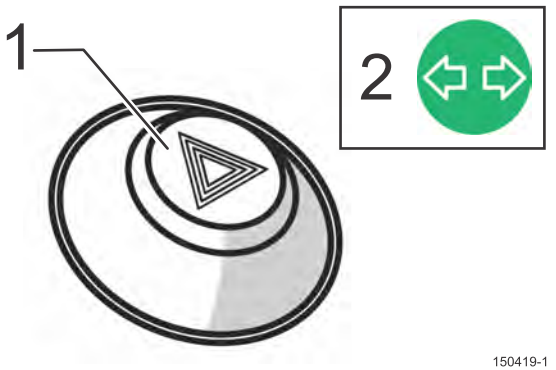
The indicator on the switch illuminates when lights are on.

Note: It is possible to turn on the rotating beacon light even if the ignition key is in the **0** position.

⚠ WARNING

Risk of damage to electrical system. Do not connect anything with nominal voltage greater than 12 V and power consumption greater than 180 W.

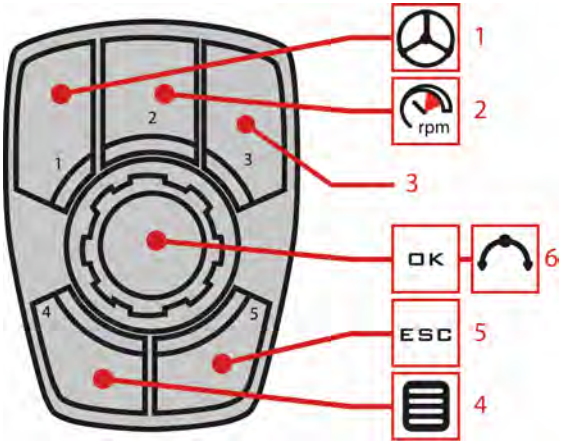
Emergency Lights



Press the emergency light switch (**1**) to turn on all four turn signals.

Activating the emergency lights will illuminate an indicator (**2**) on the instrument panel of the machine.

3.3 CONTROLLER



160501-1

	Description
1	Drive Mode selection button
2	Hand Throttle selection button
3	Maximum Speed Limiter selection button
4	ESC key
5	Menu key
6	Central key/knob

Menu Key

The Menu key is used to access the main display menu.

Press the menu button (**5**) to stop any operation in progress in the various displays and open the menu in the main display.

ESC Key

The ESC key (**4**) stops any operation in progress without saving and returns to the default page of the display.

Central Key/Knob

The central knob (**6**) is used to navigate in the various menus and settings.

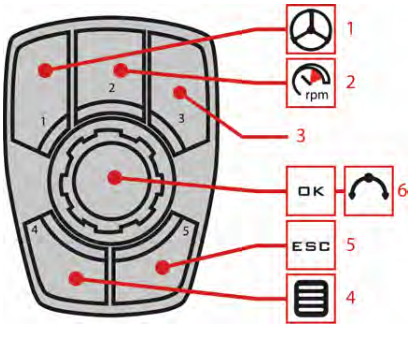
Turn the knob clockwise to move the selection to the right or down.

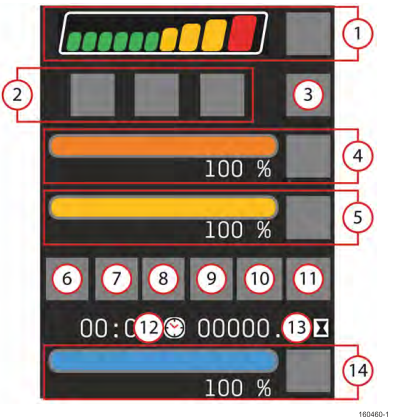
Turn the knob counterclockwise to move the selection to the left or upwards.

Press the knob to confirm the selection.

3.3.1 Drive Mode

The Drive Mode is used to change the machine's transmission and engine settings to suit the operator's needs. The Drive Mode selection key is used to change the telehandler driving modes.





To change the Driving Mode:

- Stop the machine.
- Reduce engine speed.
- Press the key (**1**) of the Controller to activate the icons of the group (**2**) and (**3**), the active mode icon will switch from white to yellow.
  If the engine speed was previously set on the controller, it is reset to 0% as soon as the button (**1**) is pressed.
- Turn the knob (**6**) to move the yellow selection on the desired driving mode.
- Press knob (**6**) to send the setting mode.
- The yellow icon of the requested mode will flash until the conditions necessary for the machine to activate the working mode are met. The previous working mode (white icon) remains active.

- Once the conditions for activating the required mode are confirmed the yellow icon stops flashing and will remain on with white light.

Icon Status	Enabled	Disbaled	Selected
NORMAL			
ECO			
CREEP			

NORMAL Mode

The NORMAL mode is the mode best suited for travel.

It is possible to make the most of the engine and transmission potential, reaching the maximum speed when in second gear.

- The maximum speed is set through the controller on the display.
- The engine rpm and the relative movement speed are set through the accelerator pedal and the controller.
- The inching pedal is operating.
- It is possible to activate the ECO-WORK function.

ECO Mode

The ECO mode enables a reduction in fuel consumption and noise by reducing the number of engine revolutions, while maintaining driving performance.

- The maximum speed is set through the controller on the display
- The engine rpm is managed by the software.
- The accelerator pedal sets the machine movement speed.
- The inching pedal is operating.
- It is possible to activate the ECO-WORK function.

CREEP Mode

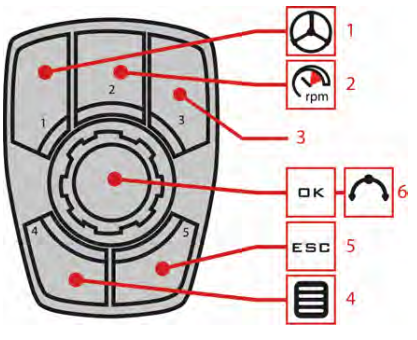
The CREEP mode is used to set a constant engine rpm and to change the machine speed through the accelerator pedal.

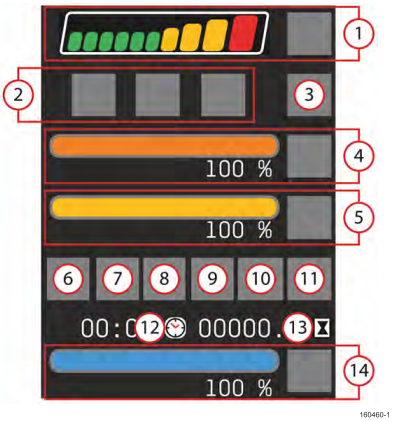
In this mode, the maximum speed is limited to 12.4 mph.

- The maximum speed is set through the controller on the display
- The engine rpm is set through the controller.
- The accelerator pedal sets the movement speed.
- The inching pedal is disabled.
- It is not possible to activate the ECO-WORK function.

ECO-WORK Function

The ECO-WORK function manages the engine speed and the relative power depending on the intensity and speed in which commands are given through the joystick.





The DRIVE Mode selection key is used to activate or deactivate the ECO-WORK function:

- Stop the telehandler.
- Reduce engine speed.
- Press the key (**1**) on the controller to activate the icons of the groups (**2**) and (**3**). The active mode icon will switch from white to yellow.
  If the engine speed was previously set on the controller, it is reset to 0% as soon as the button (**1**) is pressed.
- Turn the knob (**6**) to move the yellow selection on the ECO-WORK indicator light (**3**).

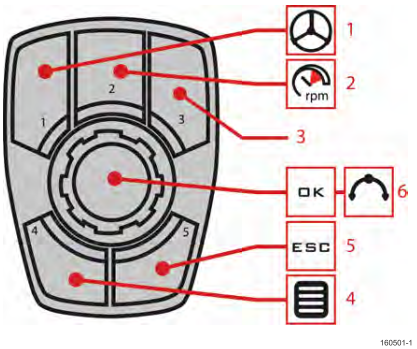
- Press the knob (**6**) to activate or deactivate the ECO-WORK function.

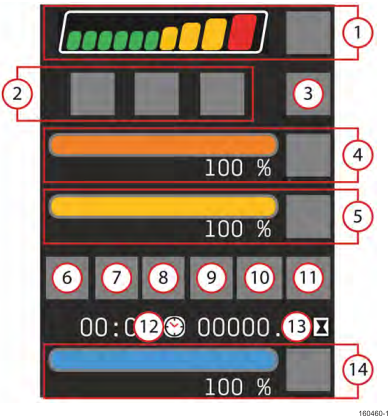
It is not possible to use or activate the ECO-WORK function in combination with the CREEP mode.

Icon	State
	Active Function
	No Active Function

Icon	State
	Selected Function
	Function Not Available

Hand Throttle





The hand throttle selection key (**2**) is used to change the engine rpm. The bar (**5**) shows the engine rpm percentage currently set. The 0% value indicates that the engine is idling and the engine rpm is controlled by the pedal in the cab. The 100% value indicates the engine at the maximum rpm possible.

To set the engine speed you must do the following:

- Stop the machine.
- Press the button (**2**) of the controller to activate the engine rpm adjustment (**4**).
- Turn the knob (**6**).
  - Clockwise to increase the rpm by 5%.
  - Counterclockwise to decrease the rpm by 5%.
- Press the knob (**6**) to save the settings.

Note: If no key is pressed to confirm selections after 25 seconds, the current value will be saved and the default screen will reappear.

⚠ CAUTION

When turning off the machine, this function must be disabled and the engine must be brought to its minimum speed.

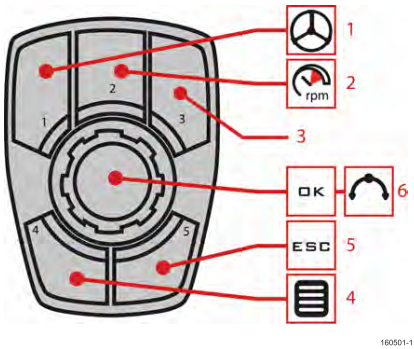
⚠ ATTENTION

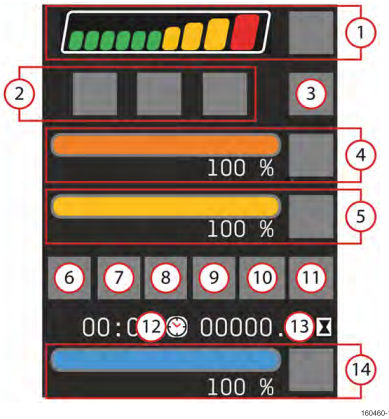
With the hand throttle in operation, machine travel is disabled.

⚠ WARNING

Do not use the electronic throttle in the cab while using the platform and/or the remote control.

Maximum Speed Limiter





The maximum speed limiter selection key (**3**) is used to set the machine movement maximum speed. The bar (**5**) shows the machine's movement percentage when it is running.

With the value set 0%, it is not possible to move the machine. The 100% value is the maximum speed permitted to the machine in the current mode.

To set the speed limitation you must do the following:

- Stop the machine.
- Press the button (**3**) of the controller to activate the engine rpm adjustment (**4**).
- Turn the knob (**6**).
  - Clockwise to increase the maximum speed..

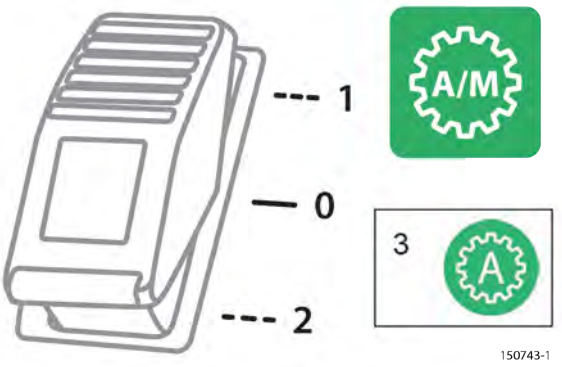
– Counterclockwise to decrease the speed of rotation.

- Press the knob (**6**) to save the settings.

Each rotation of the knob (**6**) increases or decreases the speed by 5%.

Note: If no key is pressed to confirm selections after 25 seconds, the current value will be saved and the default screen will reappear.

3.3.2 Manual Gear Shift



To change the manual gear shift, do the following:

- Stop the machine completely.
- Press the inching pedal and the brake pedal and hold them.
- Hold the button (**1**) for a few seconds.
- Press the button down for the fast gear. The indicator light on the instrument panel will illuminate.
- Press the button up for the slow gear. The indicator light on the instrument panel will illuminate.
- Wait the related indicator light to turn on.
- Release the inching and brake pedals.
- Drive slowly and gradually allow the gear to engage. The indicator light (**3**) will illuminate when the gear is properly shifted.

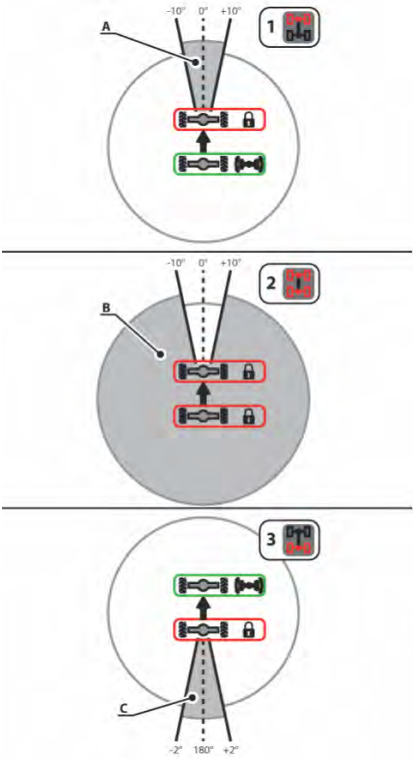
⚠ WARNING

Never try to shift gears with the machine in motion.

⚠ WARNING

Do not use the electronic throttle in the cab during the use of the platform and/or the remote control.

3.4 AUTOMATIC AXLE SWING LOCK



The automatic axle swing lock avoids possible oscillations of the machine during working operations.

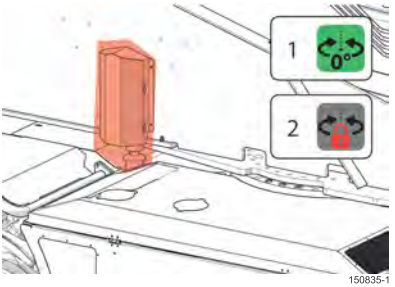
The indicator lights **1**, **2** and **3** indicate which axles are locked at that time.

The deck swing lock is automatically activated depending on the position of the turret:

- If the turret is located within +/- 10° rotation with respect to the front position (**A**) only the front axle is locked.
- If the turret is located beyond +/- 10° rotation with respect to the front position (**B**) both axles are locked: front and rear.
- If the machine is equipped with the optional Reversed Driving option. If the turret is located within +/- 2 ° rotation with respect to the 180° rotated position (**C**) only the rear axle is locked.

Note: If both axles of the telehandler are locked by the automatic axle swing lock, the gear of the machine is inhibited. To travel it is necessary to move the turret in line with the machine.

3.5 AUTOMATIC TURRET ROTATION LOCK



The turret rotation lock is a safety pin, used to stop the movements of the turret in the position of alignment with the lower chassis. It is located on the right side of the machine turret.

⚠ ATTENTION

It is mandatory to stop movement of the turret during any of the following:

- Transit on a road.
- Lifting the machine.
- Transporting the telehandler.



To correctly insert the rotation lock, do the following:

- Place the load on the ground.
- Lower and fully retract the telescopic boom.

- Align the turret to the lower chassis. When the indicator light (**1**) on the instrument panel illuminates, it indicates the turret is perfectly aligned to the chassis.
- Press and hold the turret rotation lock switch.
- Activate the features from the joystick:
  - Upwards to engage the rotation lock
  - Down to disengage the rotation lock
- If the pin does not fit into the slot, rotate the turret slowly until the pin properly fits into the carriage.
- Release the switch.

3.6 STEERING MODES

3.6.1 Steering Mode Icons

The steering mode icon shows the steering mode currently selected and in operation.

Icon	Description
	Front steering wheels
	Four steering wheels
	Transverse steering (Crab steering)

3.6.2 Steering Status Icon

The steering status icon indicates the presence of errors by the steering system.

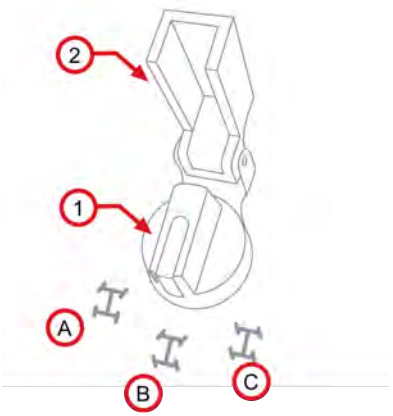
Icon	Description
	**Steering Error** It turns on when the auxiliary steering electro-pump begins working, if the pressure drops below the threshold value, and if the machine is moving.

⚠ WARNING

If the warning light illuminates, stop all operations as soon as possible. Contact the JLG Service Center to find a solution to the issue.

3.6.3 Manual Steering Selector

The steering selector is used to change the wheels steering mode.



To select a steering mode, turn the knob (**1**) to the desired steering mode:

A — 2–Wheel front Steer

This type of steering allows to carry out a steering with only the 2 front wheels.

B — 4–Wheel Circle Steer

This type of steering allows to carry out the steering with all 4 wheels, so as to have the smallest turning radius possible.

C — 4–Wheel Crab Steer

This type of steering allows a transverse or crab steering, so as to have a lateral displacement of the machine.

⚠ DANGER

Make the steering mode selection only when the machine is stopped, with the engine running and with the machine on tires. Before selecting a new steer mode, align the wheels with the machine stopped.

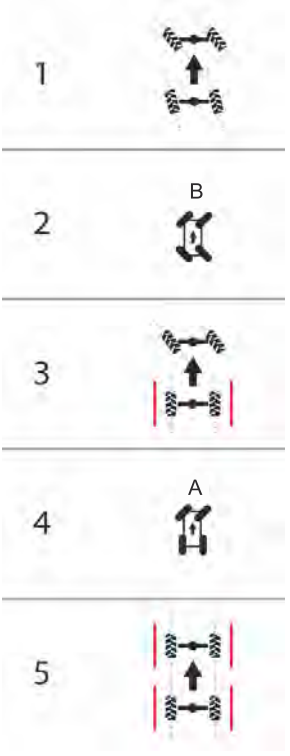
⚠ WARNING

Always operate at low speeds when crab steer is selected.

3.6.4 Manual Wheel Alignment

⚠ ATTENTION

Perform the wheel alignment periodically (every 8-10 hours) depending on the continuous use of the machine.



150312-3

During normal use of the vehicle, frequently changing the steering modes, it is possible that the wheels are no longer perfectly aligned with each other.

To perform a proper wheel alignment, perform the following steps:

1. Stop the vehicle on a level ground.
2. Select the **B** or **C** steering mode .
3. Turn the steering wheel until the rear wheels are aligned to the vehicle.
4. Select the **A** steering mode .
5. Turn the steering wheel until the front wheels are aligned to the vehicle.

6. Drive slowly for a short distance to verify the vehicle travels properly in a straight line.

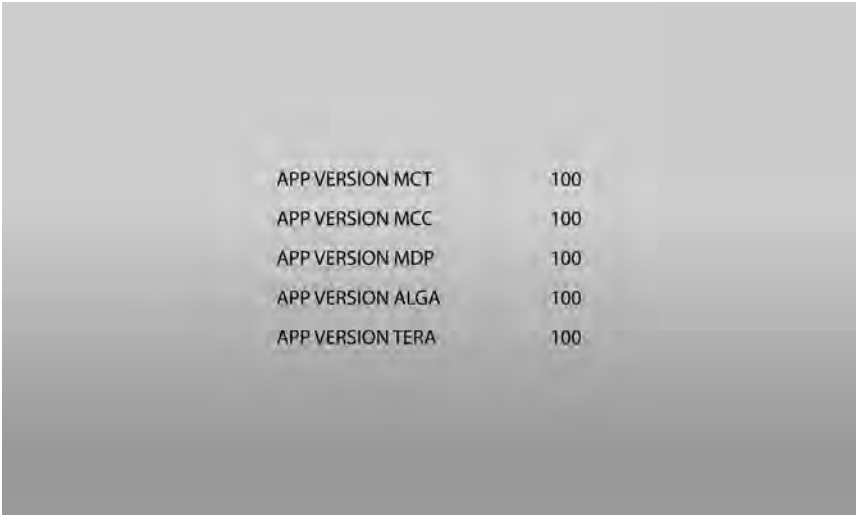
If at the end of the alignment the vehicle still does not proceed in a straight line, repeat the wheels alignment.

3.7 MULTIFUNCTION DISPLAY

3.7.1 Initial Check

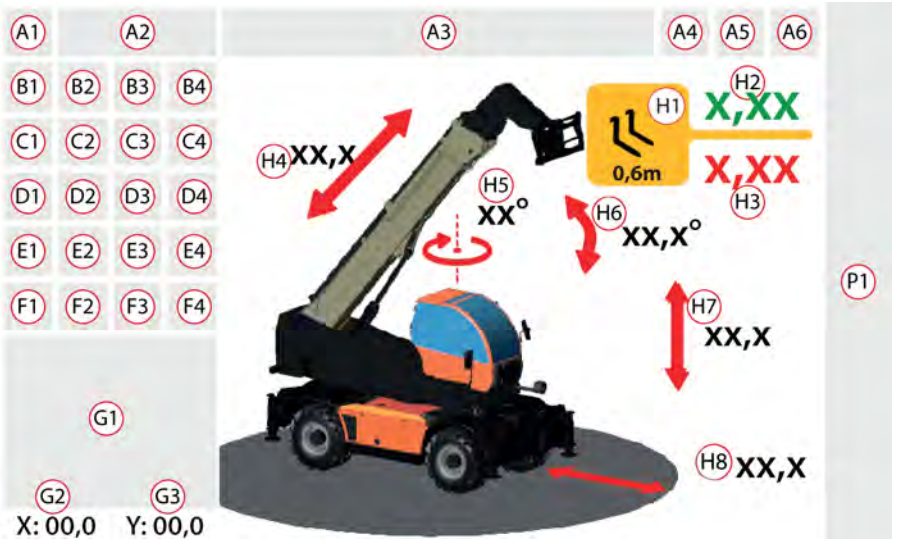
When the panel is turned on, the system will perform a check of all indicator lights and all indicators. The software versions will be displayed on the screen during the check.

After completing the initial check, the display shows the main Home screen.



3.7.2 Home

The Home screen contains the information required by the operator to use the vehicle.



Position	Description
A1	General alarm icon
A2	Indicates the active alarm and warning codes
A3	Longitudinal movement indicator and anti-tipping icon
A4	Longitudinal movement indicator and anti-tipping icon
A5	ByPass key or Recovery key
A6	Not used
B1	Boom chains error icon
B2	Boom head solenoid valve
B3	Not used
B4	Boom suspension (If equipped)
C1	Service machine and attachment
C2	Attachment recognition error
C3	Gear with rotated turret
C4	Resolution
D1	Limits
D2	Left limit reached

Position	Description
D3	Upper limit reached
D4	Right limit reached
E1	Turret rotation icon
E2	Not used
E3	Not used
E4	Axles swing lock icon
F1	Value icon of the outrigger beams in use
F2	Operating mode icon
F3	Not used
F4	Levelness icon
G1	Digital level
G2	Longitudinal inclination indication
G3	Transverse inclination indication
H1	Selected attachment
H2	Weight currently carried
H3	Maximum transportable weight according to the attachment installed and machine working mode
H4	Length of extension
H5	Degree of rotation of the turret with respect to the undercarriage
H6	Degrees of inclination of the boom with respect to the turret
H7	Load height from the ground

Position	Description
H8	Load distance from the machine center
P1	Bookmarks

Boom Chains Error Icon

The icon indicates loosening or breaking of the telescopic boom chains. When the icon illuminates, stop all working operations and service the chain.



⚠ DANGER

If at least one chain is loose or broken, activate the emergency procedure for platform recovery.

In case of breakage of one or both chains, in addition to the indication on the display:

- An acoustic signal is activated both in the cab and outside, which can be stopped by pressing the OK button on the dashboard.
- If the personnel platform is used, the green light on the control panel flashes.

⚠ WARNING

If the warning light illuminates, stop all working operations as soon as possible.Contact the JLG Service Center to find a solution to the issue.

Axles Swing Lock Icon

The turret rotation icon shows the different states in which the turret can be positioned during the working operations.

Icon	Description
	Indicates the front differential axle swing is locked.
	Indicates the rear differential axle swing is locked.
	Indicates both differential swing locks are locked.

Turret Rotation Icon

The turret rotation icon shows the different states in which the turret can be positioned during the working operations.

Icon	Color	Description
	Green	Indicates the turret is in the front position and correctly aligned to the carriage at 0°.
	Black	Indicates the turret is in the front position at +/- 5° compared to the 0° position.

Icon	Color	Description
	Yellow	Indicates the turret rotation is slow because it is close to a set or mechanical limit.
	Black	Indicates the turret is locked in the front position for travel. The rotation is deactivated.

Outriggers Status Icon

The Outriggers status icon shows the working mode of the anti-tipping device in relation to the outriggers arrangement.

Icon	Description
	Outriggers 0% extended
	Outriggers 50% extended
	Outriggers 100% extended
	Outriggers extended but with front turret

Levelness Icon

The levelness icon is present only when the vehicle is used with a passenger basket.

Icon	Color	Description
	Red	The icon indicates the machine is beyond the allowed tilting limits and must be leveled in order to proceed with work.

When working with the personnel platform, the pilot light illuminates. An acoustic signal also sounds which can be silenced by pressing the **OK** button on the instrument panel.

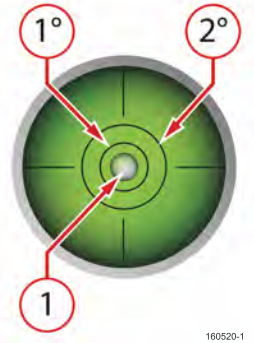
3.7.3 Digital Level

The digital level indicates the machine inclination status.

The inclination values are indicated by:

- **X**: Longitudinal inclination of the machine.
- **Y**: Transverse inclination of the machine.

The digital level is active only when the machine is stopped.



3.7.4 Bookmarks

On the side of the TERA7 display are quick access keys.
Press the key to go directly to the page of the icon indicated.



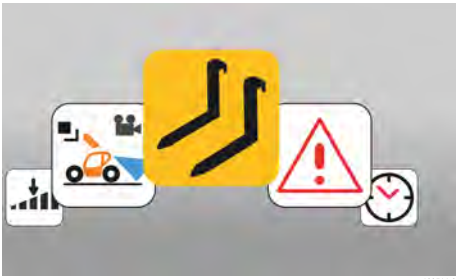
The Menu items are:	
Icon	**Menu**
	Load Charts
	Limits
	Diagnostics (Reserved for trained personnel)

The Menu items are:	
Icon	**Menu**
	Resolution
	Rear Camera

3.7.5 Menu

From the Home screen, it is possible to access the menu (fig. 160511-1) pressing the **MENU** key.

Use the **UP** and **DOWN** buttons to scroll through the menu items and press the **OK** button for 3 seconds to make a selection and go to the related page.



The Menu items are:	
Icon	**Menu**
	Available attachment menu (Refer to Attachments chapter)
	Active Errors
	Service

The Menu items are:	
Icon	**Menu**
	Anti-Tipping Calibration (Reserved for trained personnel)
	Diagnostics (Reserved for trained personnel)
	Settings (Reserved for trained personnel)
	Limits
	Resolution
	Load Charts

The Menu items are:	
Icon	**Menu**
	Rear Camera
	Boom Suspension

3.7.6 Active Errors

The presence of errors will be reported by the general warning icon, by an acoustic signal lasting 1.5 seconds, and by displaying the error code on the Home screen instead of the time.



In the presence of more than one error, the error codes will be displayed cyclically every 2 seconds on the Home screen. At the end of the cycle showing all the active errors, an icon will be displayed which indicates the user to access the Active Errors page to view all active errors in that time.

In case of an error from the anti-tipping device, the acoustic signal will be continuous and the error code will remain fixed on the Home screen. Press the **OK** button to stop the sound of the acoustic signal and resume the active errors displaying cycle.

To enter the Active Errors page, it is necessary to do the following:

- Press the **Menu** button
- Select the Active Errors icon
- Press the **OK** button



Use the VDC controller to scroll through the pages if there are several errors.
Press the **Menu** button at any time to return to the Home screen.

Each error code is associated with an icon which identifies the nature of the error:

Icon	Example	Description
A	000000.00	Alarms
W	000000.00	Warnings

3.7.7 Clock and Clock Settings

A clock is located on the Home screen next to the related icon.



It is necessary to do the following to adjust the time:

- Press the **Menu** button
- Select the clock setting icon
- Press the **OK** button
- Turn the VDC controller to set the amount
- Press the **OK** button to confirm and change the following digit



Press the **Menu** button at any time to cancel the process and return to the Home screen.

3.7.8 Service Icon

The Service icon indicates the intervals when maintenance should be done on the machine.
20 hours before the deadline, the icon will remain lit for 3 seconds after the instrument panel lights up.
The Service icon stays lit permanently if, at the end of the deadline, maintenance has not been completed.



To view hours remaining until next maintenance you must access the Service page by doing the following:

- Press the **Menu** button
- Select the Service icon
- Press the **OK** button



To return to the Home screen, press the **Menu** button or select the **Back** icon (**1**) and press **OK**.

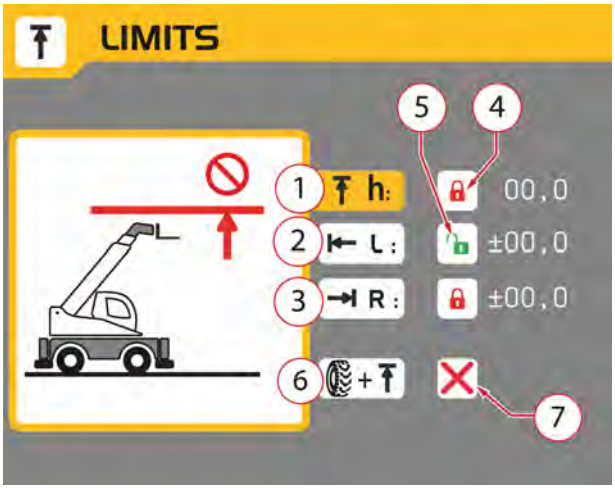
Note: Contact the JLG Service Center to perform maintenance and reset the Service hour counting.

3.7.9 Limits

It is possible to set a limited work area for boom and turret movement in the Limits window.

To access the Limits page, do the following:

- Press the **Menu** button on the VDC controller
- Select the Limits icon
- Press the **OK** button



1. Upper Area Limit	5. Deactivated Limit Indicator Light
2. Left Area Limit	6. Limit in Movement

3. Right Area Limit	7. Limit in Movement Enabled/Disabled
4. Active Limit Indicator Light	

Setting a Limit

To set a limit, take the telehandler to the limit position (of the area in which it must stop automatically during the work), select the desired limit with the VDC controller and press **OK**. The value will be blocked and indicated by the active limit indicator light.

After setting a limit the Home window will show the active Limit indicator light.

During the working process, when a set limit is reached, the following indicator lights will be displayed:

Icon	Description
	Active Limit indicator light
	Upper Limit Reached indicator light
	Right Limit Reached indicator light
	Left Limit Reached indicator light

Removing a Limit

To remove a previously set limit, it is necessary to access the Limits window and select the limit to be removed with the VDC controller and press **OK**. The correct deactivation will be indicated by the deactivated Limit indicator light (**3**) located aside of the value.

Limits in Movement

For the standard settings, the limits are reset by moving the machine forward or backward.

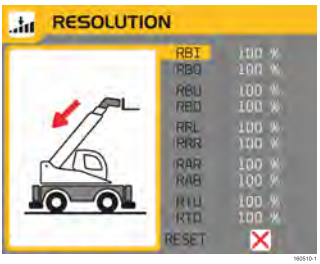
To change this setting on the Limits page, select the Limits in movement icon (**6**) with the VDC controller and press the **OK** button to activate or deactivate the function.

The indicator light (**7**) indicates the following:

Icon	Description
	The set limits will be reset after moving the machine.
	The set limits will be kept even after the machine has moved.

3.7.10 Resolution

Reduce the maximum speed of the turret and boom movements in the Resolution screen.
The 100% value indicates it is possible to move at the maximum permissible speed.



To set a Resolution, do the following:

- Access the Resolution page:
  - Press the **Menu** button on the VDC controller
  - Select the Resolution icon
  - Press the **OK** button
- Select the movement speed which must be reduced on the VDC controller
- Press the **OK** button
- Turn the VDC controller to increase/decrease the movement speed percentage

- Confirm with the **OK** button

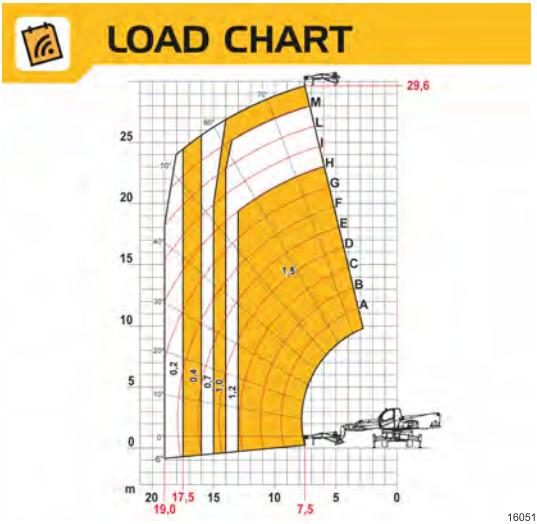
The Resolution settings are indicated by the following indicator lights on the Home screen:

Icon	Description
	This light indicates at least one turret or boom movement is activated.
	This light indicates the movement commanded at that time is subject to a resolution.

You can set a resolution on the maximum movement speed on the following movements:	
Abbreviation	**Description**
RBI	Boom return movement resolution
RBO	Boom extension movement resolution
RBU	Boom up movement resolution
RBD	Boom down movement resolution
RRL	Turret counter-clockwise rotation movement resolution
RRR	Turret clockwise rotation movement resolution
RAR	Red hydraulic socket on the boom head capacity resolution
RAB	Blue hydraulic socket on the boom head capacity resolution
RTU	Upward swing movement resolution
RTD	Downward swing movement resolution
RESET	Cancels and resets all resolutions to 100%

3.7.11 Load Capacity Charts

The Capacity diagrams page shows the capacity diagram of the attachment with the operating mode currently in use.



3.7.12 Rear Camera

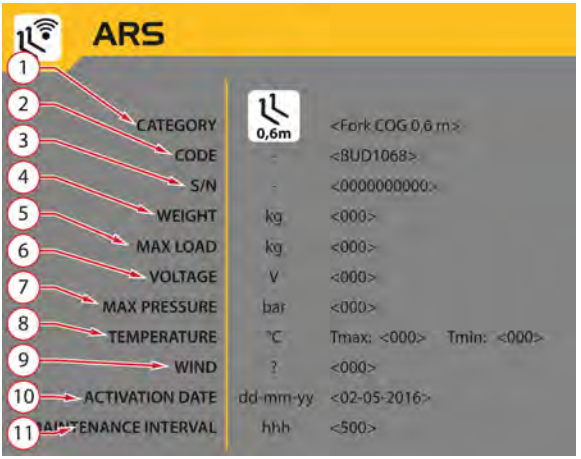
Activating the reverse gear of the machine will enact the camera located on the rear side of the vehicle.

3.7.13 Documentation

The Documentation page allows you to browse this Operation & Safety manual.

3.7.14 Attachment Automatic Recognition System (ARS)

View the information related to attachment installed with the Attachment Automatic Recognition System.



	Characteristics	Description
1	CATEGORY	Shows the attachment category
2	CODE	Attachment code
3	S/N	Serial number of the attachment
4	WEIGHT	Attachment weight
5	MAX LOAD	Maximum load permitted by the attachment
6	VOLTAGE	Attachment electrical system voltage (if equipped)
7	MAX PRESSURE	Attachment hydraulic circuit operating pressure (if equipped)
8	TEMPERATURE	Minimum and maximum operating temperature
9	WIND	Wind maximum permissible force to use attachment

	Characteristics	Description
10	ACTIVATION DATE	Attachment activation date — day-month-year
11	MAINTENANCE INTERVAL	Maintenance interval

3.7.15 Boom Suspension (If Equipped)

The boom suspension allows movements with the machine over uneven ground without affecting the boom.

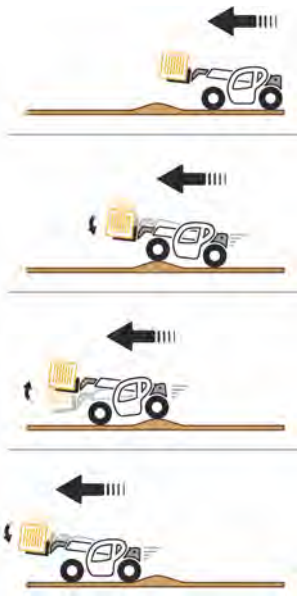


The boom suspension is activated for low speed travel only when the telescopic boom is in the horizontal position.

The boom suspension is disabled automatically when the joystick is grasped or it is not within the activation parameters.

To enable/disable the boom suspension function you must do the following:

- Press the **Menu** button on the VDC controller
- Select the Boom Suspension icon
- Press the **OK** button



160780-2

Icon	State	Conditions
	ENABLED	• The function is enabled from the menu • Speed higher than 3 mph • Boom with inclination less than 12°
	DISABLED	• The function is enabled from the menu • Speed lower than 3 mph • Boom with inclination less than 12°
	DEACTIVATED	• The function is disabled from the menu

⚠ WARNING

When activating the boom suspension the boom may have a slight, but sudden upward movement. Before activating the boom suspension, ensure the installed attachment and any load are properly secured to the machine and there are no people, animals, or objects within the operating range of the machine.

⚠ ATTENTION

The presence of the boom suspension does not involve the increase of transport speed and machine movement. The speed must always be proportional to the ground, to the place of use and to the atmospheric conditions.

Note: The boom suspension is a device which entails an increase in the comfort of the vehicle, but it does not increase its safety characteristics.

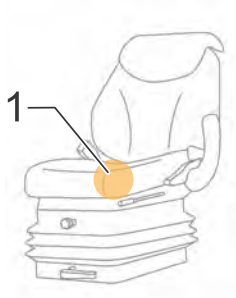
3.8 OPERATOR SEAT

The machine's seat is equipped with specific safety belts designed to protect the operator during movement or handling operations.

⚠ WARNING

Always fasten the seat belt during all machine operations.

Operator Presence Seat Sensor



The machine is equipped with an operator presence safety system which consists of an electrical microswitch inside the seat cushion (**1**).

If the engine is running and the operator is not sitting properly in the driver's seat for longer than 3 seconds, the transmission is automatically disabled and if the park brake is not engaged, an acoustic signal is emitted.

To continue moving the vehicle, the operator must sit in the driver's seat and set the transmission control lever to the **N** position.

Note: The engine can only be started if the operator is seated properly on the driver's seat and the parking brake is engaged.

3.8.1 Seat Adjustment

⚠ ATTENTION

Correctly position the seat. The seat is properly positioned when the operator is able to perform a full stroke of the brake pedal with the operator's back fully against the backrest of the driver's seat.

Manual Seat Adjustment

Backrest Inclination

To adjust the inclination of the backrest, lift the lever on the left side and let the backrest adapt to the required position. Release the lever to lock the backrest.



150418-1

Back Cushion

Adjust the back cushion by turning the knob behind the backrest.



150418-2

Horizontal Position of the Seat Unit

Adjust the entire seat unit longitudinally by moving the lever upwards and sliding the seat unit on the guides. Once the desired position is established, release the lever. Perform small movements to ensure the seat is fastened properly.



150418-3

Horizontal Seat Position

To adjust the seat longitudinally, move the lever upwards and slide the seat unit on the guides. Once the desired position is established, release the lever. Perform small movements to ensure the seat is fastened properly.



Horizontal Seat Position

To adjust the seat longitudinally, press the right handle and slide the seat unit on the guides. Once the desired position is established, release the lever. Perform small movements to ensure the seat is fastened properly.



Seat Inclination

To adjust the seat inclination, press the left handle and adjust the seat to the desired position. Once the desired position is established, release the lever. Perform small movements to ensure the seat is fastened properly.



Mechanical Suspension Degree

To adjust the degree of suspension, turn the knob towards **+** to soften the suspension. Turn the knob towards the **–** to harden the suspension.
Optimal adjustment is achieved when the weight indicated at the side lever corresponds to the weight of the operator.



Pneumatic Suspension Degree (If Equipped)
To adjust the pneumatic spring rate, pull the knob to let out pressure and soften the suspension. Push the knob to add pressure and harden suspension.
Pneumatic adjustment can only be performed with the engine running.



Adjusting the Armrest
It is possible to lift and lower the armrest by hand.
To adjust the height of the armrest when it is down, turn the knob located under the armrest to the right to raise it or to the left to lower the armrest.



3.8.2 Seat Belts

⚠ WARNING

Always fasten the seat belts when operating the machine.The machine is equipped with a cab which can withstand the weight of the machine in the event of rollover (ROPS), it is therefore necessary the operator remains fastened to the seat by the seat belt as to not be thrown from machine and possibly crushed.

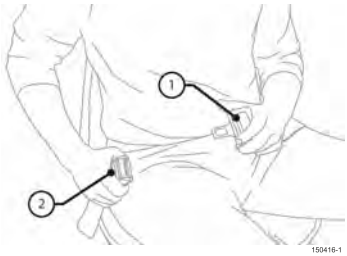
Before starting the vehicle, carefully examine the seat belt straps, buckles, and fastening devices to the machine structure. If any component is damaged or worn, replace the seat belt or component before operating the machine.

Remain seated with the seat belts properly fastened during all operations of the machine to reduce the risk of injury in the case of an accident.

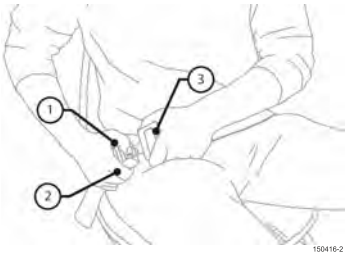
Following an accident, replace the seat belts even if they do not appear damaged.

Fasten the Seat Belts

Insert the latch plate (**1**) into the buckle (**2**).

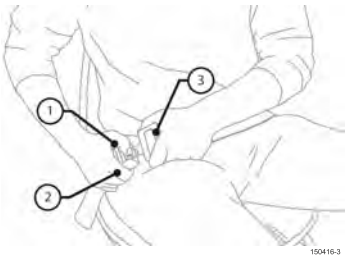


Make sure the seat belt clicks into place and adjust the belt to the body.
The seat belt is considered properly connected when it is close to the body of the operator.



Remove the Seat Belt

Press the red button (**1**) on the seat belt buckle (**2**).
Remove the latch plate (**3**).



⚠ WARNING

Drive the machine only with the safety seat belt properly worn, fastened, and adjusted.Operating without the seat belt fastened increases the risk of accidents. Do not use damaged or worn seat belts. Damaged or worn seat belts may break or not function properly during a collision resulting in serious injury to the operator if worn.

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SECTION 4
Operation

4.1 ENGINE

Note: Refer to the Engine Operation & Maintenance Manual for additional information.

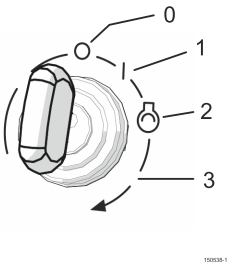
This machine can be operated under normal conditions in temperatures of 0° F to 114° F. Consult JLG for operations outside this range or under abnormal conditions.

4.1.1 Starting the Engine in Normal Conditions

⚠ WARNING

Do not use the machine without first having read and understood all parts of this manual and without having attended an adequate training course.

- Before starting the engine, make sure all control levers are in the neutral position, the parking brake is engaged, the engine hood is closed, and there is no one in the area surrounding the machine.
- The machine can only be started up or maneuvered when the operator is seated in the driver's seat, with the seat belt fastened and adjusted.
- The machine may move suddenly if started up without following the correct procedure, thus creating the risk of damage.
- Never start the engine by causing a short circuit between the terminals of the starter.
- Never start the engine by pushing or pulling the machine. This could injure people or cause serious harm to the machine.
- Use caution when using auxiliary batteries as the gas contained in these batteries may explode causing serious damage. Follow instructions provided in INSERT CROSS REFERENCE to start the engine using auxiliary batteries. An incorrect procedure can cause serious damage to the electrical/electronic system, the vehicle could move suddenly, the battery could explode, and damage could be caused to objects or people.
- Do not start the engine or touch the levers of the machine if a lock out tag or a maintenance in progress sign is placed inside the cab.



Use the following instructions to start the engine:

1. Press the parking brake switch.
2. Move the Transmission Control lever to the Neutral position.
3. Remain seated in the driver's seat.
4. Turn the ignition key clockwise to position **1**.
   With the key in this position:
   - The control panel and instrument panel will be powered.
   - A buzzer will sound indicating the key has been inserted. The buzzer also serves to warn any persons in the surrounding area the machine has been started.
   - The instrument panel will illuminate for around 5 seconds as the machine performs a self-check.
     Only the following lights must remained on at the end of the self-check:
     - Engine oil pressure warning light
     - Battery charge indicator light
     - General alarm warning light
     - Intermittent buzzer
     - Other indicators of activated functions (parking brake, gears engaged, etc.)

⚠ WARNING

If other indicators remain on signalling malfunctions or if one of the previous conditions does not occur, **DO NOT** start the engine. Refer to the Service Manual or contact the JLG Service Center.

5. Turn the ignition key to position **3** to start the engine. Release the starter within 5 seconds.

Note: Release the key once the engine has started. The indicators related to the engine oil pressure and battery charge must go off once the engine is started.

6. If the engine does not start within 5 seconds, repeat the steps at regular 15 second intervals to prevent overloading the starter motor.

⚠ WARNING

Unexpected Movement Hazard. Always ensure the transmission is in neutral and the service brake is applied before releasing the parking brake. Releasing the parking brake in either forward or reverse could cause the machine to move abruptly.

4.1.2 After Engine Starting Procedures

During the first few minutes of use keep the speed slow in order to warm up the engine and hydraulic oil.

⚠ WARNING

Serious damage can be caused to the engine and the hydraulic system if the engine reaches high rpm before the operating oil temperature and pressure levels are reached.Let the engine run at 1100 — 1300 rpm for about 5 minutes to bring the engine oil to the operating temperature, particularly with outdoor temperatures below freezing.

4.1.3 Starting Engine in Low Temperatures

⚠ WARNING

Engine Explosion. Do not spray ether into air intake for cold weather starting.

Consider the following warnings before starting in low environmental temperatures and with a cold engine:

- In order to prevent discharging the battery, do not prolong each attempt to start the engine by more than 15 seconds. If the engine does not seem to be starting, extend the start time to a maximum of 30 seconds.
- Wait at least 1 minute before attempting to start the engine again.
- It is recommended to not exceed 6 starting attempts in order to not discharge the battery.

Note: It is recommended to use anti-freeze diesel in temperatures lower than 32° F to make sure the engine is optimally supplied without reducing performance.

Water Heater



The water heater is connected to its own control unit and is used to facilitate the ignition of the engine in the winter period or in case of cold climates.

The water heater is placed in the rear side of the hood.

To use the water heater it is necessary to do the following:

- Make sure the vehicle is off.
- Enter the extension in the socket at the rear of the hood.
- Plug the extension in the **120 V** socket.
- Wait until the water is adequately heated.
- Remove the water heater extension from the socket and from the socket on the hood.

⚠ DANGER

Do not use the water heater with the engine running or the machine in travel.

⚠ WARNING

Remove the water heater power connections before turning on and/or moving the machine.

Check for good condition of the power cable before starting up the device.

Causes for Failed Engine Start

Check the following if the engine does not start:

- The Parking Brake is engaged.
- The Transmission Control lever is in the neutral position.
- No emergency buttons are pressed.

After verifying the above conditions, remove any cause of engine start failure and begin starting procedures again.

Note: If the issue persists, contact JLG Service Center.

4.1.4 Shut-Down Procedure

Perform the following before turning off the engine:

1. Bring all control levers to the idle position.
2. Bring the engine to low speed for a few seconds.
3. Turn the ignition key to position **0**.

4.1.5 Engine Start with Auxiliary Batteries

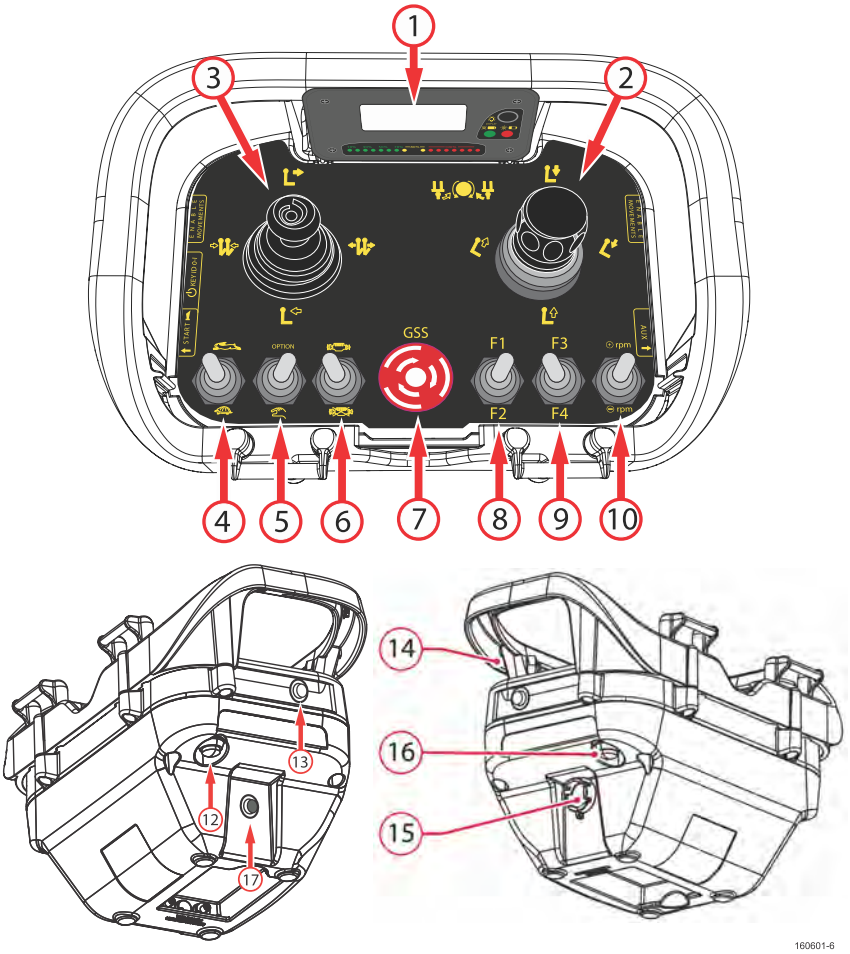
⚠ WARNING

Staring the engine with auxiliary batteries is an operation which requires two properly trained and qualified operators.

- When starting the engine using another machine, connect the accumulators in parallel. When connecting the cables, avoid contact between the positive cable (+) and the negative cable (-).
- Wear the necessary personal protective equipment before starting the operation.
- Take care to avoid contact between the machine to be started and the machine that must supply power to prevent sparks and explosions of hydrogen produced by the accumulators. The accumulator explosion causes serious damage and injury.
- Make sure not to exchange the ignition cables and first connect the earth cable (-) and then the positive cable (+).
- Be very careful when removing the ignition cables; to ensure that the cables disconnected from the accumulator do not touch other parts of the vehicle to avoid explosions caused by hydrogen.
- Cables and grippers must be proportional to the current load to be transferred. The accumulator to be used for the start-up must have a capacity greater than or at least equal to that of the standard accumulator installed.
- Check the cables and grippers for corrosion or damage. Make sure the grippers are tightly gripping the terminals.
- Be very careful during the different operations: direct or indirect contact with live parts can result in injury and sometimes even in death.
- When starting the engine, the operator must be in the driver's seat so as to keep the machine under control.
- All these operations must be carried out by skilled and trained personnel.

4.2 REMOTE CONTROL WITH JOYSTICK

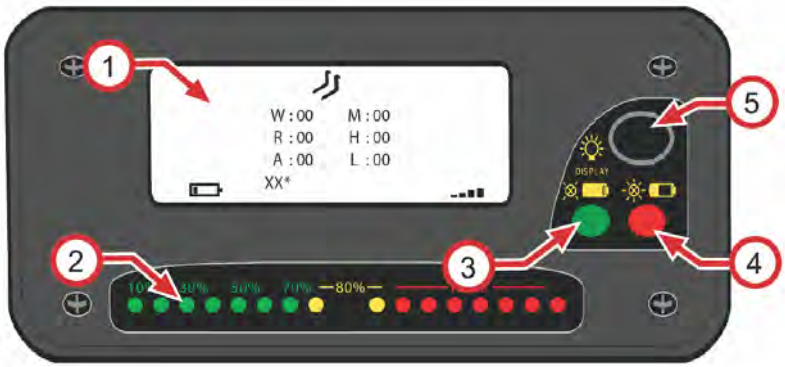
4.2.1 Description



1	LCD Display	9	Machine attachment function lever (F3) (F4 not used)
2	Joystick for boom lowering / lifting / tilt down / tilt up / turret rotation	10	Engine speed control
3	Boom extension / retraction joystick / auxiliary hydraulics	12	N/A

4	Movement speed lever	13	N/A
5	Boom head solenoid valve lever / attachment confirmation	14	N/A
6	Ignition Switch	15	Lanyard connected MKEY
7	Emergency stop button	16	Remote control and horn enable button
8	Machine attachment function lever (F1–F2)	17	Wired control connector

4.2.2 Remote Control Display



	Description
1	LCD display
2	Anti-tipping LED signalling
3	Remote control status LED
4	Remote control battery status LED
5	Not Used
w	Current weight
M	Maximum weight
R	Radius
H	Load height from the ground
A	Boom Angle
L	Boom extension length
xx*	Installed attachment code

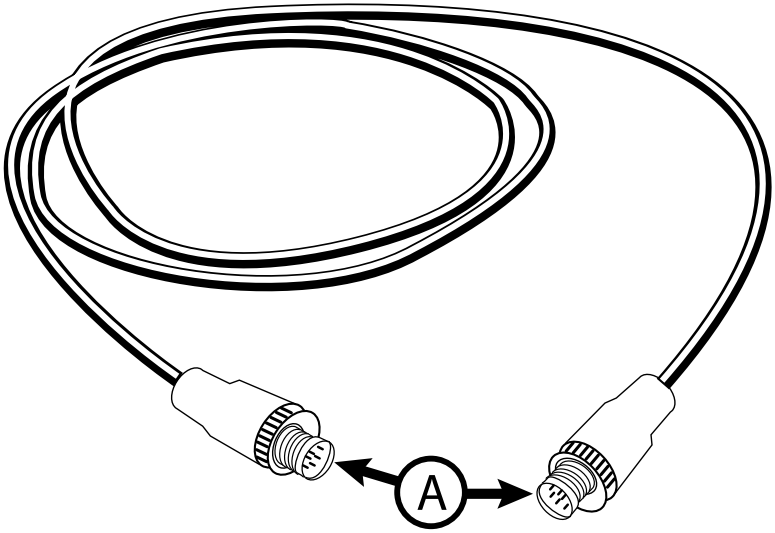
	Description
	Forks operating mode icon
	Hook operating mode icon
	Platform operating mode icon
	Battery charge level
	Remote control signal level
	Low fuel level icon
	General alarm icon
	Active electric contact icon
	Solenoid valve on boom head icon

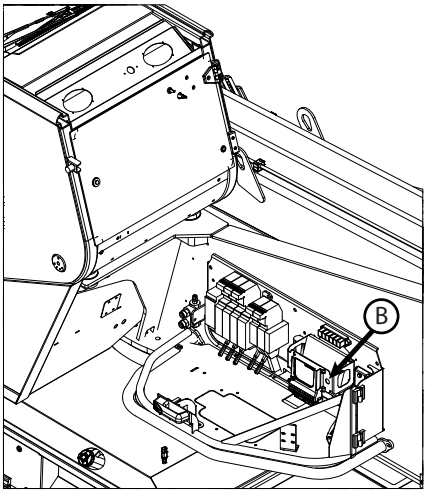
	Description
	F1 function icon (if equipped)
	F2 function icon (if equipped)
	F3 function icon (if equipped)
	F4 function icon (if equipped)
	High particulate accumulation in the DPF icon
	AdBlue level low icon
	Chains error icon (if machine is prearranged with PLE)
	Levelness icon (if machine is prearranged with PLE)
	Attachment confirmation
X	No attachment installed

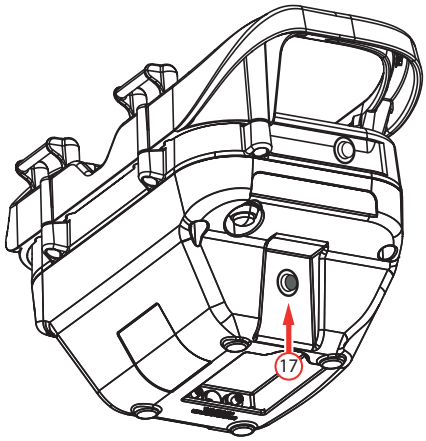
	Description
	Forks
	Bucket
	Hooks
	2.5 ton winch
	Truss length 8 feet
	Customized platform

4.2.3 Remote Connection Cable

The wired control cable is supplied to connect the receiver to the transmitter for working in environments where the remote control cannot be switched on or if the battery is dead.







Connect electrical connector (**A**) on the wired control cable to part to connection (**17**) on the remote control and connector (**B**) on the machine.

4.2.4 Operation

The remote control can perform the following movements:

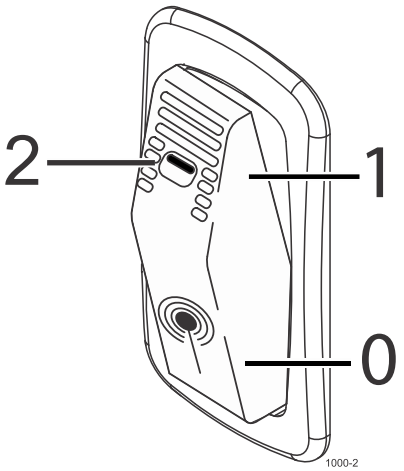
- Telescopic boom extension/retraction
- Telescopic boom up/down
- Tilt
- Turret rotation
- Auxiliary hydraulics

Machine Operations

To enable remote control operations, perform the following:

- Place load on ground.
- Level the telehandler (if equipped).
- Place machine on outriggers.
- Put transmission in neutral (N).
- Engage the parking brake.
- To initiate the switch functions you must press the interlock button (**2**) down before using the switch.
- With the interlock button (**2**) held down, press the switch on the bottom (**0**) to enable the commands from the remote control. Pressing the button will automatically stop the engine.

Note: The interlock button must be held down to turn the switch off when pressing the top (**1**) of the switch.



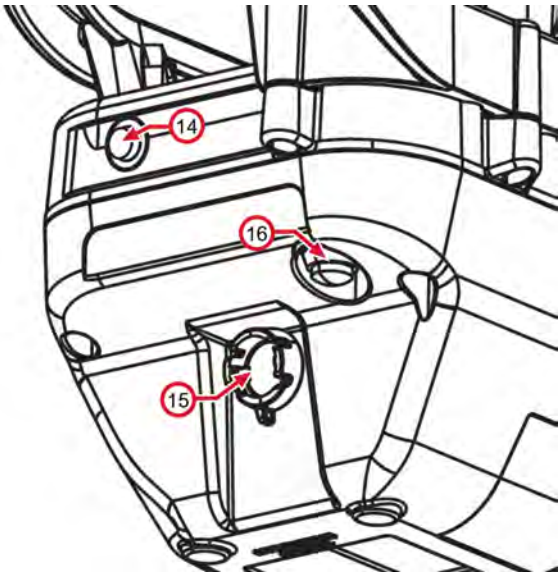
Turn Off Machine and Remote Control

To turn the machine engine and the remote control off, turn the ignition knob to position (**0**).

Remote Control Operations

⚠ WARNING

Always remain at a safe distance away from the machine and load, outside the area that would be occupied in case of machine overturning and/or load fall.



- Ensure the magnetic MKEY is inserted.
- Press the remote control on/off button (**16**) to enable the remote control.
- Depress the green button (**14**) once to initialize the remote control and allow the start screens to display.
- Press the green button (**14**) again to turn on the remote control. It will emit an alert tone indicating the engine start is enabled.

The remote control On indicator light will flash green until the remote control remains on.

When using the remote control:

- The emergency button in the cab is always active.
- The gears of the telehandler are inhibited.

Note: After 12 minutes of non-use from the remote control, the remote control and the machine will turn off.

⚠ ATTENTION

When using the remote control, a red flashing light on the machine comes on when the machine reaches the tipping limit. To reset the machine in safe conditions, make movements that do not aggravate the stability depending on the type of equipment currently used.

Turning Off Machine and Remote Control

To turn off the machine engine and the remote control, turn the ignition switch from position (**1**) to position (**0**).

Remote Control Receiver and Recharging the Remote

The remote control receiver is installed on the rear of the telehandler. When the remote control is selected in the cab, the receiver turns on. For the operating specifications carefully read and learn the use and maintenance instructions of the remote control manufacturer.

Beside the seat there is a charger for the remote control battery.

4.3 ANTI-TIPPING DEVICE

⚠ ATTENTION

It is mandatory to check the proper operation of the Anti-Tipping Device at the beginning of each work session.

⚠ DANGER

If there are any faults with the safety devices, stop work immediately until it has been repaired. Contact the JLG Service Center.



To properly check the Anti-Tipping Device do the following:

- Place the machine on a flat, level surface, align the wheels and engage the parking brake.
- Make sure the attachment is properly installed on the machine and it is suitable for its capacity.
- Make sure that the Anti-Tipping Device is set for the attachment currently used.
- Perform the test with warm engine.
- Refer to the load charts of the attachment installed and with a closed boom pick up a load approximately weighing 50% of maximum capacity.
- Raise the load at about 20 inches from the ground.
- With the engine idling, extend the boom slowly. During this operation, check the display of the Anti-Tipping Device. When the red zone is reached, the continuous audible signal will be heard and the extension movement will stop simultaneously.
- At this point, check that aggravating movements for the attachment assembled are not permitted.
- Check that stopping occurs at the point indicated in the load chart shown in notebook inside the cab.
- In the event everything is working properly, it is possible to begin work.

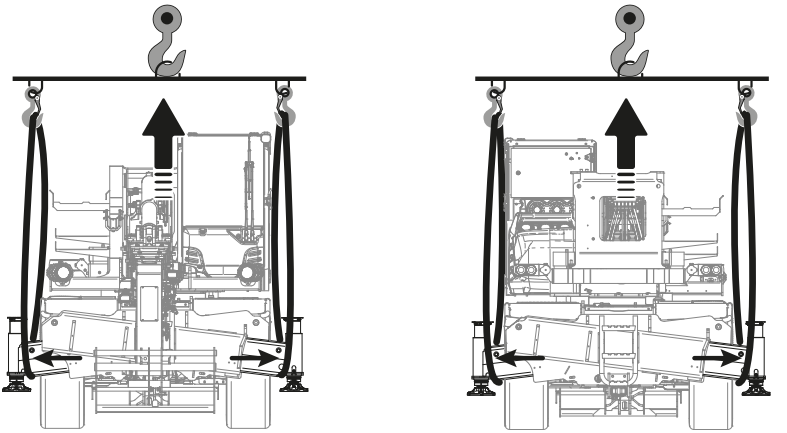
4.4 LOADING AND SECURING FOR TRANSPORT

⚠ DANGER

Always check the conditions of ropes, chains, wheel chocks, and other lifting devices to ensure good working condition and are adequate for the weight of the machine.Make sure the lifting equipment is adequate for the weight of the machine being lifted.

Note: The weight and dimensions of the machine are shown in the Product Specifications section. Check the overall dimensions for the maximum and minimum height values from the ground and weight allowed.

4.4.1 Lifting the Machine



Note: In order to lift the telehandler properly, you must extend the outriggers and pass the lifting ropes as shown in the image above.

The telehandler is fitted with lifting points, marked by special symbols.

Attach the ropes at the points indicated in the figure, paying utmost attention during the lifting phases. Slowly proceed with the lifting.

⚠ DANGER

Before lifting the machine, make sure no unauthorized personnel are in the surrounding area.

⚠ ATTENTION

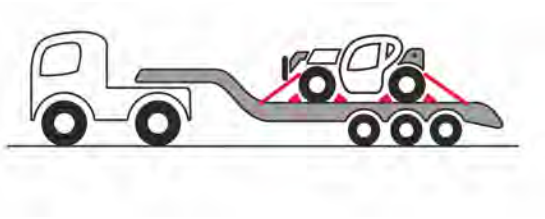
Lifting cables with a minimum unit capacity of 8 tons (17637 lb) are required.

Before lifting the telehandler, make sure to do the following:

- Remove any attachments from the telehandler.
- Retract and lower the telescopic boom completely.
- Ensure the turret lock is engaged.
- Engage the parking brake, place and the movement selection lever at "N" and switch off the machine.
- Close all windows and the cab door.

4.4.2 Transporting Machine on a Trailer

Note: Always check for good condition of the anchors (ropes, chains, wheel chocks, etc.).



Pay attention to the following when loading the telehandler onto a trailer:

- Before using ramps or trailers to load the telehandler, remove any mud, ice, or oil that could cause accidents.
- Check if the axle and the transport machine can withstand the overall weight of the telehandler and any loaded attachments.
- Check the overall dimensions of the machine for minimum and maximum heights from the ground and the weight allowed.
- Carefully handle the telehandler onto the transport machine.
- Make sure local regulations are observed when transporting the telehandler on public roads.

⚠ DANGER

When loading or unloading a telehandler from a transport vehicle, there is always the risk of the telehandler overturning sideways; therefore, have another person on the ground to observe the operations.



Take the following precautions when loading or unloading a telehandler:

1. Choose solid and level ground.
2. Remove any attachments installed on the telehandler.
3. Lower and fully retract the telescopic boom.
4. Use a platform or a ramp.
5. Always select the slowest speed.
6. Load the telehandler onto the transport vehicle, making sure the ramps are positioned properly and safely.
7. Once the telehandler is in a safe position, switch the engine off and engage the parking brake.
8. Close all windows and the cab door.
9. Anchor the vehicle to the transport vehicle with chains or cables through the relative hooks.
10. Apply wheel chocks to the front and rear wheels of the telehandler.

SECTION 5
Attachments

5.1 APPROVED ATTACHMENTS

⚠ DANGER

It is strictly forbidden to modify the structure of the attachment or adjust the safety devices of the various tool components.

5.1.1 Coupler Mounted Attachments

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

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

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

5.2 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 EQUIVALENT LOAD

5.3.1 Load Centers Beyond 24 Inches

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

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

Equivalent Load Calculation

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

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

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

Example

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

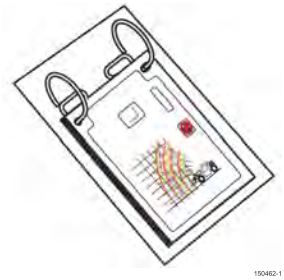
The Equivalent Load for this example is:

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

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

5.4 DIAGRAMS AND THE CAPACITY CHART

The diagrams notebook contains capacity load charts and summarizes the main information for safe use of the machine.



5.4.1 Load Charts

The Safe Working Load (SWL) of the vehicles depends on the extension extent and the boom angle.

The load capacity charts show the maximum height and extent allowed by certain attachments and loads, in order to work safely and without the risk of tipping the telehandler.

This machine is equipped with an anti-tipping device that monitors in real time the status of the load and the risk of tipping. It is necessary to use and adhere to the load charts in relation to the load and type of accessory used.

⚠ ATTENTION

It is mandatory to have the appropriate load charts to the machine and equipment on hand inside the cab.

⚠ DANGER

Danger of Tipping.Do not raise or extend the boom when the machine is in motion. Fully lower and retract the boom before moving a load.

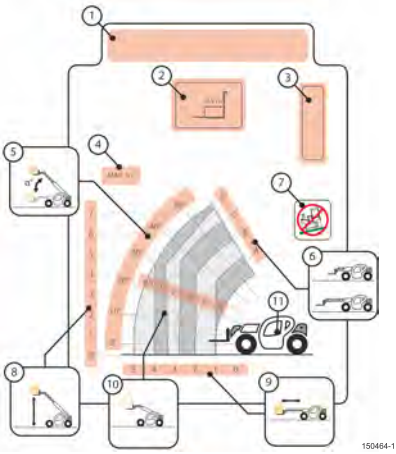
⚠ ATTENTION

All load charts provide information referring to a stopped and levelled machine.

⚠ ATTENTION

The diagrams of the machine and equipment/attachments used must always be in the Diagrams notebook inside the operator cab. Replace the load charts if they deteriorate, are damaged, or are lost.

5.4.2 Reading the Capacity Charts



1	**Machine Name and Model**
2	**Attachment Model** Attachment model with center of load indications.
3	**Load Capacity Chart Code**
4	**Attachment Maximum Capacity** The maximum capacity of the attachment is also reported by a decal on the attachment itself.
5	**Boom Angle** The boom angle is indicated by the inclinometer on the left side at the end of the boom (if any), r on the display of the anti-tipping device (if present).
6	**Boom Extension** The boom extension is indicated by alphabet letters (A, B, C, D, etc.). The same letters are shown as decals on the boom extension.
7	**Machine Operating Mode**
8	**Load Height from Ground**
9	**Horizontal Distance of the Machine Load**

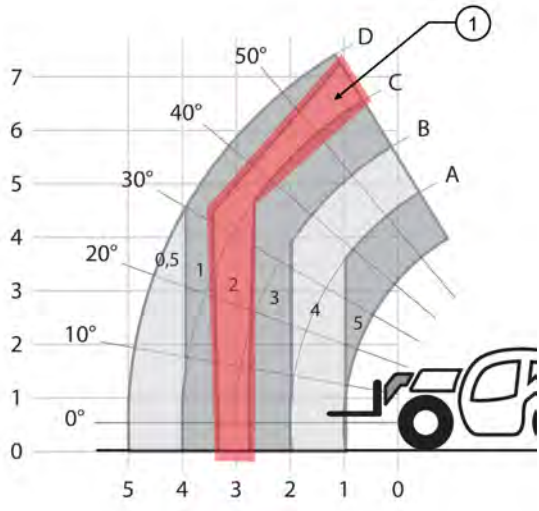
10	**Load Weight**
11	**Machine Position**

5.4.3 Use of the Capacity Charts

The load capacity charts indicate the areas in which it is possible to operate the machine and load in safe conditions.

⚠ DANGER

Danger of TippingOperating the machine without observing the capacity charts related to the attachments installed may result in hazardous conditions.



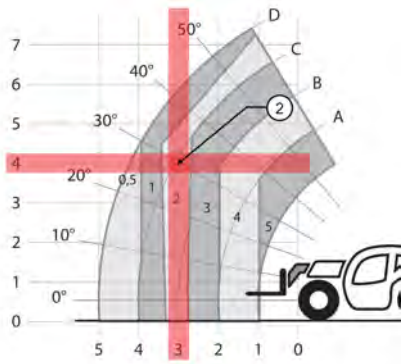
The whole working area of the boom is divided into these areas (**1**). Each area corresponds to a maximum capacity. The area closest to the machine will have a capacity equal to the maximum loading capacity of the machine. Moving away from the machine the maximum capacity of the areas decreases.

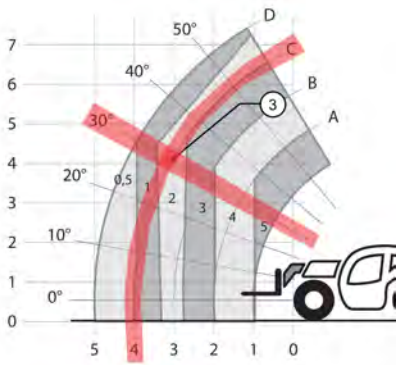
Before handling a load and to properly use the capacity chart the operator must first determine and/or have the following:

- Have read and understood this Operation & Safety manual.
- An approved attachment.
- Proper capacity chart(s).
- Weight of load being lifted.

- Load placement information:
  - HEIGHT where load is to be placed.
  - DISTANCE from the front tires of the telehandler where load is to be placed.
- On the capacity chart, find the line for height and follow it over to distance.
- Number in load zone where the two cross is the maximum capacity for this lift. If the two cross at a division between zones, the smaller number must be used.

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





Example:

If the load should weigh 1.5 imperial tons, the area to which it is necessary to refer is the area with a capacity of 2 tons (**1**). It will be possible to carry the load at a distance of 3 m from the machine and 4 m in height remaining in safety conditions (**2**). The operator could operate with the boom extended to letter C at an angle of 30° (**3**).

⚠ DANGER

Taking the load beyond the permissible limit will cause dangerous tipping conditions and the anti-tipping device will lock all movements which could upset the stability of the machine and/or load.Use the load capacity charts for each load to determine the safe working areas. It is only possible to start operating under safe conditions and within the predetermined safe work areas.

5.4.4 Legend for Capacity Load Charts

	Forks xxx = Center of gravity of the load		Prohibition of Operating with Unleveled Machine
	Forks; Positioning xxx = Center of gravity of the load		Crossbeam Outriggers Lowered — 0% Extended
	Forks; Rotating xxx = Center of gravity of the load		Crossbeam Outriggers Lowered — 50% Extended
	Winch xxx = Capacity		Crossbeam Outriggers Lowered —100% Extended
	Truss Extension xxx = Center of gravity of the load		Crossbeam Outriggers Lifted
	Gooseneck Jib (Dimensions) xxx = Center of gravity of the load		Flap Down Outriggers Lifted
	Hook for Fork Carrier Plate		Flap Down Outriggers Lowered
	Negative Truss		On Wheels
	Positive Truss		Front Position
	Fixed Front Platform xxx = Length yyy = Width		In Non-Continuous Rotation

	Extensible Front Platform xxx = Length yyy = Width zzz = Maximum Width		In Continuous Rotation
	Prohibition to Operate on Tires		

5.5 JLG APPROVED ATTACHMENTS

5.5.1 Attachment Pre-Use Checks

⚠ ATTENTION

If damage or malfunctioning is detected, comply with the instructions contained in this manual or in the manual of the attachment or platform and contact the JLG Service Center.

These checks must be performed before every use and every time a new attachment is installed on the machine:

- Check that the attachment is properly hooked to all the pins and the hooks are inserted in the correct position.
- There is no damage, deterioration, deformation of the attachment locking components.
- Check that the attachment and components are intact, perfectly functioning and not damaged.
- Verify that the attachment capacity is more than the weight of the load to be moved.
- Verify the correct functioning of the attachment and of the controls present in the vehicle cab on which the attachment is installed in a work zone free from personnel and obstacles.
- Verify the functioning of all indicators and lights present inside the telehandler on which the attachment has been mounted.
- Check the swiveling when empty.
- Check the oil level in the hydraulic circuit.
- Check that the safety symbols and stickers are clearly legible.
- Check the efficiency and functioning of the safety devices.
- Visually check the state of welding, inspect the machine and check for cavities, cracks of the welding or base metal, or other inconveniences.

- Check for any deformations and/or modifications of the material due to sudden temperature changes or damage from impacts.
- Check the attachment for wear.
- Verify the use mode relating to the installed attachment has been set on the telehandler.
- Verify that the capacity diagrams relating to the vehicle and installed attachment are present on the machine.

For attachments with hydraulic connections:

- Check that the tubes are in good conditions and do not obstruct the movements of the boom or the attachment.
- Verify the correct connection of the hydraulic tubes (if present) ensuring that the attachment functions are not inverted.

For attachments with electrical connections:

- Check that the cables are in good conditions and do not obstruct the movements of the boom or the attachment.
- Clean and fasten all the electrical connections (if present). Check before each work shift that there are no loose, twisted, hardened, or damaged wires. Do not operate the telehandler if there are any loose, twisted, hardened, or damaged electric cables.

Attachments with radio control pre-settings:

- Refer to the specific manual of the attachment for further checks.
- Verify the correct functioning of the radio control/ push button control panel and the charge status of the batteries.

If using lifting attachments:

- Refer to the specific manual of the attachment for further checks.
- Verify the integrity of the lifting hook, including relative catch, and of the hook bolt to the rope.

When winches are used:

- Refer to the specific manual of the attachment for further checks.
- Check that the rope is not damaged, cut, torn, or frayed. Do not use the attachment. (This check can be carried out by fully extending the lift boom and unrolling the winch rope). During this operation it is also possible to check the operation of the limit switch, which must lock the rope according to the procedure described in the specific paragraph.
- Verify the functioning of the extensometric transducer of the mounted attachment (if present); to do this, try to lift a load slightly heavier than the nominal maximum capacity of the attachment. In case the attachment is unable to lift the load, the

transducer operates correctly, otherwise immediately interrupt the operation bringing the load to the ground and repair the attachment.

When working with elevating work platforms:

- Refer to the specific manual of the attachment for further checks.
- Verify the operation of the emergency button of the load limiting device and of the area limiting device at the beginning of each work cycle.
- Before using the platform ensure it is not wet, dirty with grease, oil, has icy surfaces, or covered with other substances that can make its surface slippery. Accurately clean and dry the platform surfaces. Danger of slipping and falling.
- The machine on which the attachment is installed must be braked and stabilized on solid ground. If outriggers (if equipped) are present, position them correctly on the ground before starting to operate.
- Before operating, make sure the openings for access to the platform are in the closed position; always verify the correct engagement of the safety harnesses (PPE category III).

5.5.2 Attachment List

Icon	Description
	Forks; Standard
	Forks; Positioning
	Forks; Rotating
	Bucket; General purpose 94.5 inches, 2 yd^3
	Hooks

Icon	Description
	1 k Winch
	Truss Boom 8 feet, 2.6 k
	Truss Boom with Winch 9 feet, 3.3 k
	Platform; Extendable trilateral 8 feet to 13.5 feet

5.6 ATTACHMENT INSTALLATION AND REMOVAL

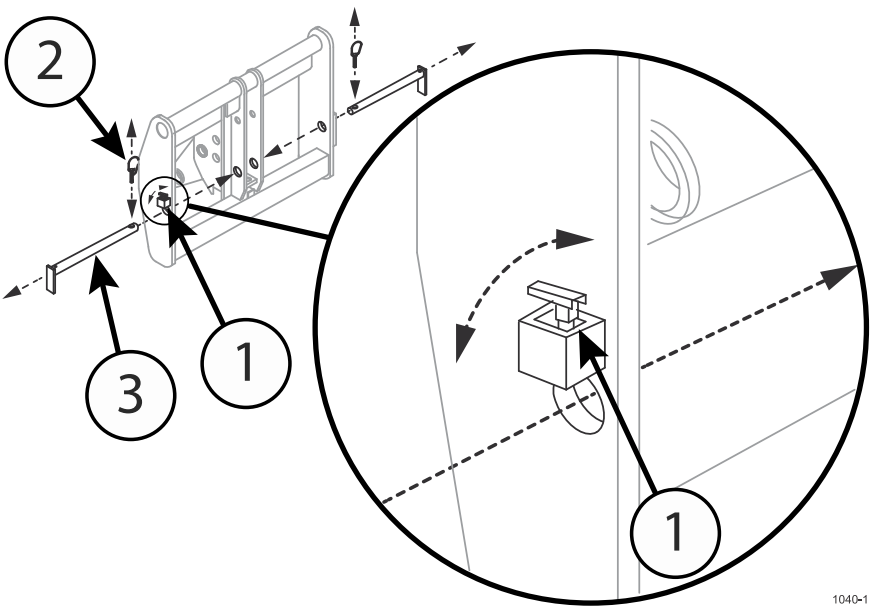
⚠ WARNING

When using an attachment that has electrical or hydraulic connections these must always be correctly connected to the telehandler. Failure to connect does not allow the proper operation of the safety devices with risk of damage to property, damage to people, and risk of machine tipping.

⚠ DANGER

It is forbidden to operate with a machine mode of use not suitable for the type of attachment installed. The electro-hydraulic attachments will not work correctly and safety devices will not be in operation creating a risk of damage to property, damage to people, and the machine risk of tipping.

5.6.1 Installation Procedure



Use the following to properly install attachments:

1. Remove the safety pins (**3**) (if installed) by removing the safety plugs (**2**) and lifting the lock pins (**1**).

2. Place the attachment on a flat not yielding surface, to be able to smoothly engage it with the attachment holding plate of the machine.

3. Place the machine with the boom lowered parallel to the tool. Approach the attachment holding plate to the accessory extending the telescopic boom. The machine can not extend the boom if it is completely lowered. Slightly raise the boom to be able to extend it.

4. Using the tilting movement, rotate the attachment holding plate downward. Bring the top of the plate under the locking hooks of the tool.

5. Slightly lift the boom and rotate the attachment holding plate upwards, thus making the attachment adhere to the attachment holding plate of the machine. During this operation, make sure that no person is in the vicinity of the attachment or the boom.

6. Turn off the engine and get out of the telehandler.

7. Lift the lock pin (**1**") and insert the safety pins (**3**) in their seats on attachment holding plate, passing through the corresponding slots of the attachment. If the two holes do not match, carry out the operations described in chapter "Safety pin outline".

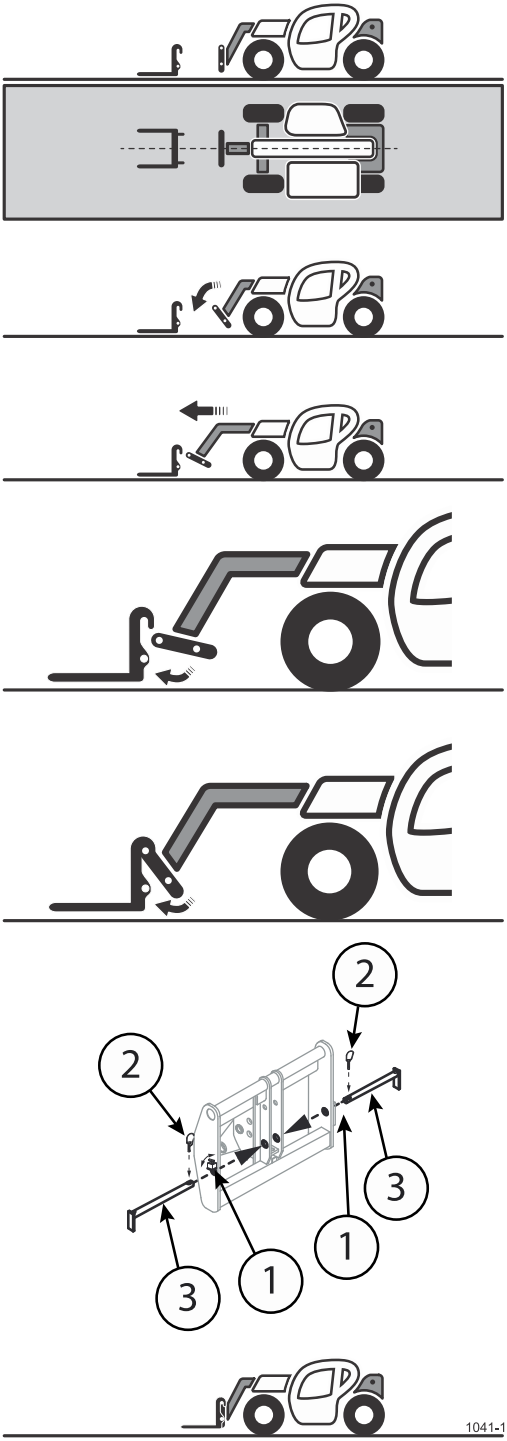
8. Fit the safety plug (**2**) on the pins just inserted.

9. In the event that the attachment needs electrical or hydraulic connections, refer to the chapters "Hydraulic connections" and "Electrical Connections".

10. Once the attachment is properly connected, turn on the telehandler and set the correct mode of operation of the machine related to the newly installed attachment.

11. Consult the manual of the machine to set the correct mode of use.

12. Ensure there is the load chart related to the machine and to the attachment just installed inside the cab.


2
2
3
1
1
3
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⚠ DANGER

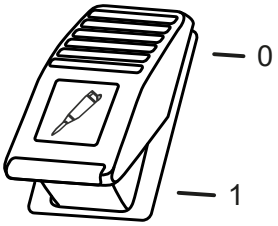
If the pin or safety pin do not reach the desired location due to deformation, it is forbidden to use the attachment.

⚠ DANGER

It is forbidden to operate the telehandler without the safety pin installed on the attachment holding plate.

5.6.2 Hydraulic Sockets and Electrical Contact on Boom Head*

Note: *The presence and number of hydraulic sockets and electrical contacts present on the boom head may vary depending on attachments.



The sockets button on the boom head (**1**) have several functions and positions depending on the optional attachments installed on the telehandler.

After selecting the desired hydraulic socket, it is necessary to use the services lever on the joystick to operate the desired movement.

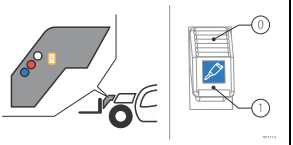
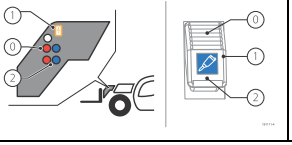
⚠ DANGER

Danger of moving the wrong hydraulic socket.

Do not operate the hydraulic sockets using the joystick during the selection of the hydraulic socket. Make the selection of the hydraulic socket and use the joystick to control the hydraulic socket selected only at a later time. After connecting the attachment to the hydraulic sockets before starting the job, check in a safe location that all the controls are working properly. During the test, be careful not to create danger or damage to persons, animals or objects.

⚠ WARNING

Pay attention to the connections of the hydraulic socket. Moving the service lever on the joystick forward (towards the open padlock) will send oil to the female socket.

Attachments	Buttons	Description
Standard hydraulic socket + electrical contact		**0** — Electrical contact Off **1** — Electrical contact On
Standard hydraulic socket + additional hydraulic socket + electrical contact		**0** — Standard hydraulic socket **1** — Electrical contact On **2** — Additional hydraulic socket

5.6.3 Hydraulic Connections

Note: Always accurately clean the hydraulic connections before each coupling. If not used, both the hydraulic connections must be protected with adequate plastic caps.

⚠ WARNING

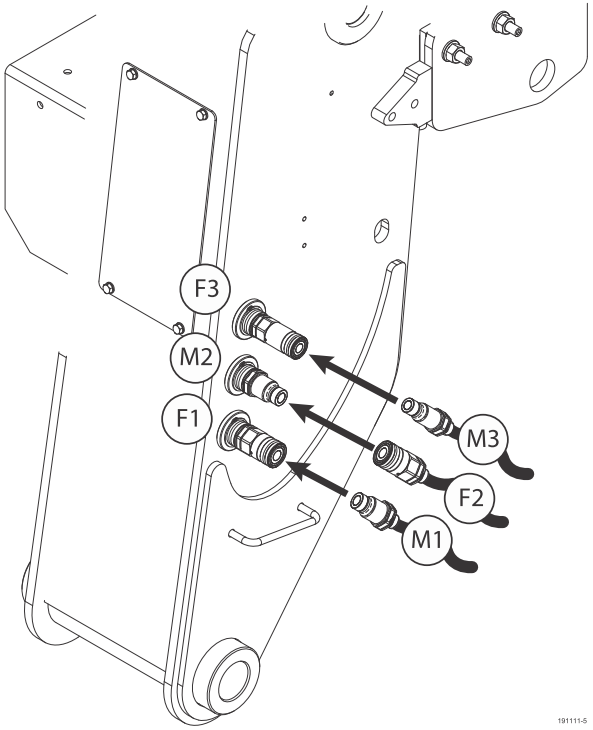
Do not use the machine or the attachment if the hydraulic tubes are worn or damaged, but repair or replace them.

⚠ DANGER

Hydraulic Liquid Under Pressure

Fine jets of hydraulic oil at high pressure can penetrate the skin. Keep hands and face at a safe distance from the pressurized fluid and wear goggles and protective gloves. Bring a piece of cardboard to the area of the suspected leak and then check for traces of liquid on the cardboard. If the liquid penetrates the skin, immediately seek for medical advice.

Hydraulic Quick Couplings and Correct Connections



Connect the hydraulic connectors to the appropriate hydraulic sockets.

- Hydraulic sockets **F1** (female) with **M1** (male)
- Hydraulic sockets **M2** (male) with **F2** (female)
- Hydraulic sockets drain pipe **F3** (female) with **M3** (male) is present on the attachment.

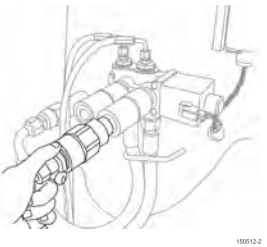
⚠ WARNING

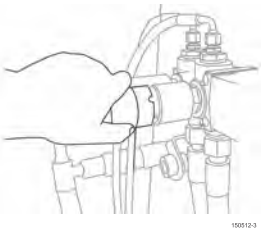
Attachments with hydraulic connections made incorrectly, have movements or functions that do not agree with the operator's controls and can cause damage to other operators, material handled, or to the machine and attachments.

Always make sure that the hydraulic connections follow the indications given above for proper connection and that the movements and functions of the attachment comply with the operator controls.

Flat-Face Coupling Connections





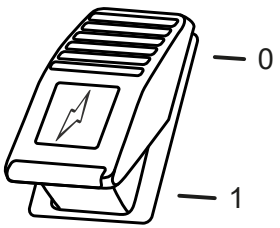


To connect the Flat-Face quick couplings:

1. Perform the attachment installation procedures described earlier in this section.
2. Turn off the telehandler.
3. Clean the plug and socket.
4. Place the plug at the center of the socket and fully push the plug, until the socket ring is lifted.
5. Turn the ring to block the plug inside the socket.
6. Check that the hydraulic pipe is correctly fixed.
7. Carry out the same operation for both pipes.

Note: When connecting a lifting attachment with winch, it is necessary to connect all 3 hydraulic pipes. The third pipe is a drain line connected directly to the hydraulic tank of the machine and is essential for the correct operation of the hydraulic motor of the winch.

5.6.4 Electrical Contact on Boom Head (If Equipped)



It is possible to connect the following at the electric contact socket on the telescopic boom head:

- The plug of the solenoid valve of the Second Additional hydraulic socket

- The plug of any attachment(s) installed on the attachment holding plate

To activate the electric contact, place the Sockets switch on the boom head in position (**1**).

Note: For information on how to make connections to the electrical socket, refer to the Electrical Connections section below.

⚠ WARNING

Do not connect users with nominal voltage greater than 12 V and amperage greater than 3 A. Risk of damage to the electrical system.

Note: The electrical contact on the boom head is an optional accessory.

5.6.5 Electrical Connections

⚠ DANGER

Before making the electrical connections, turn off the telehandler. Do not use the machine or the attachments if electrical cables are worn or damaged. Repair or replace them.

⚠ WARNING

Do not leave the boom plug hanging from the chain during work operations as this may be damaged, impairing the machine's correct operation when used without equipment.

⚠ IMPORTANT

Before making the electrical connection, perform the Attachment Installation Procedure and ensure the attachment is correctly fixed to the machine.

⚠ WARNING

When using an attachment which has electrical or/and hydraulic connections these must always be correctly connected to the machine.

⚠ DANGER

Partial or incorrect electrical connections do not allow for proper operation of the safety devices and cause risk of damage to property, persons and risk of overturning the machine. Consult the attachment manual to verify correct operation.

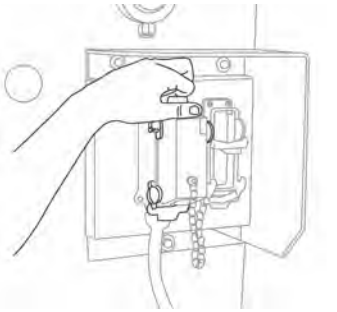
⚠ IMPORTANT

Check that the electrical cable is not in a position which hampers the movements of the machine or the attachments, as it could be damaged.

Procedures for Connecting Electrical Connections

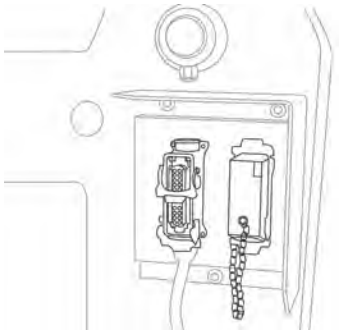
Use the following procedures to connect attachments with electrical connections:

1. Use proper attachment installation procedures.
2. Turn off the machine.
3. Disconnect the cover from the socket on the boom (**1**) lowering the 2 safety levers (**2**).



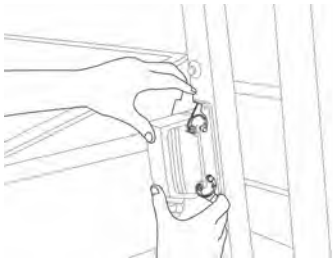
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4. Remove the cover located on the boom socket and fit it in the dummy socket aside and fasten it with the appropriate levers.



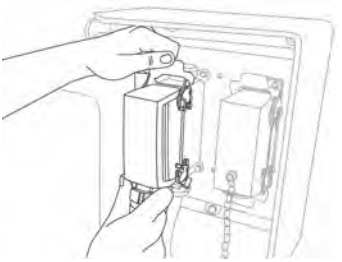
150512-5

5. Disconnect the plug from the dummy socket on the attachment (**1**) lowering the 2 safety levers (**2**).



150512-6

6. Connect the plug of the attachment on the electrical socket of the boom, fastening it by lifting the 2 safety levers (**1**).



150512-7

7. Once the attachment is properly fixed, turn on the machine and set the correct mode of operation of the machine related to the newly installed attachment.

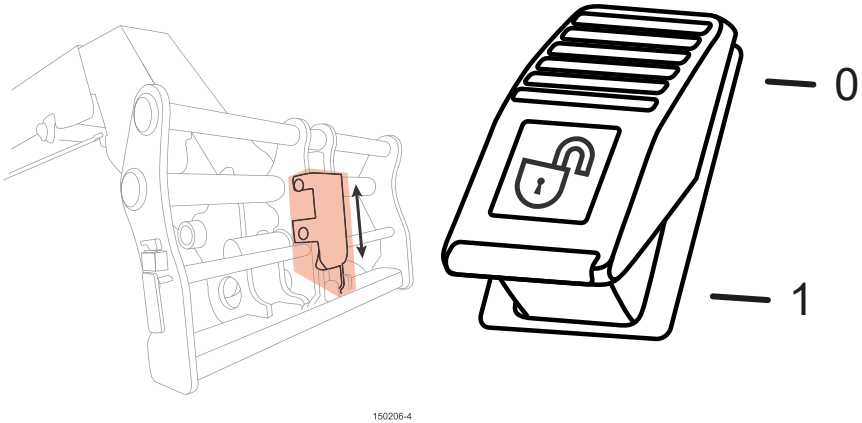
8. Check that in the cab there is the load chart related to the machine and to the attachment just installed.

5.6.6 Attachment Quick Coupling

The attachment quick coupling allows the operator to install and fasten the attachment to the attachment holding plate directly from the cab.

There are different models of quick couplings for attachment, they can be with a single block cylinder lock or double block cylinder, the procedures for use change according to the type of hydraulic system of the machine.

Quick Coupling with Single Lock on Open Circuit Machine



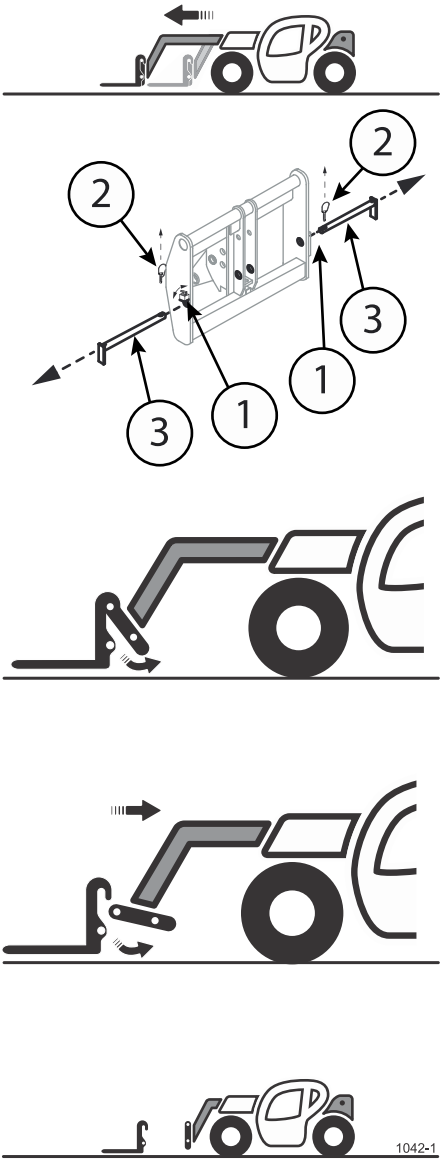
To use the quick coupling for the equipment installation it is necessary to:

- Carry out the normal hooking operations set out earlier in this section.
- Press the Quick Coupling button (**1**) and at the same time operate the roller on the services joystick to open the quick coupling.
- Keep the quick coupling open, tilt the plate upward to make sure that the equipment is fully resting on the attachment holding plate.
- Release the roller on the services joystick and the Quick coupling button (**1**) to close the quick coupling and lock the attachment.
- If the attachment is not properly fastened, repeat the installation.

⚠ DANGER

Do not operate without having properly secured the attachment to the plate, danger of load and attachment falling.

5.6.7 Attachment Removal



Use the following procedures to remove attachments.

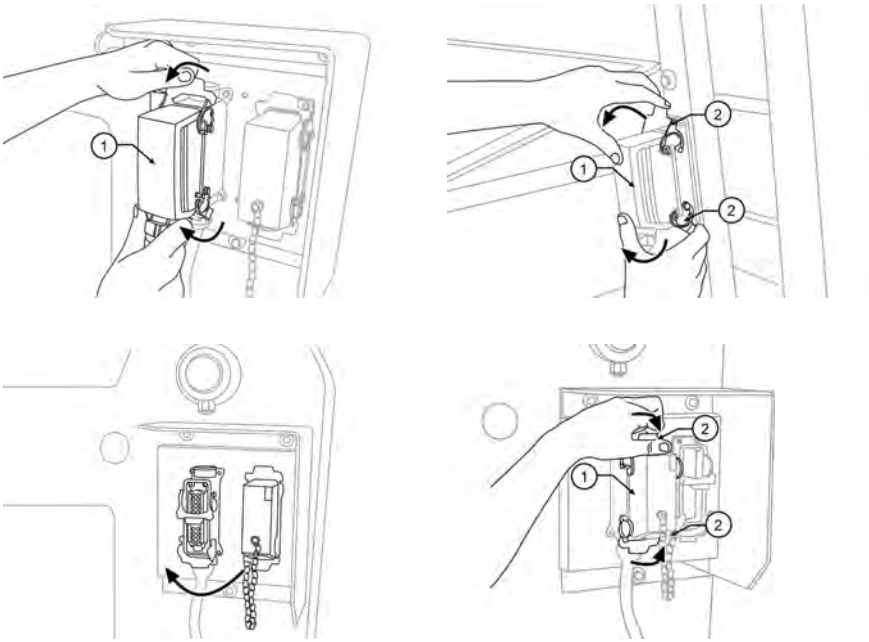
1. Place the machine on a solid and level ground.
2. Position the attachment above a support platform to facilitate the handling and transportation of the single piece of attachment.
3. Lower and extend the machine boom of about one meter.

4. Turn off the engine.
5. Remove the electrical connections, if any.
6. Remove the hydraulic connections, if any.
7. Release the attachment following the reverse procedure of the attachment installation in accordance with the type of plate installed on the machine.
8. Turn on the machine and swing down in order to release the attachment holding plate from the attachment.
9. Once released the attachment holding plate, retract the machine boom.

⚠ DANGER

After releasing the system pressure always wait for a minute before disconnecting the joints. Always disconnect the hydraulic pipes and electrical cables of the attachment before releasing it from the machine. Otherwise it is possible to damage the pipes or cables and the tool may fall and be dragged.

Electrical Connections Removal



Do the following to remove electrical connections from attachments:

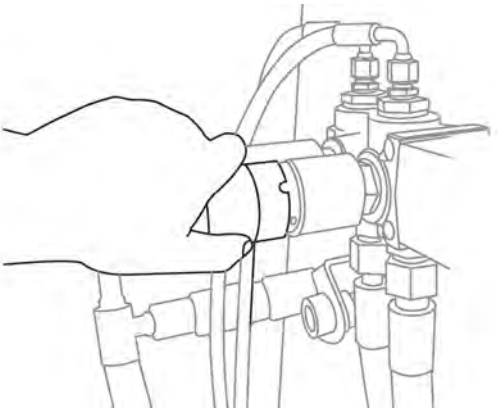
1. Follow steps 1, 2, 3 and 4 of the procedure to remove the attachment from the machine described in the previous section.

2. Disconnect the plug of the attachment from the boom lowering the two safety levers.
3. Position the plug of the attachment on its dummy socket (**1**), fastening it with the safety levers (**2**).
4. Disconnect the cover located on the boom dummy socket and fit it in the electrical socket.
5. Secure the cover to the socket on the boom (**1**) through the safety levers.
6. Check that the electrical cables are not trapped in the attachment holding plate or that they will be crushed by the attachment when it will be placed on the ground.
7. Proceed with the subsequent operations to remove the attachment from the machine.

Flat-Faced Coupling Removal

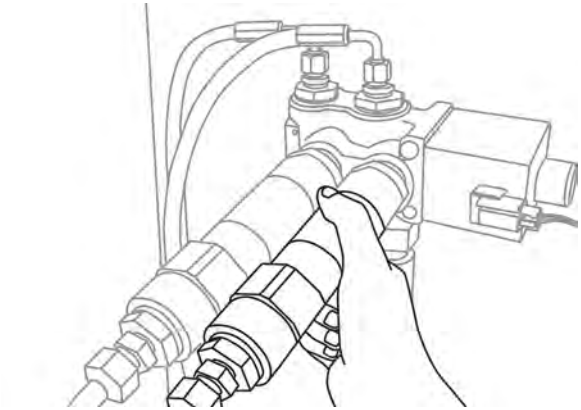
To disconnect flat-faced couplings:

1. Follow steps 1,2,3, and 4 of attachment removal procedure.



2. Turn the socket ring to match the recess with the position of the ball placed on the socket .

3. Push the socket ring (**1**).

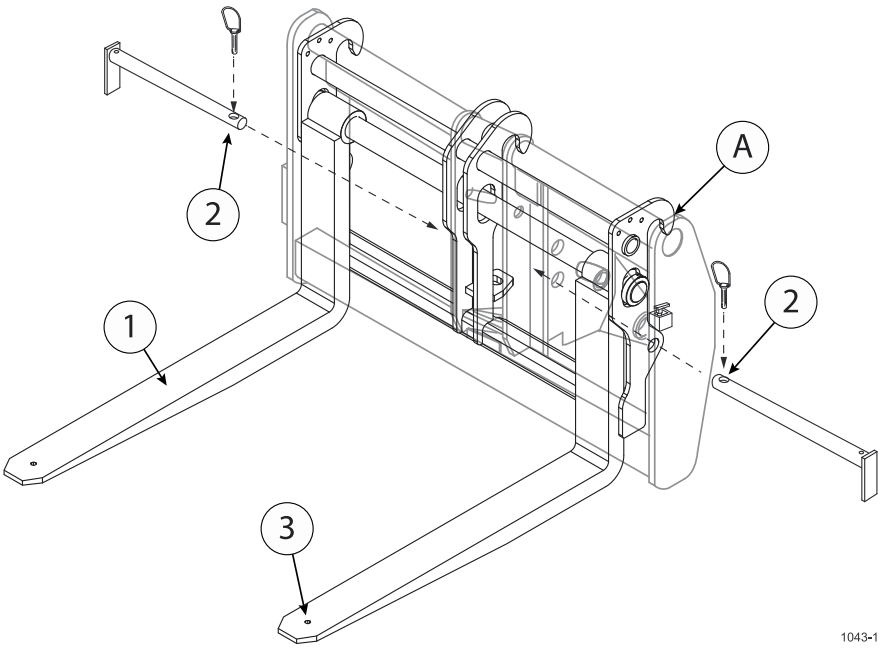


4. Pull of the plug (**2**).
5. Clean socket if dirt or debris is present.
6. Perform removal steps for both pipes.
7. Ensure hydraulic pipes are not trapped in the attachment holding plate and they will not be crushed by the attachment once placed on the ground.
8. Proceed with additional operations to remove attachments from the telehandler.

5.7 ATTACHMENT OPERATION

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

5.8 FORKS



The data necessary for the identification of the forks are positioned on the right side of the forks, in the upper part (**A**).

Below are the identification data (their order may be different on the forks).

The forks consist of the following main components:

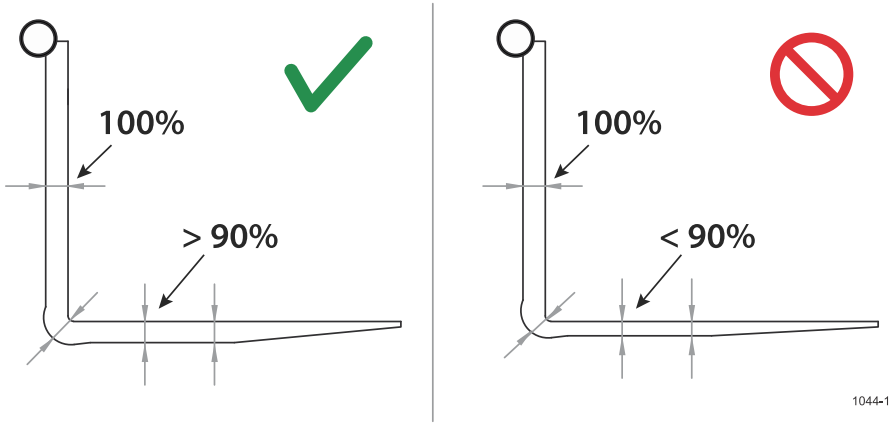
1. Forks
2. Eyelet
3. Hole for mounting specific attachments

⚠ DANGER

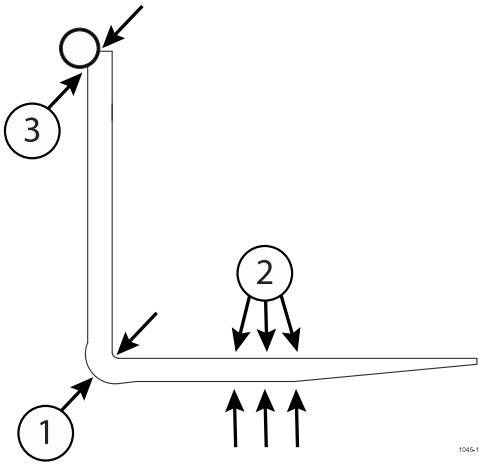
It is strictly forbidden to use the hole for fastening equipment, for the installation of equipment not expressly approved by JLG, or for use other than that intended.Machine tipping danger, damage to forks, or falling material.

5.8.1 Forks Inspection

Check Fork Thickness



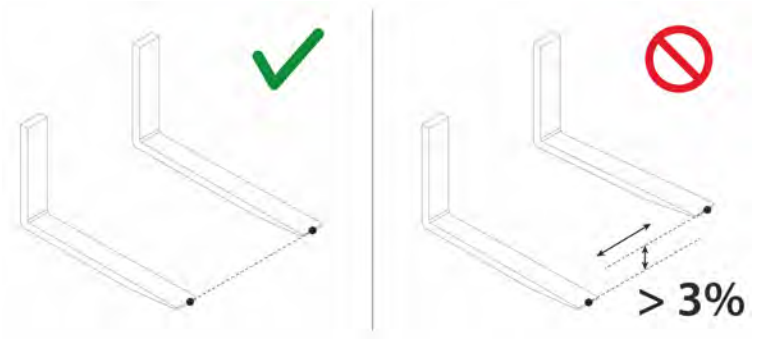
The maximum wear allowed is 10%.



For example for a fork 2.75 inches thick, the thickness must not be less than 2.5 inches.

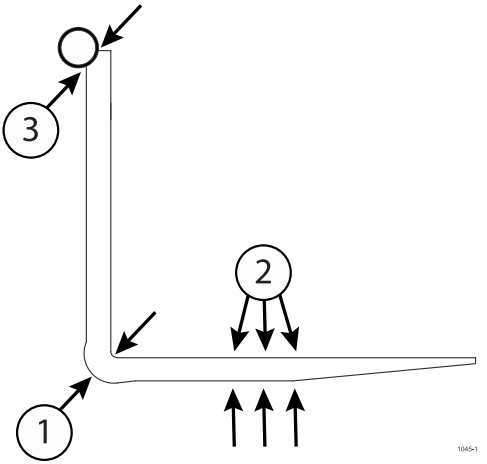
For a quick check of the thickness of the forks, it is necessary to measure the thickness in the vertical part of the fork (**1**). This will be the dimension to which refer for the fork thickness measurements (**2**). Make at least three measurements at several points.

Check for Fork Deformation and Weld Integrity



Verify that the two forks are parallel between them and that the distance from the ground is the same for both, or with difference of less than **3%** of the length of the fork.

For example, for a fork 71 inches long, the difference between the maximum permissible deformation of the fork tips will therefore be of 2 inches.

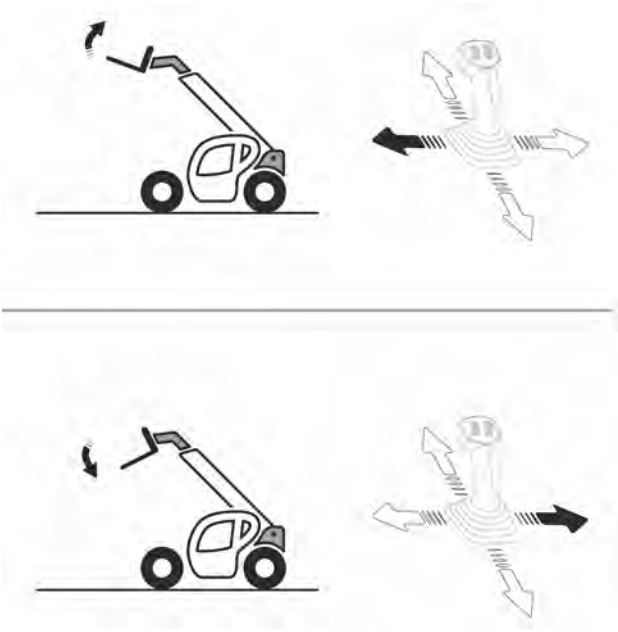


Check that all the welds on the forks (**3**) are in good conditions and have no cracks or anomalies.

5.8.2 Forks Usage

⚠ DANGER

Before using the forks, always inspect the forks as described previously in this section.



150521-1

To use the forks it is sufficient to move the controls for the plate tilting.

By moving the joystick to the left, the tips of the forks will rise; by moving the joystick to the right, the tips of the forks will lower.

5.8.3 Forks Adjustment

To adjust the position of the forks:

- Place a load on the ground.
- Lower and fully retract the boom keeping the forks approximately 3 feet above the ground surface.
- Turn off the machine.
- Get out of the telehandler and manually move the forks to the desired width.

5.8.4 Moving Loads with Forks

⚠ DANGER

Never lift a slung load with a single fork. It is absolutely forbidden to use the forks with hooks, straps or other materials for handling suspended loads. Use the appropriate accessories (hook, winch, jib).

Transporting with Forks

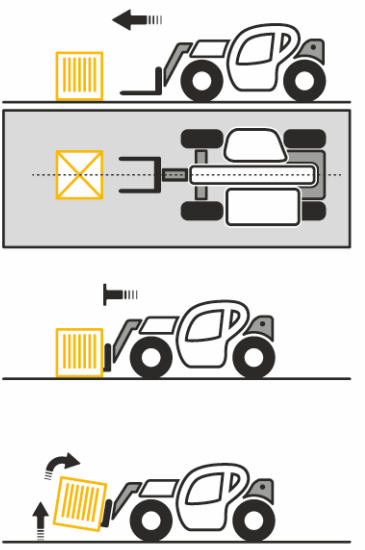


150527-1

To correctly transport a load with forks it is necessary to:

1. Fully retract the boom.
2. Lower the boom fully down so that the forks are at about 1 foot (300 mm) from the ground.
3. Tilt the fork tips upward.

Lifting a Load from the Ground



150528-1

1. Slowly move the telehandler close to the load to be lifted, with the boom fully retracted and the forks in a horizontal position at the height of the lifting position. Keep the forks raised just enough to avoid contact with the ground.
2. Extend the forks under the load to be lifted up to the contact with the attachment holding plate.
3. Press the brake pedal and move the gear selector in neutral.
4. Slightly lift the load and tilt the attachment holding plate backward setting it in the transport position.

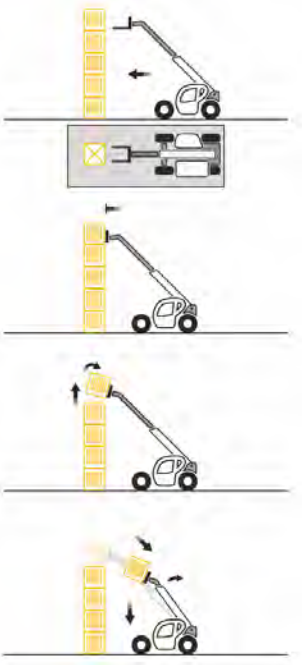
⚠ WARNING

Always observe the center of gravity of the load, tilt the forks enough to ensure stability and prevent the loss of the load during braking.

⚠ DANGER

Never carry a load with boom raised and/or removed.

Picking a Load from a High Position



150529-1

1. Make sure that the forks pass easily under the load.

2. Drive slowly and cautiously approaching the machine to the load, placing it perpendicular to this with the forks horizontal. If necessary, use the inching pedal to approach slowly.
3. Always remember to keep the distance required to insert the forks under the load, between the stack, and the machine.
4. Extend the boom for the shortest possible length.
5. After bringing the forks under the load to be lifted until it is in contact with the fork holding plate, press the brake pedal and move the gear selector in neutral.
6. Lift the load and tilt the fork holding plate to the transport position.
7. If possible lower the load without moving the telehandler.
8. Lift the boom to move the load away, then retract the extensions and lower the boom to set the load in the transport position.
9. After moving the load away properly, retract the extensions and lower the boom to set the load in the transport position.

⚠ WARNING

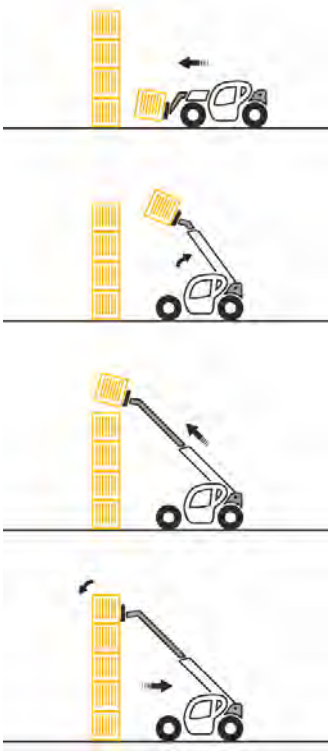
Always observe the center of gravity of the load, tilt the forks enough to ensure stability and prevent the loss of the load during braking.

⚠ DANGER

Danger of Tipping

It is absolutely forbidden to pick up a load if the vehicle is not level.
Never carry a load with boom raised and/or removed.

Positioning a Load in a High Position



1. Bring the load in the transport position in front of the stack.
2. Lift and extend the boom to take the load above the stack. If necessary, move the machine towards the stack very slowly and very carefully. If necessary, use the inching pedal to approach slowly.
3. Press the brake pedal and move the gear selector in neutral.
4. Place the load horizontally and lay it on the stack, lower and retract the extensions to properly position the load.
5. Release the forks alternately retracting the extensions and lifting the boom.

⚠ WARNING

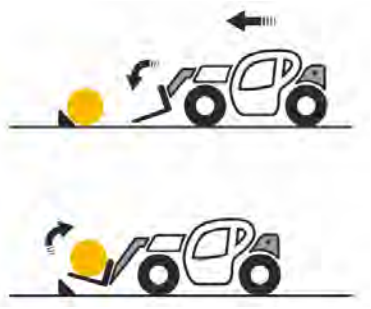
Always observe the center of gravity of the load, tilt the forks enough to ensure stability and prevent the loss of the load during braking.

⚠ DANGER

Danger of Tipping

It is absolutely forbidden to pick up a load if the vehicle is not level.
Never carry a load with boom raised and/or removed.

Picking Up a Round Load



150531-1

1. Tilt the forks forward and retract the telescopic boom, while inserting the forks under the load.
2. Rotate the fork carrier plate backward to slide the load. If necessary secure the load with wheel chocks.

⚠ WARNING

Always observe the center of gravity of the load, tilt the forks enough to ensure stability and prevent the loss of the load during braking.

⚠ DANGER

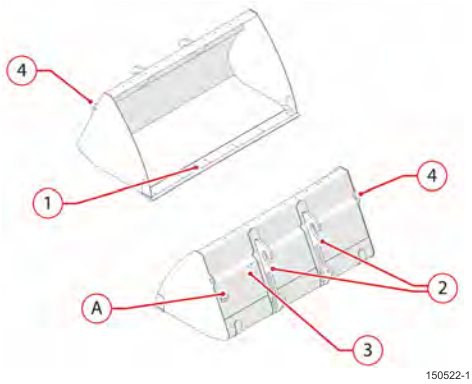
Never carry a load with boom raised and/or removed.

5.9 BUCKET

Buckets allow handling inert material.

To ensure a prompt and efficient service when ordering parts or when requesting information or technical clarification always specify the serial number.

The data necessary for the identification of the buckets are positioned on the right side, in the upper part (**A**).



Buckets consist of the following components:

1. Blade
2. Hooks for Plate Connection
3. Tilt Indicator
4. Hooks for Lifting

5.9.1 Bucket Usage

⚠ WARNING

It is absolutely forbidden to use the forks or any attachment, without securing it to the attachment holding plate with the appropriate safety plugs.

To use the bucket it is necessary to select the bucket attachment on the anti-tipping device. Refer to the fork diagram when viewing the load charts. Extending beyond (**A**) on the load chart, the load must be halved with respect to those shown on the fork diagram.



To use the buckets, you must move the plate tilting control.

Moving the joystick to the left, the tip of the bucket will move up. Moving the joystick to the right, the tip of the bucket will move down.

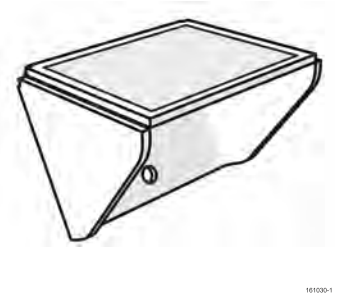


150630-1

⚠ WARNING

Given the large size of the buckets, for some movements it will be necessary to retract the boom to prevent contact of the bucket with other parts of the machine. It is advisable to operate with the minimum possible extension of the boom.

5.9.2 Fixed Tilt Indicator Use



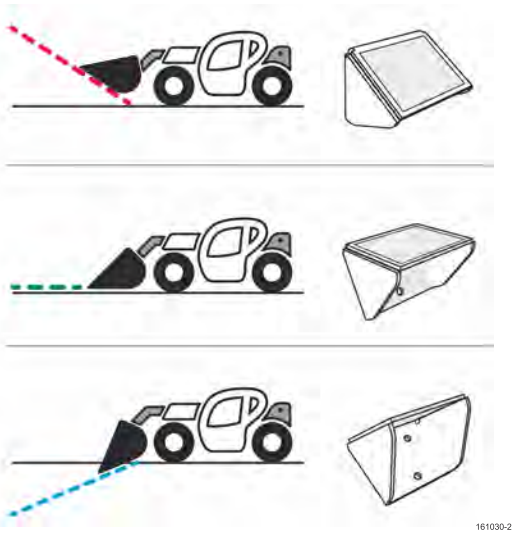
161030-1

In the left part of the bucket there is the fixed tilt indicator, this tool allows to know the angle of the bucket during use.

The bucket position can be determined based on the face shown by the fixed tilt indicator:

- **Upper visible face**: the bucket blade is turned upward
- **Face parallel to the ground**: the bucket is aligned to the ground
- **Lower visible face**: the bucket blade is turned downward

To obtain the maximum efficiency of the bucket it is appropriate to use the bucket aligned to the ground.



5.9.3 Safe Working Procedures

⚠ DANGER

Do not change the structure of the attachment.

Before Lifting

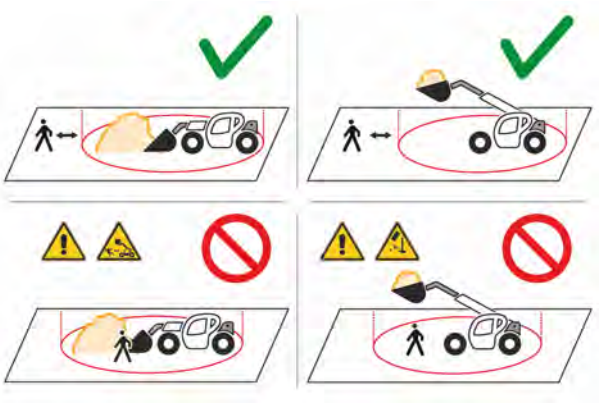
Check the following before beginning work:

- Position of telelhandler and all ground conditions.
- Check the dimensions and characteristics of the work area and complete visibility of the load and of the surrounding area. Otherwise use a person on the ground assigned for signaling.

Danger Zones

The areas around the bucket and the telehandler are danger zones. The size of this area may vary depending on the following:

- Load size
- Load lifting height



150631-1

⚠ DANGER

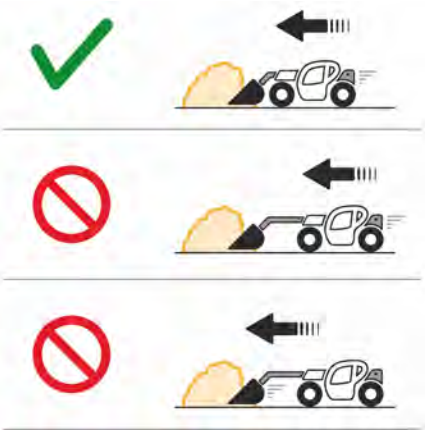
Keep away from the machine during operations and away from excavation area.

Bucket Load

It is strictly forbidden to push or stack material with an extended boom. It can cause serious damage to the telehanler.

It is strictly forbidden to push or stack material using the boom extension. It can cause serious damage to the telehandler.

It is strictly forbidden to make leveling or digging operations in reverse. It can cause serious damage to the telehandler.



150632-1

It is strictly forbidden to push or stack material with the vertical bucket planted in the ground.

⚠ WARNING

It is forbidden to repeatedly beat the swinging cylinder at closing limit switch to detach material attached to the bucket.

Carrying Load with a Bucket

Correct telehandler movement with the bucket attachment installed is as follows:

- Bucket as close to the ground as possible
- Bucket retracted as much as possible



150633-1

⚠ WARNING

Keep the bucket at a height sufficient to be able to avoid roughness of the terrain along the way.

5.10 PERSONNEL PLATFORM

⚠ DANGER

Climbing in and out of the platform is only allowed while platform is resting on the ground. Use caution when entering or leaving the platform. Always stand facing the platform and maintain three points of contact.

⚠ DANGER

Before using the platform attachment make sure all gates are closed and secured in the proper position. It is prohibited to lock the gates in the open position. Never open the gates to perform work or move material with the platform off the ground.

5.10.1 Platform Identification

The identification label is located at walking surface level on the right rear side.



Figure 18. Identification Plates

5.10.2 Lanyard Anchorage Points



Figure 19. Lanyard Anchorage Points

⚠ DANGER

Only use the lanyard anchorage points indicated by the manufacturer.

⚠ DANGER

It is mandatory to inspect the lanyard anchorage points before each use. Check there are no cracks or deformations.

5.10.3 Platform Features

Locking Pin Microswitches

On the platform plate there are one or two pin presence microswitches.



Figure 20. Locking Pin Microswitch Locations

The microswitches indicate the locking pin (s) is properly inserted into the plate. The platform controls are inhibited if the pin(s) is not inserted correctly.

The control unit indicates the anomaly through an audible signal and by the Operations Consent indicator light.

Pump for Emergency Recovery

Each machine prearranged to use the platform attachment is equipped with a pump for emergency recovery.

In case of mechanical failure, it is possible to retract and lower the boom by the pump located on the rear of the machine.

See the Emergency Procedures in this manual.

5.10.4 Prior to Use

Before using the personnel platform it is necessary to make sure the shipping blocks have been removed. The load cell shipping blocks are inserted for transportation and must be removed prior to use.

The red safety blocks (**A**) and (**B**) are located on the left and right of the load cell. To remove them unscrew the bolts and remove the shipping blocks.

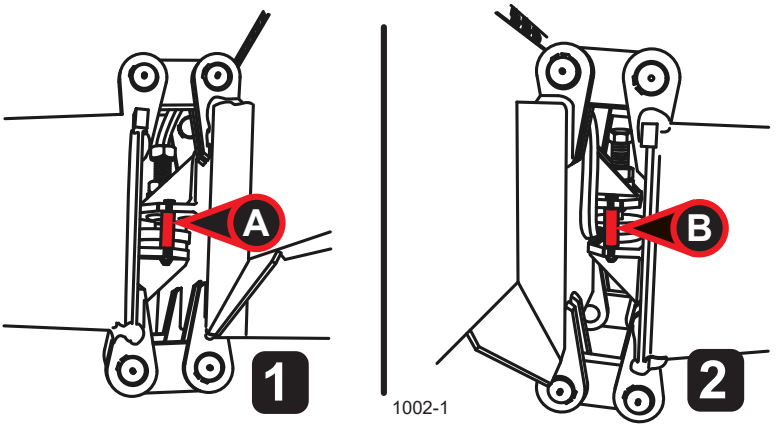


Figure 21. Safety Blocks

⚠ DANGER

Do not begin work with the shipping blocks (A) and (B) still installed on the platform. While the blocks are installed, the safety system of the platform is not operating correctly.

Note: Keep the shipping blocks in case travel over extended distances is needed to protect the load cell. The vibrations from long transport of the personnel platform may damage the load cell and adversely affect the correct operation of the platform.

5.10.5 Platform Movement Controls

To perform any movement from the platform, the operator must use two controls simultaneously. Turn the knob corresponding to the desired movement (**8 – 11**) while starting the movement with the joystick (**6**) at the same time.

Trilateral Platform Extension and Rotation

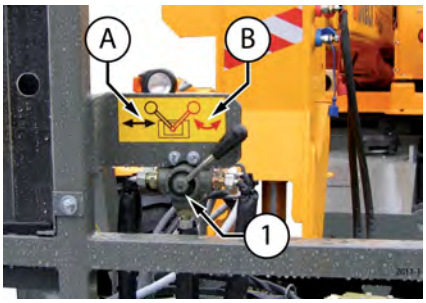


Figure 22. Movement Control Levers

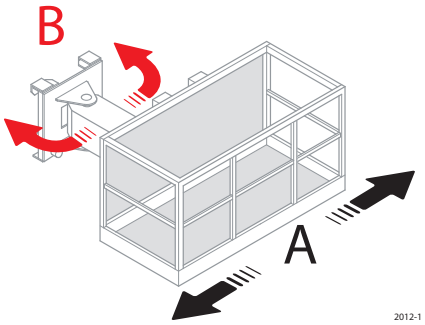


Figure 23. Platform Movement Directions

The selection lever (**1**) located on the platform, allows the flow of oil to divert to the extension or rotation controls.

- **Extend and Retract Platform** — Move lever (**1**) to the left (**A**) to enable function
- **Rotate the Platform** — Move lever (**1**) to the right (**B**) to enable function

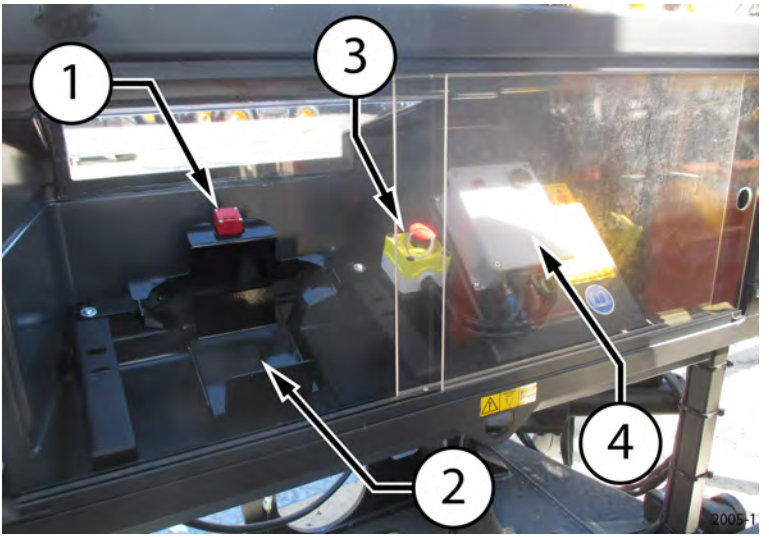
After selecting the desired function with the lever (1), use the controls from the platform or the remote control, to perform the desired movements.

Movement	Control Knob	Joystick
Retract the platform	Turn knob (**11**) and hold	Move joystick **down**
Extend the platform	Turn knob (**11**) and hold	Move joystick **up**
Platform clockwise rotation (if equipped)	Turn knob (**11**) and hold	Move joystick **down**
Platform counter-clockwise rotation (if equipped)	Turn knob (**11**) and hold	Move joystick **up**

5.10.6 Platform Remote Control

⚠ DANGER

While operating the platform, always remain inside the platform with the remote control installed in its dedicated housing.



1	Remote control coupling	3	Emergency stop button
2	Remote control housing	4	Area limiter

⚠ DANGER

If the platform is within the non-permitted work area (such as platform overload) the working area indicator lights turn off. If this happens, only boom retraction and boom lift movements will be available in order to bring the platform within the allowed working area.

When the engine is started, the indicator light on the area limiter (**4**) will illuminate. The light will remain on while the platform is in the allowed work area.

⚠ DANGER

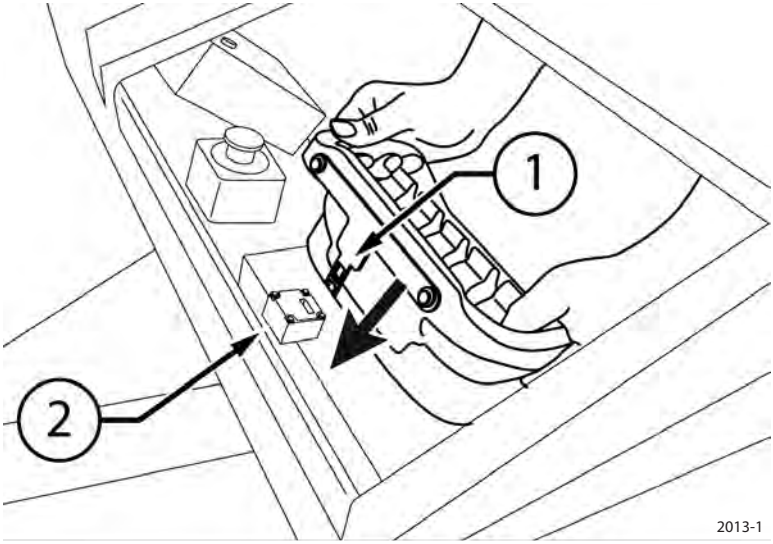
When the engine is started and the indicator light does not turn on, return the platform to safe conditions.

Operation

For proper remote control use, do the following:

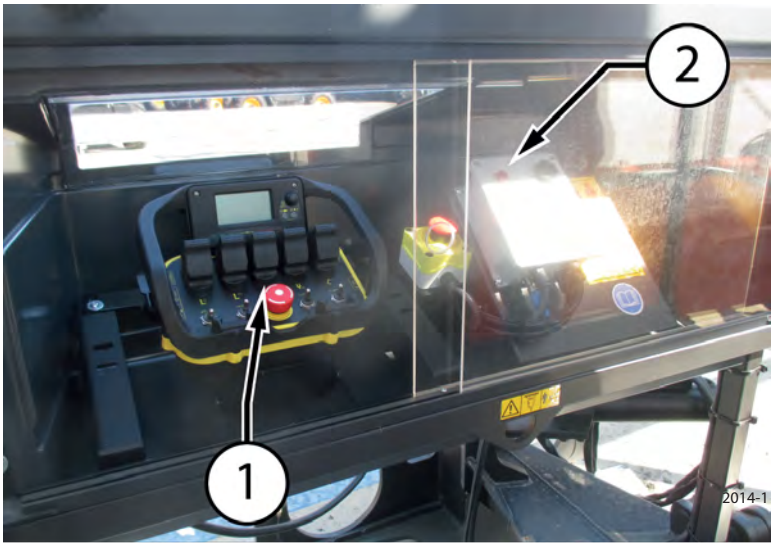
- Prepare the machine and platform for use.

- Install the remote control on the platform by inserting the plug (**1**) in the seat of the platform (**2**) as seen in the image below.

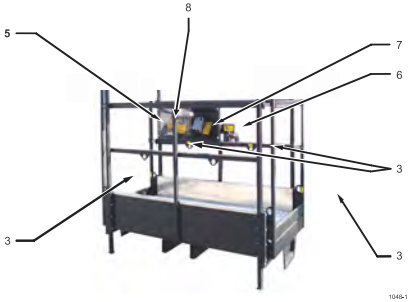


- Turn on the remote control and start the machine.

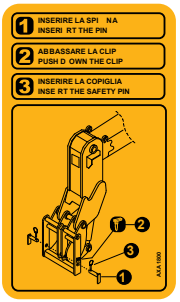
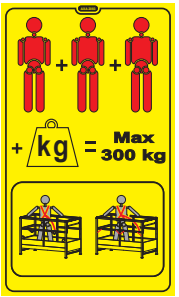
While using the platform with the remote control, keep the remote control in its seat (1). If the remote control is removed from its seat all platform and telehandler movements are inhibited.



5.10.7 Platform Safety Decals





1.		Indicates the operations to connect the attachment to the machine attachment plate.
2.		Indicates maximum platform capacity and personnel in platform — 300 kg — 3 personnel
3.		Indicates correct position to secure lanyards
4.		Crushing danger during platform rotation
5.		Indicates maximum platform capacity and personnel in platform — 300 kg — 3 personnel

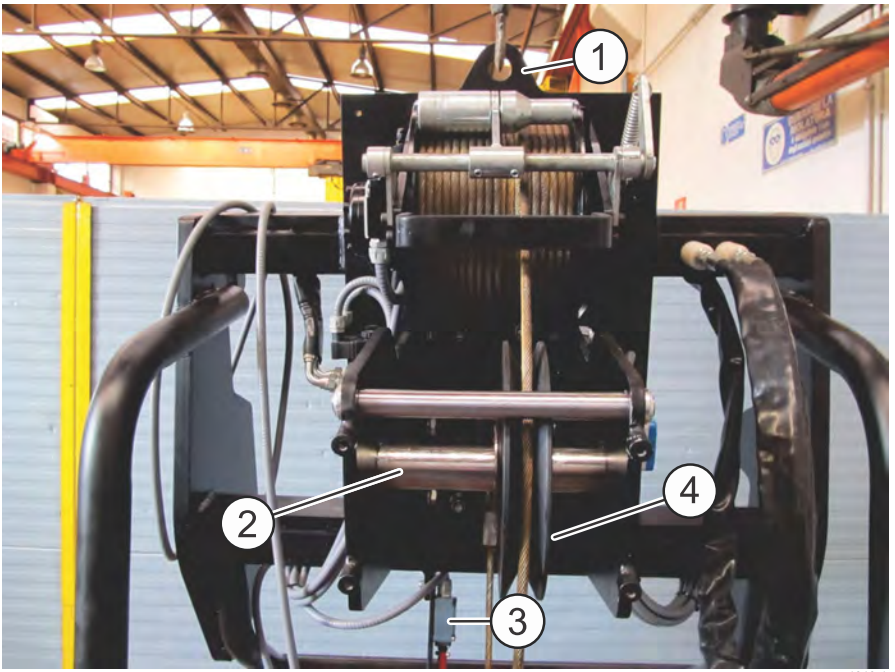
6.		Indicates to connect the attachment to the machine attachment plate
7.		Indicates to consult Operation manual prior to use
8.		Indicates to remove the safety blocks from the load cell prior to using the platform

5.11 FIXED WINCH

⚠ CAUTION

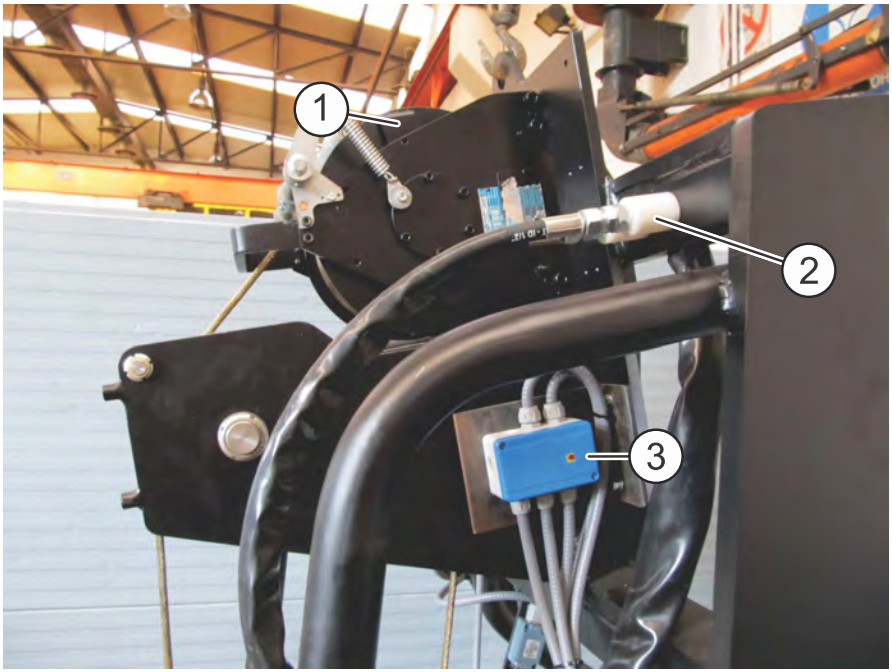
The fixed winch may only be assembled when the machine is level and within the maximum inclination of 2°.

5.11.1 Fixed Winch Identification and Technical Data



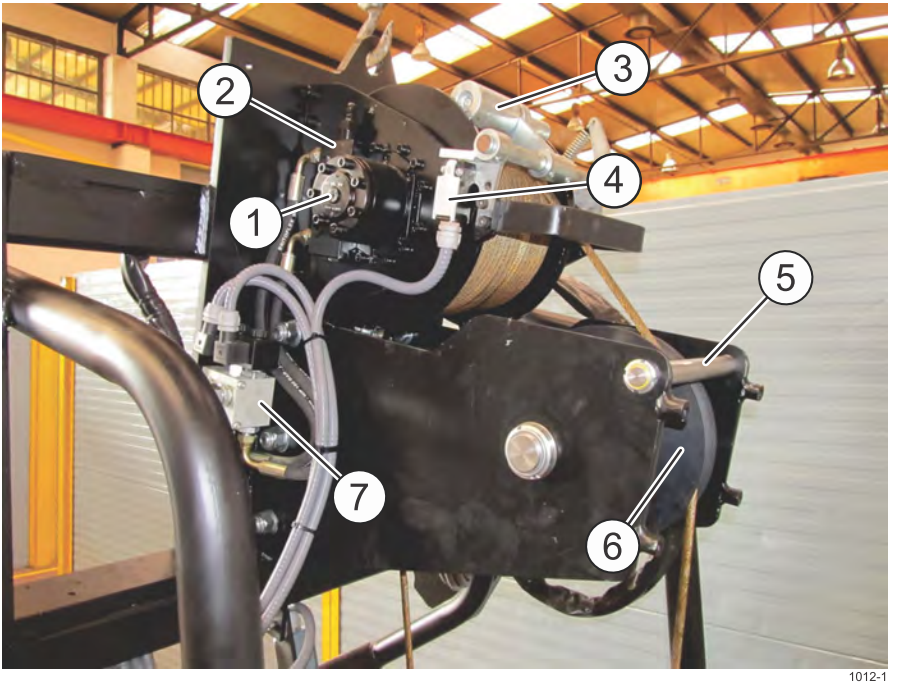
1010-1

1. Coupling for lifting	3. Maximum rope
2. Support shaft of the wire rope guide pulley	4. Wire rope guide pulley



1011-1

1. Winch	2. Quick couplers	3. Electrical box

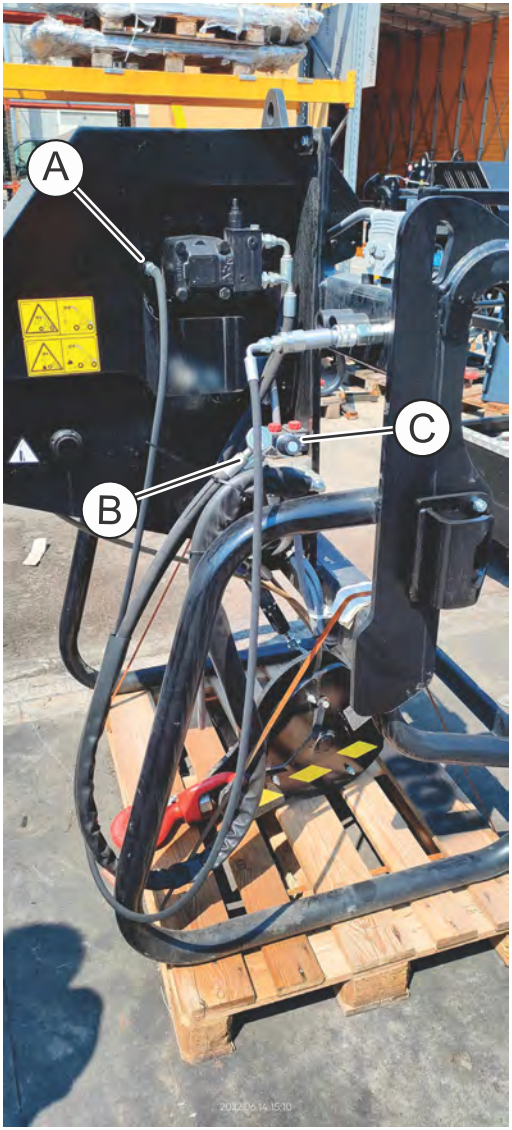


1012-1

1. Orbital motor	5. Anti-derailment pin
2. Pressure relief valve	6. Rope guide pulley
3. Cable gland	7. Hydraulic valves
4. Microswitch of the minimum length	

Double Tow Rope Guide with Drain Pipe

The function of the drain pipe is to reduce the counter pressure created during the use of the winch. It is mandatory to connect the drain pipe to the machine prior to use. Connect lines **A**, **B**, and **C** to the machine.



1013-1

Winch Specifications

Lifting Capacity	11,023 lb (5000 kg)
Wire Rope Diameter	0.5 in (12 mm)
Wire Rope Length	220 ft. (67 m)
Hook Capacity	5 ton
Block Diameter	10.4 in. (265 mm)
Rope Guide Pulley Diameter	10.4 in. (265 mm)
Drum Diameter	8 in. (202 mm)
Maximum Feeding Pressure	3,626 psi (250 bar)
Maximum Hook Speed without Suspended Weight	85 ft./ minute (26 m/ minute)
Maximum Hook Speed Oil Flow Rate	60 L/ minute
Limit Switch	Electrical
Winch Mass	235.9 lb (107 kg)
Total Mass	1,020.7 lb (463 kg)

⚠ WARNING

The winch cannot be put into operation after undergoing structural modifications or additions of other components which are not included in normal maintenance without a new declaration of conformity.If for any reason the winch undergoes shock, hydraulic problems, or any condition which could cause injury, stop the work of the winch immediately and contact an authorized JLG service center.

5.11.2 Preliminary Checks

It is necessary for all personnel operating the winch to be instructed on proper use, read and understand this section of the manual, and be able to perform the operations of the winch in a safe manner.

Prior to use, it is necessary to check the following:

- The wire rope must be free of dirt, debris, and damage.
- The efficiency of the fixed cable terminal, the relative cotter pin, and terminal.
- The correct wire rope winding.
- The lateral sliding of the rope pulley guide.
- The free rotation of the pulley in the block.
- The free rotation of the hook and the integrity of its safety tab.

- The operation of the limit switch.

Note: It is forbidden to operate the winch in conditions different from the original configuration of delivery, for materials with different shape and size, and for processing different from what is provided in this section. It is forbidden to operate the winch in the presence of functional anomalies. If necessary, ask and wait for assistance from other qualified personnel.

5.11.3 Winch Installation

Use the following steps to install the winch on the telehandler:

1. Place the winch on a flat, firm surface to smoothly engage it with the tool holder plate.
2. Lower the boom to the winch. Approach the tool holder plate to the winch by retracting the boom.
3. Turn the lower part of the plate towards the operator by swinging the boom. Bring the upper pin of the telehandler plate under the locking hooks of the winch.
4. Raise the boom slightly and fold back the tool holder plate. Move forward until the bottom of the plate comes into contact with the winch.
5. Secure the winch to the plate of the boom by inserting and fastening the pin(s).

⚠ CAUTION

Before each use, check the winch is correctly hooked and all pins and plugs are inserted in the correct position. For plates with two pins it is mandatory to operate with both pins inserted. Only one pin does not guarantee a secure locking of the winch.

⚠ DANGER

The pin(s) must always be inserted fully into the plate and locked with the plugs. In case of deformation which does not allow the pin(s) to be inserted fully, it is forbidden to use the winch.

Winch Quick Connection (If Equipped)

1. Follow steps 1–4 in Winch Installation above.
2. Connect the hydraulic lines to the couplers on the boom head.
3. Using the auxiliary hydraulic connections on the boom, give pressure to the hydraulic couplers and move the locking pin to allow insertion.

4. Move the locking pin to allow insertion. The movement of the lock pin is provided by a single acting cylinder. To allow the lock:
    - Using the auxiliary hydraulic connections, raise the pin and allow the winch to lean completely on the plate.
    - Release the auxiliary hydraulics to allow the pin to return to the original lock and fit into the winch slot.
5. Check for proper connection. Repeat above steps if a secure connection is not accomplished.

⚠ CAUTION

It is mandatory to verify the movements performed by the levers and operation of the auxiliary hydraulic connections before starting work.

⚠ CAUTION

It is mandatory to leave the operator's cab and visually make sure the winch is properly connected and secure prior to starting any operations.

5.11.4 Winch Removal

Use the steps below for removing the winch from the machine:

- Perform the installation steps in the reverse order.
- Fully wind the wire rope until it stops automatically in order to avoid the wire rope and hook touching the ground gathering dust and sand.
- Release the residual pressure and turn off the machine's engine.
- Disconnect the hydraulic oil supply.
- Disconnect the mechanical hook from the machine.
- Move the winch using the appropriate lifting points.

⚠ CAUTION

When the winch is placed on the ground, it must be placed in a marked location to ensure safety for personnel and the equipment.

5.11.5 Operation

The winch can only be used when attached to an operating machine and use the operating procedures for the connecting machine. Use the winch taking into account all warnings and procedures in the machine's manual.

Precautions Prior to Use:

- Make sure the load to be lifted does not exceed the capacity of the winch.
- Begin by moving the hook slowly while gradually and continuously increasing the speed. Use the same, gradual and continuous movement to decrease the speed when stopping the load.
- During the lifting phase, check the verticality of the winch through the mobile indicator and the position of the hook, which must be positioned perpendicular to the load.
- Do not lift the load from the side positions as this could trigger oscillations and movements which may overload the structure, create hazards, and cause the incorrect winding of the wire rope on the drum.

Normal Stop

Releasing the control during the work cycle will stop the winch movement. This stop occurs immediately.

Emergency Stop

Winch operations can be stopped by using the Emergency Stop button. This causes the winch to stop immediately.
Using the Emergency Stop button is recommended only in cases where an immediate danger to the operator, to the load, and/or to the integrity of the winch is present. Using the Emergency Stop button activates the power supply cut-off and consequent complete shutdown of the operating machine.

Restoring the winch to operation after the Emergency Stop button has been pressed is only possible after the following steps:

- Correcting the situation which caused the stoppage.
- Emergency Stop button must be reset.

At the end of each work session, the winch must be cleaned.

5.11.6 Winch Maintenance Schedules

Interval	Maintenance Check
Daily	Check the condition of the wire rope.
Daily	Check the fixed cable terminal, the relative cotter pin, and the terminal.
Daily	Check the correct winding of the wire rope.
Daily	Check the lateral sliding of the wire rope guide pulley.
Daily	Check the free rotation of the pulley in the block.

Interval	Maintenance Check
Daily	Check the free rotation of the hook and the integrity of its safety tab.
Daily	Check the limit switch operation.
Every 50 Hours	Lubricate the shaft, the wire rope guide pulley, and the pulley in the block.
Every 50 Hours	Lubricate the hook shank.
After First 100 Hours	Replace the oil in the gearbox.
Every 250 Hours	Check the oil level in the gearbox.
Every 1000 Hours or 1 Year	Replace the oil in the gearbox.
Every 1000 Hours or 1 Year	Lubricate the wire rope.

5.11.7 Handling Loads

⚠ CAUTION

The support of the load to be lifted must be appropriate to the load., must be in perfect condition, have adequate capacity, and must take into account the center of gravity to prevent the load from tipping.

⚠ CAUTION

If any of the alarms sound, lay the load on the ground immediately.

⚠ CAUTION

Never carry a load with raised boom.

⚠ DANGER

It is strictly prohibited to pick up a load when the operating machine is not level, with a maximum inclination of 2°.

When the winch or any equipment with a load on the hook, it is necessary to do the following:

- Position the winch perpendicular to the load to be lifted.
- The descent of an empty hook must be started slowly. A fast descent of the rope can lead to a loosening of the wire rope still wound on the drum, with the risk of damage to the wire rope itself and/or to the various components.

- Operate the lever gently to avoid sudden movements to the load and any faulty windings of the wire rope on the drum.
- Lift the load vertically, avoid oscillations and side lifting.
- Verify the wire rope status daily. If worn, damaged, or if it has even one broken wire replace the wire rope immediately.
- Check daily the lifting and descent limit switches, the hook, and the load control valve.
- At the beginning of each work session, verify the wire rope winding on the drum.

Lifting the Load with Winch

1. Approach the load slowly with the boom fully retracted. completely wind the steel cable if present, and maintain the hook is raised enough to avoid contact with the ground.
2. Bring the hook above the load to be lifted bringing it as close as possible to the lifting grip of the load.
3. Engage the parking brake and move the gear selector to Neutral.
4. Turn off the operating machine and remove the ignition key. Get out of the operator's cab and attach the hook to the grip prearranged for lifting the load.
5. Gently lift the load from the ground and transport it.

Placing Load with Winch

1. Move the load to the transport position at the base of the area where the load will be placed.
2. Engage the parking brake and move the gear selector to Neutral.
3. Make sure the machine is positioned on a smooth, firm surface within the limits of the maximum operating slope.
4. Using the boom, lift the load above the surface where the load will be placed.
5. Use the boom to properly position the load above the target area and lower the load gradually.
6. Turn off the operating machine and remove the ignition key. Get out of the operator's cab and remove the hook to the grip prearranged for lifting the load.

5.11.8 Winch Safety Devices

There are three safety devices on the winch:

- Descent Limit Switch
- Lifting Limit Switch
- Load Control Valve

Descent Limit Switch

The switch monitors the amount of cable still wound on the drum, stopping the descent when the minimum quantity has been reached. The limit switch may be positioned on the outside or inside of the drum or positioned inside the mechanism which guides the wire rope.

The limit switch begins operating after reaching the minimum amount of four turns of cable still wrapped on the drum. If a smaller amount remains on the drum, contact an authorized JLG service center.

Note: The cable clamps are not designed to directly support the cable with a load applied.

The capacity is ensured by the amount of cable wound on the drum. If the minimum amount of wire rope wrapped around the drum is exceeded, the capacity is no longer ensured causing the risk of complete unrolling.

Lifting Limit Switch

The lifting limit switch monitors the minimum safe distance between the hook and the mechanisms of the winch, locking the winding in case this distance is exceeded.

⚠ CAUTION

The limit switch on the winch comes into operation when a minimum distance 14.5 in. (37 cm) is reached between the hook and the drum. If this distance decreases, contact an authorized JLG service center to withdraw the tool.

⚠ CAUTION

An excessive winding of the cable (higher than the minimum distance between the hook and the pulley) can lead to contact between the load hook and the pulley/ drum with consequent risks such as load shifting, load coming off of the hook, cable coming out from the pulley, or pulley/drum failure.

Load Control Valve

The load control valve has the main function to perform a dynamic braking of the load. It doesn't allow the engine speed to exceed what is permitted by the oil flow. It also locks the load movement with the brake in case of engine supply line failure.

⚠ CAUTION

Do not change the load control valve calibration.

5.11.9 Winch Connections

Hydraulic Connections

The female Push and Pull type quick connectors on top of the boom can be coupled with the male half couplings and under pressure couplings. It is possible to connect the hydraulic connections with one hand. Push to engage and pull to release the male half coupling from the female coupling. Only connect/disconnect the hydraulic couplings after the following occurs:

- The winch has been placed on the ground.
- The engine must be stopped.
- Released pressure to the hydraulic system (move the lever in either direction with the engine off).

⚠ CAUTION

After releasing the system pressure, wait one minute before disconnecting the hydraulic connectors.

⚠ CAUTION

Always clean the couplings thoroughly prior to use. If not in use, the boom half couplings and the winch couplings must be protected with the provided plastic protective caps.

⚠ CAUTION

Always disconnect the hydraulic hoses from the winch before removing it from the machine.

Electrical Connections

Electrical connectors of the winch may have 16 or 24 poles.

⚠ CAUTION

Always disconnect the electrical connectors before releasing the winch from the telehandler.

⚠ CAUTION

The electrical connector on the winch and the electrical socket on the boom have double support to prevent damage and deterioration. If not being used, connectors and sockets must be placed in the support.

To properly connect the electrical connections perform the following steps:

1. Retract and fully lower the boom.
2. Make sure the telehandler is on a firm, level surface. Check the level with the bubble level in the operator's cab.
3. Refer to Winch Installation in this section to connect the winch to the machine.
4. Connect the two hydraulic hoses of the winch to the quick coupling on the boom head.
5. Remove the protective cap on the boom head and hook it to its dedicated support.

Note: Do not leave the protective cap hanging from the chain during work operations as it may cause damage to the machine and/or winch.

6. Detach the electrical plug from the protective support tool.
7. Insert the plug of the winch into the electrical outlet. Make sure the power cable is not in a position that hampers the movements of the machine and the winch.

Note: If the winch is equipped with only the electrical system connections, perform steps 5–7 of the operations above.

⚠ CAUTION

Electrical and hydraulic connections on the winch must always be connected to the telehandler when using the winch. Failure to properly connect all connections is a safety hazard with risk of personnel/ property damage and risk of machine tipping.

5.12 TRELLIS WINCH

The trellis winch is designed and built only to perform the lifting and transportation of materials, in compliance with the following safety rules and within the limits of the load.

- Reliance on trained and skilled operators
- Respect the load limits

Operation of the trellis winch can only be made after verifying the following:

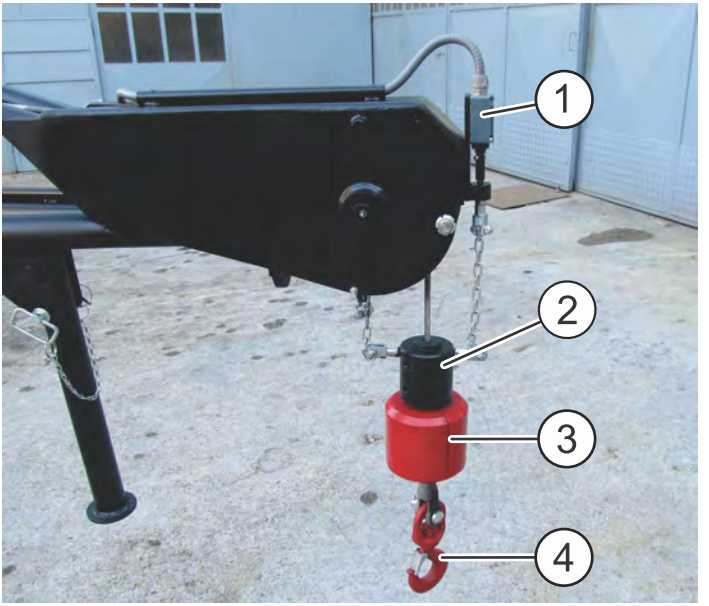
- The weather conditions are not considered critical (winds exceeding 28 mph (45 kmh))
- Visibility is sufficient for the range of work to be performed
- The area is free of electrical lines (if not possible, must keep a distance of 16 ft. (5 m)
- The working area is sufficiently marked to prevent unauthorized personnel
- No fire risks are present
- The work area is not in a corrosive or explosive environment or with harmful particles.

Vibration

The trellis winch does not generate vibrations during its use. If vibrations are noticed, stop working and contact a qualified technician.

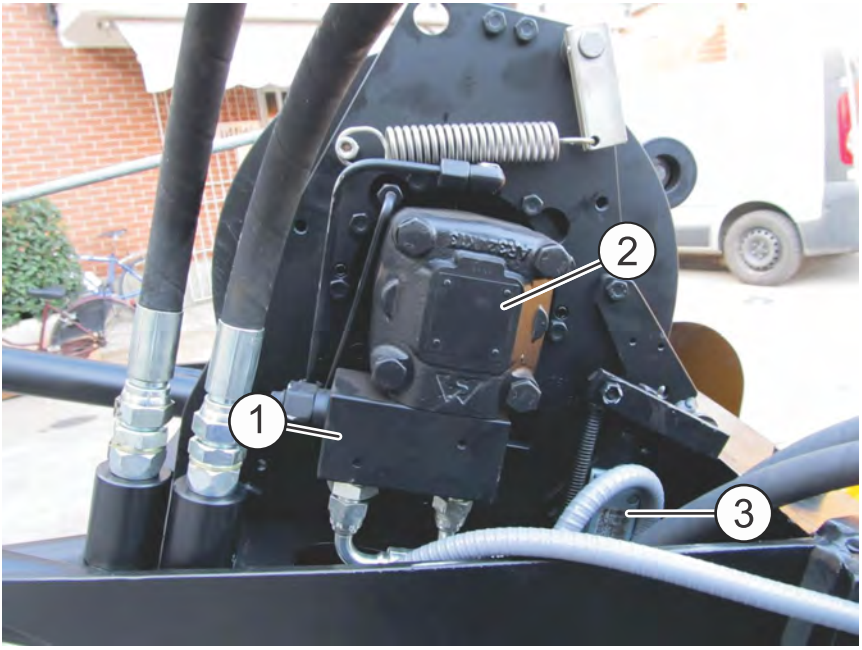
⚠ CAUTION

The trellis winch may only be assembled when the machine is level and within the maximum inclination of 2°.



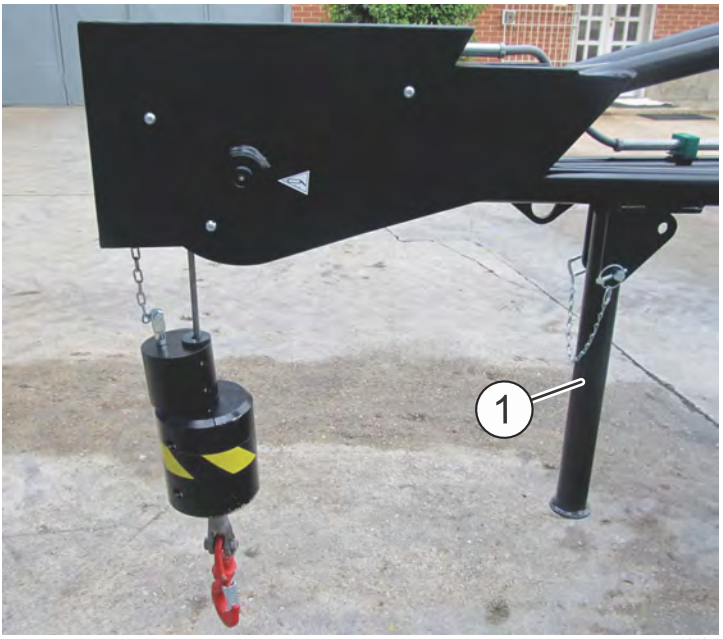
1016-1

1. Winch wire rope lifting limit switch	3. Counterweight
2. Limit switch counter	4. Hook



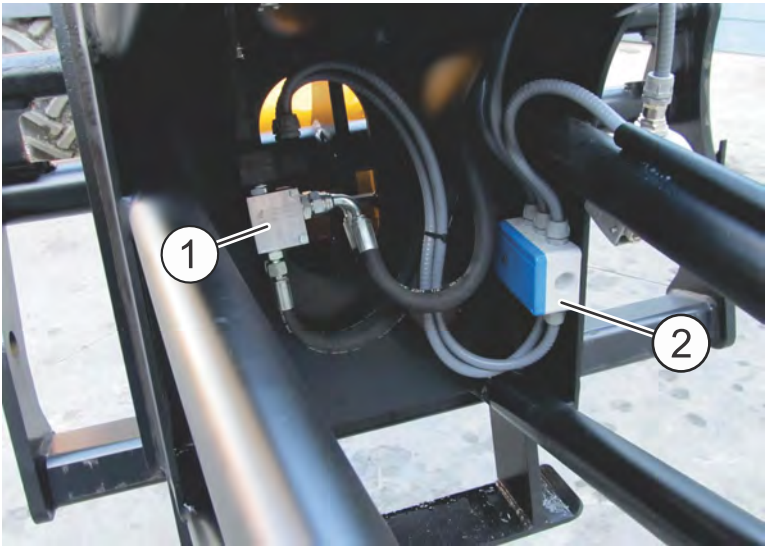
1017-1

1. Winch load control valve	2. Winch	3. Winch wire rope descent limit switch



1018-1

1. Folding support foot



1019-1

1. Hydraulic valve	2. Electrical box

Specifications

Lifting Capacity	3,307 lb (1500 kg)	
Wire Rope Diameter	0.4 in. (10 mm)	
Wire Rope Length	164 ft. (50 m)	
Hook Capacity	2 tons	
Maximum Feeding Pressure	3,626 psi (250 bar)	
Maximum Hook Speed without Suspended Weights	82 ft./ minute (25 m/ minute)	
Maximum Hook Speed Oil Flow Rate	50 L/ minute	
Limit Switch	Electrical	
Winch Mass	157 lb (71 kg)	
Total Mass	871 lb (395 kg)	
Center of Gravity	31.5 in. (800 mm)	
Dimensions	Length	118 in. (3000 mm)
	Width	21.7 in. (550 mm)
	Height	47.2 in. (1200 mm)

5.12.1 Safety Precautions

It is prohibited to do the following:

- Lift loads with a mass greater than permitted
- Lift loads with the trellis winch not in a perfectly vertical position
- Use the winch to pull
- Lift personnel even when equipped with a safety harness
- Use the trellis winch if the wire rope is not in good condition

The trellis winch is equipped with all protection devices and indications necessary to safeguard the safety of the operator:

- Wire rope descent limit switch
- Wire rope winding limit switch
- Emergency stop button in the operator's cab

Dangerous Work Areas

Dangerous areas are considered all areas where people are exposed to any hazardous event which may risk the safety of the personnel.

It is forbidden for unauthorized personnel to stand inside the work area during material handling and work operations. The machine work and handling areas must have a safety perimeter marked on the ground or cordoned off to prevent any unauthorized personnel.

⚠ ATTENTION

All personnel must be equipped with appropriate PPE for the intended work.

⚠ DANGER

Before starting any work operations, it is mandatory the operator learn all possible risks of the work site.

⚠ CAUTION

Before each use, at the beginning and end of each working day, make sure the attachment and all components (winches, trellis, limit switches, etc.) are intact, fully functional, and inspect for damage.Clean and lock all electrical connections. Prior to use, make sure there are no loose, twisted, hardened, or damaged electrical cables. Do not operate the machine if any of the previously mentioned damage is present.

- Check for proper connection of hydraulic lines while ensuring the attachment functions are not reversed.
- Verify the correct operation of the push button panel/ remote control and the joystick in the cab.

Unroll all the wire rope and make sure there are no signs of damage, cuts, injuries, or fraying to the wire rope. In the event of these signs, do not use the attachment and take steps to replace.

⚠ CAUTION

Check the correct operation of the limit switches by unrolling the wire rope completely and fully rewinding it. The limit switches must lock the wire rope in the correct manner. Check the operation of the strain gauge transducer of the assembled attachment. If anomalies are found (noise, vibration, odor, instrumentation errors, smoke, oil leaks, etc.) or does not meet any safety standards, stop using immediately and consult a qualified technician.

⚠ CAUTION

Stop the wire rope winding process only when line tension is released. If the wire rope is wound in tension, it may become caught in the drum resulting in wire rope breakage and loss.

In case of a hook replacement, use a replacement hook of at least equal capacity and record the replacement in the control log.

⚠ CAUTION

Before moving the telehandler fully wind the wire rope of the trellis winch. Traveling with unrolled wire rope can cause danger to personnel and property.

- Always remove the trellis winch during transport and lifting of the telehandler.
- The trellis winch must be suitably anchored to the plate of a transport vehicle during transportation procedures. Always check for good condition of the anchors. Do not use frayed, damaged, or twisted anchors.

5.12.2 Installation

Prior to installation of the trellis winch, check the following:

- The wire rope must be in good condition
- The efficiency of the fixed cable terminal, the relative cotter pin and terminal
- The correct wire rope winding
- The lateral sliding of the rope guide pulley
- The free rotation of the pulley in the block
- The free rotation of the hook and the integrity of its safety tab
- Limit switches operable

Installation Procedures

1. Place the trellis winch on a flat, unyielding surface in order to smoothly engage it with the mounting plate.
2. Lower the boom until it is parallel with the trellis winch. Approach the mounting plate to the trellis winch by extending/retracting the boom until it is in position.
3. Swing the boom to turn the lower part of the mounting plate of the trellis winch towards the operator. Bring the upper pin of the telehandler plate under the locking hooks of the of the trellis winch.
4. Slowly lift the boom allowing the accessory mounting plate to move until it comes into contact with the mounting plate of the trellis winch.

5. Secure the accessory to the mounting plate on the boom by inserting the mounting pin(s) and securing with cotter pins.

⚠ CAUTION

Before each use, make sure the trellis winch is correctly installed and all pins/plugs are inserted in the correct positions.

⚠ CAUTION

Before each use, make sure there is no damage, deterioration, or deformation of the locking components of the trellis winch and of the accessory mounting plate.

⚠ DANGER

The pin(s) must always be inserted inside the plate fully and locked with its plug. In the event the plug is not fully seated in the correct position it is forbidden to use the trellis winch until corrected.

⚠ CAUTION

For plates with two pins it is mandatory to operate with both pins fully inserted. One pin is not sufficient to secure the trellis winch safely for accessories with two pins.

5.12.3 Removal

Follow the instructions below for trellis winch removal:

- Fully wind the wire rope until it stops automatically.
  - This is to prevent the wire rope and hook touching the ground and gathering debris such as dirt, sand, or dust.
- Release the residual pressure and turn off the engine of the machine.
- Disconnect the hydraulic oil supply.
- Disconnect the trellis winch from the telehandler by following the installation instructions in the reverse order.
- Lift and carry the trellis winch using the appropriate hooking point.

5.12.4 Operation

Precautions for use

- Check the load to be lifted does not exceed the capacity of the trellis winch.

- Start handling the hook slowly and increase the speed gradually and continuously. The same criteria must be used when it is necessary to stop the load.
- During lifting operations, check the verticality of the trellis winch through the mobile indicator and the position of the hook. The hook must positioned perpendicular to the load.
- Do not lift any loads from the side position as this could trigger movements which overload the structure, create hazards, and/or cause incorrect winding of the wire rope into the drum.

Normal Stop

Releasing the controls during normal operations will stop all movements immediately.

Emergency Stop

The trellis winch may be stopped by pressing the Emergency Stop button which is located inside the telehandler's cab. This causes the trellis winch to stop immediately. Using the Emergency Stop button cuts off the active power supply and results in the complete shut down of the telehandler.

Using the Emergency Stop button is only recommended if there is an immediate danger to the operator, the load, and/or the integrity of the trellis winch.

You must perform the following steps after a stop caused by pressing the Emergency Stop button:

- Removal of the cause which led to the stop.
- Release the Emergency Stop button.

Prior to Operation

Always follow the below instructions:

- **It is forbidden to lift a load when the machine is not level, with a maximum inclination of 2°.**
- When a load is on the hook of the trellis winch it is necessary to position the trellis winch perpendicular to the load to be lifted.
- The descent of an empty hook must be started slowly. A fast descent of the wire rope can lead to a loosening of the rope still wound on the drum, which risks damaging the wire rope and/or various components of the trellis winch.
- Use gentle movements when operating the lever to avoid sudden movements to the load and any faulty winding of the rope on the drum.
- Lift the load vertically. Avoid swinging the load excessively and side lifting.
- Verify the condition of the wire rope daily. If worn, damaged, or it has a single broken wire it must be replaced immediately.
- Verify the correct rope winding on the drum prior to use.

Lifting a Load

1. Approach the load slowly with the boom fully retracted. Completely wind the steel cable and keep the hook raised enough to avoid contact with the ground.
2. Move the hook above the load to be lifted, bringing it as close as possible to the lifting point of the load.
3. Engage the parking brake and move the gear selector switch to neutral.
4. Turn off the telehandler and remove the ignition key.
5. Get out of the operator's cab and attach the hook of the trellis winch to the lifting point. If there are personnel on the ground responsible for hooking up the load, turn off the telehandler to avoid inadvertent operations.
6. Gently lift the load from the ground and transport it.

Moving a Load into Position

1. Bring the load in the transport position to the base of the area where the load is to be placed.
2. Engage the parking brake and move the gear selector switch the neutral.
3. Stabilize and level the telehandler.
4. Lift the boom to carry the load above the landing surface.
5. Lower and retract the extensions to properly position the load on the ground.
6. Get out of the operator's cab and attach the hook of the trellis winch to the lifting point. If there are personnel on the ground responsible for hooking up the load, turn off the telehandler to avoid inadvertent operations.

Lifting a Distant Load

1. Get as close as possible to the load to be lifted. Engage the parking brake and move the gear selector switch the neutral.
2. Stabilize and level the telehandler.
3. Move the hook over the load to be lifted by moving the telescopic boom. If required, and if possible, unroll the steel cable to bring the hook as close as possible the load's lifting point.
4. Get out of the operator's cab and attach the hook of the trellis winch to the lifting point. If there are personnel on the ground responsible for hooking up the load, turn off the telehandler to avoid inadvertent operations.
5. Gently lift the load from the ground with the telescopic boom or by rewinding the wire rope. Carry the load in the transport position which is boom fully retracted and lowered with the cable completely wound.

5.12.5 Trellis Winch Maintenance Schedules

Maintenance of the attachment must be done with the wire rope out and placed on a flat, stable surface.

Interval	Maintenance Check
Daily	After each use, clean the attachment.
Daily	Check the wire rope condition
Daily	Check the fixed cable terminal, the relative cotter pin, and the terminal
Daily	Check the correct wire rope winding
Daily	Check the lateral sliding of the rope pulley guide
Daily	Check the free rotation of the pulley in the block
Daily	Check the free rotation of the hook and the integrity of its safety tab
Daily	Check the operation of the limit switches
Every 10 Hours	Check for cracks and/or deformations in the welds.
Weekly or Every 50 Hours	Verify all nuts and bolts of the attachment are tightened sufficiently.
Every 50 Hours	Lubricate the shaft, the rope guide pulley, and the pulley in the block
Every 50 Hours	Lubricate the hook shank
First 100 Hours	Replace oil in the gearbox
Every 250 Hours	Check oil level in the gearbox
Every 1000 Hours or 1 Year	Replace oil in the gearbox
Every 1000 Hours or 1 Year	Wire rope lubrication
Contact an authorized JLG Service Center for all repairs to the attachment.	

5.12.6 Safety Devices

The trellis winch has three (four if equipped) safety devices:

- Descent Limit Switch
- Lifting Limit Switch
- Load Control Valve
- Load Cell or Load Limiter (If Equipped)

Descent Limit Switch

The switch monitors the amount of cable still wound on the drum, stopping the descent when the minimum quantity has been reached. The limit switch may be positioned in the inside/outside of the drum or inside the wire rope guiding mechanism.

⚠ CAUTION

The limit switch comes into operation after reaching the minimum amount of four turns of cable still wrapped on the drum. In the case a smaller amount remains contact a JLG Service Center.

⚠ DANGER

The cable clamps are not designed to directly to directly support the cable with a load applied.

The capacity is determined by the amount cable wound in the drum. If the minimum amount of wire rope wrapped is exceeded, the capacity is no longer ensured causing the risk of complete unrolling.

Lifting Limit Switch

The lifting limit switch monitors the minimum safe operating distance between the hook and the trellis winch mechanisms and locks the winding in the event the distance is exceeded.

⚠ CAUTION

The limit switch on the trellis winch comes into operation when a minimum distance of 14.5 in. (37 cm) is reached between the hook and the drum. If this distance decreases, contact a JLG Service Center.

⚠ CAUTION

An excessive amount of winding of the cable (higher than the minimum distance between the hook and pulley) can lead to contact between the load hook and the pulley/drum with the following possible risks: sudden movements, load coming off the hook, cable coming out from the pulley, or pulley/drum failure.

Load Control Valve

The load control valve's primary function is to perform the dynamic braking of the load. It prevents the engine speed from being more than is permitted by the oil flow. Braking also locks the load movement in the event of engine supply pipe failure.

⚠ CAUTION

Do not change the load control valve calibration.

Load Cell or Load Limiter (If Equipped)

The load cell monitors the increase of the load and prevents the winch from raising a load which exceeds the maximum allowed load weight.

5.12.7 Connection Types

Hydraulic Connections

The quick connectors on top of the boom are female push/pull type of connectors and can be coupled with male couplings and under pressure couplings. Push to engage the couplings. Pull to release the male coupling from the female coupling. Do the following prior to engaging or removing couplings:

- Placing the attachment in the ground.
- Stop the engine.
- Release the pressure on the hydraulic system (move the lever in either direction with the engine off).

⚠ CAUTION

After releasing pressure from the system always wait for at minimum one minute before disconnecting any hydraulic fittings.

⚠ CAUTION

Always clean the couplings thoroughly before use. Always put the protective caps on the hydraulic connections when not in use.

⚠ CAUTION

Always disconnect hydraulic fittings from the attachment before removing it from the machine.

Electrical Connections

The electrical connections of the attachment may be with 16 or 24 poles. Each has a protective cover which must be removed prior to installation. to remove the protective caps, push the level of the upper and lower hooks towards the attachment. Do the reverse to put it on.

⚠ CAUTION

Always disconnect the power connection before removing the attachment from the machine to not damage the cable.

⚠ CAUTION

The plug on the attachment and the socket on the boom have a double support to prevent damage and deterioration. If not in use, plugs and electrical sockets must always be placed in the support.

5.13 ROMASTOR ATTACHMENT

5.13.1 Romastor Information and Safety

The Romastor is a handling attachment for mounting on a telehandler with a minimum lifting capacity of 5,512 lb (2500 kg). It is designed to function as a rotating fork carriage with a pivoting range of more than 360°.



Figure 24. Romastor Parts

1. Quick release hydraulic hose couplings, hydraulic operating system	4. Locking plate
2. Carriage rack	5. Hydraulic turntable
3. Manual locking quick-release system (optionally hydraulically operated)	6. Adjustable forks

Documents Included

The Romastor attachment is supplied with the following documents:

- Hoisting tables for respective telehandler
- Load Moment Controller (LMC) program
- Protective safety cap insert
- Strain gauge protection

Safety

The Romastor is designed and built in such a way that is safe to operate and maintain. This applies to applications, circumstances, and directions as described in this section. Reading this section and following the directions and instructions is therefore essential for everyone who is authorized to work with or on the Romastor.

In this section, a distinction is made between normal use (see Operating Instructions) and other work with or on this machine. The reason is because of safety considerations, service technicians have to meet different requirements than operators.

The work described in the Operating Instructions can be carried out by the operator. Work not described in the Operating Instructions may not be performed by operators. Accompanying keys or special tools for accessing specific machine areas may not be left on the Romastor. They may only be used by qualified and trained technicians.

⚠ ATTENTION

The Romastor may only be used to lift stable loads supported by its forks. The Romastor may not be used for lifting unstable stacked loads or for carrying people.

- The Romastor may only be used by authorized people who have read and understand this section.
- The Romastor may only be used for the type of work listed in the specifications.
- Make sure children, unauthorized people, and animals cannot gain access to the Romastor.
- Safety devices may not be removed or not used during operation.
- The Romastor may not be overloaded.
- In addition to dangerous situations, all forms of overloading can result in damage to the Romastor and/or cause it to malfunction. If the Romastor is overloaded, all warranties shall automatically become null and void.
- Make sure the work area for conducting operations is adequately illuminated.
- Always follow local occupational health, safety, and environmental regulations.
- Keep the Romastor clean.
- The motor must always be turned off before performing maintenance and repairs.

⚠ DANGER

When moving/swivelling the Romastor, the loader operator must verify no other people are within a range of 4.6 ft. (1.4 m) from the Romastor's danger zone as indicated by the red area in the image below.



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. Romastor Danger Zone

Special Safety Devices

The Romastor is fitted with the following special safety devices:

- The Romastor is a handling attachment for mounting on a telehandler. All the telehandler's safety precautions and warnings also apply to the Romastor. If the telehandler's safety devices do not function properly, use of the Romastor is not permitted.
- The rotational movement of the Romastor is self-braking so the machine will not make unexpected movements if the hydraulic hoses break or leak.

- The Romastor is fitted with a mechanical locking plate. The locking plate is a device which limits the rotary movement of the Romastor to a maximum of 90° to the right or left. It prevents the forks on the carriage from striking the boom of the telehandler during rotary movement at a working height in excess of 9.8 ft. (3 m).



Figure 26. Mechanical Locking Plate Engaged (Lowered)

- The locking plate does not need to be engaged (it can remain in the raised position) for rotary movement at a working height in excess of 9.8 ft. (3 m), for example, when loading/unloading materials on/from a truck.
- The Romastor is protected against overloading.
- Load Moment Control (LMC) program for the respective telehandler, safety protective devices, strain gauge protection.

⚠ DANGER

Use only the correct program (LMCs) recognized by the Romastor to protect the telehandler against tipping and overloading. If the LMC program detects an overload, it will deactivate all functions except boom retraction. When an overload has occurred, you can always return to a safe situation by retracting the boom.

⚠ DANGER

The Romastor may never be used if any of the above devices are not in place and/or are not in proper working order.

5.13.2 Specifications

⚠ DANGER

The Romastor is intended to only be used in open air areas.

⚠ CAUTION

It is not suitable for use in an explosion risk area.

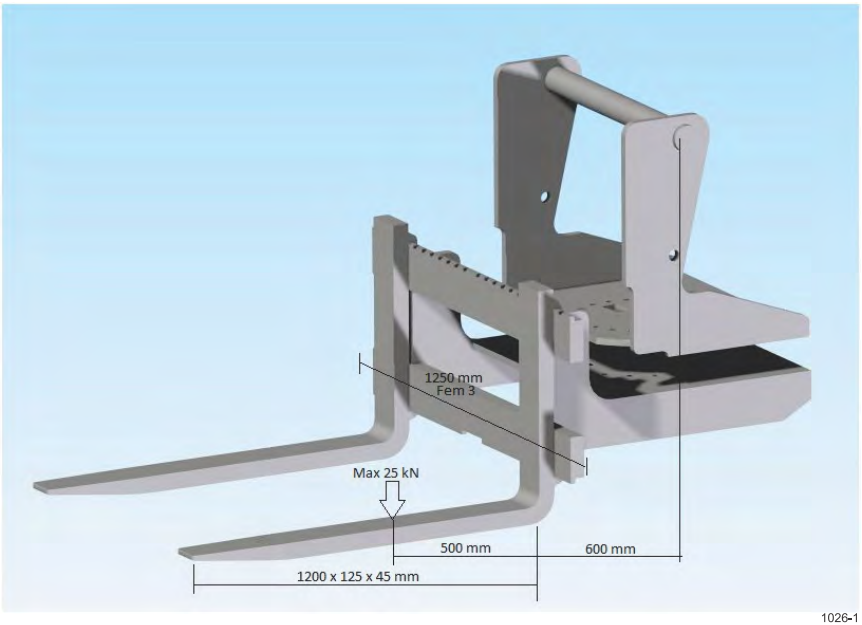


Figure 27. 3D rendering of the Romastor

Ambient temperature (during transport/storage)	-22° to 149° F (-30° to 65° C)
Ambient temperature (during operation)	-4° to 122° F (-20° to 50° C)
Lighting	Normal work area illumination
Altitude	Air pressure to 3,281 ft. (1000 m) above sea level
Net weight	1,609 lb (730 kg)
Maximum load	5,512 lb (2500 kg)

Static test coefficient	1.33
Fork adjustable range	1.6 in. to 47.2 in. (40 mm to 1200 mm)

⚠ ATTENTION

The Romastor is not fitted with any special devices for transporting hazardous chemicals, pharmaceuticals, biological agents, therapeutic products, or explosive substances.

5.13.3 Operating Instructions

⚠ ATTENTION

When operating the Romastor, users must follow the personal safety instructions and wear the appropriate PPE.

Before any work begins, the operator must make sure all of the following:

- All safety devices are in place and in proper working order.
- All hydraulic systems must be correctly adjusted and connected.
- Right and left markings on the hose fittings. When using the Romastor for the first time, identify which hose fitting controls the right and the left rotation and mark the correct hose accordingly.

The Romastor is connected/disconnected comparable to other hydraulically operated attachments.

- Couplings with the quick-release system.
- Locking the coupling. There are two possible ways of doing this depending on the Romastor model:
  - Manually with a locking bar and pin mechanism
  - Hydraulic locking mechanism (if equipped)

1. Connect the two hydraulic hoses using the (clean and dry) quick-release couplings to the telehandler's pressure-free hydraulic system.



Figure 28. Quick-release Coupling

2. Connect the electrical plug of the potentiometer/ sensor. This indicates the position of the forks.
3. Activate the Load Moment Control (LMC) program.
4. In the operator's cab, check if the correct lifting table or program is being used.
5. To rotate the Romastor use the same operating button on the left joystick for the winch and/or the personnel platform.

6. The mechanical locking plate has to be engaged (lowered) when lifting higher than 9.8 ft. (3 m) so it does not touch the telehandler boom when being rotated.



Figure 29. Mechanical Locking Plate Disengaged (Raised)

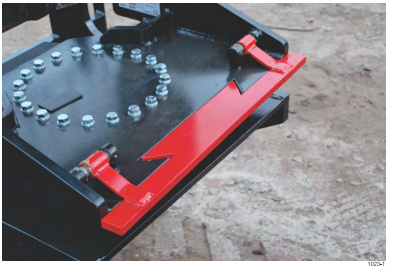


Figure 30. Mechanical Locking Plate Engaged (Lowered)

Note: When transporting the Romastor, the forks must be facing the direction of movement.

7. If the Romastor has to be uncoupled, the hydraulic hoses must be disconnected first prior to disengaging the locking mechanism.

Note: The protective safety plug must be removed from some models of telehandlers.

8. Store the Romastor in clean, dry, and safe conditions.

Note: The maximum permissible load on the forks is 5,512 lb (2500 kg). The center is 19.7 in. (500 mm) from the edge of the Fem plate.

5.13.4 Cleaning

When cleaning the Romastor, perform the following tasks depending on the type of work the machine has been performing:

- The Romastor must be empty while being cleaned.
- All components must be thoroughly inspected for damage or defects. If you have any doubts if a component will continue to function properly, it must be replaced or assessed by a qualified service technician.
- Always wear safety shoes, safety glasses, and protective gloves.
- When cleaning the Romastor, make sure no water enters the hydraulic system.

5.13.5 Maintenance

Maintenance is extremely important for the reliability and lifespan of the Romastor and its components. The operator is responsible for spotting irregularities in the machine's operations and for resolving them on time. This can prevent excessive wear of the components and damage to the Romastor. With preventive and/or corrective maintenance of the Romastor, the following tasks must be performed, depending on the type of work the machine has been used performing:

- The Romastor must be empty, clean, and completely still before performing maintenance.
- Consider your safety and the safety of others. Do not perform any actions which are unsafe.
- If a safety device has to be removed for maintenance, replace it immediately after the work is completed. The Romastor may not be used without the necessary safety devices.
- If the forks are severely damaged and/or have suffered more than 10% wear, the forks must be removed and replaced prior to use.

Note: The bolts on the topside and underside of the Romastor must be checked every week and, if necessary, tightened to a maximum of 220.5 ft.lb.(299 Nm) using a proper torque wrench.

Every 6 months the following preventive maintenance must be performed:

- Lubrication as described below.
- Hydraulic component maintenance as described below.
- All components must be thoroughly inspected for damage or defects. If you have any doubts as to whether components will continue to function properly, replace the components or have them inspected by a qualified service technician.

⚠ DANGER

All components which are worn or damaged to an extent which they are no longer safe to use must be replaced.

Lubrication

All parts requiring periodic lubrication have a grease fitting. Two applications of grease per grease fitting from the grease gun is sufficient.

Grease fittings are located in the following locations:

- Two grease fittings on the front of the Romastor.
- Four grease fittings in the inner housing.

Use the following procedure to grease the grease fittings located in the inner housing:

1. Remove the cover plate on the topside of the Romastor.

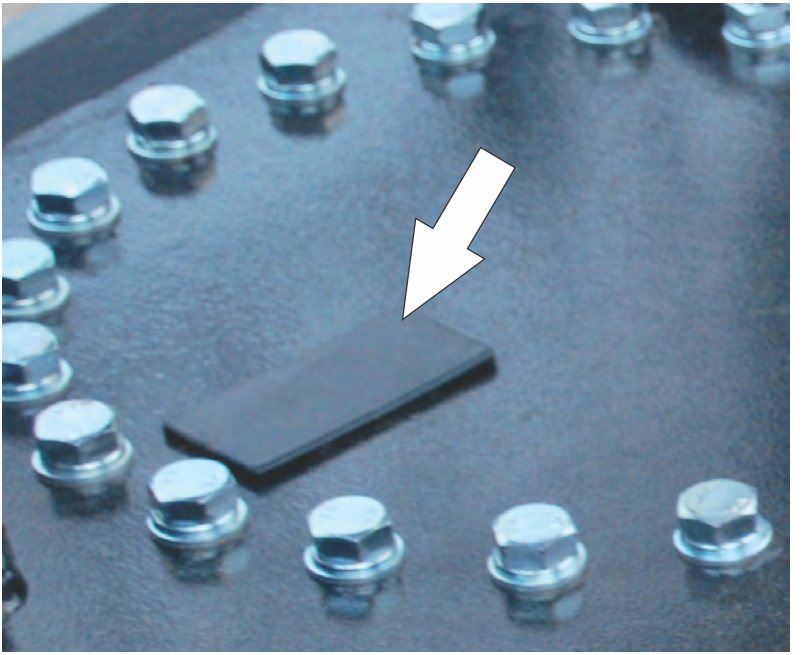


Figure 31. Close-up of grease fitting cover plate

2. Put the forks in neutral.
3. Two grease fittings are now accessible.
4. The remaining two grease fittings can be reached by turning the forks 180°.

⚠ DANGER

Always turn off the telehandler engine before applying lubricants.

5. Replace the protective cover plate on the topside of the Romastor.

Hydraulic Lines and Hoses

Hydraulic hoses may only be connected by trained and qualified personnel.

Make sure hoses are properly protected. Check hoses for damage, deformation, and leakage every day. Hoses which are damaged or deformed must be replaced.

Secure hoses in place with steel cables, pipe brackets, etc. to prevent the hoses from coming apart when the couplings are disconnected.

All hydraulic lines and hoses must be inspected for leaks once per week. Hydraulic hoses must be inspected by a qualified service technician with knowledge and experience in hydraulic hoses, safety regulations, and general standards every year.

Replace rubber and plastic hoses every six years regardless of the condition of the hose. Allow a maximum storage period of two years in the supplier's warehouse.

When replacing hoses, make sure the pressure has been completely released throughout the system and the system cannot be engaged. Collect excess oil drainage in drip-trays.

⚠ ATTENTION

The Romastor may only be disassembled by qualified, trained, and certified personnel.

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SECTION 6
Emergency Procedures

6.1 EMERGENCY STOP BUTTON



In emergency conditions, the machine can be stopped using the emergency button in the cab. The stop occurs immediately.

⚠ ATTENTION

Only use the emergency stop button if there is an immediate danger to the operator, to the load, or to the integrity of the machine.

When pressed, the emergency stop button activates the power supply cut-off and the resulting complete shut down of the machine and any connected attachment.

After a complete stop, the return to normal working conditions is only possible after:

- Removal of the cause of the stoppage.
- Releasing the emergency stop button.

To release the emergency stop button, rotate the button in the direction indicated by the arrow printed on the button.

6.2 TOWING A DISABLED PRODUCT

⚠ ATTENTION

The machine towing can be made only in emergency conditions at a maximum speed of 2.5 mph (4 kph) and for short distances up to 1640 ft (500 m).

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).

It is forbidden to do the following:

- Do not try to start the machine by pushing or towing.
- To tow the machine on public roads and for very long paths, keep the yellow flashing light and the emergency lights in operation.
- Do not tow the telehandler on a slope.
- Never stand between the towing machine and the towed machine.

⚠ WARNING

With the engine off the steering wheel and brakes servo controls do not work. If it is not possible to keep the engine running while towing the machine. Take into account the efforts to use the steering wheel will be much higher than normal.

⚠ DANGER

Make sure the weight of a towed machine, not equipped with brakes, never exceeds the weight of the machine that tows the vehicle. The distance required to stop the machine increases with the increase of the speed and of the load towed, in particular in the slope sections.

6.2.1 Moving Short Distances

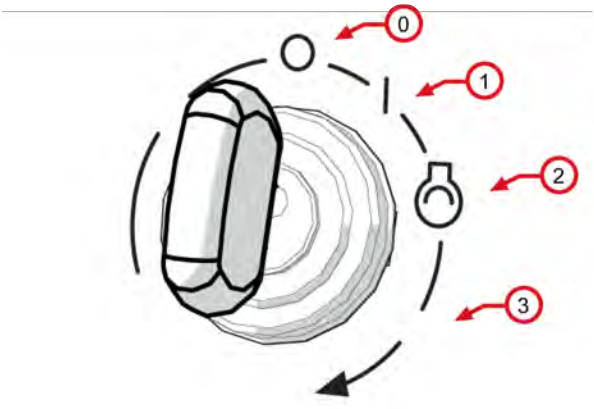
- If it is only necessary to move telehandler a short distance, less than 100 ft (30 m), it is permissible to use a vehicle of sufficient capacity to tow the unit with no previous preparation.

6.2.2 Moving Longer Distance

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

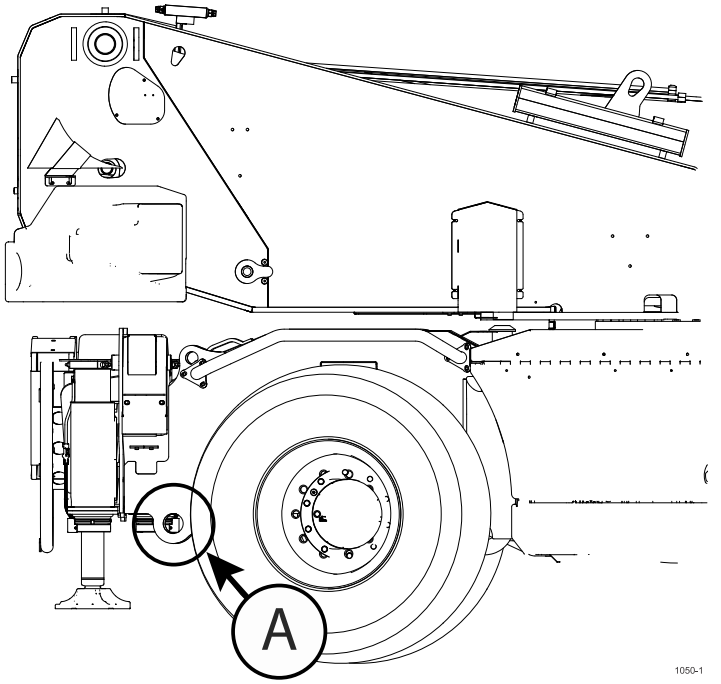
Contact the JLG Service Center for specific instructions if neither of these methods are applicable.

6.2.3 Towing with Electrical Panel On



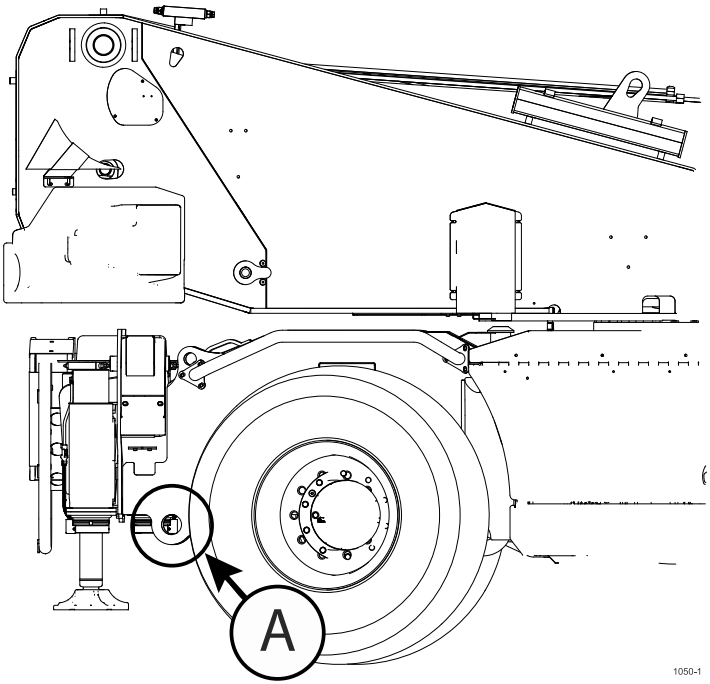
If it is necessary to tow the machine with the electrical panel in operation (for example, transmission failure) proceed with the following steps:

- Turn the vehicle off by turning the ignition key (**0**).



- Attach the towing bracket between towing machine and the machine in failure at the points prearranged for towing (**A**).
- Make sure that the telehandler is in a stable configuration and lock the wheels with chocks to prevent accidental movement of the telehandler.
- Manually disable the transmission (See Service manual).
- Turn on the electrical panel by turning the ignition key to position (**1**).
- Disengage the parking brake switch.
- Remove the wheels chock.
- During towing, remain seated in the driver's seat to prevent the parking brake from engaging automatically.

6.2.4 Towing with Engine Failure



To tow the machine with engine failure, follow the steps below:

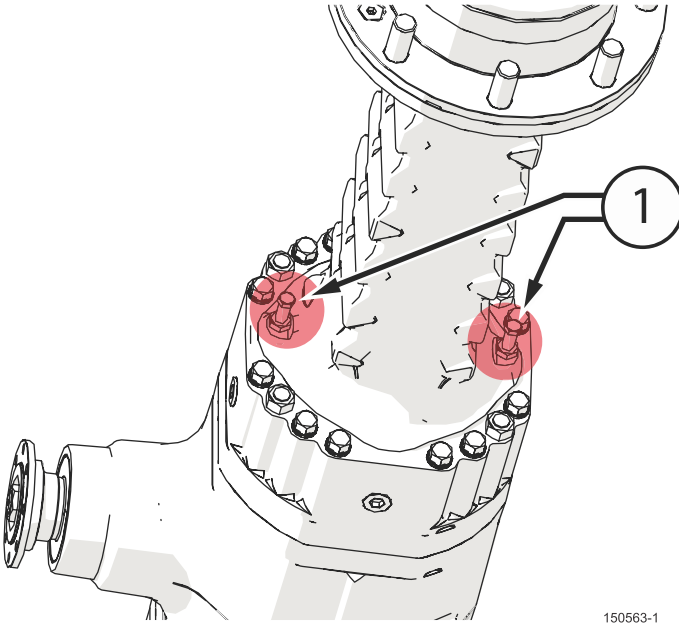
- Attach the towing bracket between towing machine and the machine in failure at the points prearranged for towing (**A**).
- Make sure that the machine is in a stable configuration and lock the wheels with chocks to prevent accidental movement of the machine.
- Manually disable the parking brake on the front axle.
- Follow the steps described in the section "Manually disable the towing".

⚠ DANGER

With the engine off, the drive and parking brake are still active.

Towing the machine with active drive and brake can cause serious damage to the machine and create dangerous situations.

6.2.5 Manually Disengage the Internal Parking Brake

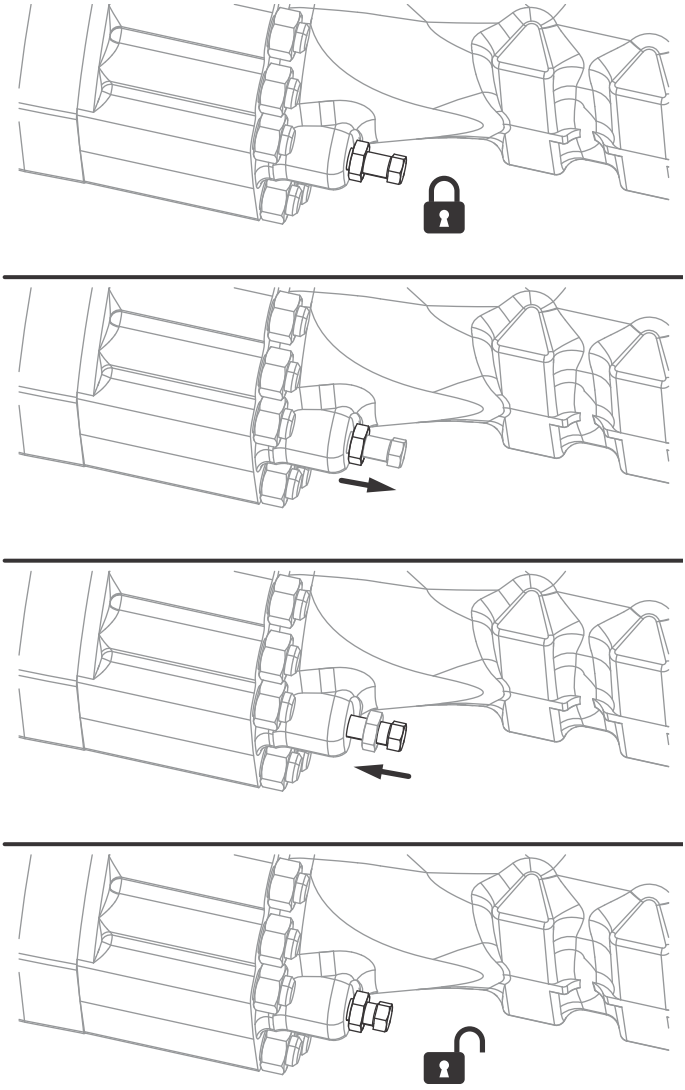


The parking brake must be disengaged directly on the axle to allow the machine to be towed. Use the steps below to disengage the parking brake.

1. Place wheel chocks under the wheels to prevent the telelhandler from moving suddenly.
2. Loosen the lock nuts on both sides of the central body of the axle.
3. Tighten the screws (**1**) until they meet resistance.

Note: Count the number of turns it takes to meet resistance. You will be required to return the screws to the starting position once all towing operations have been completed.

4. Tighten the screws (**1**) 1.5 additional turns.
5. The parking brake is now in the released position.



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⚠ DANGER

Never use the machine with the negative parking brake disengaged/disconnected.

After towing operations have been completed, return everything to the initial conditions. It is important to loosen the screws the same total number of turns which you originally tightened them.

6.2.6 Manually Disable the 2–Gear Hydrostatic Transmission

⚠ DANGER

Disable only if it is necessary to tow the machine in the event of damage to the engine and/or transmission.

In the event of towing a machine with engine and/or transmission failure, use the steps below to manually disable the hydrostatic transmission.

1. Make sure the telehandler's engine is off.
2. Make sure that the machine is in a stable configuration and lock the wheels with chocks to prevent unintended movement of the machine.
3. Rotate the hydraulic valve handle to stop the supply of hydraulic oil to the reduction gear.

Note: The valve is located under the machine, near the reduction gear.

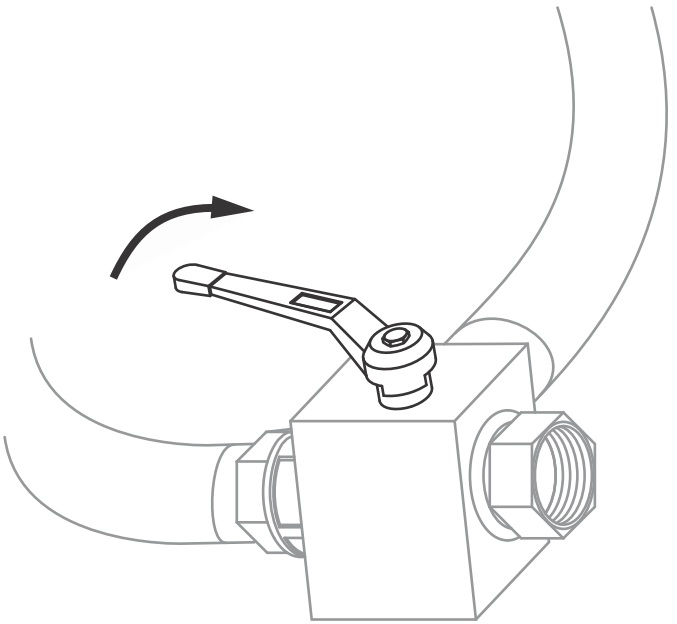


Figure 32. Hydraulic Valve Handle

⚠ DANGER

When rotating the handle, a jet of pressurized hydraulic oil may spray from the valve. Use appropriate PPE to protect eyes and skin from hydraulic oil.

4. Using a screwdriver, move the gear selection pin to neutral, shown in position (**2**) in the image below.

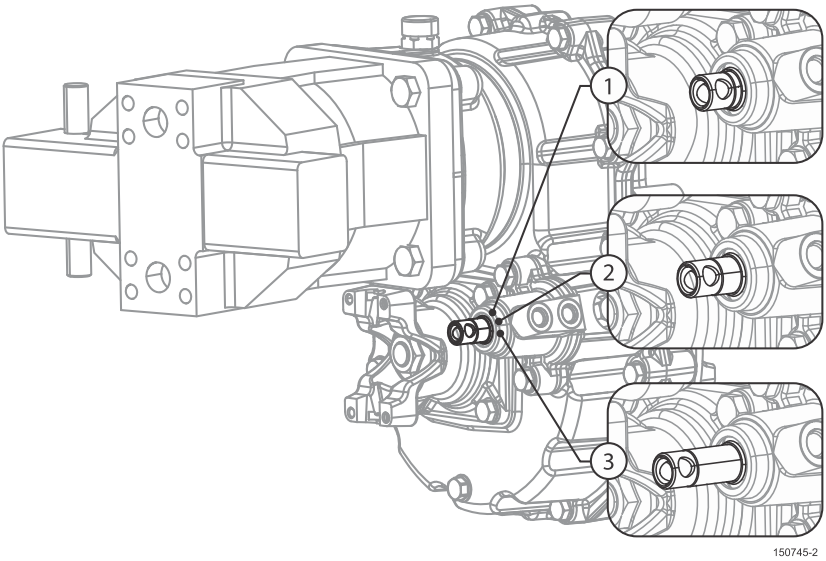


Figure 33. Gear Selection Pin

5. If possible, prior to towing the machine, turn on the instrument panel and verify the indicator lights for the Forward and Reverse gears are off.

NOTICE

Once towing operations are complete, open the valve by returning the hydraulic valve lever in Step 3 to the starting position.

6.3 EMERGENCY LOWERING OF BOOM

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

Contact the JLG Service Center for specific instructions.

Secure the telehandler using the following procedures:

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

5. Section off a large area under the boom to restrict any personnel from entering this area.

6. See Service Manual for information.

6.4 EMERGENCY PERSONNEL PLATFORM RECOVERY

It is possible to operate with the manual system to return the boom and the operators on the ground in safe conditions. In order to carry out this emergency operation use the appropriate emergency pump.

⚠ DANGER

Under the emergency pump use conditions, the anti-tipping systems are off. It is compulsory to refer to the load charts before performing any operation through the levers of the distributor. It is possible, using the inclinometer and the letters on the boom, to know the exact location of the platform and of the work area within which it can operate. During the platform recovery do not make quick movements as there is a risk of tipping.

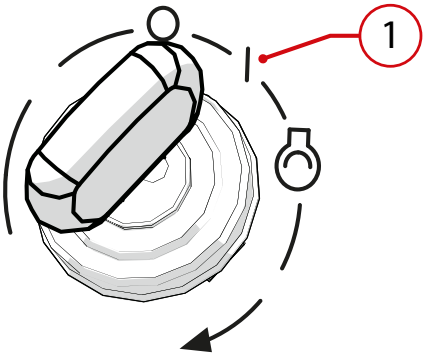
⚠ DANGER

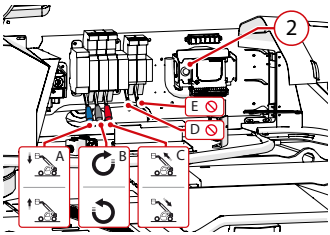
Do not leave the personnel platform using makeshift equipment or using systems which create personal risk.

The operations allowed through the emergency pump are:

- Retract boom extensions
- Lower the boom
- Turret rotation

6.4.1 Boom Retraction





To carry out the boom retraction with auxiliary pump, perform the following procedure.

- Turn the ignition key to position (**1**).
- Press the button (**2**) to turn on the electric pump.
- Press and hold down the button (**2**) then operate the levers of the distributor to move the boom in the desired direction.

Blue Lever (A)

- Move lever up to lower the boom
- Move lever down to raise the boom

Black Lever (B)

- Move lever up for right turret rotation
- Move lever down for left turret rotation

Red Lever (C)

- Move lever up for boom extension
- Move lever down for boom retraction

⚠ DANGER

It is absolutely forbidden to use and move the levers (D and E) of the distributor as they are used for tilting and servicing. Danger of tipping the platform.

- After recovery, return the machine to starting conditions.

⚠ WARNING

Move the platform by alternating movements of boom extension, retraction, and lowering while always remaining within the load chart values.

6.4.2 Platform Recovery from Cab

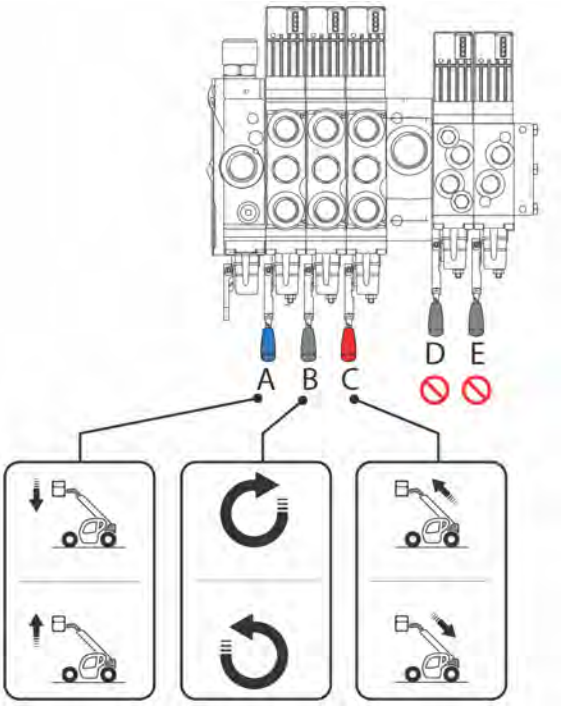
⚠ ATTENTION

To use this procedure the telehandler must have all outriggers extended.

Note: You must have a Recovery Key for this operation.

You may use the Recovery Key for this process if all the following conditions apply:

- Used by skilled and trained personnel.
- Used for short periods of time.
- If it is not possible to bring the platform to the ground through platform controls.



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Use the following procedures:

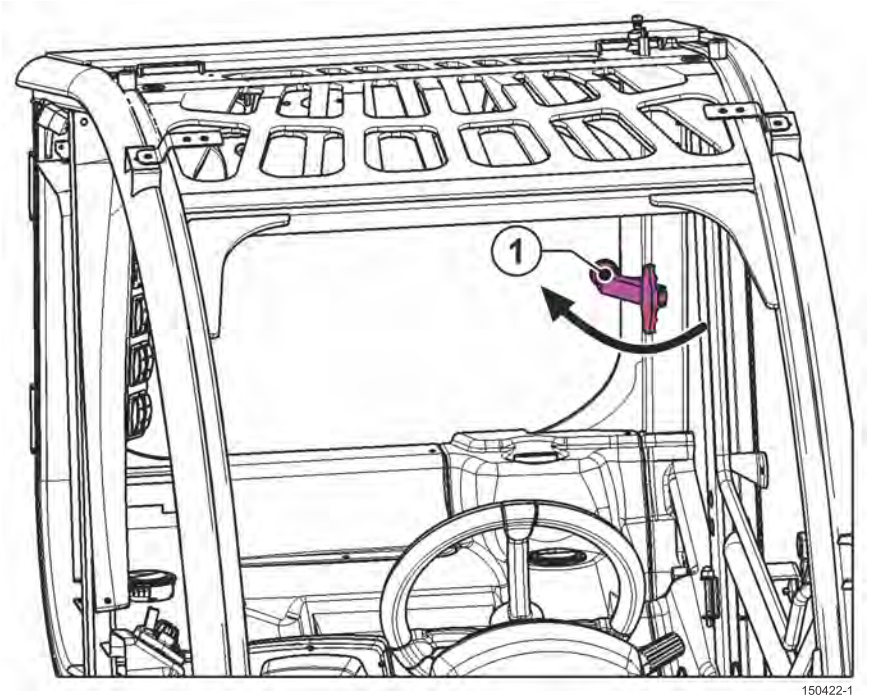
1. Turn on the telehandler from the operator's seat.
2. Turn the recovery key (**1**) to position (**I**) to activate controls in the cab.
3. Keep the recovery key activated and use the joystick to do the following in order:
   a. Fully retract the boom.
   b. Lower the boom to the ground.
4. After recovery, return to starting conditions.

6.5 EMERGENCY EXIT FROM AN ENCLOSED CAB

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

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

6.5.1



To open the rear window fully, slide the fastener to **1** and push the glass outward.

The fastener must always be positioned as shown in the figure during normal work operations.

⚠ DANGER

Danger of Crushing.It is prohibited to fully open the glass during the use of the machine. This is because of the shearing risks between the boom and the chassis.

⚠ WARNING

Be very careful when opening and/or removing the glass as it may chip or crush which may cause injury to the operator in the cab and anyone near the machine.

6.6 MACHINE SHIFTING WITH TURRET ROTATED

⚠ ATTENTION

This procedure is valid if the telehandler is operating correctly, but it is not possible to shift the machine with the turret in the rotated position. The procedure can be activated only with the vehicle on tires, raised outriggers, slow gear, and turret.

Note: You must have a Recovery Key for this operation.

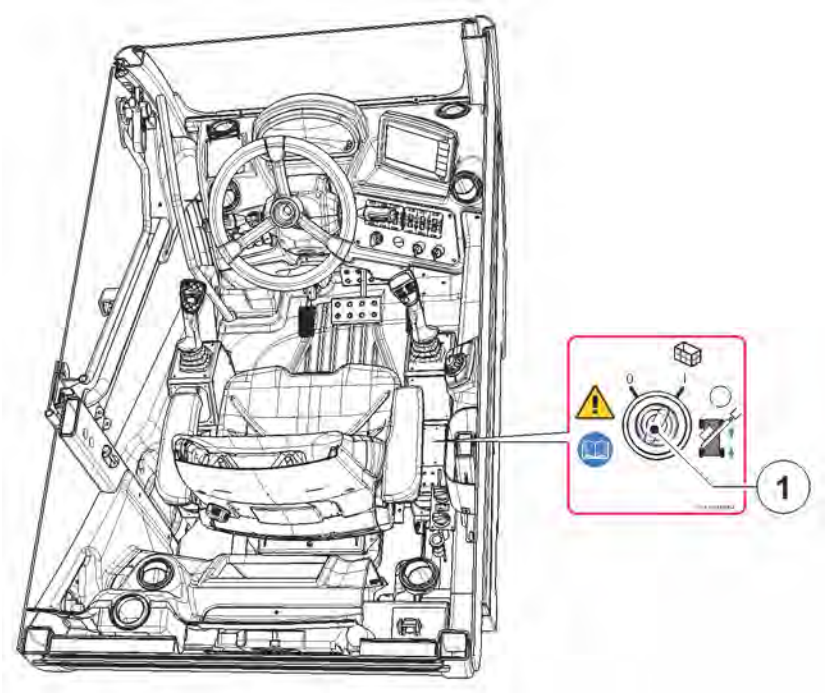
The following conditions occur when the telehandler shifts with a rotated turret:

- Both axles are locked and cannot swing.
- A buzzer in the cab emits intermittent alerts.
- The function is activated for 30 seconds. The cycle is repeatable.
- The anti-tipping light illuminates.



You may use the Recovery Key for this process if all the following conditions apply:

- Used by skilled and trained personnel.
- Used for short periods of time.
- The telehandler is not overloaded.
- During shifting, do not make turret rotation movements.



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To carry out the telehandler shifting with rotated turret, perform the following procedure:

1. Turn on the telehandler from the operator's seat.
2. Turn the recovery key (**1**) to position (**I**) to activate controls in the cab.
3. Release the recovery key (**1**).
4. Shift the machine.
5. The direction of travel is always consistent with the operator's position.
6. After the shift, return to starting conditions.

Note: The recovery key must be used to enable the reverse driving function.

SECTION 7
Lubrication and Maintenance

7.1 INTRODUCTION

This telehandler has been designed and built to provide maximum performance, savings, and facilitate its operation in various working conditions. Before delivery, the machine and the attachments were tested both by the Manufacturer and by the Dealer to ensure their maximum condition. In order to preserve these conditions and to ensure trouble free operation, it is important to perform routine maintenance, as specified in this manual at the frequency required.

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

It should be noted, also, that proper maintenance of machine and attachments not only improves reliability, but preserves its value over time.

Lubrication and maintenance charts contain instructions that must be followed to keep this product in good operating condition. Operation & Safety Manual and Service Manual contain more detailed service information with specific instructions.

⚠ WARNING

It is prohibited to carry out maintenance on the telehandler without reading and comprehending this chapter.

7.1.1 Clothing and Safety Gear

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

7.2 PRE-MAINTENANCE OPERATIONS

Before performing any maintenance, you must do the following:

- Park telehandler on flat, even ground.
- Engage the parking brake.
- Lower and fully retract all mobile parts (booms, shovels, etc.).
- If the maintenance operation requires the mobile parts to remain up, apply the boom prop.
- Run the engine at a minimum for 60 seconds to cool it down.

- Release residual pressure from the hydraulic system.
- Switch off the key in the ignition switch.
- Remove the ignition key.
- Hang up a sign that indicates maintenance work is underway. This sign can be hung on the cab door and inside it on the controls.
- Set up barriers and spacers to prevent unauthorized personnel from approaching the machine.
- Disconnect the battery isolation switch.
- Allow the engine to cool down.

7.3 GENERAL MAINTENANCE INSTRUCTIONS

Prior to performing any service or maintenance on the telehandler, follow proper shut-down procedures unless otherwise instructed. Ensure the telehandler is level, for proper fluid readings.

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

⚠ WARNING

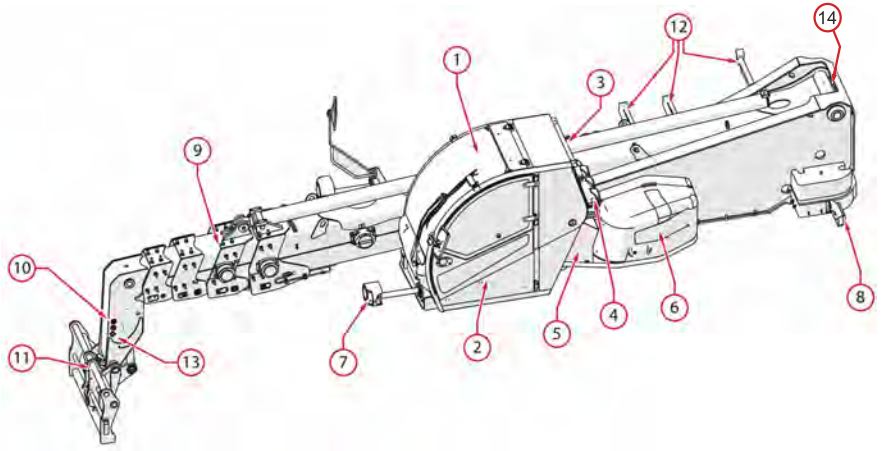
CUT/CRUSH/BURN HAZARD. Do not perform service or maintenance on the machine with engine running with the exception of transmission fluid level check.

⚠ WARNING

If maintenance must be performed with the boom raised, install the boom prop on the boom shaft.If maintenance needs to be performed under the machine, firmly support the movable parts with blocks and supports which are solid enough to support the weight.

7.3.1 Machine Components

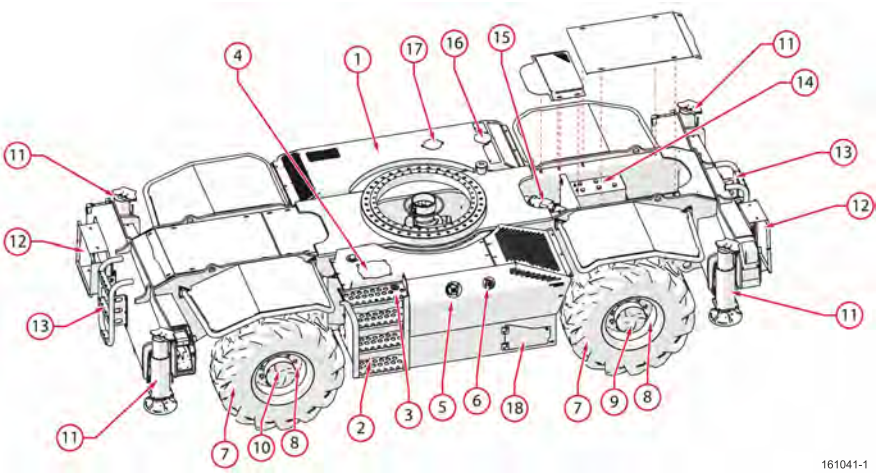
Turret Components and Description



161040-2

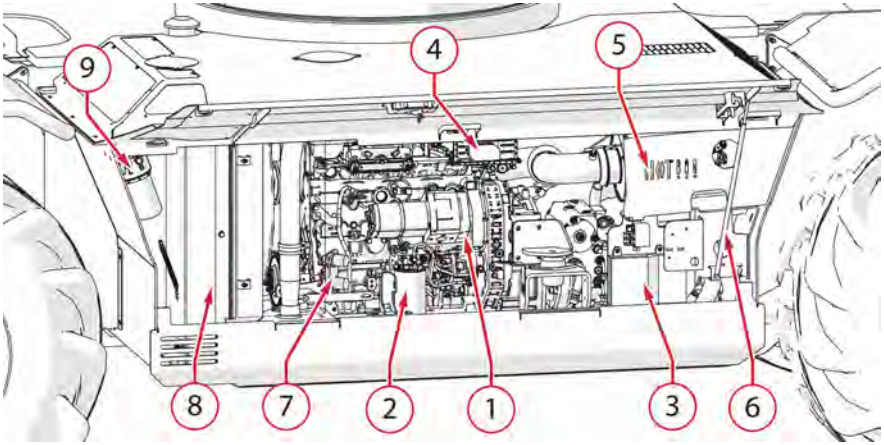
1. Cab	8. Rear Headlight
2. Door	9. Telescopic Boom
3. Rear Glass — Emergency Exit	10. Hydraulic Sockets on Boom Head
4. Air Conditioning (If equipped)	11. Attachment Holding Plate
5. Turret Rotation Gearbox Hood	12. Supports for Attachment Transport (If equipped)
6. Hydraulic Distributor Hood	13. Hydraulic socket for drainage
7. Front Headlight	14. Rear Camera

Carriage Components and Description



1. Engine Compartment	10. Front Axle
2. Steps for Cab Access	11. Outrigger
3. Hydraulic Oil Tank Cap	12. Additional Pads for Outrigger Kit (If equipped)
4. Hydraulic Oil Filter Access Cap	13. Steps for Cab Access with Rotated Turret
5. Fuel Tank Cap	14. Battery
6. AdBlue Tank Cap	15. Engine Air Filter
7. Wheel	16. Radiator Access Cap
8. Epicycloidal Reduction Gear	17. Engine Oil Access Cap
9. Rear Axle	18 Storage Compartment

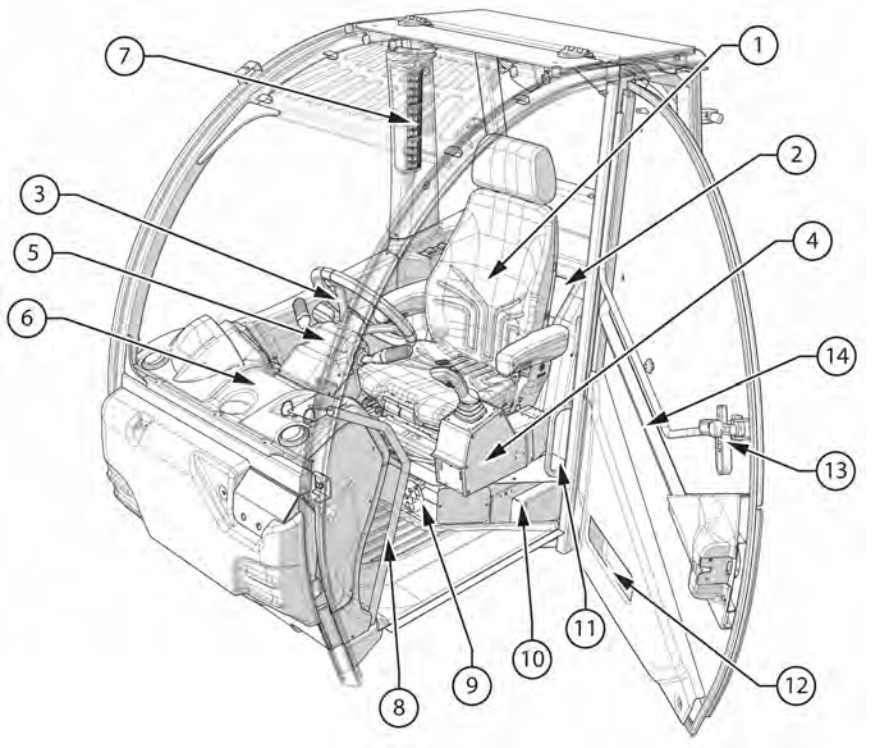
Engine Components and Description



161042-1

1	Engine	6	Hood Support Rod
2	Fuel Filter	7	Prongs for starting with auxiliary battery
3	Hybrid Box	8	Radiator
4	ECU Engine	9	Fuel Pre-Filter
5	DOC		

Cab Components and Description



1. Seat	8. Handle
2. Storage Compartment	9. Cab Ventilation Adjustment
3. Right Joystick	10. Cab Air Filter
4. Left Joystick (If Equipped)	11. Handle
5. Steering Wheel	12. Storage Compartment
6. Central Instrument Panel	13. Glass Opening Handle
7. High Instrument Panel	14. Internal Door Handle

7.3.2 Pressure Gauge



The pressure gauge is used to control the servo brake pressure. In case of anomalies and faults, the pressure may drop.

⚠ DANGER

The pressure should not drop below 18 bar (1.8 MPa – 260 psi).

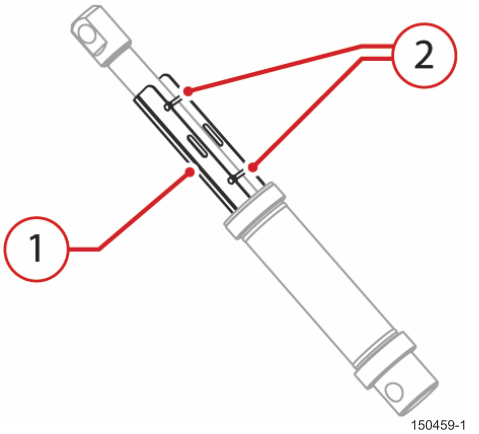
In the case of low pressure (below 18 bar) stop the telehandler and contact an authorized JLG dealer to eliminate the defect.

⚠ DANGER

It is absolutely forbidden to operate with servo brake accumulator pressure less than 18 bar (1.8 MPa – 260 psi).

7.4 BOOM PROP

The boom prop must be used as a safety measure during maintenance operations to prevent the descent or fall of the boom in case of boom failure.



To properly insert the boom prop (**1**) perform the following:

- Place the load on the ground.
- Completely retract all boom extensions.
- Lift the boom to the minimum height necessary to install the boom prop.
- Apply the boom prop around the lifting cylinder rod.

Lock the boom prop using the appropriate hooks (**2**).

⚠ WARNING

Danger of Crushing During maintenance on the boom lifting cylinder or the relative block valve, it is required to support the boom with an appropriate lifting device with a minimum capacity of at least 6,613.87 lb.

7.5 BATTERIES

⚠ DANGER

To avoid risk of battery explosion keep sparks and flames away from the battery, do not charge damaged batteries, and do not charge a hot or frozen battery.

- Do not overturn or tilt the battery as acid could come out.
- Charge the battery in a well ventilated area and always disconnect the power before removing the clamps.
- To check the charge status always use a voltmeter or a densimeter. If it is necessary to check the electrolyte level, use a flashlight, never a flame.
- Never place a metal object between the clamps to check the battery charge.
- Do not generate sparks with the cable clamps while charging the battery or starting the engine of the vehicle with an auxiliary battery.
- Check that the vent caps or covers are fitted correctly and firmly.
- Clean the top of the battery, check that the clamps are tight and cover them with a thin layer of petroleum jelly.
- In case of frozen battery this should be stored in a warm place to defrost. Do not use and do not recharge it: risk of explosion.
- In normal conditions the battery is kept charged by the alternator of the machine. If this becomes completely exhausted due to prolonged disuse or because at the end of its life the alternator looses its capacity to "regenerate". The battery must be replaced and recharged using a special battery charger tool.

⚠ WARNING

Before performing any maintenance on the telehandler, disconnect the power supply to the electric circuit of the vehicle by pressing the battery isolation switch.

7.5.1 Recharging Batteries

- A battery is fully charged if at constant temperature the density of the electrolyte and the measured voltage at the poles does not increased within 2 hours.
- After each recharge the general conditions of the battery is rated as good. This means that an old battery, after charging, will not have the same life and efficiency of a new battery.
- The simplest charging method is to charge at constant power.

- At the end of the charging, the battery charger voltage increases and creates gasification. It is recommended to use simple battery chargers with minimum current control and timer.
- If the battery has a low electrolyte level restore it to the minimum level (just above the plates limit) then charge them. After the charging is completed, fill to the maximum level (to prevent leakage).
- Overcharging must be avoided because:
  - It is a loss of energy which causes the dissociation of water.
  - It produces loss of active mass for the electrodes deterioration .
  - It creates a risk of explosion.
- If sulphated batteries are recharged without voltage limitation, they will boil and warm up with a risk of explosion.
- For old batteries (in most cases sulphated) charge with great caution. Even with 13.8 Volts there is the possibility of a temperature increase.

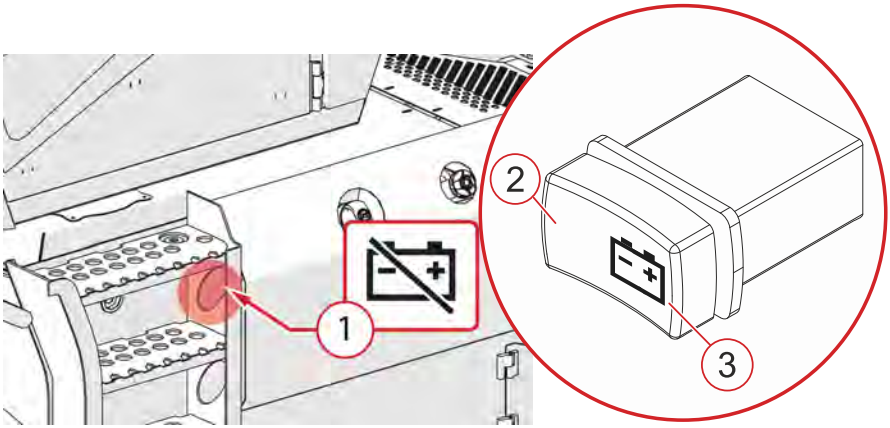
Recharging Instructions

1. Disconnect the cables from the battery to protect the electrical system.
2. Place the battery at a safe distance.
3. If possible, remove the caps.
4. Check the electrolyte level, if possible.
5. Clean the poles.
6. Make sure the room is sufficiently ventilated.
7. Limit the charging current to a maximum of 1/10 of the battery capacity (Ah).
8. Connect the battery to the charger.
9. Connect the charger to the mains.
10. Turn on the battery charger.
11. The battery temperature must not exceed 131° F (55° C).
12. After finishing switch off the battery charger.
13. Disconnect the battery charger from the mains.
14. Disconnect the battery from the charger.
15. Check the electrolyte level, if possible.
16. Refit the caps.

Battery Isolation Switch

⚠ WARNING

Only use this switch when the engine is stopped.



160702-2

The battery isolation switch (**1**) allows the operator to isolate the battery from the electrical circuit in case of emergency or during maintenance operations.

To isolate the battery:

- Turn off the engine.
- Turn the ignition key to position (**0**).
- Press the switch located at position (**1**) marked with the Battery isolation switch icon.
  - Pressing the switch on the side without the decal (**2**) will disconnect the battery.
  - Pressing the switch on the side with the battery decal (**3**) will connect the battery.

7.6 MAINTENANCE SCHEDULES

Note: The intervals are defined both in hours of work and in time intervals from the date of purchase.
It is necessary to make interventions at the end of the first interval, either work hours or time.

7.6.1 Legend

Timeline	Description
0h	According to the need - To be completed in the case of checks not linked to deadlines but more or less related to the heavy operation of the vehicle
10h / 1m	Every 10 hours of operation or every month
50h / 1m	Every 50 hours of operation or every month
250h / 2m	Every 250 hours of operation or every 2 months
500h / 6m	Every 500 hours of operation or every 6 months
1000h / 1y	Every 1000 hours of operation or every year
2000h	Every 2000 hours of operation
4000h	Every 4000 hours of operation
2y	Every 2 years

7.6.2 Safety Checks

	Maintenance
250h / 2m	Seat belts
250h / 2m	Control over the machine for the presence and status of conservation of Safety decals
250h / 2m	Control over the machine for the presence and conservation status of the Use and maintenance manual
250h / 2m	Control over the machine for the presence and conservation status of Identification labels
250h / 2m	Parking brake
250h / 2m	Operator Presence seat microswitch
250h / 2m	Reverse gear engaged acoustic signal
250h / 2m	Three operation mode steering
250h / 2m	Travel permitted only with driving seat properly positioned forward or reversed
250h / 2m	Emergency stop button

	Maintenance
500h / 6m	Hydraulic system maximum pressure
500h / 6m	Power steering calibration pressure

7.6.3 As Needed Checks

	Maintenance
0h	Air conditioning system
0h	Filters (air, engine oil, hydraulic oil, fuel, air conditioning system, cab)
0h	Brake
0h	Parking brake
0h	Electrolyte level and battery charge
0h	Lighting
0h	Hydraulic oil level
0h	Alternator belts \ services
0h	Engine oil level
0h	Radiators
0h	Radiator expansion tank
0h	Tire pressure
0h	Wear check (on both the vehicle and equipment if installed)

7.6.4 Every 10 Hours

	Maintenance
10h / 1m	Window washer tank
10h / 1m	Safety decals
10h / 1m	Safety devices
10h / 1m	Coolant
10h / 1m	Engine oil level
10h / 1m	Metal structural work, no cracks

	Maintenance
10h / 1m	Radiators

7.6.5 Every 50 Hours

	Maintenance
50h / 1m	Grease level in the automatic lubrication system (if installed)
50h / 1m	Prop shafts
50h / 1m	Axles oscillation
50h / 1m	Wheels reduction gear pins
50h / 1m	Mechanical joints of parking brake on the axle
50h / 1m	Mechanical joints
50h / 1m	Cab ventilation filter (if the closed cab option is present)
50h / 1m	Brakes oil level
50h / 1m	Hydraulic oil level
50h / 1m	Hydraulic system leaks
50h / 1m	Air filter
50h / 1m	Fuel filter
50h / 1m	Coolant
50h / 1m	Engine oil level
50h / 1m	Tire pressure
50h / 1m	Wheel nuts tightening

7.6.6 Every 250 Hours

	Maintenance
250h / 2m	Seat belts
250h / 2m	Rear view mirrors
250h / 2m	Electrolyte level and battery charge
250h / 2m	Torque specifications - Hydraulic Fittings
250h / 2m	Alternator belts \ services
250h / 2m	Torque specifications - fasteners
250h	Transmission oil

	Maintenance
250h	Differential axle oil
250h	Epicycloidal reduction gear oil

7.6.7 Every 500 Hours

	Maintenance
500h / 6m	Differential axle oil
500h / 6m	Epicycloidal reduction gear oil
500h / 6m	Cab ventilation filter (if the closed cab option is present)
500h / 6m	Brakes oil
500h / 6m	Electrical system
500h / 6m	Hydraulic oil filter(s)
500h / 6m	Air filter
500h / 6m	Engine fuel filter
500h / 6m	Engine oil filter
500h / 6m	Engine oil
500h / 6m	Drum gearbox oil
500h / 6m	Transmission oil
500h / 1y	Water separator filter

7.6.8 Every 1000 Hours

	Maintenance
1000h / 1y	Differential axle oil
1000h / 1y	Epicycloidal reduction gear oil
1000h / 1y	Cab structure
1000h / 1y	Brakes oil circuit
1000h / 1y	Brakes oil circuit: Pressure
1000h / 1y	Brake
1000h / 1y	Electrical system: cables condition
1000h / 1y	Electrical system: Lighting and signalling

	Maintenance
1000h / 1y	Electrical system: Acoustic signal devices
1000h / 1y	Hydraulic system: Jacks
1000h / 1y	Hydraulic system: Pipes and flexible pipes
1000h / 1y	Hydraulic system: Movements speed
1000h / 1y	Hydraulic oil
1000h / 1y	Engine valves clearances
1000h / 1y	Engine speeds
1000h / 1y	Fuel tank
1000h / 1y	Drum gearbox oil
1000h / 1y	Chassis: bearings and pivot bushes
1000h / 1y	Chassis: structure
1000h / 1y	Transmission oil

7.6.9 Every 2000 Hours

	Maintenance
2000h	Axles oscillation
2000h	Hydraulic system: Capacity
2000h	Hydraulic system: Pressures
2000h	Hydraulic oil tank

	Maintenance
2000h	Alternator and Starter motor
2000h	Radiators

7.6.10 Every 3000 Hours

	Maintenance
3000h	Diesel exhaust fluid filter
3000h	Coolant

7.6.11 Every 3600 Hours

	Maintenance
3600h	Engine AdBlue tank filter

7.6.12 Every 4000 Hours

	Maintenance
4000h	Prop shafts
4000h	Reduction gears universal joint
4000h	Wheels reduction gear clearance
4000h	Steering ball joints
4000h	Wheels reduction gear pins
4000h	Brakes wear

7.6.13 Every 10,000 Hours

	Maintenance
10000h	DEF collector filter

7.6.14 Every 2 Years

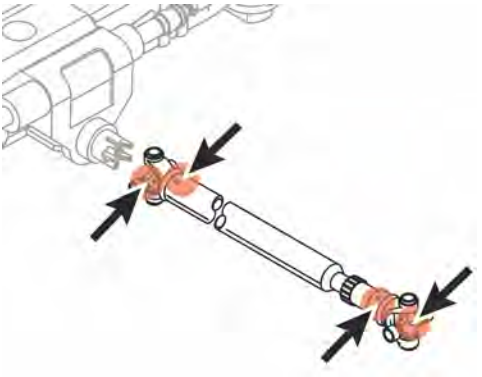
	Maintenance
2y	Air conditioning system (if installed): Dissipater filter
2y	Air conditioning system (if installed): Oil refrigerant
2y	Air conditioning system (if installed): Pressure switches

	Maintenance
2y	Air conditioning system (if installed): Condenser and evaporator coils
2y	Air conditioning system (if installed): Condensate and exhaust valve tank

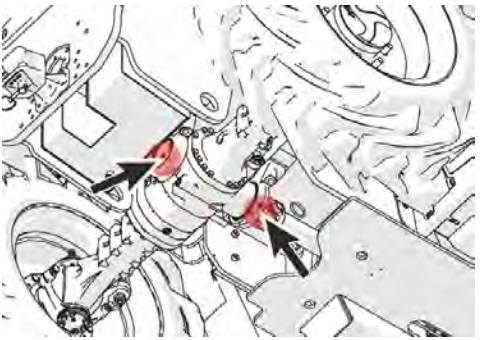
7.7 LUBRICATION

Lubricate the points shown in the figure until grease comes out and clean the lubricators from dirt or deposits.

Drive shaft lubrication points.



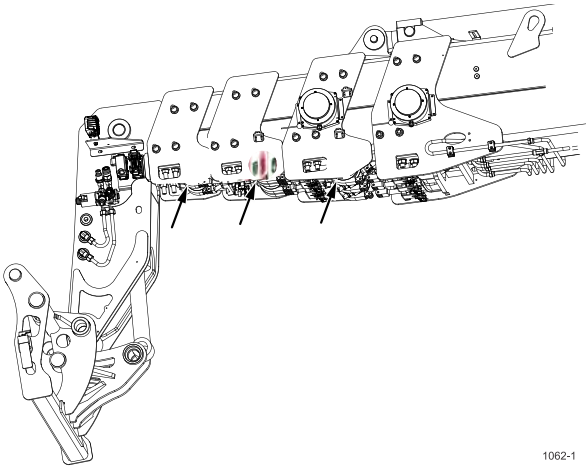
Swinging axle lubrication points,



Leveling cylinder lubrication points.



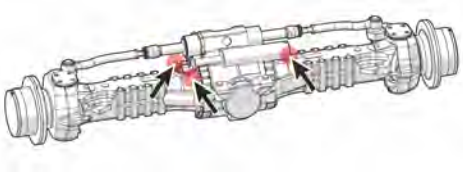
Boom with chains lubrication points.



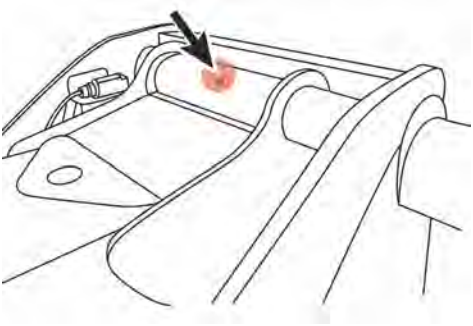
Lifting cylinder lubrication points.



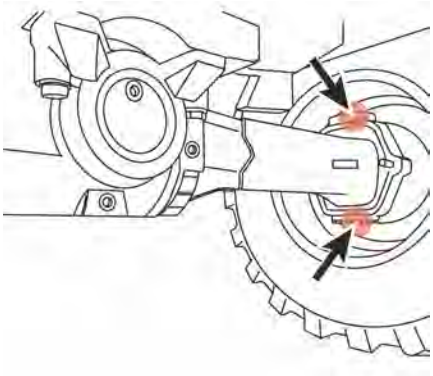
External parking brake cylinder lubrication points.



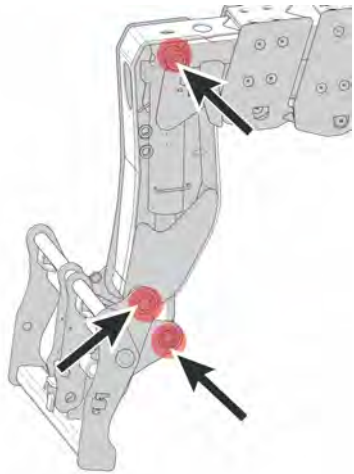
Boom-chassis pin lubrication points.



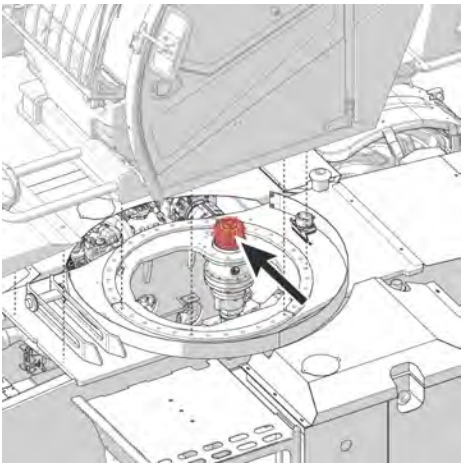
Wheels lubrication points.



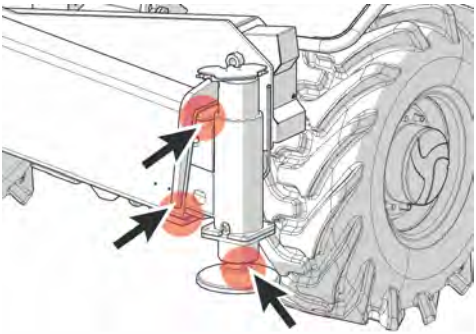
Tilting cylinder lubrication points.



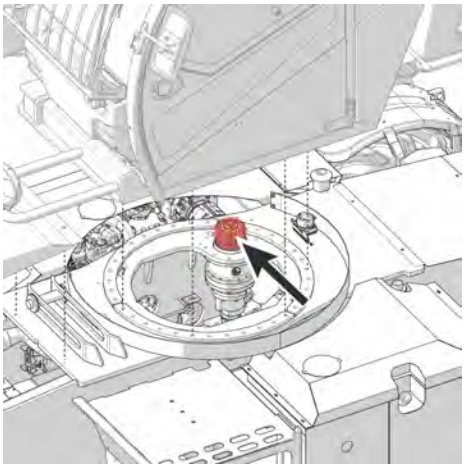
Grease and lubricate the teeth of the turret rotation fifth wheel using grease.



Outrigger lubrication points.



7.7.1 Greasing Fifth Wheel Teeth

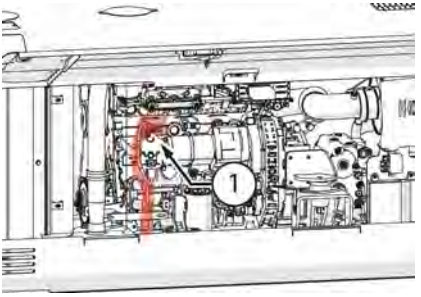


To grease the teeth of slewing firth wheel it is necessary to do the following:

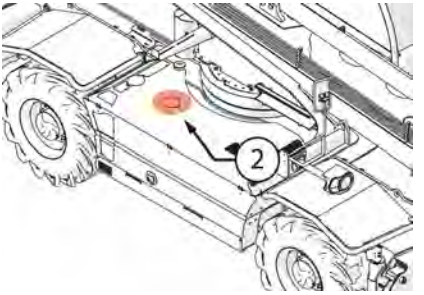
- Prepare the vehicle in the maintenance position.
- Turn on the vehicle.
- Lift the boom just enough to insert the boom prop on the lifting cylinder rod.
- Turn off the engine and remove the ignition key, place a sign in the cab showing "Maintenance in progress".
- Insert the boom prop on the rod of the lifting cylinder, apply appropriate safety supports to the telescopic boom.
- Remove the protective casing placed over the fifth wheel, at the cab side.
- Clean the fifth wheel and rotation gearbox gears from dirt or old grease.
- With a brush, grease the teeth of the fifth wheel.
- Put back the protective casing.
- Remove the boom prop.

7.8 OPERATOR MAINTENANCE INSTRUCTIONS

7.8.1 Engine Oil



150727-1



150727-2

- Check the level with the machine on level ground and the engine turned off. Wait at least 5 minutes to allow the oil to settle into the sump.
- Pull out the dipstick (**1**), clean it and insert it back fully down.
- Pull out again the dipstick (**1**) and check that the oil level is between the "**MIN**" and "**MAX**" mark.
- Put back the dipstick and insert it fully down.
- If necessary, add oil from the cap on the engine (**2**).

For the amount and type of oil, refer to the engine manual.

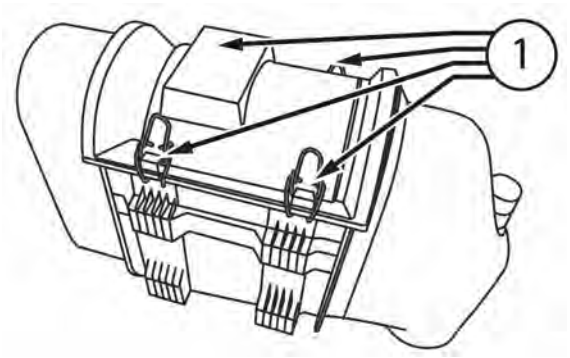
⚠ WARNING

Do not fill beyond the "MAX" mark; if the amount is excessive, oil burns with production of smoke and gives the false impression of oil consumption.

Never operate the engine with the oil level below the "MIN" mark.

7.8.2 Air Intake System

Air Cleaner Check



An air filter in bad condition results in the reduction of power, excessive fuel consumption and reduced engine life.

A clogged filter is signaled by the indicator light located on the dashboard of the telehandler.



⚠ WARNING

When clogging is indicated, you may continue working for only 1 additional hour.

- Clean the filters only when the indicator light indicates clogging or at the frequency required. Unnecessary and too frequent cleaning exposes the elements to damage by handling that can allow dust and dirt to pass through the filtering stage and cause engine damage.
- If the filter elements are in contact with liquids of any kind, they must be replaced.
- Periodically check the intake sleeves, replace them immediately in case they are damaged or deteriorated.
- Periodically check the tightness of the bolts and clamps. Air must not be allowed to get into the engine circulation without having first gone through the filter.

For the complete efficiency of the filter it is recommended to operate with the filter complete with all its parts and components, assembled in the correct way.

Each deteriorated part must be replaced as soon as possible.

⚠ ATTENTION

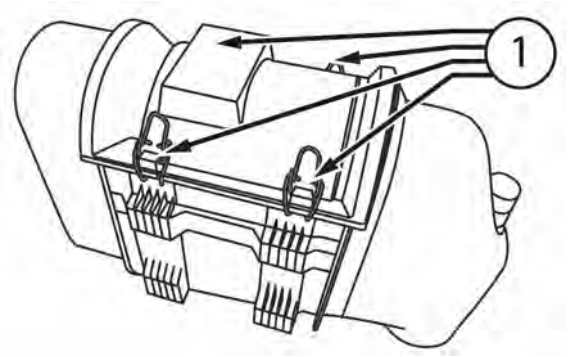
For the complete efficiency of the filter, always operate with a complete filter with all its parts and components.

Each deteriorated part must be replaced as soon as possible.

It is forbidden to operate without the engine air filter.

Filter Change

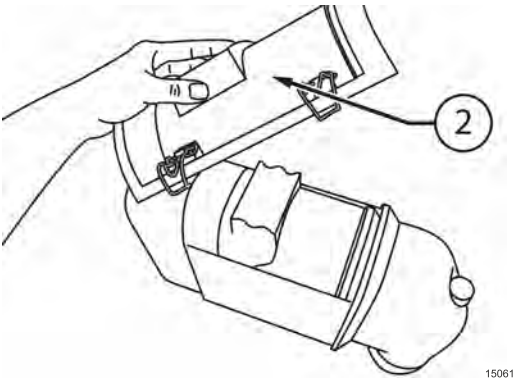
The engine sucks air constantly during its use; dust particles entering in circulation may cause serious damage.



150615-1

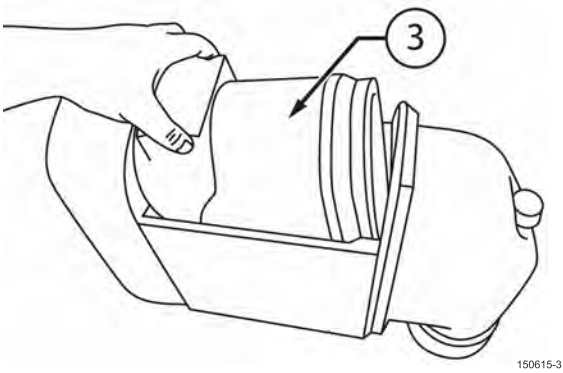
Follow the steps below for proper air filter cleaning:

- Prepare the telehandler in the maintenance position.
- Open and lock the hood.
- Open the filter cover (**1**) pulling the locking levers located on the four corners.



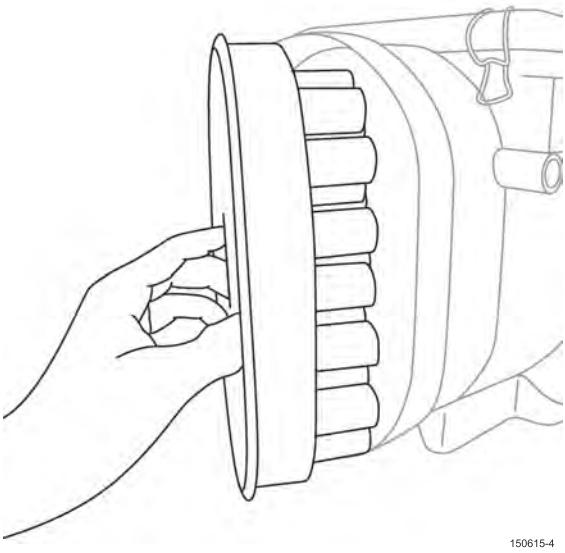
150615-2

- Lift the cover (**2**).



- Remove the cartridge (**3**) inside the filter.
- Use a wet lint-free cloth to clean the box and the cover.
- Clean or replace the filters. The filter cleaning is carried out with compressed air, up to **3** bar (43.5 psi), at a distance of not less than **150 mm** (5.9 in), taking care not to damage the filtering element.
- Reassemble everything carrying out the same operations in reverse.

Suction Ducts



Do the following to correctly clean the suction ducts:

- Prepare the telehandler in the maintenance position.
- Open and lock the hood.

- Loosen the screw that secures the inlet honeycomb.
- Remove the air inlet honeycomb.
- Use a wet lint-free cloth for cleaning. Clean every air inlet hole.
- Put back the inlet honeycomb in its seat.

Note: If the connection gasket located between the suction duct and the filter is damaged, it must be replaced.

7.8.3 Tires

Tire Safety Precautions

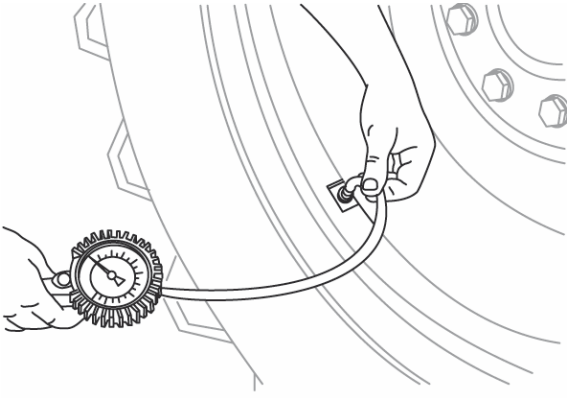
⚠ ATTENTION

On receiving the vehicle check the air pressure of the tires.

- The telehandler wheels are very heavy. Handle with care and make sure that, once stored, they can not fall and injure someone.
- Make sure the jack is placed on a solid and flat surface.
- Make sure the jack is adequate for lifting the telehandler.
- Use ratchet jacks or other locking means suitable to support the machine during the tire repair.
- Do not place any part of the body under the telehandler.
- Do not start the engine while the machine is on the jack.
- Never hit a tire or a rim with a hammer.
- Make sure the rim is clean, without rust and undamaged. Do not weld, solder, repair in any way, or use a damaged rim.
- Do not inflate a tire unless the rim is mounted on the machine or secured in such a way that it cannot move in case the tire or rim should break suddenly.
- Do not inflate any tire over the pressure indicated by JLG. If the bead chafer does not settle on the rim, when arriving to this pressure deflate the tire and lubricate again with a solution of soap and water, inflate again. Do not use oil or grease. An inflation greater than permitted with bead chafer not settled may break the bead or rim with explosive force sufficient to cause serious injury.
- After installing the wheel, tighten the nuts between the wheel and the axles. Then check the nut torque every day until the torque is stabilized.

Tire Air Pressure Check

- Check the tire pressure regularly. The pressure must be checked with cold tires.
- The tire pressure must always be at the levels indicated.



150578-2

Verify and adjust the pressure of the front and rear tires.

Ensure the tread and the sides are not damaged.

Connect a pressure gauge to the tire valve and verify that the inflation pressure is correct.

Tire Damage

⚠ DANGER

Tires showing cuts or excessive wear must be replaced immediately.

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

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

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

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

Tire and Wheel Replacement

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

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

- Equal or greater ply/load rating and size of original
- Tire tread contact width equal or greater than original
- Wheel diameter, width and offset dimensions equal to the original
- Approved for application by tire manufacturer (including inflation pressure and maximum tire load)

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

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

Wheel Installation

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

Use the corresponding table to know the correct tightening torque.

Always tighten the nuts in opposing position, not consecutively.

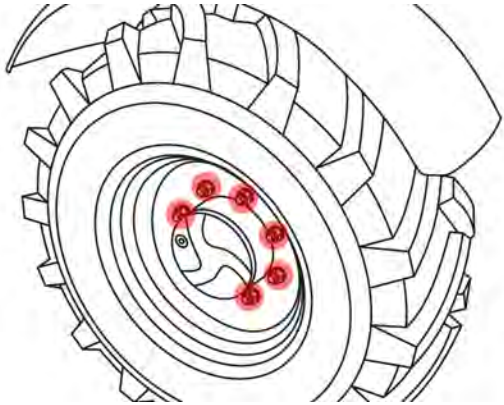
After installing the wheel, tighten the nuts between the wheel and the axles. Then check the nut torque every day until the torque is stabilized.

The number of axle columns must match the number of nuts tightened. Then all the nuts on each wheel must be installed otherwise the telehandler can not operate.

In case of wheel replacement the machine or the raised side can be placed on the ground only with wheels installed and properly tightened.

The nuts tightening must be made first with the telehandler, or part of it, raised from the ground then with telehandler resting on the ground.

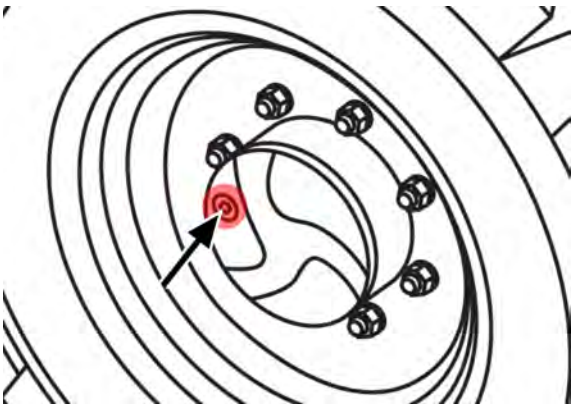
Only use JLG original nuts for tightening the wheels. If you lose even one nut contact the JLG service center.



Check if the nuts of the front and rear wheels are tightened well, using a torque wrench (with a torque multiplier, if necessary).

Nut with swivel washer	Torque
M18x1.5	260 N·m (192 ft·lbs)
M22x1.5	450 N·m (332 ft·lbs)

Epicycloidal Reduction Gear Oil Check



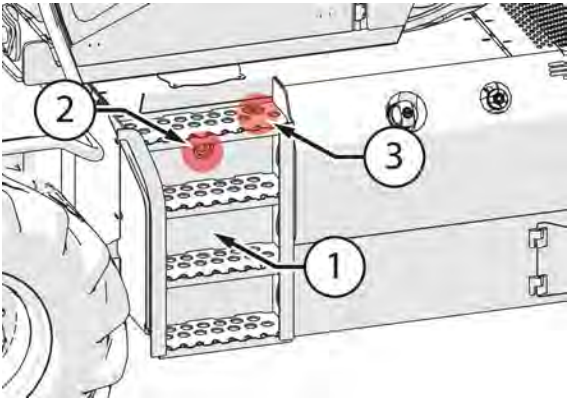
The oil cap of the epicycloidal reduction gear is located on the wheel hub:

When checking the oil level it is necessary to do the following:

- Prepare the telehandler in the maintenance position.
- Turn the wheel for the oil cap to be in the horizontal position (9 o'clock).
- Place a container to collect the oil.
- Remove the cap and verify that the oil seeps from the hole.
- If necessary, top-up through the same hole.

- Close the cap and tighten it securely.

7.8.4 Hydraulic Oil



160440-1

The hydraulic oil tank is located on the left side of the telehandler under the cab (**1**).

The level can be checked through the transparent cap placed on the left side of the machine (**2**).

The level is correct when the oil is visible from the transparent cap (**2**) with all the cylinders of the machine in the transport position.

Checking Hydraulic Oil

To keep the telehandler in normal operation conditions, it is necessary to keep the oil level in best conditions.

To properly check the oil level in the tank it is necessary to do the following:

• Prepare the telehandler in the maintenance position.

• Make sure all cylinders and jacks of the machine are retracted (e.g. telescopic boom fully retracted and lowered, attachment holding plate tilted down as much as possible to avoid contact with chassis or tires). In this way all the oil of the hydraulic circuit will be sent in the tank.

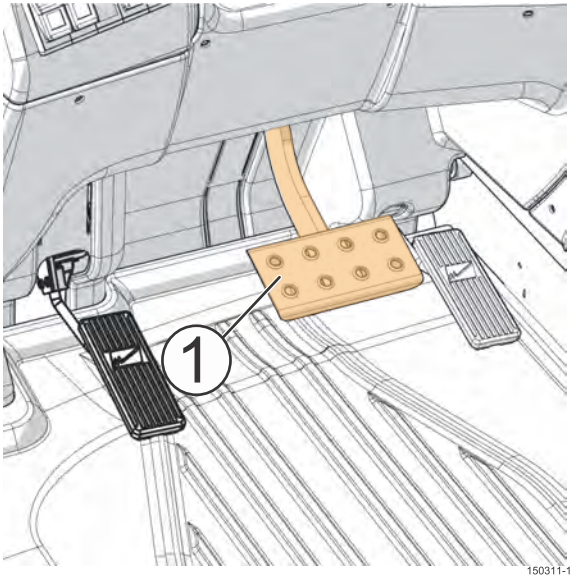
• Check the oil level through the transparent cap (**2**). Under the best conditions, the oil level reaches the middle of the transparent indicator.

• If necessary, remove the filler cap (**3**) and add oil until it reaches the proper level.

• Replace the filler cap (**3**).

7.8.5 Brake System

Brake Inspection



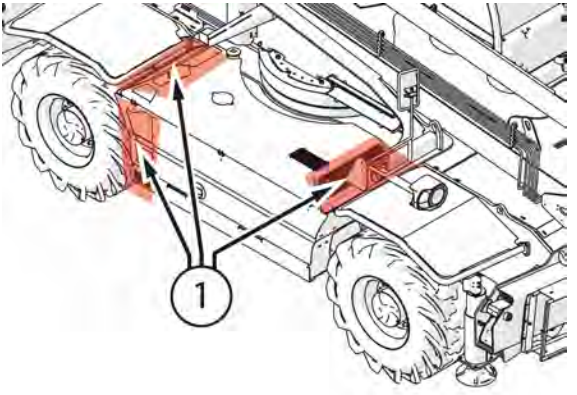
Visually check if the joints of the pedals are not damaged and that the pedal stroke is not excessive or too elastic.

⚠ DANGER

If irregularities in braking are noticed, contact qualified personnel to verify the cause of the issue. The braking parts also safeguard the operator's safety, do not intervene personally on the braking system trying to eliminate possible anomalies.

7.8.6 Engine Cooling System

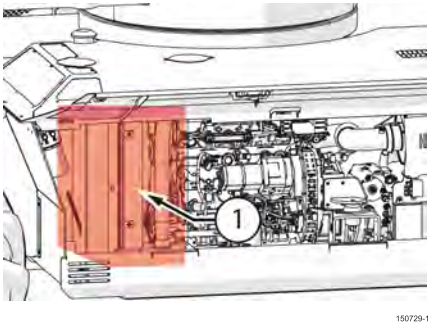
Coolant Level Check and Cleaning



150728-1

Check the air recirculation networks and grids (**1**) and ensure they are clean and free of dirt and debris.

For cleaning, use a jet of air at low pressure from the inside to the outside of the machine.



The oil and water radiator (**1**) involve the following steps:

Radiators check

Check that the fins are not deformed; in that case straighten with caution.

Check that the fins have not accumulated dirt and that they are not obstructed.

Radiators cleaning

Prepare the telehandler in the maintenance position.

Clean the radiator from dirt and impurities accumulated between the cooling fins. For cleaning use compressed air with pressure not exceeding 7 bar directed from the inside towards the outside.

If necessary, apply a detergent solution and then remove it with a pressure washer.

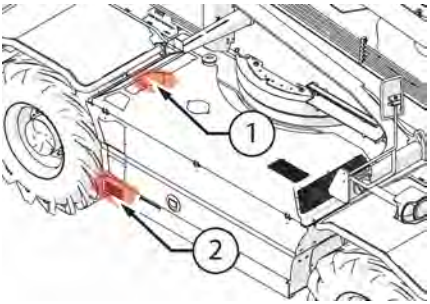
Filling the Radiator

⚠ DANGER

Do not remove the filling cap of the radiator when the system is hot, otherwise it could cause leakage of boiling coolant. Once the system has cooled, turn the filling cap to the first mark and wait until the pressure has completely exhausted before proceeding.

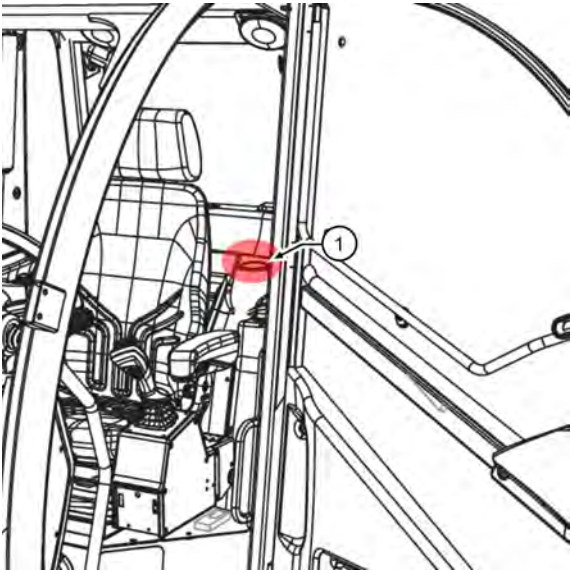
⚠ DANGER

The coolant can be toxic. Avoid contact with skin, eyes or clothing. Rinse thoroughly with water in case of contact with skin and eyes. Consult a doctor immediately.If not reused, dispose of in accordance with local environmental regulations.



- Prepare the machine in the maintenance position.
- Open the engine hood.
- Slowly unscrew the filler cap (**1**) counterclockwise until it reaches the safety latch.
- Exhaust the residual pressure and steam.
- Add the coolant up to the level of **30** mm (1.2 in) below the cap.
- Replace the filler cap.
- Close the engine hood.

7.8.7 Windshield Washer System

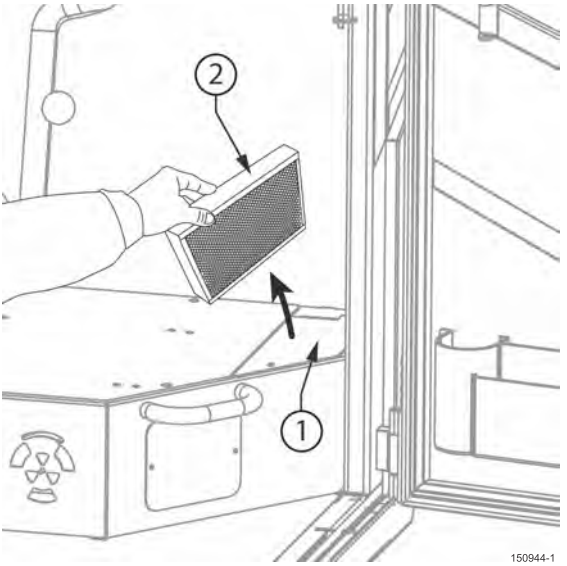


The washer fluid tank is located in the cab on the left side of the seat (**1**).

To add liquid to the tank:

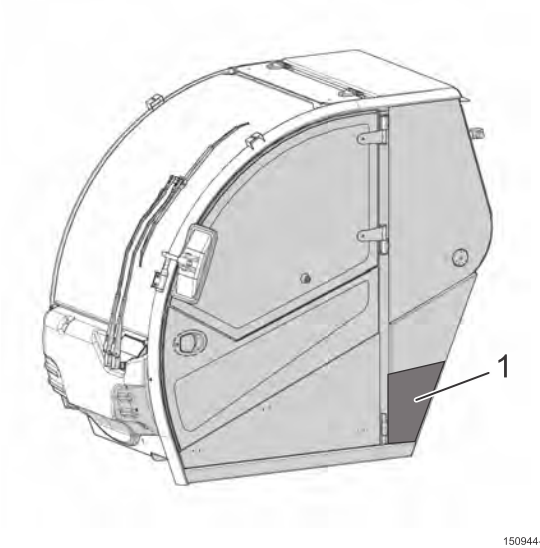
- Remove the filling cap.
- Add washing fluid to fill the tank.
- Replace the filling cap.

7.8.8 Cab Air Filters



When changing the cab ventilation filter, clean the suction duct with a jet of air from inside the cab to the outside.

- Prepare the telehandler in the maintenance position.
- Remove the housing (**1**), located on the left part of the seat, unscrewing the fixing screw.
- Remove the filter (**2**).
- Replace or clean the filter cartridge by tapping gently on a flat surface, with the outer side facing down, being careful not to damage it; or use a jet of air (less than 100 psi) by blowing from the inside to the outside.
- Refit the filter (**2**).
- Replace the housing (**1**).



Clean the air intake grid (**1**) at the end of every working day using a jet of air.

⚠ DANGER

Do not use diesel fuel, gasoline, solvents or water to clean the cartridges, as this may damage the filtering material.

⚠ WARNING

If the telehandler is used in environments particularly rich of dust, the filter life is reduced to 100 hours.

⚠ WARNING

In the case of malfunction in the ventilation system, check the filter for clogging.

⚠ DANGER

Do not use the machine without a cab filter.Dust in the cab may cause health risks to the operator and errors in the ventilation system.

7.9 ADBLUE®

AdBlue® is a registered trademark of Verband der Automobilindustrie (VDA).

AdBlue is used in the selective catalytic reduction (SCR) to reduce emissions of nitrogen oxides from the exhaust gases produced by vehicles equipped with a diesel engine.

The solution is non-toxic, non-flammable and is not dangerous to handle. However, the solution can be corrosive to some metals and must be stored and transported using the proper materials.

7.9.1 Proper Use

The SCR systems are very sensitive to the quality of AdBlue used.

It is extremely important that the AdBlue complies with the specifications and has not been contaminated during transport, handling or storage.

A key aspect to consider is that the damage that can result from an AdBlue containing calcium or metals out of specification are not immediately visible, but appear after a certain time, and even after many miles.

In summary, the issues which can arise from a low quality AdBlue are of two types: aging and poisoning of the catalyst.

- Aging is typically given by the presence of substances that causes the catalyst to lose its efficiency and reduce its life and ability to operate (reducing the usable area). The catalyst is designed to last the lifetime of the vehicle while if AdBlue with parameters (e. g. Calcium) out of specification is used, it will last less and must be replaced with high costs.
- Poisoning is typically due to the presence of metals (e. g. Zinc or copper) or pollutants (which should never be present in the AdBlue) as it immediately ruins the catalyst and makes it unusable. The result is an immediate need to replace the catalyst in order to enable the SCR system operation again.

Therefore, aging takes place slowly and stops the vehicle after a long time while poisoning is rather immediate and immediately stops the vehicle. Both, however, require costly catalyst replacement and can be prevented only using high quality AdBlue without contaminants.

7.9.2 Specifications

Urea 32.5 % - solution in water			
Characteristics	**Minimum**	**Maximum**	**Reference Unit**
Urea content	31.8	33.2	% of weight
Density at 20°C	1.0870	1.0930	g/cm^3
Refractive index at 20°C	1.3814	1.3843	-
Alkalinity as NH3	-	0.2	%
Biuret	-	0.3	%

Urea 32.5 % - solution in water			
Characteristics	**Minimum**	**Maximum**	**Reference Unit**
Aldehyde	-	5	mg/kg
Insoluble	-	20	mg/kg
Phosphates (PO4)	-	0.5	mg/kg
Calcium	-	0.5	mg/kg
Iron	-	0.5	mg/kg
Copper	-	0.2	mg/kg
Zinc	-	0.2	mg/kg
Chromium	-	0.2	mg/kg
Nickel	-	0.2	mg/kg
Aluminum	-	0.5	mg/kg
Magnesium	-	0.5	mg/kg
Sodium	-	0.5	mg/kg
Potassium	-	0.5	mg/kg

7.9.3 Tank Filling

⚠ WARNING

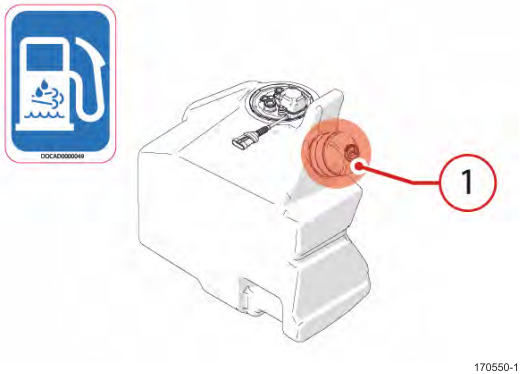
Danger of burns caused by boiling hot AdBlueThe AdBlue pipes are under pressure while and after the engine is running.

Safety Measures

- Cool the engine before opening the fueling system.
- Always wear protective gloves, clothing, and goggles.
- Slowly open pipe fittings and the clamping elements of the system components.
- Fill tank only in a well-ventilated environment.
- Avoid direct contact with skin, eyes, or clothing.

⚠ WARNING

Damage to the engine caused by presence of AdBlue in the fuel. Only add the AdBlue to the appropriate tank, AdBlue must not get into the fuel tank.



To properly add AdBlue do the following:

- Park the machine and turn off the engine.
- Allow the engine to cool.
- Open the AdBlue tank cap (**1**).
- Close the tank cap.



7.9.4 After Run Indicator

The After Run indicator is lit until the Urea circuit is operating.
The indicator stays on for 90 seconds after the engine is turned off.
During this time an electric pump will drain the urea circuit.

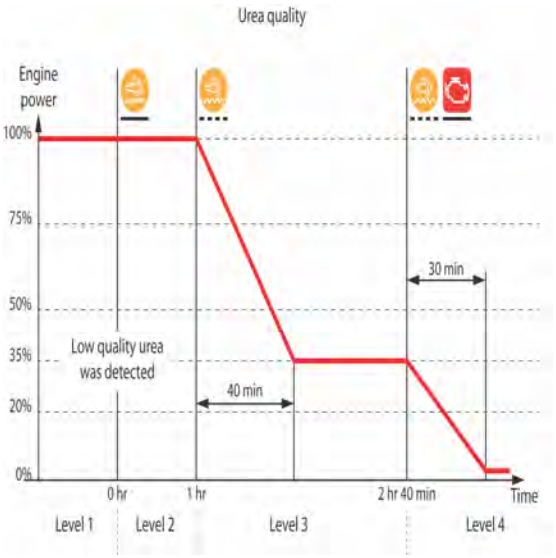


7.9.5 AdBlue — Urea Quality

The urea quality is indicated by the indicator lights:

1		Urea Quality Indicator Light
2		Engine Error

The urea quality is indicated by different stages as shown below.



1 — Normal Level

- Acceptable quality urea
- All the indicators lights are off.

- Engine at full efficiency.

2 — Pre-Alarm Level

- Low quality urea detected.
- The indicator light (**1**) is on and stays on.
- Engine at full efficiency.

3 — Alarm Level

- 1 hour after detecting low quality urea.
- The indicator light (**1**) starts flashing.
- Over the following 40 minutes, the engine power will be gradually reduced to 35% and the RPM to 40%. The parameters will be reduced up to the next level or to the resolution of the problem.

4 — Error Level

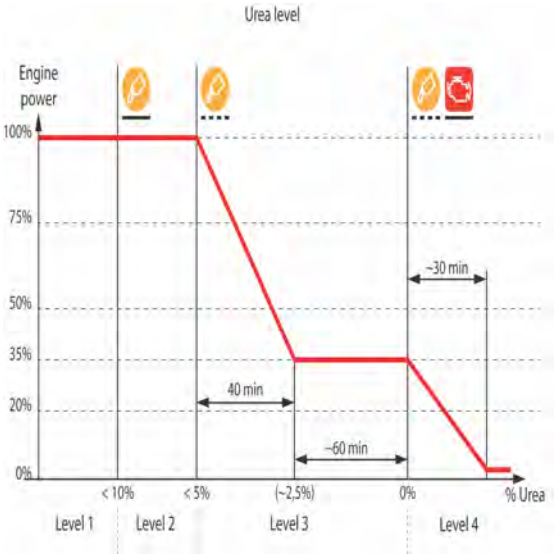
- 2 hours and 40 minutes after detecting low quality urea.
- The indicator (**1**) flashes and the indicator light (**2**) turns on.
- In the following 30 minutes the engine power will be reduced to a minimum until the normal conditions are restored.

7.9.6 AdBlue — Urea Level

The urea level is indicated by the indicator lights:

1		Urea Level Indicator Light
2		Engine Error

The urea level is indicated by different stages as shown below.



1 — Normal Level

- Urea level above 10%.
- All the indicators lights are off.
- Engine at full efficiency.

2 — Pre-Alarm Level

- Urea level below 10%.
- The indicator light (**1**) is on and stays on.
- Engine at full efficiency.

3 — Alarm Level

- Urea level below 5%.
- The indicator light (**1**) starts flashing.
- Over the following 40 minutes, the engine power will be gradually reduced to 35% and the RPM to 40%. The parameters will be reduced up to the next level or to the resolution of the problem.

4 — Error Level

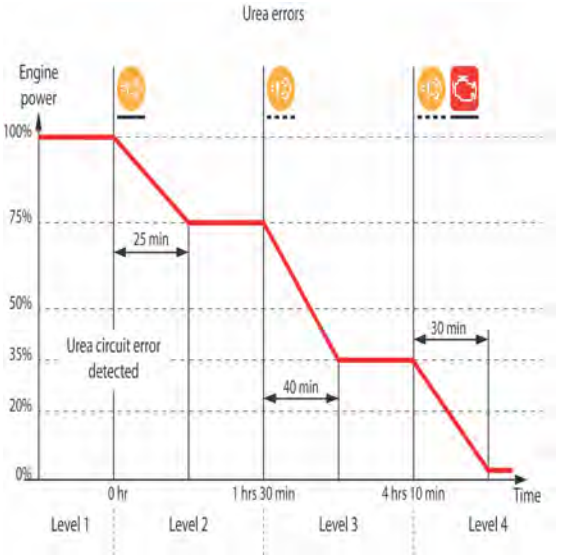
- Urea exhausted.
- The indicator (**1**) flashes and the indicator light (**2**) turns on.
- In the following 30 minutes the engine power will be reduced to a minimum until the normal conditions are restored.

7.9.7 AdBlue — Urea Circuit Errors

The errors in the urea circuit are indicated by the indicator lights:

1		Urea Error Indicator Light
2		Engine Error

The urea level is indicated by different stages as shown below.



1 — Normal Level

- No errors are detected.
- All the indicators lights are off.
- Engine at full efficiency.

2 — Pre-Alarm Level

- Error detected.
- The indicator light (**1**) is on and stays on.

- Over the following 25 minutes, the engine power will be gradually reduced to 75%. The parameters will be reduced up to the next level or to the resolution of the problem.

3 — Alarm Level

- Error detected 1 hour and 30 minutes ago.
- The indicator light (**1**) starts flashing.
- Over the following 40 minutes, the engine power will be gradually reduced to 35% and the RPM to 40%. The parameters will be reduced up to the next level or to the resolution of the problem.

4 — Error Level

- Error detected 4 hours and 10 minutes ago.
- The indicator (**1**) flashes and the indicator light (**2**) turns on.
- In the following 30 minutes the engine power will be reduced to a minimum.

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SECTION 8
Additional Checks and Information

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 TROUBLESHOOTING

Before performing any Troubleshooting procedures, read all relevant Safety sections of this manual.

	This symbol indicates the trouble experienced may not be resolved without the intervention of an authorized JLG Service Technician.

8.2.1 Engine

Problem	Cause	Solution	
Engine does not engage	Direction of travel lever engaged	Place the lever in neutral	
	Parking brake deactivated	Activate parking brake	
	No fuel	Add fuel to fuel tank	
	Battery Isolation switch disconnected	Connect the battery isolation switch	
	Low battery	Recharge or replace the battery	
	Fuse Failure	Replace the fuse	
	Other	Consult the Service manual	

8.2.2 Hydraulic Transmission System

Problem	Cause	Solution	
The machine does not move in any direction	Insufficient hydraulic oil level	Check the hydraulic oil level	
	Hand throttle engaged	Disengage the hand throttle	
	The sensor built in the seat does no report the presence of the operator	Sit properly in the operators seat	
	The movement selection lever is not engaged	Engage the lever to the desired position	
	The outriggers are lowered	Raise all outriggers fully up	
	Parking brake in operation	Disengage the brake	
	Electrical circuit failure	Repair the circuit	
	Hydrostatic transmission failure	Repair of replace the transmission	
	The transmission ByPass tap has been opened (if equipped)	Close the ByPass tap	
The machine loses speed	Hydraulic oil intake failure clogged	Remove the oil filter and replace it	
	Inching pedal failure	Check the correct operation of the pedal and of the valve	

8.2.3 Brakes

Problem	Cause	Solution	
The telehandler does not brake	Lack of oil in the brake fluid tank	Refill the tank and/or purge the system	
	Loss of fluid from the circuit	Check for leaks	
	Brake discs worn	Replace the brake discs	
	Brake master cylinder failure	Repair or replace	
	Unsuitable fluid in the circuit or in the differential sump	Check the brake oil specifications indicated	

8.2.4 Steering Wheel

Trouble	Cause	Solution	
The machine runs sideways The wheels are not aligned	The wheel are not correctly aligned	Align wheels	
	Steering selection error	Put lever in different steering mode	
	Control distributor failure	Repair or replace the distributor	
	Leakage from the steering wheel hydraulic cylinders	Replace the gaskets	

8.2.5 Telescopic Boom

Trouble	Cause	Solution	
The telehandler does not lift the load	The safety systems have activated	See “Anti-Tipping Device” information in this manual	
	Electrical system failure	Check the fuses and the electrical system	
	Hydraulic oil level in the tank is insufficient	Add hydraulic oil	
	Relative hydraulic pump failure	Repair or replace the pump	
	Distributor low calibration	Check and recalibrate the distributor	
	Lifting cylinders internal leak	Replace the gaskets	
The boom does not extend	“The safety systems have activated (Indicator light and audible alarm in operation)”	See “Anti-Tipping Device” information in this manual	
The boom does not come down	“The safety systems have activated (Indicator light and audible alarm in operation)”	See “Anti-Tipping Device” information in this manual	

8.2.6 Turret Rotation

Problem	Cause	Solution	
The turret does not rotate	Turret rotation locking pin	Remove the pin	
	The safety systems have been activated (indicator light and audible alarm in operation)	See “Anti-Tipping Device” information in this manual	
	Turret rotation hydraulic pump failure	Install a pressure gauge and check the pressure	
	Low operating pressure	Calibrate the distributor	
	Hydraulic motor failure	Disconnect the damaged hose and check for proper oil spill. Replace if necessary.	
	Electrical buttons failure	Check the current on the coil	
	Rotation performed against a fixed wall or dragging a weight Warning W1059	Reset the rotation sensor: Unload the loads if any, retract and lower the boom and insert the turret rotation locking pin	

8.2.7 Warning Codes

Code	Description	Code	Description
W1001	Machine not stopped	W1045	Not neutral
W1002	Emergency button pressed	W1046	Not boom down
W1003	Device alarm	W1047	No parking brake consent
W1004	No personnel presence button	W1048	No enable
W1005	Imi block	W1049	Mode not confirmed
W1006	Shuttle overload	W1050	Stick not inserted
W1007	High angle limit 55	W1051	On unstabilized radio
W1008	Angles congruence not checked	W1052	Boom not down
W1009	Extensions congruence not checked	W1053	Gear not engaged
W1010	Not allowed	W1054	Rear axle locked

Code	Description	Code	Description
W1011	Slow down for high limits switch	W1055	Outriggers consent incongruence
W1012	Slow down for Imi	W1056	Power steering engaged
W1013	Turret not locked	W1057	Outriggers activated
W1014	Outrigger on the ground	W1058	Load not allowed
W1015	Angle not low	W1059	Rotation sensor error
W1016	Max extension speed	W1060	Lifting danfos internal error
W1017	Min extension speed	W1061	Lifting danfos direction error
W1018	On road	W1062	Lifting danfos tension error
W1019	On shuttle	W1063	Extension danfos internal error
W1020	Turret not unlocked	W1064	Extension danfos direction error
W1021	Max extension hr	W1065	Extension danfos tension error
W1022	Min extension hr	W1066	Rotation danfos internal error
W1023	Turret not frontal	W1067	Rotation danfos direction error
W1024	Height 3 meters	W1068	Rotation danfos tension error
W1025	Not on tires	W1069	Auxiliary danfos internal error
W1026	Max angle limit	W1070	Auxiliary danfos direction error
W1027	Arm not closed	W1071	Auxiliary danfos tension error
W1028	Not on front 15	W1072	Swing danfos internal error
W1029	Lock for isaac inervention	W1073	Swing danfos direction error
W1030	Seat microswitch is missing	W1074	Swing danfos tension error
W1031	Not allowed on shuttle deco	W1075	N/A
W1032	Shuttle door microswitch	W1076	N/A
W1033	Optional excluded	W1077	N/A
W1034	Open door	W1078	N/A
W1035	Error on deco	W1079	N/A
W1036	Shuttle selector	W1080	Turret mc2m power supply
W1037	Intervention a2b	W1081	Carriage mc2m power supply
W1038	Rope overload	W1082	Cab recovery
W1039	Unwound rope	W1083	ABT sensor alarm

Code	Description	Code	Description
W1040	Winch not selected	W1084	Continuous oil function active
W1041	Shuttle jib not closed	W1085	MC2M Carriage Stabilized Power Supply
W1042	Shuttle backwards	W1086	MC2M Turret Stabilized Power Supply
W1043	Crossmembers not closed	W1087	Midac + Stabilized Power Supply
W1044	Pedal brake is missing	W1088	Outriggers errors (2 feet down micro-switches amd 2 feet up microswitches, capacity on tired)

8.3 TELEHANDLER STORAGE

8.3.1 Long Period of Inactivity

If the telehandler must be stored for a long period of time (over a week), certain precautions must be complied with to protect it:

- Clean the telehandler.
- Lubricate all the greasers.
- Check the tires and inflate them to the recommended pressure.
- Clean the fuel system and change the filter cartridges.
- Store any attachments.
- Use the battery cut-off switch to deactivate the electrical circuit.
- Realign and lower all the mobile parts of the vehicle completely.
- Close and lock all the windows.
- Close and lock the door.

8.3.2 Extended Period of Inactivity

If the telehandler must be stored for an extended period (more than two months), certain precautions must be complied with to protect it:

- Clean the telehandler.
- Touch up the paint where necessary to prevent rust.
- Lubricate all the greasers.
- Check whether any parts are worn or damaged and replace them, if necessary.
- Check the tires and inflate them to the recommended pressure.
- Drain the oil from the engine and replace it with new oil.

- Clean the fuel system and change the filter cartridges.
- Empty the fuel tank as usual and fill it with 3 gallons of special fuel for prolonged inactivity. Run the engine for ten minutes so the new solution can distribute evenly.
- Store any attachments.
- Use the battery cut-off switch to deactivate the electrical circuit.
- Realign and lower all the mobile parts of the telehandler completely.
- Apply a layer of light grease on the uncovered rods of the hydraulic cylinders.
- Close and lock all the windows.
- Close and lock the door.

8.3.3 Restarting the Telehandler

Preparing the telehandler after a long period of inactivity:

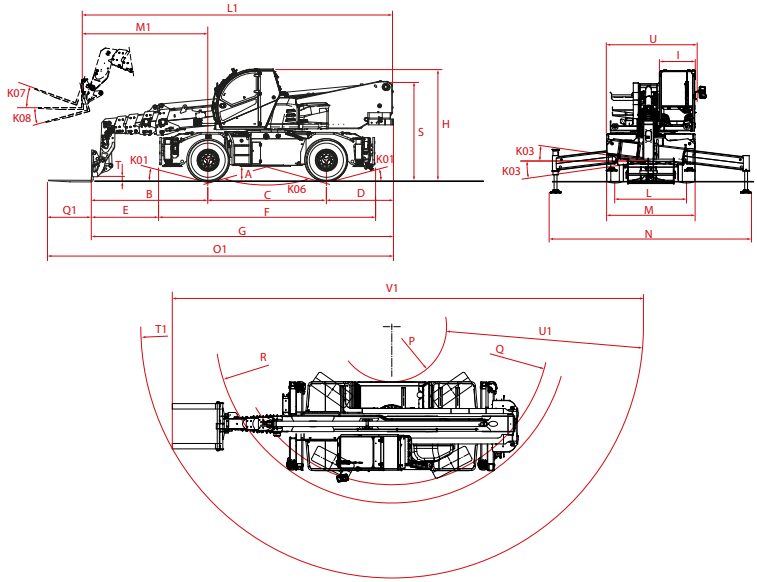
- Inflate the tires to the correct pressure.
- Remove the jack stands from under the axles.
- Fill the fuel tank.
- Check the radiator coolant level.
- Check the level of the various oils.
- Fit a fully charged battery.
- Remove the cover of the exhaust pipe.
- Remove the layer of grease on the exposed cylinder rods.
- Start the engine and check that all the controls work properly.
- Let the engine run for a few minutes.
- Verify the efficiency of the brake system.

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SECTION 9
Specifications

9.1 PRODUCT SPECIFICATIONS

9.1.1 Dimensions



Callout	Dimension	Callout	Dimension
A	16.5 in	T	7.48 in
B	127.5 in	U	98.3 in
C	129.9 in	Z	100.6 in
D	73.6 in	L1	339.3 in
E	73.2 in	M1	137.4 in
F	237.8 in	O1	378.7 in
G	331.1 in	P1	2 in
H	124 in	Q1	47.2 in
I	38.6 in	R1	49.6 in
L	78.7 in	S1	5.9 in
M	98.4 in	T1	275.2 in
N	221.5 in	U1	214.5 in

Callout	Dimension	Callout	Dimension
O	211 in	V1	547.2 in
P	60.4 in	K01	16°
Q	173.2 in	K03	8°
R	193.5 in	K06	150°
S	108.3 in		

9.1.2 Performance

Fork Swiveling Angle	133°
Pull-Out Force	16,636 lb-ft
Towing Force	22,481 lb-ft
Maximum Climb Angle	40%
Outriggers Maximum Capacity	11,023 lb
Wheels Maximum Capacity	11,023 lb
Maximum Capacity	11,023 lb
Capacity at Maximum Height on Outriggers	4,410 lb
Capacity at Maximum Height on Wheels	3,306 lb
Capacity at Maximum Horizontal Extensions on Outriggers	1,323 lb
Capacity at Maximum Horizontal Extensions on Wheels	661 lb
Turret Rotation	360°
Maximum Horizontal Extension on Outriggers	71.9 ft
Maximum Horizontal Extension on Wheels	45.9 ft
Maximum Lifting Height on Outriggers	84.3 ft
Maximum Lifting Height on Wheels	72.2 ft
Forward Swiveling	2.1 seconds
Reverse Swiveling	1.3 seconds
Descent	9.5 seconds
Retraction	15 seconds
Extension	30 seconds
Lifting	14.5 seconds

Boom Type	Telescopic with 3 telescopic sections and swing articulations STD 133°
Maximum Speed (On wheels with maximum permitted diameter)	24.9 mph
Maximum Speed — Foam Filled Tires (On wheels with maximum permitted diameter)	12.4 mph

9.1.3 Engine

Brand	FPT
Model	F4HFE413K*B015
Fueling	Diesel
Displacement	274 in^3
Operation	4 stroke
Cooling System	Liquid
Nominal Power	168 HP
@rpm	2200 rpm
Peak Power	170 HP
@rpm	1900 rpm
Number and Arrangement of Cylinders	4, Vertical in line
Injection	Electronic, Common Rail
Consumption	460.6 lb/Hp h
@rpm	1900 rpm
Maximum Torque	524 lb-ft
@rpm	1500 rpm
Intake	16–valve turbo compressor, aftercooler
Emission Standard	Stage IV/Tier 4f
Exhaust Gas Treatment	DOC+SCR (AdBlue)
Air Filter	Air pre-heating and air pre-filtering with dust separator
CO Emissions	0.026 g/kWh (0.04 lb/Hp h)
HC Emissions	0.003 g/kWh (0 lb/Hp h)

NOx Emissions	0.168 g/kWh (0.28 lb/Hp h)
Particulate Emissions	0.013 g/kWh (0.02 lb/Hp h)

9.1.4 Weights

Maximum Mass	53,131 lb
Unladen Weight	46,297 lb
Maximum Permitted Mass on Front Axle	28,660 lb
Maximum Permitted Mass on Rear Axle	28,109 lb
Load per Wheel	23,400 lb
Load per Foot	30,350 lb

9.1.5 Electrical and Hydraulic System

Alternator	120 A
Battery	12 V — 185 Ah – 1200 A
Starter Motor	4.2 kW
Hydraulic Pump Type	Variable Displacement Pump with Load Sensing for Power Steering and Movements
Hydraulic Pump Capacity	76.6 gal/min (290 L/min)
Maximum Operating Pressure	4351 psi (30 MPa)
Distributor Type	Hydraulic in 5 sections with “Load Sensing” proportional electronic servo-control with “Flow Sharing”, 5 simultaneous movements with independent maximum speed control of each movement
Distributor Control	Dual Proportional Joystick
Optional Distributor Control	Double Proportional Joystick
Boom Hydraulic Sockets	With Quick Couplings

9.1.6 Transmission

Transmission Type	Hydrostatic with continuous adjustment and electronic control
Reversal	Electro-Hydraulic
Transmission Gearbox	Servo-controlled 2–speed

Drive Mode	Normal, Eco, Creep. Selectable ECO-WORK
Inching	With electronic pedal for controlled forward movement

9.1.7 Axles

Driving Axles	Front and Rear
Type of Axles	2 steering, with 4 epicyclodial reduction gears
Service Braking	Oil bath with servo brake on front and rear axle with double hydraulic system
Parking Braking	Negative actuation with electrical control
Front Axle	With transverse leveling device with control in the cab
Rear Axle	Swinging
Type of Steering	4 wheels / transversal / 2 wheels

9.1.8 Acoustic Pressure

Reference standard for stopped and running machine	UNI EN 12053:2008
Value with stopped machine	72.2 dB(A)
Value with running machine	86.2 dB(A)
Reference standard perceived by the operator	UNI EN 12053:2008
Value perceived by the operator with closed cab	71.0 $\pm$ 4 dB(A)

9.1.9 Acoustic Power

Reference Standard	Directive 2000 / 14 / EC
Guaranteed Standard	108 dB(A)
Measured Value	107 dB(A)

9.1.10 Vibration

Reference standard for seat vibrations	UNI EN 1032:2009
Value for seat vibrations	2.9 ft/s^2 (0,89 m/s^2)
Uncertainty for seat vibrations value	0.9 ft/s^2 (0,27 m/s^2)
Reference standard for steering wheel vibrations	UNI EN 1032:2009

Value for steering wheel vibrations	8.7 ft/s² (2,65 m/s²)
Uncertainty for steering wheel vibrations value	2.6 ft/s² (0,80 m/s²)

9.1.11 Tires

Standard Tires	18R22.5
Foam Filled Tires	445/65 R22.5

9.1.12 Fluids

Engine oil specifications	JLG ENGINE EVOLUTION TIR4 SAE 15W/40; (< -20°C / < -4°F) JLG ENGINE EVOLUTION TIR4 SAE 10W-30
Engine oil capacity	3.8 gal (14,40 L)
Front axle oil specifications	JLG GEAR EP/E LS 85W-90 API GL-5, MIL-L-2105D; (< -20°C / < -4°F) JLG SPECIAL LS SYNT AXEL OIL 75W-90
Front axle oil capacity	1.98 gal (7,50 L)
Front reduction gears oil capacity	0.33 gal (1,25 L)
Rear axle oil specifications	JLG GEAR EP/E LS 85W-90 API GL-5, MIL-L-2105D; (< -20°C / < -4°F) JLG SPECIAL LS SYNT AXEL OIL 75W-90
Rear axle oil capacity	1.98 gal (7,50 L)
Rear reduction gears oil capacity	0.33 gal (1,25 L)
Transmission gearbox oil specifications	(from -10°C/14°F to +35°C/95°F) JLG UTTO FLUID WB SAE 10W/30; (from -30°C/- 22°F to +10°C/14°F) JLG MTF III FLUID
Transmission gearbox oil capacity	0.48 gal (1,80 L)
Rotation reduction gear oil capacity	-
Rotation reduction gear oil specifications	Life lubricated
Air conditioning refrigerant specifications	R134A
Air conditioning refrigerant capacity	2 lb (1,10 kg)
Grease specifications	NLGI – 1
Grease capacity	9 lb (4,00 kg)
Hydraulic oil type	JLG Hydro Telehandler Fluid ISO46
Hydraulic system (total capacity)	84.54 gal (320,0 L)
AdBlue tank	9.25 gal (35,0 L)
Fuel tank	58.12 gal (220,0 L)

Coolant capacity	7.93 gal (30,0 L)
Cool specifications	Antifreeze Red

JLG Hydro Telehandler Fluid ISO46

The sticker shown indicates the hydraulic circuit is filled with hydraulic oil JLG Hydro Telehandler Fluid ISO46.



Specifications:
ISO 6743-4 HV, Afnor NFE 48-602, ISO 11158, DIN 51524 Part 3 HVLP, Afnor NFE 48-603 HV, ASTM D6158, Denison HF-0 / HF-1 / HF-2, Eaton Vickers I-286-S / M-2950-S, Cincinnati Vehicle P-68 / P-69 / P-70, Afnor NFE 48-690(dry), Afnor NFE 48-691(wet), U.S. Steel 126 / 127 / 136, JCMAS HK, Bosch variable vane pumps, Rexroth RE 90220, Sauer Danfoss 520L0463, General Motors (LS-2) LH-03-1 / LH-04-1 / LH-06-1, SEB 181222.

Chemical-Physical Characteristics			
Properties	**Analysis Method**	**Unit of Measure**	**Value**
Density at 15°C	ASTM D1298	kg/l	0.88
Viscosity at 40°C	ASTM D445	cSt	46.6
Viscosity at 100°C	ASTM D445	cSt	8.6
Viscosity Index	ASTM D2270	-	165
Kinematic viscosity at 40°C after Sonic Shear	ASTM D445	cSt	41.6
Viscosity Index after Sonic Shear	ASTM D2270	-	144
FZG Failure Load Stage	ASTM D5182	Stage	12
Flash Point (C.O.C.)	ASTM D92	°C	210
Pour point	ASTM D97	°C	-35
Temperature for Brookfield viscosity of 750cP	ASTM D2983	°C	-9

JLG Hydro Telehandler Fluid ISO32

Note: Hydraulic oil for cold climates is optional. Consult your dealer in case of doubts or information on your machine.

The sticker shown indicates the hydraulic circuit is filled with hydraulic oil JLG Hydro Telehandler Fluid ISO32.



Specifications:
ISO 6743-4 HV, Afnor NFE 48-602, ISO 11158, DIN 51524 Part 3 HVLP, Afnor NFE 48-603 HV, ASTM D6158, Denison HF-0 / HF-1 / HF-2, Eaton Vickers I-286-S / M-2950-S, Cincinnati Vehicle P-68 / P-69 / P-70, Afnor NFE 48-690(dry), Afnor NFE 48-691(wet), U.S. Steel 126 / 127 / 136, JCMAS HK, Bosch variable vane pumps, Rexroth RE 90220, Sauer Danfoss 520L0463, General Motors (LS-2) LH-03-1 / LH-04-1 / LH-06-1, SEB 181222

Chemical-Physical Characteristics			
Properties	**Analysis Method**	**Unit of Measure**	**Value**
Color	-	-	Green-Blue
Density at 15°C	ASTM D1298	kg/l	0.878
Viscosity at 40°C	ASTM D445	cSt	32.4
Viscosity at 100°C	ASTM D445	cSt	6.6
Viscosity Index	ASTM D2270	-	165
Flash Point (C.O.C.)	ASTM D92	°C	205
Pour point	ASTM D97	°C	-37

9.1.13 Environmental Conditions

Although the telehandler and the attachments can be used in several different situations, it is necessary to observe compliance with minimum standards of operation as specified below:

Parameter	Allowed Values
Operating Temperatures	from -20°C to +40 °C (from -4 °F to 104 °F)
Average Daily Temperature	< +40 °C (< 104 °F)
Storage Temperature	from -25°C to +50 °C (from -13 °F to 122 °F)

Parameter	Allowed Values
Humidity	from 20 % to 95 %
Altitude	< 2500 m (< 8200 ft)

9.1.14 Electromagnetic Interference

In the case of additional attachments installed by the customer, the user must verify if the installation causes interference of any kind with the tools of the telehandler; if so, the user must correct such interferences.

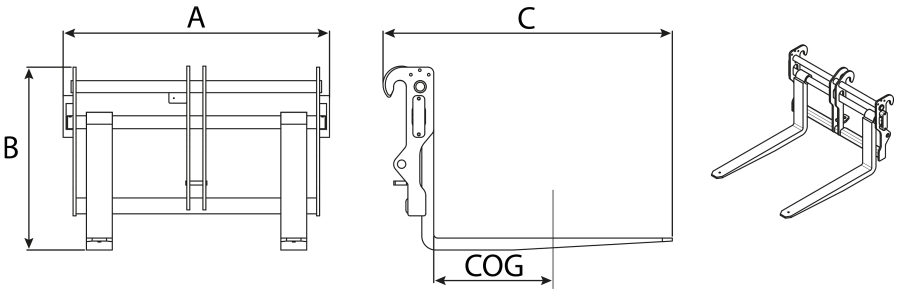
It is essential to pay particular attention to mobile devices such as radio communications (telephones) that must be installed by trained service technicians must use externally mounted antennas.

9.1.15 Radiation

The machine, in conditions of normal use, does not produce any type of radiation, ionizing and non ionizing, that can cause problems to the operator.

9.2 ATTACHMENTS SPECIFICATIONS

9.2.1 Counter Plate with Forks

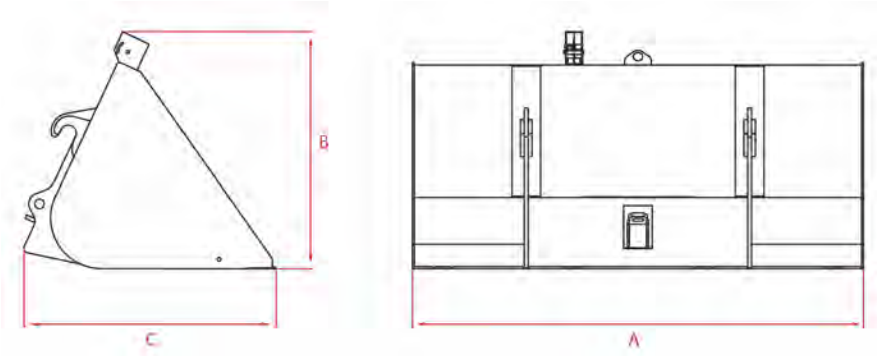


Note: The dimensions refer to one single fork.

	BCV8376
Price list attachment code	TCV0071
Capacity	13,200 lb (6000 kg)
Weight	705 lb (320 kg)
Width (A)	53 in (1340 mm)
Height (B)	36 in (920 mm)

	BCV8376
Length (C)	57 in (1455 mm)
COG	24 in (600 mm)

9.2.2 Bucket



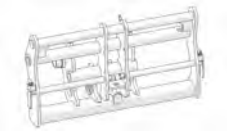
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	BUD3078
Price List Attachment Code	TBN0347
Weight	970 lb (440 kg)
Width (A)	72 in (1820 mm)
Height (B)	38 in (970 mm)
Length (C)	32 in (810 mm)

	BUB2826–S
Price List Attachment Code	TBN0346
Weight	1,345 lb (610 kg)
Width (A)	95 in (2400 mm)
Height (B)	59 in (1150 mm)
Length (C)	52 in (1320 mm)

SECTION 10
Definitions

Attachment Holding Plate



The attachment holding plate is the interface between the telehandler and the interchangeable attachments. The attachment holding plate is placed at the end of the telescopic boom and is used for the quick and safe installation of the interchangeable attachments at the machine base.

Back

The back is the side that is in back of the operator in the control position during the normal forward travel of the machine.

Attachment

The attachment is an interchangeable device which can be installed by the operator on the attachment holding plate of the machine, in order to change the function of the machine.

Front

The front is the side that is in front of the operator in the control position during the normal forward travel of the machine.

Left Side

The left side is the side that is located to the left of the operator in the control position during the normal forward travel of the machine.

Operator

Instructed person, trained with specific theoretical-practical course concerning use of the machine or attachments.

Right Side

The right side is the side that is located to the right of the operator in the control position during the normal forward travel of the machine.

Machine



Vehicle means a work machine provided with an engine for operation. The term "machine" or "basic machine" are indistinctly used.

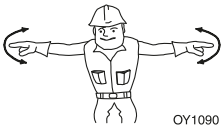
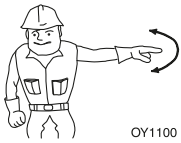
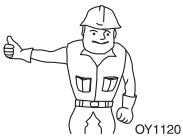
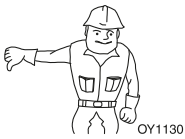
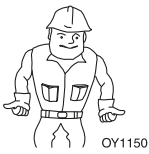
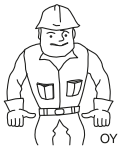
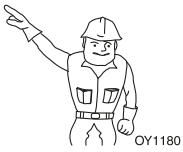
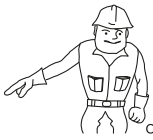
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Serial Number ____

Date	Comments

Inspection, Maintenance and Repair Log

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.

Corporate Office
JLG Industries, Inc.
1 JLG Drive
McConnellsburg, PA 17233-9533 USA
(717) 485-5161 (Corporate)
(877) 554-5438 (Customer Support)
(717) 485-6417

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